JEFFERSON COUNTY - CITY OF PORT TOWNSEND

ALL HAZARD MITIGATION PLAN

INCLUDING SPECIAL PURPOSE DISTRICTS

2024

JEFFERSON COUNTY EMERGENCY MANAGEMENT
Emergency Operations Center
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PREFACE

Special Thanks & Acknowledgements

This plan was made possible because of the gracious spirit of cooperation demonstrated by the County Administrator of Jefferson County, the City Manager of the City of Port Townsend, and the Director of the Jefferson County Emergency Management Department. Without their commitment and dedication to the hazard mitigation planning process and unselfish willingness to partner to obtain a Hazard Mitigation Planning Grant, this plan might not have been written.

Thanks also to the members of the Jefferson County Natural Hazards Mitigation Steering Committee for their patience, organization, enthusiasm, and tenacity:

Willie Bence, Director, Jefferson County Department of Emergency Management
Keppie Keplinger, Deputy Director, Dept. of Emergency Management, Jefferson County
Jacob Hausdorf, Planning Coordinator, Dept. of Emergency Management, Jefferson County
Mary Baker-Scott, Program Coordinator, Dept. of Emergency Management, Jefferson County
Brad Brooks, Planning Coordinator, Dept. of Emergency Management, Jefferson County
John Bethel, Citizen/Geologist, Jefferson County
Laura Guth, Jefferson County Community Emergency Response Team and Disaster Air Response Team

In addition, special thanks go to the following individuals for their assistance in the development of this plan:

Local 20/20
Cindy Jayne, Climate Action Committee

Neighborhood Emergency Preparedness Groups (NPREP)
Deborah Stinson
Elizabeth Bindschadler

Concerned Citizens
Bill Dean
Bill Hunt
Larry Berger
Pat Garrett
Dennis Hausdorf
Mark Miller
Pete Hubbard
Dave Codier

Washington State Military Department, Emergency Management Division: Kevin Zerbe, Mitigation Programs Coordinator
Funding Acknowledgements: This plan was made possible entirely through local jurisdictions and special purpose districts providing staff time and resources to help complete this multi-jurisdictional plan.

Points of Contact

For information regarding this plan or to comment on this plan, please contact the Jefferson County Department of Emergency Management:

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Record of Changes

Change No.	Page No.	Subject	Date Entered	Entered By

How to Use This Plan

Each section of the *Natural Hazards Mitigation Plan* provides information to assist local governmental jurisdictions and agencies, local Indian Tribes, and the citizens of Jefferson County and the City of Port Townsend in understanding the community in which we live and work and the hazard related issues facing government, citizens, businesses, and the environment. Combined, the various sections of this plan work together to create a document that guides the mission to reduce vulnerability and minimize loss from future natural hazard events.

The structure of this plan enables people to use only that portion of the plan that is of interest to them and/or pertains to their needs. It also allows local government to review and update specific sections as new data becomes available. New data can be easily incorporated, resulting in a natural hazards mitigation plan that remains current and relevant to the needs of the citizens of Jefferson County.

The **Jefferson County – City of Port Townsend Natural Hazards Mitigation Plan** is organized into eleven sections:

Preface: contains Acknowledgements, the Record of Changes and How to Use this Plan.

Revision Summary: contains summary of revisions to this plan from the previous version.

Executive Summary: contains a summary of the plan and a five-year action plan matrix.

Section I: contains the introduction and an overview of the planning process.

Section II: contains information regarding the various natural and man-made hazards that can affect Jefferson County. This section is also known as the *Hazard Identification & Vulnerability Analysis* (HIVA).

Section III: contains multi-jurisdictional community profile information as well as information regarding multijurisdiction/multi-hazard mitigation measures and a listing of multi-jurisdictional mitigation strategies and projects suggested by stakeholders and citizens as part of the public process associated with the development of this plan.

Section IV: contains jurisdiction-specific and special purpose district specific information as well as vulnerability assessment information for each jurisdiction and special purpose district that has participated in the hazard mitigation planning process.

Section V: contains the mitigation strategies of each jurisdiction and special purpose district that has participated in the hazard mitigation planning process

Section VI: contains the mitigation issues of coordinating agencies that impact Jefferson County's plan.

Section VII: contains the various appendices to the plan. These include copies of the adoption resolutions, frequently asked questions, acronyms, and references for sources of information.

Plan Review Crosswalk – Section VIII: contains a cross-reference grid that ties the *Disaster Mitigation Act of 2000*, and *44 CFR Part 201 – Mitigation Planning, Interim Final Rule* to the contents of this plan.

REVISION SUMMARY

2024 Plan Revisions Summary

BACKGROUND

The *Jefferson County – City of Port Townsend Natural Hazards Mitigation Plan* (the Plan) was originally written and adopted in 2004 and updated and readopted in 2009 and 2018, as required by law. The mitigation planning regulation at 44 CFR 201.6(d)(3) states:

A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five (5) years in order to continue to be eligible for mitigation project grant funding.

The following updates reflect the 2024 review and revision process reflected in the Plan and submitted to the Washington State Hazard Mitigation Office for review.

Each participating organization was provided with turn-around documents that detailed their organization profile and goals that were submitted in 2022 through 2024. They were asked to review them against their current situations, and update them to reflect current plans, documents and policies. The updated turn around documents were then returned to the core writing team to be incorporated into the overall Plan.

REVISIONS

Preface: Contains acknowledgements, the Table of Contents, and introductory material for the Plan. The following revisions have been made to this section:

- *Special Thanks and Acknowledgements* have been updated to reflect current personnel and special contributors to the 2024 revisions.
- *Table of Contents* has been updated to reflect changes in content and order of the Plan.
- Steering Committee Members and contributors have been updated to acknowledge participation.
- *List of Plan Recipients* has been updated to reflect the current distribution. • *Promulgation* will be updated as local jurisdictions adopt the plan. For the 2024 plan update, Jefferson County's plan will be considered "approved upon adoption" as jurisdictions will adopt the plan after FEMA review; only upon local adoption will the Mitigation Plan be considered current under FEMA rules.

Executive Summary: Contains a summary of the plan and a five-year action plan matrix.

- This section was updated by the steering committee to reflect the most recent planning process and goals utilized in the 2024 plan update.

Section I – The Planning Process: Contains the introduction and an overview of the planning and participation process.

- *Plan Methodology* has been updated with the names of current committee participants, jurisdictions, and citizens. Text has been revised to highlight that a

number of natural hazard categories have been broken out to provide more detail on locally important disaster issues.
- *Plan Development Process* has been updated with the names of key contributors.
- *Plan Participation and Adoption* table has had a column added so that both 2004 and 2009 Adoption Resolutions can be summarized. Adoption Resolutions will be entered after FEMA approves the Plan and participants adopt the approved Plan.
- *Plan Maintenance* has been updated to reflect the Plan update schedule for the period from 2017 through 2021.

Section II – Multi-Jurisdictional: Contains information regarding the most serious natural hazards within the State that can affect Jefferson County, and additional man-made hazards that are of concern to Jefferson County.

- *Jefferson County Profile* has been updated to call out the Plan's current maps. Maps have been updated with most current information available.
- *Jefferson County Profile* narrative has been improved and updated using statistics from the most recent Census.
- *Significant Historical Disaster Events* – "Federal Disaster Declarations for Washington" table has been updated through most current declarations in 2023.
- Climate Change: This section was reviewed and updated by Local 20/20's Climate Change Action Committee to best reflect the current understanding of the impact of climate change to Jefferson County.
- Winter Storm, Damaging Winds, and Heat Wave were consolidated into a single section called "Severe Weather" to improve efficiency.
- All hazard profiles were updated and brought current by volunteer subject matter experts. Review included update of severe incidents/Presidential Disaster Declarations, addition/update of new and relevant maps, and editing for content and clarity as needed.

Section III – Multi-Jurisdictional / Multi-Hazard Mitigation: contains multi-jurisdictional community profile information as well as information regarding multi-jurisdiction/multi-hazard mitigation measures and a listing of multi-jurisdictional mitigation strategies and projects suggested by stakeholders and citizens as part of the public process associated with the development of this plan.

- Updated list of mitigation activities suggested by citizen stakeholders during community survey and conversation process. Added descriptions of potential mitigation activities organized by type/theme, along with additional context as needed.

Section IV – Jurisdiction-Specific Information; Hazard Vulnerability Assessment and Proposed Mitigation Strategies: Contains jurisdiction-specific and special purpose district specific information as well as vulnerability assessment information for each jurisdiction and special purpose district that has participated in the hazard mitigation planning process.

- All Participating Jurisdictions identified principal points of contact to work with the Steering Committee on their jurisdiction's profile. Participating Jurisdictions updated profiles to include the most recent data they had available, include population demographics, financial data, and significant events, as well as the status of existing mitigation projects and any new projects for inclusion in the 2024 plan.

Section V – Mitigation Strategies:

- Added or Updated Mitigation Activities to reflect 2024 Status as provided by participants.

Section VI – Coordinating Entities:

- Reviewed, updated and gave all previously used coordinating entities a chance to edit their write-ups.

Section VII – Appendices:

- *Appendix A - Acronyms* – Acronyms reviewed and confirmed.

- *Appendix B - Contributors & Contact Points* – Updated – All contacts and contributors have been updated to reflect contributions that are in the 2024 revision.
- *Appendix E - Resources* – All tested and verified.
- *Appendix F - Adoption Resolutions* –Summary table added column to include 2024 resolution numbers; table will be updated as jurisdictions adopt the Plan after FEMA review and approval.
- *Appendix G - Public Participation Documentation* – Updated with representative samples of public participation within the year of the update.

Section VIII – FEMA CROSSWALK

- *Plan Review Tool Introduction* has been updated to reflect the use of the most recent version of the crosswalk.

EXECUTIVE SUMMARY

Executive Summary

Five-Year Action Plan

The *Jefferson County – City of Port Townsend Hazard Mitigation Plan* (the Plan) is an **All-Hazard** Plan, and includes resources and information to assist county residents, public and private sector organizations, and others interested in participating in planning for natural hazards. The Plan provides a list of activities that may assist Jefferson County in reducing risk and preventing loss from future natural hazard events. The action items address multi-hazard issues, natural hazards from avalanche, drought, earthquake, fire, flood, landslide, severe storm, tsunami, and volcano, as well as man-made hazards that are significant to Jefferson County entities.

The Plan Organization:

The Plan contains a five-year plan matrix, background on the purpose and methodology used to develop the plan, a profile of Jefferson County, sections on the most threatening natural and man-made hazards that can occur within the County (avalanche, drought, earthquake, flood, landslide, severe local storm, tsunami, volcano, and wildfire, power outage, etc.), profiles and mitigation activities of special jurisdictions, mitigation issues with coordinating agencies and jurisdictions that impact Jefferson County, and the appendices. The sections are delineated as follows:

Executive Summary contains a summary of the plan and a five-year action plan matrix.

Section I contains the introduction and an overview of the planning and participation process.

Section II contains information regarding the most serious natural hazards within the State that can affect Jefferson County, and additional man-made hazards that are of concern to Jefferson County.

Section III contains multi-jurisdictional community profile information as well as information regarding multi-jurisdiction/multi-hazard mitigation measures and a listing of multi-jurisdictional mitigation strategies and projects suggested by stakeholders and citizens as part of the public process associated with the development of this plan.

Section IV contains jurisdiction-specific and special purpose district specific information as well as vulnerability assessment information for each jurisdiction and special purpose district that has participated in the hazard mitigation planning process.

Section V contains the mitigation strategies of each jurisdiction and special purpose district that has participated in the hazard mitigation planning process

Section VI contains the mitigation issues of coordinating agencies that impact Jefferson County's plan.

Section VII contains the various appendices to the plan. These include copies of the adoption resolutions, public participation, and the FEMA evaluation crosswalk.

Section VIII – FEMA Crosswalk, Plan Review Tool Introduction has been updated to reflect the use of the most recent version of the crosswalk.

The Plan Development Participants:

The Plan is the result of a collaborative effort among Jefferson County citizens, public agencies, the private sector, and regional and state organizations. Public participation played a key role in development of goals and action items. Interviews were conducted with stakeholders across the county, and public meetings were held to include Jefferson County residents in the process of developing the plan. Where possible, Hazard Mitigation planning was brought into workshops and classes hosted by stakeholders for related topics. A detailed recounting of the planning process is contained in Section I. New this year is the use of both Neighborhood Emergency Preparedness (NPREP) groups and an online capability for citizens to review the document and make comments.

The Plan Mission:

The primary mission of the Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, the county's economy and environment from natural hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the County towards building a safer community.

The secondary mission of the Plan is to provide the foundation for creating an "All Hazards Mitigation Plan" that effectively addresses issues of man-made hazards in addition to natural hazards.

The Plan Goals:

The Plan goals describe the overall direction that Jefferson County and Port Townsend agencies, organizations, special districts, private industry and citizens can take toward mitigating risk from natural hazards. The goals are the guiding principles from the broad direction of the mission statement to the specific recommendations of the action items.

(1) Protect Life and Property

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards.
- Improve hazard assessment information to make recommendations encouraging preventive measures for existing development in areas vulnerable to natural hazards
- Enhance Jefferson County Neighborhood Emergency Response Teams to provide citizens from all areas of Jefferson County with the information and tools they need to help them, their families, and their neighbors in the hours and days immediately following an emergency or disaster event.

- Encourage homeowners and businesses to purchase insurance coverage for damages caused by natural hazards.
- Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to natural hazards.

(2) Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.
- Continue the current flood awareness programs conducted by various jurisdictions as part of the National Flood Insurance Program Community Rating System.
- Create an earthquake awareness program conducted by various jurisdictions in which the vulnerability to earthquakes is high.
- Enhance the awareness programs for Wildland – Urban Interface fire risks, particularly with Homeowners Associations in wildland settings.

(3) Natural Systems

- Balance watershed planning, natural resource planning, and land use planning with natural hazard mitigation to protect life, property, the economy, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

(4) Partnerships and Implementation

- Encourage leadership within private and public sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.
- Strengthen inter-jurisdiction and inter-agency communication and coordination and partnering of jurisdictions and agencies within Jefferson County to foster the establishment and implementation of natural hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- Develop a partnership with the local and regional newspapers to produce a series of in-depth articles on each natural hazard and both personal and public mitigation techniques.
- Develop and strengthen coordination and cooperation with local business and industries that are particularly vulnerable to natural hazards in Jefferson County.

(5) Emergency Services

- Strengthen Emergency Management capabilities to prepare for, and to respond to disasters of all types.
- Encourage the establishment of policies at the local level to help insure the prioritizing and implementation of mitigation strategies and/or projects designed to benefit critical/essential facilities, services, and infrastructure.
- Where appropriate, coordinate and integrate natural hazard mitigation activities with existing local emergency operations plans.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.
- Improve the interoperability capabilities among Emergency Services.
- Improve the survivability of communications and disaster response effectiveness of Emergency Service entities.

The Plan Maintenance: Implementation, Monitoring and Evaluation

The Plan Maintenance Section of this document details the formal process that will ensure that the *Jefferson County – City of Port Townsend Hazard Mitigation Plan* (Plan) remains active and relevant. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section includes an explanation of how Jefferson County and the City of Port Townsend intend to incorporate the mitigation strategies outlined in this plan into existing planning mechanisms such as the Jefferson County Comprehensive Plan.

Plan Adoption

The Board of Jefferson County Commissioners and the Port Townsend City Council will be responsible for adopting the Plan for their respective jurisdictions. Special Districts participating in the Plan must have their own governing body adopt the Plan as the official plan of the special district. Coordinating agencies, jurisdictions, and entities will be responsible for adopting their own plans within their own jurisdictions.

Coordinating Body

A Jefferson County Hazard Mitigation Advisory Committee will be responsible for coordinating implementation of Plan action items and undertaking the formal review process.

Convener

The Board of Jefferson County Commissioners and the Port Townsend City Council will adopt the Plan, and the Hazard Mitigation Advisory Committee will take responsibility for Plan implementation. The County Administrator will serve as convener to facilitate the Hazard Mitigation Advisory Committee meetings, and will assign tasks such as updating and presenting the Plan to members of the committee. Plan implementation and evaluation will be a shared responsibility among all Natural Hazard Advisory Committee Members.

Implementation through Existing Programs

Jefferson County and the City of Port Townsend address statewide planning goals and legislative requirements through GMA, CRS, and NFIP requirements, capital improvement plans, and building codes. The Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. Local plans, such as Emergency Response Plans, that have sections related to Hazard Mitigation will be coordinated with the Plan so that requirements of the Plan are incorporated into local guiding documents and ordinances, and vice versa.

Economic Analysis of Mitigation Projects

The Federal Emergency Management Agency's approaches to identify costs and benefits associated with natural hazard mitigation strategies or projects fall into two general categories: benefit/cost analysis (BCA) and cost-effectiveness analysis. Where appropriate, proposed

activities will be evaluated using the BCA tools and $Hazus_{MH}$ modeling software, along with empirical data to assess whether or not the mitigation strategy is justified.

Formal Review Process

The Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The convener will be responsible for contacting the **Hazard Mitigation Advisory Committee** members and organizing the annual meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

Continued Public Involvement

Jefferson County and the City of Port Townsend are dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. Copies of the plan will be cataloged and kept at all of the public libraries in the county. The existence and location of these copies will be publicized on the Jefferson County and the City of Port Townsend websites along with the Plan, itself. This site will also contain an email address and phone number to which people can direct their comments and concerns on an ongoing basis.

Public hearings will be held concomitant with the evaluation of the program so that changes in needs and perceptions can be addressed and updated in the Plan as appropriate.

The plan also includes the contact information for the county department responsible for keeping track of public comments on the Plan.

SECTION I
THE PLANNING PROCESS

Introduction

Throughout recorded history, the residents of Jefferson County have dealt with various natural hazards affecting the area. Photographs, journal entries, and newspapers from the mid to late 1800's to the present show that the residents of the area have dealt with flooding, severe windstorms, harsh winter storms, wildfires, earthquakes, landslides, and even indirectly from volcanic activity. Although there were fewer people in the area many years ago, the natural hazards did at times adversely affect the lives of those who depended on the land and climate conditions for food and welfare. As the population of the county increased, the exposure to natural hazards created a greater risk than experienced historically. With an ever-continuing growth in population, shifting demographics, the development of natural lands, and advancing climate change, the impact of these natural hazards will continue to escalate.

Jefferson County's rural setting, combined with its mild climate and close proximity to the waters of Puget Sound and the mountains and forests of the Olympics create an almost ideal locale that draws people to live here. However, the potential impacts of natural hazards typical to the area make the population, business community, and the environment vulnerable to natural disaster situations.

Jefferson County is subject to flooding, severe storms, landslides, earthquakes, wildfires, and tsunami events, while other hazards such as tornadoes, volcanic activity, and drought have occurred in the past, or are becoming more likely every year as a result of climate change. It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the county, but occur they will – it is only a matter of time. However, with careful planning and collaboration among public agencies, private sector organizations, as well as citizens and businesses within the community, it is possible to minimize the losses that can result from these natural disasters.

What is natural hazard mitigation?

Natural hazard mitigation is the development and implementation of activities designed to reduce or eliminate losses resulting from catastrophic natural events. This plan identifies all major hazards, natural or man-made, affecting the participants, but focuses on developing strategies for dealing with the natural hazards.

Why develop a natural hazards mitigation strategy?

The rising cost of responding to and recovering from natural disasters has led to an increased interest in identifying effective ways to reduce the vulnerability to natural hazards and the disasters these hazards can create. Natural hazard mitigation plans assist communities in identifying the hazards that could impact them, determining the vulnerability of the community to these hazards, and identifying mitigation strategies to prevent or reduce the impacts these hazards pose to the community through a coordinated, multi-jurisdictional approach.

This report serves to establish a foundation for coordination and collaboration among local agencies, jurisdictions, and the citizens of Jefferson County in addition to providing a basis for identifying mitigation strategies and future mitigation projects as a means to assist in meeting the requirements of various federal assistance programs.

What are the benefits of hazard mitigation?

- ***Save lives and property*** – communities can save lives and reduce property damage from natural hazards through mitigation actions, such as moving families and their homes out of harm's way or by limiting development and/or regulating the type of construction or structures allowed in certain areas.

- ***Reduce vulnerability to future hazards*** – by having a mitigation strategy in place, communities are better prepared to take the proper steps that will permanently reduce the risk of future losses.

- ***Facilitate post-disaster funding*** – by identifying mitigation strategies and projects before the next disaster, Jefferson County communities will be in a better position to obtain post-disaster funding because much of the background work necessary for funding assistance will already be in place.

Who does the natural hazards mitigation plan benefit?

The ***Jefferson County – City of Port Townsend Hazard Mitigation Plan*** was developed, written, and adopted as a multi-jurisdictional all-hazards mitigation plan for the benefit of the incorporated municipalities, various special purpose districts, and the unincorporated rural areas of Jefferson County. It is anticipated that a large number of county special purpose districts will also adopt this plan in order to benefit from future hazard mitigation funding.

The information contained in this plan is applicable countywide and serves to provide the framework for natural hazard mitigation within Jefferson County. Much has already been gained in simply developing this plan and establishing the basic mitigation strategies that have been incorporated into this document. It is hoped that the spirit of inter-jurisdictional cooperation that has begun with this planning effort will continue in the years to come thereby providing further benefits to all jurisdictions and agencies within the county as well as the citizens these jurisdictions and agencies serve.

Furthermore, the plan was developed following the process set forth in the Disaster Mitigation Act of 2000 as well as the requirements of the National Flood Insurance Program Community Rating System. By doing so, it is anticipated that citizens living in those jurisdictions within Jefferson County that participate in the Community Rating System could possibly further benefit from this plan through an additional decrease in their flood insurance premiums.

Natural hazards land use policy in Washington

Planning for natural hazards in Washington has taken shape over the past 50 years beginning with the State Environmental Policy Act (1971) and the Shorelines Management Act (1971), and followed by the State Building Code Act (1974, 1985) and the Growth Management Act (1991). It is an integral element of Washington's statewide land use planning program which focuses on appropriate land use controls in critical areas that are prone to natural disasters, along with keeping up with the latest technology in construction methods to mitigate potential disasters.

Support for natural hazards mitigation

The primary responsibility for the development and implementation of mitigation strategies and policies lies with local jurisdictions. However, local jurisdictions are not alone; various partners and resources exist at the state and federal levels to assist local government in the development of mitigation strategies and plans. Within Washington State, the Washington Military Department, Emergency Management Division is the lead agency for providing hazard mitigation planning assistance to local jurisdictions.

Plan Methodology

Because of the similarity in hazards that pose threats to the various communities within Jefferson County, a decision was made that the plan should meet three basic goals to serve the needs of the citizens of Jefferson County, and governmental jurisdictions and agencies:

1. *That the plan be multi-jurisdictional thereby satisfying the natural hazards mitigation planning requirements as specified in the Disaster Mitigation Act of 2000 for all communities within Jefferson County.*

2. *That the plan be developed following the process outlined by the Disaster Mitigation Act of 2000 as well as the National Flood Insurance Program Community Rating System so that the plan coordinates with and compliments Community Rating System programs that exist now or may exist in the future within Jefferson County.*

3. *That the plan be written in such a way so as to evolve into an "**All Hazards Mitigation Plan**" for Jefferson County and the City of Port Townsend.*

The plan was written using the best available information obtained from a wide variety of sources. Throughout the plan development process, a concerted effort was made to gather information from participating municipal and county agencies and staff as well as stakeholders, business and industry, and the citizens of Jefferson County. **A concerted effort was made to solicit information from local agencies and individuals with specific knowledge of certain natural hazards and past historical events, as well as planning and zoning codes and ordinances and recent planning decisions.**

Establishment of the Natural Hazards Mitigation Steering Committee

The COVID-19 pandemic created great difficulty for the local emergency planning and response community in their efforts to update this plan. The Jefferson County Emergency Operations Center has been virtually (remotely) activated for the entirety of the pandemic, in support of public health, healthcare, other partners, and the community, activating in early March of 2020, finally demobilizing at the end of calendar year 2022.

Combined with staff turnover, few members of the previous 2016 plan's Steering Committee remained, and ability to support the mitigation planning process both internally at DEM and from other community partners was limited. As such, a small steering committee was newly formed in early 2022 to help lead the plan update cycle. The steering committee featured select DEM staff and volunteers with a wide diversity of strengths, backgrounds, and community connections to ensure engagement with a wide array of partners.

As such, this plan update was done entirely "in-house," led primarily by the members of the Steering Committee.

This committee was charged with the following responsibilities:

- Establish plan development goals and objectives.
- Establish a timeline for completion of the plan.
- Ensure that the plan meets the requirements of the Disaster Mitigation Act of 2000 as well as National Flood Insurance Program Community Rating System requirements.
- Solicit and encourage the participation of municipalities, special purpose districts, stakeholders, and citizens in the plan development process.
- Assist local planning officials, special purpose district commissioners, and others in gathering information for inclusion in the plan.
- Organize and oversee the public involvement process.
- Gather all pertinent information to be included in the plan.

Natural Hazards Mitigation Steering Committee Members

Willie Bence, Director, Jefferson County Department of Emergency Management
Keppie Keplinger, Deputy Director and Public Information Officer, Jefferson County DEM
Jacob Hausdorf, Project Coordinator, Jefferson County DEM (through December of 2022)
Mary Baker-Scott, Planning Coordinator, Jefferson County DEM (through March of 2023); replaced by Brad Brooks, Planning Coordinator, in September of 2023
Laura Guth, Volunteer Program Manager, Jefferson County Community Emergency Response Team (CERT) and Jefferson County Disaster Air Response Team (DART)
John Bethel, Geologist; Volunteer, Jefferson County DEM Incident Management Team

The Natural Hazards Mitigation Steering Committee will continue in an advisory capacity after this plan is completed. Responsibility for annual updates and revisions to the plan will be delegated to the Jefferson County Department of Emergency Management with support from the Jefferson County Department of Community Development.

Natural Hazards Mitigation Advisory Committee

Input from Stakeholders and Citizens

In order to facilitate better coordination and communication between the Natural Hazards Mitigation Steering Committee and stakeholders and citizens of the community, **"The Jefferson Peninsula Regional Emergency Planning Committee (JPREP)"** was used as a larger planning group and served as a Natural Hazards Mitigation Planning Committee.

JPREP is the "Whole Community" engagement organization in Jefferson County, featuring first responders, government at all levels, non-government organizations, service organizations, voluntary organizations, private sector, and any member of the general public who is interested in resilience and disaster preparedness. Typically, JPREP meetings are held once a quarter, and are used to share information and build relationships among a diverse group of stakeholders. Given its diverse audience, the JPREP organization was a perfect choice to be our primary engagement outlet during the plan update process.

Information was gathered from these stakeholders and citizens via a series of public surveys and JPREP meetings. Meetings were held virtually, with additional outreach occurring at Covid Vaccination Clinics and through the local newspapers and media.

Additionally, the Steering Committee utilized DEM's unique partnership with Local 20/20, a local non-profit service organization, a program called NPREP. NPREP brings neighborhoods together using the Map Your Neighborhood training, encouraging neighborhoods to organize among themselves to prepare for disaster, allowing for neighbors to help neighbors before and after the event. Outreach was conducted specifically through Jefferson County's approximately 123 organized neighborhoods for their feedback and input.

Finally, Jefferson County DEM's website, viewable at jeffcoeoc.org, featured a page dedicated to the plan update process. The previous 2016 mitigation plan was posted there, as well as slide decks and video of previous public meetings, links to feedback surveys, and other relevant information.

Stakeholders

Information regarding hazard identification, vulnerability assessment, and mitigation strategies for inclusion in this plan was also requested from the following agencies and organizations:

All Jefferson County Drainage Districts	Parks & Recreation District No. 1
All Jefferson County Fire Districts	Port of Port Townsend
All Jefferson County Hospital Districts	Port Townsend School District
All Jefferson County Sewer Districts	Port Townsend Library District
All Jefferson County Water Districts	Public Utility District No. 1 of Jefferson County
Jefferson County Library District	Port Townsend Police Department
Jefferson Transit Authority	Port Townsend Finance Department
Jefferson County Sheriff's Office	Water Districts 1, 2, and 3
Jefferson County Assessor	JC Department of Community Development
Jefferson County Central Services	PT Business & Community Development Dept
JeffCom 911	Jefferson County Public Works
	Port Townsend Public Works

Appendix C, ***PARTICIPANTS & CONTACTS***, contains the names and roles of each of the individual participants from the above organizations and citizenry. It is divided into the Steering Committee, Reviewers, and other citizens who have made a significant contribution to the effort to produce the Plan. **Over 200 people from 28 jurisdictions and special districts contributed to the building of this Plan.**

In addition, the following jurisdictions are recognized in the process of developing the Natural Hazards Mitigation Plan through the provision of information, and a commitment to coordinate efforts in the future. These entities were selected because Jefferson County does not have jurisdiction over them, yet the mitigation plans of these jurisdictions impact Jefferson County in terms of its needs to place mitigation resources, and in some cases, for the purposes of the "All Hazards" plan, actually create the type of hazard that Jefferson County needs to anticipate. Private partnerships have been encouraged with businesses and individuals that could be anticipated to have a material impact on planning issues, mitigation efforts, and fast recovery during a natural disaster.

Clallam County Emergency Operations Center	Sequim School District No. 323
Clallam Fire Protection District No. 1 (Clallam/Jefferson)	U.S. Coast Guard
Clallam Fire Protection District No. 3 (Clallam/Jefferson)	U.S. Forest Service – Olympic National Park
Clallam County PUD	U.S. Naval Magazine – Indian Island
Fort Worden State Park	Washington Department of Ecology
The Hoh Tribe of Indians	Washington Department of Fish & Wildlife
KROH – FM 91.9	Washington Department of Natural Resources
KPTZ – FM 91.1	Washington Department of Transportation
Neighborhood Emergency Preparedness Groups (NPREP)	WA Military Dept – Emergency Management Division
Port Townsend Paper	Washington State Patrol
Propane Providers	

In addition, the following citizens participated in the public process to develop the 2024 plan and have contributions remaining from previous Plans**.** These citizens became involved because of their specific knowledge of certain natural hazards and past historical events as well as local land use plans and codes and recent planning decisions.

Pat Garrett	Pete Hubbard
Dennis Hausdorf	Margaret Backer
Larry Berger	Mark Miller
Bill Hunt	Dave Codier
Deborah Stinson	Cindy Jayne
Elizabeth Bindschadler	Bill Dean

Hazard specific research

The Natural Hazards Mitigation Steering Committee reviewed and updated information and data on all hazards that previously contained within the plan: avalanche, damaging winds, drought, earthquake, flood, heat wave, landslides, public health emergencies, tornado, tsunami / seiche, volcanic activity, wildland fire, and winter storms. Information was obtained from local historical records, and a wide variety of local, state, and federal agencies as well as the above referenced stakeholder interviews and public workshops. In addition, a great deal of information was obtained from existing plans, studies, reports and numerous sources via the Internet. See Appendix E for a list of resources used.

Note: In 2009, we expanded the number of natural hazards by splitting “severe storms” into “wind storms” and “winter storms” and by adding “Heat Wave,” “Public Health Incidents,” and tornados, even though the latter is exceptionally rare. Similarly, the man-made hazards were expanded to include a break-out of transportation issues, particularly “military ordnance incidents' ' and “maritime incidents”.

In 2016, a section on “Climate Change” was added to each of the appropriate hazards. In addition, the draft version of updated FEMA FIRMS was available along with the risk assessments done to develop the new FIRMS. These, also, were used with their appropriate hazards.

In order to meet the Steering Committees stated goal of simplicity and reduction of redundancy for the 2024 update, the sections of Winter Storm, Damaging Winds, and Heat Wave were all recombined under a single section labeled “Severe Weather” in order to improve efficiency and reduce clutter of multiple sections.

Plan Development Process

The Disaster Mitigation Act of 2000

In the past, federal legislation has provided funding for disaster relief, recovery, and hazard mitigation planning. The Disaster Mitigation Act of 2000 is the latest legislation to improve this planning process and was put into motion on October 10, 2000, when the President of the United States signed the Act (Public Law 106-390). The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

Mitigate: to cause to become less harsh or hostile; to make less severe or painful.

Planning: the act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

Hazard Mitigation (as defined by the Disaster Mitigation Act of 2000): any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

The Disaster Mitigation Act of 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. It encourages and rewards local and state pre-disaster planning and promotes sustainability as a strategy for disaster resistance.

To implement the new Disaster Mitigation Act of 2000 requirements, The Federal Emergency Management Agency (FEMA) prepared an Interim Final Rule, published in the Federal Registry on February 26, 2002, at 44 CFR Parts 201 and 206, which establishes planning and funding criteria for state and local governments.

The primary purpose of hazard mitigation is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide. This is accomplished by using a systematic process of learning about the hazards that can affect the community, setting clear goals, identifying appropriate actions, following through with an effective mitigation strategy, and keeping the plan current.

Local Involvement:

Almost all of the jurisdictions in the plan contributed to the development of the plan through the dedication of staff time to oversee the development of the plan, assist in writing the plan, and/or compile jurisdiction-specific information contained in the plan.

Appendix C, ***Participants & Contacts***, contains a table of the names and roles of each of the individual participants from all of the jurisdictions, districts, and citizenry. **Over 200 people from 19 participating jurisdictions and special districts, and coordinating entities who contributed to the building of this Plan are listed.**

The table is divided into the Steering Committee, Reviewers, and other citizens who have made a significant contribution to the effort to produce the plan.

All jurisdictions and special districts having elected governing bodies were contacted and asked if they would participate in the development of the overall Natural Hazard Mitigation Plan for the County. Given the resources available to each jurisdiction, they participated as best they could. In

the case of school districts, for example, all districts were currently working on an Emergency Response Plan, which included a section on Hazard Mitigation. Thus, they were able to provide a subset of their Emergency Response Plan as input into the Natural Hazard Mitigation Plan.

All participants fell into one or more of the following categories:

Steering Committee – Provided leadership in getting resources to compile and write the plan, in providing guidance in the strategic development of the plan, and in getting adoption in the key jurisdictions.

Stakeholders – Stakeholders are local champions who provided significant input into the development of the plan through the gathering of their district's mitigation needs, and who reviewed the draft versions and provided counsel to improve the plan. These champions reviewed and recommended the adoption of the plan to the 24 Boards and Councils that comprised the eligible government entities in Jefferson County. Stakeholders generally have sufficient authority to commit staff resources to implement mitigation activities, and to support the plan. All Steering Committee and Advisory Committee members are stakeholders.

Contacts – Contacts are people, primarily staffers, who made significant contributions, including reviewing the draft plan, but did not have the leadership role in making the plan viable in their district.

Commissioners and Council Members – Commissioners and Council Members had the legal authority to commit the jurisdiction or special district to participate in and to adopt the Plan as their entity's official Plan. Generally, the adoption of the Plan was made upon the recommendation of the primary stakeholder reporting the Board, and after a period of "due diligence" in which the Board reviewed the Plan and determined that the commitment asked of their district was acceptable.

Others – Other individuals who contributed, but did not fall into one of the above categories are listed. These include staff support, the contributions of interested citizens, and even stakeholders whose analysis eventually led them to determine they should opt out of the Plan.

The table in Appendix C identifies each of the people who contributed and the specific role they had in putting together this plan.

Public Participation Process

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions. Washington's land use planning system addresses the need for public process and provides the opportunity for citizens to be involved in the planning process. The Federal Emergency Management Agency also requires public input during the development of flood mitigation plans.

The *Jefferson County – City of Port Townsend Hazard Mitigation Plan* integrates a cross-section of citizen input throughout the planning process. The Natural Hazard Mitigation Steering Committee developed a public participation processes encompassing four components: (1) a Hazard Mitigation Advisory Committee comprised of knowledgeable individuals in the community; (2) conducting stakeholder interviews to target the specialized knowledge of individuals working with populations or areas at risk from natural hazards; (3) conducting public meetings to identify common concerns and ideas regarding hazard mitigation and to discuss specific goals and actions of the mitigation plan; and (4) and an on-going feedback mechanism that allows public contact with the planning through the internet.

Integrating citizen involvement during the development of the Natural Hazard Mitigation Plan has resulted in increased public awareness, and set the stage for future cooperation from the portion

of the public that has a particular interest in man-made hazards that will be covered in the All Hazard Mitigation Plan to come. This involvement and cooperation ensure that the mitigation plan reflects community issues, concerns, and perspectives, and encourages new ideas to be brought forward to benefit the community.

In addition, the one hundred twenty-three neighborhood emergency groups were asked to address hazard mitigation at their regular meetings and provide feedback to the Planning Team, either directly or through the plan website at jeffcoeoc.org.

Public Involvement

In order to better involve the public in the planning process, the Natural Hazards Mitigation Steering Committee advertised and conducted public virtual meetings over Zoom and fell under Washington's Open Public Meetings Act (RCW 42.30). These meetings coincided with Jefferson County Department of Emergency Management's "JPREP" meetings, described above. These meetings involved an explanation of the hazard mitigation planning process, a review of previous mitigation projects, discussion of the results of public surveys, and an opportunity for further conversation and submission of comments. The results of those meetings can be found in the "Citizen Suggested Mitigation Strategies" in Section III.

Public surveys were distributed at the onset of the planning process, with surveys advertised through NPREP, JPREP, and other community avenues. The Planning Committee received a total of 82 responses regarding ideas for mitigation projects, and 84 responses on hazard vulnerability.

Project Webpage

The second aspect of the public process involved the development of a project website, https://www.co.jefferson.wa.us/1380/2022-Hazard-Mitigation-Plan-Update. The working draft was placed on the website created specifically for the public to use to view and comment on the Plan in real-time as it was being developed.

Plan Participation and Adoption

The Jefferson County Administrator, and City of Port Townsend City Manager agreed to participate in the development of the All Hazards Mitigation Plan on behalf of their governing bodies and agreed to adopt it once FEMA has approved the plan. In addition, special districts that participated in the development of the *Jefferson County Natural Hazard Mitigation Plan* in prior years did the same. The Summary of Adoption Resolutions, below, details the adoption history, since there have been significant organizational changes over the years that the region has been participating.

The participation in and adoption of a multi-jurisdictional pre-disaster mitigation plan shall not necessarily imply advocacy of, or support for, individual mitigation initiatives proposed by other participating jurisdictions, and the adoption of the plan by each jurisdiction shall be subject to limitations as set forth in each jurisdiction's adoption resolution.

Summary of Adoption Resolutions				
Agency/Jurisdiction	**2004 Adoption Resolution Number**	**2009 Adoption Resolution Number**	**2016 Adoption Resolution Number**	**2024 Resolution Number**
Jefferson County	50-04	21-10	04-17	
City of Port Townsend	04-037	10-013	16-046	
Port Ludlow Drainage District	13	Not Numbered	Opt Out	
Jefferson County Fire District 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR)	2004-07	10-06	16-08	
Jefferson County Fire District 2 (JCFD2) dba Quilcene Fire - Rescue	2004-1	2010-03	2016-09	
Jefferson County Fire District 3 (JCFD3) dba Port Ludlow Fire & Rescue (PLFR)	2004-01	2010-004	2016-10	
Jefferson County Fire District 4 (JCFD4) dba Brinnon Fire - Rescue	2004-4	2010-5	2016-5	
Jefferson County Fire District 5 (JCFD5) dba as Discovery Bay Volunteer Fire Dept	01-04	2010-6	2017-01	
Jefferson County Fire District 6 (JCFD6)	282-04			
JeffCOM 9-1-1	County Dept	County Dept	2017-001	
Public Hospital District No. 1	Opt Out	Opt Out	Opt Out	
Public Hospital District No. 2	2004-013	2010-18	2017-05	
Jefferson County Library District	04-02	10-01	16-06	
Port of Port Townsend	426-04	550-10	657-17	
Port Townsend School District No. 50	04-16	10-12	16-16	
Brinnon School District No. 45	Opt Out	207-10	246-16	
Chimacum School District No. 49	2004-13	2010-05	2016-9	
Queets/Clearwater School District No. 20	01-04/05	1040	16-09	
Quilcene School District No. 48	01:04/05	01:10/11	02:16/17	
Quillayute Valley School District No. 402	01-04/05	04-10/11	06-16/17	
Jefferson Transit Authority	04-12	Opt Out	17-3	
Public Utility District No. 1 of Jefferson County	2004-013	2010-007	2016-022	

Plan Maintenance

Evaluating and Updating the Plan

The ***Jefferson County – City of Port Townsend Hazard Mitigation Plan*** will be evaluated on an annual basis to determine the effectiveness of mitigation programs, projects, or other related activities and to reflect changes in land development or programs that may affect mitigation priorities and/or strategies; the plan will be updated every five years. Five-year updates will be delivered to the Washington State Hazard Mitigation Officer for review and forwarding to the Federal Emergency Management Agency, Region X Office.

Annual Plan Evaluation

In an effort to facilitate the annual plan evaluation process, the Natural Hazards Mitigation Steering Committee will remain a semi-active group following the formal adoption of this plan and shall be charged with the responsibility of conducting an annual plan evaluation each calendar year. The Director of the Jefferson County Department of Emergency Management or his/her designee will be responsible for contacting the chairperson and members of the Natural Hazards Mitigation Steering Committee and organizing the annual plan evaluation process.

The Natural Hazards Mitigation Planning Committee will review the current natural hazards mitigation strategies to determine their relevance to changing situations within Jefferson County as well as known changes in State or Federal policy, and to ensure these mitigation strategies are addressing current and expected conditions.

Jefferson County and the City of Port Townsend address statewide planning goals and legislative requirements through GMA, CRS, and NFIP requirements, capital improvement plans, and building codes. The plan will provide a series of recommendations that are closely related to the goals and objectives of these existing planning programs. Local plans, such as Emergency Response Plans, that have sections related to Hazard Mitigation will be coordinated with the plan so that requirements of the plan are incorporated into local guiding documents and ordinances, and vice versa.

As part of this annual evaluation, those communities that participate in the Community Rating System shall submit a copy of their annual evaluation report to the Chairperson of the Natural Hazards Mitigation Steering Committee no later than September 15th of each calendar year. (At this time none of the Jefferson County communities are participating in the CRS.)

Following the annual plan evaluation process, the Chairperson of the Natural Hazards Mitigation Steering Committee will prepare a written report describing: 1) the plan evaluation process; 2) the status of any current mitigation activities or projects; 3) any deficiencies identified as a result of the plan evaluation. Copies of this report shall be delivered to the City Manager of the City of Port Townsend, the County Administrator and Board of Jefferson County Commissioners, and participating jurisdictions no later than September 30th of each calendar year. In addition, a copy of this report will also be mailed to the Washington State Hazard Mitigation Officer no later than September 30th of each calendar year.

NOTE: *This annual plan evaluation and report is for the express purpose of evaluating and reporting the status of the various mitigation strategies and/or projects identified in this plan and to assess the progress of existing mitigation activities.*
Those jurisdictions that participate in the Community Rating System are responsible for evaluating, maintaining, and updating their Community Rating System Program as well as submitting written reports in accordance with current Community Rating System requirements.

Plan Integration and Implementation

The Hazard Mitigation Steering Committee will also work to ensure integration of goals between the Hazard Mitigation Plan and the numerous plans held by participating jurisdictions.

As such, after adoption the Committee will work with participating jurisdictions to identify relevant plans held within each jurisdiction (typically already identified and listed in their jurisdictional

hazard profile in this plan), and to conduct a review and comparison of key goals and initiatives held in their plans with similar goals in the HMP.

This review will occur within the first two meetings of the Committee, for a review and potential discussion at its third meeting.

Following said review, the next meeting of the Planning committee will be to discuss any potential conflicts or reconciliation that needs to occur between the HMP and plans held by participating jurisdictions.

The Committee will additionally hold a discussion and provide recommendations to participating jurisdictions on how to streamline goals and projects, i.e. including a climate change adaptation component in their existing education and outreach materials.

The Committee will also provide recommendations on how participating jurisdictions adopt goals and actions from the HMP into their existing plans, and will additionally offer to review individual plans and make recommendations as to how to align them with the HMP.

Information and discussion opportunities will also be provided to participating jurisdictions at other existing coordination venues, like JPREP (Jefferson-Port Townsend Regional Emergency Preparedness Group) and the monthly Jefferson Emergency Operations Center team meeting.

The previous mitigation plan was integrated into existing plans through outreach and discussion at these venues, and supported through requested reviews of existing plans by DEM staff.

This venue and process will be the same for all participating jurisdictions in this plan.

Five-Year Plan Update

The plan must be updated annually and resubmitted to the Washington State Emergency Management Department and to FEMA every 5 years for approval in order to maintain eligibility for mitigation grants.

Updates to the plan shall be conducted on a five-year cycle and shall commence at the direction of the Director of the Jefferson County Department of Emergency Management no later than March 1 of the scheduled update year.

The City Council of the City of Port Townsend, and the Jefferson County Board of County Commissioners shall approve the updated plan and a copy of the updated plan shall be submitted to the Washington State Hazard Mitigation Officer.

Assuming the approval of this Plan in 2024, the following schedule will be in effect:

PLAN EVALUATION AND UPDATE SCHEDULE 2025 – 2029	
Date	**Required Action to be Taken**
July-September 2025	Conduct plan evaluation and public meeting
September 2025	Submit written report to Washington State Emergency Management Department
July - September 2026	Conduct plan evaluation and public meeting
September 2026	Submit written report to Washington State Emergency Management Department
July-September 2027	Conduct plan evaluation and public meeting

September 2027	Submit written report to Washington State Emergency Management Department
July-September 2027	Conduct plan evaluation and public meeting
September 2027	Submit written report to Washington State Emergency Management Department.
February 2028	Director of the Jefferson County Department of Emergency Management directs Plan to be updated
March 2028 - December 2028	Natural Hazards Mitigation Planning Committee Chairperson and Department of Emergency Management staff will begin 5-year plan update process; request a report of all mitigation activities and/or projects from all participating jurisdictions. Update plan in cooperation with Natural Hazards Mitigation Planning Committee Chairperson and others as may be necessary
January 2029 - March 2029	Conduct at least one public meeting regarding the plan update; receive comments from Planning Committee Members, stakeholders, and the public; make revisions as may be necessary
May 2029	Updated plan approved by all participating entities
June 2029	Submit updated Plan to Washington State Emergency Management Department and to FEMA for re-approval.

Continued Public Involvement

All participating entities are dedicated to the continued involvement of the public in the Natural Hazards Mitigation process.

Copies of the plan will be kept and made available for public review at the following locations:

- Jefferson County Department of Emergency Management
- Jefferson County Department of Public Works
- Jefferson County Department of Community Development (DCD)
- Jefferson County Public Library
- City of Port Townsend Developmental Services Department (DSD)
- City of Port Townsend Library
- City of Port Townsend Administration Department
- City of Port Townsend Public Works

The Jefferson County Department of Emergency Management shall be responsible for receiving, tracking, and filing public comments regarding the Natural Hazards Mitigation Plan.

A public meeting will be held as a part of the annual plan evaluation process as well as the five-year plan update. Additional meetings may also be held as deemed necessary by the Chairperson of the Natural Hazards Mitigation Planning Committee. The purpose of these meetings is to provide a public forum so that citizens can express concerns, opinions, or ideas about the plan.

The Jefferson County Public Information Officer shall be responsible for utilizing Jefferson County resources to publicize annual public meetings in order to facilitate continued public involvement in the natural hazard mitigation process within Jefferson County and the City of Port Townsend.

SECTION II

Multi-Jurisdictional

Hazard Identification

LANDSLIDES
SUMMARY

Definition:
Landslide is the sliding movement of masses of loosened rock and soil down a hillside or slope. Landslide causes depend on rock type, precipitation, seismic shaking, land development and zoning practices, soil composition, moisture, and slope steepness.

Similarly, an **avalanche** is a mass of sliding snow, ice, earth, and rock that grows and collects additional material as it descends.

The Hazard:
Landslide is the sliding movement of masses of loosened rock and soil down a hillside or slope. Landslide causes depend on rock type, precipitation, seismic shaking, land development and zoning practices, soil composition, moisture, and slope steepness. It can be fast moving, such as the March 2014 Oso Landslide in Snohomish County, Washington, or slow moving such as the inches per day landslide in Jackson, Wyoming in April 2014. There are different types of landslides such as debris avalanches, slumps, rockfalls, and debris flows.

Debris Flows include soil, rock, and logs mixed with water that flow as a dense and rapidly moving slurry down steep, headwater channels. Debris flows may initiate in steep headwater channels at higher elevations, but descend to affect facilities or users in valley bottoms. Debris flows often occur repeatedly down the same drainage course. Repeated debris flow deposition often builds fan deposits at the bottom of such drainage course which are likely sites of future deposition. Debris flows can block roads, inundate buildings, and destroy structures along their flow path or in the deposition area.

Debris Avalanches occur where a shallow layer of loose soil becomes saturated and slides on a dense substrate. The substrate may be dense glacially consolidated sediment or bedrock. This type of landslide is frequently seen on coastal bluffs but also occurs in steep alpine settings. This type of landslide seldom encroaches far enough to pose a risk to structures at the top of slope, can be catastrophic for structures at the base of slope (Photos). Debris avalanches typically occur during periods of generally wet weather and are triggered by short periods of very intense rainfall.

Slumps are rotational landslides that often large in areal extent and entail movement of a great thickness and mass of soil. Initiation of new slumps on previously stable slopes is unusual, but prehistoric slumps are common on the marine shores of Puget Sound and some inland areas, for example the Queets River Valley. Some of these old slumps can reactivated by an increase in groundwater levels that results from long periods of above average rainfall.

Rockfalls are a detachment of rock from a cliff face and it’s decent to a deposition area, often a talus which is a slope formed especially by an accumulation of rock debris. Many backcountry trails in the Olympic Mountains traverse areas of active rockfall. Fortunately, the frequency of rockfall, is such that the danger to hikers is low.

Finally, although not technically a landslide phenomenon, snow avalanches also occur in steep, high elevation terrain and often occur along same chutes (during the winter) that may be subject to debris flows

in the spring and fall. Few roads in Jefferson County are high enough in elevation to be subject to snow avalanches (unlike the Hurricane Ridge Road in Clallam County).

Impacts and Effects:

- Loss of life
- Loss of homes and businesses
- Loss of public buildings
- Damage or complete loss of bridges
- Interruption of the transportation infrastructure
- Damage and interruption to utilities
- Destruction by covering of clam and oyster beds
- Damage to critical transportation infrastructure
- Damage or loss of recreation facilities
- Loss of jobs due to damaged equipment and facilities
- River and streams seek new channels affecting property values and economic development opportunities
- Damage to salmon habitat and salmon stream restoration projects

Previous Occurrences:

Winter storms in December 2007 resulted in multiple landslides, one of which moved a house off its foundation in the Brinnon area. In January of 2009, a massive landslide in adjoining Clallam County severely damaged State Route 112 for a length of 500 feet, resulting in its closure for weeks before it was safe enough for crews to get close enough to fully assess the damage.

It is nearly an annual event to have landslides take out a section of county road in the West end of Jefferson County. The Upper Hoh Road, Quinault South Shore Road, Undie Road and Oil City Road have all had pieces taken out over the past few years. During the period from 2010 thru 2015, the range of cost to repair roads damaged by landslides was from $600,000 to $1,181,000. The average for that period was $742,000.

Record searches have revealed that there have been no recorded deaths from avalanches in the mountain areas of the county. There has, however, been minor avalanche damage to mountain roads.

Probability of Future Events:

Landslides: HIGH – Jefferson County experiences multiple winter storms each year that have the potential to saturate soils and precipitate landslides in the hilly topography of the county. Small landslides occur approximately annually.

Avalanche: LOW - Any Avalanche that does occur within Jefferson County will almost certainly occur within the boundaries of the Olympic National Park with minimal to no impact to the human population. It is highly unlikely any avalanche will cause impacts to life or property.

History of Landslides in Jefferson County

Landslides are a common hazard in Jefferson County. Most recent records indicate that earth movement is associated with inclement weather, such as heavy rains, saturated ground and strong winds that loosen tree roots. Slides have been a problem over the years on the road between Port Hadlock and Port Ludlow. During the storm of January 1997, slides occurred along Discovery Bay, Cape George, Mats Mats, Paradise Bay, Shine, South Point, Coyle, Quilcene Bay, and Brinnon in the eastern part of the county. In the western part of the county, slides occurred in the Hoh, Clearwater, and Quinault River drainage areas. Evidence indicates that large land movements have occurred from past earthquakes such as the sunken forest off Point Wilson along the South Whidbey Fault. In more recent history, a landslide along Highway 20 at Eaglemount in the 1970s took out the road to Discovery Bay, covered the railroad tracks, and caused a derailment of rail cars carrying hazardous materials.

Highway 101 has been washed out numerous times where the Hoh and the Bogachiel Rivers have undercut the hillside after heavy rains and snowpack melts. With the addition of water from the rain and runoff, these rivers have had a long history of eroding their banks causing the slopes to slide. The typical scenario is that heavy storms cause rivers and creeks to overflow and undercut nearby roads. The roads then give way, often destabilizing the land above the road, and causing larger landslides.

In December 2007, landslides from heavy rains moved a house off its foundation in Brinnon. At the same time, over 1000 feet of the Hoh Road in west Jefferson County were damaged, resulting in its closure for six months. The Hoh Road is a significant access-way to the Hoh Rain Forest in the Olympic National Park.

In November 2009, the Dosewallips Road, which runs parallel to the Dosewallips River near Brinnon, experienced a landslide that took out a section of road and required a local disaster declaration to effect emergency repairs.

In March 2013, a landslide that ran 1000 feet along Whidbey Island jutted 300 feet into the ocean and raised the beach by 30 feet. The Whidbey News Times reported it as displacing 5.3 million cubic feet of earth or the equivalent of 40,000 dump trucks. Although not in Jefferson County, this type of landslide in the right spot-on Whidbey Island could create a tsunami that would hit the Fort Worden Beach and Port Townsend Bay. Figure LS-1, below, shows the before and after of the landslide.

Figure LS-1 – Before and After the Ledgewood-Bonair Landslide



Hazard Assessment and Vulnerability Assessment

In addition to the shoreline conditions, Jefferson County is plagued by the stealth landslides of roads being undercut by rivers overflowing their banks, particularly along the Dosewallips and the Hoh Rivers. These are stealth landslides because they only make the local news, and are not significant enough for emergency declarations. Even so, Jefferson County Public Works averages $750,000 per year on projects to rebuild sections of road lost to landslides during the rainy season.

Slides in Jefferson County range in size from thin masses of soil of a few yards deep to deep seated bedrock slides many yards wide. Slides are commonly categorized by the “form of initial failure”, but they may travel in a variety of forms along their paths. The travel rate may change in velocity from a few inches per month to many feet per second depending on the slope, material, and water content. The recognition of ancient dormant slide masses is important because landslides can be reactivated by earthquakes or unusually wet winters. Sinkholes can develop unexpectedly and cause damage to roadways and private property.



Brinnon Mud Slide – February 2015 Source: Jefferson County Public Works

Figure LS-2 shows the landslide susceptibility in East Jefferson County. The scale is set for readability in this document, but it masks how vulnerable the shorelines are. In grid 27N1E, for example, getting closer in allows one to see that there have been two slides and multiple areas marked as “High” hazard. These do not show up well in the document. Anyone can get online at the Jefferson County Maps dialog and drill down to find the natural hazards for their own property. A direct link to the Environmentally Sensitive Areas map is: http://maps.co.jefferson.wa.us/Website/mspub/viewer.htm?mapset=esa

Figure LS-2 Landslide Risk in East Jefferson County

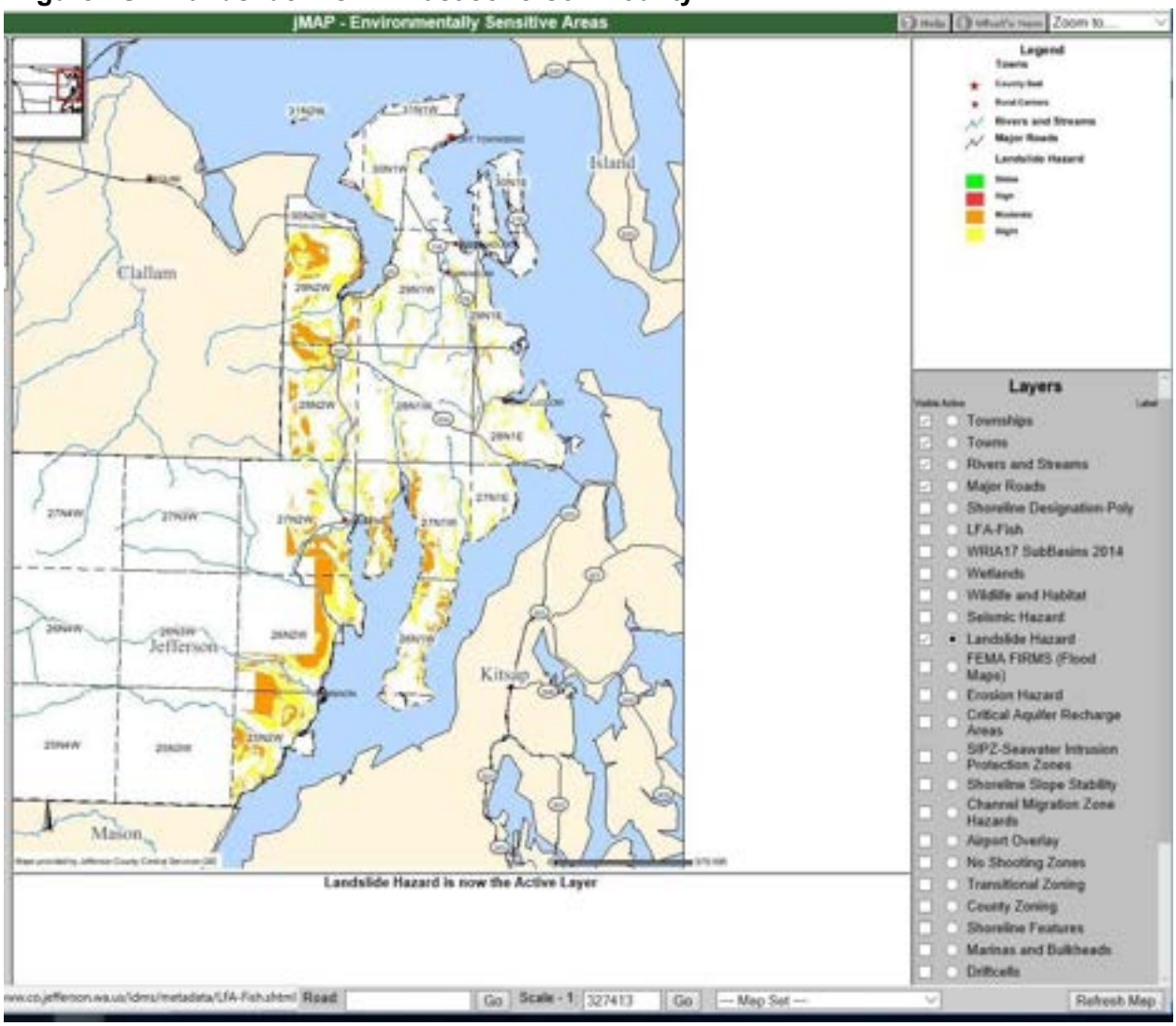


Table LS-1 lists landslides that have impacted Jefferson County, including some in adjacent counties.

The table is a subset of a DNR table that covers all landslides of consequence throughout the state. Since the scope of this document is Jefferson County, we deleted the line items for those landslides that did not have a direct impact on Jefferson County – either through direct damage or blocking major access routes.

As the county continues to grow and the desire of people to have a home with a view, an increasing number of structures are built on top of or below slopes subject to land sliding. Land is not stable indefinitely. People often believe that if a bluff has remained stable for the last 50 years, it will remain so for the next 50 years regardless of the development or maintenance around it. As trees are removed to make way for new homes, the nature of erosion and water absorption makes the slopes and bluff in these areas a dynamic and changing environment.

Characteristics that may be indicative of a landslide hazard area:

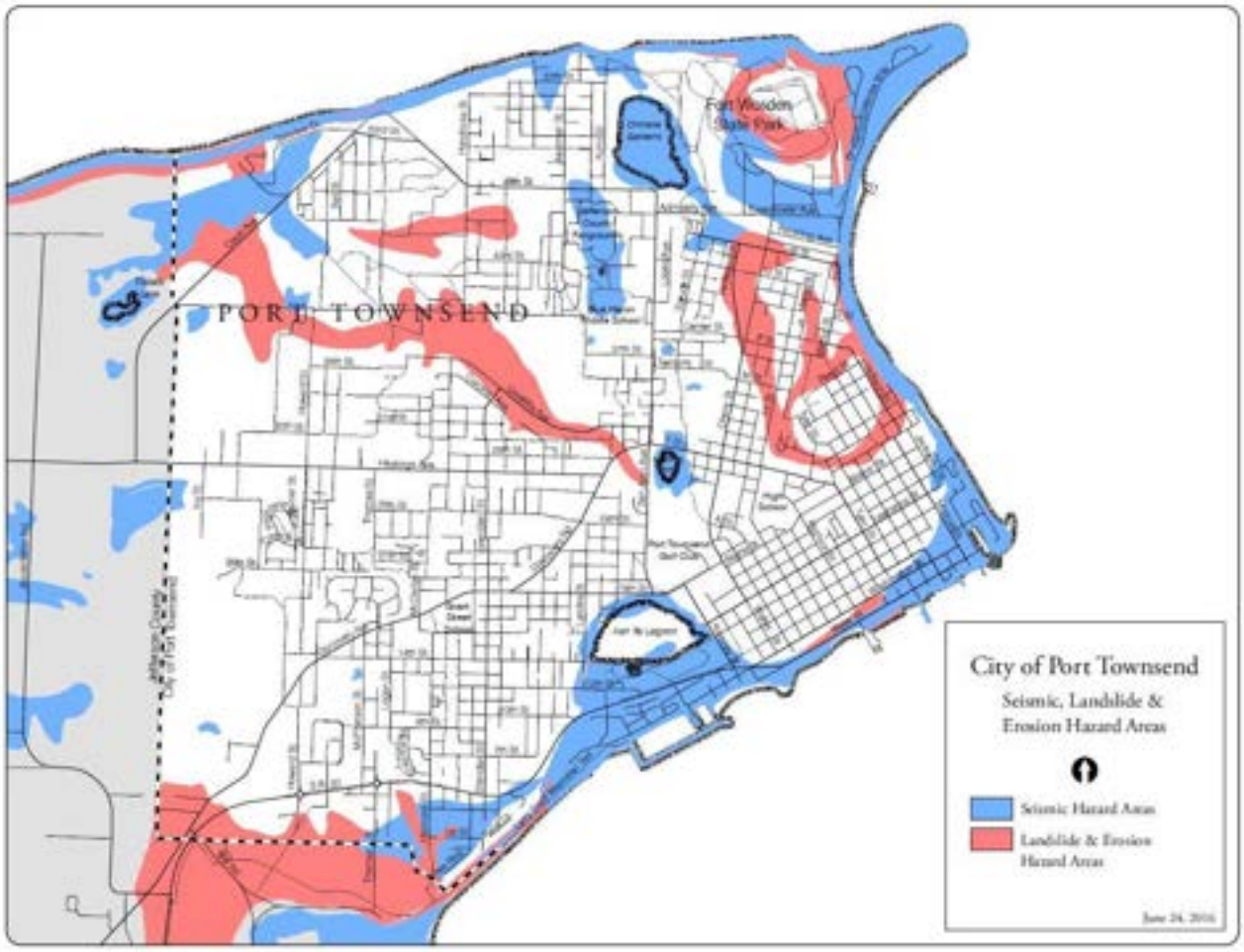
- Bluff retreat caused by sloughing of bluff sediments, resulting in a vertical bluff face with little vegetation
- Pre-existing landslide area
- Tension or ground cracks along or near the edge of the top of a bluff
- Structural damage caused by settling and cracking of building foundations and separation of steps from the main structure
- Toppling, bowed or jack-sawed trees
- Gullying and surface erosion
- Mid-slope ground water seepage from a bluff face

Land stability cannot be absolutely predicted with current technology. An unequivocal predictor of landslide vulnerability is the occurrence of previous landslides in the same area. The best design and construction measures are still vulnerable to slope failure. The amount of protection, usually correlated to cost, is proportional to the level of risk reduction. Debris and vegetation management is integral to preventing landslide damages. Corrective measures help, but still leave the property vulnerable to risk. Figure LS-4 shows the known landslide risk areas within the City of Port Townsend.

A landslide risk assessment was completed by *Risk Management* by comparing the unstable-to-intermediate sloped areas with the locations of buildings throughout coastal zones of eastern Jefferson County. The analysis is summarized in Table LS-2 for Port Townsend and unincorporated portions of the county. Table LS-2 shows the building value (in dollars) for the communities located in the known and potentially unstable slope zones. This table also includes the number of buildings in the zone as well as the overall total number of buildings and building value.

Over 1600 buildings are located in potential coastal landslide zones, which have a total estimated value of approximately $237.5 million. The majority of these buildings are located in unincorporated areas; these 1590 buildings have an estimated value of $225 million. In Port Townsend, 56 out of 2129 buildings are identified in Unstable, Unstable recent slide, Unstable old slide, and Intermediate slope zones of the coastal zone atlas slope stability map. Figure LS-6 provides a sample map of Port Townsend to illustrate how slope stability and recent landslides are illustrated in map sets available from Washington.

Figure LS-5 City of Port Townsend Seismic, Landslide and Erosion Risk



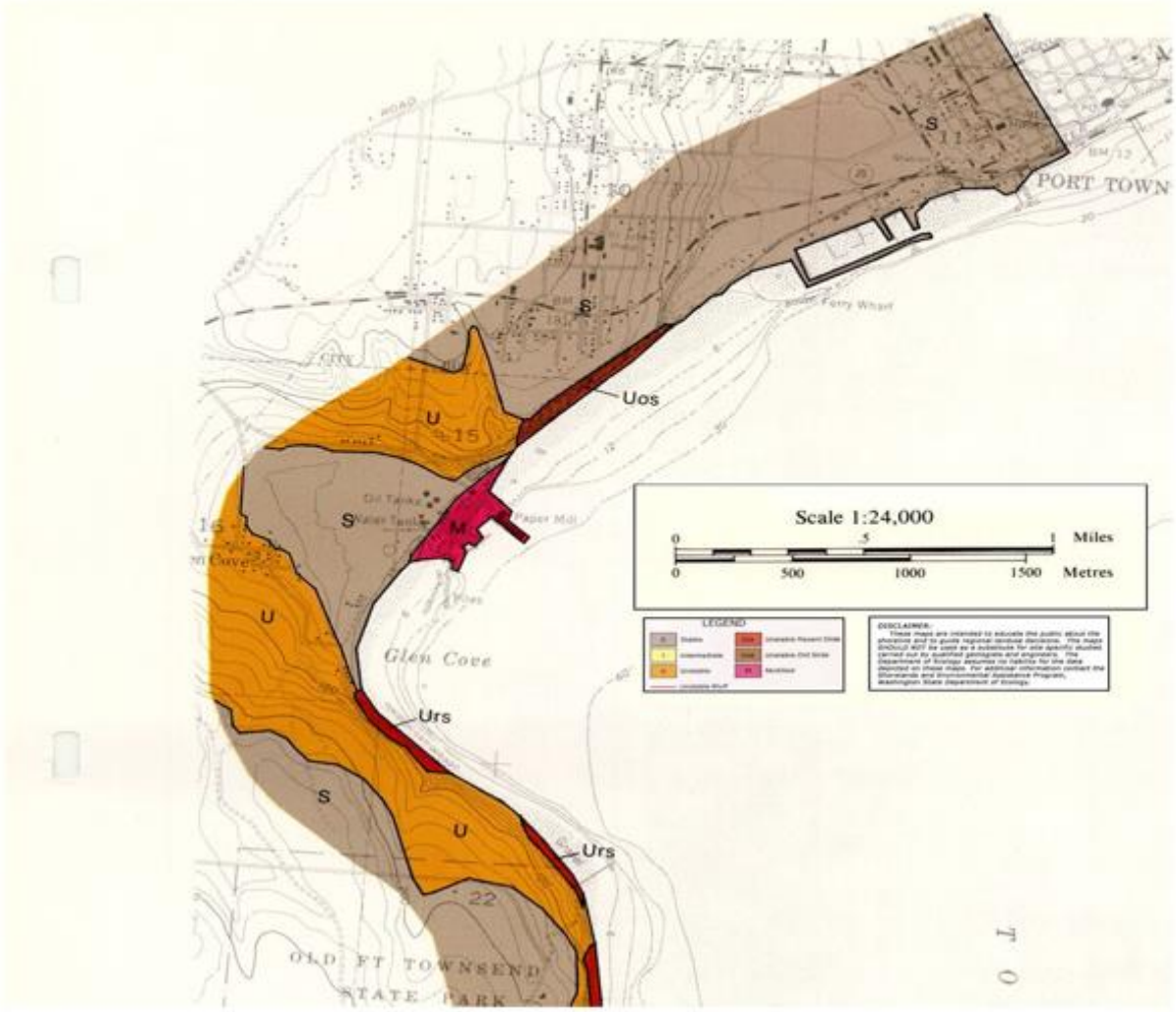
Although the **blue areas** are seismic hazard areas likely to liquefy, they are frequently adjacent to high-bank waterfront that can easily calve off if the area becomes unstable at sea level.

Table LS-2 - Buildings Exposed to Unstable, Unstable-Recent, Unstable-Old, Intermediate, and Stable Slopes

Community	Total Estimated Building Value	Building Value in Landslide Zone	Percent of Economic Values of Buildings Exposed (Unstable to Intermediate Slopes)	Total Number of Buildings	Number of Buildings Exposed (Unstable to Intermediate Slopes)	Percent of Buildings in Landslide Zone
Port Townsend (entire city limit area)	$646,052,977	$12,416,517	1.9%	4845	56	1.2
Port Townsend (coastal zone area)	$339,817,661	$12,416,517	3.7%	2129	56	2.6%
Unincorporated (entire county)	$1,639,851,022	$225,040,217	13.7%	14356	1590	11.1%
Unincorporated (western Jefferson coastal zone area)	$829,644,324	$225,040,217	27.1%	6513	1590	24.4%
Total (Entire County)	**$2,285,903,999**	**$237,456,734**	**10.4%**	**19201**	**1646**	**8.6%**
Total (Coastal Zone Atlas Area)	**$1,169,461,985**	**$237,456,733**	**20.3%**	**8642**	**1646**	**19.0%**

Note: Two highlighted rows show the values obtained relative to the Coastal Zone Atlas slope stability study area (Washington Department of Ecology, 1978)

Figure LS-6 – Sample Slope Stability Map for Port Townsend



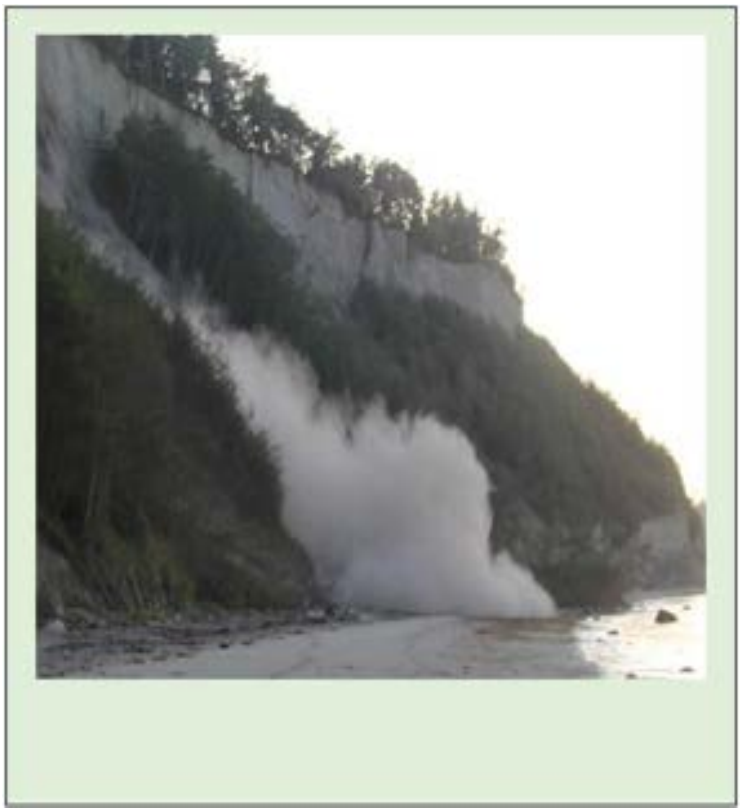
Climate Change

Projections of climate change impacts in Jefferson County suggest that the frequency and magnitude of landslides is likely to increase as a result of those impacts. Climate change is likely to affect land sliding here in two ways.

The most direct change will likely be an increase in rainfall. All types of land sliding in Jefferson County (with the exception of rock fall) are primarily driven by heavy rainfall. Models predict a likely increase in both total “wet season” precipitation, which tends to drive reactivation of slumps, and rainfall intensity, which is related to initiation of debris avalanches.

In addition to increasing rainfall, climate change models predict a rise in global sea level. For Port Townsend the models suggest that sea level rise will reach or exceed approximately two feet by the end of this century. Virtually all of our coastal bluffs (that are underlain by glacial sediments) are gradually retreating, and the primary mechanism by which bluffs retreat is by land sliding. While the immediate trigger for such land sliding is typically rainfall, bluff retreat is ultimately driven by wave erosion at the toe of the bluff. Beaches are effective at dissipating wave energy and slowing bluff retreat. As sea levels rise, rather than breaking on the beach, more waves will reach and break directly on the bluff, eroding the toe and accelerating retreat through land sliding.

Increasing rainfall will likely increase land sliding across Jefferson County. The increased rainfall combined with sea level rise could dramatically increase the frequency and magnitude of land sliding along the extensive marine shorelines of east and west Jefferson County.



On Sunday, Oct. 13, 2013 another large chunk of sand and debris tumbled to the beach below “End of the World,” a bluff overlooking the Strait of Juan de Fuca on the edge of Port Townsend. Photo by Scott Wilson.

Conclusion

Jefferson County's significant coastline, Olympic Mountains, and network of roads that parallel rivers make it a high risk for landslides and high vulnerability to the cost of repairing the damage.

Some landslide hazards can be mitigated by engineering, design, or construction so that risks are acceptable. When technology cannot reduce the risk to acceptable levels, building in hazardous areas should be avoided. Ordinances identifying geological hazards must be rigorously applied.

The least expensive and most effective landslide loss reduction measure is by avoidance. The next most economical solution is mitigation using qualified expertise with an investigation report review process. The costliest is repair of landslide damages.

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Tables - LANDSLIDES

LS-1 Significant Landslides that Directly Affected Jefferson County
LS-2 Buildings Exposed to Unstable, Unstable-Recent, Unstable-Old, Intermediate, and Stable Slopes

Figures - LANDSLIDES

LS-1 Before and After the Ledgewood-Bonair Landslide LS-2 Areas Most Vulnerable to Landslides
LS-3 Counties Vulnerable to Landslides
LS-4 Jefferson County Landslide Risk
LS-5 City of Port Townsend Seismic, Landslide and Erosion Risk LS-6
Sample Slope Stability Map for Port Townsend

EARTHQUAKES

IMPACTS & EFFECTS

- Loss of Life
- Loss of property
- Injuries resulting in long term disabilities
- Loss of jobs due to damaged equipment and facilities
- Landslides and debris avalanches
- Disruption of utilities
- Disrupted functionality of critical facilities including hospitals, fire stations, schools, power, communications, fuel delivery and transportation
- Disruption of the local economy and government
- Disruption of water and food lifelines

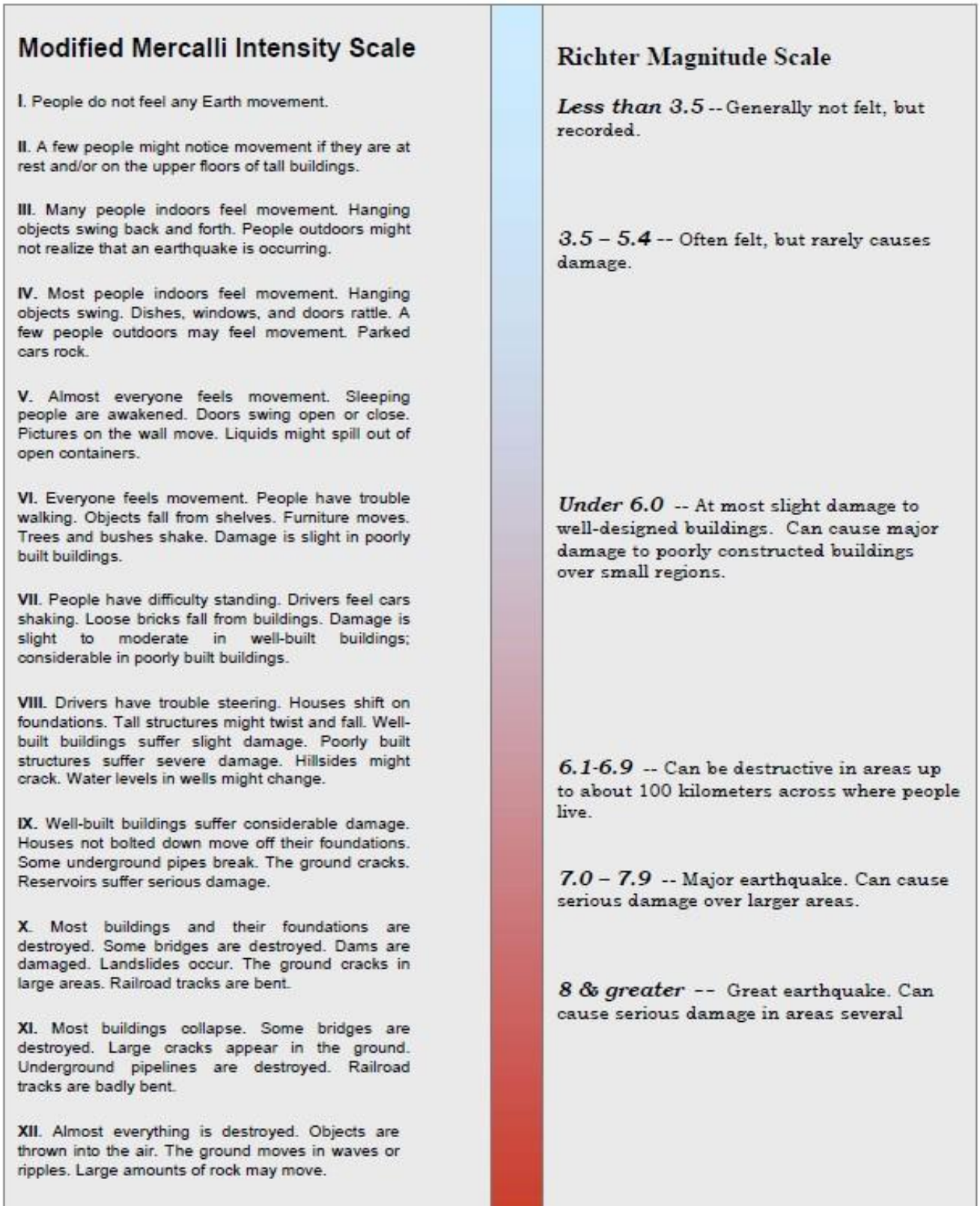
Definition

An earthquake is ground shaking caused primarily by an abrupt shift along a fracture in the earth, called a fault. The earth's crust is divided into eight major pieces (or plates) and many minor plates. These plates are constantly moving, very slowly, over the surface of the globe. As these plates move, stresses are built up in areas where the plates come into contact with each other. Within seconds, an earthquake releases stresses that have slowly accumulated within the rock, in some instances over hundreds of years. Sometimes the release occurs near the surface, and sometimes it comes from deeper faults.
Although. earthquakes are caused mostly by rupture of geological faults, they can also by other events such as volcanic activity, landslides, mine blasts, and nuclear tests. An earthquake's point of initial rupture is called its focus or hypocenter. The epicenter is the point at ground lifelines level directly above the hypocenter.

"The severity of an earthquake is described by both *magnitude* and *intensity*. These two frequently confused terms refer to different, but related, expressions. *Magnitude,* usually expressed as an Arabic numeral characterizes the size of an earthquake by measuring indirectly the energy released. By contrast, *intensity* indicates the local effects and potential for damage produced by an earthquake on the Earth's surface as it affects humans, animals, structures, and natural objects such as bodies of water. Intensities are usually expressed in Roman numerals, and represent the severity of the shaking resulting from an earthquake. Ideally, any given earthquake can be described by only one *magnitude*, but many *intensities* since the earthquake effects vary with circumstances such as distance from the epicenter and local soil conditions."

Charles Richter, the creator of the Richter magnitude scale, distinguished *intensity* and *magnitude* as follows:
"I like to use the analogy with radio transmissions. Magnitude can be compared to the power output in kilowatts of a broadcasting station. Local intensity on the Mercalli scale is then comparable to the signal strength on a receiver at a given locality; in effect, the quality of the signal. Intensity, like signal strength, will generally fall off with distance from the source, although it also depends on the local conditions and the pathway from the source to the point."

Figure EQ-1 - Earthquake Measurement Systems





History of Earthquakes affecting Jefferson County & the Puget Sound Region

Washington State, especially the Puget Sound basin, has a history of frequent earthquakes. More than 1,000 earthquakes are recorded in the state annually. Large earthquakes in 1949, 1965 and 2001 caused over $1 billion in damages throughout Puget Sound. The most recent large earthquake, the “Nisqually Earthquake” on February 28, 2001, was a 6.8 magnitude earthquake located 17.6 kilometers northeast of Olympia. All of the state, and the Puget Sound Basin have a history of frequent earthquake

Figure EQ-2 Large Earthquakes in the Northwest

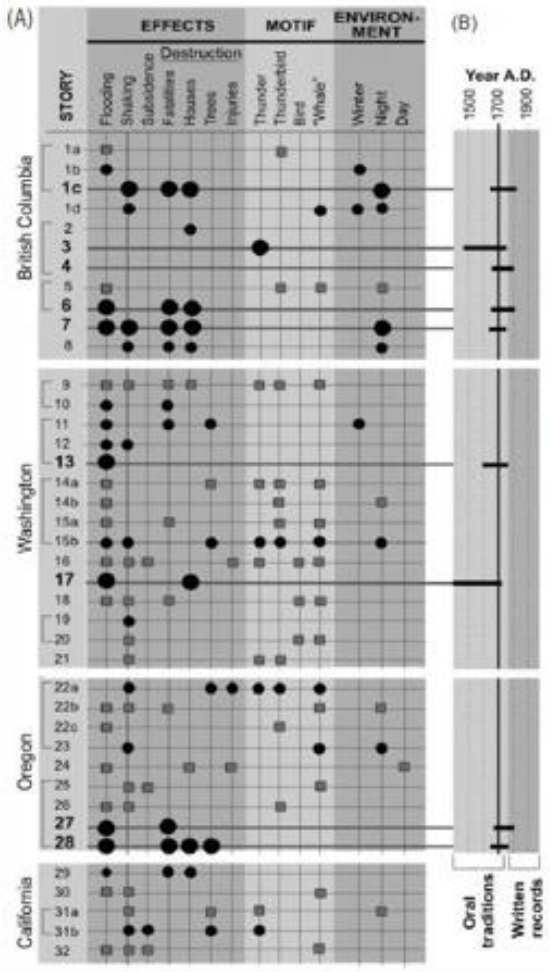
The **2001 Nisqually earthquake** (“The Ash Wednesday earthquake") occurred at 10:54:32 local time on February 28. It had a moment magnitude of 6.8 and a maximum Mercalli intensity of VIII (*Severe*). The epicenter was in the southern Puget Sound, northeast of Olympia, but the shock was felt in Oregon, Canada, eastern Washington, and Idaho. This was one of several large earthquakes that occurred in the Puget sound region in the prior 52 years and caused property damage valued at between one and four billion dollars. One person died of a heart attack and several hundred were injured.

All of East Jefferson County jurisdictions participating in the Hazard Mitigation Plan felt the shaking, and a few incurred substantial damages. The Port Ludlow Main Fire Station and Headquarters building had a wall crack that compromised the building. Fortunately, the firefighters were out on a call at the time, so no one was hurt. A replacement building was estimated at two million dollars.

Residents across western Washington felt an earthquake Sunday, Oct. 8, 2023 that registered a magnitude 4.3.
The earthquake began at 7:21 p.m., according to the United States Geological Survey. Harold Tobin, director of the Pacific Northwest Seismic Network, said the earthquake epicenter was near Port Townsend near Marrowstone Island. The earthquake was felt as far north as Vancouver, British Columbia and as far south as Olympia.

The most infamous large earthquake to affect the area is the “Cascadia” earthquake that occurred at 21:00 on January 26, 1700. Its magnitude is estimated at between 8.7 and 9.2. At the time, there was no significant population living in multi-story houses and working in concrete and steel cities, as there are now, but there was a thriving native culture that has handed down stories of the event. Table EQ-1 presents some of the native stories and their characteristics that helped to date the Cascadia Earthquake of 1700.

Table EQ-1 - Dating the 1700 Cascadia Earthquake from Native Stories



Estimated Date Range and Basis for Estimate

1650–1825 (1c). "This is not a myth … my tale is seven generations old … there was a great earthquake and all the houses of the Kwakiutl collapsed." — *La'bid in 1930.*

1456–1756 (3). "The masked dance … originated with a man … who lived about 12 generations ago." — *Unidentified informant in 1936.*

1670–1795 (4). "… the mask was first obtained five generations before her own …" — *Mrs. Robert Joe, age >80 in 1950.*

1655–1814 (6). "The tide … rushed up at a fearful speed. … The Clayoquot who thus became chief was the great-grandfather of Hy-yu-penuel, the present chief of the Sheshaht …" — *Unidentified informant in 1860.*

1640–1740 (7). "These are stories from my grandfather's father (born c. 1800) about events that took place four generations before his time … over 200 years ago" "… the land shook … a big wave smashed into the beach." — *Chief Louis Nookmis, age 84 in 1964.*

1600–1775 (13). "One old man says that his grandfather saw the man who was saved from the flood." — *Unidentified informant c. 1875.*

1400–1715 (17). "… eight or nine generations from my grandfather there was a flood." — *Frank Allen, age 60 in 1940.*

1690–1805 (27). "My grandfather saw one of the old women (survivors) who had been left alive. She had been hung up on a tree, and the limbs of that tree were too high up. So she took her pack line and tied it to a limb, and then when she wanted to go down by means of that, she fell, she was just a girl when she fell from it. Her back was broken from it (she had a humpback thereafter). That is what she told about the raised water." — *Annie Miner Petersen, age 73 in 1913.*

1657–1777 (28). "… there was a big flood shortly before the white man's time, … a huge tidal wave that struck the Oregon Coast not too far back in time … the ocean rose up and huge waves swept and surged across the land. Trees were uprooted and villages were swept away. Indians said they tied their canoes to the top of the trees, and some canoes were torn loose and swept away … After the tidal wave, the Indians told of tree tops filled with limbs and trash and of finding strange canues in the woods. The Indians said the big flood and tidal wave tore up the land and changed the rivers. Nobody knows how many Indians died. — *Beverly Ward, recounting stories told to her around 1930 by Susan Ned, born in 1842.*

Damaging levels of shaking have occurred over much of the state since records started being kept in 1790. In addition, geologic evidence also indicates that large, prehistoric earthquakes have occurred in areas prior to the beginning of record keeping.

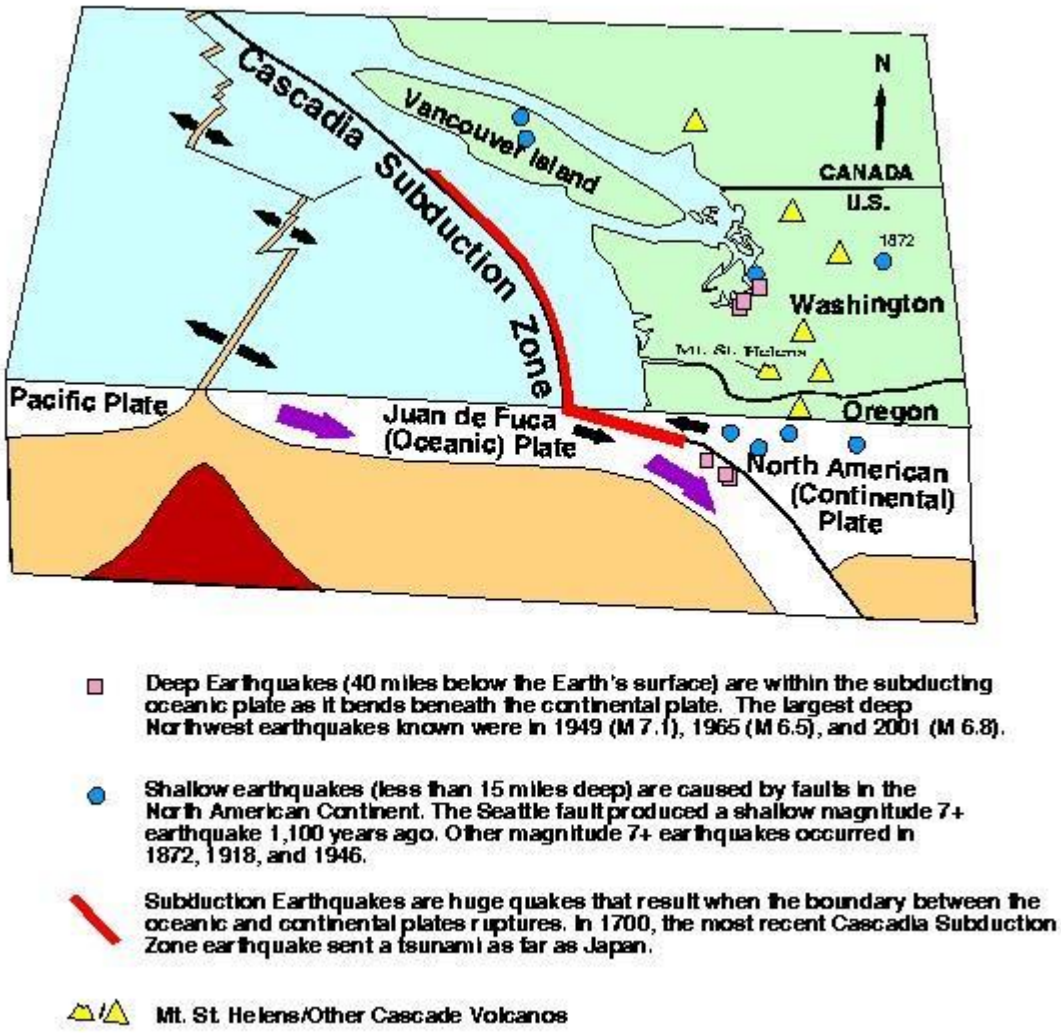
Recorded damage sustained to date in Jefferson County has been relatively minor and has been restricted to some incidence of cracked foundations, walls, and pictures falling off of the wall. Recent exploration indicates that a prehistoric, sunken forest has been identified off Point Wilson on the line of the South Whidbey Fault. Geologic studies of faults adjacent to the county boundaries suggest that the potential for serious earthquake damage is very real for the county. Table EQ-2 provides a list of some of the most significant earthquakes Washington has felt, but it is very easy to create a much longer list using the tools at the Pacific Northwest Seismic Network website.

Table EQ-2 Cascadia Historic Earthquakes					
Date	**Time (PST)**	**Latitude/ Longitude**	**Depth (Km)**	**Mag**	**Location**
January 26, 1700	2100			9.0+	Cascadia Subduction Zone
May 4, 1834	2008				Felt in Port Townsend
April 2, 1859	0230	47^{0}00' 123^{0}00'			Felt in Olympia
December 14, 1872	2140	48º48' 121º24'	shallow	7.4	North Cascades
December 12, 1880	2040	47º30' 122º30'		5.5	Puget Sound
April 30, 1882	2248	47º00' 123º00'	deep	6.0	Olympia area
November 29, 1891	1521	48º00' 123º30'		5.0	Puget Sound
March 6, 1893	1703	45º54' 119º24'	shallow	4.9	Southeast Washington
January 3, 1896	2215	48º30' 122º48'		5.7	Puget Sound
March 16, 1904	2020	47º48' 123º00'		5.3	Olympics eastside
January 11, 1909	1549	48º42' 122º48'	deep	6.0	Puget Sound
August 18, 1915	0605	48º30' 121º24'		5.6	North Cascades
January 23, 1920	2309	48º36' 123º00'		5.5	Puget Sound
July 17, 1932	2201	47º45' 121º50'	shallow	5.2	Central Cascades
July 15, 1936	2308	46º00' 118º18'	shallow	5.7	Southeast Washington
November 12, 1939	2346	47º24' 122º36'	deep	5.7	Puget Sound
April 29, 1945	1216	47º24' 121º42'		5.5	Central Cascades
February 14, 1946	1914	47º18' 122º54'	40	6.3	Puget Sound
April 13, 1949	1155	47º06' 122º42'	54	7.1	Puget Sound
August 5, 1959	1944	47º48' 120º00'	35		Northwest Cascades
April 29, 1965	0728	47º24' 122º24	63	6.5	Puget Sound
February 13, 1981	2209	46º21' 122º14'	7	5.5	South Cascades
April 13, 1990	2133	48º51' 122º36'	5	5.0	Deming
January 28, 1995	1911	47º23' 122º21'	16	5.0	17.6 km NNE of Tacoma
May 2, 1996	2104	47º46' 121º57'	7	5.3	10.2 km ENE of Duvall
June 23, 1997	1113	47º36' 122º34'	7.4	4.9	5.5 km NE of Bremerton
July 2, 1999	1743	47º05' 123º28'	41	5.1	8.2 km N of Satsop
February 28, 2001	1054	47º 09' 122º 52.4	52.4	6.8	17.6 km NE of Olympia

Hazard Identification and Vulnerability Assessment

In Western Washington, the primary tectonic plates of interest are the Juan de Fuca and North American plates. The Juan de Fuca plate moves northeastward with respect to the North American plate at a rate of about 4 cm per year. The boundary where these two plates converge, the Cascadia Subduction Zone, lies approximately 50 miles offshore and extends from the middle of Vancouver Island in British Columbia to northern California. As it collides with North America, the Juan de Fuca plate slides (or subducts) beneath the continent and sinks into the earth's mantle. Jefferson County is vulnerable to the results of this continual movement of the earth's tectonic plates.

Earthquake Hazards in Washington and Oregon



http://www.eqe.com/revamp/wash/index.html Pacific Northwest Seismograph Network

The collision of the Juan de Fuca and North American plates produces three types of earthquakes, which are designated by their location and origin.

1. **Cascadia Subduction - "Great earthquakes":** The first type occurs along the Cascadia subduction fault, as a direct result of the convergence of these two plates. Although no large earthquakes have occurred along the offshore Cascadia Subduction Zone since historic records started to be kept, similar subduction zones worldwide do produce "great" earthquakes—magnitude 8 or larger. A subduction earthquake would be centered off the coast of Washington or Oregon where the plates converge. Such earthquakes typically have a minute or more of strong ground shaking and are quickly followed by damaging tsunamis and numerous large aftershocks. Subduction zone earthquakes have left compelling evidence from years past. These earthquakes were of enormous magnitude (8 to 9+) and recurred approximately every 550 years. The recurrence interval, however, has apparently been irregular, with the interval between earthquakes being as short as 100 years and as long as 1,100 years.

2. **Juan de Fuca Plate - "Deep earthquakes":** The second type of earthquake occurs within the Juan de Fuca plate as it sinks into the mantle. These are primarily deep earthquakes, approximately 25-100 kilometers in depth. Due to their depth, aftershocks are typically not felt in association with these earthquakes. The strongest of these recorded were the 1949 Olympia and the 1965 Sea-Tac earthquakes. Approximate "recurrence intervals" for intraplate earthquakes of various magnitude were estimated to be 35 years for magnitude 6.5 and 100 years for magnitude 7. Since 1870, there have been 7 earthquakes in the Puget Sound basin of magnitudes of 6.0 or larger. Generally, these earthquakes last between 20 – 60 seconds.

3. **North American Plate – "Shallow earthquakes":** The third type is an incident of shallow earthquakes that occur within the North American plate. Conventional theory indicates that they occur when stress is transmitted from the Cascadia subduction fault into the interior of the North American plate. This type of earthquake has occurred throughout Washington and most parts of Oregon. These earthquakes are primarily shallow with depths of 30 kilometers or less and generally have the magnitude of 5 to 5.5, however the largest recorded earthquake in Washington history was a 7.4 in 1872 and was thought to be shallow.

The majority of earthquakes that occur in the Pacific Northwest region are of the shallow kind occurring in the North America plate. The 1872 North Cascades earthquake, the 1945 earthquake near North Bend, and the 1981 earthquake on the St. Helens seismic zone were all of this type.

New evidence of a fault running east-west through south Seattle (the Seattle Fault) suggests that a major earthquake having a magnitude of 7 or greater affected the Seattle area about 1,000 years ago. Recent studies have found geologic evidence for large shallow earthquakes along the Seattle Fault 1,100 years ago within the central Puget Sound Basin. Massive block landslides into Lake Washington, marsh subsidence and tsunami deposits at West Point in Seattle, tsunami deposits at Cultus Bay on Whidbey Island, and large rock avalanches on the southeastern Olympic Peninsula have all been dated to approximately 1,100 years ago.

Evidence of a fault that runs east-west through Admiralty Inlet (the South Whidbey Island Fault) suggests that a major earthquake affected the Port Townsend/Jefferson County area hundreds of years ago. Two new" faults were recently discovered running north- south from Whidbey to Vashon Island and possibly as far as Tacoma have the capacity to unleash earthquakes with magnitudes greater than 7.2.



The principal ways that earthquakes cause damage are by:

- strong ground shaking
- landslides,
- liquefaction,
- subsidence,
- tsunamis (seismic ocean waves),
- and seiches (rhythmic movements of inland bodies of water)

The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Most casualties result from falling materials. Severe earthquakes usually disrupt utilities including: power, telephone, gas, sewer, solid waste, and water. Disruption of utilities for a lengthy period of time would have an untold effect on the economics of the county. The effects of an earthquake in Jefferson County are hard to define because of the many unpredictable variables involved.

Soil liquefaction occurs when water saturated sands, silts, or gravels are shaken so violently that the grains rearrange and the sediment loses strength, begins to flow out as sand boils or cause lateral spreading of overlying layers. Liquefaction causes loss of bearing strength under foundations or roadways, can trigger landslides, and can float low-density structures, such as partially empty fuel tanks, furnaces, and pilings. Liquefaction commonly causes ground failures such as ground cracking or lateral spreading above liquefied layers. Lateral spreads are spreads are landslides that can occur on very shallow slopes.

The time of the earthquake has a large impact on the potential for human casualties. The potential for casualties is greatest during the heaviest hours of traffic and when people are concentrated in schools and business areas. Typically, the twelve-hour period from six o'clock in the morning to six o'clock in the evening has the greatest potential for human casualties.

Site conditions and the types of soils or rock also affect the amount of shaking and the potential for damage. Solid rock or bedrock does not increase the shaking. Soft materials, however, such as mud, artificial fill and layers of sand and clay will make the consequences of ground shaking much worse. Jefferson County, particularly in the Port Townsend area that also has the highest concentration of people, has many areas of sand and clay soil. These soil materials serve to increase or amplify the effects of an earthquake. Steep slopes may experience landslides. Floodplains and areas of artificial fill will be prone to liquefaction. This may result in pockets of local areas experiencing severe damage especially where the ground fails under buildings, water mains, pipelines or bridges.

Building materials will greatly affect the impact of an earthquake on a structure. Unreinforced masonry structures, of which there are several in Port Townsend, are the most vulnerable while wood frame structures typically perform well in earthquakes. Additionally, individual buildings have different natural frequencies of vibration that depend on their height and structural design. Amplification of frequencies may affect some buildings more than others. Strong shaking is a hazard both near the epicenter of an earthquake and in areas where amplification occurs.

The effects of an earthquake could also vary widely by the buildings and infrastructure first damaged. Damage to buildings that house emergency services such as fire stations and hospitals could lessen emergency response capabilities. Damage to roads, fallen trees, and failed bridges can also impair the delivery of emergency services. The majority of the county's bridges were built prior to 1960 when engineering incorporated improved building practices in the event of an

earthquake. Earthquakes remain as one of the most significant hazards to people and property in Jefferson County.

The Spaghetti Farm

While most people on the Olympic Peninsula should be aware of the Cascadia Subduction Zone because of convincing by local emergency managers and neighborhood emergency groups, what many probably do not realize is that they live in a veritable spaghetti farm of earthquake faults. What follows is a step-by-step walk around of the major named Quaternary faults that surround the Olympic Peninsula and have the potential to affect Jefferson County. Quaternary faults are those that have been **recognized at the surface**, which **have moved in the past 1,600,000 years**, a portion of the Quaternary epoch, and **which are capable of a magnitude 6 or greater earthquake**. Table EQ-3 provides a table-of-contents for the next seven figures.

Table EQ-3 – Figures of Earthquake Faults affecting Jefferson County

Figure ID	*Name of Fault Map*	*Description*
EQ-3	Cascadia Subduction Zone	A map of the subduction zone about 60 miles off the Washington's Pacific coast.
EQ-4	Cascadia Subduction Zone with Coastal Quaternary Faults	A map of the subduction zone with additional quaternary faults along Washington's coast marked in white.
EQ-5	Victoria Quaternary Fault (including Port Townsend, WA)	This Quaternary Zone includes the Southern Whidbey Island fault, which is in the 3-mile wide channel between Port Townsend and Whidbey Island. It is capable of a magnitude 7.2+ tremor.
EQ-6	Seattle Quaternary Fault	The Hood Canal fault zone can impact lower East Jefferson County, but most people worry about the Seattle Fault, which runs under the densely populated city.
EQ-7	Composite map of the Quaternary Faults that affect Jefferson County	Any of these are capable of a 6.0+ earthquake on its own. We have no way of knowing if or how many will be triggered by a Cascadia Subduction Zone event and / or if they will create significant aftershocks from different directions.

Probability of Future Events: MED – while a damaging earthquake is an eventuality, the region experiences damaging earthquakes infrequently. Felt earthquakes from nearby faults occur every 1 – 5 years, but those often produce little to no impacts to life or property. The Cascadia subduction zone is expected to produce a major earthquake every 300 – 500 years, a low occurrence. As a result, the planning team rates this hazard as a MED probability.

Figure EQ-3 – The Cascadia Subduction Zone

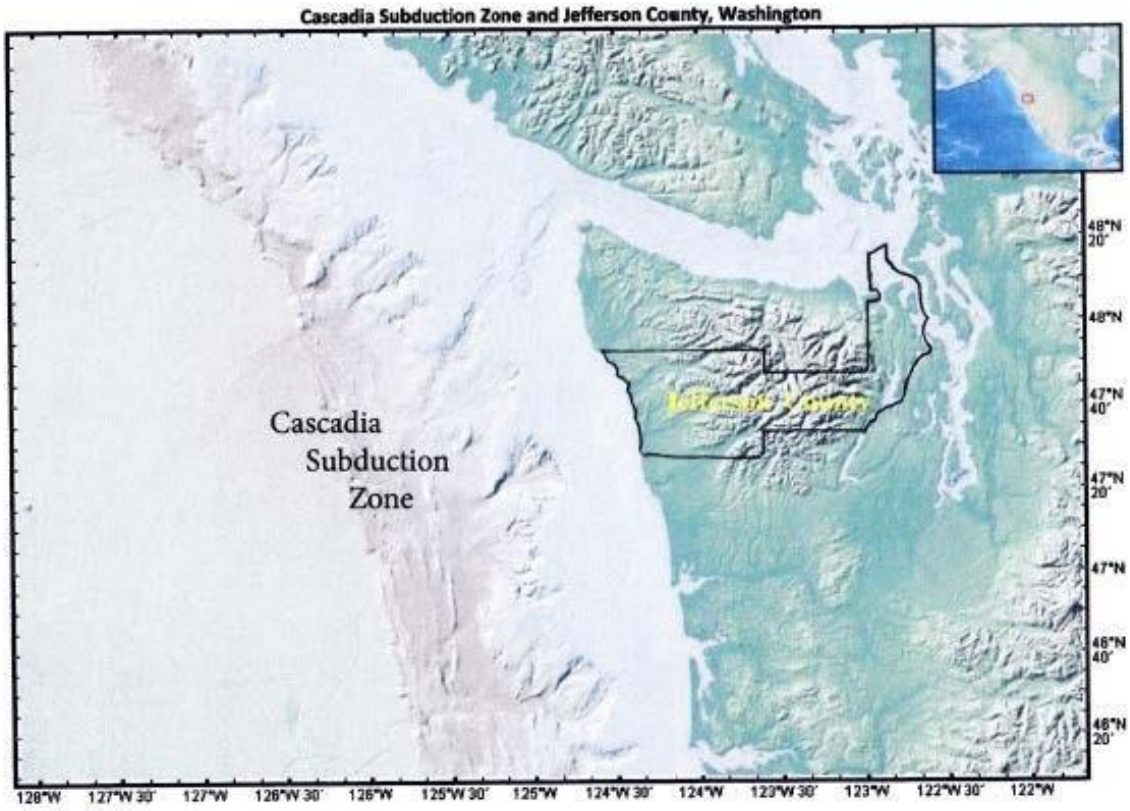
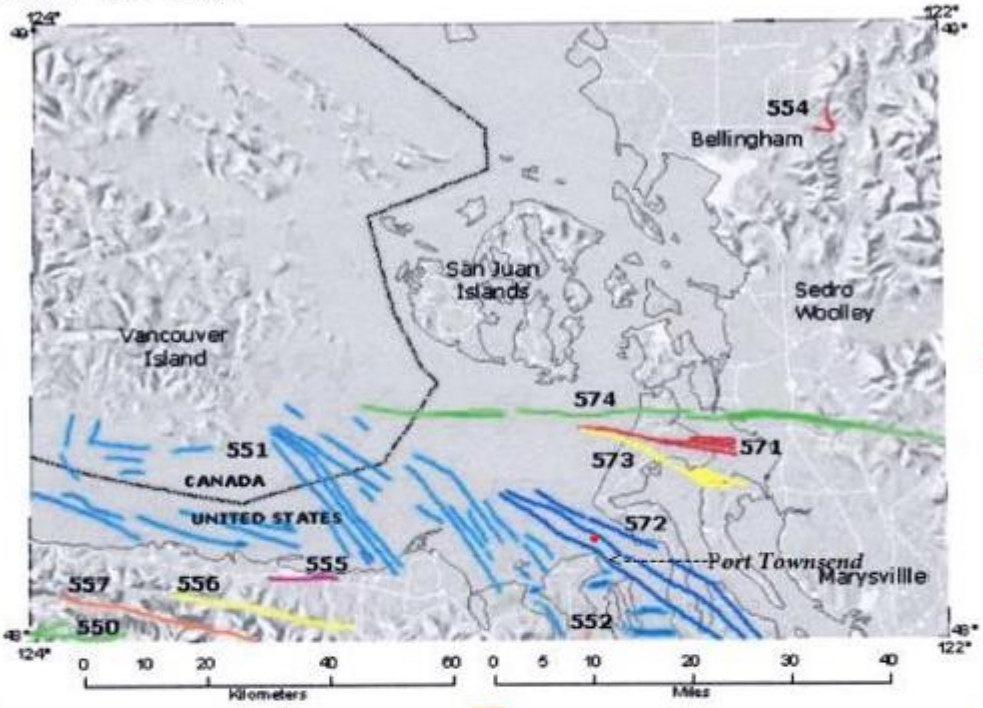


Figure EQ-4 – Victoria Quaternary Fault Zone (including Port Townsend)

USGS

Quaternary Fault and Fold Database for the United States

Victoria 1° x 2° Sheet



Number	Name
550	Calawah fault
551	Unnamed faults in Strait of Juan de Fuca and Puget Sound (Class B)
552	Hood Canal fault zone (Class B)
554	Macaulay Creek fault (Class B)
555	Unnamed fault south of Port Angeles
556	Little River fault
557	Unnamed fault along Barnes Creek (Class B)
571	Strawberry Point fault
572	Southern Whidbey Island fault zone
573	Utsalady Point fault
574	Devils Mountain fault

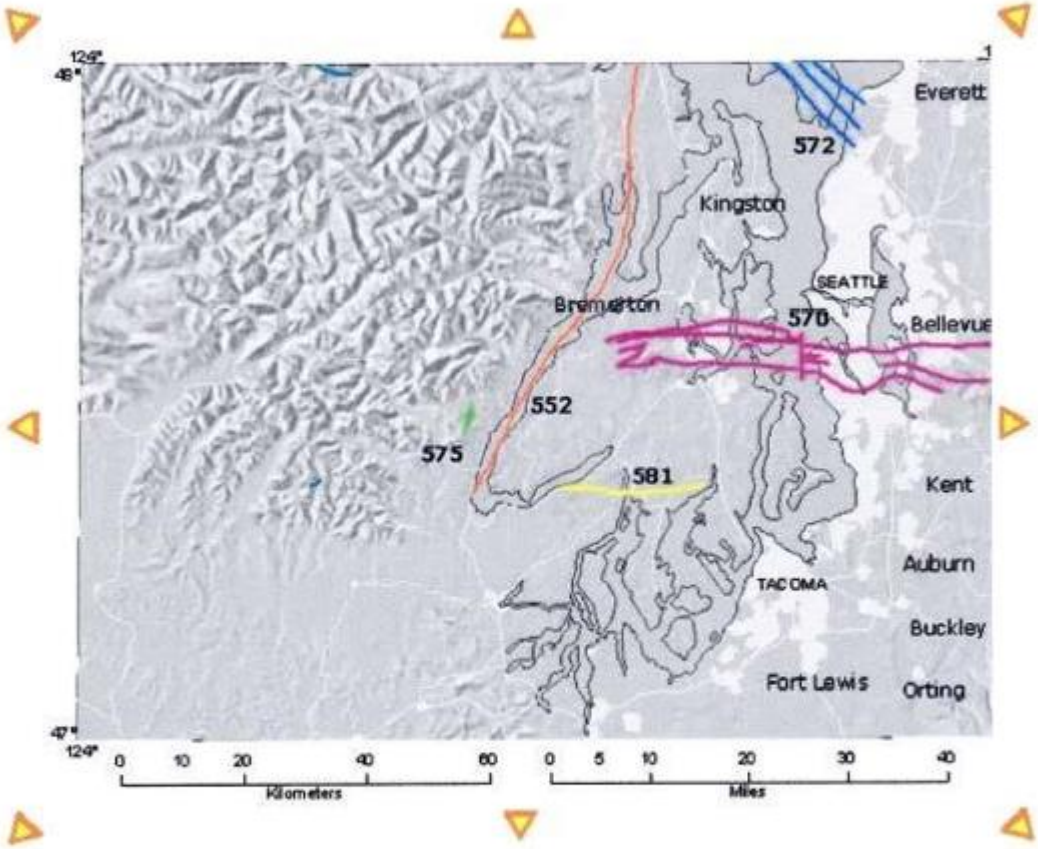
Last modified January 27, 2006 URL http://earthquake.usgs.gov/regional/qfaults/wa/vic.html

Figure EQ-5 – Seattle Quaternary Fault Zone

Seattle Quaternary Fault and Fold Map

USGS
Quaternary Fault and Fold Database for the United States

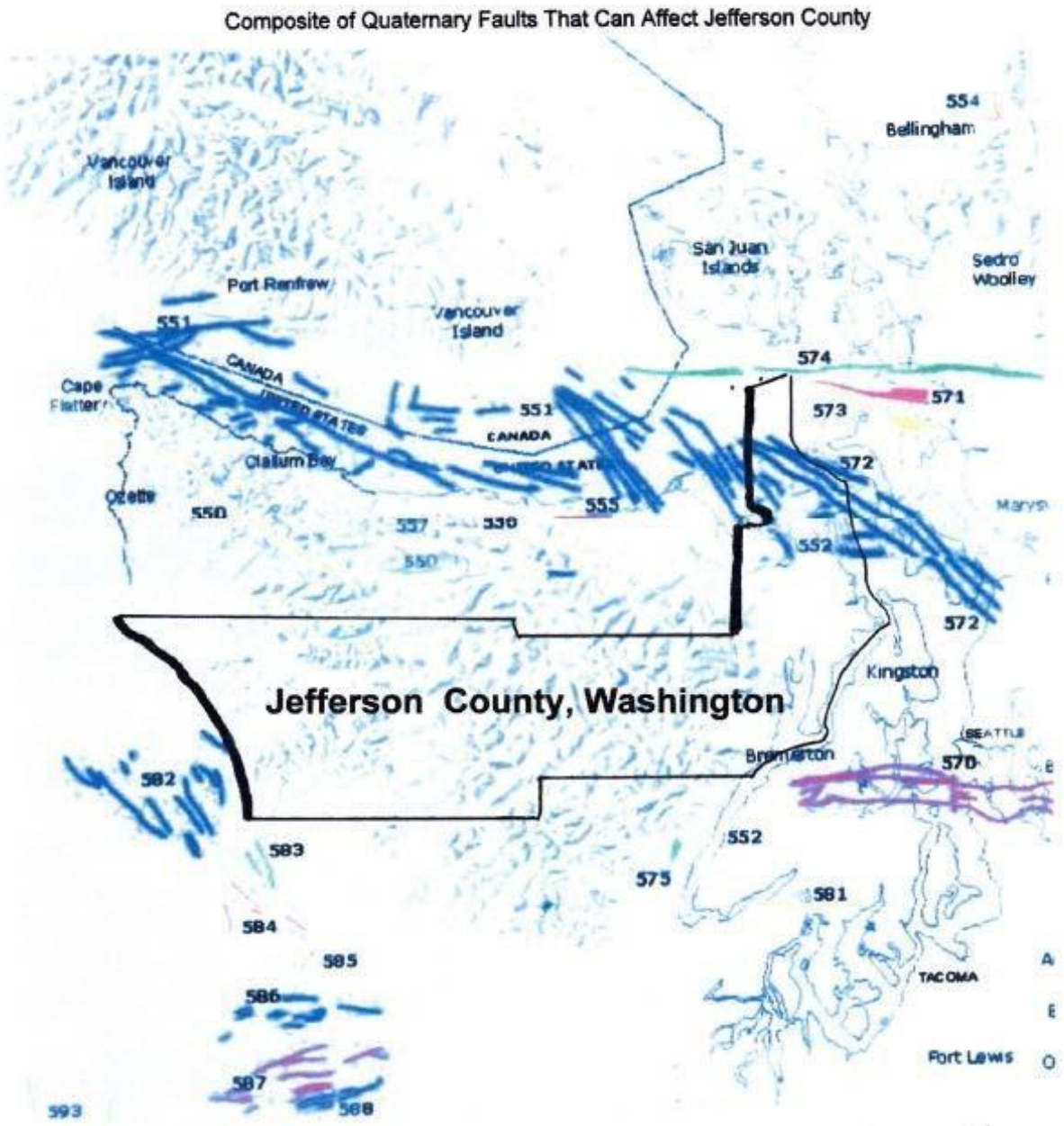
Seattle 1° x 2° Sheet



Number	Name
552	Hood Canal fault zone (Class B)
570	Seattle fault zone
572	Southern Whidbey Island fault zone
575	Saddle Mountain faults
581	Tacoma fault zone

Last modified January 27, 2006
URL http://earthquake.usgs.gov/regional/qfaults/wa/sea.html

Figure EQ-6 – Composite Map of Quaternary Faults affecting Jefferson County



Quaternary faults are those active faults that have been recognized at the surface and which have evidence of movement in the past 1.6 million years. That is the duration of the Quaternary Period. Source: Wikipedia

As one can see, there are a multitude of opportunities for earthquakes to occur in and around Jefferson County. Many do occur and are unnoticed because they are small and undistinguishable from the vibrations inherent with a mechanized society. During the period from 1638 to 1928, just 2,500 earthquakes were reported in Oregon and Washington; during the period from 1928 to 1985, more than 18,500 events were reported. Typically, each year over 1,000 earthquakes with a magnitude 1.0 or more are recorded in Washington and Oregon.

There are two scenarios, however, that have the potential to severely damage Port Townsend and East Jefferson County: a 9.0+ magnitude rupture of the Cascadia Subduction Zone, and a 7.4+ rupture of the Southern Whidbey Island (SWI) Faults, just one and a half miles from Port Townsend. Because of its proximity, the Hazus simulations show that a Southern Whidbey Island event can do more damage to the urban centers of East Jefferson County than a Cascadia event, even though the Cascadia event could be 1000 times stronger.

Scientists and emergency managers have combined two tools to model likely outcomes from the above occurrences, shake maps and Hazus simulations. Caveat: These tools are for planning purposes only – and no plan survives its implementation.

Earthquake Shake map Scenarios describe the expected ground motions and effects of specific hypothetical large earthquakes. In planning and coordinating emergency response, utilities, emergency responders, and other agencies are best served by conducting training exercises based on realistic earthquake situations, ones that they are most likely to face.

Shake maps can be developed for both magnitude and intensity. Magnitude is the power of the earthquake, while intensity is the damage that is or can be done at some point distant. Remember the radio broadcast analogy: magnitude is analogous to the output power of a radio transmitter, e.g. 50,000 watts; intensity is how well you can pick up the radio signal at some distance – except, here, we are talking about destruction caused by the earthquake. In the scenarios below, we have shake maps for both magnitude and intensity.

Hazus is a free tool from FEMA that estimates losses to specific buildings for earthquake and flood.

Earthquake building losses were modeled at $165 million for a Southern Whidbey Island event of magnitude M7.4 and $104 million for a Cascadia M9.0 event. The losses reported are for building losses only and do not include losses for other infrastructure, such as the roads, ferry system, etc.

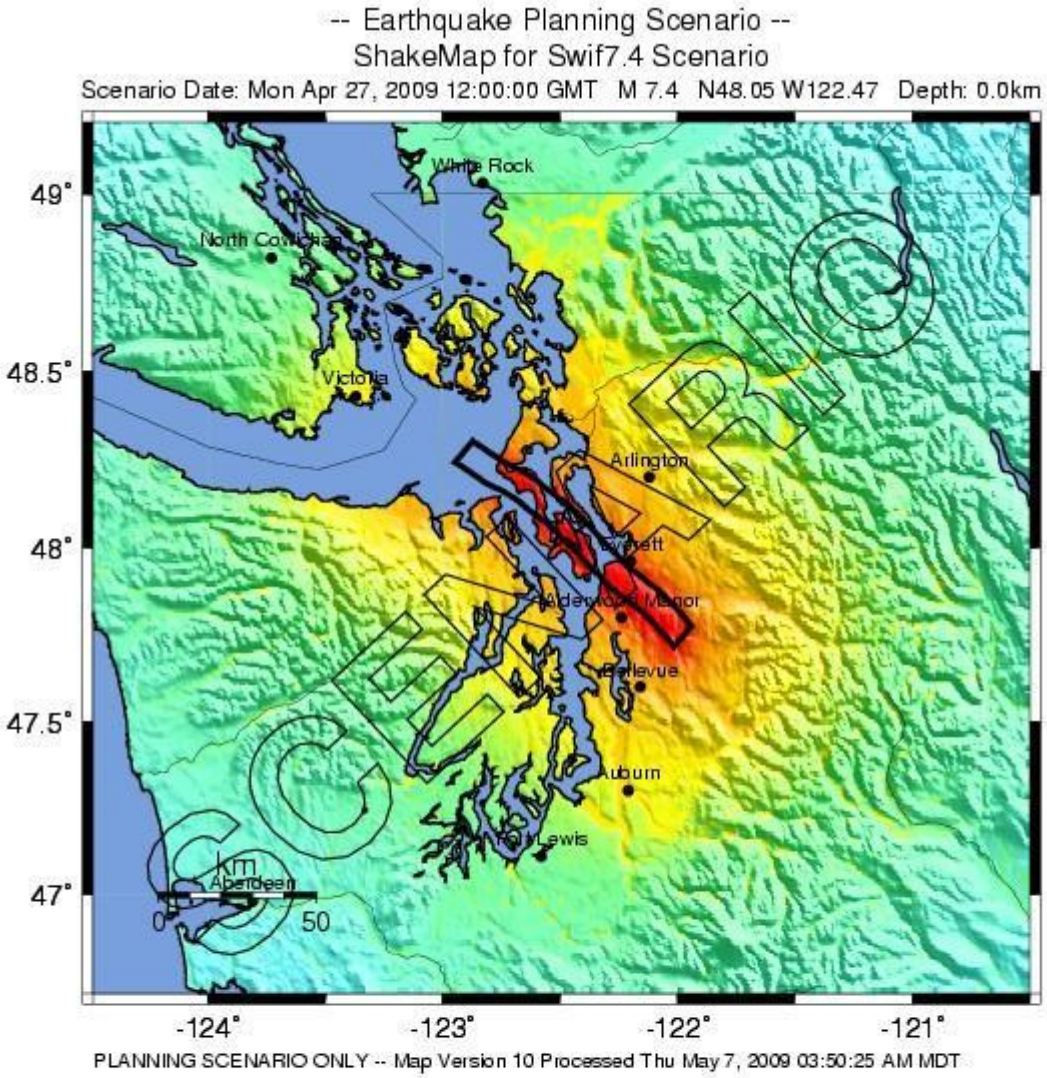
The City of Port Townsend and the unincorporated areas of the county have a large percentage of buildings located in the moderate-high liquefaction zone. The City of Port Townsend will have a substantial impact if the Southern Whidbey Island event were to occur. The Hoh Tribe will experience the greatest impact from a Cascadia event.

The Southern Whidbey Island Earthquake Scenario

Research has shown that the SWI faults are active and have generated at least four large earthquakes in the last 16,000 years. Figure EQ-8 is a “shake map scenario” representing a magnitude 7.4+ earthquake on the Southern Whidbey Island (SWI) fault.

In the first SWI Scenario, a magnitude 7.4 earthquake occurs directly between Whidbey Island and Port Townsend. Port Townsend will experience violent to extreme shaking.

Figure EQ-7 – Southern Whidbey Island M7.4+ Earthquake Scenario

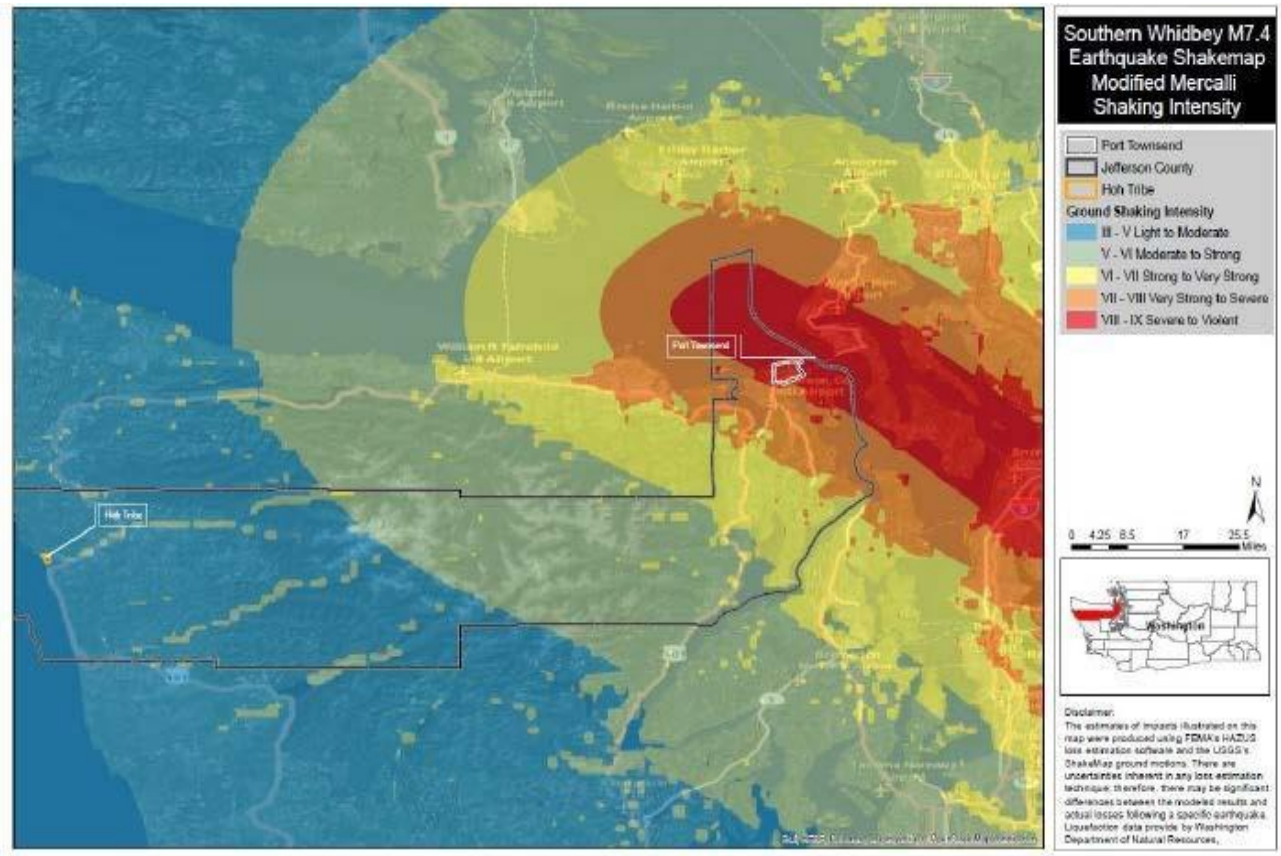


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	*<.17*	*.17-1.4*	*1.4-3.9*	*3.9-9.2*	*9.2-18*	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	*8.1-16*	*16-31*	*31-60*	*60-116*	*>116*
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

With the exception of the few public buildings that have been seismically retrofitted, Port Townsend's
Downtown Historic District consists mostly of multi-story unreinforced masonry structures built in the late 1800's to early 1900's. While buildings that have been seismically retrofitted may help the survivability of people inside, they are not likely to be functional because of the loss of utilities and infrastructure around them.

Figure EQ-9 is a shake map, modeled in 2015, using the Modified Mercalli (MM) scale to estimate damage from a magnitude 7.4+ SWI earthquakes. Note that the damage levels are marked in Roman numerals because this shake map is modeling the intensity of the earthquake.

Figure EQ-8 - Southern Whidbey Island M7.4+ Earthquake Scenario



Regardless of which map is used, it should be clear that Port Townsend is in real trouble if the SWI fault generates a large earthquake. Not only will the downtown area be hit hard, but it is possible for a tsunami to be generated right at the mouth of Port Townsend Bay, giving only minutes between the shaking and a tsunami wave of unknown proportions.

The Cascadia Subduction Zone (CSZ) Earthquake Scenario

A 1000-kilometer rupture of the Cascadia Subduction Zone is what people are most aware of and most concerned about. Most recently, attention to this possibility was heightened by an article titled “The Really Big One,” penned by Kathryn Schulz in The New Yorker (July 2015). It has also been written about in depth in the book, “Full Rip 9.0” by Sandi Doughton, Science Writer for *the Seattle Times*. This is a good thing in that by incentivizing people to prepare for “The Big One”, they are helping them get ready for a smaller but more devastating event from the Southern Whidbey Island (SWI) fault.

This is not to say that the Cascadia event will not be as bad as people think. We simply are not yet knowledgeable enough to make good predictions. The mantra at the Jefferson County EOC is “Please, Lord, not in my lifetime.”

To try to better prepare for such a catastrophic event, FEMA and State and local agencies in the Cascade region of the country created a functional exercise, called *Cascade Rising (CRX)* to allow emergency management personnel to validate plans and readiness by performing their duties in a simulated operational environment based on the Cascadia event. It took two to three years of preparation for the multi-state, multi-jurisdiction, multi-agency exercise to be planned and then executed over a week-long period in June 2016. Part of the effort to build verisimilitude into the exercise was to collect data on vulnerable structures to create maps and simulated photos of destruction. This helps to understand the impact the Cascadia event will have on the region.

The Cascadia Region is home to a robust ferry transportation system that will be uniquely impacted by a major CSZ earthquake.



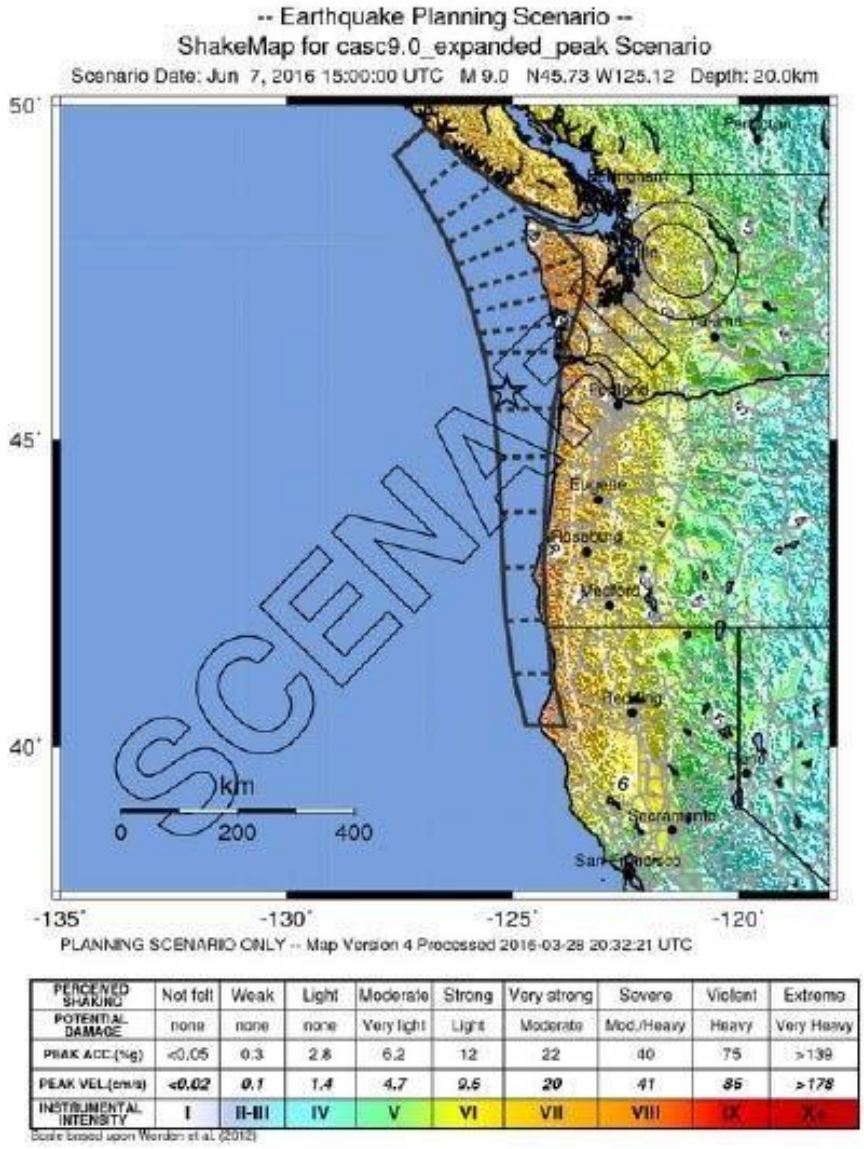
This system—the largest in the nation—operates both domestic and international routes, serving destinations throughout Northwest Washington State and Southwest British Columbia.

Full or partial failure of this system after a CSZ earthquake would create significant response challenges for island communities only accessible, or most easily accessible by existing ferry routes. (Cascadia Rising Exercise Scenario Document)

Source: Jefferson County Department of Emergency Management

Figure EQ-10 is a shake map scenario for a Cascadia event exceeding M9.0. It shows that East Jefferson County, which is the economic engine for the area, will receive strong to very strong shaking. The concern with this is that the shaking will go on for many minutes. “A magnitude 9.0 earthquake can last for five minutes or longer, and the amount of energy released is 1,000 times greater than that of a 7.0. The most powerful quakes could leave few if any masonry buildings standing, destroy bridges and toss objects into the air, according to the USGS.

Figure EQ-9 - Cascadia M9.0+ Earthquake Scenario

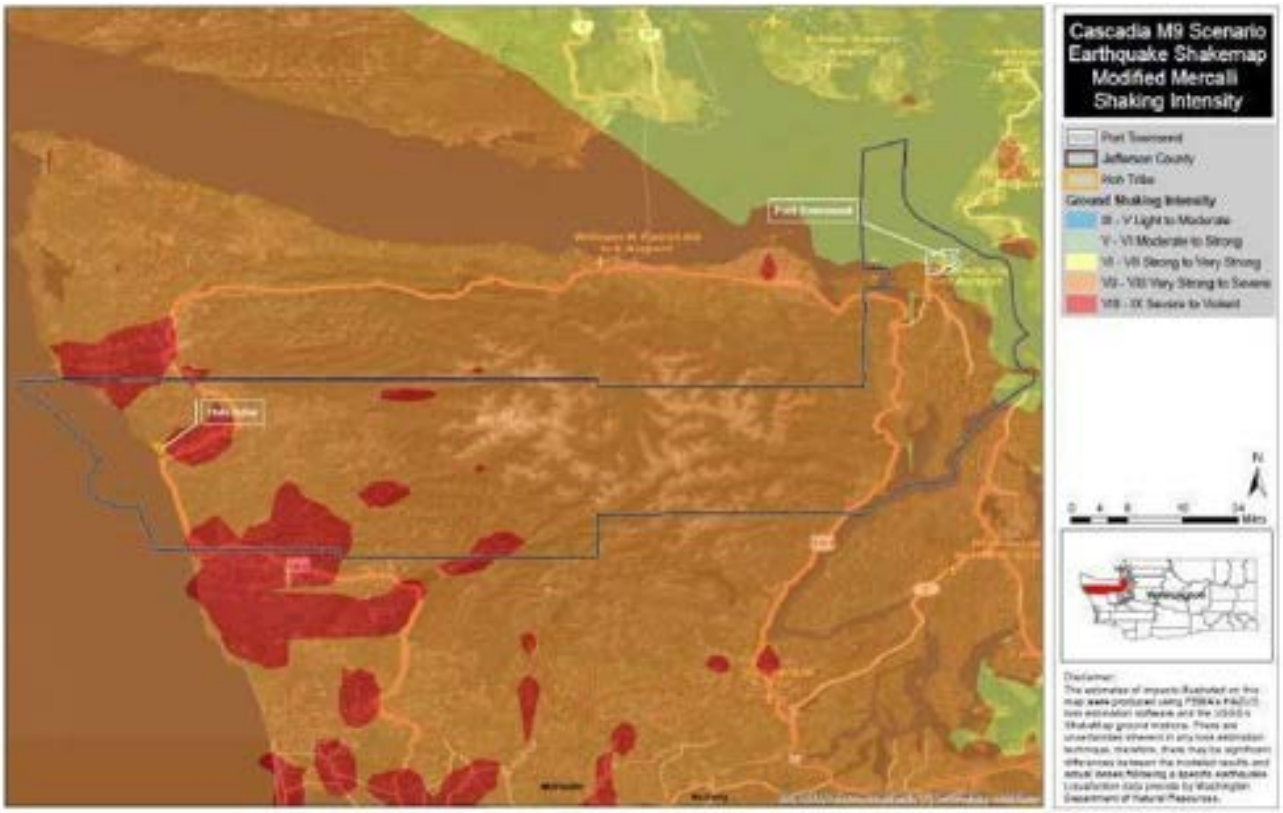


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	*<0.02*	*0.1*	*1.4*	*4.7*	*9.6*	*20*	*41*	*86*	*>178*
INSTRUMENTAL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

Scale based upon Worden et al. (2012)

The CSZ event shake map (Figure EQ-11) shows that the majority of Jefferson County will experience
“very strong” to “severe” shaking intensity, with the West Jefferson County getting pockets of “violent” shaking intensity. U.S Hwy 101 can be expected to be busted up in multiple places. The CRX showed that it would take a minimum of three hours for help to reach the West End, which has no significant emergency assets of its own. Air assets are likely to be the only way to get help to the Hoh Tribe and to the pockets of tourist/survivors. During the tourist season, there can be 10,000+ tourists on the coast at any given time.

Figure EQ-10 - Cascadia M9.0+ Earthquake Shake map



Hazus simulations, summarized in Table EQ-4, show that the destruction in Port Townsend can be significantly higher for an SWI fault event than for an CSZ event of M9.0+. And while it is clear from the caveats, that the damage estimates are understated, the relative levels of death and destruction make sense. An CSZ generated earthquake will be somewhat attenuated by the time the shock waves hit East Jefferson County, and the population will have about ninety minutes to get out of the way of any tsunami generated. An SWI generated earthquake will be right on the City's doorstep and give people about 10minutes to get off the Fort Worden beaches or out of the downtown area before any tsunami wave created hits. Once again, at certain times of the year, particularly during festivals, Port Townsend's population can expand from 9,800 to 50,000 at sea level. It is plausible that people will just be picking themselves off the ground when a tsunami wave hits.

Table EQ-4 – Hazus Earthquake Results for Selected Scenarios

Community	Total Estimated Building Value	Total Number of Buildings	Number of Buildings in the Moderate – High Liquefaction Zone	Percent of Buildings in the Moderate-High Liquefaction Zone	Building Dollar Loss for a Southern Whidbey M7.4 Event	Loss Ratio (Dollar Losses/ Total Building Value) Southern Whidbey M7.4 Event	Building Dollar Loss for a Cascadia 9.0 Event	Loss Ratio (Dollar Losses/ Total Building Value) Cascadia 9.0 Event
Port Townsend	$646,052,977	4845	276	5.7%	$90,401,638	14%	$23,310,587	3.6%
Hoh Tribe	$3,119,782	35	6	17.1%	N/A**	N/A**	$341,835	11% (*)
Unincorporated	1,639,851,022	14356	1151	8.0%	$75,073,592	4.6%	$80,928,751	4.9%
Total	$2,289,023,782	19,236	1,433	7.5%	$165,475,259	7.4%	$104,581,170	4.7%

Note: The above table shows the total estimated building value by community, and percent of buildings and number of buildings located within the moderate to high liquefaction zone. In addition, buildings losses are reported for Cascadia M9.0 and Southern Whidbey M7.4 scenario earthquakes as well as associated loss ratios. Loss ratios are calculated by dividing the dollar loss by the total building value. The loss values are for building losses only; additional damages to infrastructure and building contents are not captured in this table.
(*) Loss ratio would be higher if the earthquake design code was known (for example, Low Code (LC) may give higher loss rates than Medium Codes (MC)). **The western side of Jefferson County will not be impacted by a Southern Whidbey Island event.

The Bottom Line

Jefferson County's part of the world is unique in its geology, demographics and geography, and where we might fall in the line for help from state and/or federal agencies on the road to recovery.

Jefferson County's demographics stand out in terms of emergency response. Leading the other 38 counties in the state for the 65 years+ age of its citizens in the 2020 census. Despite lack of family-wage employment opportunities, the population increased by 7.7 percent from 2010 to 2020. There will likely be a higher percentage of special needs people among survivors of a major quake than in more age-diversified areas.

Jefferson County's geography presents other challenges. The West end of Jefferson County, where the Hoh Native American Reservation is located, is bordered by the Pacific Ocean. Clallam County is the border to the north; to the east, Admiralty Inlet and Hood Canal, and to the south, Grays Harbor and Mason counties. Port Townsend, the largest and only incorporated city in the county is on a peninsula.

Access and egress to the peninsula by car is limited. The most common way to get here is via the Hood Canal Bridge. The second choice is by way of Highway 101. In the event of a disaster, both routes could easily be impacted for one reason or another. Potential damage to either or both of those routes emphasizes one of the disadvantages to the "Just-In-Time" delivery systems used by local retailers and businesses.

The "Just-In-Time" inventory system has its advantages by eliminating the need for suppliers to have large warehouses to hold inventories.

But there are also disadvantages to this system for the end-user. Of specific concern is the time of exceptional need for specific goods and supplies following a major disaster. Because of damaged roads or unavailable goods from suppliers, the shelves would remain empty and demands for specific products unmet.

In a study done by the Cascadia Region Earthquake Workgroup (2005), resupply issues for businesses in the Puget Sound area (to include not just grocery stores, but hospitals, pharmacies, emergency services, transportation related services, fuel, building materials and more) could quickly reach critical stages because of damages to previously used methods of delivery caused by a major disaster.

Getting supplies to the area by other means, should the need occur, would be at the top of the resource acquisition list for emergency management staff but the timeliness of acquiring those supplies would be dependent upon a number of things to include the overall impact of the disaster (how big an area was damaged and to what extent); availability of supplies (resources going to the hardest hit areas with greater populations first) and securing alternate means of delivery of needed supplies to include manpower, food, water and medical supplies and whatever else might be critically needed to save lives).

Of note is the possibility there will be long term interruption of the supply chain on the peninsula after a M9.0 earthquake. Recovery could take years with some resources never recovering.

A survey recently completed by Chapman University, revealed that most people in the U.S. have unrealistic expectations of what would happen if a major disaster—man-made or natural—were to occur.

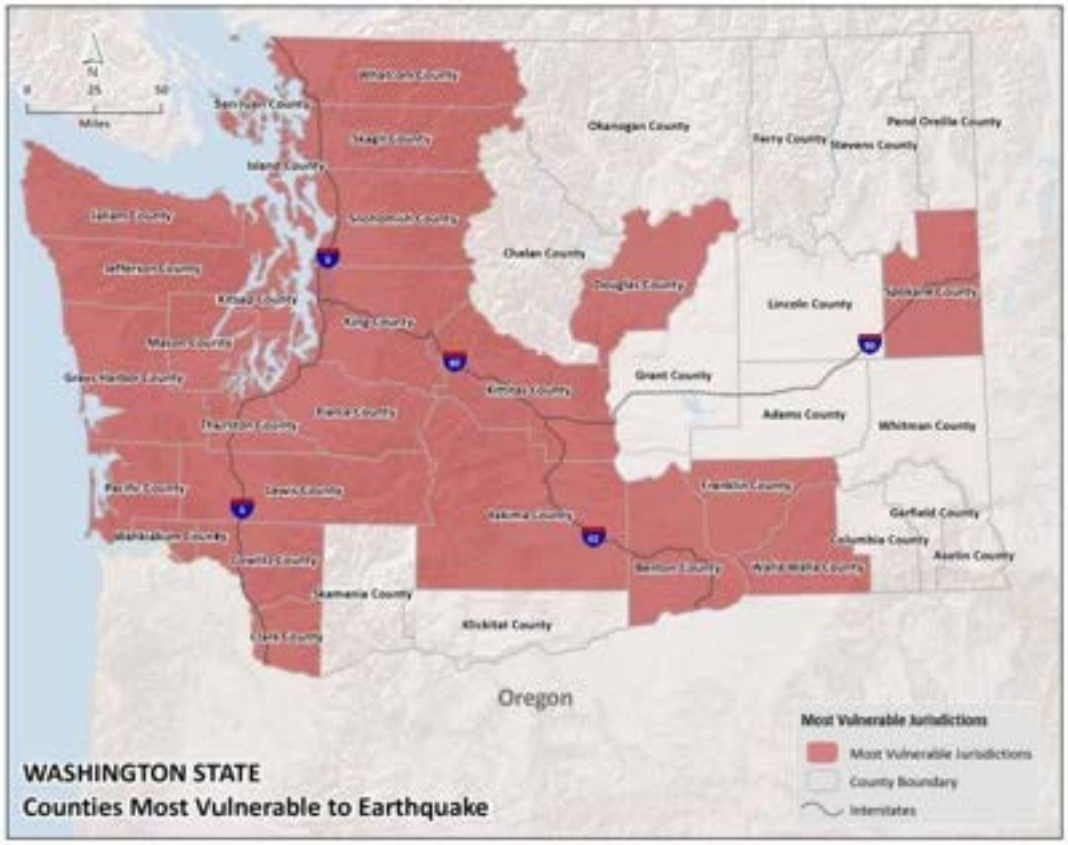
"We found a major disconnect between people's expectations of what would happen in a disaster and the reality of a disaster's aftermath," said Ann Gordon, Ph.D., and lead researcher on the disaster portion of the survey.

"The number one excuse given by Americans for not having an emergency kit is that they expect first responders to come to their aid immediately -- this is an unrealistic belief in the wake of a natural disaster." (CBS News)

Climate Change
Not Applicable

Conclusion
Jefferson County is among the counties considered most at-risk and vulnerable to earthquake. Our evaluation is that the County has a very high risk and a very high vulnerability.

Figure EQ-12 - Counties Most Vulnerable to Earthquake



Although scientists have tried for decades to predict earthquakes, no one has discovered a method that can be applied with regular success. For some areas with well-understood patterns of seismicity, it may be possible to forecast decades-long time windows when large earthquakes are likely to occur. However, the Pacific Northwest has only been monitored for a couple of decades; not long enough to allow us to see what patterns, if any, exist here. Seismologists are still trying to understand what types of earthquakes are possible here, and what kind of shaking we will experience from future earthquakes (depending on the earthquake location and size, and the site geology and topography).

Mitigation activities, including the following, should be instituted and maintained to lessen potential problems:

1. Examination, evaluation, and enforcement of effective building codes

2. Geologically hazardous areas, as defined by the Growth Management Act, should be identified and land use policies adopted to lessen risk.

3. Public information on what to do before, during, and after an earthquake should be provided to citizens. Emphasis must be place on individual and family preparation for not just earthquake related disaster, but for all disasters.

   Since 2004, the City of Port Townsend has actively sought to seismically retrofit public buildings that are critical assets. City Hall, the police station, the city's Historic Carnegie Library, City Water Distribution Center, tunnel lids and the City's water tower have all been completed or are in the process of being seismically retrofitted. The city is also developing

plans for a “Resiliency Center” to deal with the post-disaster recovery needs after a major event.

Earthquake hazards can be reduced by advance preparation; such as coordinating emergency communications and activities across jurisdictional lines, preparing personal emergency plans, and considering seismic hazards in land use plans, building codes, and planning for medical, utility, and emergency facilities. Education programs are currently in place to facilitate the development of individual, family and neighborhood preparedness.

Earthquake Hazard Updates since 2016

Section II of the 2016 Jefferson County - City of Port Townsend All Hazard Mitigation Plan contains a thorough and accurate characterization of the seismic setting and earthquake hazards in Jefferson County. That section is adopted by reference in this document. This section summarizes new information regarding earthquakes risks developed subsequent to the 2016 document.

Investigations into paleo-seismicity in the Pacific Northwest have continued to clarify the extent of and timing of shallow, post-glacial fault movements. Of particular note is research on the North Olympic Fault Zone. This fault zone is now understood to be approximately 80 km in length, generally paralleling the Strait of Juan de Fuca coastline but inland (south) of the coastline by 5 to 10 km. It extends generally from the vicinity of Clallam Bay in the west, east to Siebert Creek (all in Clallam County). Recent work has included paleo-seismic trenching in this fault zone (Schermer et al., 2020, Duckworth et al, 2021) and studies of turbidite deposits in Lake Crescent (Leithold et al. 2019). These studies have shown at least four incidents of movement on this fault zone since in the 14,000 years since deglaciation, with the latest movement occurring approximately 1000 years ago. Evaluation of the recurrence interval and observed displacement suggest that this system is capable of producing earthquakes with magnitudes of Mw 7.0–7.5. Recent Work on the Devils Mountain Fault zone and Skipjack Island fault zone (Barrie and Greene (2018), and Greene et al. (2018), (Both in the San Juan Islands) along with earlier work on the Southern Whidbey Island Fault (Sherrod et al. (2008) confirm the presence of multiple, shallow, earthquake-capable in the vicinity of Jefferson County.

Between 2018 and 2021 Washington State Funded the School Seismic Safety Project which entailed screening-level assessments of selected school building buildings throughout Washington State. School building in each of the four school districts in Jefferson County were included. The resulting reports identify areas of both structural and none-structural seismic vulnerability in the buildings examined. These screening level reports were completed for the following school buildings in Jefferson County:

School District	School Building
Brinnon	Brinnon Elementary School
Chimacum	Chimacum High School
Chimacum	Chimacum Middle School
Port Townsend	Port Townsend High School
Port Townsend	Blue Heron Middle School
Quilcene	Quilcene High and Elementary School

Reports describing the evaluations of these school buildings are available at https://www.dnr.wa.gov/school-seismic-safety

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EQ-6 Seattle Quaternary Fault
EQ-7 Composite Map of Quaternary Faults that affect Jefferson County
EQ-8 Southern Whidbey Island M7.4+ Earthquake Scenario
EQ-9 Southern Whidbey Island M7.4+ Earthquake Shakemap
EQ-10 Cascadia M9.0+ Earthquake Scenario
EQ-11 Cascadia M9.0+ Earthquake Shakemap
EQ-12 Hazus Earthquake Results for Selected Scenarios
EQ-13 Counties Most At-Risk and Vulnerable to Earthquakes

TSUNAMI

Definition:

Tsunamis are wave trains, or series of waves, generated in a body of water by an impulsive disturbance including earthquakes, subaqueous or terrestrial landslides impacting water bodies, or volcanoes. Tsunami waves, often incorrectly described as tidal waves, are extremely destructive to life and property. Imperceptible on the open ocean, they can travel at velocities of up to 1000 km/h. Tsunami waves are usually 100 or more miles from crest to crest and can reach heights of up to 30 meters. They can traverse the entire 12,000 to 14,000 miles of the Pacific Ocean in 20 to 25 hours, striking with virtual undiminished force on coastal areas.

A seiche is the formation of standing waves in water body, due to wave formation and subsequent reflections from the ends. A seiche may be incited by earthquake motions, impulsive winds over the surface, or wave motions entering the basin. A tsunami generated along the South Whidbey Island earthquake fault could send a wave directly into Port Townsend Bay, where it would wrap around the bay and create a seiche.

The Hazard: Tsunamis are wave trains, or series of waves, generated in a body of water by an impulsive disturbance including earthquakes, subaqueous or terrestrial landslides impacting water bodies, or volcanoes.

Impacts and Effects:

- Loss of life
- Loss of property
- Damage to critical transportation infrastructure
- Damage or loss of recreation facilities
- Disruption of utilities
- Loss of jobs due to damaged equipment and facilities

Previous Occurrences: Geologic evidence shows that the Jefferson County area around Discovery Bay and the City of Port Townsend have experienced at least 7 major inundations in the last 3500 years.

Probability of Future Events: MED – Minor tsunamis or tsunami advisories have been documented every few years, with most being distant source events. However, here are several know faults and subduction zones capable of generating major tsunamis as part of an underwater subsidence.

Natural Hazard Risk Rating: The average natural hazard risk rating for tsunamis for all districts in Jefferson County was estimated at 10.45, which would be considered low. Districts with water boundaries, however, consistently rate the risk at 40, which, while moderate, is among the highest ratings given for anything in Jefferson County.



Figure TS-1 Olympic Peninsula Tsunami Inundation Zones at 100' and 600'

History of Tsunamis in Jefferson County

The Washington coast, including the coastal areas of Jefferson County, experienced a large tsunami following the 1964 Alaskan earthquake; however, no deaths were reported in this state. As recently as March 2011, a tsunami warning was issued for the Washington coast due to the Tohoku earthquake in Japan, which created a tsunami that did reach our coast.

Research indicates that an earthquake on the west coast of America at 21:00 on January 26, 1700 caused a tsunami in Japan that killed thousands of people. Local evidence now indicates that the same tsunami damaged the west coast of Jefferson County and the lowlands of Grays Harbor and Pacific counties. This was caused by an estimated 9.0+ undersea earthquake along the Cascadia Subduction Zone, which can happen again. The event, called a megathrust earthquake, created a large tsunami that crossed the Pacific Ocean and inundated Japanese villages without the shaking warning they were used to having. The Japanese documented the event, thus allowing us to get the exact time of arrival of the wave in Japan and to back calculate when the earthquake occurred on Washington coast.

At the time of the "1700 Tsunami", there were only native and early explorer civilizations in the areas inundated in Washington. Today, there are billions of dollars of property and millions of people that could be directly affected.

Seafloor core evidence indicates that there have been forty-one subduction zone earthquakes on the Cascadia subduction zone in the past 10,000 years, suggesting a general average earthquake recurrence interval of only 243 years. Of these 41, nineteen have produced a "full margin rupture," wherein the entire fault opens up. There is also evidence of accompanying tsunamis with every earthquake. One strong line of evidence for these earthquakes is convergent timings for fossil damage from tsunamis in the Pacific Northwest and historical Japanese records of tsunamis. Table TS-1 provides the approximate dates of the tsunami events occurring from Cascadia ruptures in the last 3500 years. The interval ranges were from about 200 to 900 years with an average of about 500 years.

Table TS-1 Recurrence of the "Great Earthquakes" in Washington State		
Estimated Year of Occurrence		***Return Interval***
2005 Source	***2003 Source***	***Years***
1440 – 1340 BCE	1150 -1220 BCE	Unknown
980 - 890 BCE	910 – 780 BCE	250
660 – 440 BCE	610 – 450 BCE	400
350 – 420 CE	250 – 320 CE	910
690 – 730 CE	550 – 750 CE	330
780 – 1190 CE	880 – 960 CE	210
9:00 pm, January 26 1700 (NS)		780

The Washington State Emergency Operations Center was activated on June 9, 1996 after the Alaska Tsunami Warning Center issued a Tsunami Watch for the Washington coast and Puget Sound. An earthquake of 7.5 near Adak, Alaska generated a seismic wave of 2.5 feet. The state EOC returned to normal operations on the same date after the Tsunami Warning Center determined there was no threat to Washington State. Although not a common occurrence, the history indicates that the potential for tsunamis exists for coastal areas and areas along the Strait of Juan de Fuca.

The Jefferson County Emergency Operations Center (EOC) has been activated multiple times to monitor for distant tsunamis from under sea earthquakes near Japan and along the South American coast. The Japanese earthquake at Honshu on March 11, 2011, created a massive tsunami in Japan, but also generated a distant tsunami that hit the Washington coast, including Port Townsend and Fort Worden State Park beaches. As the EOC tracked the tsunami across the Pacific, the City Manager gave orders to evacuate the vulnerable population of the Admiralty Apartments, a low-income residence on the Port Townsend waterfront. The tsunami wave did hit the Washington coast and Port Townsend, but, fortunately, was less than a meter high at its highest spot.

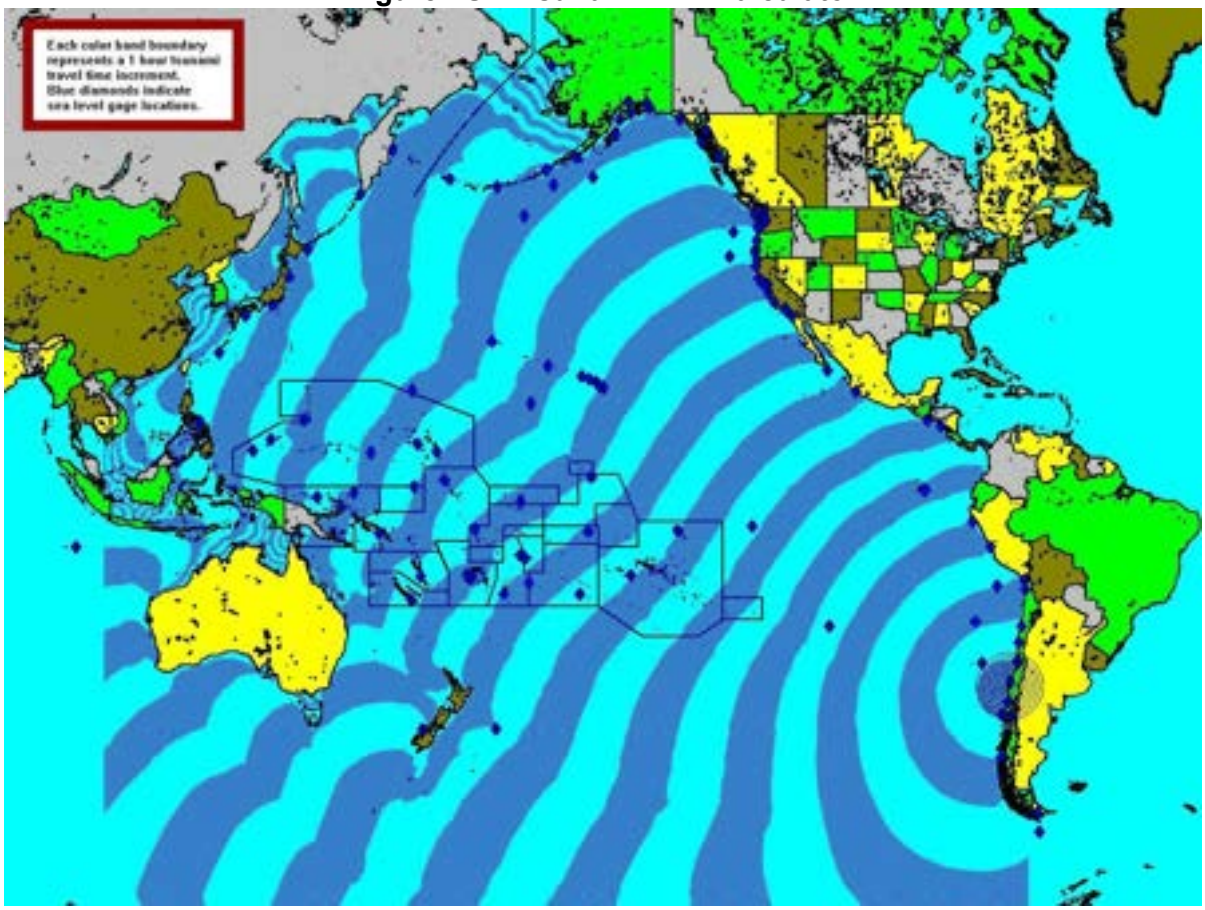
Hazard Identification and Vulnerability Assessment

The Pacific coastal areas and inland waters on the Strait of Juan de Fuca are the most vulnerable to tsunamis generated at a distance or by a local subduction zone earthquake. Distant tsunamis are those that originate so far away that residents of Jefferson County cannot feel the shaking of the earthquake that creates the wave. In most cases, nearby tsunamis will give warning by the shaking of the earthquake creating the wave; in some cases, though, the wave can be generated by a landslide and may not be heard or felt.

Damaging tsunamis striking the Pacific Northwest coast over the past century were generated by distant earthquakes located far across the Pacific basin. These tsunamis are distinguished from earthquakes near the coast, termed *local tsunamis*.

Figure TS-2 shows how long it takes a tsunami to reach the Washington coast from across the ocean. Typically, the Port Townsend coastline and Port Townsend Bay have about 90 minutes before a wave hits once it enters the Strait of Juan de Fuca. A tsunami wave generated by the rupture of the Cascadia fault, off the coast of Washington, will take approximately two hours to reach the Port Townsend area – depending on how and where the rupture occurred. A distant tsunami, such as was generated by the Honshu earthquake, can take seven or eight hours or more to reach Washington's coast.

Figure TS-2 Tsunami ETA Calculator

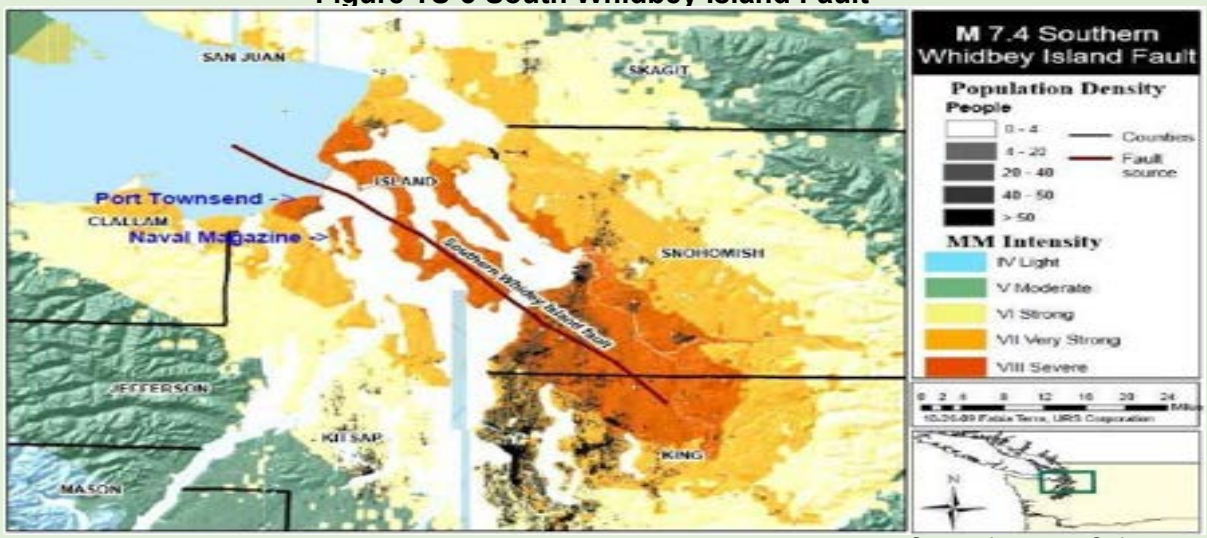


Source: Jefferson County Department of Emergency Management

The Jefferson County Risk Report estimates that an earthquake in the Puget Sound along the Seattle fault could generate a tsunami that would reach Port Townsend in twenty (20) minutes.

On the other hand, a rupture of the South Whidbey Island Fault or a landslide into the sea from Whidbey Island could cause a significant tsunami that would reach Port Townsend or the Fort Worden beaches in minutes. People on the beaches would still be picking themselves up off the ground when the wave hit. The South Whidbey Island fault is mid-way between Port Townsend and Whidbey Island, a distance of about one and a half miles. Figure TS-3 shows the location of the South Whidbey Island Fault.

Figure TS-3 South Whidbey Island Fault

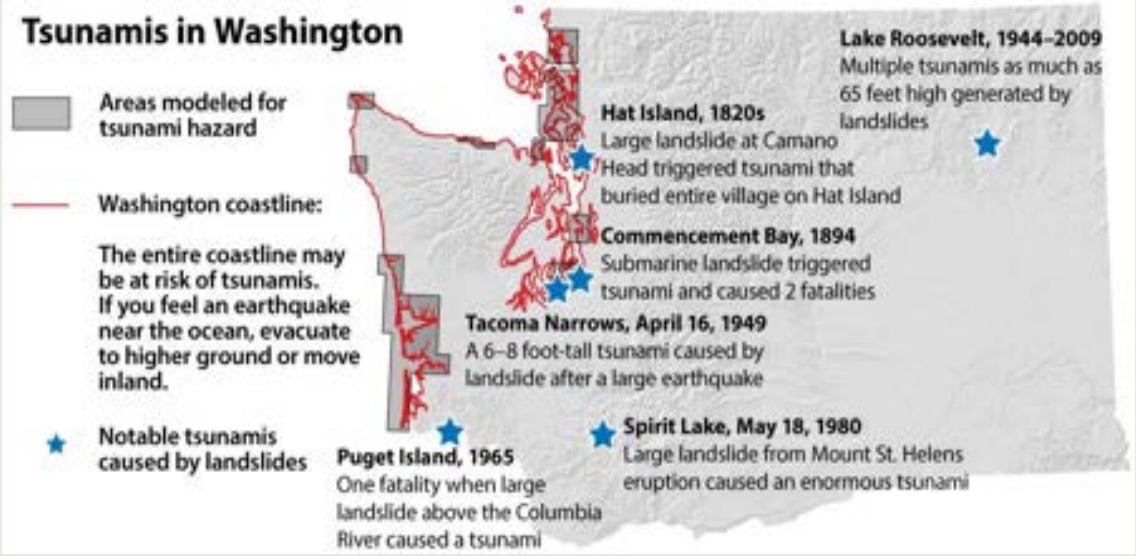


Source: Insurance Owl.com

It should be noted that all of Port Townsend, half of Marrowstone Island, and the Naval Magazine at Indian Island are all with Zone VIII, that of the most severe intensity. The land surrounding Discovery Bay and both ends of the Hood Canal Bridge are in Zone VII, "Very Strong" shaking. These have the potential to send debris laden tsunamis down Discovery Bay to take out U.S. Hwy 101 and a power substation, and down the Hood Canal to take out the Hood Canal Bridge.

The Washington Department of Natural Resources (DNR) has documented notable tsunamis that have occurred in Washington (Figure TS-4), and is working to model the coastlines for tsunami hazard.

Figure TS-4 - Notable Tsunamis in Washington



Source: WA DNR Website

The Cascadia Subduction Zone Tsunami Generator



Source: washington.edu

The Cascadia subduction zone is an oceanic tectonic plate (the Juan de Fuca plate—the edge is indicated here by the Juan de Fuca Ridge) that is being pulled and driven (i.e. subducted) beneath a continental plate (the North American plate). Earthquakes along the fault that is the contact between the two plates, termed the inter-plate thrust or megathrust, may generate local tsunamis in the Pacific Northwest. Except for the 1992 Cape Mendocino earthquake at the southernmost part of the subduction zone, there have been no major earthquakes on the megathrust in historic time.

Some geologists offer that the Cascadia subduction zone is poised between major earthquakes. Therefore, the possibility exists that local tsunamis may someday accompany a major earthquake along the Cascadia megathrust. Pacific coastal areas and inland waters on the Strait of Juan de Fuca are the most vulnerable to tsunamis generated at a distance or by a local subduction zone earthquake.

As a tsunami leaves the deep water of the open ocean and travels into the shallower water near the coast, it transforms. A tsunami travels at a speed that is related to the water depth - hence, as the water depth decreases, the tsunami slows. The tsunami's energy flux, which is dependent on both its wave speed and wave height, remains nearly constant. Consequently, as the tsunami's speed diminishes as it travels into shallower water, its height grows. Because of this shoaling effect, a tsunami, imperceptible at sea, may grow to be several meters or more in height near the coast. When it finally reaches the coast, a tsunami may appear as a rapidly rising or falling tide or a series of breaking waves.

A tsunami generated by a Cascadian Subduction Zone earthquake directly off the coast of Washington State, could arrive in less than a half hour. Tsunami waves from a Cascadia Subduction Zone earthquake located off the shore of Northern California or Northern British Columbia may reach the coast of Washington State in an hour or less.
Puget Sound is vulnerable to tsunamis generated by local crustal earthquakes or by submarine landslides triggered by earthquakes. Wave oscillations in enclosed or semi-enclosed bodies of water are called seiches. Seiches are caused by earthquake induced land surface waves that generate oscillations in bodies of water, resulting in fluctuations of the water levels causing sloshing from one end to the other. In 1891, an earthquake centered near Port Angeles caused eight-foot waves in Lake Washington.

The death and damage that can be inflicted by a tsunami is notable. The wave action is destructive in itself, however floating debris left after the wave can continue batter coastline structures and development. Boats moored in harbors and marinas often are swamped and sunk, or are destroyed and stranded on the shore. Breakwaters and piers collapse. Storage tanks situated near the waterfront are vulnerable. Port facilities, fishing fleets, and public utilities are frequently the backbone of the economy of the affected areas, and these are the very resources that generally receive the most severe damage.

Until debris can be cleared, wharves and piers rebuilt, utilities restored, and the fishing fleets reconstituted, communities may find themselves without fuel, food and employment. Wherever water transport is a vital means of supply and economic sustainment, disruption of coastal and inland seaports can have far reaching economic effects. Tsunami effects on fishing, mollusks, shore plants and marine and land organisms can be devastating. In addition to the enormous direct destruction caused by the waves themselves, salt water can invade coastal lakes and destroy, at least temporarily the fresh water habitat.

Jefferson County's ocean coastal areas have many miles of cliffs and high banks that slow or retard wave inundation. Lower elevation lands of river and stream outlets, however, do have small communities near their banks.

Port Townsend: The National Tsunami Hazard Mitigation Program's Center for Tsunami Inundation Mapping Efforts has developed tsunami models to help jurisdictions along the Southern Washington Coast, and Port Angeles and Port Townsend prepare evacuation plans for a future tsunami. The models use a moment magnitude 9.1 earthquake on the Cascadia Subduction Zone off the Washington coast as the generator of the tsunami. Figure TS-5, below, shows the inundation zone and evacuation routes for the Port Townsend area. City Hall and half of the grocery and hardware stores, and two power substations are within the Port Townsend zone. The police station used to be, but was moved out of the tsunami zone in 2009 with the aid of a FEMA Hazard Mitigation grant.

Projects covering these areas have identified at-risk communities (all census designated and incorporated places within one kilometer of the coast) and developed arrival times and wave elevations for them.

For communities on the outer coast, the first wave crest is predicted to arrive between 30 and 60 minutes after the earthquake; in Willapa Bay and Grays Harbor, the first crest is not expected to arrive for more than an hour.

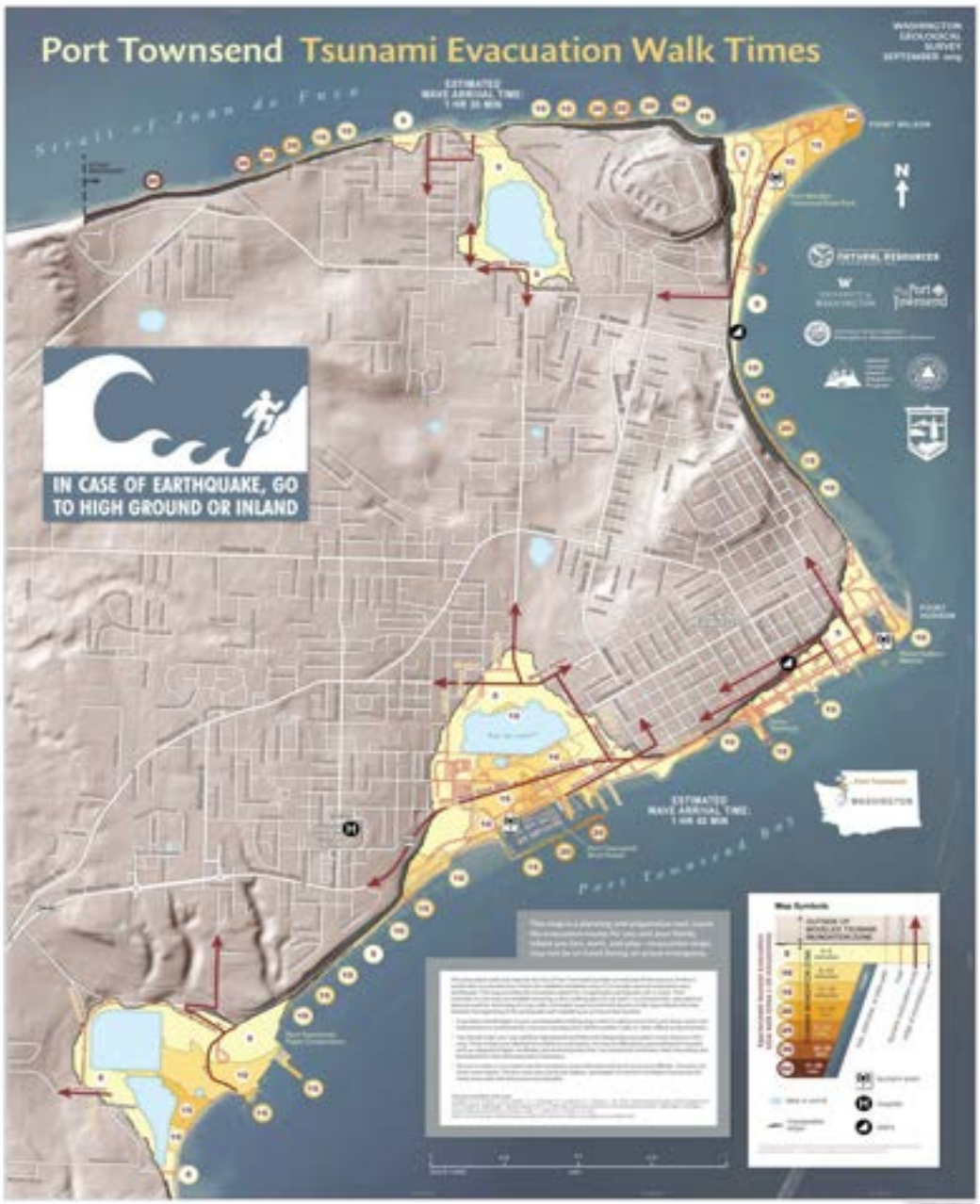
Significant flooding can occur before the first wave crest because a Cascadia Subduction Zone earthquake is expected to lower the ground surface along the coast. Flooding of areas less than six feet above tide stage
is expected immediately. Maximum flooding depth and extent will depend on tide height at the time of tsunami arrival.

Section II of the 2016 Jefferson County - City of Port Townsend All Hazard Mitigation Plan contains a thorough and accurate characterization of the tsunami hazards in Jefferson County. That section is adopted by reference in this document. This section summarizes new information regarding tsunami risks developed after the 2016 document.

The Washington State Geological Survey, in conjunction with the NOAA and researchers at the University of Washington have modeled a tsunami generated by a Mw 9.0 Cascadia subduction zone megathrust earthquake scenario. Using this modeling, maps have been developed for much of the Washington State marine shoreline, including the coastlines of both east and west Jefferson County. This mapping shows areas of inundation, current velocities, and tsunami arrival times. In 2021 maps were released for Puget Sound and Adjacent Waters (https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/geologic-hazard-map#tsunami-inundation). Mapping for the Pacific Coast is being prepared for release at the time of this writing and will be available at the same location when it is released. Examples of some of the information presented in these maps is presented in the following table:

Location	Inundation Depth,	Arrival Time after EQ	Maximum Current Speed
Kalaloch Beach Campground	35 ft.	20 min.	9+ kn
Hoh River Mouth	100 ft.	20 min.	21.5 kn
Point Wilson	6.7 ft.	2 hrs	9+ kn
Duckabush River 101	12.7 feet	2 hrs 25 min.	0-3 kn

The Washington State Geological Survey has used this tsunami modeling to create walking evacuation maps for several cities including Port Townsend (see below). This map shows inundation areas and tsunami arrival times but also shows suggested evacuation routes, and the estimated time required to walk from various shoreline locations to a safe location.



The tsunami modeling and hazard assessments developed to date have been based largely on a tsunami generated by a Cascadia subduction zone earthquake. As described in the Earthquake hazard section however, there are multiple shallow crustal faults in the north Olympic Peninsula vicinity. Where those faults extend the Salish Sea they also have the potential to generate dangerous tsunamis (Hutchinson (2015)). Garrison-Laney and Miller (2017) describe tsunami deposits at the head of Discovery Bay. At that location at least nine tsunami deposits dating back 2500 years have been identified. Some of these deposits have been correlated to subduction earthquakes, but there are more tsunami deposits here, within that period, than there have been documented subduction earthquakes. The inference is that the "extra" deposits record tsunamis generated by movement of shallow crustal faults.

For the Port Angeles and Port Townsend areas, the crest of the first wave is expected within 90 minutes of the earthquake, with significant flooding before the crest.

West Jefferson County: Jefferson County's west end consists of about 27 miles of open ocean frontage, small unincorporated towns, and two Indian tribes: the Quileute and the Hoh. Modeling of the Cascadia fault suggests that tsunami waves in excess of thirty feet high could inundate the shoreline. The Hoh Tribe of Indians have the most vulnerable community with approximately 110 individuals, many of which are still in the inundation zone at the mouth of the Hoh River. They have been working diligently to acquire elevated land around the perimeter of the reservation in order to move their community center and emergency facilities to high ground to give tribe members a place to go during a tsunami emergency.

Figures TS-6 and TS-7 show the recognized tsunami inundation zone for the Hoh Tribe and the Queets area on the Pacific coast.

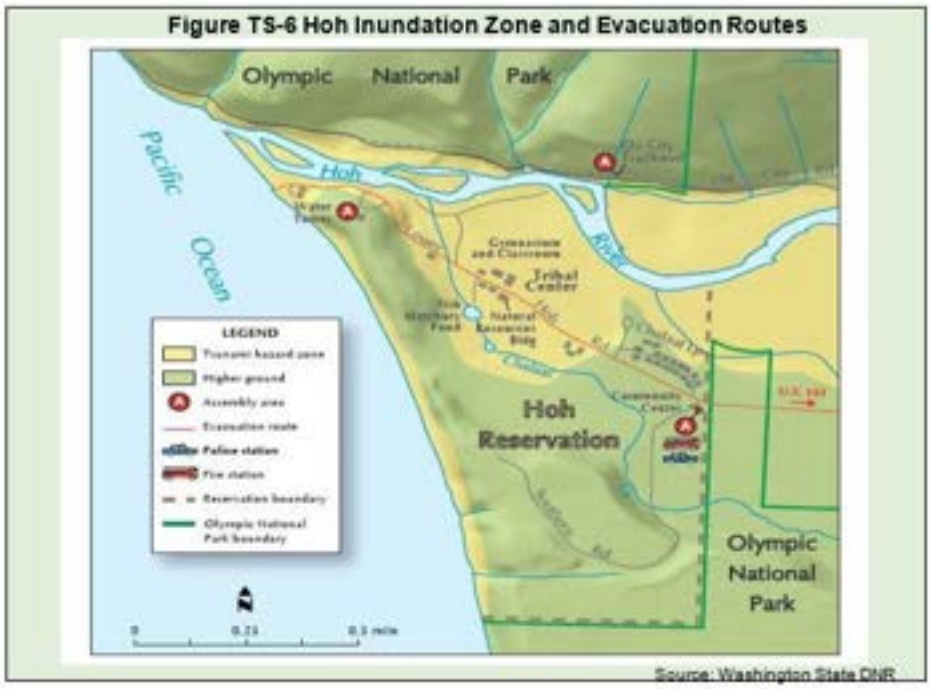
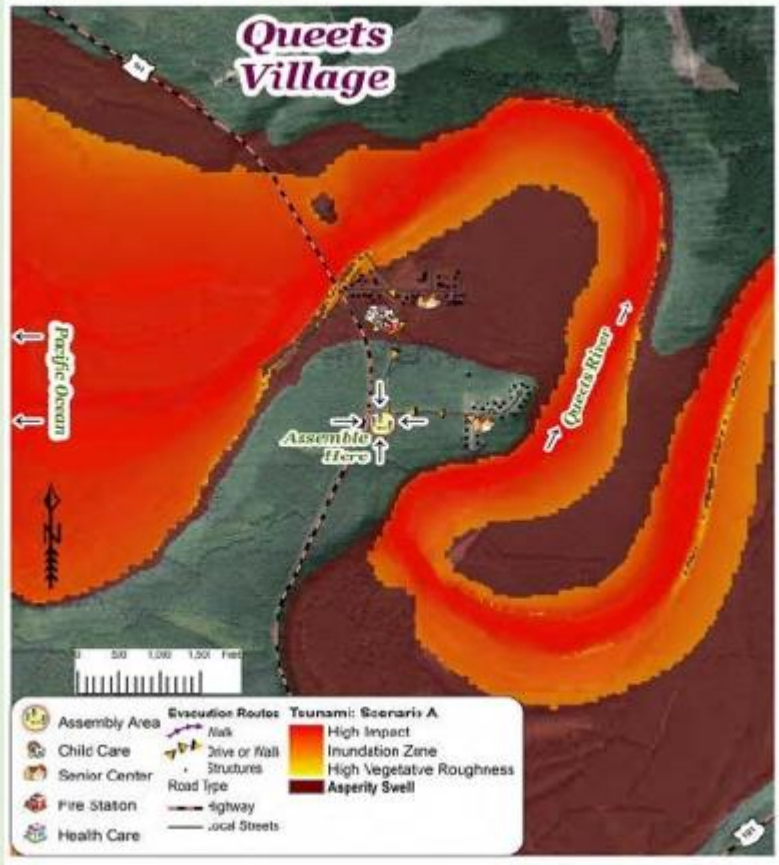


Figure TS-7 Queets Inundation Zone and Evacuation Routes



Source: Washington State DNR

THE COST OF A CASCADIA-GENERATED TSUNAMI

The *Risk Report for Jefferson County* contains the assessment of the value of buildings that will be damaged or destroyed in a tsunami generated by a Cascadia M9 earthquake. Table TS-2 provides the estimate of buildings and their value in the tsunami zone. While a good way to compare against other areas, such as Port Angeles to understand relative vulnerability, it grossly understates the cost of the tsunami. The simulation scenario values buildings because it can, but it does not factor in that a significant portion of the county's economic engine is within the tsunami zone, along with 1/3 of Port Townsend's grocery stores, three-quarters of its financial institutions, a power sub-station, and city hall.

The time to recover and the cost of recovery will dwarf the value of the buildings damaged.

Table TS-2 Building Exposure to a Cascadia M9 Earthquake -generated Tsunami Along the Jefferson County Coast

Community	Total Estimated Building Value	Building Value in Tsunami Zone	Total Number of Buildings	Number of Buildings in Tsunami Zone	Percent of Buildings in Tsunami Zone
Port Townsend Area*	$646,052,977	$42,185,069	4845	265	5.5%
Hoh Tribe	$3,119,782	$3,119,782	35	35	100%
Total	$649,172,759	$45,304,851	4,880	298	6.1%

Source: Risk Report for Jefferson County

Figures TS-9 and TS-10 overlay buildings in the predicted tsunami inundation zone for Port Townsend and vicinity and for the Hoh Tribal area with a “red tide” showing the projected limits of the tsunami. As of 2015, modeling suggested a maximum of about 7 meters or nearly 23 feet. The two bulges at top and bottom in the middle of the city map are China Lake and Kai Tai Lagoon, respectively. They are at sea level, but San Juan Avenue, which connects them in a straight line has a peak height of twenty-two feet, based on USGS topographic maps. If the tsunami wave height prediction is light, the wave could cut the city in two, taking out the Blue Heron Elementary School along the way. Why could it be light? The simulations are based on an M9 earthquake on the Cascadia fault; nothing says such a subduction zone earthquake couldn’t be of a stronger magnitude.

FIGURE TS-9: PORT TOWNSEND BUILDING INUNDATION IN A SIMULATED CASCADIA M9 EARTHQUAKE GENERATED TSUNAMI

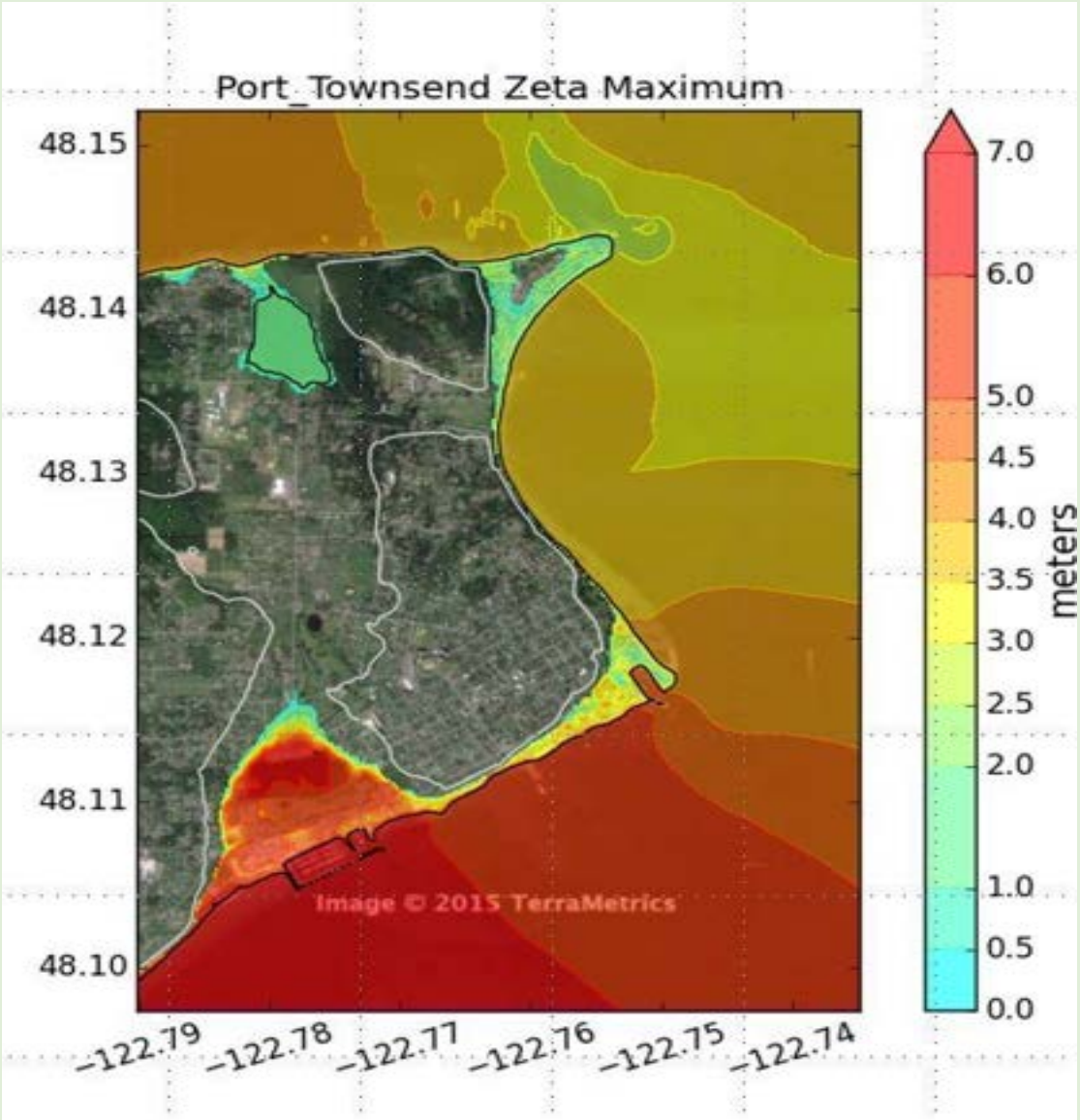


Source: Risk Report for Jefferson County

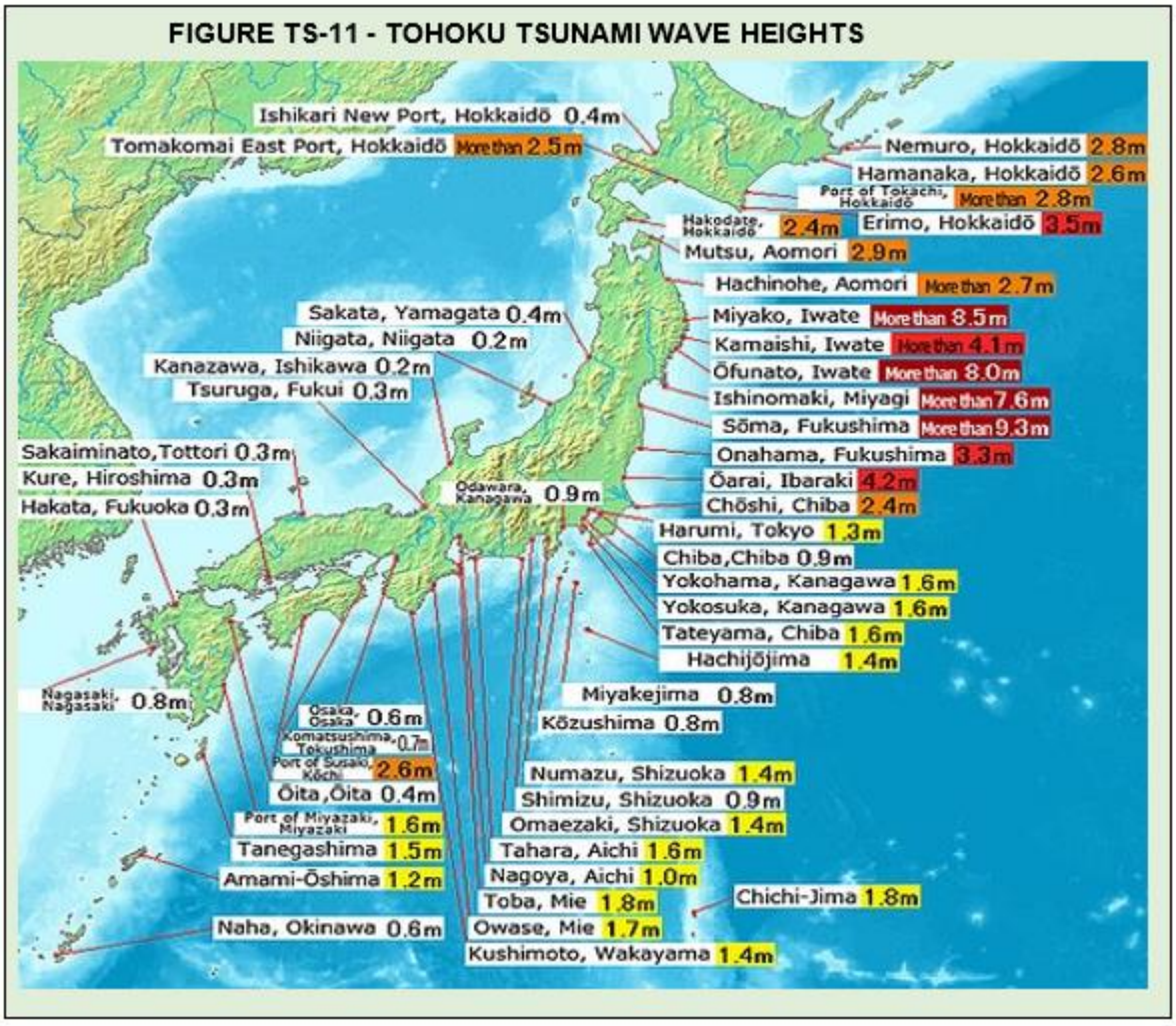
A LESSON LEARNED FROM THE TOHOKU TSUNAMI (2011)

Jefferson County evacuation zones have been predicated on high ground being at 50 feet or higher. The latest inundation map (Figure TS-10, 2015) from WA DNR ends with wave heights at seven meters, about 23 feet. Figure TS-11 and the accompanying text from the Pacific Northwest Seismic Network show wave heights of the Tohoku Japan generated by an earthquake of magnitude similar to what we expect from a Cascadia Subduction Zone rupture. In some locations, wave heights reached 40.5 meters or 133 feet, overtopping three story buildings designated as safe for vertical evacuation.

FIGURE TS-10 - PORT TOWNSEND INUNDATION ZONE – 2015



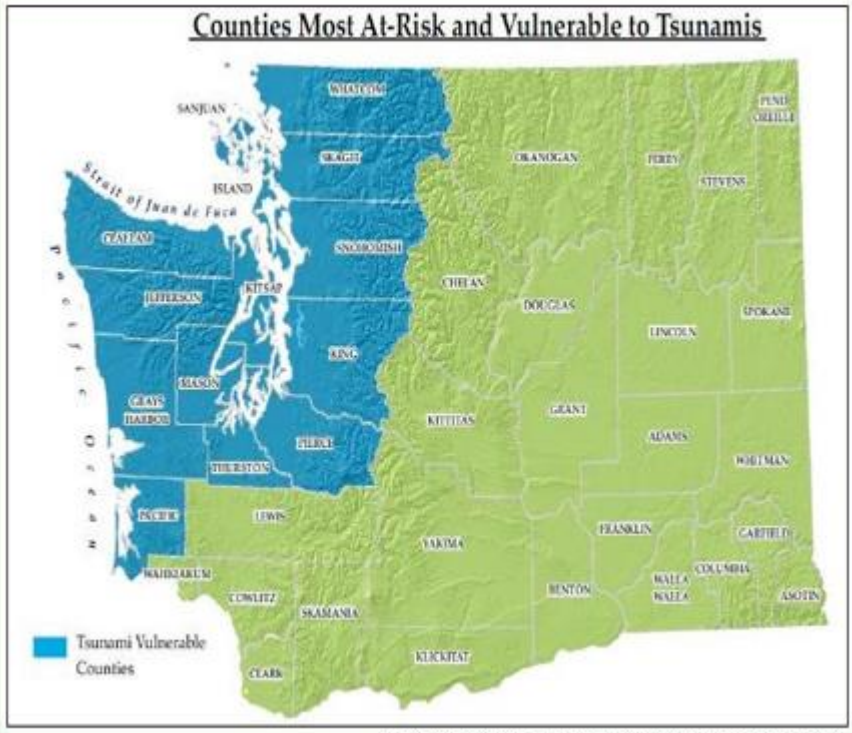
“The Tohoku Japan M 9.1 earthquake on Friday, March 11th, 2011 provided horrifying images to the world of great waves smashing through the best coastal defenses in the world and into the heart of coastal cities. The tsunami in Miyako swirled over the top of three-story buildings designated as safe for vertical evacuation. Although the map shows “more than 8.5m”, the maximum wave height in Miyako was reported as reaching 40.5 meters or 133 feet. The flooded Fukashima nuclear power plant lost its primary and secondary power systems that lead to the possibly the worst nuclear catastrophe since World War II. Japanese scientists made a serious mistake in thinking that a few hundred years of history defined the limit of how large earthquakes in the Japan Trench subduction zone could get. The consensus reached was less than M8.5; the "Great East Japan Earthquake" is estimated to have been a M 9.1. Evidence of a large tsunami in the year 869 C.E. had not yet been incorporated into the hazard assesments.”



Conclusion

Jefferson County is considered one of the most at-risk counties for tsunamis in Washington (Figure TS-12).

Figure TS-12 Counties Most At-Risk and Vulnerable to Tsunamis



Source: Washington State Hazard Mitigation Plan

Tsunami damage can be minimized through land use planning, preparation, and evacuation. Tsunamis tent to impact the same localities over and over again. Therefore, if tsunamis have damaged an area before, they are likely to do so again. One choice is to avoid living in or using areas with significant tsunami hazard. Alternatively, communities can review land use in these areas so that no critical facilities, such as hospitals and police stations, or high occupancy buildings, such as auditoriums or schools, or petroleum-storage tanks are located where there is a tsunami hazard.



If warning is received early enough (two to five hours) which is possible for tsunamis generated at a distance, preventative action can be taken. People can be evacuated; ships can clear harbors or seek a safe anchorage; equipment and vehicles can be moved; and buildings can be boarded up and sandbagged. The time from initiation of an earthquake to a tsunami for local earthquakes, however may be only a few minutes to at most a little more than an hour. Residents in areas susceptible to tsunamis should be made aware of the need to seek high ground if they feel strong shaking. Coastal communities should identify evacuation routes even if they do not have good information about potential inundation areas. Standard signs have been adopted for use throughout tsunami prone areas on the west coast. These signs have been posted along highways, beach areas, and campgrounds. Brochures with information on tsunamis have also been provided to these areas.

The U.S. West Coast/Alaska Tsunami Warning Center (WC/ATWC) was established in Palmer, Alaska in 1967 as a direct result of the great Alaskan earthquake that occurred in Prince William Sound on March 27, 1964.



Since 1986, it has taken the Center an average of 10 minutes to get a warning out to potentially affected areas. Messages are composed automatically based on earthquake location and are sent to National Weather Service (NWS) offices. The NWS offices forward the message to NOAA Weather Radio, the Emergency Alert System, the Emergency Managers Weather Information Network, and other communication systems available to the public and media.

Coastal areas ranging from Cape Flattery to Long Beach can now receive weather and emergency alert warning information for a radio transmitter site on Mt. Octopus in West Jefferson County. This weather radio site is predicted to help save lives and alert property owners of wind, wave and storm conditions. The Mt. Octopus radio transmitter will also provide residents and visitors critical warnings in case of tsunamis generated by distant earthquakes in the Pacific area.

A transmitter, called AHAB (All Hazard Alert Broadcast), installed at the Port Townsend Boat Haven will also provide information on tsunamis, local weather warnings, and other appropriate emergency warning information for the Port Townsend area.



Photo by Bob Hamlin

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VOLCANIC EVENT / ASH FALL

SUMMARY

Definition

A volcano is an opening in Earth's surface through which lava (molten rock), hot gases, and rock fragments erupt from the earth's interior. Such an opening forms when melted rock from deep within Earth (magma) blasts through the surface.

Volcanoes take many forms according to the chemical composition of their magmas and the conditions under which the magmas are erupted. Most volcanoes are mountains, particularly cone-shaped ones, which were built up around the opening by lava and other materials thrown out during eruptions.

In some eruptions, huge fiery clouds rise over the mountain, and glowing rivers of lava flow down its sides. In other eruptions, red-hot ash and cinders shoot out the mountaintop, and large chunks of hot rock are blasted high into the air. A few eruptions are so violent they blow the mountain apart.

The Hazard: A **volcano** is a rupture in the crust of a planetary-mass object, such as Earth, that allows hot lava, volcanic ash, and gases to escape from a magma chamber below the surface. The hazard can come in the direct form of molten lava, poisonous and corrosive gases, or rock fragments, ash fall, and lightning storms that affects people and equipment. Such an opening forms when melted rock from deep within the Earth (magma) blasts through the surface.

Washington State has five active volcanoes – Mount Baker, Glacier Peak, Mount Rainier, Mount St.
Helens, and Mount Adams.

Impacts and Effects:

- Loss of life
- Loss of property
- Resultant earthquakes
- Potential clouds of carbon dioxide, toxic gases, and regional acid rains
- Flooding, landslides, avalanches, ash falls
- Damage to mechanical and electronic equipment from fine ash falls
- Damage to critical transportation infrastructure
- Destruction of dams
- Disruption of hydroelectric power sources
- Heavy demands on power supplies as heavy ash falls block out light
- Destruction of stream beds and salmon habitat
- Damage or loss of recreation facilities
- Loss of jobs due to damaged equipment

Previous Occurrences: Mount St. Helens has been the only one active in the past 50 years with a massive eruption in 1980, followed by dome building eruptions in the 1980-1986 and 2004-2008. It is the last significant volcanic eruption to affect Jefferson County.

Probability of Future Events: Low – Washington's volcanoes will erupt again, as shown by recent activity at Mount St. Helens. There is a 1 in 500 probability that portions of 2 counties will receive 10 centimeters (4 inches) or more of volcanic ash from any Cascades volcano in any given year, and a 1 in 1,000 probability that parts or all of 3 more counties will receive that quantity of ash. Due to prevailing westerly winds, the probability of an annual ash-fall from any major Cascade volcano of one-centimeter ranges from 1 in 1000 to 1 in 5000.

Jefferson County also has risk from ash fall from Alaskan volcanoes because the prevailing westerly winds will carry significant ash towards the county. This is affected greatly by the season and how the Jet Stream is shifted at the time.

History of Volcanoes as they Affect Jefferson County

There are no volcanoes in Jefferson County; however, the proximity to potentially active volcanoes in the Cascade Mountains to the east could impact the county. When Mt. St. Helens erupted on May 18, 1980, heavy ash from a west wind blanketed much of Eastern Washington. Subsequent eruptions on May 25 and June 12 similarly affected Western Washington, although to a lesser degree.

Eruptions of any of the active volcanoes in Western Washington and Oregon could significantly affect travel, tourism and air quality conditions in Jefferson County. During the 1980 eruption, for example, aircraft were diverted from commercial routes downstream because the pumice in the air could damage engines and possible cause them to quit.

Figure VO1 shows volcanos in Alaska and British Columbia. White triangles with an "U" inside designate unmonitored volcanoes, while green triangles designate monitored ones.



Figure VO-1 Alaskan Volcano Map

Volcanic Hazards

Washington State is located on the Pacific "Ring of Fire". As a result, we have numerous potentially active volcanoes in and near the state (Figure 2). Any of these has the potential for future eruptions. These volcanoes however are all located within a zone roughly coincident with the Cascade Mountain Range. There are no potentially active volcanoes on the Olympic Peninsula. As a result, Jefferson County is not at risk of the most destructive and life-threatening volcanic hazards including lahars, pyroclastic flows and lava flows.

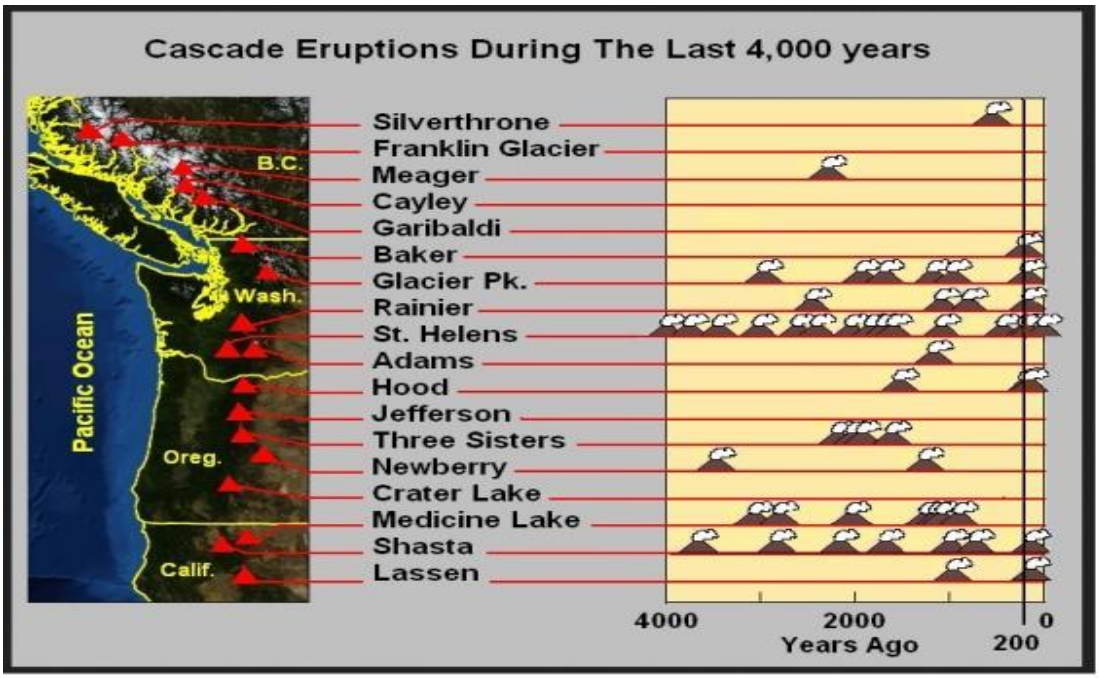


Figure 2, Eruptive History of Cascade Volcanos in the last 4000 years (Figure from the USGS)

The only volcanic hazard this County might face would be volcanic ash fall from an eruption of one of the Cascade Volcanos. Ash fall can impact the receiving communities in many ways including:

- Ground and air transport can be shut down
- The electric grid and other above-ground utilities can be damaged or interrupted
- Buildings can be damaged or destroyed by the weight of fallen ash.

Despite our proximity to a number of potentially active volcanoes the chance of a severe ash fall here is low. Prevailing winds in Western Washington are generally from a westerly direction. Figure 2 shows the distribution of volcanic ash layers from several modern and ancient Pacific Northwest eruptions. Note that all of the plumes extend in a generally easterly direction from their volcanic vents. Western Jefferson County is on the edge (approximately 0.2 inch of ash depth) of the ash fall from the massive Mt. Mazama eruption 7,600 years ago. All of the remaining ash falls missed Jefferson County entirely. The threat to Jefferson County of significant damage from a future volcanic eruption is low.

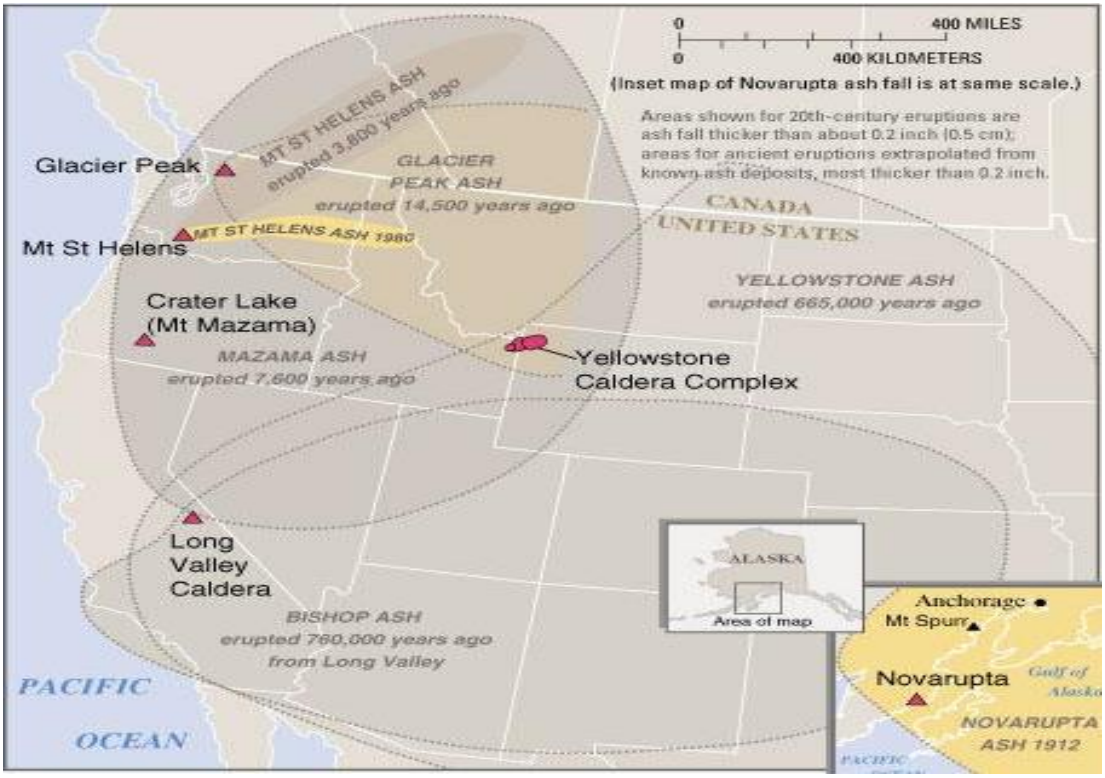


Figure 3, Distribution of both modern (Mt. St. Helens) and ancient volcanic ash layers in the Pacific Northwest. (Figure from the USGS)

Hazard Identification and Vulnerability Assessment

Volcanologists and geologists define Mounts Baker, Rainier, Hood, and St. Helens as active volcanoes. Even Glacier Peak, long thought to have been without an eruption for over 10,000 years is now known to have erupted as recently as a thousand years and possibly as late as the 17th century. Mount Adams is also capable of renewed activity. Seven separate hazards can be associated with volcanoes. They include earthquakes, lava flows, mud flows, ash flows, rock flows, ejecta, and ash fall.

Volcanic hazards can occur with or without an actual eruption. Earthquakes associated with volcanic activity can cause landslides and avalanches in the areas surrounding the actual volcanic sight. With proper wind conditions, ash deposits could be deposited from all of Washington's volcanoes and from several of those in Oregon. Depending on the size of the eruption and the time of year, the ash could: clog drainage channels; cause electrical short circuits; drift onto roadways; collapse roofs of houses and other buildings, cause skin and eye irritation to the general population and or respiratory distress to the aged, young and infirm; clog engines and air filters, and create acid rain.

In addition, it can disrupt radio, television and telephone transmissions. Since the ash remains on the surface, it can be resuspended in the atmosphere when disrupted by wind or human activities. Heavy ash- fall blots out light. Sudden heavy demand for electric light and air conditioning may cause a drain on power supplies, leading to a partial or full power failure.

Under normal wind conditions, the ash would move into eastern Washington. In a south or southeasterly wind, Jefferson County could be affected.

The following chart (Figure VO-4) shows the potential tephra hazard from any major Cascade volcano. Under those circumstances, most of Jefferson County would be subject to a Tephra hazard. Tephra is the heated rocks that are shot out of the volcano. Large heavy ones fall close to the volcano; small light ones become the volcanic ash that can float in the air for hundreds, even thousands of miles.

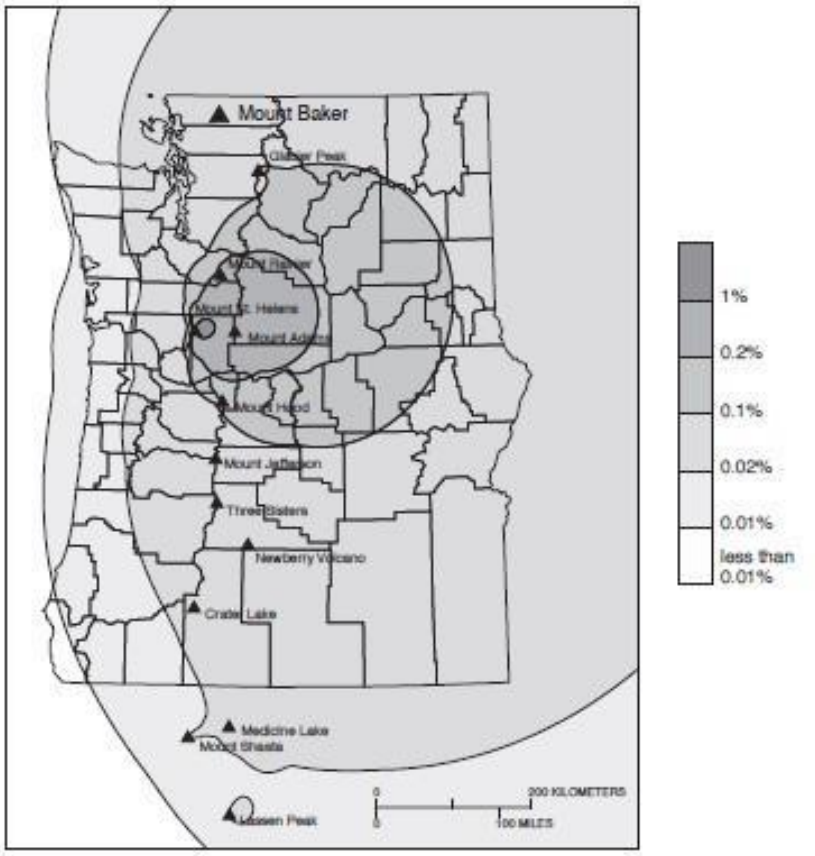


Figure VO-4 Annual Probability of 1 cm or more of Tephra Accumulation from any major Cascade Volcano

In studying Mount Rainier's active eruptive history, volcanologists and geologists know that it will erupt again. Since the exact type and scale of the eruption(s) cannot be predicted, an awareness of the hazards of ash deposits must be communicated to Jefferson County residents. The hazard is considered "low"; however, the potential for eruptions and the potential results remain.

United States Geologic Survey (USGS) volcanologists and Department of Natural Resources (DNR) geologists identify Mount Rainier as being an active eruptive volcano. From the magnitude of past events it is surmised that the consequences of a lahar (mudflow) or debris flow down the populated river valleys near Mount Rainier will be catastrophic and will potentially result in a tremendous loss of life and property. New studies show that the process of geothermal hydro alteration is unevenly weakening the inside of Mount Rainier. This is a process whereby the slopes of the mountain are being internally eaten away by hot, acidic water, which makes the slopes more susceptible for failure, increasing both the possibility and risk of lahars.

Washington State areas including King, Pierce, and Thurston County have much higher risk of loss of life and property than Jefferson County. Jefferson County's location with respect to the active volcanoes would limit the number of hazards, however impacts would be felt. The economic, cultural and transportation impacts that would be experienced in Jefferson County, however, would be severe if such an eruption were to occur on Mount Rainier. Most certainly, Interstate 5 and Interstate 90 would be closed, thus disrupting key routes for trade and travel. Ash and some debris could fall on Jefferson County depending on prevailing winds at the time. Jefferson County could serve as a haven for displaced residents for not only days, but perhaps for decades to come, thus impacting the infrastructure and resources of the County. Puget Sound fishing resources and economic foundations of the timber and recreation industries could be impacted for decades. The tourism industry and economic benefits derived could also be affected for Jefferson County.

Climate Change

It is easy to conclude that volcanoes can disrupt the earth's climate for reasonably long periods – in human terms. The "Little Ice Age" is said to have been a function of increased volcanism during the periods from 1257-1300 AD and 1400-1455 AD that was sustained for many centuries by sea ice/ocean feedback. Now there are theories that volcanism can be stimulated by global warming.

The theories, finding new support from research in Iceland, state that superheated rock kept under pressure by the weight of glaciers can become magma when glaciers melt due to global warming and relieve some of the pressure on the rocks. The evidence cited is that glacier melting in Iceland will cause the island nation to rise 1.57 inches per year in the next decade.

"As the glaciers melt, the pressure on the underlying rocks decreases," Compton said in an e-mail to TIME. "Rocks at very high temperatures may stay in their solid phase if the pressure is high enough. As you reduce the pressure, you effectively lower the melting temperature." The result is a softer, more molten subsurface, which increases the amount of eruptive material lying around and makes it easier for more deeply buried magma chambers to escape their confinement and blow the whole mess through the surface.

Iceland is estimated to be losing 11 billion tons of ice weight per year. At the current pace, the researchers predict, the uplift rate in parts of Iceland will rise to 1.57 in. (40 mm) per year by the middle of the next decade, liberating more calderas and leading to one Eyjafjallajökull-scale blow every seven years. In 2010 the volcanic caldera under the Eyjafjallajökull ice cap in southern Iceland erupted for three weeks from late March to mid-April and spreading ash across vast swaths of Europe. The continent was socked in for a week, shutting down most commercial flights.

The idea that reduced ice cover in a volcanic area can actually lead to an increase in volcanism is in some dispute. The Plan cites a recent article that attributes the cause to reduced ice cover lowering the overburden pressure on magma chambers, softening the magma, leading to more eruptive behavior.
However, it is not clear that softer magma under reduced pressure would result in more eruptions. Other scientists have added the idea that reduced pressure would also lead to increased gas production from the liquid magma, thus causing an increase in local chamber pressures.

However, a mechanism that is well established is that the ejecta from an eruption lead to a temporary globally averaged cooling lasting typically 3 years, depending on the nature of the particles and the altitude to which the eruption projects them. Larger particles precipitate out quickly (days to weeks), but smaller particles diminish incoming solar radiation and ejected sulfur forms sulfur dioxide which, if it reaches the stratosphere creates sulfuric acid aerosols that also diminish solar radiation. These cooling effects overwhelm the climate-warming effects associated with the volcanic ejection of carbon dioxide, methane and other greenhouse-enhancing gases.

Research indicates that the Indonesian volcano, Somalas, erupted with a magnitude 7 (out of 8) on the Volcanic Explosivity Index (VEI) in 1258 C.E., thus causing the medieval “year without summer”. This was on the order of magnitude of the Tambora eruption in 1815, and larger than the Krakatoa eruption.

Figure VO-5 illustrates the correlation between the VEI and the volume of ejecta.

The net impact of climate change on volcanoes remains in considerable doubt. Increased rates of ice loss driven by climate change are probably not sufficient to cause a marked change in what is already a very sporadic and unpredictable rate of local and regional volcanic activity. However, increases in more active volcanic areas, particularly Iceland, may increase the likelihood for Jefferson County to be affected by a more globally-felt cooling event. This could have local consequences, both positive and negative, even though the cooling would only last a few years. It is important to note that this temporary cooling would be followed by a more rapid rate of globally averaged warming as the climate returns to the warming trends established prior to any single volcanic eruption.

Conclusion

Emergency Plans must advise people of potential hazards. Being aware of the potential hazards and responding appropriately will help mitigate the loss of life and could potentially help reduce losses of property in the eventuality of a volcanic eruption. Emergency plans must be tested and practiced ahead of time and used without hesitation when a volcano threatens to erupt.

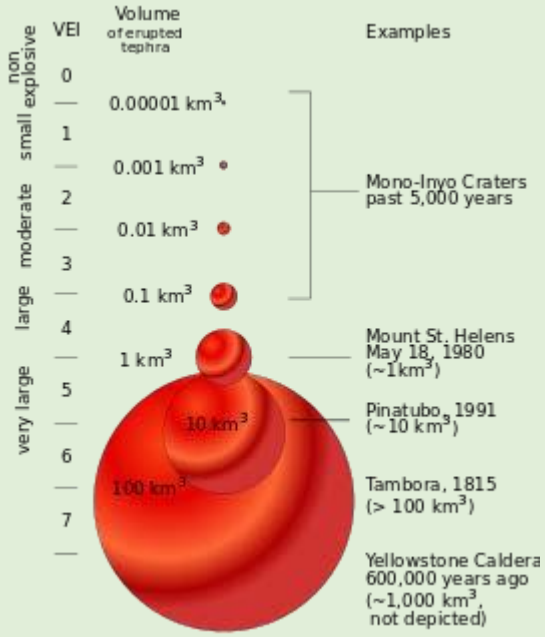
Scientists and public officials must announce warnings early and clearly. The Cascades Volcano Observatory in Vancouver, Washington, monitors and assesses hazards from the volcanoes of the Cascade Range of Washington, Oregon, and California. Seismic monitoring is shared with the USGS center in Menlo Park, California, (for northern California) and the Geophysics Program of the University of Washington in Seattle (for Washington and Oregon). CVO also is home to the Volcano Disaster Assistance Program.

The Volcano Disaster Assistance Program, home-based in Vancouver, Washington, was formed in the mid-1980s to respond to volcanoes in all parts of the world. An experienced team of USGS and other scientists can rapidly respond to developing volcanic crises with a state-of-the-art portable cache of monitoring equipment. VDAP has proven to be effective in saving lives and property by assistance provided to local scientists for determining the nature and possible consequences of volcanic unrest and communicating eruption forecasts and hazard-mitigation information to local authorities.

Figure VO-5 - Volcanic Explosivity Index

The **Volcanic Explosivity Index** (**VEI**) is a relative measure of the explosiveness of volcanic eruptions. It was devised by Chris Newhall of the United States Geological Survey and Stephen Self at the University of Hawaii in 1982.

Volume of products, eruption cloud height, and qualitative observations (using terms ranging from "gentle" to "mega-colossal") are used to determine the explosivity value. The scale is open-ended with the largest volcanoes in history given magnitude 8. A value of 0 is given for non-explosive eruptions, defined as less than 10,000 m_3 (350,000 cu ft) of tephra ejected; and 8 representing a mega-colossal explosive eruption that can eject $1.0 \times 10_{12}$ m_3 (240 cubic miles) of tephra and have a cloud column height of over 20 km (12 mi). The scale is logarithmic, with each interval on the scale representing a tenfold increase in observed ejecta criteria, with the exception of between VEI 0, VEI 1 and VEI 2.



VEI and ejecta volume correlation

Source: Wikipedia

Table VO-2 – Volcanic Explosivity Classification

VEI	Ejecta volume (bulk)	Classification	Description	Plume	Frequency	Tropospheric injection	Stratospheric injection[2]
		Examples					
0	< 10^4 m³	Hawaiian	Effusive	< 100 m	continuous	negligible	none
		Kīlauea, Piton de la Fournaise, Erebus					
1	> 10^4 m³	Hawaiian / Strombolian	Gentle	100 m–1 km	fortnightly	minor	none
		Nyiragongo (2002), Raoul Island (2006), Stromboli (continuous since Roman times to present)					
2	> 10^6 m³	Strombolian / Vulcanian	Explosive	1–5 km	monthly	moderate	none
		Unzen (1792), Cumbre Vieja (1949), Galeras (1993), Sinabung (2010)					
3	> 10^7 m³	Vulcanian / Peléan/Sub-Plinian	Catastrophic	3–15 km	3 months	substantial	possible
		Nevado del Ruiz (1985), Lassen Peak (1915), Soufrière Hills (1995), Nabro (2011)					
4	> 0.1 km³	Peléan / Plinian/Sub-Plinian	Cataclysmic	> 10 km (Plinian or sub-Plinian)	18 months	substantial	definite
		Mayon (1814), Pelée (1902), Galunggung (1982), Eyjafjallajökull (2010)					
5	> 1 km³	Peléan/Plinian	Paroxysmic	> 10 km (Plinian)	12 years	substantial	significant
		Vesuvius (79), Fuji (1707), Mount Tarawera (1886), St. Helens (1980), Puyehue (2011)					
6	> 10 km³	Plinian / Ultra-Plinian	Colossal	> 20 km	50 - 100 yrs	substantial	substantial
		Laacher See (c. 12,900 BC), Veniaminof (c. 1750 BC), Huaynaputina (1600), Krakatoa (1883), Novarupta (1912), Pinatubo (1991)					
7	> 100 km³	Ultra-Plinian	Super-colossal	> 20 km	500 - 1,000 yrs	substantial	substantial
		Mazama (c. 5600 BC), Thera (c. 1620 BC), Taupo (180), Baekdu (1000), Samalas (Mount Rinjani) (1257), Tambora (1815)					
8	> 1000 km³	Ultra-Plinian	Mega-colossal	> 20 km	> 50,000 yrs[3][4]	vast	vast
		La Garita Caldera (26.3 Ma), Yellowstone (640,000 BC), Toba (74,000 BC), Taupo (24,500 BC)					

Source: Wikipedia

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VO-3 Total Cascade Tephra Hazards
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SEVERE WEATHER

SUMMARY

Definitions:

The National Weather Service (NWS) defines *high winds* as sustained winds of 40 mph or gusts of 58 mph or greater, not caused by thunderstorms, expected to last for an hour or more. Areas most vulnerable to high winds are those affected by a strong pressure difference from deep storms originating over the Pacific Ocean; an outbreak of very cold, Arctic air originating over Canada.

The NWS defines a *winter storm* as having significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation. Heavy snowfall is 4 inches or more in a 12-hour period, or 6 inches or more in a 24-hour period in non-mountainous areas; and 12 inches or more in a 12-hour period or 18 inches or more in a 24-hour period in mountainous areas.

FEMA includes severe winter storms, straight-line winds, flooding, landslides, mudslides, and tornadoes all under the Severe Weather Storms category. Flooding and tornadoes will be handled in a separate section.

Previous Occurrences:

A few outstanding storm events in the more distant past should be noted. In February, 1979, sustained winds of 80 mph with gusts up to 120 mph caused the Hood Canal Bridge to collapse. The worst damaging winds on record for Jefferson County occurred in the 1962 Columbus Day Storm in which winds of hurricane force hit the Northwest, and resulted in damage to the Hood Canal Bridge. Peak gusts of 160 mph hit the Washington coast.

Probability of Future Events: HIGH - Jefferson County experiences multiple storms a year that may cause power outages, urban and/or riverine flooding, road closures – including the Hood Canal Bridge – and other impacts.



Hood Canal Bridge in a Windstorm. Unknown Date



Hood Canal Bridge – February 13, 1979 (WSDOT)



Hood Canal Bridge during a windstorm—looking West.

Weather conditions that will close the Hood Canal Bridge

Generally, the Hood Canal Bridge will close to vehicle traffic and the draw spans map open during storms involving wind speeds in excess of 40 mph that are sustained for 15 minutes or longer to relieve pressure on the bridge structure. The bridge may also close to drivers as conditions warrant. However, the direction of the wind can cause the bridge to be closed to traffic at a lower sustained wind speed if it is negatively impacting vehicle traffic crossing the

bridge. Additionally, powerful Hood Canal tides can also play a role in the decision to close the draw span to traffic.

On February 9, 2017, the Hood Canal Bridge was closed to vehicle traffic for seven hours because of high winds. On that same day, a landslide blocked access to the peninsula via Hwy. 101 through Mason County.

Snow Storms – Winter Storm – The National Weather Service defines a winter storm as having significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation. Heavy snowfall is 4 inches or more in a 12-hour period, or 6 inches or more in a 24-hour period in non-mountainous areas; and 12 inches or more in a 12-hour period or 18 inches or more in a 24-hour

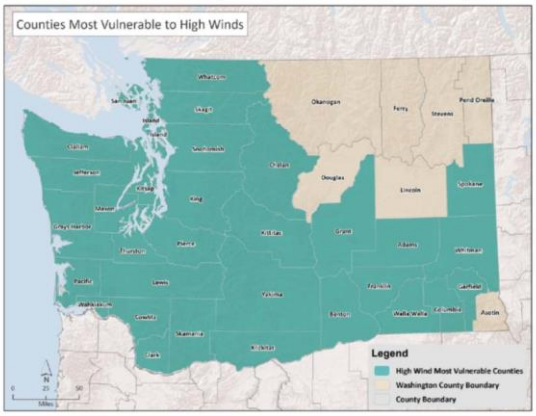
period or 18 inches or more in a 24-hour period in mountainous areas.

Most storms move into Washington from the Pacific Ocean with a southwest to northeast airflow. Maritime air reaching the Olympic Mountains rises upwards and cools. As this airflow reaches higher elevations and cools, there is less ability to hold moisture and precipitation occurs. Impacts and effects include loss of life damage to homes, businesses and critical transportation infrastructure; loss of timber resources; delays in emergency responses; damage or loss of recreation facilities; disruption of utilities; loss of jobs due to damaged equipment and facilities; school closures and business closures resulting in economic impacts.

Jefferson County is subject to several severe local storms each year. As shown in Figure DW-1, Jefferson County is one of the most vulnerable counties in the state when it comes to damaging windstorms.

Figure DW-1: Wind Storm Risk in Washington State

These storms have included high wind, snow, ice, rain, and hail. Snowstorms or blizzards are the most likely and potentially devastating phenomena, with the ability to isolate people from emergency services and to interrupt utility services and other lifelines. Snowstorms are also associated with other natural hazards such as flooding and landslides. Ice storms can occur when rain falls out of the warm moist upper layer



atmosphere into a dry layer with freezing or sub-freezing air near the ground.

More recent data from the beginning of the millennium have been collected by NOAA/NWS. These data include Jefferson County and also include regions adjacent to the county, which is useful because weather is a regional phenomenon by its very nature. The NWS specify three zones containing or most relevant to Jefferson county: WAZ510, Admiralty Inlet; WAZ516, North Coast; and WAZ511, Hood Canal.

The levels of the NWS weather alert system are Watch, Advisory, and Warning.

The Warning level is the highest. The

Type	Admiralty Inlet	North Coast	Hood Canal
High Wind	95	91	23
Heavy Snow	3	2	7
Winter Storm	13	6	28
Excessive Heat	1	1	7
High Surf	0	0	13

Warning level alerts in major categories for the three WAZ zones beginning with 2006 are presented in the following table.

NWS Warning Alerts Issued for Jefferson County and Region after 2005

It should be noted that the same Warning can be issued in more than one location at the same time. Zones 510 and 516 are adjacent and share many of the same Warnings, but not with 511 which covers the distant coast.

NWS Warning Alerts
https://mesonet.agron.iastate.edu/vtec/search.php#byugc/WAZ510
https://mesonet.agron.iastate.edu/vtec/search.php#byugc/WAZ516
https://mesonet.agron.iastate.edu/vtec/search.php#byugc/WAZ511

The NWS Storm Events Databases show that storms are a common type of event for the county. The data are after 2006 and are aggregated into four-year cells.

NWS Storm Events Database for Jefferson County, WA

Years	2006-09	2010-13	2014-17	2018-21
Heavy	32	22	10	13
Snow[a]				
High Winds[b]	35	22	28	13

Storm Events Heavy Snow Jefferson County[a]

https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Heavy+Snow&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2000&endDate_mm=12&endDate_dd=31&endDate_yyyy=2021&county=JEFFERSON%3A31&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=53%2CWASHINGTON

Storm Events High Winds Jefferson County[b]

https://www.ncdc.noaa.gov/stormevents/listevents.jsp?windfilter=050&sort=DT&statefips=53%2CWASHINGTON&county=JEFFERSON%3A31&eventType=%28Z%29+High+Wind&beginDate_yyyy=2000&beginDate_mm=01&beginDate_dd=01&endDate_yyyy=2021&endDate_mm=12&endDate_dd=31

The storm season is typically runs from October through April. During that period the major damage occurs, as is shown by the distributions of the FEMA Disaster Declarations and Washington State Governor Weather Proclamations, which are associated with the most damaging storms.

FEMA Disaster Declarations (Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides, Tornado)

FEMA DR#	Storm Month/Year
4593	12/2020
4539	04/2020
4418	10/2018
4253	12/2015
4249	11/2015
4242	08/2015
4056	01/2012
1963	01/2011
1825	12/2008
1682	12/2006
1641	01/2006
1499	11/2003

https://www.fema.gov/disaster/declarations[d]

FEMA Disaster Declarations
(Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides, Tornado)

WA Governor Weather Proclamations
2013-2022

Proclamation #	Storm Month/Year
22-01	01/2022
21-18.3	11/2021
21-18.2	11/2021
21-18.1	11/2021
21-03	12/2020
20-02	01/2020
20-01	01-2020
19-07	02/2019
19-06	12/2019
19-04	02/2019
19-02	02/2019
17-03	01/2017

https://www.governor.wa.gov/office-governor/official-actions/proclamations[d]

Hazards and Effects:

Overview

Storms cause damage to infrastructure for shelter, transportation, communication, utilities, and economic purposes. Such damage has a wide variety of ramifications, including:

- Transportation
  - Roadways may be removed or blocked by land- or mudslides, ice, snow or flooding
  - Air traffic may be prevented by runway problems or high winds
  - Water crossings may be halted by wind and/or sea conditions for ferries and floating bridges, such as the Hood Canal bridge
- Building structural damage
  - Residential damage may cause homelessness
  - Business and service facility damage may limit their operational capacities
- Utility service failures
  - Electrical service outages
  - Water and sewage system operations
- Public services
  - Emergency response delays
  - Health/medical response availability
  - School closures

Discussion

History shows that storms are among the most common hazards in the Jefferson County region. The major hazard components of storms are winds, precipitation, and temperature, which can occur in any combination. In general, the hazards associated with wind storms are related to structural damage, marine conditions, and flight conditions. Precipitation is associated with hazards of flooding, ground saturation, and snow. Temperature hazards are related to freezing and heat extremes.

The expected magnitude of a hazard is the probability of it occurring times the amount of damage caused. The probability may be estimated by the number of times it occurs over the years. The magnitude is related to the amount and duration of damage.

Major Hazards and Effects

Wind and Electric

The most common hazard in the Jefferson County region is wind. The most common hazard of windstorms is electrical outages. Particularly in the spring, wind storms “prune” the trees and falling branches frequently fall on electrical lines and break them. When the ground is saturated with water, wind storms can blow whole trees into electrical lines. The addition of snow and ice in winter storms can increase breakage of electrical lines by weighing them down. Since 2013 there have been approximately 340 electrical outages per year due to weather events.

There is considerable variation in the magnitude of electrical outage hazard. Most of them involve small areas and relatively few locations. In such cases the effect is relatively small because the outages can be repaired quickly. However, the hazard can be relatively great involving large areas or longer durations. For example, in early 2022 a set of widespread outages from a storm in Eastern Jefferson County affected over 1,800 users and some outages lasted six days.

Short duration outages are inconvenient but usually not particularly hazardous. However, longer outages are more problematic. Some medical/health problems require electrically-dependent treatments in homes. In the digital age, electrical loss and computer shutdown can stop business and office operations which can produce serious economic damages.

A major hazard of windstorms is the effect on marine and air transportation. When winds produce large waves, the ferries stop sailing and the Hood Canal Bridge is closed to traffic. These effects greatly interfere with ground traffic across Admiralty Inlet and Puget Sound to and from Jefferson County. That traffic interference involves the movement of goods and services required for normal operations. Windstorms also ground air traffic, which can be particularly important in the transportation of patients in medical instances requiring rapid or specialized treatment not locally available.

Precipitation

Precipitation extremes can have major effects on roadways. When the ground gets saturated with weather mudslides and landslides can block or remove roadways. In Jefferson County such events require traffic taking alternative routes. Such routes are not always available and the county can become divided into “micro-islands” isolated from one another.

Under cold conditions precipitation involves snow and ice which greatly interferes with traffic in general and will prevent passage on sections such as grades. General interruptions in traffic involve access to schools, businesses, and many agencies which in major instances are completely shut down. This not only makes normal personal and business travel activities hazardous, it interferes with first responder services. These are particularly problematic for prompt EMS responses to human injuries and repairing damages caused by the storm, such as clearing roadways and electrical outages.

Temperature

The Jefferson County region is not very susceptible to temperature extremes. Heat waves have historically been essentially nonexistent. Winter storms have been mild with limited durations of snow and ice in the lowlands where habitation and roads are concentrated. Avalanches and other winter hazards have occurred at higher elevations where damage does not affect human operations.

The major temperature concern is related to hypothermia resulting from periods of subfreezing temperatures. The greatest associated hazard is for homeless people without shelter from the cold. That hazard would be extended to people with homes relying on electrical heating sources, such as heat pumps, in the event of a long-duration electrical outage.

Conclusion

Storms are not only the most common hazard for the Jefferson County region, they produce the most widespread damage and have the largest variety of effects on almost every aspect of county process. They affect the entire county area when they occur. Storm to damages extend to public agencies and private businesses. The general community is affected down through neighborhoods individual residences. Consequently, one of the most important foundations for mitigating storm incidents is the establishment and maintenance of communications and cooperative, synergistic operations among public, private, and community entities.

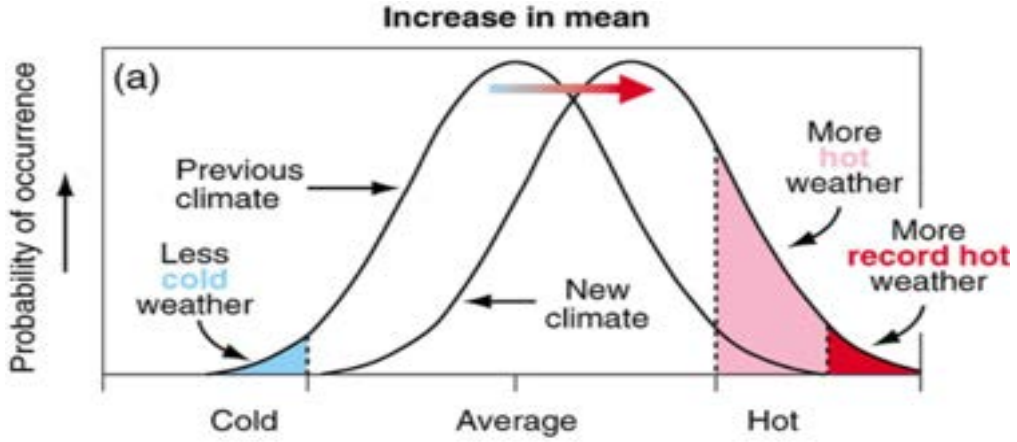
To this end, the Department of Emergency Management meets with city and county public works departments for pre-storm season planning and coordination. Jefferson PUD has a liaison on the county's Incident Management Team. Community contacts are maintained through quarterly meetings with JPREP. Additionally, the DEM maintains contact with community organizations involved in communications and services.

These types of storms can quickly overwhelm county resources. Citizens should be prepared for these storms; family plans should be developed, disaster kits should be assembled, and every family member should be taught how to shut off utilities to prevent damage from abrupt resumption and to prevent damage from freezing and breaking pipes. Initiating early dismissal from schools and businesses is an effective mitigation measure and should be encouraged.

Local jurisdiction plans should provide a priority for road and street clearance, provision of emergency services, mutual aid with other public entities, and procedures for requesting state and federal aid if needed. The public should be given information on emergency preparedness and self-help to prepare for better response during severe storms.

Expectations

Storms will remain the county's most frequent weather hazard. The storms will remain most likely in October through April. Climate change will affect the storms but the time frame over which it will happen is unknown.
Climate change is expected shift the climate to warmer temperatures overall. It is also expected to destabilize the jet stream, resulting in its path to swing farther north and south than previously. The following graph depicts the expectation.



Intergovernmental Panel on Climate Change

Under a warming climate, extreme weather may become more commonplace, especially with respect to hazards such as extreme heat, extreme precipitation events (including more severe atmospheric river events), and more frequent and severe coastal flooding. Extreme precipitation events will affect both summer and winter storm intensities and effects.
Mitigation of such changes should involve improved community preparation for sustaining necessary functions during storms over longer periods. Severe storms can build unexpectedly and rapidly, so integrated communications, strategies and tactics among the organizations involved in mitigation, mobilization and recovery are important to build and maintain.

References – SEVERE WEATHER

1. "*Severe Local Storm*", The Hazard Identification and Risk Assessment (THIRA), Jefferson County Department of Emergency Management, 2011, pp. 34-37.

2. "Winter Storm", NOAA NWS Glossary, Accessed August 2016. Available at: http://w1.weather.gov/glossary/index.php?letter=w

3. "Heavy Snow", NOAA NWS Glossary, Accessed August 2016. Available at: http://w1.weather.gov/glossary/index.php?letter=h

4. "*Severe Storm Hazard Profile*", Washington State Enhanced Hazard Mitigation Plan, Military Department, Emergency Management Division, April 2013, Tab 5.7, p. 18. Available at: http://mil.wa.gov/uploads/pdf/HAZ-MIT-PLAN/Severe_Storm_Hazard%20profile.pdf

5. "*History of Storms Affecting Jefferson County's People and Economic Acitivity*", The Hazard Identification and Risk Assessment (THIRA), Jefferson County Department of Emergency Management, 2011, p. 34.

6. *Port Townsend An Illustrated History of Shanghaiing, Shipwrecks, Soiled Doves and Sundry Souls*, Thomas W. Camfield, Ah Tom Publishing Inc., 2000, p. 435.

7. Ibid. 3.

8. Ibid. 6, 443.

9. Ibid. 4, 16.

10. Ibid.

11. *Severe Winter Storms Affecting Western Washington*, Ken Horvath, Derived from multiple sources, September, 2016.

12. Petersen, S., Bell, J., Miller, I., Jayne, C., Dean, K., Fougerat, M., 2015. *Climate Change Preparedness Plan for the North Olympic Peninsula*. A Project of the North Olympic Peninsula Resource Conservation & Development Council and the Washington Department of Commerce, funded by the Environmental Protection Agency. p. 18. Available: www.noprcd.org

Tables – SEVERE WEATHER

WS-1 Severe Winter Storms Affecting Western Washington
WS-2 Precipitations: Trends and Extremes

Figures – SEVERE WEATHER

WS-1 Ice dresses up Haller Fountain in Port Townsend on an unusually cold day. WS-2 Port Townsend's Water Street in 1955.
WS-3 Counties Most Vulnerable to High Winds
WS-4 Counties Most Vulnerable to Winter Storms

FLOOD

SUMMARY

Definition

Of all the hazards that affect Jefferson County, floods are the most common and cause the most property damage.



There are basically three types of floods possible in Jefferson County.

1. **River building floods**: River building floods are caused by heavy, prolonged rain, melting snow, or both. Prolonged heavy rains and high freezing levels are the common cause for river flooding in Jefferson County. Runoff from the melting of low elevation snow often contributes to these floods. The spring runoff of the mountain snowpack also drives some river flooding in Jefferson County, especially during times of spring rains.
2. **Tidal floods**: Tidal floods occur when high tides, strong winds, heavy swell, and low atmospheric pressure combine to produce flooding.
3. **Flash floods:** Although possible, flash floods are not as common in Jefferson County as they are in Eastern Washington. Flash floods are characterized by a very rapid quick rise of the water level in a small river, stream or dry wash. In the most extreme case, a flash flood is a literal wall of water moving down a steep canyon or ravine. The brief intense rainfall from a thunderstorm is usually the cause of a flash flood.

The Hazard: Flooding is the uncontrolled release of impounded water resulting that can affect life and property. Flooding may occur as an overflow of water from water bodies, such as a river, lake, or ocean, in which the water overtops or breaks levees, resulting in some of that water escaping its usual boundaries or it may occur due to an accumulation of rainwater on saturated ground in an area flood.

The National Flood Insurance Program defines flood as, “A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters; or
- Unusual and rapid accumulation or runoff of surface waters from any source; or
- Mudflow (liquid and flowing mud moving across surface); or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.”

Flooding can be caused by excessive precipitation causing rivers and lakes to overflow their banks; tidal floods, or flash floods can be caused by intensive short bursts of precipitation in areas that cannot absorb or retain the water.

Previous Local Occurrences: Flooding is a frequent occurrence on the plains near the coasts. Between 1938 and 1966 (28 years), the Duckabush River flooded 26 times. Between 1931 and 1982 (51 years), the Dosewallips River flooded 23 times. In 2002, the flooding of Dosewallips changed the river course near Highway 101. In 2003, Dosewallips flooded the streets near Brinnon 3.5 feet. In the same flood event, Duckabush flooded the Fire District #4 Station. In December 2014, the Duckabush flooded Fire District #4's Station 4-2 again, resulting in a $40,000 clean-up bill and $14,000 of damage to their apparatus.



Brinnon FF Diaz indicates how high the water rose at Brinnon Fire Department's Duckabush apparatus garage in 2014.
Photo by Jefferson County Dept. of Emergency Management

In 2015, Jefferson County incurred nearly $1.6 million in road repair costs due to landslides and flooding in the Forks, WA, locally referred to as the West End. Approximately $300,000 was directly allocated to flood damage to the Oil City Road.

On April 7, 2021, President Biden declared that a major disaster exists in the State of Washington to include Jefferson County, and ordered Federal assistance to supplement state, tribal, and local recovery efforts in the areas affected by a severe winter storm, straight-line winds, flooding, landslides, and mudslides from December 29, 2020 to January 16, 2021.

Table FL-1 lists all the Presidential Disaster Declarations for flooding in Jefferson County (**RED**) and adjacent counties (BLUE) from 1956 through July 2016. Adjacent counties have been included because there have been times when flooding and storm damage in adjacent counties were enough to warrant a Presidential Disaster Declaration for them, but were not high enough to do so in Jefferson County – even though the flooding and / or storms did not respect the county line.

Probability of Future Events: MED – While Jefferson County experiences winter storms that may include excessive rainfall annually, damage from floods occurs slightly more infrequently, around every 3 years. Minor impacts from urban flooding occur most frequently, but damaging flooding from high surf or rivers occurs less frequently.

Natural Hazard Risk Rating: Using the Hazard and Vulnerability Assessment Tool, the average natural hazard risk rating for avalanches for all districts in Jefferson County was estimated at 35%, which is right on the boundary for moderate risk.

Table FL-1 Presidential Disaster Declarations for Flooding Jefferson County and Adjacent Counties (1956-2016)

https://www.fema.gov/disaster/declarations?field_dv2_declaration_date_value%5Bmin%5D=2016&field_dv2_declaration_date_value%5Bmax%5D=2023&field_dv2_declaration_type_value=All&field_dv2_incident_type_target_id_selective=49112&field_dv2_state_territory_tribal_value%5B%5D=WA

EVENT DATE	EVENT	COUNTIES / RECIPIENTS
December 1979	Maj. #612 - Storms/high tides / mudslides / flooding	**Clallam**, Grays Harbor, **Jefferson**, King, **Mason**, Skagit, Snohomish, Whatcom
January 1986	Maj. #757 - Severe storms/flooding	**Clallam**, **Jefferson**, King
January 1990	Maj. #852 - Severe storms/flooding	Benton, **Grays Harbor**, King, Lewis, Pierce, Thurston, Wahkiakum
November 1990	Maj. #883 - Severe storms/flooding	Chelan, **Clallam**, Grays, Harbor, **Island**, **Jefferson**, King, **Kitsap**, Kittitas, Lewis, **Mason**, Pacific, Pierce, San Juan, Skagit, Snohomish, Thurston, Wahkiakum, Whatcom, Yakima
December 1990	Maj. #896 - Storms/high wind/ flooding	**Island**, **Jefferson**, King, **Kitsap**, Lewis, Pierce, San Juan, Skagit, Snohomish, Whatcom
November 1995	Major #1079 - Flooding and Wind (Nov - Dec 95) Declared Jan 3, 1996	Chelan, **Clallam**, Clark, Cowlitz, **Grays Harbor**, **Island**, **Jefferson**, King, Kittitas, Lewis, **Mason**, Pacific, Pierce, Skagit, Snohomish, Thurston, Wahkiakum, Whatcom, Yakima
December 1996	Major #1159 - Winter Storm (Ice, snow, flooding) Declared January 17, 1997	Adams, Asotin, Benton, Chelan, **Clallam**, Clark, Columbia, Cowlitz, Douglas, Ferry, Franklin, Garfield, Grant, **Grays Harbor**, **Island**, **Jefferson**, King, **Kitsap**, Kittitas, Klickitat, Lewis, Lincoln, **Mason**, Okanogan, Pacific, Pend Oreille, Pierce, San Juan, Skagit, Skamania, Snohomish, Spokane, Stevens, Thurston, Walla Walla, Whatcom, Yakima

March 1997	Major #1172 - Flooding Declared April 2, 1997	**Grays Harbor**, **Jefferson**, King, **Kitsap**, Lincoln, **Mason**, Pacific, Pierce, Pend Oreille, Stevens
EVENT DATE	**EVENT**	**COUNTIES / RECIPIENTS**
January 27 to February 4, 2006	DR 1641 Severe Storms, Flooding, Tidal Surge, Landslides, and Mudslides	**Clallam**, **Grays Harbor**, **Island**, **Jefferson**, **Kitsap, Mason**, Pacific, Pend Oreille, San Juan, Snohomish, and Wahkiakum Counties
November 2-11, 2006	DR 1671 Severe Storms, Flooding, Landslides, and Mudslides	All counties in the State of Washington are eligible to apply for assistance under the Hazard Mitigation Grant Program.
December 14-15, 2006	DR 1682 Severe Winter Storm, Landslides, and Mudslides	All counties in the State of Washington are eligible to apply for assistance under the Hazard Mitigation Grant Program
December 1 - 17, 2007	DR 1743 Severe Storms and Flooding	**Clallam**, **Grays Harbor**, **Jefferson**, King, **Kitsap**, Lewis, **Mason**, Pacific, Skagit, Snohomish, Thurston and Wahkiakum Counties.
December 2008 / January 2009	DR 1817 Severe Winter Storm, Landslides, Mudslides, and Flooding	Adams, Asotin, Benton, Chelan**, Clallam,** Columbia, Cowlitz, Franklin, **Grays Harbor**, **Jefferson,** King, Kittitas, Klickitat, Lewis, **Mason,** Pacific, Pierce, Skagit, Skamania, Snohomish, Spokane, Stevens, Thurston, Wahkiakum, Walla Walla, Whatcom, Whitman, and Yakima counties.
March 2012	DR 4056 Severe Winter Storm, Flooding, Landslides, and Mudslides	**Clallam**, **Grays Harbor**, King, Klickitat, Lewis, **Mason**, Pierce, Skamania, Snohomish, Thurston, and Wahkiakum
March 2014	ED 3370 Flooding and Mudslides	State of Washington
January 2016	DR 4249 Severe Storms, Straight-line Winds, Flooding, Landslides, and Mudslides	Chelan, **Clallam**, Garfield, **Island**, **Jefferson**, Kittitas, Lewis, Lincoln, **Mason**, Pend Oreille, Skamania, Snohomish, Spokane, Stevens, Wahkiakum, and Whitman counties
February 2016	DR 4253 Severe Winter Storm, Straight-Line Winds, Flooding, Landslides, Mudslides, and a Tornado	**Clallam**, Clark, Cowlitz, **Grays Harbor**, **Jefferson**, Lewis, **Mason**, Pacific, Skamania, and Wahkiakum counties



Brinnon Flooding – February 2015 *Photo by Keppie Keplinger*

Hazard Identification and Vulnerability Assessment

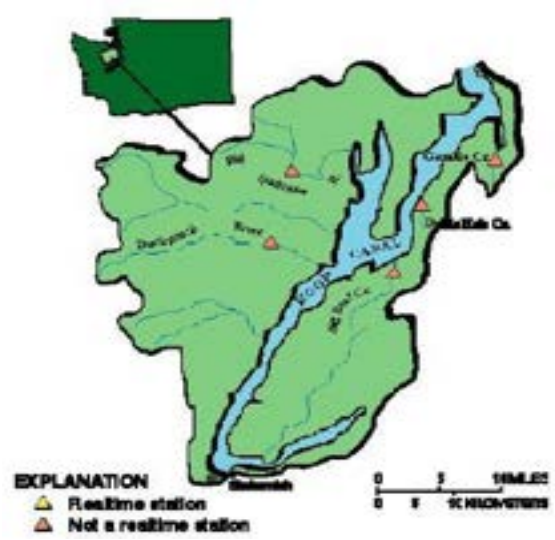
Flooding in Jefferson County occurs in the winter months. Coastal flooding is caused by storm surges which result from high spring tides and strong winter storm winds. Newspapers have reported wave run up during heavy wind storms in Port Townsend.

The rivers swell during winter months when heavy rains and snowmelt produce the highest runoff flows. The greatest and most frequent flooding occurs at river mouths where the high river waters are held back by concurrent ocean water surges and heavy rains characteristic of winter storms.

The frequency of major flooding is well-correlated with precipitation levels. Figure FL-1 on the following page shows 100-year 24-hour precipitation data. The high precipitation areas, shown in blue, green and yellow on Figure FL-1 include all of the counties with a history of frequent major flood events.

As one can see from the map, there are locations in Jefferson County where there would have to be a tremendous amount of rain to exceed a 100-year event. The Olympic Mountains keep the rain on the Pacific side of the mountains and create such locations as the Hoh Rain Forest, which gets 12 – 14 feet of rain each year.

Floods on the rivers of Eastern Jefferson County, specifically the Duckabush, Dosewallips, and both the Big and Little Quilcene Rivers, generally are a combination of two types—the river-building floods with help twice each day from the tidal floods. These rivers are short rivers with steep sided banks. Tidal changes from Hood Canal combined with increased runoff from the Olympics have produced a history of frequent flooding. Occurring principally during the winter months, flooding has inflicted loss of life and



property, damage to infrastructure and has been the cause for suspension of economic activity in communities near the Big and Little Quilcene, Duckabush, and Dosewallips Rivers in Eastern Jefferson County.

Eastern Jefferson County has short, steep rivers that rise quickly and recede quickly. The flood plains are alluvial in nature and are greatly affected by tidal action.

Southern winds tend to hold water against the shores compounding the effects.

Most floods are short term, however the potential for extreme damage is possible

In Western Jefferson County, floods on the Hoh, Clearwater, Bogachiel, and Quinault Rivers have damaged roads and bridges causing significant expense to the County to constantly repair and maintain them. Over the last 10-years, the average annual cost to the county for repairs due to flood and landslide damage has been $750,000.

Rivers in Western Jefferson County are highly erosive to the low riverbanks of the flood plains. Many acres of farm and timberland disappear annually. Road and bridge washouts on Highway 101 in the “West End” have necessitated sandbagging and other emergency measures for members of the Hoh Tribe residing on reservation lands at the end of the Lower Hoh Road.



Big Quilcene River, 2010 Flooding. Photo by Julian Ray

Much of the recent development in the County has occurred either in or near flood plains. This development increases the likelihood of flood damages in two ways. First, new developments near a flood plain add structures and people in flood areas. Secondly, new construction alters surface water flows by diverting water to new courses or increases the amount of water that runs off impermeable pavement and roof surfaces. This second effect diverts waters to places that were previously safe from flooding.

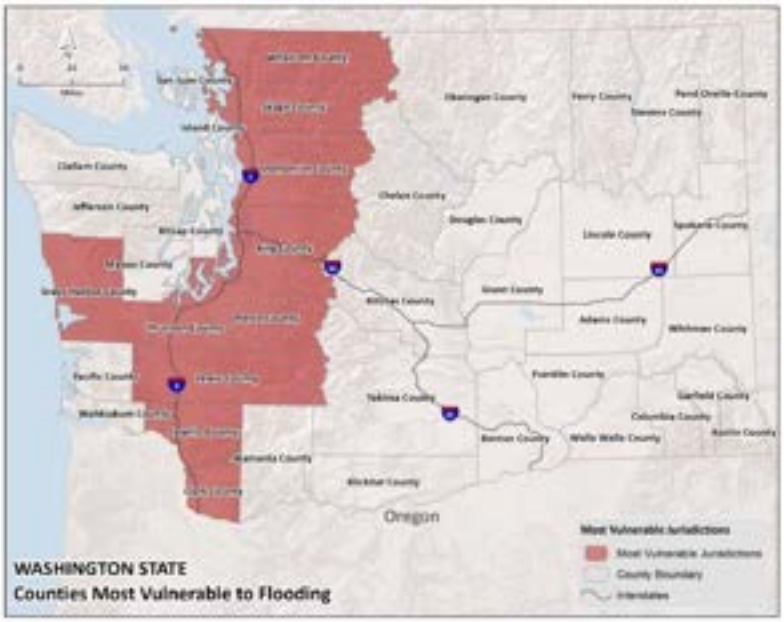
Floods have regularly occurred throughout Western Washington. Principally during the winter and early spring months, Jefferson County’s flooding typically follows long rainy periods and / or rapid warming when Olympic Mountain snowpack melts rapidly into rivers and streams on all sides of the mountain slopes. That being said, Figure FL-2 shows that Jefferson County is not among the counties considered most vulnerable to flooding.

Duckabush Estuary Restoration Project | Washington Department of Fish & Wildlife

The Washington State Department of Fish and Wildlife (WDFW), in partnership with the U.S. Army Corps of Engineers and the Hood Canal Salmon Enhancement Group (HCSEG), is proposing a restoration project on the Duckabush River estuary in Jefferson County to begin in **2023**. According to WDFW, the project would occur primarily on public land at the Duckabush Wildlife Area Unit (https://wdfw.wa.gov/places-to-go/wildlife-areas/duckabush-wildlife-area-unit)

managed by WDFW. The project would reconnect the Duckabush River to neighboring floodplains and wetlands by modifying local roads and elevating Highway 101 onto a bridge spanning the area where freshwater from the Duckabush River meets saltwater of Hood Canal. The project would contribute to a Puget Sound-wide objective to restore river deltas and their wetlands. Among other benefits, it is anticipated this project will reduce seasonal flooding eliminating existing water bottlenecks and allowing for natural tidal flows.
https://wdfw.wa.gov/species-habitats/habitat-recovery/nearshore/conservation/projects/duckabush

Figure FL-2 – Washington Counties Most Vulnerable to Flooding



Jefferson County is not considered at high risk or having a high vulnerability to floods because most of the County's critical assets are not in flood zones. There are pockets, however of vulnerability near river flood zones. Since a picture is worth a thousand words, the following gallery of figures (Table FL2) extracted from the Washington State Enhanced Hazard Mitigation Plan shows evidence for the above conclusions:

- The dollar value of assets at risk from flooding is less compared to other counties. (Figure FL-3).
- Frequency of flooding is moderate compared to other counties (Figure FL-4);
- Jefferson County only has 2.9% of its land area at risk for riverine flooding (Figure FL-5).
- Washington State Watershed Flood Risk Map (Figure FL-).
- Jefferson County only has three NFIP categorized repetitive loss properties and no Severe Repetitive Loss (SRL) properties within its borders,

Jurisdictions most vulnerable to flooding were determined by the State by scoring each county based on the above factors: frequency of flooding that causes major damage, the percentage of the county in floodplain, the number of flood insurance policies currently in effect, the number of flood insurance claims paid, the number of repetitive flood loss properties, and the number of severe repetitive loss properties. A maximum value of 28 points was possible (King County received this score). Jefferson County received 7 points. The entire table and analysis can be found in the "*Flood Hazard Profile*" of the

Washington State Enhanced Hazard Mitigation Plan at http://mil.wa.gov/uploads/pdf/HAZ-MITPLAN/Flood_Hazard_Profile.pdf.[xx]

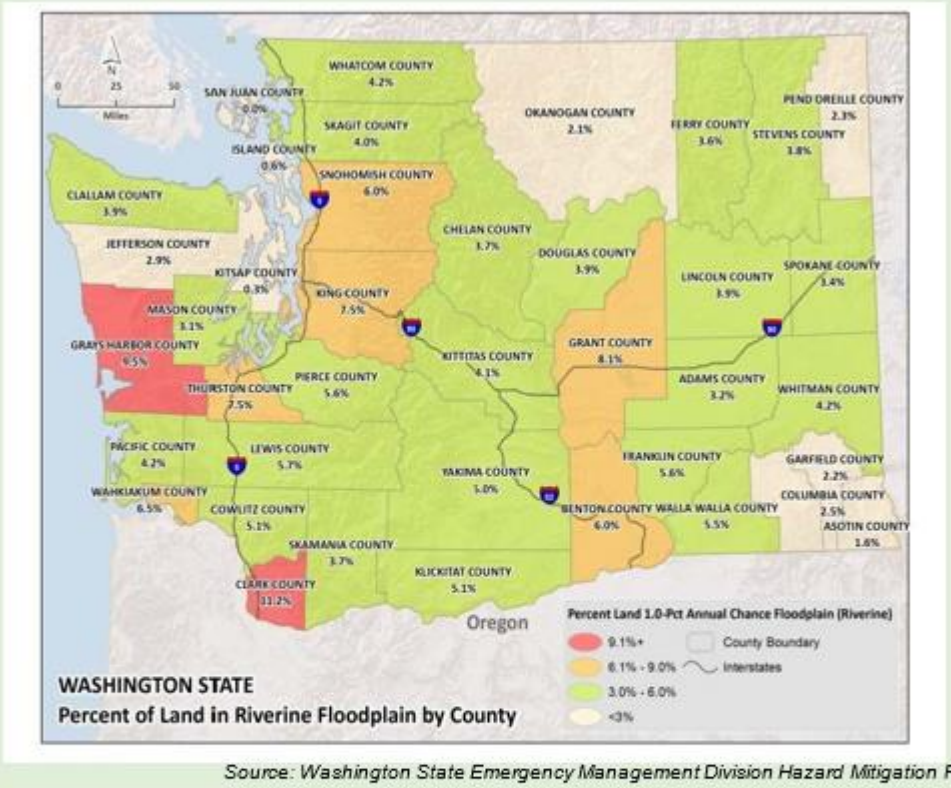
The ten counties with the highest score are considered most vulnerable to flooding and are highlighted in Table FL-2. Note that county totals include properties in the unincorporated areas of the County as well as the properties inside of the limits of the incorporated cities and towns within those Counties.

Why is this important? Jefferson County should be recognized as among the top 10 counties most vulnerable to flooding. It is a recognition that in a major flood disaster Jefferson County, because of its relatively small population, will not be among the counties getting emergency resources quickly because those resources will be focused on more densely populated areas. Consequently, local authorities have to develop strategies that rely on resilience, self-reliance, and a trained-to-handle disasters population.



Center Valley flooding worst in 10 years, according to a local resident.
Source: Leader March 16, 2016

Figure FL-5 – Percentage of the County in the Riverine Floodplain



Source: Washington State Emergency Management Division Hazard Mitigation Plan

Although Jefferson County has less than 3% of its land in a riverine floodplain, there are two factors which argue for the county's flood vulnerability:

- Nearly all of its population centers are in coastal floodplains to one degree or another
- The majority of the County's economic engine is in or near the floodplains
- Significant critical assets are within or adjacent to the coastal floodplains

NFIP

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding**.**

The following NFIP statistics were used in determining the vulnerability ranking of Washington counties:

- Number of Flood Insurance Policies in Effect
- Number of Flood Claims Paid
- Number of Repetitive Loss Properties, and
- Number of Severe Repetitive Loss Properties.

Repetitive Loss Properties – "A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program

(NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. Currently there are over 122,000 RL properties nationwide."

Severe Repetitive Loss Properties (SRL) – "The SRL group consists of any NFIP-insured residential property that has met at least 1 of the following paid flood loss criteria since 1978, regardless of ownership: • 4 or more separate claim payments of more than $5,000 each (including building and contents); or

2 or more separate claim payments (building payments only) where the total of the payments exceeds the

current value of the property.

In either case, two of the claim payments must have occurred within 10 years of each other. Multiple losses at the same location within 10 days of each other are counted as 1 loss, with the payment amounts added together." Only a small percentage of the homes in mapped flood plains are insured against flood loss. Many homeowners who live in flood plains carry fire insurance, however they do not carry flood insurance. Only about 20 to 30 percent of the homes in floodplains have insurance for flood losses.

Jefferson County and the City of Port Townsend are both participants in the NFIP program. Their statistics are presented in their community profiles and below in "Risk Map Assessment."

On the Jefferson County webpage, community members will find Flood Development and Protection Information. https://www.co.jefferson.wa.us/369/Flood-Development-and-Protection-Informa

RISKMAP ASSESSMENT

RiskMAP replaced the Flood Map Modernization program in 2010. Flood Map Modernization was established in 1997 to digitally update FEMA flood maps. Under the Map Moderations Program, several counties in the Washington were mapped, providing countywide Digital Flood Insurance Rate Maps (DFIRMs). Jefferson County's turn came in 2014, with the Preliminary DFIRMS available for comment in February 2016. Figure FL-7 below shows the scope of the DFIRMS under development.

Additionally, the Risk Map project does Hazus simulations and pulls the latest NFIP statistics for the area being studied. Table FL-3 provides the NFIP community characteristics for the Jefferson County area as of December, 2015.

Table FL-3 – Community Characteristics

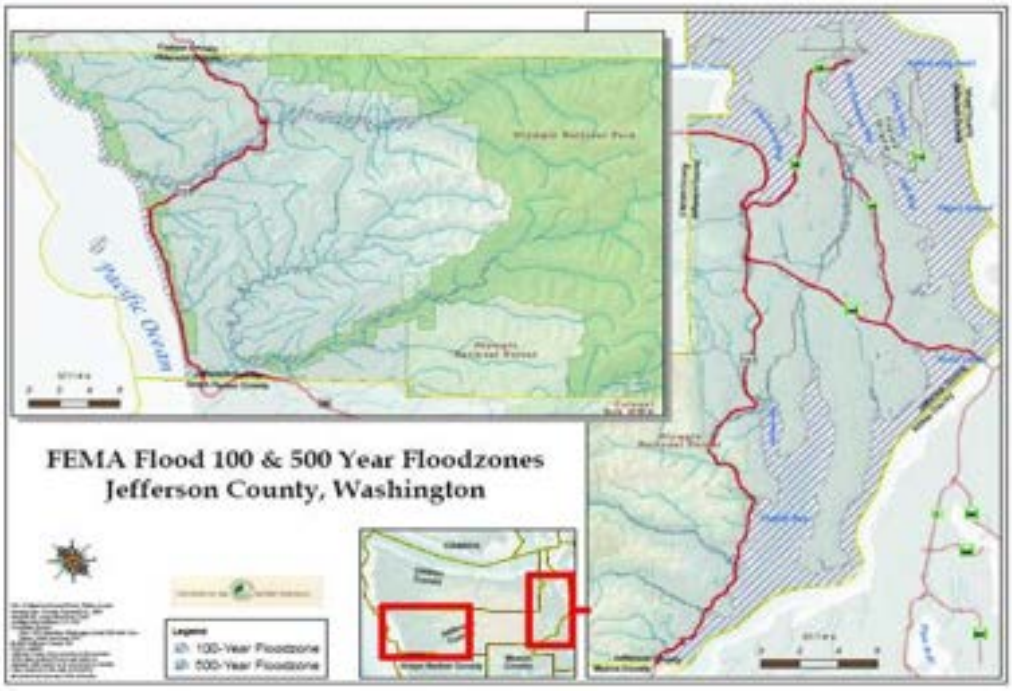
Community Name	Total Population	CRS Community	Flood Claims	Total Losses Paid	Repetitive Loss Properties	Total Policies	Total Insurance Coverage
Port Townsend	9,210	No	4	$26K	0	60	$17M
Unincorporated Jefferson County	30,076	No	28	$387K	1	162	$38M
Hoh Tribe	102	No	0	0	0	3	$520k

According to **NOAA National Centers for Environmental Information, State Climate Summaries 2022,** rainfall is expected to be the dominant form of precipitation across the majority of the state by the end of this century. Higher spring temperatures will also result in earlier melting of the snowpack, with average snowpack projected to decline by up to 70% by the end of this century. This will further decrease water availability during the already dry summer months, and due to earlier spring peak flows, it will increase the risk of spring flooding.

Projected increases in heavy rainfall events by midcentury could further increase flood risk.
Increasing temperatures raise concerns for sea level rise in coastal areas. Since 1900, global average sea level has risen by about 7-8 inches. It is projected to rise another 1-8 feet, wit a likely range of 1-4 feet by 2100 as a result of both past and future emissions from human activities.

Sea level rise has caused an increase in tidal floods associated with nuisance-level impacts. Nuisance floods are events in which water levels exceed the local threshold (set by NOAA's National Weather Service) for minor impacts. These events can damage infrastructure, cause road closures, and overwhelm storm drains.

Figure FL-7: FEMA 100-year and 500-year Flood Zones in Jefferson County



Information about flood insurance has been posted on Jefferson County's webpage along with a link to get more information through FEMA's National Flood Insurance Program (NFIP), FEMA FloodSmart and the Floodplain Management Association. Log on to https://www.co.jefferson.wa.us/369/Flood-Development-and-Protection-Informa.

Figure FL-7B – Sample FIRM Panels available for East Jefferson County



Table FL-4 – Assessment of Special Flood Hazard Area

Community	Total Estimated Building Value	Total Number of Buildings	Building Dollar Loss for a 1% Annual Chance Flood Event	Loss Ratio (Dollar Losses/Total Building Value)	Number of Buildings within the VE Zone	Number of Buildings within the AE or A zones	Percent of Buildings in the Special Flood Hazard Area (AE-A and VE Zones)
Port Townsend	$646,052,977	4,845	$5,042,238	0.8%	0	64	1.3%
Unincorporated	$1,639,851,022	14,356	$4,980,605	0.3%	10	681	4.8%
Hoh Tribe	$3,119,782	35	Unknown*	Unknown*	1	7	23%
Total	**$2,289,023,781**	**19,236**	**$10,022,843**	**0.44%**	**11**	**752**	**3.9%**

It should be noted that there are a number of critical structures that are located slightly outside the floodplain, based on maps – but not based on Mother Nature's predilections. Figure FL-8 is an illustration of one of risks that do not get picked up in generic simulations – one of two power substations that serves the Quimper Peninsula is a few feet outside a flood zone. If a tsunami or flood takes out that substation, the Quimper Peninsula has the potential to be without power for months.

Figure FL-8 - PUD Substation Near Flood Zone



Climate Change

The North Olympic Peninsula Resource Conservation & Development Council (NOPRCD) https://www.noprcd.org/ report estimates rain events in which rainfall exceeds one inch in 24 hours will increase by 13% by the 2050's. Table FL-5 copies the Precipitations: Trends and Extremes table from the NOPRCD report. Table FL-6 provides the probability that the mean sea level will reach or exceed projected Mean Higher High Water (MHHW) tidal datum by selected years, including 2050.

Figures FL-9 and Fl-10 are maps of the probabilistic sea level rise / coastal flood risk for Port Townsend for 2050. It is interesting to note that, based on the Annual Extreme Storm Flooded Areas in 2050 map, the frequency of flooding will increase, and critical infrastructure that one would expect to be in a higher flood zone are shown to be threatened more than they are today. Specifically, the Port Townsend Paper Mill, Life Care Center of Port Townsend, and the Kearney Street power substation all appear to be inside the predicted flood zone due to rising sea levels.

Table FL-5 – Precipitations: Trends and Extremes

Precipitation[57]	Observed Changes	Future Projections
Averages (for Pacific Northwest)	No significant changes in average amount; Region-wide decrease in snowpack.	Little average annual change – with dryer summers (-6% to -8% average decrease). Continued declining snowpack with significant loss of snowpack in Olympics by 2080[58].
Extremes	Ambiguous	More heavy rainfall events: 13% (± 7%) increase in days with > 1 inch of rain.

Sea Level Rise: A Challenge for Washington's Coastal

Rising sea levels coupled with increased severity and intensity of storms lead to increases in coastal inundation and erosion. In Washington State, sea level projections estimate a middle range rise of about 2.6 inches by 2030, about 6.5 inches by 2050, and **about 24 inches by 2100**.Apr 28, 2014 https://mrsc.org/Home/Stay-Informed/MRSC-Insight/April-2014/Sea-Level-Rise-A-Challenge-for-Washington-s-Coasta.aspx

Figure FL-10 – Annual Extreme Storm Flooded Areas in 2050, Port Townsend



Conclusion

Many homes and small businesses located in flood plains are vulnerable to damage. Flood damage to croplands, structures, land resources, roads and utilities exceed damage cause by all other natural hazards in Jefferson County. Building in floodplains must be regulated to ensure that floodplain development is limited to utilization such as parks, golf courses, farmlands, etc., to help ensure that land use is maximized while the potential for damages is minimized.

Jefferson County developed the "**Jefferson County Flood Damage Prevention Ordinance, No. 181120-95**" to better regulate and direct development in flood plain areas: https://test.co.jefferson.wa.us/WebLinkExternal/DocView.aspx?dbid=0&id=181843&page=6&cr=1. It regulates planning, construction, operation, maintenance and improvements in these areas for both public and private endeavors. The ordinance helps ensure that work is properly planned, constructed, operated and maintained to avoid adversely influencing the regimen of the stream. It provides a sound basis for planning to ensure the security of life, health, and property damage by floodwaters in floodplain areas.

The public should be made aware and reminded of hazardous areas and be provided information on flood insurance, mitigation, preparedness, response and recovery. Local plans should reflect warning, evacuation, housing and other emergency procedures. Plans must also include and emphasize the need to be aware of potential disease, hazardous material releases, or debris that may affect floodwaters.

In years past, people living on or near rivers have taken it upon themselves to remove gravel deposits thus helping to maintain river and stream channels. As greater emphasis has been placed on maintaining salmon spawning areas, this type of activity is now restricted and requires hydraulic permits for any activity in the riverbeds. As a result, deposits of gravel have built up over the years, and the river channels have become increasingly shallow, exacerbating the chances of flooding. Low levees constructed along several rivers in eastern Jefferson County have failed in the past. Although levees have been reinforced on the Dosewallips River, many levees on the mouth of the Big Quilcene River are the same elevation as the riverbed.

The National Weather Service has extensive weather monitoring systems and usually provides adequate and timely warning. The National Oceanic and Atmospheric Administration (NOAA) provides coverage of the Puget Sound area, but currently does not cover the western portion of the county. N.O.A.A. WEATHER RADIO (NWR) is a source of initial warnings and alerts. It is a nation-wide network that broadcasts weather information and emergency alerts - including relays from the Emergency Alert System (EAS).



The United States Army Corps of Engineers, under PL 84-89, has the authority to assist public entities in flood fighting and rescue operations as well as protecting, repairing and restoring federally constructed flood control infrastructure

Work on Dosewallips River. Photo by Bob Hamlin

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Tables - Flood

FL-1	Presidential Disaster Declarations for Flooding in Jefferson County and Adjacent Counties (1956-2016)
FL-2	Gallery of Relative Criteria for Identifying Counties Most Vulnerable to Flooding Community Characteristics
FL-3	
FL-4	Assessment of Special Flood Hazard Area

FL-5 Precipitation: Trends and Extremes
FL-6 Relative Sea Level Projection for Coastal Communities

Figures - Flood

FL-1 24-Hour Precipitation Totals that would Qualify as a 100 Year Event FL-2 Washington Counties Most Vulnerable to Flooding
FL-3 Modeled Value of Flood Damage
FL-4 Frequency of Major Flooding
FL-5 Percentage of the County in the Floodplain
FL-6 Washington State Watershed Flood Risk Map
FL-7 FEMA 100-year and 500-year Flood Zones in Jefferson County
FL-8 PUD Substation Near Flood Zone
FL-9 Sea Level Inundation Area for Port Townsend, WA in 2050 FL-10 Annual Extreme Storm Flooded Area for Port Townsend, WA in 2050

Flood risk overview for Port Townsend

There are 428 properties in Port Townsend that have greater than a 26% chance of being severely affected by flooding over the next 30 years. This represents 6% or all properties in the city. In addition to damage on properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Overall, Port Townsend has a moderate risk of flooding over the next 30 years, which means flooding is likely to impact day to day life within the community.
https://floodfactor.com/city/port-townsend-washington/5355855_fsid

DROUGHT

SUMMARY

Definition:

Drought is a condition of climatic dryness that is severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems. The severity of drought is measured by the Palmer Index in a range of 4 (extremely wet) to -4 (extremely dry). The Palmer Index incorporates temperature, precipitation, evaporation and transpiration, runoff and soil moisture when designating the degree of drought.

In the most general sense, drought originates from a deficiency of precipitation over an extended period, resulting in a water shortage for some activity, group, or environmental sector.

Unlike most states though, **Washington has a statutory definition of drought (Revised Code of Washington Chapter 43.83B.400).** According to state law, an area is in a drought condition when the water supply for the area is below 75 percent of normal, and water uses and users in the area will likely incur undue hardships because of the water shortage.

Drought affects water levels for use by industry, agriculture, individual consumers, and recreation areas. Water shortages affect fire-fighting capabilities through reduced flows and pressures. Drought also affects power production; much of Jefferson County's power is produced by hydroelectric dams. When water levels drop, electric companies cannot produce enough power to meet demand and are forced to buy electricity from other sources and higher costs are passed to all consumers.

History of Drought in Jefferson County
Drought has not been a serious and frequent hazard for Jefferson County. There have indeed been years that have been exceptionally dry; however there has not been any recent history of several consecutive years where rainfall has been non-existent. Table DR-1 below, lists the most significant droughts affecting the State of Washington, including Jefferson County, since 1930.

The Hazard:

Drought severity is measured by the Palmer Index in a range of 4 (extremely wet) to -4 (extremely dry). The Palmer Index incorporates temperature, precipitation, evaporation and transpiration, runoff and soil moisture when designating the degree of drought.3 Drought affects water levels for use by industry, agriculture, individual consumers, and recreation areas. Water shortages affect fire-fighting capabilities through reduced flows and pressures. Drought also affects power production; much of Jefferson County's power is produced by hydroelectric dams. When water levels drop, electric companies cannot produce enough power to meet demand and are forced to buy electricity from other sources and higher costs are passed to all consumers.

Impacts and Effects: Adverse impacts of drought on the local economy can present a broad array of effects to include the following: adverse impact on agriculture, especially dry land farms and grazing lands, increased prices for local produce, increased danger of fires and decreased firefighting capabilities due to low flows and pressure, loss of timber resources, increased unemployment in affected sectors, serious impacts to recreation areas, soil erosion resulting, silting of streams resulting in damage to salmon and other fisheries, impacts to hydroelectric power and

pricing, imposition of water conservation measures, and curtailment of industries using large quantities of water.

In addition, more precipitation is forecast to fall as rain with decreases in snowpack accumulation. Decreases in stream flows are anticipated to affect salmon runs. In addition, impacts to the availability of water for irrigation from both surface and ground water are expected. Decreases to water available for firefighting can be expected to increase risk of danger for first responders and citizens, as well as decreased effectiveness of firefighting efforts

History of Drought in Jefferson County

Drought has not been a serious and frequent hazard for Jefferson County. The most recent years in which Jefferson County was part of a drought declaration was in 2015. During this year several Water Resource Inventory Areas with portions in Jefferson County were included (WRIAs 2, 17, and 20). In 2009 water levels at City Lake and Lord's Lake, the main reservoirs for Port Townsend's water supply, fell to nearly the points at which Port Townsend Paper Company (PPC) would have been required to curtail operations. In 2002 and 2003 back to back dry summers did impact operations at PPC and fishing was halted on rivers on the Olympic Peninsula.

Probability of Future Events: MED **-** Forecasted **c**limatic changes for the Pacific Northwest include increases in precipitation amounts and rates for spring, fall, and winter and decreased precipitation in summers. Jefferson County has been drought conditions approximately once every 5 – 10 years, although climate change may impact that frequency in the near future.

Jefferson County Drought Risk Rating

Washington State assesses drought risk to 1) size of the area likely to be affected, 2) the size of the population that would be affected, and 3) risk to vulnerable populations. Jefferson County's risk is rated as "Low" for all three of these categories. However, it should be noted that owing to the rain shadow effect from the Olympic Mountains, the Quimper Peninsula will be more susceptible than other parts of Jefferson County.



Drought Hazards Risk (WaSRI-D) from 2018 WSHMP

Summary

While the State rates Jefferson County's risk as low, some areas of the County are more at risk than others. The population center of Port Townsend on the Quimper Peninsula is one of these. This risk is also compounded by the reliance on surface water resources for the City and the Port Townsend Paper Company. Surface water sources are more impacted by years of low snowpack than groundwater sources. Direct impacts of drought would include increased risk of wildfires and firefighting capabilities. Also impacts to stream flows and temperatures would be expected with consequent impacts on fish mortality. Local food production could be impacted including dry farmed crops such as grain and crops reliant on irrigation from surface or ground water sources. In addition, livestock watering and pasture maintenance could be impacted. The resilience of groundwater aquifers underlying our agricultural areas is unknown. Indirect impacts of drought could include economic damages to all sectors. Figure DR-1: Counties Most At-Risk and Vulnerable to Drought.

Table DR-1: Significant Droughts in Jefferson County and Washington State Since 1900

Date	Occurrence
July-Aug 1901	No measurable rainfall in western Washington from July 23 to August 25.
August 1919	Occurred primarily in Western Washington
July – August 1921	Drought occurred in all agricultural sectors.
June – August 1922	From June 10 to August 10, the statewide precipitation average was only .10 inch.
March – Mid-August 1924	There was a total of 1,532 fires, causing 322,691 acres to burn and destroying 25.3 million board feet of timber.
July 1925	1,275 fires burned 142,355 acres which destroyed 69 million board feet of timber. Wheat and oat crop production was 73 percent and 81 percent of normal, respectively.
June 21 – August 25, 1926	Little or no rainfall reported. 1553 fires burned 375,010 acres. Fire costs greater than any other year.
August 1928 – March 1929	Drought unusually long and severe. Most stations reported less than 60% of normal rainfall for the entire period.
July-Aug 1930	Drought affected the entire state. Most weather stations averaged 10 percent or less of normal precipitation.
April 1934-March 1937	The longest drought in the region's history - the driest periods were AprilAugust 1934, September-December 1935, and July-January 1936-1937
May-Sept 1938	Driest growing season in Western Washington.
1952	Every month was below normal precipitation except June. The hardest hit areas were Puget Sound and the central Cascades.
Jan-May 1964	Drought covered the southwestern part of the state. Precipitation less than 40
Spring, 1966	The entire state was dry.
June-August 1967	Drought occurred in Washington.
Oct 1976- Sept 1977	Worst drought in Pacific Northwest history. Below normal precipitation in Olympia, Seattle, and Yakima. Puget Sound precipitation levels averaged between 30 and 70% of normal, temperatures were higher than normal which resulted in algae growth and fish kills.

Oct 1991-Sept 1994	Stream flows were between 30 and 60% of normal. Agriculture products suffered greatly.
2001	On March 14, 2001, Gov. Gary Locke authorized the Department of Ecology to declare a statewide drought emergency; Washington was the first Northwest state to make such a declaration, which remained in effect until December 31,
2002-2003	2001Two of the driest summers on record —one of five driest winters in past 100 years. Port Townsend Paper Corporation curtailed some operations, and fishing was halted on rivers on the Olympic Peninsula
2009	One of the driest summers on record failed to adequately recharge Port Townsend's reservoir - City Lake. The city was within days of invoking drought procedures that would have stopped operations at the Port Townsend Paper Corporation (PTPC). In 2009, PTPC was so frail that any stoppage could have been the tipping point to force it into bankruptcy again.

Table DR-1: Significant Droughts in Jefferson County and Washington State Since 1900

Date	Occurrence
2014-2015	Characterized as a "snowpack drought", Governor Inslee declares drought on March 13, 2015 in nine water resource inventory areas (WRIA). Each of WRIA 17, WRIA 20 and WRIA 2 include portions of Jefferson County.

2001 Drought Emergency

On March 14, 2001, Gov. Gary Locke authorized the Department of Ecology to declare a statewide drought emergency; Washington was the first Northwest state to make such a declaration, which remained in effect until December 31, 2001.

The central part of the state, from the crest of the Cascade Mountains to the east banks of the Okanogan and Columbia Rivers, suffered the most from water shortages.

The Palmer Drought Index for March 2001 (Figure DR-2) graphically displays the height of drought conditions in Western Washington. These maps provide a comparison of drought conditions in Washington with those in the rest of the lower 48 states at the time.

The scale used for the Palmer Drought Index characterizes severe drought as having likely crop or pasture losses, very high fire risk, water shortages common with water restrictions imposed. An extreme drought has major crop and pasture losses, extreme fire danger, and widespread water shortages or restrictions.

During this period the Port Townsend Paper Mill shut down to conserve the community's water supplies, thus electing to trade the stress of a short unemployment period for the overall community's need for water.

2014-2015 Drought Emergency

A warm winter in 2014 gave indications that 2015 would be a poor water supply year. By February of 2015, it was clear that the snowpack would not rebound sufficiently. Based on April – September forecasts, the Washington State Association of Counties (WSAC) identified three areas in Washington, including the Olympic Peninsula that would meet the statutory definition of a drought. Based on recommendations, Governor Inslee directed Ecology to declare a drought for

the three areas, the East Slope of the Central Cascades, The Olympic Peninsula, and the Walla Walla Basin. Figure DR-3, below, shows the areas of the drought declaration. Figure DR-4 shows the Palmer Drought Index at the peak of the drought for Jefferson County.

Considered full at 40 feet, the Lords Lake Reservoir, water supply for Port Townsend, dropped precipitously.

In July the city declared a Stage 1 drought emergency, which required conservation by citizens. By November, 2015, Lords Lake had dropped to 8' 5", and was approaching the level at which the City would activate agreements with Port Townsend Paper to curtail operations. Port Townsend uses approximately one million gallons of water per day; Port Townsend Paper uses 10 million gallons per day from the same sources. Fortunately, heavy rains in December, January and February 2016, broke the drought and brought the reservoir back up to full.

Figure DR-3 - 2015 Drought Declaration Regions

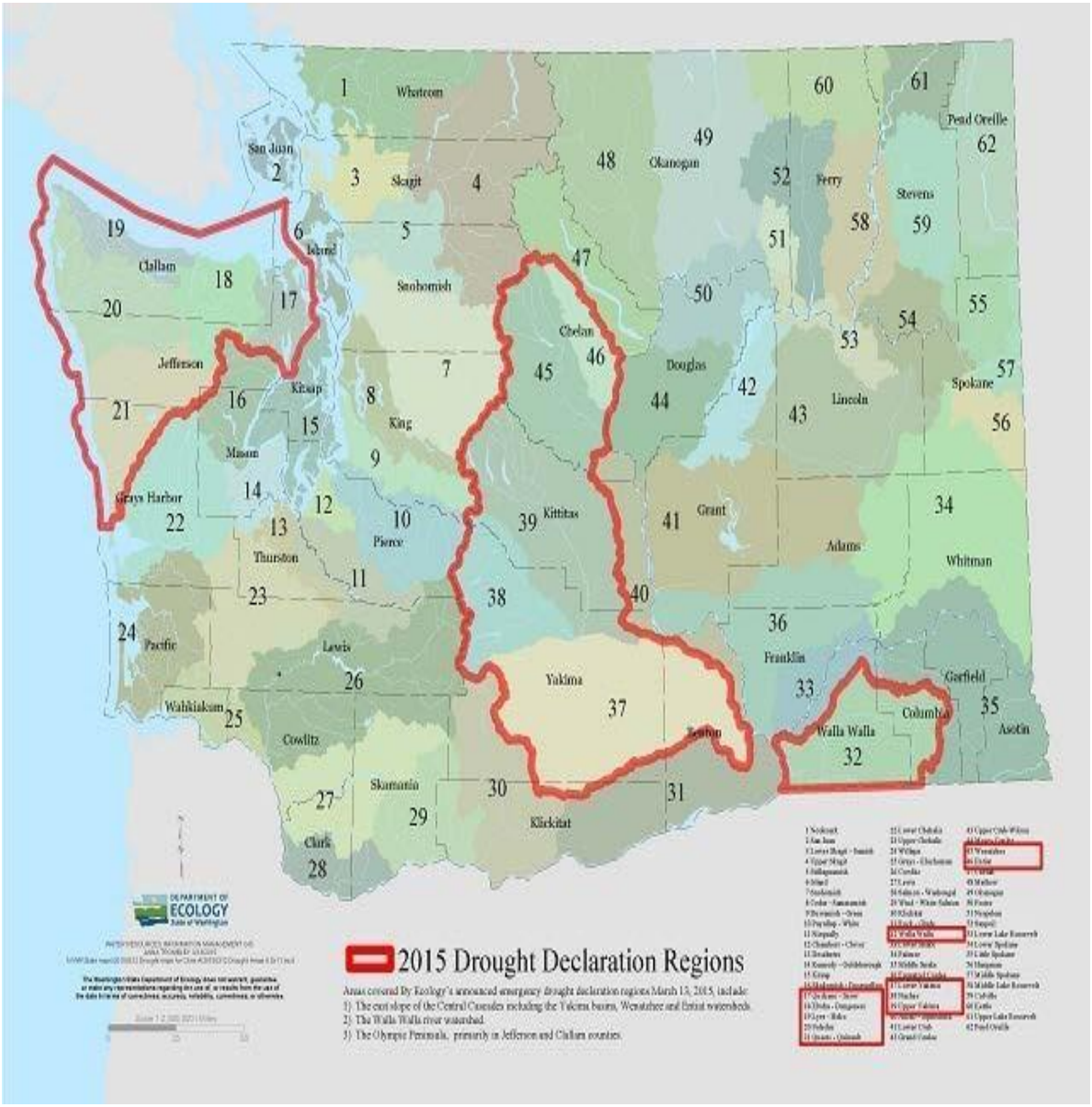
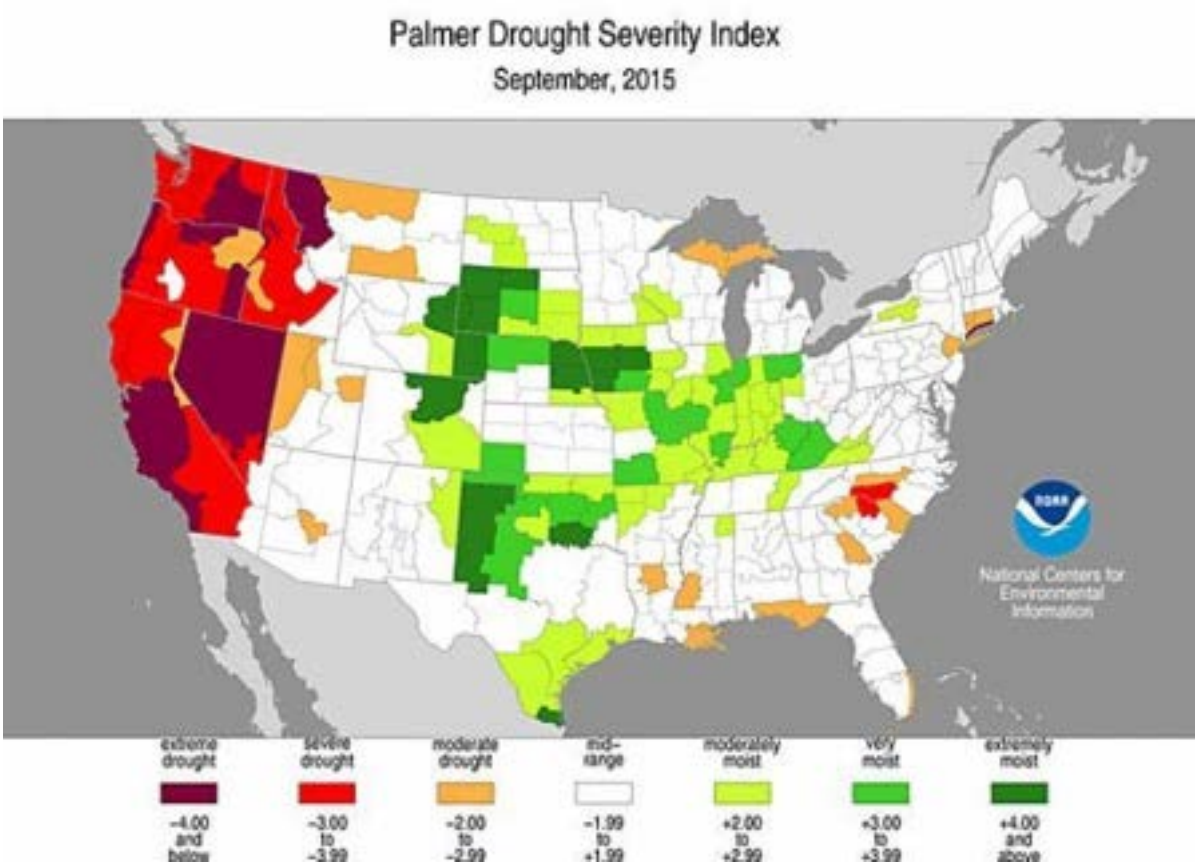


Figure DR-4 – Palmer Drought Index for September 2015



Hazard Assessment and Vulnerability Assessment

The most direct impact of drought is economic rather than loss of life or immediate destruction of property. Droughts impact individuals, the agricultural industry, and other related sectors including fishing and recreation.

There is increased danger of wildland fires associated with droughts. Low stream levels have affected reservoirs and hydroelectric power resources, bringing less inexpensive electricity from dams and potentially higher electric bills. Water intensive industries such as Port Townsend's pulp and paper mill may be forced to curtail some operations in times of severe drought as they did in the drought of 2002.

Oftentimes drought is accompanied by extreme heat. Low stream flows combined with high temperatures, oxygen depletion, disease and lack of spawning areas have severely impacted fish resources within the county.

Problems of domestic/municipal water supplies have been historically corrected by the addition of a reservoir, a larger pipeline, a new well, or some other facility. Short-term measures including water conservation practices and using large capacity water tankers to supply domestic potable water have been used. Forest fires, erosion, crop loss, price increases, low water level contamination in shallow wells, power outages, dry pastures, logging shutdowns, and fish kills have been experienced in Jefferson County during times of drought.
All of the above effects result in economic and revenue losses for county residents, and the state.

Climate Change

Little average annual change – with dryer summers (-6% to -8%) average decrease. Continued declining snowpack with significant loss of snowpack in Olympics by 2080. This has the potential to damage the local economy. The City of Port Townsend and Port Townsend Paper Mill, together, use 11 million gallons of water per day taken from Lords Lake and the Big Quilcene River. The WRIA that recharges the rivers in the summer is dependent on a good snowpack during the winter. If the snowpack is small, there is a possibility for drought conditions to occur in the summer until the rainy season restarts. The City has an agreement that if Lords Lake drops to a minimum depth, the mill curtails operations until the water level comes back. This has the potential to cause the mill, the county's largest private employer, significant economic stress.

As Figure DR-2 shows, the Quimper Peninsula in Jefferson County has considerable susceptibility for drought.

Figure DR-2 – Drought Susceptibility for Washington State 2001-2007



Source: Washington Hazard Mitigation Plan

Conclusion

The Washington Hazard Mitigation Plan identifies the counties most at-risk and vulnerable to drought as those with a significant agriculture base. Accordingly, Jefferson County's risk and vulnerability are low to moderate, depending on the economic climate for paper and wood products at the time.

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Figures – Drought

DR-1 "*Counties Most At-Risk and Vulnerable to Drought"*, Washington State Enhanced Mitigation Plan, October 2012, Tab 5.3, "Drought Profile", p.11

DR-2 "*Palmer Drought Index – March 2001"*, National Climatic Data Center – National Oceanic and Atmospheric Administration, August 2016. Available at: http://www.ncdc.noaa.gov/temp-andprecip/drought/historical-palmers/psi/200103-200103

DR-3 "*2015 Drought Declaration Regions"*, 2015 Wa Drought Map Gov Declaration.png.

DR-4 "*Palmer Drought Index – September 2015"*, National Climatic Data Center – National Oceanic and Atmospheric Administration, August 2016. Available at: http://www.ncdc.noaa.gov/temp-andprecip/drought/historical-palmers/psi/201509-201509

Tables – Drought

DR-1 "*Significant Droughts in Jefferson County and Washington State since 1900"*, Jefferson County Department of Emergency Management, 2016.

Climate Change

Climate Change and Resiliency Considerations

> *FEMA recognizes challenges posed by climate change, including more intense storms, frequent heavy precipitation, heat waves, drought, extreme flooding, and higher sea levels. These phenomena may have impacts on mitigation, preparedness, response, and recovery operations as well as the resiliency of critical infrastructure and various emergency assets. FEMA encourages Recipients and subrecipients to consider climate change adaptation and resiliency in their planning and scoping efforts*[1].

FEMA recognizes that it is prudent for jurisdictions to be aware of and plan for adverse impacts of climate change. In its 2011 *FEMA Climate Change Adaptation Policy Statement*, paragraph IV.A.5 states, "The current standards and guidance, based on today's climate, may not anticipate the risks structures will face as the climate changes. Therefore, it is important to review guidance and standards to determine the feasibility of incorporating future climate change considerations, and encourage the integration of adaptation measures into local planning and development practices[2]."

The implications to participants of the Plan are that in the future:

1. **FEMA will require updated plans to address climate change in its planning, and**
2. **Climate change factors will be included in Benefit / Cost Analysis for projects.** [CJ1]

Jefferson County and the City of Port Townsend are already proceeding down those lines. In 2007, they issued a Joint Resolution (County Resolution 44-07[3], City Resolution 07-022[4]), committing to reducing greenhouse gas emissions and empowering a joint City/County citizen's committee to develop a Local Climate Action Plan.

In 2008, the County and the City issued a Joint Resolution (County Resolution 02-08[5], City Resolution 08-001[6]) *Providing Composition Terms of Office and Procedural Rules for the Climate Action Committee* to create a Climate Action Plan (CAP) for the county.

This was followed in January, 2009 with a Joint Resolution (County Resolution 06-09[7], City Resolution 09-002[8]) adopting an *Inventory of Energy Usage and Associated Greenhouse Gas Emissions, Backcasts, Forecasts, and Interim Targets & Approving Climate Change Committee Workplan.*[9]

In November, 2011, the County and the City adopted the *Climate Action Plan*[10] created by the Climate Action Committee, and proceeded to implement it. The policies and goals of the Climate Action Plan parallel that of the Federal and State governments and will show up in this and future hazard mitigation plans as policy changes and strategic development to enhance the resilience of the area.

Climate Change Context

"***It is unequivocal that human influence has warmed the atmosphere, ocean and land***." [1]

The U.S. Environmental Protection Agency website (https://www.epa.gov/climatechange-science/basics-climate-change) notes that "The earth's climate is changing. Multiple lines of evidence show changes in our weather, oceans, and ecosystems, such as:

- Changing temperature and precipitation patterns.
- Increases in ocean temperatures, sea level, and acidity.
- Melting of glaciers and sea ice.3
- Changes in the frequency, intensity, and duration of extreme weather events.
- Shifts in ecosystem characteristics, like the length of the growing season, timing of flower blooms, and migration of birds.

These changes are due to a buildup of greenhouse gases in our atmosphere and the warming of the planet due to the greenhouse effect.

The purpose of this Plan to identify the range of possibilities that can affect the natural and manmade hazards in Jefferson County so that participants in the Plan can make informed decisions to mitigate and/or adapt to future harm to their jurisdiction.

This document summarizes the best available science that provides the reader with the possibilities and probabilities of the hazards identified as threatening Jefferson County jurisdictions.

Where possible, we will use estimates and probabilities relating to the local area. Our primary sources for this will be:

1. *Climate Action Plan for Port Townsend / Jefferson County Washington*, Adopted November 14, 2011
2. *Climate Change Preparedness Plan for the North Olympic Peninsula*, September 2015
3. *Best Available Science Report*, Jefferson County Critical Areas Ordinance Update, December 15, 2015
4. *Risk Report for Jefferson County including the City of Port Townsend and the Hoh Tribe,* January, 2016.
5. Miller, I.M., Morgan, H., Mauger, G., Newton, T., Weldon, R., Schmidt, D., Welch, M., Grossman, E. 2018. Projected Sea Level Rise for Washington State – A 2018 Assessment. A collaboration of Washington Sea Grant, University of Washington Climate Impacts Group, University of Oregon, University of Washington, and US Geological Survey. Prepared for the Washington Coastal Resilience Project. updated 07/2019 (http://www.wacoastalnetwork.com/files/theme/wcrp/SLR-Report-Miller-et-al-2018.pdf)
6. University of Washington's Climate Impacts Group's Heavy Precipitation Projections for use in Stormwater Planning (available at: https://cig.uw.edu/resources/analysis-tools/)

Summary of Science: Current impacts and future predictions

"It is increasingly apparent that the global climate is rapidly changing and that these changes will affect the people, ecosystems, economy, and culture of the North Olympic Peninsula. The most noticeable impacts will likely include:

- A diminishing snowpack lowering the region's summer river flow and extending the summer drought season;
- Shifts in the timing and type of precipitation, creating rain on snow events and unseasonably high stream flows that scour river bottoms and flood low-land areas;
- Ongoing sea level rise driving coastal flooding, saltwater inundation, and enhanced shoreline erosion;
- Extended warm temperatures which result in increased river water temperatures, enhanced wildfire risk, decreased soil moisture, and stressed forests through disease and insect outbreaks; and
- Increasingly corrosive ocean waters (i.e. ocean acidification) from the ongoing absorption of human emissions of CO2. "[14]

Table CC-1 presents a summary of the climate change predictions developed for the *Climate Change Preparedness Plan for the North Olympic Peninsula*.[15]

Table CC-1 - Climate Change Predictions for the North Olympic Peninsula[15]

Climate Changes[1]	**Observed Changes**	**Future Projections**
Temperature Averages *(for Pacific Northwest)*	Warmed 1.3°F (1895-2011)	By 2050's – between 4.3°-5.8°F average increase in all seasons.
Temperature Extremes	Increase in nighttime heat events.	Slight increase in days over 90°F (+8 days) for the Pacific Northwest (PNW), with limited increase in days over 95°F on the Olympic Peninsula[2]. Longer frost-free season (+35 days) across PNW.
Precipitation Averages *(for Pacific Northwest)*	No significant change in amount; region wide decrease in snowpack and glaciers.	Little average annual change – with drier summers (-6% to -8% average decrease for the 2050s). Continued declining snowpack with a significant loss of snowpack in Olympics by 2080[3].
Precipitation Extremes	Ambiguous	More heavy rainfall events: 13% (±7%) increase in days with >1 inch of rain by the 2050s.
Future Sea Level Rise[4] *(probability that mean sea level will reach or exceed ____ feet at a given year)* [CJ3] *[See section below for the most recent data*		
	Port Townsend	50% chance of ≥ 0.9 feet (2050) and ≥ 2.4 feet (2100) 5% chance of ≥ 1.2 feet (2050) and ≥ 3.9 feet (2100)

Future Annual Coastal Flood Elevation[5] *(probability that mean sea level will reach or exceed ____ feet in a given year)*		
	Port Townsend	50% chance of ≥ 2.9 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 3.8 feet (2050) and ≥ 6.1 feet (2100)

Table CC-1 References

1 Unless otherwise noted, climate observations and projections in this table are from; University of Washington, Climate Impacts Group, 2013. Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers. http://cses.washington.edu/cig/reports.shtml

2 Kunkel, K., Stevens, L., Stevens, S., Liquiang, S., Janssen, E., Wuebbles, D., Redmond, R., Dobson, J.G., 2013 Regional Climate Trends and Scenarios for the U.S. national Climate Assessment, NOAA Technical Report NESDIS142-6.

3 Mantua, N., Tohver, I., Hamlet, A., 2009. The Washington Climate Change Impacts Assessment: Impacts of Climate Change on Key Aspects of Freshwater Salmon Habitat in Washington State. In The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate, Climate Impacts Group, University of Washington, Seattle, Washington. Available: http://cses.washington.edu/db/pdf/wacciach6salmon649.pdf

4 See section I.E. of this report, and Appendix C & D, for more information on this Sea Level Rise modeling methodology and outcomes.

5 Ibid.
Source: Petersen, S., Bell, J., Miller, I., Jayne, C., Dean, K., Fougerat, M., 2015. Climate Change Preparedness Plan for the North Olympic Peninsula. A Project of the North Olympic Peninsula Resource Conservation & Development Council and the Washington Department of Commerce, funded by the Environmental Protection Agency. Available: www.noprcd.org

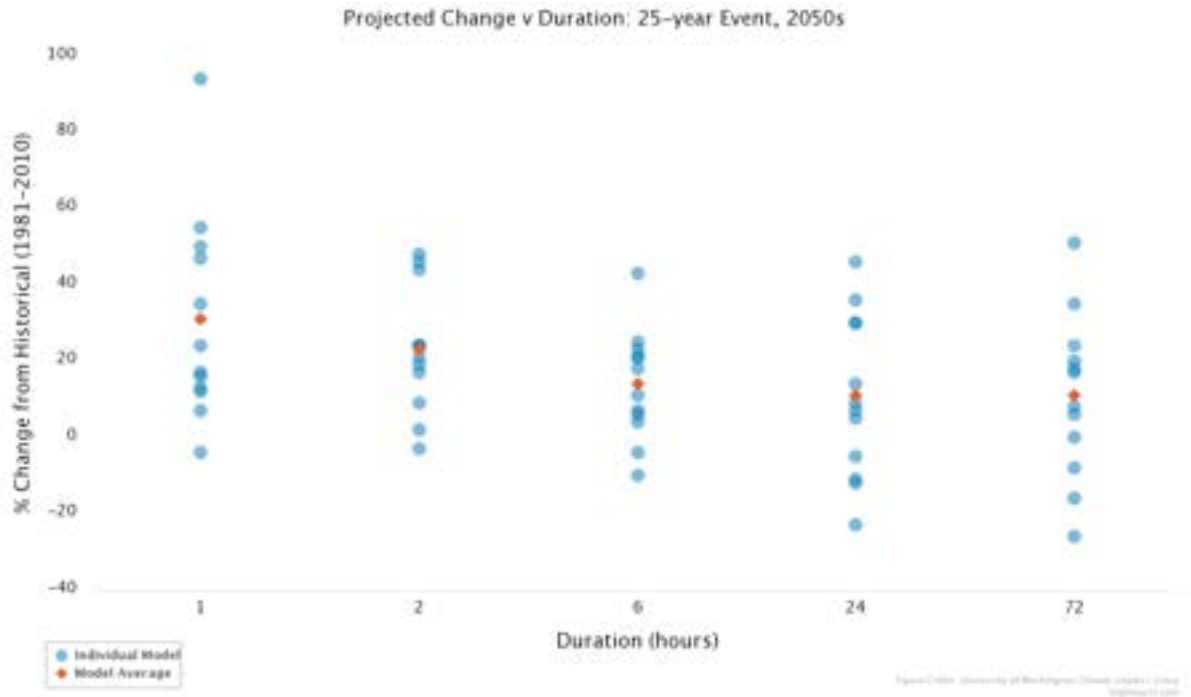
Climate Projection Updates for 2022 HMP

A number of publications related to climate projections for Washington State have come out since the 2016 update of this HMP, and are summarized here. A new report, *Projected Sea Level Rise for Washington State – A 2018 Assessment,* (reference 18) has updated projections for sea level rise in Jefferson County. Data is available for all of Jefferson County's coastline, and can be selected using the tools at Climate Impacts Group website (https://cig.uw.edu/projects/interactive-sea-level-rise-data-visualizations.) If one selects data for the Port Townsend downtown area, and selects the Representative Concentration Pathway of RCP 8.5 (which was used in the NOPRCD report), the updated data is:

Port Townsend	50% chance of ≥ 0.8 feet (2050) and ≥ 2.2 feet (2100) 5% chance of ≥ 1.2 feet (2050) and ≥ 3.7 feet (2100)

Note that the future annual coastal flooding data in the table above has not yet been updated with the latest sea level rise data in the 2018 report.

University of Washington Climate Impacts Group has created detailed projected changes in extreme precipitation for 12 kilometer grids across Washington State. (Morgan, H., Mauger, G., Won, J., Gould, D. 2021 Projected Changes in Extreme Precipitation Web Tool. University of Washington Climate Impacts Group. https:/doi.org/10.6069/79CV-4233.) For example, if one clicks on the grid for the eastern section of the Dosewallips River, for a 25 year return interval, and for the 2050's, one gets the following graph of Projected Changes in Extreme Precipitation.



Another new report relevant to Jefferson County is "Shifting Snowlines and Shorelines: The Intergovernmental Panel on Climate Change's Special Report on the Ocean and Cryosphere and Implications for Washington State." (Reference 19). It notes on page 7 "Sea surface temperatures off Washington's coast are projected to increase about 2.2°F (1.2ºC) by the 2040s (relative to 1970–1999).

This is expected to make harmful algal blooms (HABs) more likely to occur. By the end of the century under a moderate greenhouse gas emissions scenario (A1B), warmer waters in the Puget Sound are expected to lead to an average of 13 more days per year with favorable conditions for HABs. The season suitable for HABs would begin up to two months earlier and last up to one month longer than in the past (1970–1999). HABs are a threat to human and marine health and commercial and subsistence fisheries.

A 2018 report in Nature, “Dramatic declines in snowpack in the western US” utilized observed and modeled data, and indicates in its figure 1 that between 1955-2016 snowpack in the northeastern Olympics declined by 80%. However, the article also notes that their model “suggests increases in the eastern Cascades of southern Oregon and the southern part of the Olympic Mountains.” https://www.nature.com/articles/s41612-018-0012-1/ (ref 20).

A 2019 report “Managing Washington Wildfire Risk in a Changing Climate” (reference 21) notes that “On average for western Washington, the number of very high fire danger days (days with 100-hr fuel moisture below the historical percentile) is projected to increase to 43 days for the 2020s and 48 days by the 2050s, up from 36 days for the 1971 to 2000 period.” The 2015 State of Knowledge: Climate Change in Puget Sound[2] report also notes that “the annual area burned for Northwest forests west of the Cascade crest could more than double, on average, by 2070---2099 compared to 1971---2000”, although it notes that further research is needed.

Ocean acidification is already impacting the Puget Sound and surrounding waters, and is projected to intensify, with ramifications for the marine food webs of the area. This is noted in the recent Puget Sound Marine Waters 2020 Overview report.[3]

The report 2018: Northwest. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II (ref 22) notes “Existing water, transportation, and energy infrastructure already face challenges from flooding, landslides, drought, wildfire, and heat waves. Climate change is projected to increase the risks from many of these extreme events, potentially compromising the reliability of water supplies, hydropower, and transportation across the region.” (p 1052). There are public health implications for these impacts as well.

The most recent Intergovernmental Panel on Climate Change report, AR6 Climate Change 2021: The Physical Science Basis, also notes in the Summary for Policymakers, that the likelihood of compound extreme events, such as concurrent heatwaves and droughts, etc. has also increased.[4]

Recent Occurrences of Extreme Events

Recent occurrences of events consistent with climate projections are also worth noting:

- The 2021 heat was Washington’s deadliest weather-related event in history[5]
- Wildfire smoke affected air quality on the North Olympic Peninsula in 2021[6]

Integration of Climate Change into Jurisdictional Planning

The implications of current FEMA thinking to participants of the Plan are that in the near future:

1. **FEMA will require updated plans to address climate change in its planning; and**
2. **Climate change factors will be mandatory in Benefit / Cost Analysis for projects.** [CJ7]

Prudent and durable jurisdictional planning should be based on each jurisdiction's needs, resources, and best available climate science. A key aspect of integrating climate change into the planning is to recognize that past records are not necessarily indicative of future conditions. Additionally, planning should factor in that the impacts of climate hazards can be multi-sectoral, including energy (generation, transmission, distribution), water (potable, supply, and distribution), building systems (building services, fire and safety), transport (passengers, emergency services, logistics including food/waste/materials), information and telecommunications networks, health, security and physical protection.

Appendix A of the NOP R&CD report presents 30 pages of adaptive solutions that can be used to enhance strategic planning.[16] Figure CC-1 provides excerpts from the DRAFT *Port of Port Townsend Capital Repair & Replacement Plan (2016-2021)* as an illustration of how it can be worked into a jurisdiction's planning.[17]

Figure CC-1 – Excerpts from DRAFT Port of Port Townsend Capital Plan (2016-2021)[17]

A Note of Caution: Port Facilities & Climate Change Vulnerabilities

The Port of Port Townsend, and the businesses that benefit from the infrastructure provided by the Port, substantially contribute to the economy of Jefferson County. However, with the exception of the Jefferson County International Airport, nearly all of the Port's facilities and infrastructure lies adjacent to the inland marine waters of Puget Sound. Consequently, most Port properties are highly vulnerable to future sea level rise (SLR) and increased storm intensity occasioned by man-made ("anthropogenic") climate change. Much is at stake, as some 150 businesses and nearly 500 jobs in Jefferson County depend upon Port land and infrastructure.

The best available science suggests that recurrent storm surge damage and inundation due to sea level rise (SLR), will likely degrade, severely compromise, or even destroy significant components of low-lying Port infrastructure over the coming century. Moreover, a recent study prepared as part of the North Olympic Peninsula Resource Conservation and Development Council's project, "*Planning for Climate Change on the North Olympic Peninsula*" (September 2015), concluded that many Port facilities may be threatened by annual coastal flooding events by as soon as 2030. See Figures #5 and #6, on the following pages.[4] By mid-century, many Port facilities are likely to suffer from periodic inundation due to SLR coupled with storm surge and coastal flooding. By century's end (a mere 85 years in future), some Port properties are likely to be permanently inundated.

Although the precise timing of the arrival of severe impacts is difficult to predict, anthropogenic climate change will threaten the financial viability of the Port over the coming decades. In time, it will severely undermine our community's natural environment, public health, and economic wellbeing. Over coming decades, SLR and storm-related flooding will undoubtedly result in the closure of a number of businesses and key components of Port infrastructure (e.g., Boat Haven Storm Water System), either permanently or for significant periods of time.

Moreover, anticipated effects upon ecosystems will also impact Port tenants and facility users. These include: changes in ocean chemistry likely to affect Coast Seafoods in Quilcene, as well as the health of the Alaska fishery that indirectly contributes to businesses located at the Boat Haven Shipyard. Over the coming decades these changes may negatively impact Port leaseholders, as well as the Port's anticipated future revenue streams and financial health.

Although recovery from a single storm surge event may be possible and within the Port's financial capabilities, the longer-term concern is that the mounting costs of repairing and recovering from repeated storm surge events that inundate low lying areas could rapidly exhaust the Port's financial ability to mount an effective and coherent response. Longer-term, the questions are as follows:

- *At what point do the costs of repairing Port infrastructure after such shocks outweigh the benefits derived from such expenditures?*
- *At what point is it most prudent to turn away from "sunk" infrastructure costs and entirely re-imagine and reshape the nature, character, and level of complexity of Port operations?*

In sum, inevitable future physical changes suggest that continuing to "double" down on current facilities and infrastructure may be unwise in the coming years, and that the Port should begin to anticipate and prepare for the impacts of the environmental and economic damage expected from climate change.

The Port would benefit greatly from the development and consistent use of an analytical decision-making framework for climate change adaptation. This decision-making methodology would factor risks based on the best available science, and provide a quantitative cost-benefit analysis structure to support future capital expenditures. Development and use of such a tool would help the Commission and public to quantify and evaluate the estimated magnitude of costs, versus benefits, likely to be derived from repairing and rebuilding exiting infrastructure, versus retreating.

Source: Port of Port Townsend http://portofpt.com/planning/

How this document deals with climate change.

For each hazard, there is a “climate change” subsection that addresses what types of change are projected and how it can change the character of that hazard for our participants.

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13. "*What's in a Name? Global Warming vs. Climate Change*", NASA, Retrieved 23 July 2011.

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15. Ibid. II.

16. Ibid. Appendix A. Available: www.noprcd.org

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Tables

CC-1 Climate Change Predictions for the North Olympic Peninsula

Figures

CC-1 Excerpt from Port of Port Townsend Capital Plan (2015-2022)
CC-2 Jefferson County Power Substation with Hazard Zones in Vicinity

[1] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press.
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HEAT WAVE (EXTENDED)

Definition

The National Weather Service (NWS) defines a heat wave as a “prolonged excessive heat/humidity episode” in which its Heat Index (HI) is expected to exceed 105º for at least two consecutive days.

A definition based on Frich et al.'s Heat Wave Duration Index is that a heat wave occurs when the daily maximum temperature of more than five consecutive days exceeds the average maximum temperature by 5 °C (9 °F), the normal period being 1961–1990.

Heat related illness is a well-known, recognized hazard in the outdoor work environment, as well as a threat to the day-to-day functioning of people without the means of sheltering from the heat. Heat Related Illnesses (HRI) include heat fatigue, heat rash, fainting, heart cramps, heat exhaustion, and heat stroke. Aside from these disorders, heat poses an additional threat of injuries due to accidents caused by heat related fatigue, dizziness, and disorientation.

The Heat Index devised by the NWS gives an accurate measure of how hot it really feels when the relative humidity is added to the actual air temperature. Since HI values were predicated on shady, light wind conditions, exposure to full sunshine can increase values by 15 degrees. The Appendix presents a graphic representation of the heat index.

2021 Heat Wave

From June 26 to July 2, 2021 the National Weather Service in Seattle reported a long-duration, unprecedented heat wave throughout the Pacific Northwest. This extreme heat event resulted in a high to very high risk of heat-related impacts/illness for much of the population, especially those that are heat sensitive and those without effective cooling and/or adequate hydration. Those at higher risk for heat-related illness include people 65 years of age and older; infants and children up to four years of age; people who are overweight and people who are ill or on certain medications. Extreme heat events (heat waves) are predicted to happen more often and last longer due to our changing climate. Climate change is a global environmental and public health threat.

SUMMARY

The Hazard:

The National Weather Service defines a heat wave as a “prolonged excessive heat/humidity episode” in which its Heat Index (HI) is expected to exceed 105º for at least two consecutive days. Severe heat waves have caused catastrophic crop failures, thousands of deaths from hyperthermia, and widespread power outages due to increased use of air conditioning. A heat wave is considered extreme weather, and a danger because heat and sunlight may overheat the human body.

Impacts and Effects:

- Potential deaths due to Heat Related Illness (HRI)
- Increase in illness and accidents due to HRI
- Potential illness and death of commercial livestock as well as domestic pets
- Adverse impact on agriculture, especially dry land farms and grazing lands
- Increased danger of fires

- Imposition of water conservation measures
- Shortages of water for firefighting
- Increased prices for local produce
- Economic impact due to loss of sales from people sheltering from heat instead of being out in the community
- Economic impact of lost work-time due to HRI

Possible heat related disorders are:

- Heat Index 130º or higher: Heat stroke/sunstroke highly likely with continued exposure.
- Heat Index 105º - 130º: Sunstroke, heat cramps or heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity.
- Heat Index 90º - 105º: Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
- Heat Index 80º - 90º: Fatigue possible with prolonged exposure and/or physical activity.

Probability of future events: HIGH – Jefferson County residents are particularly vulnerable to extreme heat given the population demographics and lack of adequate HVAC and cooling infrastructure in the county. With climate change, it is likely periods of high heat and humidity will occur on at least an annual basis.

NWS Alerts:

The National Weather Service tracks heat waves by reporting stations, of which Seattle is the closest to Jefferson County. It issues heat advisories and excessive heat warnings based on the following criteria:

Heat Advisory - Issued within 12 hours of the onset of the following conditions: heat index of at least 105Â°F but less than 115Â°F for less than 3 hours per day, or nighttime lows above 80Â°F for 2 consecutive days.

Excessive Heat Watch - Issued by the National Weather Service when heat indices in excess of 105ÂºF (41ÂºC) during the day combined with nighttime low temperatures of 80ÂºF (27ÂºC) or higher are forecast to occur for two consecutive days.

Excessive Heat Warning - Issued within 12 hours of the onset of the following criteria: heat index of at least 105Â°F for more than 3 hours per day for 2 consecutive days, or heat index more than 115Â°F for any period of time.

Future Heat Waves: According to a 2022 report from NOAA National Centers for Environmental Information, unlike other locations in the United States, Seattle and other urban areas are rarely exposed to very high temperatures. Future heat waves, particularly an increase in the frequency of warm nights, could stress these communities, which are not well adapted to such events.

History of Heat Waves in Jefferson County

The following incidents were gleaned from local news sources and histories of Jefferson County:

Updates are from Wikipedia.

August 1981 - Heat wave in the Pacific Northwest region

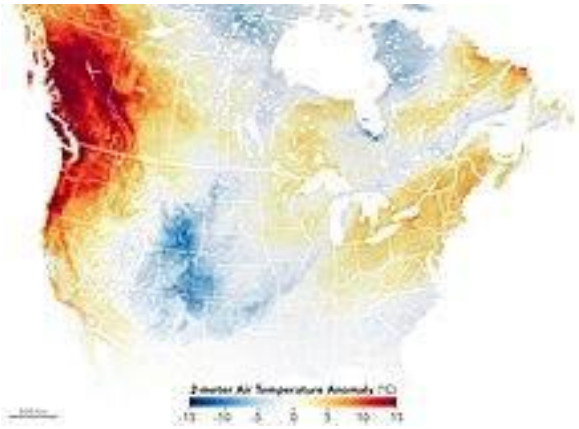
2006 – Multiple heat waves of 3-4 days each in June, July, August, and culminating in September during Seattle's Bumbershoot festival.

August 2008 – Three days in which heat alerts were issued by the National Weather Service.

July – August 2009 – Triple digit heat from Seattle to Medford, Oregon on July 28 – 29.

July 2013 - Canadian heat wave moved south into central Washington.
August 18th – 20th 2016 – Multiple days of over-100 degrees temperatures in the counties surrounding Jefferson County. Silverdale, Sequim, Seattle, etc. were all under "excessive heat warnings."

June 2021 - Heat wave in the low 100 degree range covering Portland, Seattle, Olympic Peninsula and British Columbia



Air temperature anomalies across North America on June 27, 2021, compared to 2014–2020 baseline.

NWS Seattle 2000-2019 Temperatures >85th percentile,

2000-2004: 65 days

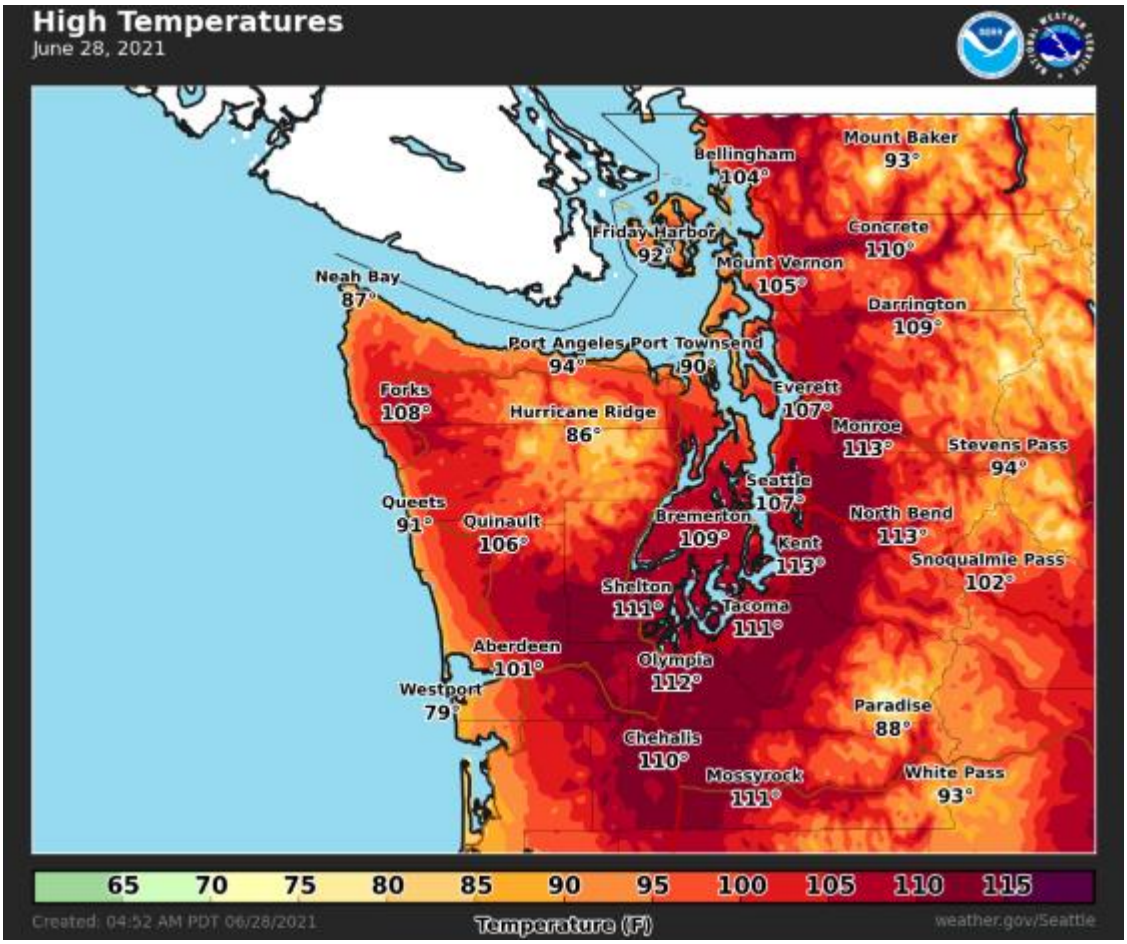
2005-2009: 78 days

2010--2014: 70 days

2015-2019: 177 days

HAZARD ASSESSMENT AND VULNERABILITY ASSESSMENT

The geography of Jefferson County mitigates its exposure to extreme heat because it is heavily wooded, surrounded by significant waterways (the Strait of Juan de Fuca and Puget Sound), and is protected by the Olympic Mountains. Even so, the moderate conditions deter people from purchasing air conditioners, and nearly a third of the population is over 65-years old. Even though extremely high temperatures are generally of short duration in Jefferson County, the high proportion of vulnerable populations, including the elderly, small children, and chronic invalids, dictate that local governmental, emergency, and public health officials are sensitive to heat conditions and take appropriate preventive measures.



Washington state high temperatures June 28, 2021 - 2021 Western North America heat wave – Wikipedia files

Climate Change

Future projections predict a slight increase in days over 90°F (+8 days) for the Pacific Northwest (PNW), with a limited increase in days over 95°F on the Olympic Peninsula. The 2.5-fold increase over the recent years of the number of days in Seattle which has exceeded the 85th heat percentile should be taken as an indicator the climate is changing and that the change may be more rapid and local than expected.

Conclusion

Heat-related damage and deaths state-wide will increase as average yearly temperatures increase. More frequent days over 100 °F (38 °C) will cause several problems for humans, including heat cramps, heat exhaustion, and heat stroke. The amount of heat waves has increased in the state of WA over the past 20 years. The average cost for each mortality from heat related deaths is $6,250.

Due to its favorable location and geography, Jefferson County has a low probability of experiencing the significant heat wave related issues that the rest of the State will face. Nevertheless, Washington's Department of Labor and Industries (L&I) has issued a rule, with which Jefferson County employers must comply, for employers having one or more employees performing work outdoors to:

- Establish and implement written procedures to prevent the occurrence of HRI;
- Provide and make accessible enough drinking water when hazards are present;
- Have formalized procedures in place to respond to employees showing signs of HRI; and
- Provide effective HRI prevention training to all employees.

The NWS will initiate alert procedures when the HI is expected to exceed 105°- 110°F (depending on local climate) for at least two consecutive days. The procedures are:

- Include HI values in zone and city forecasts.
- Issue Special Weather Statements and/or Public Information Statements presenting a detailed discussion of (a) Extent of the hazard including HI values; (b) Who is most at risk; (c) Safety rules for reducing the risk.
- Assist state/local health officials in preparing Civil Emergency Messages in severe heat waves. Meteorological information from Special Weather Statements will be included as well as more detailed medical information, advice, and names and telephone numbers of health officials.
- Release to the media and over NOAAs own Weather Radio all of the above information.

Jefferson County and the City of Port Townsend are both in compliance with the L&I rule, and local civil, public health, and emergency management authorities are cognizant of the issues and prepared to issue warnings and to react to stress indicators within the population.

Appendix

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TORNADO

SUMMARY

Definition

Tornadoes are the most violent weather phenomena known. They are characterized by funnel clouds of varying sizes that generate winds as fast as 500 miles per hour. They can affect an area of ¼ to ¾ of a mile and seldom more than 16 miles long. Tornadoes normally descend from the large cumulonimbus clouds that characterize severe thunderstorms. They form when a strong crosswind (sheer) intersects with strong warm updrafts in these clouds causing a slowly spinning vortex to form within a cloud. Eventually, this vortex may develop intensity and then descend to form a funnel cloud. When this funnel cloud touches the ground or gets close enough to the ground to affect the surface it becomes a tornado. Tornadoes can come from lines of cumulonimbus clouds or from a single storm cloud.

The Hazard: Tornadoes are the most violent weather phenomena known. They are characterized by funnel clouds of varying sizes that generate winds as fast as 500 miles per hour. They can affect an area of ¼ to ¾ of a mile and seldom more than 16 miles long.

Impacts and Effects:

- Death
- Severe Injury on
- Destruction



Source: https://en.wikipedia.org/wiki/Tornado

Previous Occurrences: Table TN-1, below, shows that there have only been 13 tornadoes recorded in Jefferson County region since 2000. During all that time, there has been only one injury.

Natural Hazard Risk Rating: The average natural hazard risk rating for tornadoes for all districts in Jefferson County was estimated at 20%, which is the lowest risk rating for all natural hazards that Jefferson County has seen.

Since 2007, the “Enhanced” Fujita Scale (EF) has been used to estimate the scale of a tornado based on 28 criteria.

Figure TN-1 - THE ENHANCED FUJITA SCALE

The National Weather Service scales tornadoes by intensity on a scale of zero to five on the FujitaPearson scale which include:

F-0. Light damage. Wind 65 to 85 mph. Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.

F-1. Moderate damage. Wind 86 to 110 mph. The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.

F-2. Considerable damage. Wind 111 to 135 mph. Roof torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

F-3. Severe damage. Wind 136 to 165 mph. Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.

F-4. Devastating damage. Wind 166 to 200 mph. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

F-5. Incredible damage. Wind above 200 mph. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel-reinforced concrete structures badly damaged.

History of Tornadoes in the Jefferson County Region

Jefferson County does not have a record of significant tornado activity. Generally, the Northwest lacks the big thunderstorms that spawn tornadoes. From the period 1880 through 2012, there have been no “officially” recorded tornadoes in Jefferson County. There is a growing concern, however that the chances of a Tornado occurring within the county is only increasing. Recent years have shown a number of tornados occurring in neighboring counties including an EF-2 in Port Orchard located in adjacent Kitsap County. In September of 2021, a Tornado Warning was also issued to Kitsap County, although a tornado never full materialized. At this rate, it is expected that Jefferson County will undergo some sort of Tornado event in the next ten or twenty years.

Year	# of Tornadoes	Direct Injury	Indirect Injury	Direct Fatality	Indirect Fatality	Property Damage
All	129	303	0	6	0	$30,944,280
2021	2	0	0	0	0	$40,000
2020	2	0	0	0	0	
2019	2	0	0	0	0	$150,000
2018	1	0	0	0	0	$1,180,000
2017	2	0	0	0	0	$4,000
2016	4	0	0	0	0	$20,000

Yearly Tornado Summary in Washington State

https://datacentral.kitsapsun.com/tornado-archive/

Table TN-1: Tornadoes in the Olympic Peninsula and Puget Sound region from 2000 through 2021.

Date	*Location*	*EF*
10/10/2020 03:40	Neilton (Grays Harbor)	1
10/18/2019 18:02	Shelton	1
12/18/2018 13:50	Port Orchard	2
01/18/2015 14:18	Gig Harbor	1
09/30/2013 06:20	Frederickson	1
2010	Eastern Puget Sound	1
09/06/2009	East of Tacoma	1
2006	S of Olympia	1

Date	*Location*	*EF*
05/18/2005 18:50	Lake Ki	1
05/27/2004 14:00	Sunnydale	1
2004	SW of Olympia	1
2003	ESE of Olympia	1
06/27/2001 18:45	Bonney Lake	1

Probability of Future Events: LOW - Severe windstorms are far more likely than tornados.

From1954 to 2000 the entire state of Washington averaged 1.6 tornadoes per year. From 2000 through 2021 the region around Jefferson County alone averaged 2.6 tornadoes per year. This increase suggests that the probability of future tornado events will increase.

Hazard Assessment and Vulnerability Assessment



Tornadoes are not normal occurrences in the Northwest the way they are in the Midwest. Tornadoes require a confluence of warm surface temperatures and warm fronts coming from the south with cold fronts coming from the north. Northwest climates do not normally generate the temperature variations conducive to tornado formation. Washington was ranked 43 in the US for total number of tornadoes. Nonetheless, the tornado threat should be taken very seriously. The conditions conducive to tornado formation can develop in Northwest Washington, although it is not common for funnel clouds to be reported in this region. During severe thunderstorms, it is possible for tornadoes to occur.

Tornadoes in Washington tend to be light or moderate, with winds ranging from 40 to 112 mph. There are a notable minority of tornadoes that cause significant to severe damage with winds going as high as 200 mph. The peak season for tornadoes is April through July. However, in Washington tornadoes may occur in the late summer months and, in a few rare cases, may occur in the winter months. While tornadoes are sometimes formed in association with large Pacific storms, most of them are caused by intense local thunderstorms. Tornadoes almost exclusively occur in the late afternoon and early evening.

Normally, Pacific Northwest tornadoes are moderate but it is possible for serious tornadoes to develop, causing death and serious injury.

Typically, tornadoes may cause severe damage to everything in their path. Walls collapse, roofs are ripped off, trees and power lines are destroyed. The challenge is that tornadoes, especially in the Northwest, are very difficult to predict and their onset is sudden. Unlike the tornado-prone areas in the plains states, there is little awareness of the tornado threat and the forecasting and warning systems are less well developed. It is extremely rare for a tornado watch or warning to be issued anywhere in the Northwest. As such, there is little public awareness of the warning systems and self-protection measures common to the tornado prone states.

Climate Change

At this time, there is too much variability in wind speeds and storm events and too short a time series to be able to make projections of climate changes effect on the intensity or patterns of winds in the region. The increase in tornado activity in the region over the last decade is correlated with climate change. There are not enough data to establish a causal relationship but it cannot be rejected and it is suggestive.

Conclusion

Emergency response agencies should not be taken by surprise by a tornado in Jefferson County. While violent tornadoes are not a characteristic of the Northwest Washington climate, the weather systems that may generate tornadoes appear regularly and the incidents of tornados are increasing. Emergency response agencies and emergency management officials should be prepared for the rapid notification of the public and for the efficient management of a mass casualty incident, and the prioritization of debris clearance.

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Tables - TORNADO

TN-1 Recorded Tornado Events in Jefferson County Since 1950, Compiled by Jefferson County Department of Emergency Management, August 2016.

Figures - TORNADO

TN-1 *Fujita Tornado Damage Scale*, Fujita, T. Theodore, University of Chicago, 1971. Source: Storm Prediction Center, NOAA. Available at: http://www.spc.noaa.gov/faq/tornado/fscale.html

WILDFIRE / FOREST / URBAN INTERFACE

SUMMARY

The Hazard: Forest and wildland fires are the uncontrolled destruction of forested and wild lands by fire caused by natural or human-made events. Forest and wildland fires occur primarily in undeveloped areas, although there are significant pockets of residences within Jefferson County woodlands.

Impacts and Effects:

- Loss of civilian lives and firefighters
- Loss of homes and businesses
- Loss of crops and livestock
- Destruction of wildlife habitat and watersheds
- Damage to salmon habitat
- Damage or total loss of scenic vistas and recreation facilities
- Destruction of timber resources
- Loss of jobs due to destroyed and damaged equipment and facilities
- Decreased tourism
- High costs to fight fires
- Fire and emergency response teams unable to meet “routine” obligations and fight wildland fires simultaneously
- Vulnerability to flooding increases

Previous Occurrences: According to the National Fire Information Reporting System (NFIRS), Jefferson County averages 5 – 10 acres of wildland fires every year. The last major wildfire, the Chimney Peak fire, occurred in 1981

Probability of Future Events: High – An annually recurring dry season combined with encroaching residential development is resulting in a regular brush fire season. So far, the rapid response of rural fire departments has kept the impact of these fires to a minimum, but the County has experienced two large fires in the past two years that threatened life and property.

Definition

Forest and wildland fires are the uncontrolled destruction of forested and wild lands by fire caused by natural or human-made events. Forest and wildland fires occur primarily in undeveloped areas.

Interface fires are a recent phenomenon that occurs in developed forest and wildlands, only partially cleared, and occupied by structural development. In interface fires people, homes and small businesses intermingle with the wildland and forest areas.

When weather conditions are dry and fuels are abundant, rapidly spreading fires can cause significant loss of life and property.

History of Fires as they affect Jefferson County

Jefferson County has had an active history of wildland fires during the past millennium. The fact that the oldest of old-growth timber stands are rare attests to the fact that most of the area has burned and reburned many times during the past 1000 years. Stands of trees older than 500 years do not occur except in small patches or scattered trees found in moist draws and stream bottoms at the headwaters of a few creeks and rivers.

It is difficult to trace the fire history of this area back more than 350 years. However, old-growth trees and fire scars suggest fires about 450, 480, 540 and 670 years ago. Historically, wildland fires were not considered a hazard. Fire is a normal part of most forest and range ecosystems. Fires historically burned on a fairly regular cycle.

The burning cycle in western Washington appears to be about every 100 – 150 years. A preponderance of evidence, however, has been obliterated by logging, major windstorms that toppled older trees, and more recent fires in the areas. Recorded history of fires in the area, however, indicates Jefferson County has had an active history of fires. As communities expand farther and farther into forested lands, and the desire to maintain the wilderness ambiance, interface fires are becoming a significant hazard, having the potential for loss of life and destruction of property.

"The occurrence of wildfires on the Olympic peninsula is closely tied to climate. It appears that the pattern of fires has been as variable as the pattern of past climates. Some periods have had stand destroying fires, others have had almost none. Still other periods may have had a pattern of high fire frequency but low fire intensity. **Because of this variability and the many factors involved, one aspect of the fire history of the Olympics seems certain: one cannot characterize the fire patterns of one period by knowing what it is in another."**

Table WF-1, below, details some of the history and more interesting wildland fires that have affected Jefferson County.

Table WF-1 Representative Wildland Fires That Affected Jefferson County

Date	***Identifier***	***Particulars***
7200 – 8700 years ago	Lower Hoh River Drainage	Layer of charcoal underneath dated 6800 year old ash.
~1308	Olympic Peninsula	At the end of the Medieval Optimum and start of the Little Ice Age; burned half of the Olympic Peninsula.
~1448 - 1538	Mid-elevations of the Olympic Peninsula	
~1668 & 1701	Last of the Big Fires	Burned over one million acres.
~1720 - 1850	Virtually no fires.	End of Little Ice Age; Climate cool and wet.

Sept 1864	Ludlow – Quilcene Fire	Several thousand acres on Mt. Walker, Mt. Turner, and Quilcene Ridge fanned by a high east wind.

Date	***Identifier***	***Particulars***
1868	Multiple smaller fires.	Drought was severe. Driest June, July, August and September for the 58-year record up to that time. Worst fire season since early 1700's.
1885	Neilton Burn	2000 acres near Lake Quinault.
1890	Quilcene Fire	Land clearing burns near Sequim got out of control. Fire survived the winter smoldering in stumps. Restarted in in the spring and burned south, covering 30,000 acres.
1902	The Forest Fires of 1902	Many fires in Washington and Oregon. One fire or series of fires followed the Washington coast, jumping the Quinault, Raft, Queets, Clearwater, Hoh, Quillayute rivers, and swung around Lake Ozette and died out before it reached the Sooes. The worst fire season in 275 years; worse than the 1868 season.
1918	Dosewallips & Duckabush Fires	Dosewallips Fire – 2665 acres Duckabush Fire – 4810 acres
1924-1925	Green Mountain, Mt. Zion, Snow Creek Fires	Discovery Bay (1924) 5000 acres Snow Creek Fire (1924) 3100 acres Green Mt. Fire (1925) 9615 acres Snow Creek Fire (1925) 3825 acres
1929	Interorrem Fire	85 Lightning strikes; 8,602 acres in the lower Duckabush drainage.
1939	Deep Creek Fire	13,000 acres of which 3460 were in the Olympic National Forest
1978	Hoh Fire	Caused by Lightening. Discovered 13 days after ignition in Olympic National Forest; 1,050 Acres
1981	Chimney Fire	500+ Acres
August 2015	Sunnyside Road, Mason County	59 acres along a power corridor. Threatened BPA transmission line; cuts power to more than 2000 PUD customers

August 2016	Olympic Forest Fires	Four separate fires totaling 956 acres as of August 22nd, 2016.
August 2023	Beaver Valley Fire - Chimacum	3 acres, evacuation order issued for approx. 9 homes
August 2024	Road 2620 Fire - Brinnon	398 acres; evacuation order issued for approx. 12 homes

Hazard Identification and Vulnerability Assessment

The Washington Department of Natural Resources and its federal and local partners determined that 181 communities are at high risk for wilderness fires after evaluating them for fire behavior potential, fire protection capability, and risk to social, cultural and community resources. Risk factors included area fire history, type and density of vegetative fuels, extreme weather conditions, topography, number and density of structures and their distance from fuels, location of municipal watershed, and likely loss of housing or business. The evaluation used the criteria in the wildfire hazard severity analysis of the National Fire Protection Association's NFPA 299 Standard for Protection of Life and Property from Wildfire, 1997 Edition. Figure WF-1 shows the areas at high risk for fires within each county.

Figure WF-1 Areas of High Fire Risk (2002)

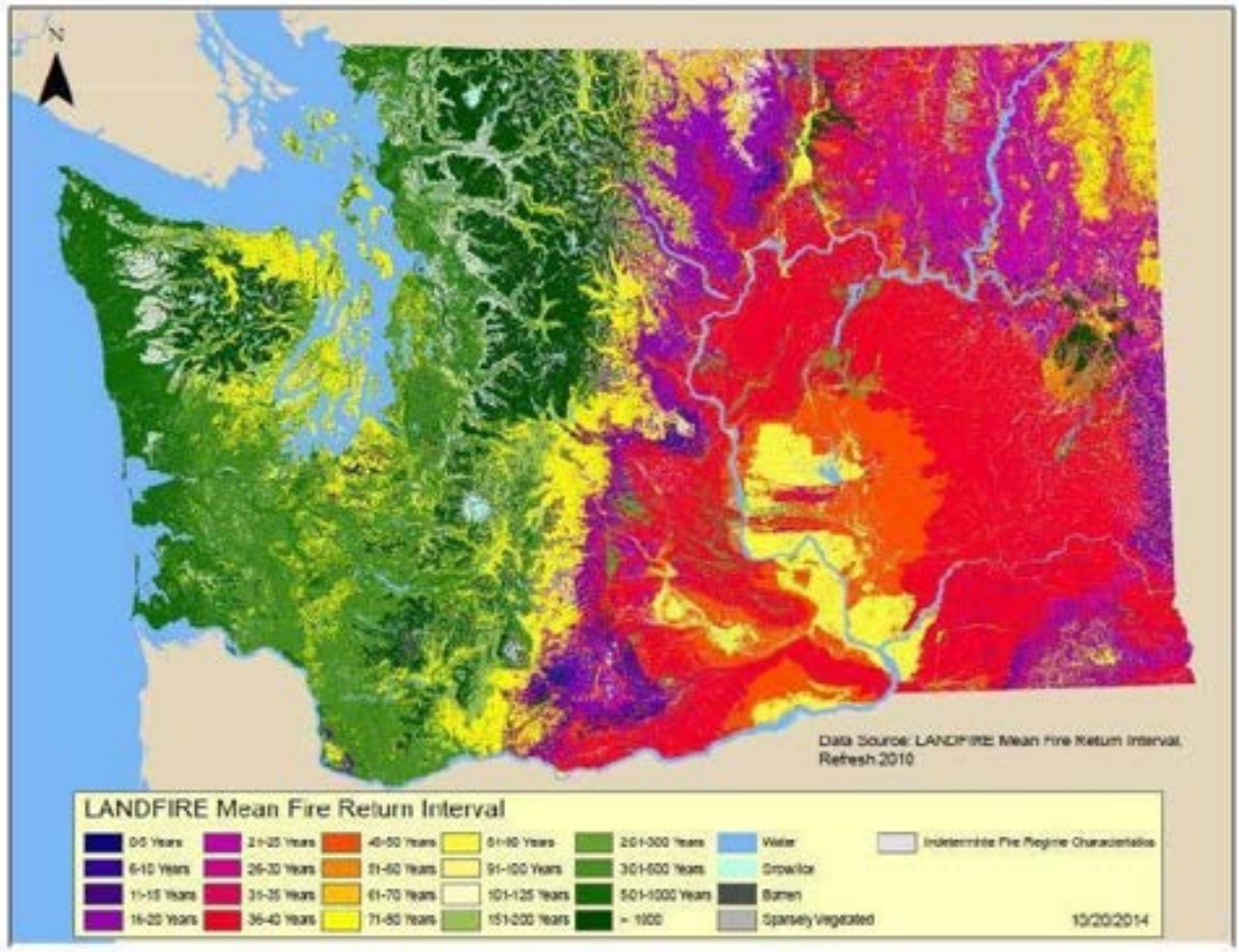


Source: *Progress Report on the National Fire Plan in Washington State*, Department of Natural Resources, September 2002.

As seen from the map preceding, Jefferson County is among the counties in which the wildfire threat is high. Jefferson County communities that are on the list of areas at high risk for urban interface wildfires are: Brinnon, Port Hadlock, Port Townsend, and Quilcene.

In 2016, however, the focus of the WA DNR is on the Wildland Urban Interface Communities at risk based on a statistical mean return rate for fires, which excludes Jefferson County communities that are in rural areas. Figure WF-2 shows the LandFire Mean Fire Return Interval throughout the state. East Jefferson county is yellow, which is “71-80 years.” This is underscored by the apocryphal joking of local firefighters that the Olympic Peninsula is known as the “Silicon Forest” – not because of technology companies, but rather because it will not burn.

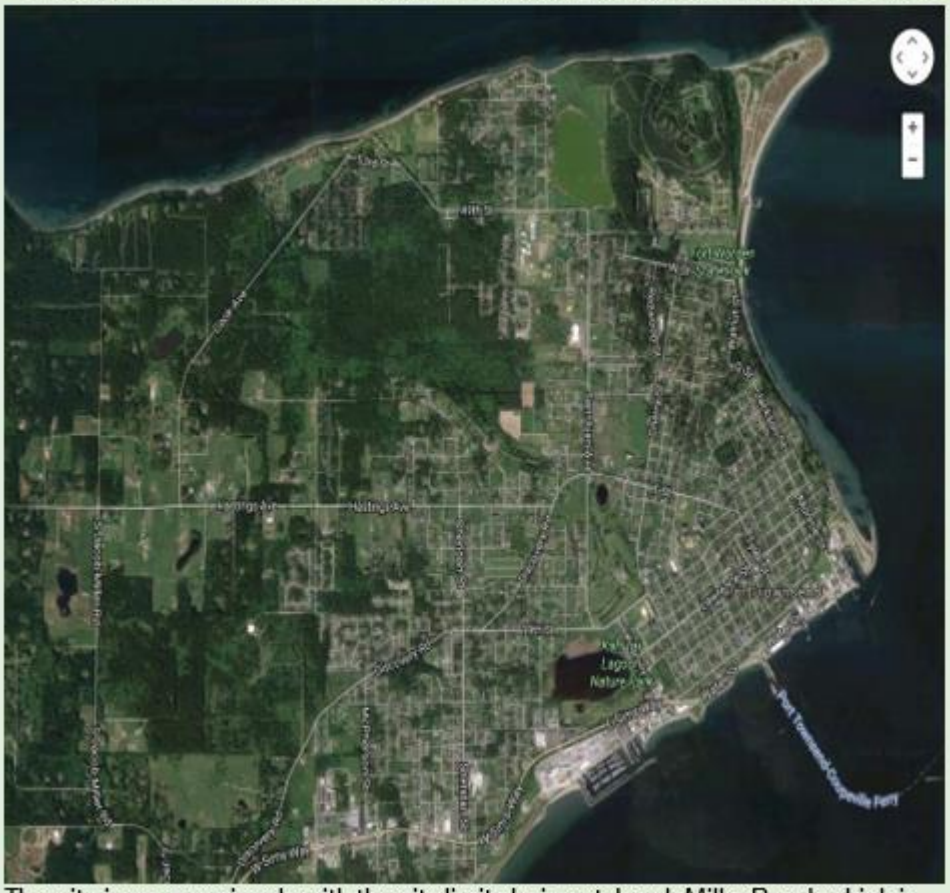
Figure WF-2 LANDFIRE Mean Fire Return Interval



The uncomfortable fact is that Jefferson County and its populated communities are integrated with the surrounding forest. Wildland – Urban Interfaces (WUI) exist in a multiplicity of areas because Homeowners Associations, developers, etc. carve out communities while leaving extensive trees among and around the dwellings. The Mean Fire Return Interval is meaningless because increasingly forest fires are caused by human carelessness and can override natural checks and balances. Meanwhile, because of historical reasons, the ownership of DNR protected land is a checkerboard with privately own land, thus making it

vulnerable to fires started on private lands. Figure WF-3, below, is a google earth view of the City of Port Townsend to show how the wildland-urban interface is intermixed throughout the City. Table WF-2, below, is a gallery of recent WUI fires that impacted Jefferson County.

Figure WF-3 - Wildland – Urban Interface throughout Port Townsend



The city is on a peninsula with the city limits being at Jacob Miller Road, which is labeled on the left side of the map.

Table WF-2 Gallery of Selected Recent Jefferson County WUI Fires

 **08/20/2016 Recreational Fire Leads to Wildfire.**	"East Jefferson Fire Rescue crews at 7:50 a.m. Saturday, Aug. 20 responded to a brush fire, 15 by 20 feet in size, in the 400 block of Four Corners Road. Neighbors stated that a man had been burning Friday night in a homemade, half-barrel fireplace, which was found within the burn area, according to EJFR. Investigators believe a spark from that barrel ignited the brush fire." Courtesy photo by Bill Beezley, East Jefferson Fire Rescue.
 09/02/2015 Fire in Mason County Cuts Electric Service to Over 2000 Jefferson County Customers.	"More than 2,000 electricity customers in Jefferson County were without power on Thursday, Aug. 28 as a result of two separate incidents, including a wildfire under a Bonneville Power Administration (BPA) transmission line in Mason County. The Sunnyside Road Fire, which is on state Department of Natural Resources (DNR) land, had consumed about 59 acres in the Skokomish Valley as of Monday, Aug. 31, according to Joe Miles, a spokesperson for DNR. Multiple agencies responded to fight the blaze; 68 personnel battled the fire, which as of Monday was contained. Cause of the fire is still unknown." By Leader Staff.



Beckett Point Fire – 09/05/2011

"Firefighters on Sept. 5 kept this fireworks-induced wildfire from reaching homes on Beckett Point (the sea level cabin community's southern edge, which is to the right) and the homes tucked into the tree line along Beckett Point Road. The fire started at about 3 p.m. on Monday, a result of kids playing with fireworks. Fickle winds fanned it to about 21 acres. It was 70 percent contained by 7 p.m. (This was the fire's calm section.) Soon after, a helicopter began dropping water along ridge-top brush and trees." Photo by James Robinson

Jefferson County and Port Townsend are served by 4 active fire districts, all with mutual aid agreements. During any fire incident, the incident commander can ask for units from any of the districts. At such times, units not involved redeploy to cover the areas left exposed by units fighting the wildfire. This "floating battalion" allows all of the districts to put more equipment on a fire and still have coverage in their home district. In the Beckett Point fire, for example, engines from three districts responded directly to the fire, Jefferson County Emergency Management set up an Incident Command Post for communications at the fire, and mutual aid partners extended coverage to those districts whose equipment responded to the fire.

Jefferson County's fire season usually runs from mid-May through October. Any prolonged period without significant precipitation presents a potentially dangerous situation, particularly if strong dry, east winds prevail. The probability of a forest fire or an interface fire in any one location depends on fuel conditions, topography, the time of year, the past weather conditions, and if there is human activity such as debris burning, camping, etc., which are taking place.

The combination of a dryer climate along with a plethora of illegal meth labs hidden in the wildlands has resulted in an increase the number and severity of urban interface fires. In addition, as the buildable space in the towns and city are used up, numerous housing developments are being created in the unincorporated portion of the county.

Washington State fires responded to by city and county fire departments were largely started by human causes. Included in the list of human causes are cigarettes, fireworks, and outdoor burning. Wildland fires started by heat spark ember of flames caused the largest dollar loss, followed by debris burning and cigarettes. Loss per incident for debris fires is three times higher than any other fire cause.
Short-term loss caused by fires is the complete destruction of valuable resources such as timber, wildlife, habitat, scenic vistas, and watersheds. Vulnerability to flooding increases due

to the destruction of watersheds. Long-term effects are reduced amounts of timber for building and recreation areas.

Home building near forests and wildlands increases the loss from fires. There is a trend for families to move into more rural and forested areas. Many homes are built with an effort to maintain the scenic

aspects of the surrounding area. These areas are farther from firefighting assets. Frequently, there is little clearance of vegetation resulting in a lack of defensible space.



09/05/2011 On Sept. 5th firefighters came over the ridge to keep flames from reaching the houses on the ridge overlooking Beckett Point. Photo by James Robinson of the Leader

Narrow access roads frequently found in these areas interfere with fire suppression efforts. Frequently roads are so narrow that standard sized fire apparatus cannot adequately turn around or pass on the roads. More diverse fire apparatus such as brush rigs and smaller engines are needed. Smaller fire districts may not be able to financially support these additional requirements.

Climate Change

“The Olympic Mountains are generally wetter than other parts of the state and have been less prone to wildfires. However, it is expected that warmer summer temperatures, higher evaporation rates, and declines in soil moisture will increase wildfire risk on the Peninsula. The fire season will also lengthen due primarily to earlier snowmelt. One set of projections expects a 150% - 1,000% increase in annual area burned in forests west of the Cascades by

the end of the century. When it comes to wildfire, the risk to property and people is determined primarily by the amount of development along the wildland/urban interface. In both Jefferson and Clallam County 24% of that interface is developed and this includes 14,686 homes in Clallam County and 10,475 homes in Jefferson County (in 2013)."

Conclusion

Jefferson County, the City of Port Townsend, and the unincorporated towns of Brinnon, Port Hadlock, and Quilcene are all considered at high risk for urban interface wildfire – at least by the local fire districts. The commingling of residential enclaves adjacent to and among forested areas also means that these areas are highly vulnerable.

A number of activities can be undertaken which will reduce the actual numbers of fires and resulting loss of fires.

- Forest fire education and enforcement programs must be emphasized to include early reporting of fires
- Effective early fire detection and emergency communication systems are essential
- Effective early warning systems are essential to notify local inhabitants and persons in the area of the fire. An evacuation plan detailing primary and alternate escape routes should be developed if possible.
- Fire-safe development planning should be undertaken by jurisdictions to include:
    - Sufficient fuel free areas around structures
    - Fire resistant roofing materials
    - Adequate two-way routes and turnaround areas for emergency vehicles
    - An adequate water supply
    - Development of local ordinances to control human caused fires
- Road closures should be increased during peak fire periods to reduce access to fire prone areas

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Tables - WILDFIRE (Forest – Urban Interface)

WF-1 Representative Wildland Fires That Affected Jefferson County
WF-2 Gallery of Selected Recent Jefferson County WUI Fires

Figures - WILDFIRE (Forest – Urban Interface)

WF-1 Areas of High Fire Risk (2002)
WF-2 LandFire Mean Fire Return Interval – 2014
WF-3 Wildland – Urban Interface throughout Port Townsend

DAM FAILURE

SUMMARY

Definition

Dam failure is the uncontrolled release of impounded water resulting in downstream flooding that can affect life and property. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism or terrorism can cause dam failures.

“All dams are assigned a high, significant, or low hazard classification based on potential of loss of life and damage to property should the dam fail. This classification is considered the *Dam Hazard*, and indicates the potential hazard to the downstream area resulting from failure or mis-operation of the dam or facilities. Classifications are updated based on development and changing demographics upstream and downstream. Washington State describes each of the different hazard classifications as follows:

- Low - A dam where failure or mis-operation results in no probable loss of human life and low economic and/or environmental loss. Losses are principally limited to the owner's property.
- Significant - A dam where failure or mis-operation results in the potential of one to six losses of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. These dams are often located in predominantly rural or agricultural areas but could be located in areas with more dense populations and significant infrastructure.
- High - A dam where failure or mis-operation will probably cause a potential loss of greater than seven human lives.”

The Hazard: “A dam is a barrier across flowing water that obstructs, directs or slows down the flow, often creating a reservoir, lake or impoundments. Most dams have a section called a *spillway or weir* over which, or through which, water flows, either intermittently or continuously, and some have hydroelectric power generation systems installed.” A levee is an embankment raised to prevent a river from overflowing. Levees are also small ridges or raised areas bordering an irrigated field. A dike is an embankment built along the shore of a sea or lake or beside a river to hold back the water and prevent flooding.

“Dams are considered "installations containing dangerous forces" under International Humanitarian Law due to the massive impact of a possible destruction on the civilian population and the environment.”

Dam failure is the uncontrolled release of impounded water resulting in downstream flooding that can affect life and property. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism or terrorism can cause dam failures. Dam failures are comparatively rare, but can cause immense damage and loss of life when they occur.

Impacts and Effects:

- Loss of life
- Loss of homes and businesses
- Loss or long-term disruption to water supplies
- Firefighting water sources adversely impacted
- Business depending on large quantities of water severely impacted
- Road and bridge washouts
- Loss of crops and livestock
- Damage or destruction of salmon streams
- Damage or loss of recreation facilities
- Loss of jobs due to damaged equipment and facilities

Previous Occurrences: Dam failure has not been a major concern for the residents of Jefferson County. There has been no history of lives lost, property loss, or other damage as the result of dam failures.

Probability of Future Events: **Low**. Regular inspections mitigate the possibility of a spontaneous dam failure without an external factor. A severe earthquake could cause the destruction of any given dam but the probability of a severe earthquake is low, even as the consequences are high.

The National Inventory of Dams (NID) contains information on approximately 79,000 dams throughout the U.S. that are more than 25 feet high, hold more than 50 acre-feet of water, or are considered a significant hazard if they fail. The current National Inventory for Dams for Jefferson County lists 4 dams that meet that criteria. Table DF-1 shows the four Jefferson County dams listed on the inventory.

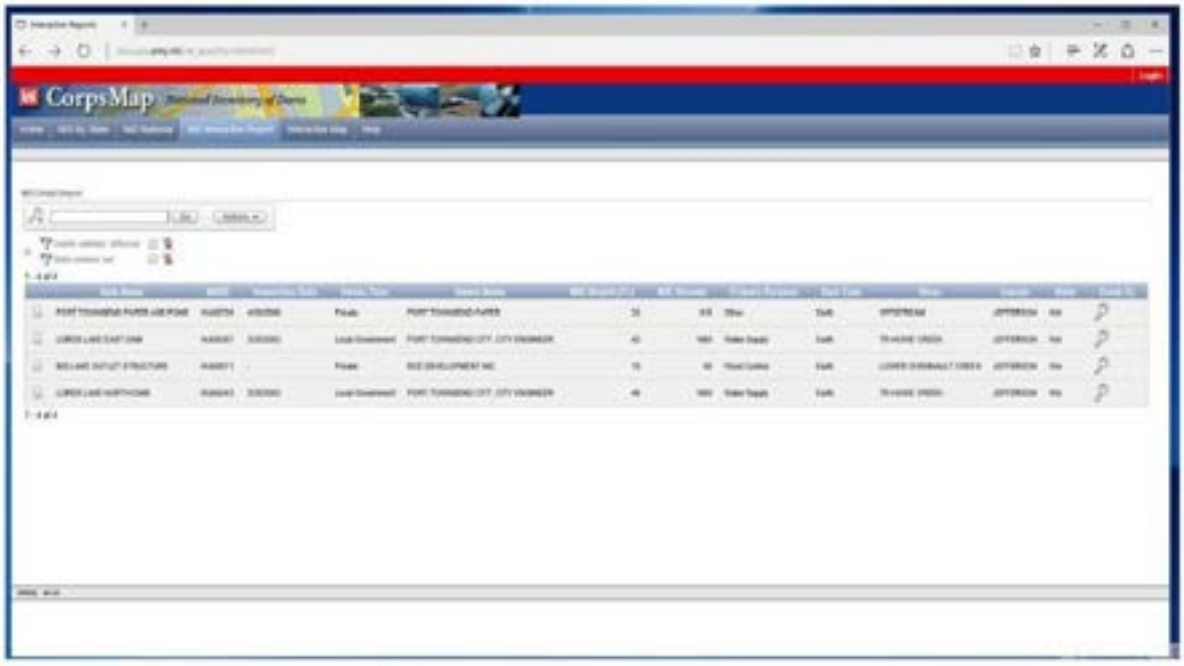


Figure DF-1 - Location of Port Townsend Paper ASB Pond

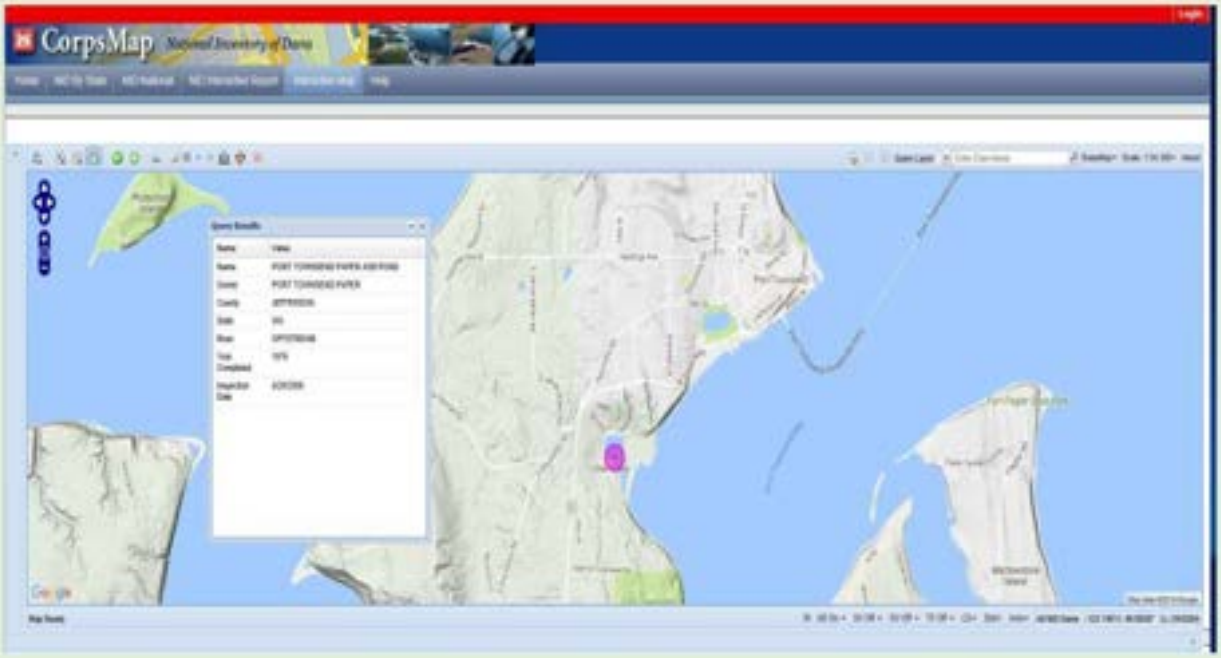


Figure DF-2 - Location of Lords Lake East Dam

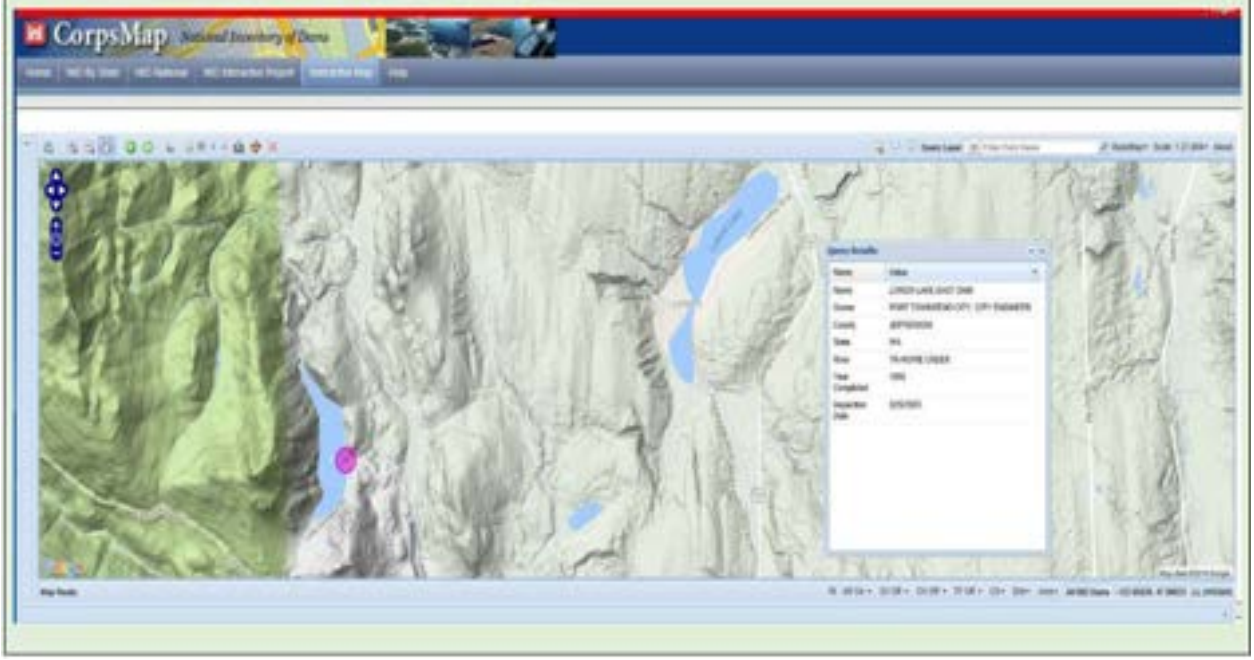


Figure DF-3 - Location of Big Lake Outlet Structure

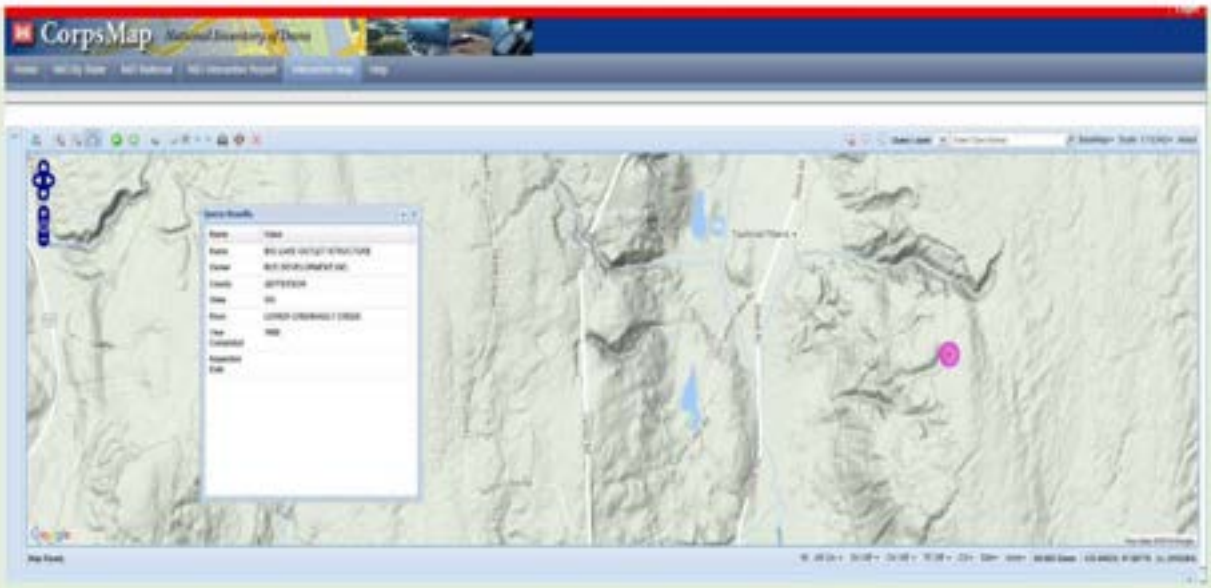


Figure DF-4 - Location of Lords Lake North Dam

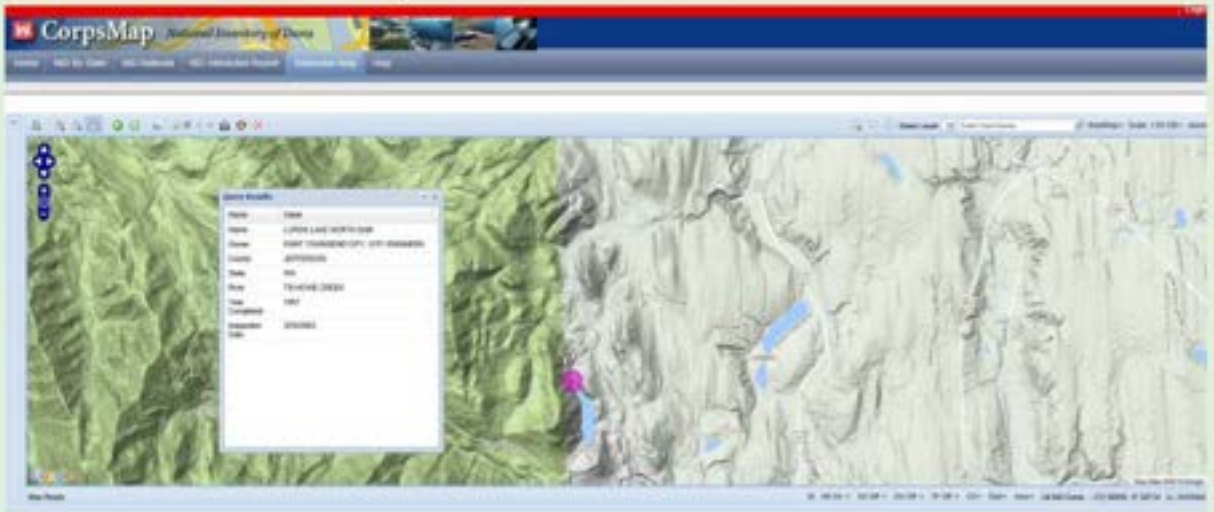


Table DF-2 - Downstream Hazard Classifications

Downstream Hazard Classification				
Downstream Hazard Potential	**Downstream Hazard Class**	**Population at Risk**	**Economic Loss Generic Descriptions**	**Environmental Damages**
Low	3	0	**Minimal.** No inhabited structures. Limited agriculture development.	No deleterious materials in water
Significant	2	1 to 6	**Appreciable.** 1 or 2 inhabited structures. Notable agriculture or work sites. Secondary highway and/or rail lines.	Limited water quality degradation from reservoir contents and only short-term consequences.
High	1C	7 to 30	**Major.** 3 to 10 inhabited structures. Low density suburban area with some industry and work sites. Primary highways and rail lines.	Severe water quality degradation potential from reservoir contents and long-term effects on aquatic and human life.
High	1B	31-300	**Extreme.** 11 to 100 inhabited structures. Medium density suburban or urban area with associated industry, property and transportation features.	Severe water quality degradation potential from reservoir contents and long-term effects on aquatic and human life.
High	1A	More than 300	**Extreme.** More than 100 inhabited structures. Highly developed, densely populated suburban or urban area with associated industry, property, transportation and community lifeline features.	Severe water quality degradation potential from reservoir contents and long-term effects on aquatic and human life.

The Washington Department of Ecology Dam Safety Section has five dams listed on its state inventory of dams for Jefferson County. Shown below in Table DF-3, two are listed as High risk (Cat. 1A), and one is listed as Significant risk (Cat. 2), and two are listed as Low risk (Cat. 3).

History of Dam Failure in Jefferson County

Dam failure has not been a major concern for the residents of Jefferson County. There has been no history of lives lost, property loss, or other damage as the result of dam failures.

Table DF3 Jefferson County Dams listed in the WA Department of Ecology State Dam Inventory

Report Date Time: 2015-12-07 10:51 43

NAME OF DAM		NAME OF OWNER			STATE ID	NATIONAL ID	YR COMPLETED	HAZARD CLASS
RIVER OR STREAM		IMPOUNDMENT NAME			LATITUDE	LONGITUDE	SEC TWN RNGE	WRIA
DAM TYPES	RESERVOIR PURPOSES	CREST LEN	DAM HT	SURFACE AREA	STORAGE	MAX STORAGE	MAX DISCHARGE	DRAINAGE AREA
Dam Inventory for Jefferson County							Counties: 39/39, Dams: 1166/1166	
Big Lake Outlet Structure		Bce Development Inc			JE17-571	WA00571	1988	3
Lower Chennault Creek		Big Lake			47.8948130 deg	122.809608 deg	T28 NR01 W S28	17
RE	C	163 ft	15 ft	3.0 acres	10 acre-ft	65 acre-ft	23 cfs	0.32 sq mi
Lords Lake East Dam		Port Townsend City, City Engineer			JE17-357	WA00357	1956	1A
Tr-Howe Creek		Lords Lake			47.8808330 deg	122.931498 deg	T28 NR02 W S33	17
RE	S	600 ft	42 ft	56.0 acres	1480 acre-ft	1860 acre-ft	190 cfs	0.50 sq mi
Lords Lake North Dam		Port Townsend City, City Engineer			JE17-243	WA00243	1957	1A
Tr-Howe Creek		Lords Lake			47.8877300 deg	122.937612 deg	T28 NR02 W S28	17
RE	S	165 ft	40 ft	56.0 acres	1480 acre-ft	1860 acre-ft	250 cfs	0.50 sq mi
Port Townsend Paper ASB Pond		Port Townsend Paper			JE17-726	WA00726	1976	2
Offstream		Port Townsend paper ASB Pond			48.0931240 deg	122.805158 deg	T30 NR01 W S16	17
RE	Q	4920 ft	33 ft	31.0 acres	550 acre-ft	615 acre-ft	0 cfs	0.05 sq mi
Witter Dam		James M Kelly			JE17-1068	WA01068	1965	3
Tr-Puget Sound		unnamed			47.9301610 deg	122.734325 deg	T28 NR01 E S07	17
RE	R	310 ft	14 ft	5.0 acres	5 acre-ft	14 acre-ft	12 cfs	0.00 sq mi

Source: Wa Dept of Ecology

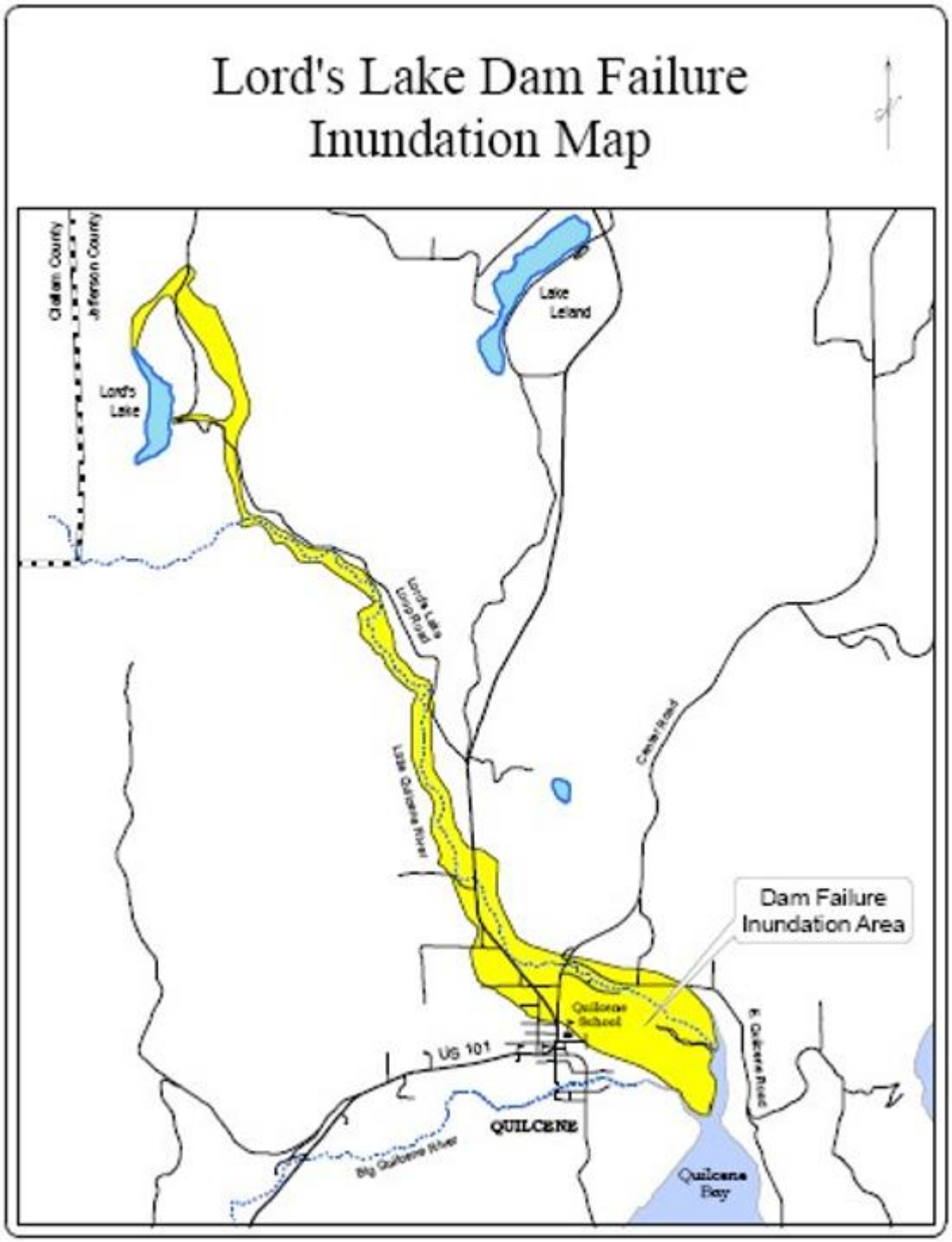
HAZARD IDENTIFICATION AND VULNERABILITY ASSESSMENT

There are two publicly owned, and three privately owned dams of consequence in the county. Both publicly- owned dams are property of the City of Port Townsend. Morgan Hill Reservoir, which is at the highest point in the City of Port Townsend, also used to be on the list. It was categorized as a Category 1A, High Downstream Hazard Potential because it is in the middle of the city. It no longer meets state standards, so the reservoir is left dry and its risk of a downstream catastrophe is nil. The City intends to surplus the property in the future.

The Lords Lake East and Lords Lake North dams are categorized as having a “High Downstream Hazard Potential” with a population risk of 31 – 300. Economic loss that could result if these dams were to fail is rated as extreme with 11-100 inhabited structures downstream of the dam. High hazard dams (dams located upstream of three or more residences) are supposed to be inspected on a 6-year inspection cycle.

Figure DF-5, below, shows that a failure of the Lords Lake East Dam has the potential to inundate a significant portion of the Quilcene area of Jefferson County.

Figure DF-5 – Lord's Lake East Dam Failure Inundation Zone



All of the State's 116 high hazard dams have previously been inspected, although during the years of 1999-2000, some of the inspections were deferred due to heavy workloads in plan reviews and construction inspections of new projects. Previous history, inspections, and information received by the Department of Ecology, however, indicated that Jefferson County's dams did not have significant safety deficiencies. As a result, the Washington State Department of Ecology's "*2000 Report to the Legislature—Status of High and Significant Hazard Dams in Washington State with Safety Deficiencies*" does not indicate that these dams have significant safety deficiencies.

In general, periodic inspections and follow-up engineering analysis are conducted to:

- Identify defects, especially due to aging
- Evaluate dam operations and maintenance
- Assess dam structural integrity and stability
- Assess the stability of dam structures under earthquake conditions

Inspections look not only at the dam, but also at the downstream development that has taken place to ensure that encroachment into the area project to be flooded in the event of a dam failure has not taken place. Such encroachment would change the hazard classification. The State Dam Safety Office is also attempting to examine smaller dams such as city's old reservoir systems. These dams were often built many years before stringent requirements were in place. The State Dam Safety Office is attempting to get these smaller dams on a schedule for comprehensive inspections and repair as well.

While the failure of projects with a high potential for loss of life and property is remote, the number of failures of low hazard projects that provide important infrastructure roles may be on the rise.

Conclusion

Three state statues deal with safety of dams and other hydraulic structures: Chapters 43.21A, 86.16, and 90.03 RCW. These laws provide authority to approve plans for dams but also to inspect hydraulic works and require appropriate changes in maintenance and operation. Periodic inspections are the primary tool for detecting deficiencies at dams that could lead to failure. Periodic inspections help identify dams where significant development has occurred downstream resulting in the need for more stringent building and planning codes due to greater population at risk. County building permits consider dams in the permit process.

It is noteworthy that a dam's classification can move from Significant Risk (Cat. 2) to High Risk (Cat. 1A), not because the dam is becoming structurally unsound, but rather because there is more development downstream that can be damaged in a breach.

References – DAM FAILURE

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11. Lords Lake Inundation Zone, Jefferson County GIS, 2009.

Tables - DAM FAILURE

DF-1 "*Jefferson County Dams Listed on the National Inventory of Dams*", National Inventory of Dams,
U.S. Army Corps of Engineers, NID Interactive Report,
http://nid.usace.army.mil/cm_apex/f?p=838:4:0::NO

DF-2 Downstream Hazard Classification

Figures - DAM FAILURE

Location of Port Townsend Paper ASB Pond, National Inventory of Dams, U.S. Army Corps of Engineers, CorpsMap, http://nid.usace.army.mil/

Location of Lords Lake East Dam, National Inventory of Dams, U.S. Army Corps of Engineers, CorpsMap, http://nid.usace.army.mil/

Location of Big Lake Outlet Structure, National Inventory of Dams, U.S. Army Corps of Engineers, CorpsMap, http://nid.usace.army.mil/

Location of Lords Lake North Dam, National Inventory of Dams, U.S. Army Corps of Engineers, CorpsMap, http://nid.usace.army.mil/

Lord’s Lake East Dam Failure Inundation Zone, Jefferson County GIS Department.

WATER SHORTAGE / SEWER FAILURE (EXTENDED)

SUMMARY

Definition:

Water can be in short supply or become contaminated due to either intentional actions or to unintentional consequences of improper handling, system breakdowns, or through the introduction of bacteria from various means. Shortages in this context are extended, but are through non-climatic events, thus droughts are not addressed here, but have their own section.

The Hazard: Water can be in short supply or become contaminated due to either intentional actions or to unintentional consequences of improper handling, system breakdowns, or through the introduction of bacteria from various means. It can also be chronically in short supply due to the effects of climate warming such as droughts on municipal water supplies. Disruption to the water supply can also be the result of natural hazards such as earthquakes, windstorms, and flooding.

Impacts and Effects:

Health problems ranging from mild discomfort to extremely ill and/or death
Health care providers overwhelmed by patients
Hospital bed shortages
Emergency Medical Systems challenged by increased calls
Loss of tourism resulting in loss of business revenue
Long term emergency management crisis if water supply is contaminated
Adverse impact on agriculture, especially dry land farms and grazing lands
Increased danger of fires
Serious impacts to recreation areas
Imposition of water conservation measures
Curtailment of industries using large quantities of water causing unemployment
Shortages of water for firefighting
Increased prices for local produce

Previous Occurrences: There have been no major historical incidents of food or water contamination in Jefferson County other than occasional “food poisoning” episodes at restaurants or social gatherings.

Probability of Future Events: MED – Climatic changes may be impacting the frequency and duration of drought conditions on the Olympic Peninsula and lead to spot shortages of water.

History of Water Shortage/Sewer Failure in Jefferson County

There have been no major historical incidents of extended water shortages or water contamination in Jefferson County other than occasional breaks in water lines or the occasional “food poisoning” episodes at restaurants or social gatherings. Wells and water supplies have

had short-term periods of contamination following maintenance work on their systems or by accidental contamination of wells due to poor drainage systems or other similar events. In each case, the cause of contamination was referred to the proper authorities or was solved by private owners of the water wells involved.

- Several local lakes have had periodic contamination by blooms of toxic blue-green algae. This has killed or injured small pets, and has resulted in periods in which the lakes have been quarantined. While inconvenient, these lakes are not major contributors to the economy or the drinking water supply, so the occurrences are of concern only to the degree that they threaten county residents and their animals.

- Port Townsend has a single 36" diameter pipeline from the City reservoir to the city itself, twenty eight miles away. This has occasionally been broken by landslides in vulnerable areas. These are quickly repaired, and water outages have never been more than a day. The city has a 5-million gallon reservoir that can supply the city for two to three days during a water line disruption.

- On December 14, 2009, an 80-year old 12" main broke at 11:00 a.m. The break was repaired by 7:00 p.m., but restaurants were ordered by the Public Health Department to close until the water was tested twice with satisfactory results. The test concluded at 4:00 p.m. on the next day.

Hazard Assessment and Vulnerability Assessment

At this time in the history of our country, people are primarily dependent on others to provide water, although a significant number of rural households in Jefferson County have their own wells. County and city water supply systems are large and provide the majority of the county with drinking water. While this system encourages efficiency of supply, it is vulnerable to interruption and can also spread disease rapidly.

Over the past decade, the vulnerability of the Jefferson County communities' water supplies has been increasing. Primary reasons for the increased risk include:

Increased development in rural areas has put stress on available water sources
Possible climatic changes that reduce the winter snow packs responsible for recharging ground water systems
Aging water delivery infrastructure that is easily disrupted
Parasites, bacteria, and other organisms have become more resistant to pesticides
It can take up to a week for people to show signs of exposure. This makes it difficult to track the source because people tend to forget what and where they ingested. Additionally, more people can contract the illness during the incubation period.
New parasites and bacteria are being identified all the time.
Speculation based on intelligence gathered in the war on terrorism suggests that contaminating the nation's regional water supplies would create a disaster for hundreds of thousands of people

The City constructed a new 5-million-gallon reservoir and drinking water treatment facility, which went into service in 2016. The new facility improves capabilities to meet Federal requirements,

and replaces a reservoir that was old and could not withstand a significant earthquake. This increases the available supply of potable water to 3.0 mgd, the planned treatment plant capacity.

The primary effects of a contaminated food or water supply are illnesses and sometimes even death. If the contamination leads to an epidemic, it could severely tax the health care system in regards to diagnosis, treatment and prevention. A community dependent on tourism, such as Port Townsend, would be affected by loss of productivity.

During a region-wide event such as a major earthquake, Jefferson County water supplies are extremely vulnerable. For example:

The City of Port Townsend, which has about 1/3 of the county's population, depends on a single 36" diameter pipeline to carry its water supply that is known to cross areas that are subject to landslides. Originally built in 1926, with upgrades in 1956, it has known vulnerabilities that are being addressed within funding limitations. The estimated cost to replace the entire line is approximately $30 million. Figure H_2O-1, below, shows the system.

The Jefferson County Public Utility District No. 1 (PUD) has a 4000-gallon water tanker trailer to support the region during a water shortage emergency. The PUD tanker is not regularly used, and the tires are worn. Additionally, PUD's other alternate water source is bottled water suppliers such as Olympic Springs.

The PUD provides water to small communities such as Quilcene, and could have an obligation to be in multiple places with one piece of equipment during a major event – assuming that the roads were in such a condition as to allow it.

On September 19, 2016, routine testing identified the possibility of a toxic substance in the City water supply. Subsequent testing showed the water to be safe. In the meantime, the EOC prepared a plan to distribute water to 10,000 residents daily. Water trucks and bladders were deemed not adequate. Estimated costs to deliver bottled water were $30,000 per day in both direct and indirect costs.

There were three small independent water districts in which neighborhoods in rural areas have banded together to provide water to about a dozen households each. These are isolated and do not have significant back-up power for their pumps. Since 2009, one of these has been taken over by the PUD.

Climate Change

Warming climates will cause earlier snowmelt resulting in a shift as to when water must be captured in reservoirs to prevent a shortage in the summer. Figure H_2O-2 illustrates the shift from a "transition" hydrologic basin type to a "rain dominant" basin type in the WRIA that serves Port Townsend and East Jefferson County. A "transition" basin type is one which depends on both snow and rain to recharge its water supply, as opposed to the "rain dominant" basin type, which is self-evident.

Figure H_2O-1. City of Port Townsend Water System

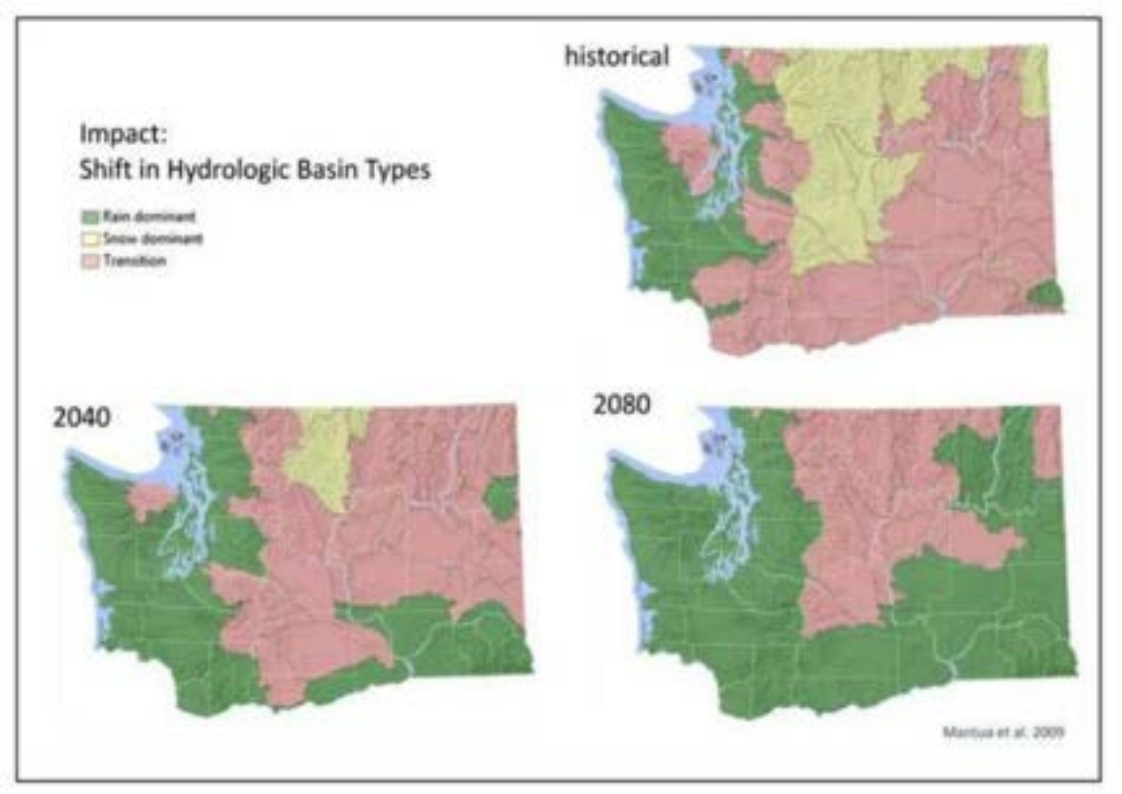


FIGURE 1-1

OLYMPIC GRAVITY WATER SYSTEM (OGWS)

City of Port Townsend Water System Plan

Figure H2O-2 – Shift in Hydrologic Basin Types



"Shifting hydrologic basin types in the PNW under climate change. This projection shows the shifting of hydrologic basins on the North Olympic Peninsula away from a transient (rain & snow) watershed to rain dominant by the end of the century under climate change. With global temperature rise showing few signs of future abatement, this future may vary in timing but not in ultimate outcome. Source: NOPRCD Report

Conclusion

Education of the population's water resources must be ongoing and dynamic. Safe drinking water requires two critical steps: protection and treatment. Pollution prevention needs to be integrated with safe drinking water programs. All Group "A" public water systems in Washington State (greater than 15 connections) are required to collect samples for coliform bacteria analysis per WAC 246-290.

Security procedures of water reservoirs must be examined to insure that intentionally introduced contamination is addressed. For instance, the intentional exposure to botulism can easily be done through aerosol droplets falling into the water systems. Health Department and health care providers must be increasingly aware of potential diseases that can be transmitted to the population as a form of terrorism.

Proactive maintenance and upgrade of vulnerable assets must be addressed in both the city and county, particularly in the context of a region-wide disaster event.

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Figures - WATER SHORTAGE (EXTENDED)

H_2O-1	City of Port Townsend Water System
H_2O-2	Shift in Hydrologic Basin Types

Man-Made Hazard Identification

The original scope of the Jefferson County Hazard Identification and Vulnerability Assessment (HIVA) was to be a “Natural Hazard” assessment. Since many of the natural hazard risks we face are a function of man-made hazards or events, we have included those in this plan. The objective is to evolve the *Natural Hazard Mitigation Plan* into a full *All Hazard Mitigation Plan* and use it to improve Jefferson County’s ability to deal with the full spectrum of natural and man-made hazards.

AIRCRAFT MISHAP
(Commercial / Civil / Military)

SUMMARY

Definition

The Federal Aviation Administration (FAA) defines an aircraft accident as:

“An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and until such time as all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. “

In the context of this document, “aircraft mishap” and “aircraft accident” are interchangeable.

The Hazard:

An aircraft mishap or accident is an event involving an aircraft that results in damage to the aircraft, damage to property or the environment, or injury to people. The injuries to people can affect those in the aircraft, and individuals on the ground. There are two aspects of aircraft accidents that pose hazards in the context of emergency management and disaster planning.

One aspect is an aircraft accident resulting in mass casualties, either to passengers aboard the aircraft or non-passenger victims on the ground. Jefferson County does not have passenger air service but is routinely overflown by commercial aircraft and military transport aircraft.

The second aspect of aircraft mishaps is the environmental damage that such events can cause. Jefferson County is composed of mainly mountainous, forested terrain with extensive shoreline and wetland habitats. Normally, the area experiences a good deal of rainfall most of the year but experiences a dry season during the summer requiring an official “burn ban” to mitigate wildfire hazards.

Aircraft accidents have the potential to ignite wildfires in vulnerable areas, damage homes and businesses in populated areas, and result in multiple fatalities of both aircraft occupants and bystanders who happen to be in the wrong place at the wrong time. Aircraft fuels and oils pose pollution hazards if the aircraft crash site is in an environmentally sensitive area, such as a wetland or estuary, or a large spill occurs as could result from the crash of a fully fueled trans-Pacific flight or a mishap involving fuel storage. Additionally, military aircraft and the weapons they carry include some extremely toxic or hazardous materials that could be released into the environment following a mishap.

Impacts and Effects:

- Loss of life
- Injuries to aircraft occupants and people on the ground
- Significant damage or destruction of aircraft.
- Significant damage or destruction of property on the ground
- Structure fire or wildfire
- Hazardous material spills affecting the environment and exposed personnel

History of Aircraft Mishaps in Jefferson County

There has not been a mass casualty air accident in the Puget Sound region, in recent history. However, there have been eleven aircraft mishaps in the past five years in Jefferson County, all general aviation accidents. The 1975 crash of a USAF C141 transport aircraft and the 2010 crash of a USCG MH60T helicopter demonstrate the potential for high impact military aircraft incidents. Among the eleven aircraft mishaps was a bizarre incident resulting in the fatal crash of an aircraft stolen from the Jefferson County International Airport by an individual that was not a licensed pilot

Previous Occurrences:

- **March 21, 1975 -** An Air Force C141 crashes into the Olympic Mountains near Quilcene Washington. The presumed crash site of an Air Force C141 Starlifter was in a rugged, roadless section of the Olympic Mountains. The four-engine jet of the Air Force Military Airlift Command was carrying 16 persons, including a crew of 10 based at McChord Air Force Base near Tacoma, and six passengers. The plane was on a flight from Yokota Air Base in Japan to McChord.

- **July 7, 2010 –** A US Coast Guard MH-60T helicopter on a positioning flight enroute to Sitka, AK, deviated from its flight path to overfly a Coast Guard vessel and impacted electrical transmission lines near La Push, Washington, US, resulting in the deaths of three crew members and the destruction of the aircraft. Eyewitnesses said they saw the tail of the helicopter appeared to clip an aerial power cable that runs from the shore near La Push to James Island.

- **December 29, 2016 -** A Cessna 182P collided with terrain near Dabob, WA. The non-instrument-rated private pilot and three passengers were fatally injured. The airplane was substantially damaged. The visual flight rules (VFR) flight departed from Boeing Field

International Airport (BFI), Seattle, Washington, and was enroute to William R. Fairchild International Airport (CLM), Port Angeles, Washington.

- **January 24, 2017 -** A Beech E17L experienced a loss of engine power and the pilot ditched in Discovery Bay, WA. The airline transport pilot was not injured; the airplane sustained substantial damage. The personal local area flight departed from Jefferson County International Airport, Port Townsend, WA. The pilot stated that following departure, he maneuvered along the shoreline and the airplane reached about 900 feet above ground level (agl). The fuel pressure dropped to zero and the low-pressure light illuminated. The pilot attempted to restart the engine, to no avail. He opted to ditch in the water and avoid the tall trees on land. The airplane touched down in the water and became submerged, sustaining damage to the lower wing. The pilot swam to shore.

- **April 2, 2017** - A Cirrus SR22 impacted mountainous terrain near Mount Christie, located inside the Olympic National Forest.in Jefferson County, WA. The certified flight instructor (CFI) and student pilot sustained serious injuries. The airplane sustained substantial damage during the accident sequence. The accident site was located .4 NM southwest of Mount Christie, at an elevation of 4,700 feet MSL.

- **September 29, 2017** - A Piper PA-28-140 was destroyed when it impacted trees and terrain near Brinnon, WA during a night cross-country flight. The student pilot received serious injuries, and the certificated flight instructor (CFI) received fatal injuries.

- **October 30, 2017** - A Cessna 140 was substantially damaged following a total loss of engine power and subsequent forced landing about 0.4 nautical miles east-southeast of the Port Townsend/Jefferson County International Airport (0S9), Port Townsend, WA. The commercial pilot, the sole occupant, sustained minor injuries and the airplane sustained substantial damage to the left wing and fuselage. The flight originated from 0S9 about 20 minutes prior to the accident.



Figure AM-1 Wreckage of Cessna 140 after it landed in a neighborhood short of the 0S9 runway

- **April 28, 2019** – A Boeing A75N1 Stearman biplane was substantially damaged when it was involved in an accident. The pilot and passenger sustained minor injuries. The aircraft departed Jefferson County International Airport (0S9), Port Townsend, WA, to the west. About 1,200 ft mean sea level (msl), over Discovery Bay, the pilot began to smell burning oil. He then saw spraying oil and a light oil smoke coupled with engine vibration. A return to the departure airport was not an option, so he turned left toward land and began a slight descent with full power. The pilot stated that the terrain on the shoreline was rugged and the surrounding terrain above the shoreline was densely forested. As the pilot turned toward the beach, the engine seized, and his rate of descent increased. During the flare to land, the right main landing gear and right wing impacted the water. The airplane came to rest upright on the ground, oriented more than 90° from the direction of landing, and sustained substantial damage to the wing and fuselage.



Figure AM-2 – Wreckage of Stearman biplane on the beach of Discovery Bay, WA.

- **January 13, 2019 -** A small plane crashed in the area of Irondale nearby the Irondale Church. The pilot reported the door opened in flight and as he tried circling back to the airport, the plane apparently ran out of fuel and was unable to glide any further which caused the crash. The Pilot made it out with only a laceration and no other injuries or damage occurred..

- **July 21, 2019** - A Cessna 172 airplane collided with terrain at the Jefferson County International Airport (0S9), Port Townsend, WA. The private pilot was not injured; the two passengers received minor injuries. The airplane was substantially damaged.

- **July 13, 2020** – A Cessna A185 was substantially damaged during landing. The pilot of the tailwheel equipped airplane reported that, during the landing roll with a crosswind, encountered a gust of wind from the right that lifted the right wing, and the left wing dropped and impacted the runway surface. The airplane then began to veer to the right. While the pilot was attempting to correct, the airplane nosed over. The airplane sustained substantial damage to both wings, right lift strut, vertical stabilizer and rudder.

- **August 16, 2020 –** A Ryan ST3KR was substantially damaged during landing. The pilot of the tailwheel equipped airplane reported that, upon touch down, the airplane veered left and departed the runway surface. The pilot elected to go around and "applied full right

rudder and power." Concerned the airplane would not gain enough altitude to clear the obstacles, the pilot landed off the runway surface. Subsequently, the airplane impacted vegetation and the left main landing gear collapsed. The airplane sustained substantial damage to the left wing.

- **August 18, 2020 –** A Cessna 150L was substantially damaged when it was involved in an accident near Quillayute, Washington. The unlicensed pilot was seriously injured and subsequently died. The airplane was operated as an unauthorized flight.



Figure AM-3 –Wreckage of stolen Cessna 150 near La Push WA, showing difficulty of access in heavily forested area.

- **March 29, 2021** – A Luscombe 8A was substantially damaged on the ground. The pilot reported that, after refueling his airplane, that was chocked, with the parking brake set, he attempted to hand prop the engine. After the engine started and while he was walking around the back of the airplane, the engine's rpm began to increase, and the airplane began to pivot about 90° on the left wheel. When the airplane bypassed the wheel chock, it then rolled towards a fuel station. Shortly thereafter, the airplane impacted the fuel station, which resulted in substantial damage to the right-wing strut.

Probability of Future Events: High – The lack of regularly scheduled air service limits the probability of a mass casualty event. However, as the number of accidents over the past five years demonstrate, the probability of aircraft mishaps in the future is high. Fortunately, since most mishaps involve small general aviation operations that occur most frequently on weekends, the consequences of those mishaps is likely to remain low.

There has not been a mass casualty air accident in the Puget Sound region, in recent history. However, there have been eleven aircraft mishaps in the past five years in Jefferson County, all general aviation accidents. The 1975 crash of a USAF C141

transport aircraft and the 2010 crash of a USCG MH60T helicopter demonstrate the potential for high impact military aircraft incidents. Among the eleven aircraft mishaps was a bizarre incident resulting in the fatal crash of an aircraft stolen from the Jefferson County International Airport by an individual that was not a licensed pilot

Hazard and Vulnerability Assessment

Jefferson County has one general aviation facility, Jefferson County International Airport (0S9), four private airstrips, and several bodies of water suitable for seaplane operations within its boundaries. Jefferson County does not have commercial passenger air service, but the county is routinely overflown by commercial aircraft to and from Seattle-Tacoma International Airport (SEA) in Seattle, WA and Paine Field in Everett, WA. McChord Air Force Base and Gray Army Airfield south of Tacoma, WA, Naval Air Station Whidbey Island in Oak Harbor, WA, and Coast Guard Air Station Port Angeles in Port Angeles, WA, are four military aircraft bases that conduct flight operations over the Olympic Peninsula and there are two aircraft overwater Military Operating Areas (MOA) immediately adjacent to Jefferson County. Multiple commercial passenger seaplanes operating out of Seattle and Kenmore, WA transit just offshore of Jefferson County and numerous private seaplanes use Jefferson County waters. Additionally, numerous civilian and military over flights are conducted daily across Jefferson County at both high and low altitudes, with the attraction of overflying the Olympic Mountains.

The Jefferson County International Airport is a general aviation facility with a single, 3000 foot east-west runway at an elevation of 107 feet above sea-level. Services include a Fixed Base Operator (FBO) providing aircraft maintenance and 100LL fuel services, a restaurant, and an aircraft museum with restoration activities onsite. Up to 10,000 gallons of avgas 100LL are stored in a below ground fuel storage facility The City of Port Townsend is within a five-mile radius of the Jefferson County airport but is not along the take-off and landing flight path. There are several neighborhoods and numerous individual homes located along the flight paths that are somewhat protected by a ring of hills surrounding the airport. Additionally, Medical Evacuation Flights commonly occur within Jefferson County utilizing a variety of rotor-wing aircraft in order to transport patients to Seattle or elsewhere.

Large passenger aircraft originating from SEA and Paine Field and military transport over flights originating from the region's military bases add to the possibility of a mass-casualty event if they were to crash in Jefferson County or within the city of Port Townsend. Since these flights are typically at high altitudes as they cross Jefferson County, the probability is small that any given aircraft would have a simultaneous combination of problems, direction, and speed to cause it to drop into the few concentrated population areas of Jefferson County. Military aircraft operating in the MOAs would likely actively avoid populated areas if they experienced a problem and would most likely crash in offshore waters.

Despite the large number of planes flying over populated areas, the number of crashes killing or injuring non-passengers is quite small. In general, crashes are most likely to occur within five miles of an airport, typically along flight paths. Weather is a significant factor in aircraft mishaps. Low ceilings and visibilities, winds, thunderstorms, and ice are the primary

weather-related events that increase risk to aviation in and around Jefferson County. Weather was a factor in at least two of the recent aircraft mishaps.

In addition to endangering lives, aircraft mishaps pose moderate risks of causing property damage, igniting wildfires, and causing environmental damage through hazardous material spills, primarily fuel and oil. Although the following mishap did not occur in Jefferson County, it does demonstrate the potential hazards associated with aircraft mishaps.

On August 10, 2018, a De Havilland DHC-8-402 was destroyed when it impacted trees on Ketron Island in Puget Sound, near Steilacoom, WA. The non certificated pilot was fatally injured. The airplane was registered to Horizon Air Industries Inc. and operated by the individual as an unauthorized flight. The airplane departed from the Seattle-Tacoma International Airport, Seattle, WA for an unknown destination. Two F-15C fighters were launched to intercept the stolen passenger aircraft, both armed with air-to-air missiles. The aircraft flew around the area for over an hour while Air Traffic Control maintained radio contact with the occupant. Ultimately, the suicidal pilot flew the empty passenger aircraft into the ground on Ketron Island. The crash ignited a fire that burned roughly two acres before firefighters could put it out. Emergency responders took over an hour to get to the crash site because of several obstacles, including a 30-minute wait for ferry transport to Ketron Island. Once on the island, the firefighters needed to bushwhack their way through 300 yards of thick brush and use a tractor to plow through an overgrown trail leading to the crash site. This incident perfectly encapsulates just how unpredictable aircraft mishaps, accidents, and other incidents can truly be.

If this aircraft mishap had occurred in Jefferson County, the consequences could have been much more severe. Response times in rougher terrain could have been several hours, so a much larger fire could have been ignited and spread. If fired, the air-to-air missiles, or fragments of the missiles and aircraft, could have landed in populated or sensitive areas, causing injuries and damaged property. These missiles contain toxic materials that could have been released into the environment.

The hazards of civil and military aviation are well documented and have resulted in very strict regulations governing flight activities. A complex web of federal regulations and protocols focused on air safety governs aircraft manufacture, maintenance, and operation, all designed to mitigate these hazards. Aircraft mishaps will continue to happen, but the combination of regulation and technology advancements work to reduce the frequency and severity of these events. First responders in the county are trained to respond to aircraft crashes, hazardous material spills, and wildfires. Search and rescue units are trained for mountainous and water rescues. Military resources are readily available to respond to military aircraft mishaps, including Explosive Ordnance Disposal units. These resources help to mitigate the potential hazards of an aircraft mishap

Conclusion

Although a rare possibility, the catastrophic potential of a major aircraft mishap in Jefferson County or the City of Port Townsend cannot be ignored. Significant damage to property, including utilities and transportation routes, could result. Significant financial impact from property damage could occur, as well as the inevitable heavy loss of life. Impacts to the

environment could also occur with the release of hazardous materials, mostly fuel and oil, although the quantity of these materials in an aircraft are such that remediation efforts are likely to be fully successful

Aircraft mishaps of a lesser scale are almost sure to happen with varying degrees of impact. Most will have impact limited to the people on the aircraft, including injury or death, and damage to the aircraft may be substantial. Some could impact the environment originating at the crash site such as wildfires and hazardous material spills. In recognition of these hazards, Jefferson County has resources available and trained to respond appropriately to the consequences of any aircraft mishaps.

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Figures - AIRCRAFT MISHAP

AM-1 *"Port Townsend man escapes injury in plane crash",* Peninsula Daily News, October 31, 2017. Photo by Bill Beezley / East Jefferson Fire & Rescue

AM-2 Discovery Bay aircraft crash, April 28, 2019. Photo by Jefferson County Sheriff's Office

AM-3 "*Small plane stolen in Jefferson County crashes near La Push"* August 27, 2020. Photo by KIRO 7 News helicopter

MARITIME EMERGENCY
(Ferry Accident; Ship Collision)

SUMMARY

Definition

A maritime accident, for the purposes of the HIVA, would be one in which a vessel of significant size had an accident causing the loss of life and property to the extent that it required the activation of elements of the Jefferson County Department of Emergency Management to help respond. “Marine disasters can be roughly divided into the following four groups: collisions, weather-related events, fires, and infectious diseases. At sea communities are very small and resources are minimal compared to shore-side catastrophes so not much is required to turn a shipboard emergency into a disaster”.

Jefferson County is bordered by the Pacific Ocean, Puget Sound, and the Admiralty Inlet as well as having smaller bodies of water such as Discovery Bay, Port Townsend Bay, and the Hood Canal.

These areas are vulnerable to shipping and boating accidents, as well as those involving ferries. Ferry accidents could result in a mass casualty incident that may be difficult to address, though the United States Coast Guard has the primary responsibility for safety and rescue on the open waterways. Major emergencies associated with freight vessels though, are more likely to result from collisions with other vessels or mechanical failures during severe weather.

The Hazard: In addition to the Puget Sound itself, the region contains many smaller bodies of water. These areas are vulnerable to shipping and boating accidents, as well as those involving ferries. Ferry accidents could result in a mass casualty incident that may be difficult to address, though the United States Coast Guard has the primary responsibility for safety and rescue on the open waterways. Major emergencies associated with freight vessels though, are more likely to result from collisions with other vessels or mechanical failures during severe weather.

Impacts and Effects:

- Possible loss of life
- Possible injuries to vessel occupants and to first responders
- Possible mass casualty incident
- Loss of vessel and/or cargo
- Loss of property of vessel passengers
- Threat to endangered species of both aquatic and airborne species from chemical or fuel spills resulting from the accident
- Possible contamination of commercial fishing grounds or shellfish farms
- Possible significant economic damage in limited sectors of the Jefferson County economy

Previous Occurrences: In 2005, an escort tug veered in front of a single-hull oil tanker loaded with two million gallons of light fuel oil. The tug boat was rolled over multiple times by the collision, but no one was seriously hurt and no fuel was spilled.

In 2007, the Director of Washington's State Ferry System pulled the two ferries on the Port Townsend – Keystone run out of service on an emergency basis just before Thanksgiving week-end because the 80-year old vessels were considered to be too risky to run.

Every fall and winter, generally between October and March, Ferry service suffers from reduced visibility or severe weather which makes the transit between Port Townsend and Coupeville difficult. Additionally, severe weather has also caused either a ferry to ground itself on the beach near the Coupeville ferry dock, or the outright cancellation of sailings which can strand visitors or prevent needed commercial vehicles from getting to their destination.

Probability of Future Events: MED – Puget Sound and the Admiralty Inlet are some of the highest trafficked sea lanes in the United States. The Port Townsend Bay has traffic from the ferry system, submarines, navy and coast guard warships, commercial fishing vessels, occasional cruise ships, and many pleasure craft. At times, the rough seas can threaten the ferries or small vessels. As the Puget Sound continues to grow, so too does the amount of traffic that comes through its waters. Additionally, as the Navy begins to pivot itself to the Pacific area of operations, it increases its own traffic to and from nearby Naval Base Kitsap along with the Jefferson County based Naval Magazine Indian Island.

It is quite common, especially in the Fall through Spring, for thick layers of fog to encompass the Admiralty Inlet and Strait of Juan de Fuca. This fog combined with the heavy traffic through the area creates the potential for collisions. While larger craft such as merchant vessels and navy ships are fixed with Marine Radar, many smaller private boats are not which makes the likelihood of ship vs. small boat incidents higher than large-on-large.

History of Maritime Accidents in Jefferson County

Jefferson County was once a major west coast seaport, and as such, has a rich history of maritime accidents. During the period from 1853 through 2002, there have been at least 27 major maritime accidents in the area from Protection Island through the Admiralty Inlet and down to Port Ludlow. This included the steamship *Clallam*, which broke down in a storm, resulting in the deaths of 56 people who were in lifeboats that were launched into a riptide.

Many Washington maritime incidents occur along the Pacific Coast too. In adjacent Clallam County, for example, there have been at least 33 significant maritime accidents around Tatoosh Island off Cape Flaherty.



Figure ME-1: Unknown vessel aground near Tatoosh Island.

Hazard Assessment and Vulnerability Assessment

Jefferson County waters and adjacent international sea lanes are traversed by freighters, oil tankers, cruise ships, submarines, warships, pleasure craft, and the occasional whale. Rough water in Port Townsend Bay often causes the cancelation of ferry runs. Figure ME-2 below illustrates why.



Figure ME-2: A Washington State Ferry experiences rough water in the Puget Sound.

The Puget Sound area is one of the busiest seaways in the nation with some many unique features:

- It is 3500 square miles; larger than San Diego, Los Angeles, San Francisco, Boston, Miami, and New York combined.
- It has an international border with Canada.
- Over 5,000 deep draft ships transit each year.
- It contains the home ports for the Alaskan Fishing Fleet.
- It contains the Washington State Ferry System, largest in the nation with 500+ transits daily and over 20,000 passengers daily.
- 15 Billion Gallons of Oil are moved annually.
- 3rd Largest US Navy Strategic Port in the U.S.
- Recreational Boat Population of 1.3 million.

Given the volume of traffic and the mix of vessels, it is a wonder that there aren't more maritime accidents than there have been.

The Seattle Gateway Sector as control over Puget Sound vessel traffic in much the same way that air traffic controllers control the skies. The Northwest Maritime Center in Port Townsend is adding an "Alternate Gateway Emergency Operations Center" to its new building in Port Townsend to provide backup control if the primary center in Seattle goes down.

A rescue tug boat has been stationed at Neah Bay to provide assistance to vessels in trouble at the entrance to Puget Sound and its vicinity.

Several Jefferson County law enforcement and fire agencies have a limited water rescue and fire-boat capability. These programs are hampered by funding issues, so the equipment is old and their capabilities limited by size. Since the agency boats are not manned full-time, response times are contingent upon whether trained crews happen to be on duty with their respective agency at the time of a water related emergency.

Conclusion

Although the waters around Jefferson County can be difficult, safety standards, the positioning of a safety tug boat at Neah Bay, and aggressive response by the USCG have kept the loss of life and vessels down. Nevertheless, the large volume of commercial and recreational vessels in the Puget Sound suggests that it is inevitable more maritime accidents will occur.

Local law and fire agencies train to respond to maritime emergencies, but have limited ability to deal with large maritime disasters.

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Figures - MARITIME EMERGENCY

ME-1 Unknown vessel aground at Tatoosh Island. Unknown attribution.

ME-2 A Washington State Ferry experiences rough water in the Puget Sound. Source: Internet

CIVIL DISTURBANCE

SUMMARY

DEFINITION

Any incident that disrupts a community to the degree that police intervention is required to maintain public safety is a civil disturbance or civil disorder. Demonstrations, riots, strikes, public nuisances, domestic disputes, terrorism, and/or criminal activities fall into this category. The hazard could surface in any community, and can be sparked by disagreements ranging from simple family disturbances to political, racial, belief, social and economic differences that escalated beyond an exchange of words.

The Hazard: Any incident that disrupts a community to the degree that police intervention is required to maintain public safety is a civil disturbance or civil disorder. Demonstrations, riots, strikes, public nuisances, domestic disputes, terrorism, and/or criminal activities fall into this category.

Impacts and Effects:

- Loss of life
- Loss of property
- Closure of businesses
- Looting
- Arson
- Long term divisiveness in the community
- Adverse impacts on tourism and economic development
- Increased demands on law enforcement and emergency response resources
- Increased demands on mental health resources

Previous Occurrences: Multiple domestic disputes, criminal activities, and public nuisances occur each month and are routinely dealt with by local law enforcement authorities. In 1998, the Washington State EOC was activated in response to the Makah Indian Nation proposed whale-hunting activities at Neah Bay.

Probability of Future Events: High – The broad definition assures occurrences. Even with a narrow definition, local schools receive bomb threats once or twice a year, and local peace groups hold periodic sit-ins at the front gate of U.S. Navy Magazine – Indian Island.

HISTORY OF CIVIL DISTURBANCES IN JEFFERSON COUNTY

Jefferson County has not experienced the violence associated with riots occurring in nearby Seattle in the 1990s. In Seattle, a small-scale riot occurred after the 1992 Rodney King verdict. After the jury's decision was announced small groups of people roamed downtown Seattle streets smashing windows, lighting dumpster fires and overturning cars. In 1999, during the World Trade Organization Ministerial Conference, riots resulting in injury and death of participants and bystanders occurred. The City of Seattle declared an

emergency and the Governor signed a proclamation of emergency allowing commitment of state resources to support affected local jurisdictions.

In 1998, the Washington State EOC was activated in response to the Makah Indian Nation proposed whale hunting activities at Neah Bay. At the request of the Clallam County Sheriff, the State of Washington provided resources from the National Guard, Washington State Patrol, Department of Fish and Wildlife, Department of Natural Resources and Emergency Management Division to control disturbances between protestors and residents.

County High Schools including Port Townsend, Chimacum, and Quilcene have all had bomb scares and have had instances of students bringing weapons to school. Following the Columbine High School experience in Colorado, such incidents have been approached with intense seriousness. Although nothing approaching the level of Columbine has occurred, school officials are aware and cognizant of the possibilities.

As the conflict in Iraq became more of a certainty, several protesting groups promised “civil disobedience”.

While the larger marches were held in Seattle and Tacoma, there was vocal opposition evident in Jefferson County. Participants did not resort to violence, but wherever there are strong opposing views, the potential existed for words and signs to be replaced by more violent activities.

The Naval Magazine (NAVMAG) continues to be the main target for low-level demonstrations. Figure CD-2 shows a group of peace marchers that started their trek at the NAVMAG gate and marched to the Pope Marine Park in Port Townsend, a distance of about nine miles.

Since the start of the COVID-19 Pandemic in early 2020, Jefferson County has experienced many protests over a wide range of issues. Several of these causes have been because of masking and vaccine mandates that require people to wear masks in public establishments, to be vaccinated in order to work in certain professions, and to provide proof of vaccination when entering places of business in some cases. Protests have also erupted over other issues related to Covid-19 as well, but have not been as prevalent in some respects. These protests have ranged anywhere from just a few people to several dozen and have consistent occurrences.

Additional protesting was sparked following a string of deaths in the black community at the hands of law enforcement elsewhere in the nation, particularly the death of George Floyd in Minneapolis, Minnesota in May 2020. This led to massive riots occurring in many large cities in the name of social justice and anger at perceived heavy-handed tactics from police nationwide. In smaller communities such as Jefferson County, protests have been more peaceful but the threat of escalation, especially from issues happening elsewhere in the nation persist.



CD-1 *A Black Lives Matter/Police Reform protest near Safeway in Port Townsend, May 31st, 2020*

HAZARD IDENTIFICATION AND VULNERABILITY ASSESSMENT

Civil disturbances are divisive, often complex in their origin, and are possible in nearly every community in the nation. As the population continues to grow, so will the concentrations of ethnic groups, varied perspectives, and disparate economic status. Jefferson County has experienced a growth rate that has outpaced the rest of the State of Washington. Diverse philosophies exist in county residents. As the economy fluctuates due to economic realities of declining fishing and forest industries, emotions tend to run high. Since 2016, as a result of contentious national elections, multiple police killings within the black community, and controversial Covid-19 mandates, people across the nation have become incredibly divided and Jefferson County has not shown itself to be any different. Tourism, a major source of revenue for county businesses could be affected by an increasing potential or the actual developments of civil disturbances.

That being said, the Peace Movement in Port Townsend tends to be just that – peaceful. The city is somewhat unique in that it has a significant military establishment, the Naval Magazine on Indian Island, across from a city that was discovered and populated by the "Hippie" generation in the 70's, and who are now many of the senior citizens. Generally, everyone is tolerant of each other's views, and protests tend to be lawful. If circumstances were to arise in which outsiders came in to cause a problem because of some kind of incident, the city and / or county would have to ask for outside help in dealing with it.

Conclusion

The potential for civil disturbances exists in Jefferson County. Main participants might not be residents of the county. County law enforcement resources are aware and have practiced response scenarios if such disturbances occur. The continuous rise of disinformation on Social Media outlets will continue to have effects on the public population's perception of issues resulting in further protests or more violent acts that disrupt the community.

References – CIVIL DISTURBANCE

1. The Hazard Identification and Risk Assessment (THIRA), Jefferson County Department of Emergency Management, 2011, pp. 48-50.

2. "*Vaccine mandate protest in Port Townsend"* published in Peninsula Daily News, November 4th, 2021
3. "*Large crowd gathered for protest for justice*, published in Port Townsend Leader, May 31st, 2020

Figures - CIVIL DISTURBANCE

CD-1 BLM protest at Safeway – Port Townsend

LOCAL ECONOMIC DISRUPTIONS

SUMMARY

Definition

Bankruptcy is a legal status of a person or other entity that cannot repay the debts it owes to creditors. In most jurisdictions, bankruptcy is imposed by a court order often initiated by the debtor.

The Hazard: A large-scale regional or national event such as an earthquake, pandemic, a severe economic recession or depression or simply strategically placed massive incompetence or malfeasance can cause such severe economic disruption as to force a governmental entity into bankruptcy.

Impacts and Effects:

- Breakdown of governmental institutions
- Imperilment of life due to the inability to provide life-support services and medicines
- Compromise of immediate response such as emergency shelter, food, water, and medical treatment due to lack of adequate inventories
- Impairment of long-term recovery if businesses cannot function
- Permanent loss of businesses if recovery is delayed
- Loss of schools, homes, and businesses as people abandon a moribund geographic area

Previous Occurrences: During the period from 1890 to 1893, Port Townsend experienced a severe local depression when the railroads stopped at Seattle and Tacoma rather than continuing all the way to Port Townsend.

Probability of Future Events: MED – In 2008, the U.S. entered into a recession. The Port Townsend paper mill, the largest employer in the area, was teetering on the edge of bankruptcy, and the county had to lay off 13 people to balance its budget. At that time, the city and the county tightened their budgets, laid off people, and restructured some of their operations.

Since that time, the local government has stabilized, albeit at a lower level of employment. From time to time, local municipalities and special districts run up against their borrowing capacity due to external mandates or local disasters. The possibility of a bankruptcy scenario is real, although currently circumstances are not as bad as in previous years. The current biggest threat is to the smaller special districts that have assets located in hazard zones and who can experience catastrophic loss very easily.

There is also the possibility of another recession within the next 5-years that will again stress local governments.

Government Codes related to bankruptcy

Bankruptcy in the United States is governed under the United States Constitution (Article 1, Section 8, Clause 4) which authorizes Congress to enact "uniform Laws on the subject of Bankruptcies throughout the United States." Congress has exercised this authority several times since 1801, most recently by adopting the *Bankruptcy Reform Act of 1978*, as amended, codified in *Title 11 of the United States Code* and commonly referred to as the "Bankruptcy Code" ("Code").

Chapter 9, Title 11, United States Code is a chapter of the *United States Bankruptcy Code*, available exclusively to municipalities, that assists them in the restructuring of debts. On July 18, 2013 Detroit, Michigan became the largest city in the history of the United States to file for Chapter 9 Bankruptcy protection. Jefferson County, Alabama, in 2011 and Orange County, California, in 1994 are also notable examples. "The term 'municipality' means political subdivision or public agency or instrumentality of a State."

A large-scale regional or national event such as an earthquake, pandemic, a severe economic recession or depression or simply strategically placed massive incompetence or malfeasance can cause such severe economic disruption as to force a governmental entity into bankruptcy.

Figure BR-1below shows all municipalities filing for Chapter 9 bankruptcy protection during the period 2010 - 2015, along with local governments voting to approve a bankruptcy filing.

Cities, towns and counties are shown in **red**. Utility authorities and other municipalities are displayed in **gray**. Multiple municipalities have filed for bankruptcy in some cities, such as Omaha, Neb., so not all markers are visible. Please note that some listed municipal bankruptcy filings may have been dismissed.

Figure BR-1 Bankrupt Cities and Municipalities - 2015



Selected Examples of Municipal Bankruptcies

The State of Illinois and the City of Chicago have each been on the brink of bankruptcy for years. As of 2012, there were approximately 640 municipal bankruptcies that had been filed since 1937. Table BR-1 lists some examples of the both the larger municipalities and those in the vicinity of Jefferson County, Washington.

Table BR-1 Selected Municipal Bankruptcies

Municipality	Date	Circumstances	Notes
Washington Public Power Supply System (WPPSS)	1983	Due to halt in construction of planned nuclear reactors.	
Orange County, California	1994	$1.7 billion (largest municipal bankruptcy until November 2011, and $3 billion when adjusted for inflation), on interest rate-related losses	
Prichard, Alabama	1999	Inability to pay pensions.	
Millport, Alabama	2005	Due to loss of sales tax revenues after factory closing.	What would happen if Port Townsend Paper closed?
Los Osos, California	2006	Debt related to a wastewater facility.	
Pierce County Housing	2008	Residents' lawsuits due to mold in properties.	

Authority, Pierce County, Washington			
Jefferson County, Alabama	November 2011	November 2011, over $4 billion in debt (largest Chapter 9 bankruptcy until 2013 Detroit bankruptcy filing,) from sewer revenue bonds tainted by an interest rate swap bribery scandal with JPMorgan and county commissioner Larry Langford, and bond insurance credit rating collapse in the late-2000s subprime mortgage crisis, followed by the occupation tax being declared unlawful in Alabama.	Placed here for startle reaction because it has the same county name. It can happen here.
Detroit, Michigan	2013	A report on the financial health of Detroit was released by Orr in May 2013. The report stated that Detroit is "clearly insolvent on a cash flow basis" and that the city would finish its current fiscal year with a US$162 million cash-flow shortfall. It also stated that the city's budget deficit would reach $386 million in less than two months and that one-third of the city's budget was going toward retiree benefits.	Largest municipal bankruptcy to date, August 2016.

History of Economic Disruption in Jefferson County, Washington

During the late 1880's, there was a boom period in which Port Townsend leaders thought the city would become the capitol of Washington. In the fiscal year 1884-1885, for example, a larger number of steamships entered and cleared through Port Townsend than in any other port in the United States. In 1889, Port Townsend's leading real estate speculators created the Port Townsend Southern Railroad with the intention of building a line from Port Townsend to Portland, Oregon. "Port Townsend's population suddenly swelled to some 7,000. During a brief few years were constructed the majority of mansions and major business buildings revered today for their history."

In the spring of 1890 the Port Townsend Southern Railroad negotiated a deal with the Oregon Improvement Company, a subsidiary of Union Pacific, to build the proposed railroad. By the summer of 1891, the line had been built from Port Townsend to Quilcene, but no farther. By Thanksgiving, The Oregon Improvement Company was put into receivership as a combination of bad management and a national depression drove the economy down. "By the time the depression reached panic proportions in 1893, the city's population had dwindled to some 2,000 souls."

Although it did not declare bankruptcy, the Port Townsend economy languished in the doldrums until the 1920's when the paper mill was built.

HAZARD IDENTIFICATION AND ANALYSIS

In 1994, Orange County California declared bankruptcy when their county treasurer of 24 years drove the county into insolvency by "investing" in derivatives to subsidize the county's reliance on interest income. Leveraged with two dollars borrowed for every dollar of capital, falling interest rates made it impossible to pay back creditors. When the state refused to help the county, it was left with no choice to file Chapter 9 bankruptcy.

The circumstances deserve consideration for a number of reasons:

- California Proposition 13 had limited local government ability to raise taxes.
- In FY94, interest made up 12% of Orange County's revenues vs. 3% for all other California counties. By FY95, it was intended that interest would be 35% of revenues.
- The county turned to riskier investments to offset declining revenues in the face of increasing costs.
- County government declared bankruptcy on December 6, 1994.
- The state refused to intervene, thus negating an implied moral obligation of states to help their municipalities.
- Voters rejected a half-cent sales tax increase as part of a recovery plan.

In When Government Fails: The Orange County Bankruptcy, Mark Baldassare identified three conditions necessary for a municipal bankruptcy: political fragmentation, voter distrust, and state fiscal austerity.

The Jefferson County Washington Parallel

In 2009, Jefferson County was experiencing similar financial difficulties as Orange County did in 1994:

- Washington Proposition 747 limited the growth of property taxes to1% per year without specific taxpayer approval. Overturned by the State Supreme Court, its provisions were quickly reenacted by the legislature because of public outcry.

- A major recession, started by the collapse of the subprime mortgage market, dried up both building permit revenues and interest income to the county.

- By the end of February 2007, the county had earned $283,924 in interest income on the $1,094,358 it had collected for the full year. By the end of February 2009, the county had taken in $26,051 in interest income.

- County voters have rejected two bond measures to fund the building of a new elementary school, thus forcing the consolidation of schools and laying off of teachers.

- Washington State was nine billion dollars in the red for the 2010-2011 biennium, and cutting back programs and levels of funding to local governments.

Fast forward to 2016, and we see that there still are issues that make local jurisdictions vulnerable to the next downswing in the economy or local and regional natural disasters that cause considerable damage to public or private infrastructure:

- The City of Port Townsend is mandated to enhance its water treatment by the Federal government. It is building a new **$16 million** water treatment facility and an **$8 million** seismically sound 5 million-gallon water reservoir to replace an existing one that is deteriorating, thus adding significant long-term debt to the city budget;
- The Brinnon Fire Department lost an unmanned station and an engine and related equipment due to flooding in 2015. The Chief, at that time, indicated that they had $14,000 in damage to the engine, a $40,000 bill for flood cleanup, one station closed due to disrepair, and the cost to move the flooded-out station estimated at $1.2 million;
- Port Townsend Paper Corporation, the largest private employer in the county, is built on the shoreline of Port Townsend Bay and is vulnerable to tsunamis.

Jefferson County is unique in Washington in that it is becoming a retirement county. Over 56% of the population is over 65 now. Over sixty percent of revenues are transfer payments, contingent on the health of the financial markets. The primary commercial sectors of the county economy are the paper mill, a thriving maritime industry, and tourism. The majority of Jefferson County economic assets are north of State Highway 104 on the Quimper peninsula. The Quimper Peninsula has three main arterials, Highway 104, U. S. 101, and the State Ferry System. The loss of any one of these for a significant period of time impacts sales tax and business tax revenues; forces some businesses to close; and puts stress on local government services.

Although many states, counties, and municipalities were hard hit by the 2009 recession, circumstances are such that Jefferson County did not reach a tipping point. Jefferson County, however, does show evidence of the precursors that make it vulnerable to entering a bankruptcy scenario. In an emergency management context, this could result in the outsourcing of 9-1-1 capabilities to other counties, the elimination of emergency management as a separate entity and its being brought back under the auspices of the Sheriff's Office or outsourced, as well. Emergency services in the county would have to go on an austerity program even as the influx of retirees is putting an increased demand on health and EMT services.

Conclusion

Jefferson County and the City of Port Townsend are vulnerable to significant economic disruptions due to their geography, location and the ways they can be isolated. The precursors to municipal bankruptcy are present and suggest that it is possible for circumstances to degrade sufficiently to push area jurisdictions in that direction. Strong cooperation among county and city officials is necessary to weather the storm and prevent a local economic disaster.

Any kind of significant disaster event, such as a major earthquake, tsunami, flood or a prolonged loss of power due to failure of the electrical grid, can push Jefferson County, the City of Port Townsend and / or any of the special districts over the tipping point and

necessitate contemplating bankruptcy. The area is one natural disaster away from a financial disaster.

References - BANKRUPTCY

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13. Email from Chief of Brinnon Fire Department, Patrick Nicholson, to the Hazard Mitigation Plan Project Coordinator detailing the financial circumstances the department was in due to the winter's flooding, dated February 11, 2015.

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Tables – Local Economic Disruption

BR-1 Selected Municipal Bankruptcies

Figures – Local Economic Disruption

BR-1 Bankrupt Cities and Municipalities - 2015

HAZARDOUS MATERIALS INCIDENT

SUMMARY

Definition: A hazardous material is defined as “matter (solid, liquid, or gas) or energy that when released is capable of creating harm to people, the environment, and property, including weapons of mass destruction, as defined in 18 U.S. Code, Section 2332a, as well as any other criminal use of hazardous materials, such as illicit labs, environmental crimes, or industrial sabotage.”

The Hazard:

A hazardous material incident involves the uncontrolled release of hazardous materials into the environment, whether accidental or intentional. Hazardous materials are materials that can cause harm to people, structures, or the environment and may be naturally occurring or manmade substances.

The production, use, storage, transportation and disposal of hazardous material substances and wastes, places the public and the environment at significant risk. A release may occur by spilling, leaking, emitting toxic vapors, or any other process that enables the materials to escape its container, enter the environment, and create a potential hazard. The nature and extent of this risk is difficult to determine as the process involved in hazardous materials and toxic waste management are dynamic. Many federal laws and regulations exist to manage the manufacture, utilization, and disposal of hazardous materials.

DOT defines a hazardous material as any item or chemical which, when being transported or moved in commerce, is a risk to public safety or the environment, and is regulated as such under its Pipeline and Hazardous Materials Safety Administration regulations (49 CFR 100-199), which includes the Hazardous
Materials Regulations (49 CFR 171-180). In addition, hazardous materials in transport are regulated by the International Maritime Dangerous Goods Code; Dangerous Goods Regulations of the International Air

Transport Association; Technical Instructions of the International Civil Aviation Organization; and U.S. Air Force Joint Manual, Preparing Hazardous Materials for Military Air Shipments.

In addition to manmade hazardous materials, biological hazardous materials are also naturally occurring in Jefferson County, primarily in the form of toxins that develop in shellfish and those released by algae and bacterial blooms. Annually, some portion of the marine waters along eastern Jefferson County are closed to shell fishing for some period due to the presence of marine biotoxins that cause Paralytic Shellfish Poisoning (PSP). During the summer, algae blooms in local lakes produce the neurotoxin microcystin, resulting in closure of the lake to protect people. Anderson Lake in Anderson Lake State Park experiences an annual bloom of cyanobacteria that produce the neurotoxin anatoxin-a, also known as Very Fast Death Factor.

Impacts and Effects.

- Injury or loss of life caused by:
  - Thermal harm
  - Radiological harm
  - Asphyxiation
  - Chemical harm
  - Etiological (Biological) harm
  - Mechanical harm
- Damage to structures
- Damage to the environment, including
  - Permanent loss of marine life, including shellfish beds and salmon habitats
  - Contamination of water supplies
- Economic losses

Previous Occurrences: Hazardous material incidents occur frequently with varying degrees of response necessitated. The most recent significant incidents were:

- May 13, 2015 – Approximately 72,000 gallons of inadequately treated effluent was accidentally released at the Port Ludlow Wastewater Treatment Plant because of a mechanical failure. A “No Contact” health advisory was issued for Port Ludlow Bay by the Jefferson County Public Health and lifted 7 days later

- March 9, 2016 – Approximately 9,000 gallons of mixed biosolids and storm water drained into Port Ludlow Bay when the Port Ludlow Waste Treatment Plant was flooded by runoff when an upstream community storm water culvert was blocked by debris and diverted the water to the treatment plant property. A “No Contact” health advisory was issued for Port Ludlow Bay by the Jefferson County Public Health and lifted 5 days later.

- May 12, 2019 – A family’s pet dog died and a child became ill and was hospitalized following exposure to cyanobacteria neurotoxins in Anderson Lake at Anderson Lake State Park, Chimacum, WA

- August 19 & 20, 2019 – Environmental protestors stated they were sprayed with glyphosate from a helicopter herbicide spray rig while protesting a logging company’s spraying of newly cleared land. Passing traffic also noted they were sprayed. However, an

investigation by the Washington State Department of Agriculture found no evidence that personnel had been sprayed with glyphosate but did find traces of sulfometuron-methyl and clopyralid herbicides.

- January 5, 2021 – An estimated 42,000 gallons of a mix of sewage and stormwater bypassed the Port Ludlow Wastewater Treatment Plant and was released into Port Ludlow Bay. A "No Contact" health advisory was issued for Port Ludlow Bay by the Jefferson County Public Health and lifted 7 days later.

A query of the Washington State Department of Ecology (WSDOE) produced two reports of the hazardous material incidents reported to DOE during the period of January 1, 2016 through December 31, 2021. These reports were drawn from the state's Spills Program Integrated Information System (SPIIS) and the Environmental Report Tracking System (ERTS) The combined data of those two databases, plus known incidents not included in the database extract, are included as Table HM-2 Hazardous Material Incidents Reported to Department of Ecology - 2016 – 2021. Table HM1, below, summarizes the number of reported incidents during this period.

Year	Number of Reported Incidents
2021	63
2020	48
2019	52
2018	53
2017	46
2016	48
Total	**310**

Table HM-1 Number of Hazardous Material Incidents Reported by Year in Jefferson County

Probability of Future Events: High – Hazardous material incidents happen 40-50 times per year, or more. Most are small, easily cleaned up, and have no lasting detrimental impact. The State Department of Ecology now requires all spills to be reported, especially spills into waterways, no matter the amount.

History of Hazardous Materials Spills Affecting Jefferson County

Hazardous material incident data provided to Jefferson County by WSDOE for the period January 1, 2016 through December 31, 2021 indicates a substantial increase in incidents to an average of about 50 per year. This is likely due as much to a change in Washington State reporting criteria as to any increase in incidents. Previously, Washington State

Department of Ecology required only spills over 25 gallons to be reported. Recent changes to state laws now require that all spills to waterways must be reported and spills on land should be reported.

Jefferson County is surrounded by water, bounded on the west by the Pacific Ocean, on the north by the Salish Sea, and on the east by Admiralty Inlet, the Hood Canal, and Puget Sound. Port Townsend was once the major seaport in the Pacific Northwest and remains an important center for maritime activities. These waterways are heavily travelled by commercial, government and recreational vessels. Unsurprisingly, a majority of the hazardous material incidents, or potential incidents, occur on these waterways. A brief analysis of the reported data shows that 178 of the 310 (57.4%) hazardous material incidents reported occurred in a marine environment such as sheens on water in the harbor, groundings or sinking vessels, or overboard discharges (not counting the sewage/wastewater spills originating from commercial/industrial activities on land). Twelve of those incidents were the result of some type of casualty aboard a vessel that resulted in a Captain of the Port (COTP) order but no actual hazardous material release. 129 (78%) of the remaining maritime incidents resulted in some variation of oil spill, including gasoline, diesel, hydraulic or motor oil.

While oil spills make up the single largest portion of non-maritime hazardous material incidents (46%) reported since 2015, no single incident produced a significant threat within the last six years. The remaining 54% of reported incidents vary widely along the spectrum of hazardous materials. Inadvertent discharge of wastewater from commercial or industrial sites is the second largest contributor to hazardous material incidents. As noted above, there have been several unusual incidents over the past six years.

The Port Ludlow Waste Treatment Plant has had multiple discharges of effluent to the waters of Port Ludlow Bay, necessitating the closure of beaches for human recreation for a period of time, typically a week. Several of the discharges were caused by mechanical malfunctions of plant equipment or power failures. At least two incidents were caused by exceptionally heavy rainfall that caused storm water to flood parts of the facility, resulting in inadvertent discharges.

Much of the land in Jefferson County is forested and owned and logged by several timber companies. One of their practices is to spray a recently logged area with herbicides to reduce the amount of undesired growth on newly clear-cut land. In 2019, protestors disputed this herbicide application by gathering next to the areas that were scheduled for aerial spraying. The acreage was also next to a heavily travelled public road. The protestors believed the herbicide being used was glyphosate, a key component of Roundup and considered carcinogenic. During the application, a wind arose that caused some of the herbicide to drift outside of the intended area. Protestors claimed they had been sprayed and several cars on road also believed they had been exposed to the herbicide. The incident was reported to the Washington State Department of Ecology. The Washington State Department of Agriculture initiated an investigation and determined that glyphosate had not been used and there was no evidence that personnel had been sprayed. However, the investigation did find traces of sulfometuron-methyl and clopyralid herbicides in areas adjacent to the targeted acreage, indicating that some overspray did occur, likely due to a light downslope wind that arose during the operation.

Jefferson County also has a large amount of coastal shoreline and several recreational lakes. These waterways are subject to natural processes that release several types of biotoxins. The toxin that produces Paralytical Shellfish Poisoning is produced every year in shellfish beds open to the public, resulting in closure of these beaches to shellfish harvesting. Occasionally, someone will ignore this warning and harvest affected shellfish leading to various degrees of illness, depending on the amount ingested.

Freshwater lakes are also subject to biotoxin releases. In recent years, both microcystin and anatoxin-a have been found in Lake Leland, Gibbs Lake, Crocker Lake and Anderson Lake. Gibbs Lake is wholly within the Jefferson County Gibbs Lake Park and Anderson Lake is wholly within Anderson Lake State Park. Lake Leland Park and Campground is operated by Jefferson County Parks & Recreation, but much of the land surrounding the lake is privately owned and occupied. All of the land surrounding Crocker Lake is privately held. Therefore, many people, both residents and tourists, can be exposed to these biotoxins. Jefferson County Public Health monitors the water quality at these and several other lakes in the county. When biotoxin levels in the water exceed established safety thresholds, the lakes are posted and closed until the danger is past. However, Anderson Lake presents a significant and growing hazard to the public with the growth of cyanobacteria blooms, resulting in very high levels of anatoxin-a, also known as Very Fast Death Factor. Anatoxin-a is a neurotoxin that can kill in a very short time following exposure. In 2019, a family dog and young child strayed too close to Anderson Lake's water and were directly exposed to anatoxin-a. The dog died very shortly after this exposure and the child was hospitalized for several days following exposure. Washington state agencies are aware of the hazard and have been conducting studies to determine a path forward to remediate this hazard.

During Operations Desert Storm and Iraqi Freedom and the war in Afghanistan, several thousand tons of explosives passed through eastern Jefferson County between the Hood Canal Bridge and Naval Magazine Indian Island (NAVMAG Indian Island). The type of cargo that is loaded/offloaded at NAVMAG Indian Island is primarily ammunition (e.g., bombs, bullets and missiles). Contract trucks and trailers make several trips each day moving materials between Indian Island and Naval installations in Kitsap County. Trucks moving hazardous materials to Port Angeles and locations in Clallam County often also transit Jefferson County roads. Ammunition ships load up at NAVMAG Indian Island before heading out to sea and transiting just offshore of Port Townsend.

Since 2015, the number of illegal drug labs encountered by state and local agencies has dramatically decreased. Only two incidents were reported, including one methamphetamine lab and one illegal steroid lab. However, the relatively sparse population of the county near good transportation routes provide the opportunity for drug manufacture and transportation because we do not have the resources to focus heavily on drug interdiction. This is exacerbated by the making of marijuana available legally for recreational use. It has encouraged "drug tourism" and an influx of transients looking for easy access to marijuana. This, in turn, has resulted in a degradation of community facilities as the parks and public areas become trashed with hazardous materials.

Hazard Identification and Vulnerability Assessment

Areas at risk for hazardous materials transportation incidents lie along highways, pipelines, rivers, and seaport areas. These risks are compounded by natural hazards (e.g. earthquakes, floods, and severe storms). Each incident's impact and resulting response depends on a multitude of interrelated variables that range from the quantity and specific characteristic of the material to the conditions of the release and area/population centers involved.

The county Local Emergency Planning Committee (LEPC) was established under the provisions of the State and Federal law (The Community Emergency Planning and Community Right-to- Know Act-EPCRA). The purpose of the LEPC is to coordinate the development of emergency plans and procedures for dealing with a hazardous materials incident. The committee's charter is to conduct hazard identification, vulnerability analysis, and risk management activities. Additionally, they are chartered to develop and maintain emergency response plans appropriate to hazardous materials based on the volumes and types of substances found in, or transported through their jurisdictions.

Conclusion

The Hazardous Material Emergency Preparedness (HMEP) Grant of 1998 made it possible for Jefferson County to revise plans to address the mandates of the Superfund Amendments and Reauthorization Act (SARA) and EPCRA.

For major marine oil and hazardous material spills, the Northwest Area Contingency Plan (ACP) will be used for all responses. It combines the resources of the local, State, and Federal governments. Two Geographic Response Plans (GRPs) cover the shorelines of Jefferson County, specifically the Washington Outer Coast and Hood Canal/Admiralty Inlet. They include resource priorities, protection and clean-up strategies, and local logistical information.

References – HAZARDOUS MATERIAL INCIDENT

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Tables - HAZARDOUS MATERIAL INCIDENT

HM-1 Number of Hazardous Material Incidents Reported by Year in Jefferson County
HM-2 Hazardous Material Incidents Reported to Department of Ecology - 2016 – 2021

MAJOR FIRE ACTIVITY

SUMMARY

The Hazard: Major fire activities are generally associated with urban settings, even in rural communities. Urban fires are fires in cities and towns with the potential to rapidly spread to adjoining structures. These fires damage and destroy homes, schools, commercial buildings, and vehicles. By "major", we are excluding single structure fires unless they are of special note; we are including fires that were significant for their time.

Impacts and Effects: Any or all of the following:

- loss of life,
- loss of property,
- extensive damage to business and homes,
- overtaxed emergency response system
- overtaxed healthcare provider system; and
- long term, costly cleanup of damage.

Previous Occurrences: Port Townsend has had its share of major fires. The most famous recent urban fire is the Aldrich Market Fire in which the oldest continuously operating grocery store in the state was destroyed in the City of Port Townsend in August of 2003. This was started by teenagers playing with fireworks in an outside stairwell. The building has been rebuilt, but condominiums have replaced the heritage seed business which occupied the second story. The seed company, which collected and propagated rare seeds from plants thought lost, had its entire collection destroyed. It never recovered from the loss.

Figure MF-1 - Aldrich Market Fire





Source: http://www.burkedigitalpix.com/ © The Leader

Table MF-1, below, provides a look at how the city and nearby communities have fared with major urban fires.

Table MF-1 Significant Fires in Port Townsend and Vicinity History

Date	*Name*	*Circumstances*
09/06/1885	Downtown Fire	Started in a blacksmith shop. Burned down all buildings (20) between Water, Washington, Taylor and Tyler streets.
08/21/1886	Leland School House Fire	Embers from a near-by forest fire ignited the school house and burned it to the ground, along with the books and furniture. The school term, nearly over, was postponed indefinitely.

06/17/1900	Uptown Fire of 1900	The entire block between Lawrence, Clay, Tyler and Polk streets burned down. Firefighters were delayed because a citizen who spotted the fire couldn't find the key to open the alarm box. Keys were kept at nearby residences at the time.
09/24/1900	Downtown Fire of 1900	The entire block currently occupied by the west half of Memorial Field was burned to the ground after a fire was touched off by the carelessness of one of the city's "soiled doves."
07/08/1914	The "Green Light" Fire	The fire originated in a house of ill repute behind city hall, about six feet from the old fire department headquarters. The "Green Light" was a total loss. The mayor had employees ready to remove city records if city hall caught fire.
04/06/1923	W. H. Learned Opera House	Probably caused by a pyromaniac that was active that year.
06/23/1923	Eisenbeis Hotel	Burned to the ground. Probably caused by a pyromaniac that was active that year.
10/31/1959	Quilcene Halloween Fire	A fire broke out in the 71-year old Linger Longer Lodge at around mid-night on Halloween. Telephone lines were down, so the fire department wasn't notified and didn't arrive until it was too late to save the structure.
12/27/1959	The Hill & Landes Fire	Two commercial buildings, the Hill & Landes building and the Sheehan & Seavey Building, were destroyed by a fire that breached their common wall.
08/03/2003	Aldrich's Market Fire	Billed as the "worst commercial fire since 1959". Aldrich's Market was the oldest continuously operating grocery store in the state, having been founded in 1895. The fire was started by children playing with fireworks in an outside stairwell that led to businesses on the second story of the market. The ***Heritage Seed Company***, which collected seeds from rare plants for propagation, lost all of its collection and went out of business. Aldrich's Market reopened in 2005, and continues to be the oldest grocery store in the state that has operated under the same trade name.

Probability of Future Events: MED – Although Jefferson County and the City of Port Townsend have had major structure fires, conditions were not conducive to spread the fire to other buildings. County fire departments and the City of Port Townsend Fire Department (now known as East Jefferson Fire Rescue) have used rapid response, excellent training, and have exercised mutual aid agreements to prevent large fires from developing into a conflagration.

Hazard Assessment and Vulnerability Assessment

Port Townsend is a Victorian Seaport with its business district listed in the Registry of National Historic Sites. For decades, nobody had the money to tear down or replace the structures that people were abandoning during a local depression in the late 1800s, until it became fashionable to preserve and restore them. Thus many homes and buildings in this small city are over 100-years old, while many "newer" homes are easily over 50-years old.

Many homes and business structures were constructed prior to the time that construction and fire safety codes were in place and actively enforced. Many older residences are equipped with original wiring, making electrical systems a potential source of ignition. In older neighborhoods, houses are often very close together, lack sprinkler systems, and are

conducive to rapidly spreading fire. A significant number of old industrial/business facilities have not been retrofitted with new electrical infrastructure or fire extinguishing sprinklers.

Regular fire inspection of residences is non-existent, however recent hiring of fire prevention specialists and fire code inspectors will go far in addressing this situation before it becomes a problem. Water systems in older residential areas are aging. Some systems may fail to meet demands for fire protection water availability. Land use planning and system upgrades must be addressed in these areas. Residential area roads are often narrow and prevent the response of adequate fire apparatus.

In areas where newer industrial and business buildings are located, these structures are reasonably secure from destruction in the case of a spreading urban fire. New industrial buildings are generally constructed of fire-resistant materials, protected with automatic sprinkler systems, and have reasonable spacing between the structures. Although a major fire could occur in such facilities, it would not spread as quickly between neighboring structures. The Uniform Fire Code has required sprinklers in certain industrial and business buildings since 1985. As older buildings have been remodeled and reconfigured to accommodate shops and downtown hotels, they were required to meet more stringent fire codes as well.

Although Jefferson County and the City of Port Townsend have had major structure fires, conditions are no longer conducive to spreading the fire to other buildings. County fire departments, which have absorbed the City of Port Townsend Fire Department, have used rapid response, excellent training, and have exercised mutual aid agreements to prevent large fires from developing into a conflagration.

More stringent enforcement of fire codes has helped ensure reliability of the facilities' defenses. As the county has grown, fire districts have become better equipped and have more paid full-time firefighters on the staff. Fire stations are still located great distances apart; however, much improvement has been experienced over the past decade.

Nevertheless, there are always scenarios in which firefighting resources can be stretched to their limits. Port Townsend has no gas pipelines, but it does have hundreds of propane tanks. It is not inconceivable to have an earthquake break the connections of many propane tanks and have several explode and cause fires. In addition, the earthquake could break the single water line from the city reservoir to Port Townsend and also damage the 5 million-gallon reservoir that the city currently uses. In one fell swoop, there could be multiple fires with casualties at the same time water to put out the fires is cut off. It is a low probability scenario, but one that is well within the bounds of possibility.

Conclusion

Multiple structure fires are an ever-present danger in all parts of the county. Jefferson County needs to continue public education on fire safety, fire alarms, and fire response. The County must continue its efforts in ensuring fire codes are appropriate and enforced.

The current system to bring water to Port Townsend and to store it is being seismically retrofitted or replaced, depending on the conditions of the existing infrastructure.

References – MAJOR FIRE

1. *Port Townsend An Illustrated History of Shanghaiing, Shipwrecks, Soiled Doves and Sundry Souls*, Thomas W. Camfield, Ah Tom Publishing Inc., 2000, p. 246.
2. Ibid., 246.
3. Ibid., 236.
4. Ibid., 237.
5. Ibid., 242.
6. Ibid.
7. Ibid.
8. Ibid., 247
9. *Port Townsend The City that Whiskey Built,* Thomas W. Camfield, Ah Tom Publishing Inc., 2002, p. 289.
10. *Aldrich's Market*, "On the Hill A History of the Uptown Business District", Pam McCollum Clise, 1995 (Updated in 2007.)

Tables - MAJOR FIRE

MF-1 Significant Fires in Port Townsend and Vicinity History

Figures - MAJOR FIRE

MF-1 Aldrich Market Fire

MAJOR LAW ENFORCEMENT ACTIVITY

SUMMARY

Definition: Any incident that disrupts a community to the degree that police intervention is required to maintain public safety is a major police activity, civil disturbance or civil disorder. Demonstrations, riots, strikes, public nuisances, domestic disputes, terrorism, and/or criminal activities can all fall into this category. The hazard could surface in any community, and can be sparked by disagreements ranging from simple family disturbances to political, racial, belief, social and economic differences

The Hazard: Any incident that disrupts a community to the degree that police intervention is required to maintain public safety is a major law enforcement activity. In small jurisdictions, such as Jefferson County or the City of Port Townsend, this could be a hostage incident, bank robbery, bomb incident, civil disturbance or civil disorder, or a major natural disaster requiring significant control of an area. Many of the other hazards addressed in this Plan include a major law enforcement component in reacting to the event.

Impacts and Effects:

- Loss of life
- Loss of property
- Closure of businesses
- Looting
- Arson
- Long term divisiveness in the community
- Adverse impacts on tourism and economic development
- Increased demands on law enforcement and emergency response resources
- Increased demands on mental health

Previous Occurrences: There are bomb scares at city and county schools two to three times a year, but none have been real so far. There were regular public displays of anti-war protest groups such as the “Raging Grannies", but again, everything is normally orderly and friendly. In 2009, there was a double homicide with arson to hide the crime.

Probability of Future Events: High – The increase of illegal methamphetamine production and distribution of other drugs in rural areas such as Jefferson County, combined with a growing homeless crisis, serve to increase the probability of future incidents necessitating major law enforcement activity. By 2016, the prevalence of cell phone videos and the 24hour news cycles on the internet exacerbated police mistakes and/or malfeasance across the nation until there was a violent national reaction from the black community to any police shootings. In some cities police are being ambushed and murdered. On August 14, 2016, there were reports of rioting and cars being set on fire in Milwaukee, Wisconsin as a reaction to a police shooting of an armed suspect after a police foot chase.

Similar events also occurred in Seattle and Minneapolis in 2020 following the death of African-American men in police custody, which combined with an unstable political climate, caused situations resulting in the need to deploy the National Guard in many major cities across the nation.

History of Major Police Activity in Jefferson County

Jefferson County has not experienced the violence associated with riots occurring in nearby Seattle in the 1990s. In Seattle, a small-scale riot occurred after the 1992 Rodney King verdict. After the jury’s decision was announced small groups of people roamed downtown Seattle streets smashing windows, lighting dumpster fires and overturning cars. In 1999, during the World Trade Organization Ministerial Conference, riots resulting in injury and death of participants and bystanders occurred. The City of Seattle declared an

emergency and the Governor signed a proclamation of emergency allowing commitment of state resources to support affected local jurisdictions.

In 1998, the Washington State EOC was activated in response to the Makah Indian Nation proposed whalehunting activities at Neah Bay. At the request of the Clallam County Sheriff, the State of Washington provided resources from the National Guard, Washington State Patrol, Department of Fish and Wildlife, Department of Natural Resources and Emergency Management Division to control disturbances between protestors and residents.

County High Schools including Port Townsend, Chimacum, and Quilcene have all had bomb scares and have had instances of students bringing weapons to school. Following the Columbine High School experience in Colorado, such incidents have been approached with intense seriousness. Although nothing approaching the level of Columbine has occurred, school officials are aware and cognizant of the possibilities.

In 2009, a double-homicide with arson to cover up the crime in the Quilcene area became the focal point of major police and fire activity. The alleged perpetrator was caught within 24-hours, but the continued drain of law enforcement resources to process the crime scene and build a case had budgetary impact on county operations.

June 2013 – A school employee doing maintenance at Blue Heron Middle School discovered a pipe bomb that had been brought to the school in the 1990s. He transported the device to the Port Townsend Police Station, which is housed in a former school building that now contains community service organizations. The police, the YMCA, Red Cross, food bank, city swimming pool, parts of the Port Townsend Library, and KPTZ-FM radio are all housed there and had to be evacuated until the Washington State Police bomb squad could be activated and transported to the scene – a two-hour trip from its station. The State Patrol bomb squad safely detonated the device.

Figure MP-2 – Pipe Bomb Incident – June 28, 2013



A maintenance worker in a Blue Heron Middle
School classroom found this pipe bomb on June
28. The worker transported the device to the Port Townsend Police Department at Mountain View Commons about 10:45 a.m. The campus was evacuated because of dangers associated with the device and hazardous chemicals that were also found at Blue Heron and transported to Mountain View. As of 1:22 p.m., the Washington State Patrol bomb squad had detonated the pipe device to destroy it. Photo courtesy Port Townsend Police Department



Walter Chartrand of a Washington State Patrol bomb squad works on analyzing a pipe bomb brought to the Port Townsend police station by a school district employee who had found it while cleaning science classroom storage at Blue Heron Middle School. Mountain View Commons was locked down and evacuated for several hours before the old pipe bomb was destroyed in a controlled explosion. Photo by Tristan Hiegler

Hazard Assessment and Vulnerability Assessment

Civil disturbances are divisive, often complex in their origin, and are possible in nearly every community in the nation. As the population continues to grow, so will the concentrations of ethnic groups, varied perspectives, and disparate economic status. Jefferson County has experienced a growth rate that has outpaced the rest of the State of Washington. Diverse philosophies exist in county residents. As the economy fluctuates due to economic realities of declining fishing and forest industries, emotions tend to run high. Tourism, a major source of revenue for county businesses could be affected by an increasing potential or the actual developments of civil disturbances.

The difficult economy combined with the smuggling of designer drugs through Canada and the increase in meth labs in rural areas increase the probability of criminal activity that requires a major law enforcement response. The Jefferson County Sheriff's Office has twenty deputies, and the City of Port Townsend has sixteen commissioned officers to cover an 1800 square mile county twenty-four-seven. During holidays or festivals, when man-power is ramped up to deal with a special influx of people, there is a limited additional

surge capacity through personnel recall, activating all of the police volunteers and getting volunteers from nearby jurisdictions on a mutual-aid basis. In the event of an active shooter scenario, individual units of the Washington State Patrol may provide additional support, but specialized units such as a Swat Team or Armored vehicle take two-hours to be authorized, mount-up, and arrive in Port Townsend from their normal staging areas.

Conclusion

The potential for major police enforcement activity exists in Jefferson County. Main participants might not be residents of the county. County law enforcement resources are aware and have practiced response scenarios if such disturbances occur. Even with a quick response, state and federal law enforcement support will not arrive to help for many hours.

Police actions that are considered fairly common and routine in large urban areas become major police activities in small rural communities. Serving a warrant, discovery of a pipe bomb, maintaining security at a major fire or festival – all can require resources from outside the agency because of limited personnel and sometimes because of specialized skill sets involved.

References – MAJOR LAW ENFORCEMENT ACTION

1. "*Uneasy Calm in Milwaukee after police shooting, protests*", by Aaron Mak and Jacob Carpenter, USA Today, August 14, 2016.

2. *Old pipe bomb found in science room storage is exploded by WSP bomb squad*, by Tristan Hiegler of the Leader, Port Townsend Leader, July 3, 2013.

Figures - MAJOR LAW ENFORCEMENT ACTION

ML-1 Pipe Bomb Incident - June 28 2013

MILITARY ORDNANCE INCIDENT

SUMMARY

Definition

FEMA defines hazardous materials in a broad sense to include:

- Explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious, or radioactive materials
- that, when involved in an accident and released in sufficient quantities,
- put some portion of the general public in immediate danger from exposure, contact, inhalation, or ingestion.

The production, use, storage, transportation and disposal of hazardous material substances and wastes, places the public and the environment at significant risk. A release may occur by spilling, leaking, emitting toxic vapors, or any other process that enables the materials to escape its container, enter the environment, and create a potential hazard. The nature and extent of this risk is difficult to determine as the process involved in hazardous materials and toxic waste management are dynamic. Many federal laws and regulations exist to manage the manufacture, utilization, and disposal of hazardous materials.

An ordnance incident is the deliberate or accidental detonation of military ordnance, warheads, missiles, torpedoes, fuels, or any military related device or substance intended for the delivering high explosives or causing destructive explosions.

The largest munitions depot on the west coast, Naval Magazine Indian Island, is located within the boundary of Jefferson County. Tens of thousands of tons of high explosives in the form of missiles, torpedoes, warheads, etc. are shipped in and out of the depot every year by ship and by truck. There is a possibility of an accident or incident detonating high explosives near a populated area.

The Hazard: The largest munitions depot on the west coast, Naval Magazine Indian Island (NAVMAG II), is located within the boundary of Jefferson County. Tens of thousands of tons of high explosives in the form of missiles, torpedoes, warheads, etc. are shipped in and out of the depot every year by ship and by truck. There is a possibility of an accident or incident detonating high explosives near a populated area.

Note: Due to how the U.S. Military staffs it's various positions and commands, the Naval Commander of Naval Magazine Indian Island is typically in that position for only 2-3 years before rotating out. The go-to contact in the event of an emergency would likely be the Emergency Manager who is an integrated member of the Jefferson County Incident Management Team and shares a close relationship with DEM.

Impacts and Effects:

- Loss of life and injuries as a direct result of an explosion
- Fatalities and injuries as an indirect result of an explosion, e.g. from flying glass
- Destruction of property in the explosion radius
- Economic impact due to destruction of businesses within the blast radius
- Psychological trauma to survivors and residents
- Depending on the type of event, there may be hazardous residues that contaminate the area for long periods
- Economic impacts due to the loss of property values because of the perceived threat of living near NAVMAG Indian Island
- First responders, population and workers at risk until abatement is effective
- Explosions resulting in destruction and fires
- Permanent loss of fishing, clam beds, and oyster beds from chemical spills
- Loss of recreation sites and tourism
- Potential contamination of water supplies
- Business closures

Previous Occurrences: In 2008, a fully loaded semi-truck carrying 155mm munitions out of the base lost its brakes on a hill leading to the main gate of the navy base. A quick-thinking sentry raised the security bollards, which stopped the truck from entering onto the state highway fronting the base. There were no detonators with the munitions, so the threat of explosion was relatively low in this case.

Probability of Future Events: Low – NAVMAG Indian Island has a superb track record for safety. The 2008 incident caused the revision of protocols to prevent a recurrence. There have been no significant problems as of December, 2016.

History of Military Ordnance Incidents in Jefferson County

There have been no accidental detonations of military ordnance in Jefferson County.

February 15, 2008 – A shipping truck exiting NAVMAG Indian Island crashed into security bollards raised by the guards when the vehicle lost its brakes. The crash on February 15, 2008 happened just after 7 p.m. when a shipping truck transporting ordnance to the base crashed into one of the hydraulic security walls just inside the main gate.

Navy investigators determined that the 2003 Volvo truck and trailer, carrying 360 rounds of 155mm M107 projectiles, experienced a brake malfunction as it entered the base, causing it to crash into the movable wall used as a security measure.

According to an accident report from the Navy, no ordnance was damaged in the crash and no individuals were injured.

After the incident, a safety perimeter of 1,700 feet was set up, stopping traffic on state Highway 116 for more than an hour. The area remained closed until a Navy explosive ordnance disposal team arrived to inspect the truck and ordnance.

The team later determined it was safe to reopen the road.

The ordnance was offloaded and a tow truck was called to dislodge the truck from the barrier.

Hazard Assessment and Vulnerability Assessment

Indian Island has its own security and fire department to handle incidents within the base. Vulnerabilities of the base to severe windstorms, and the potential of hazardous material accidents that could impact the communities around the bay necessitate inter-governmental cooperation at all levels. Depending on its nature, a catastrophic explosion could scatter radiologic debris.

Additionally, the trans-shipment of hundreds of thousands of tons of munitions, including spent Uranium projectiles, through the area periodically creates opportunities for protest groups. Loaded munitions ships leaving the base sometimes sail within a few hundred yards of downtown Port Townsend because of tidal conditions.

During the Persian Gulf operations known as “Desert Storm” and during Operation Iraqi Freedom, several thousand tons of explosive passed through eastern Jefferson County between the Hood Canal Bridge and Naval Magazine Indian Island. The type of cargo that is loaded/offloaded at NAVMAG Indian Island is primarily ammunition (e.g., bombs, bullets and missiles). Contract trucks and trailers made several trips each day moving materials between Indian Island and Naval installations in Kitsap County. U.S. Pacific Fleet ordnance material flows from producers and procurement sites through Naval Magazine Indian Island to the Pacific Fleet.

Areas at risk for ordnance materials transportation incidents lie along highways, pipelines, rivers, and seaport areas. These risks are compounded by natural hazards (e.g. earthquakes, floods, and severe storms). Each incident’s impact and resulting response depends on a multitude of interrelated variables that range from the quantity and specific characteristic of the material to the conditions of the release and area/population centers involved.

Figure OR-1 shows the route that trucks take from the Hood Canal Bridge to NAVMAG Indian Island. According to the National Counterterrorism Center (NCTC), a semi-truck fully loaded with high explosives needs an evacuation radius of 7000 feet. Depending on where an ordnance truck had an accident, the evacuation radius could include the County EOC, 9-1-1 facilities, sheriff’s office and jail complex, two propane storage facilities, gasoline stations, two schools and a library. It is also possible to have an accident in which the evacuation radius would include both the NAVMAG EOC and the County EOC, thus necessitating transferring EOC operations to the Alternate EOC at the City of Port Townsend nine miles away.

Conclusion

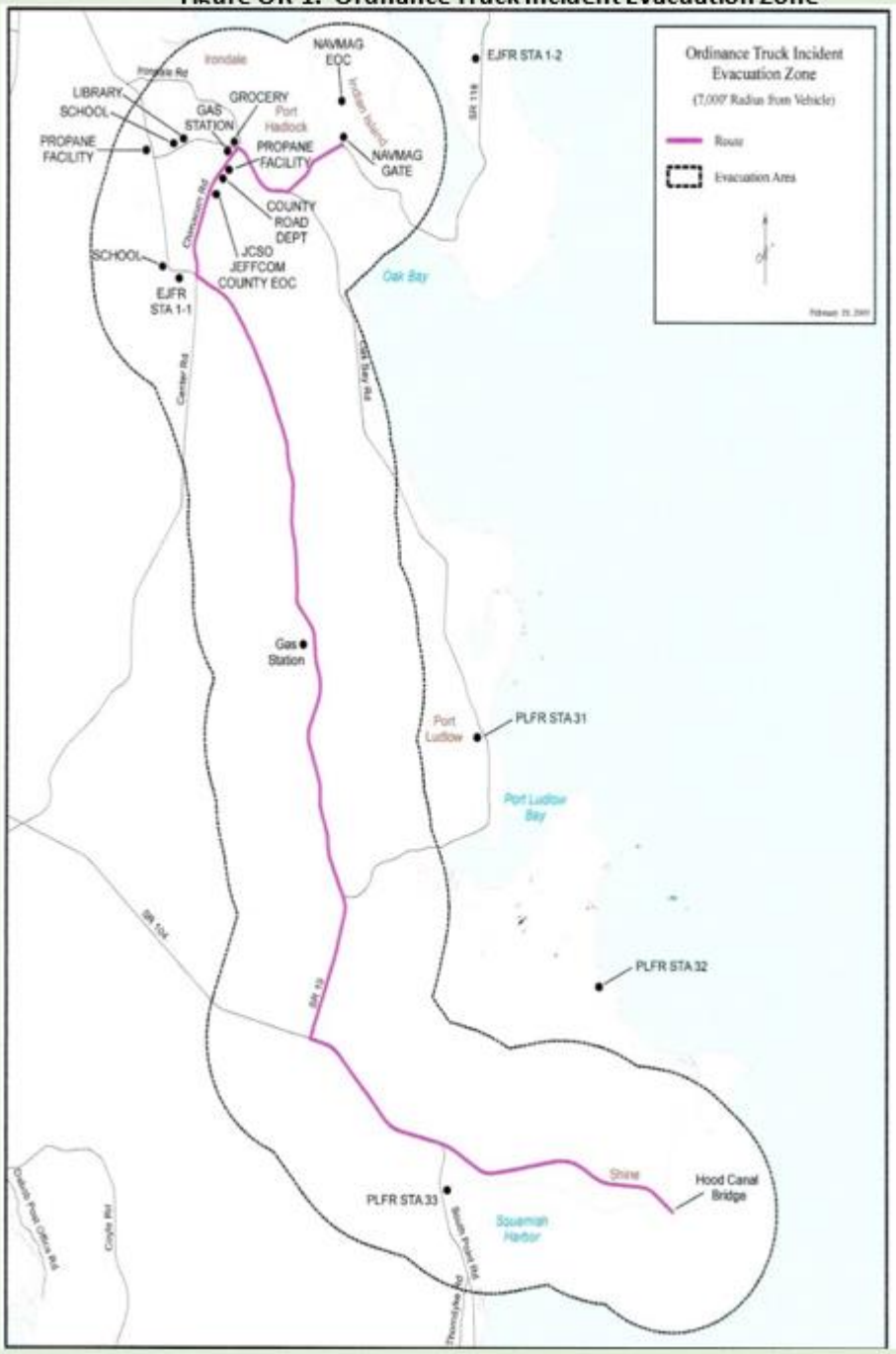
Jefferson County has convened its leaders to examine and more thoroughly understand existing emergency response processes, communication plans and methodologies.

NAVMAG Indian Island conducts periodic Educational outreach presentations for the public. "We really wanted to reach those parts of the community who don't get a chance to get involved in what's happening in their area," said Melissa Kilgore, administrative assistant for human resources, financing and budgeting for NAVMAG Indian Island."

Citizens, both public and private, must be prepared with evacuation or shelter-in-place plans for all hazards including ordnance incidents. Agencies should have critical incident plans outlining roles for school administrators, law enforcement, fire departments, and medical care providers. Agencies should coordinate their plans with each other to ensure that redundancies are addressed and to further the understanding and opportunities for cooperation by all potentially affected agencies.

A number of critical agencies are vulnerable to be being affected by an ordnance truck accident and should have procedures and exercises predicated on having to move operations to the Alternate EOC.

Figure OR-1. Ordnance Truck Incident Evacuation Zone



Source: Jefferson County Department of Emergency Management

References – MILITARY ORDNANCE INCIDENT

1. "*Military Ordnance Incident*", Jefferson County – City of Port Townsend Hazard Mitigation Plan, Jefferson County Department of Emergency Management, 2009, pp. 189-192.

2. "*Hazardous Materials*", SLG 101: Guide for All-Hazard Emergency Operations Planning", FEMA, Washington D.C., September 1996, p. 6-C-1. Available at: http://www.fema.gov/pdf/plan/6-ch-c.pdf

3. "Cargo truck wrecks inside Navy gate", Sullivan, Patrick J., Port Townsend Leader, Port Townsend Washington, February 27, 2008.

4. Part of the mission of NAVMAG Indian Island is "depleted uranium management". Military medical sources maintain that depleted uranium is not harmful unless it is inside the body, either through inhalation, ingestion or hostile action.

5. Bomb Threat Stand-off Distances, National Counter-terrorism Center, 2006. (Unclassified) Available at: https://www.nctc.gov/docs/2006_calendar_bomb_stand_chart.pdf

6. *NAVMAG Indian Island Conducts Outreach*, Mass Communications Specialist 2nd Class (AW/NAC)
Eric J. Rowley, Fleet Public Affairs Center Det. Northwest, Story Number: NNS071206-19, 12/6/2007. Available at: http://www.navy.mil/submit/display.asp?story_id=33702

7. Depleted Uranium Fact Sheet, Available at:
http://www.au.af.mil/au/awc/awcgate/dod/du_factsheet_4aug98.htm

Figures - MILITARY ORDNANCE INCIDENT

OR-1 "*Ordnance Truck Incident Evacuation Zone*", Jefferson County Department of Emergency Management, 2009.

POWER OUTAGE – ENERGY EMERGENCY

SUMMARY

Definition:

A power outage is an interruption of normal sources of electrical power. Short-term power outages (up to a few hours) are common and have minor adverse effects, since most businesses and health facilities are prepared to deal with them. Extended power outages, however, can disrupt personal and business activities as well as medical and rescue services, leading to business losses and medical emergencies. Extended loss of power can lead to civil disorder, as in the New York City blackout of 1977. Only very rarely do power outages escalate to disaster proportions, however, they often accompany other types of disasters, such as hurricanes and floods, which hampers relief efforts.

Although there are no statutory definitions of an extended power outage, the Washington Administrative Code (WAC) 246-293-660 sets the minimum standards for water system reliability by defining a power outage as a minimum of 30 minutes. It indirectly sets the outage standard for power utilities as averaging less than four hours per outage, with three outages or less per year over a three-year period. Not more than one outage per three-year period can exceed eight hours. From this we can infer that an extended power outage is anything over eight hours long.

Other jurisdictions define an extended power outage as one which puts “the comfort and safety” of its citizens at risk. “Comfort and Safety” means an ambient temperature that minimizes residents’ susceptibility to loss of body heat and risk of hypothermia or susceptibility to respiratory ailments and colds.

The Hazard: Electricity may be interrupted due to drought, earthquake, major destruction of power transmission lines. They can develop quickly due to storms or an earthquake, or they may develop slowly such as when world politics might produce shortages. Only very rarely do power outages escalate to disaster proportions, however, they often accompany other types of disasters, such as severe winter storms and floods, which hampers relief efforts. Electromagnetic pulses and voltage spikes from high altitude nuclear blasts (HEMP), deliberate satellite attacks, or natural Carrington events can also damage electricity infrastructure and electrical devices. Cyber-attacks can bring down the power grid by interfering with control systems.

Impacts and Effects:

- Imperilment of life due to the inability to provide life-support services, e.g. an oxygen concentrator at home
- Imperilment of life due to the inability to produce heat or cooling during adverse weather periods
- Loss of communications
- Disruption of critical services

- Endangerment of property due to catastrophic failure of systems dependent on power
- Extreme hardship for elderly and special needs population
- Loss of refrigeration and losses from spoilage
- Loss of water resulting from inability to run electric pumps
- Potential failure of waste removal systems
- Disrupted fuel supplies
- Loss of business and revenue
- Banking systems are disabled
- Shortage of food supplies as stores close
- Communication systems disrupted as battery backups are depleted
- Higher costs for electricity
- Higher costs for petroleum products
- Alarm systems disabled, potential for criminal acts increased
- Law enforcement and emergency response teams challenged with increased traffic accidents with non-working traffic lights
- Limited patient care as emergency generators become overtaxed

Previous Occurrences: There have been a few "major" occurrences in Jefferson County, but none that could be considered catastrophic in that they were localized and individual emergencies were manageable with local and regional resources:

- After the Columbus Day storm in 1962, there were areas in Washington that were without power for two to three weeks.

- During the summer of 1996, problems with line loading caused major regional power outages along the west coast. Storms have also caused power outages ranging from hours to 3-4 days in areas of Jefferson County. Electrical power shortages also occurred during 1973-74 and in 1977-due to drought conditions.

- Following the "Super Bowl Storm" in 2006, Port Ludlow was without power for three days when major transmission lines were damaged in the high winds accompanying that storm.

- The last significant occurrence in Jefferson County was on December 31, 2008, when severe winds broke a Bonneville Power Feeder line cutting off power to 2/3 of the Jefferson County population. Power was restored within hours through a work-around, but the line itself was not fully repaired for many days.

- During the winter of 2021-2022, Jefferson County experienced multiple power outages lasting several days. Coyle and the Toandos Peninsula were the community hardest hit with some neighborhoods being without power for up to a week before PUD and Public Works crews could clear roads to get services restored

Probability of Future Events: High – Severe winter storms combined with above-ground power lines in forested areas makes power outages a regular recurring event. Whether any given outage becomes an extended outage is a function of the severity of the problem, its physical location, and the environmental conditions during the event.

Definition:

A power outage is an interruption of normal sources of electrical power. Short-term power outages (up to a few hours) are common and have minor adverse effect, since most businesses and health facilities are prepared to deal with them. Extended power outages, however, can disrupt personal and business activities as well as medical and rescue services, leading to business losses and medical emergencies. Extended loss of power can lead to civil disorder, as in the New York City blackout of 1977. Only very rarely do power outages escalate to disaster proportions, however, they often accompany other types of disasters, such as hurricanes and floods, which hampers relief efforts.

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Other jurisdictions define an extended power outage as one which puts “the comfort and safety” of its citizens at risk. “Comfort and Safety” means an ambient temperature that minimizes residents’ susceptibility to loss of body heat and risk of hypothermia or susceptibility to respiratory ailments and colds.

Hazard Assessment and Vulnerability Assessment

Puget Sound Energy (PSE), the power provider up until 2010 had a history of major power outages, typically caused by large storm events. Power outages have lasted as long as 9 – 10 days in some areas of the county. During storms accompanied by cold winter temperatures, power outages have been problematic and dangerous for special needs populations and the elderly.

The Jefferson County Public Utility District Nbr. 1 (JPUD), the current power provider for East Jefferson County, purchased the power assets from PSE in 2010. It is attempting to mitigate the potential for extended power outages by creating more of a presence in Jefferson County to work with consumers, and establishing closer relations with the Jefferson County Department of Emergency Management to improve communications during power outage events. JPUD purchased the power related assets from Puget Sound Energy on April 1, 2013, and took over the power distribution responsibility from them. Its strategy was to keep the power distribution at a local level rather than with a non-local provider, but the production assets are still from the outside, primarily the Bonneville Power Authority.

Loss of a major distribution system due to damage or an act of terrorism on the grid could cause power outages for several hours to several days. Loss of refrigeration and water sources that require electrical pumps could present major health issues. Loss of electricity to power gas stations could affect the fuel supply. With power outages, retail food outlets would be closed, alarm systems could be disconnected, and eventually emergency communication systems and cell phones would be affected after the battery life of backup

systems was expended. Back-up generators would be at risk for breakdown following extensive utilization.

Long-term power outages due to drought or failure at a hydroelectric generation station could present problems. The power distribution systems that currently exist are designed to help prevent major power outages for long periods of time. Washington State is connected to a regional transmission grid that has major connections with other grids out-of-region, including British Columbia, Montana, California, and other southwest states.

In general, if Washington is short of electricity due to drought and low water levels in reservoirs powering hydroelectric generating plants, electricity can be purchased elsewhere. The result is higher cost electricity, rather than inadequate supply. Utility companies build on an "N-1 capacity". This means the utility is prepared for one of each kind of line to go down without a disruption in service. If two of the same type of lines goes down, some may lose power. In the 1996 event, Portland was forced to take everything off line to avoid melting of transmission lines from the overload of power. Even with the grid system, however, voluntary curtailment and conservation must be practiced. The Washington State Curtailment Plan for Electric Energy (WAC 194-22) describes a 5-stage plan for power curtailment with each level representing a more severe shortage that requires sterner steps.

Most of the out-of-region power is thermal; it is not affected by drought. In fact, a shortage of electricity over the long term is not a major concern in Western Washington since a substantial amount of electricity is transmitted from Canada to California via Washington and Oregon, therefore providing easy access to external power supplies. Hot weather and increased use often associated with droughts can be a concern for electric utilities, however. Increased loads cause electric lines to heat up; when lines get too hot, they sag. Sagging lines into trees and other vegetation is a major concern and therefore loads must be monitored to control sagging.

Jefferson County is vulnerable to localized, short-term energy emergencies brought about by accidents, terrorism or storms. Most of these energy emergencies can be handled by the utility companies. The effects of energy shortages could include inconvenience to consumers, reduced heating and lighting capability, reduced production in all sectors, potential failure of transportation, water and waste, communication, information, and banking systems. Secondary hazards associated with these events could include traffic accidents as traffic lights are out, limited patient care at the hospital due to power capabilities of backup generators, injuries due to downed power lines, and closure of retail operations including food stores, gas stations, restaurants, and other stores. Energy emergencies can seriously hamper emergency response capabilities and should be planned for.



09/02/2015 Fire in Mason County Cuts Electric Service to Over 2000 Jefferson County Customers.

Submitted photo to the Port Townsend Leader

Terrorism and the Grid: There are three levels of terrorism to deal with when discussing the grid: physical, cyber, and pulse. A particular attack may involve one or more of these types of attack.

Physical Terrorism: On April 13, 2013, unknown individuals attacked the Pacific Power & Light Metcalf Transmission Substation near San Jose, California. These saboteurs lifted a heavy vault lid to a vault carrying AT&T fiber optic cables. Within 30 minutes of cutting the cables and knocking out communications, they attacked the transmission substation and knocked out 17 transformers in 19 minutes by firing AK-47 assault weapons from outside the locked perimeter. They left the scene one minute before police units arrived. The Metcalf Substation provides power to Silicon Valley.

Power was rerouted from other areas and producers to keep Silicon Valley going, but it took 27 days to get the substation back in operation. Jefferson County PUD substations have the same kind of vulnerability to physical attack.

Cyber-terrorism: In 2008, the U.S. and Israel cyberattacked the Iranian Nuclear program using the *Stuxnet* virus. Shortly thereafter, Iran retaliated with a cyberattack against the Aramco Oil company in Saudi Arabia, destroying 30,000 of its computers. The attack on the Iranian program was accomplished by introducing the “worm” into the SCADA system causing the uranium purification centrifuges to tear themselves apart. That SCADA system was manufactured by Siemens as is most of the SCADA systems used by the power industry in the United States.

Pulse Attack: High Altitude Electromagnetic Pulses (HEMP) can be used to damage the grid over a widescale area. A HEMP attack would most easily be from a high-altitude nuclear detonation, but could also be from a non-nuclear device or a satellite. A detonation at 400 km high can send a pulse that covers the entire continental United States. Damage to electrical equipment would be highly variable and depend on physical location, whether equipment was powered on, etc. The ability of the United States power grid to withstand such an attack would depend on whether equipment was on, the topography of the location (mountain shadow), and a myriad of unknowable things occurring at the time. See “Carrington Event” below for what the levels of electromagnetic pulses can do.

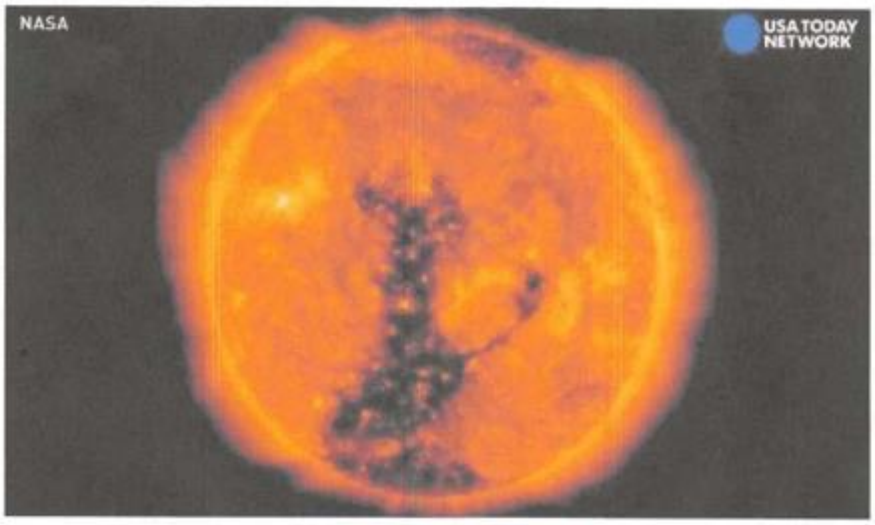
Carrington Event: Not to be outdone by mere terrorists, our sun can produce a "pulse attack" that can take out the entire world. A "Carrington Event" is a Coronal Mass Ejection (CME) from the sun that results in a solar geomagnetic storm that can easily take out electric grids and electronics. Such an event is named after amateur astronomer Richard Carrington, who observed the phenomena on September 1, 1859, the largest such geomagnetic storm ever recorded. Even back then, telegraph equipment caught fire, the auroras turned night into day, and some telegraphers were shocked. Ice core samples have determined that the 1859 event was the largest in the last 500 years.

NOAA has developed a "Space Weather Scale" to rate geomagnetic storms along with other types of phenomena. Figure PO-1, below, presents the Geomagnetic Storm portion to illustrate the kinds of damage that an EMP pulse can do:

"A G3 - Strong geomagnetic storm conditions were observed beginning 05:59 UTC on May 8, 2016. Power system voltage irregularities are possible, false alarms may be triggered on some protection devices. Spacecraft systems may experience surface charging; increased drag on low Earth-orbit satellites and orientation problems may occur. Intermittent satellite navigation (GPS) problems, including loss-oflock and increased range error may occur. Radio - HF (high frequency) radio may be intermittent. Aurora may be seen as low as Pennsylvania to Iowa to Oregon."

On January 22, 2017, *USA Today* reported the NASA Space Weather Station observed a massive coronal hole transiting the sun. The following link contains the video of that transit:

http://www.msn.com/en-us/video/wonder/watch-massive-coronal-hole-rotate-across-suns-surface/viBBy4Vry?ocid=spartandhp



Massive Coronal Hole Transits Sun - It is unknown what effect it will have on earth's electronics, but is expected to generate an aurora. Source: USA Today Network

The Impact of Long-Term Power Outage

The most immediate impact of extended power outages is the potential for loss of life due to medical devices at home failing, or temperatures reaching hot or cold extremes because of the loss of heating/cooling capabilities resulting in vulnerable people being placed at risk. As time progresses without the restoration of power, families began to incur economic damage from the loss of food stores in their refrigerators and freezers, or from having to travel to and pay for commercial shelter such as a hotel.

Retail establishments experience loss of business due to their operations not being able to function during the outage. Those businesses with back-up power incur extraordinary costs in producing their own power until the extended outage is over.

Particularly long outages can impact water supply and create other issues as emergency power capabilities break down from extended use, thus requiring extraordinary efforts to maintain normalcy.

Outages lasting into the months can result in the breakdown of civilization locally and migration to areas of support.

All of the above effects result in economic and revenue losses for county residents, and the state.

Climate Change

Washington State relies on hydropower for nearly three quarters of its power and sales to households use 54% of that. Climate warming will have a negative impact on both supply and demand of electricity throughout Washington.

The biggest factors determining the effects on electricity are annual temperature changes and the change in peak snowpack melt and stream flow. The Northwest Power and Conservation Council predicts a 300 megawatt (about 1% of Washington's generating capacity) reduction in demand for each degree the temperature rises.

Increased stream flows from early snowpack melt could result in higher power supply in the spring when demand is down due to warming conditions, and lower power supply in the summer when demand is highest due to more hot days and the demand for air conditioning.

Higher demand for lower power supply can lead to brown-outs, black-outs, rate increases, and the cost of living and doing business in Washington going up.

Table PO-1 provides NOPRCD's projection for temperature increases in the Olympic Peninsula due to global warming.

Table PO-1 – Temperature: Trends and Extremes

Temperatures	Observed Changes	Future Projections
Averages *(for Pacific Northwest)*	Warmed 1.3°F (1895-2011)	By 2050's – increases of 4.3°F (lower emissions), to 5.8°F (higher emissions)
Extremes	Increase in nighttime heat events.	Slight increase in days over 90°F (8 ± 7 days) for PNW with limited increase in days over 95°F on the Olympic Peninsula. Frost-free season increases + 35 days across Pacific Northwest.

Source – NOPRCD Report

Global warming notwithstanding, the Northwest Power and Conservation Council issued a warning that the loss-of-load probability will approach 10% in 2021 due to the retirement of several coal plants. In this scenario, the region will need over 1,000 megawatts of new capacity to maintain adequacy. If there is any significant increase in in summer heat waves or severe winter storms, there will be an increase in demand for power to run air conditioners or heaters, just when the region is losing it.

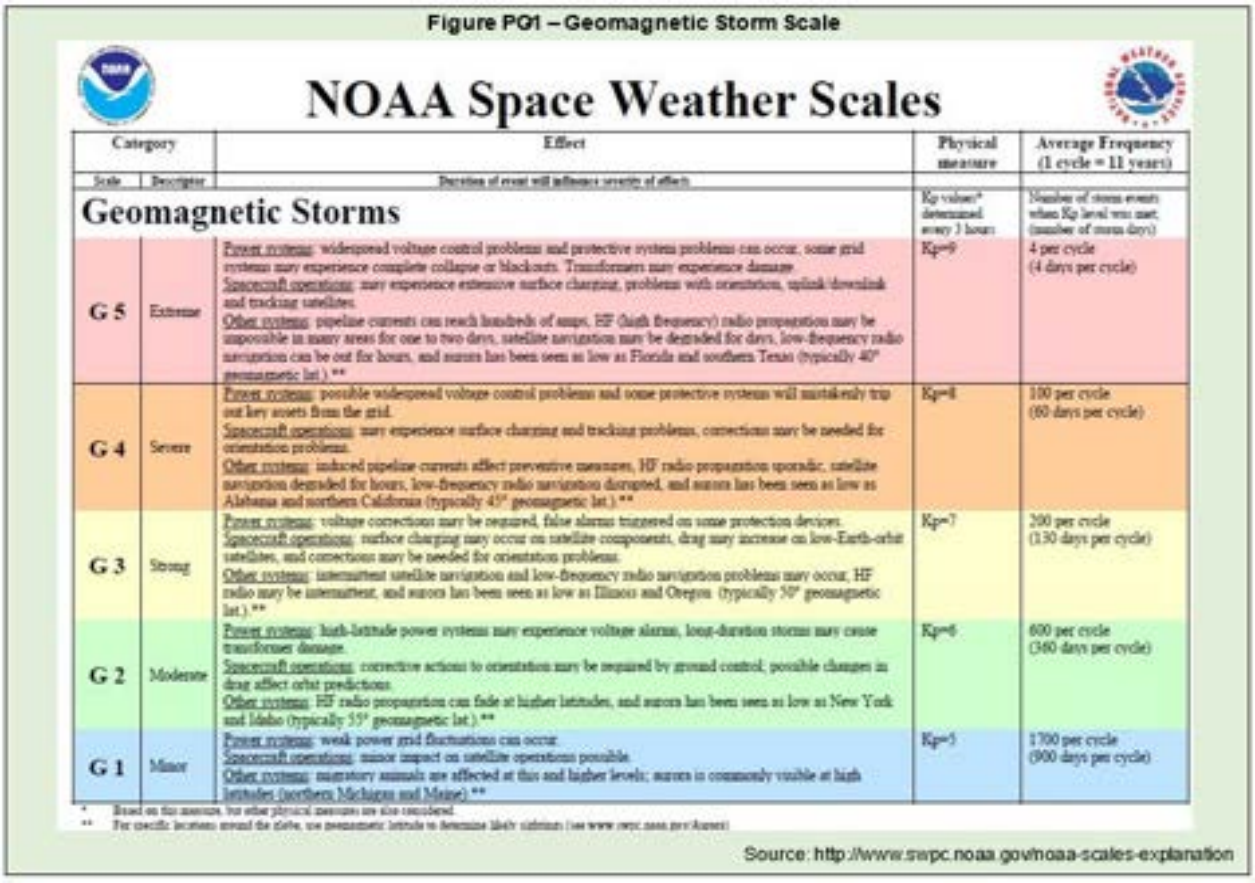
Conclusion

Because of its location, Jefferson County is at risk for severe wind and winter storms that are capable of causing extended power outages. Not all critical facilities have back-up power, while others have diesel or gasoline back-up generators that can eventually run out of fuel. If the event causing the power outage has also damaged arterial highways, fuel resupply may not be available, thus causing secondary power outages two to three days after the initial outage as back-up generators fail.

Several fire stations have back-up generators that run off of 1000-gallon propane tanks, and can last for weeks during winter weather. Power outages caused by a wide-scale event such as an earthquake would severely hamper relief efforts and exacerbate the enormity of the event.

The Jefferson County Public Utility District Nbr. 1 (JPUD), the power provider for East Jefferson County, is attempting to mitigate the potential for extended power outages by creating more of a presence in Jefferson County to work with consumers, and establishing closer relations with the Jefferson County Department of Emergency Management to improve communications during power outage events. JPUD purchased the power related assets from Puget Sound Energy in 2010, and took over the power distribution responsibility from them.

Figure PO1 – Geomagnetic Storm Scale



NOAA Space Weather Scales

Category		Effect	Physical measure	Average Frequency (1 cycle = 11 years)
Scale	Descriptor	Duration of event will influence severity of effects		
Geomagnetic Storms			Kp value;* determined every 3 hours	Number of storm events when Kp level was met; (number of storm days)
G 5	Extreme	Power systems: widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. Spacecraft operations: may experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. Other systems: pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and auroras has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.).**	Kp=9	4 per cycle (4 days per cycle)
G 4	Severe	Power systems: possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. Spacecraft operations: may experience surface charging and tracking problems, corrections may be needed for orientation problems. Other systems: induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and auroras has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).**	Kp=8	100 per cycle (80 days per cycle)
G 3	Strong	Power systems: voltage corrections may be required, false alarms triggered on some protection devices. Spacecraft operations: surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. Other systems: intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and auroras has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).**	Kp=7	200 per cycle (130 days per cycle)
G 2	Moderate	Power systems: high-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. Spacecraft operations: corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. Other systems: HF radio propagation can fade at higher latitudes, and auroras has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).**	Kp=6	600 per cycle (360 days per cycle)
G 1	Minor	Power systems: weak power grid fluctuations can occur. Spacecraft operations: minor impact on satellite operations possible. Other systems: migratory animals are affected at this and higher levels; auroras is commonly visible at high latitudes (northern Michigan and Maine).**	Kp=5	1700 per cycle (900 days per cycle)

* Based on this measure, but other physical measures are also considered.

** For specific locations around the globe, use geomagnetic latitude to determine likely sightings (see www.swpc.noaa.gov/Aurora)

Source: http://www.swpc.noaa.gov/noaa-scales-explanation

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Tables – POWER OUTAGE

PO-1 Temperature: Trends and Extremes

Figures – POWER OUTAGE

PO-1 Geomagnetic Storm Scale

PUBLIC HEALTH EMERGENCY

SUMMARY

The Hazard: Public hazards can be food or water contamination or medical emergencies such as diseases, epidemics, or pandemics that have the potential to affect people and animals over a significant area. Water emergencies are discussed in the sections on man-made hazards. In the United States, a **public health emergency** declaration releases resources meant to handle an actual or potential public health crisis.

Definitions:

Disease – a condition of the living animal or plant body or of one of its parts that impairs normal functioning and is typically manifested by distinguishing signs and symptoms

Outbreak – Occurrence of more cases of disease than expected in a given area among a specific group of people over a particular period of time

Epidemic – an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area. More geographically broad than an outbreak

Pandemic – an epidemic that has spread over several countries or continents, usually affecting a large number of people.

Vulnerabilities

- Aging population
- Tourism and travel destination
- Rural location
  - Limited transportation options – One primary access to the main urban areas of the region
  - Limited healthcare resources – one critical access hospital
  - Zoonotic disease
- Low vaccination rates
- Systemic inequity

Jefferson County has one critical access hospital with 25 beds and four fire districts that provide emergency medical response. East Jefferson Fire & Rescue, which is the only fire district to provide 24 hour staffed stations, provides out-of-county transport services for the hospital. The remainder of the districts rely heavily on volunteers. During regional events, local resources may be overwhelmed, resulting in the need to make careful decisions about resource allocation.

Port Townsend is a working Victorian seaport, that receives visitors from all over the world. Tourism is an important driver of the economy throughout the county, creating risk both through the exposure to people from a wide geographic area and from the loss of tourism income during public health emergencies

Jefferson county typically has vaccination rates below the average for the state of Washington. While vaccine uptake was high during the COVID-19 pandemic, rates remain low for other vaccine preventable disease, particularly among children.

Systemic inequity leaves specific populations at higher risk for consequences of public health emergencies. Race, ethnicity, gender, age, economic access and housing status are correlated with social vulnerability. That vulnerability may correlate with additional harm to those populations.

Previous occurrences and the probability of future hazards

1918 – Influenza epidemic causes many deaths in Jefferson County
2007 – Jefferson County health authorities put out warnings to customers of a Port Townsend farm who purchased produce handled by an employee who had contracted Hepatitis-A. The potentially exposed groups Community Supported Agriculture (CSA) customers, Port Townsend Food Co-op customers and children and others who attended a field trip to the farm the first week of June.
2012 – Two cases of paralytic shellfish poisoning are reported
2020-22 – The COVID-19 Pandemic causes the death of several county residents, the hospitalization of over a hundred and severely disrupts local commerce and activity

Additional hazards are likely to occur, but the time frame for their occurrence is not clear.

- The likelihood of epidemic or pandemic respiratory viruses is high over time. There have been 2 pandemic respiratory viruses within the last 100 years, and multiple epidemic respiratory viruses over the past 20 years
- Outbreaks of vaccine preventable disease have historically occurred every 5-15 years.
- Other hazards are ongoing, but may experience changes in severity or prevalence (opioid use, influenza)

Potential Impact of Hazards

Potential impacts of public health emergencies include:

- Human illness and death
- Illness and death of commercial livestock and domestic pets
- Increased stress on local health care system, possibly beyond the capacity to respond
- Shortages of food and supplies due to commerce disruption
- Disruption of local commerce
- Economic impact due to loss of sales from people sheltering in place
- Economic impact of lost work-time due to illness

Hazard Assessment and Vulnerability Assessment

Potential Hazards

Environmental Biotoxins (Blue-Green Algae and Red Tide): Jefferson County lakes have periodically seen moderate blooms of toxic blue-green algae. During such blooms, lakes are

quarantined, as the algae produce toxins that cause liver damage or nerve impairment. Local bays, such as Discovery Bay and Oak Bay, are periodically contaminated by a “red tide” that infects shellfish and produces a marine biotoxin that can cause paralytic shellfish poisoning (PSP) in people eating the shellfish.

Food-borne Germs and Illnesses: Many different disease-causing germs can contaminate foods, so there are many different foodborne infections (also called foodborne disease or food poisoning). Washington has experienced outbreaks in campsites, contaminated swimming areas, and occasionally in restaurants due to undercooked foods.

Influenza: Seasonal influenza is a respiratory viral infection that has a pattern of seasonal increase during the winter months. It presents a recurrent challenge to public health system, causing significant burdens to the healthcare system, morbidity and mortality. Novel influenza strains present a risk for high transmissibility and epidemic influenza spread.

Novel Respiratory Viruses (e.g. SARS, MERS, SARS-CoV-2): The COVID-19 pandemic highlighted the potentially far-reaching impact of novel respiratory viruses. Respiratory virus can mutate quickly, travel quickly and be difficult to control. Medical treatments for respirator viruses are limited.

Opioid Use: Use of opioids presents a risk to public health through mortality due to overdose as well as the risk of co-morbidities and the spread of communicable disease through the use and sharing of supplies for using drugs, particularly injection drugs. Overdose deaths in Jefferson County doubled from 2019 to 2020.

Other Diseases: Other diseases may become epidemic and be transmitted here through a variety of means (e.g ebola, Creuzefeldt-Jokob disease, Zika, West Nile Virus)

Mitigation Strategies

- Proactive monitoring for potential and incipient events
- The containment of local outbreaks of disease or contaminated products.
- Increasing vaccination rates
- Implementation of harm reduction measures
- Work on increasing equity and access to resources for all county residents
- Building reserves of critical supplies
- Building networks of communication and support among vital service providers

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TERRORISM (CBRNE)

SUMMARY

DEFINITION:
The Federal Bureau of Investigation (FBI) defines **terrorism** as “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objective”. The definition continues to specify terrorism as either domestic or international, based upon the origin, base, and objectives of the terrorist organization.

This has now been expanded to include Cyberterrorism: “**Cyberterrorism** is the convergence of cyberspace and terrorism. It refers to unlawful attacks and threats of attack against computers, networks, and the information stored therein when done to intimidate or coerce a government or its people in furtherance of political or social objectives. [A cyberterrorism] attack should result in violence against persons or property, or at least cause enough harm to generate fear. Virtually initiated attacks which lead to the death or bodily injury, explosions, or severe economic loss can also be included in cyberterrorism-related activities. Attacks against elements of a government’s critical infrastructure could also be classified as acts of cyber-terrorism depending on the impact of such an event.”

The Hazard: Terrorism comprises a political effort to oppose the status quo by inducing fear in the civilian population through the widespread and publicized use of violence, including murder, injury, and destruction.

Impacts and Effects:

- Loss of life
- Loss of property
- Damage and potential destruction of government buildings
- Disruption of ferries, bridges, and seaports
- Destruction of historical sites
- Damage to law, fire, emergency medical services and responder facilities
- Disruption of financial institutions and banking
- Contamination of food and water supplies
- Death or illness from bioterrorism, chemical attacks, or nuclear detonation
- Overtaxed emergency response system
- Overtaxed healthcare provider system
- Long term clean-up of environmental damage
- Disruption of telecommunication systems and transportation systems from cyber terrorism
- Mass influx of refugees from highly populated areas
- Instillation of fear and paranoia throughout the population

Previous Occurrences: Although no overt act of terrorism has been detected in Jefferson County, the Sheriff's Department has received reports of people observing operations at the Naval Magazine Indian Island. In one incident of such suspicious behavior in 2007, a citizen

was able to obtain a license plate number that was subsequently traced to a stolen vehicle. The suspect was not apprehended.

From time-to-time, there are reports of suspicious people or suspicious packages being left on the Washington State ferries. So far, these have not resulted in more than an inconvenience on the Port Townsend ferries as authorities take the time to check out the persons or packages.

Probability of Future Events: MED – Even though Port Townsend and Jefferson County seem like low priority targets, the FBI has reported threats against ferry systems, and it is known that NAVMAG Indian Island has periodically been under observation by persons not wanting to be identified.

It is impossible to provide a precise probability of future events of this type but the general consensus is anywhere from 1 to 10 years. The most likely tactics to be used are Active Shooter(s), Bombings (any variety), and Cyber Attacks. The least likely tactics to be used are Chemical, Biological, Radiological, and Nuclear (CBRN) Bombing/Attack and Hijacking/Skyjacking. Most likely targets are assessed to be Government Facilities, Commercial Facilities (Public Assembly, Retails, Entertainment and Media, etc), Transportation, and Military and Law Enforcement.

History of Terrorism in Jefferson County:

Jefferson County residents, businesses, schools and government have received numerous threatening phone calls over the years regarding bomb threats. Although many reports of pending explosions are received, most are malicious mischief. A few mailboxes have been blown up, and a few cases of arson have occurred. Arson commissions have been for personal gain, some for revenge, and some for a “thrill”. These occurrences have not met the definition of terrorism especially when compared to events such as those that occurred in New York City and Washington DC on September 11, 2001.

Although no overt act of terrorism has been detected in Jefferson County, the Sheriff’s Department has received reports of suspicious persons observing operations at the Naval Magazine Indian Island. In one such incident in 2007, a citizen was able to obtain a license plate number that was subsequently traced to a stolen vehicle. The suspect was not apprehended.

In 2013, there was a rumor of terrorism, when a Port Townsend School District (PTSD) employee discovered a pipe bomb while doing maintenance. The Port Townsend Police Department and other organizations based at Mountain View were evacuated and streets in the area closed after the PTSD employee brought the suspected pipe bomb to the police department. The device had apparently been brought to Blue Heron Middle School in the 1990s by a student and given to a science teacher. The school district employee located the object while performing maintenance at the school. The pipe object was then brought to the police station to turn over. It was at that time that the Mountain View campus and surrounding area was secured due to safety concerns. The State Patrol bomb squad was summoned and detonated the device.

Hazard Identification and Vulnerability Assessment:

On September 11, 2001, the entire nation was initiated into the world of international terrorism. Acts resulting in tremendous violence introduced the country to groups such as Al Qaeda. The nation watched with horror from their living rooms the frantic searches and recovery operations at the World Trade Center, the Pentagon, and in an obscure field in Pennsylvania. Fear, disbelief, and immediate counter-terrorism reactions were instituted. These acts accomplished exactly what terrorism is designed to do.

While the Global War on Terror has been winding down in the last five years, radical Islamic terror groups such as Islamic State (ISIS) and Al-Qaeda (AQ) and their subsidiaries still exist as threats, though are significantly weakened compared to what they were. In recent years, however, the rise of both radical right wing and left wing groups within the United States has increased the fears of Domestic Terrorism. The January 6th, 2021 Insurrection at the United States Capitol building by radical right-wing elements in an attempt to overthrow the results of the presidential election provide the biggest example in recent memory of such acts. Terrorists cells are able to evolve and communicate without detection. Since Port Townsend and Jefferson County have both anti-war groups and a significant military installation that supplies munitions used throughout the world, it is easy to postulate the radicalization of an individual in the area and an attempt to damage or destroy a warship or the Indian Island Naval Magazine. Terrorism is no longer a strictly overseas-bred phenomenon, and with the gradual fracturing of domestic politics, homegrown extremism is becoming more and more common.

Terrorists hope to instill fear and panic in civilian populations by convincing them that their governments cannot:

- Protect its own population
- Protect the symbols of its authority
- Protect society's institutions
- Protect society's infrastructure
- Protect its own officials
- End the threat of more terrorism, and as a result,
- Cannot maintain normal, peaceful conditions in society.

Washington State is vulnerable to terrorist activity. Terrorism can be state sponsored or the outgrowth of a frustrated, extremist fringe of polarized and/or minority groups. Extremists have a different concept of morality than mainstream society, thereby making predictions on what and where they will perform other acts of violence very unpredictable. Terrorist groups may include extremists in:

- Ethnic, separatists, and political refugees
- Left wing radical organizations
- Right wing racists, anti-authority survivalist groups
- Extremist issue-oriented groups such as religious, animal rights, environmental, etc.

Jefferson County has no immunity to potential terrorist activity. Terrorist groups at play today are constantly emerging. Aside from the notorious Al Qaeda groups, there are other potential "copy groups" who would not hesitate to utilize chemical and biological materials. Terrorists perform acts of violence or spread anthrax through the mail system, or release bio-toxins into the food supply want notoriety, want to spread the maximum amount of fear through the population, and

want to create an event that will receive national/international attention. As home to important military installations and our close proximity to Seattle's economic, financial, and population centers, Jefferson County's vulnerability to the effects of terrorism is substantial.

Communities that are most vulnerable to terrorist incidents have visible and vulnerable targets. These kinds of targets that are found in Jefferson County include:

- Government office buildings, courthouses, schools, hospitals
- Dams, water supplies, power distribution systems
- Military installations
- Ferries, bridges, seaports
- Theaters, parks, concert halls
- Financial institutions and banks
- Sites of historical and symbolic significance
- Scientific research facilities, academic institutions, museums
- Industrial plants; business offices
- Law, fire, emergency medical services and responder facilities
- Special events, parades, religious services, festivals, celebrations

The term "Weapons of Mass Destruction" (WMD) describes weapons that can be classified into the following categories: Chemical, Biological, Radiological, Nuclear and Explosive. These categories are often referred to as the acronym CBRNE. Biological and chemical agents pose threats because of their accessible nature and the rapid manner in which they could be spread. Most agents can be easily introduced into the environment through aerosol generators, explosive devices, breaking containers, or other forms of covert dissemination. Dispersed as an aerosol, chemical agents have their greatest potential for inflicting mass casualties. Biological agents can be disseminated by the use of aerosols, contaminated food or water supplies, direct skin contact, or injection. The consequences of biological attacks will first be recognized in the hospital emergency rooms and by other health care resources, and will present communities with an unprecedented requirement to provide mass protective treatment, mass patient care, mass fatality management, and environmental health clean-up procedures and plans. Radiological and nuclear weapons would inflict explosions, thermal radiation, and radiation exposure injuries, sickness or death.

Cyberterrorism is a relatively new phenomenon that can be used to potentially disrupt society and exploit our continuing reliance on computers and telecommunication. Cyberterrorism threatens the electronic infrastructure supporting the social, health, and economic well-being of all citizens. Interlinked computer networks regulate the flow of power, water, financial services, medical care, telecommunication networks, and transportation systems.

Nation-state actors in direct competition with U.S. interests can also cause a wave of terrorism to occur especially preceding, or in-step with conflict elsewhere in the world. These kinds of attacks may be Cyber oriented, or attacks against infrastructure, military targets, or even the civilian population as a means to either distract the government, instill fear in the population, and create doubt in their mind over their safety and the government's ability to protect them. Today, these actors may include Russia, China, North Korea, and Iran, but in the future as politics shift, it can change.

If one were able to accurately predict, it would be more likely that a site in Seattle or Tacoma or a nearby military installation would be the direct target rather than one located in the County. The consequences are that Jefferson County could appear (or it could be announced to the Seattle-Metro area) that this area could be a haven for people fleeing from a terrorist situation. County resources would be quickly overloaded, food supplies would quickly be depleted, lodging would be scarce, and management of people (both local and "refugees") could be extremely difficult. County leaders have addressed such scenarios and are becoming cognizant of potential problems and the implications of such an event.

In the same vein, Jefferson County's relative quiet lifestyle offers several areas of seclusion from which covert activities could be planned. The rise of militia groups in other parts of Washington, Oregon, Montana, and Idaho underscores this aspect of the County's demographics. Groups could see the County as a place to organize and wait until circumstances are right in other areas of the country. Alert citizens and law enforcement alike have the responsibility to be aware of citizens' activities and to be mindful of the realities of the world today.

Conclusion:

Terrorism is a deliberate strategy. Terrorism is discriminate since it has a definite purpose, but indiscriminate in that the terrorist has neither sympathy nor hate for the randomly selected victim. Although the focus of terrorists is a political authority, their targets and victims tend to involve innocent civilians. Civilians are easier to attack and often produce more dramatic consequences.

Changes in the National Homeland Security Advisory System levels are provided as soon as they are available via an Emergency Management phone line accessible by anyone with a telephone. Jefferson County has convened its leaders to examine and more thoroughly understand existing emergency response processes, communication plans and methodologies. Citizens, both public and private, must be continually aware of suspicious activities. Agencies should have critical incident plans outlining roles for school administrators, law enforcement, fire departments, and medical care providers. Agencies should coordinate their plans with each other to ensure that redundancies are addressed and to further the understanding and opportunities for cooperation by all potentially affected agencies.

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2. "*Terrorism Profile*", Tab 5.16, Washington State Threat Mitigation Plan, October 2012, p. 1.

3. *Threat Definitions*, "Terrorism Profile", Tab 5.16, Washington State Threat Mitigation Plan, October 2012, p. 3.

4. *Threat Definitions*, "Terrorism Profile", Tab 5.16, Washington State Threat Mitigation Plan, October 2012, p. 3.

SECTION III

Multi-Jurisdiction/Multi-Hazard Mitigation

MULTI-JURISDICTION/MULTI-HAZARD MITIGATION

This section of the Natural Hazards Mitigation Plan contains information regarding mitigation goals and multiple-hazard mitigation action items that pertain to all of the jurisdictions, and special purpose districts that have participated in the plan development process. Also included is information as to how mitigation measures will be prioritized, implemented, and administered at the jurisdictional level.

It is the intent of this planning effort that the mitigation goals and multiple hazard mitigation action items included in this section of the plan are applicable to all entities that participated in the development of this plan to the extent that their governing bodies authorize.

A listing of multi-jurisdictional mitigation strategies and projects suggested by stakeholders and citizens during the plan- development process is also included in this section of the plan.

In addition, each participating jurisdiction and special purpose district has compiled a listing of proposed mitigation strategies and/or projects specific to their community. These entity-specific mitigation strategies and/or projects can be found in SECTION IV of this plan.

Mitigation Goals:

The natural hazard mitigation goals listed in this portion of the plan are multi-jurisdictional in nature and are intended to help guide the direction of and prioritize future natural hazard mitigation activities at the local level aimed at reducing risk and preventing loss from natural hazards.

The plan goals describe the overall direction that Jefferson County and Port Townsend agencies, organizations, special districts, private industry and citizens **can** take toward mitigating risk from natural hazards. The goals are the **guiding principles** from the broad direction of the mission statement to the specific recommendations of the action items. They are:

(1) Protect Life and Property

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards.
- Improve hazard assessment information to make recommendations encouraging preventive measures for existing development in areas vulnerable to natural hazards
- Enhance Jefferson County Neighborhood Emergency Response Teams to provide citizens from all areas of Jefferson County with the information and tools they need to help them, their families, and their neighbors in the hours and days immediately following an emergency or disaster event.
- Encourage homeowners and businesses to purchase insurance coverage for damages caused by natural
  hazards.
- Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to natural hazards.

(2) Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.
- Continue the current flood awareness programs conducted by various jurisdictions as part of the National Flood Insurance Program Community Rating System.
- Create an earthquake awareness program conducted by various jurisdictions in which the vulnerability to
  earthquakes is high.
- Enhance the awareness programs for Wildland – Urban Interface fire risks, particularly with Homeowners Associations in wildland settings.

(3) Natural Systems

- Balance watershed planning, natural resource planning, and land use planning with natural hazard mitigation to protect life, property, the economy, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

(4) Partnerships and Implementation

- Encourage leadership within private and public sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.
- Strengthen inter-jurisdiction and inter-agency communication and coordination and partnering of jurisdictions and agencies within Jefferson County to foster the establishment and implementation of natural hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- Develop a partnership with the local and regional newspapers to produce a series of in-depth articles on
  each natural hazard and both personal and public mitigation techniques.
- Develop and strengthen coordination and cooperation with local business and industries that are particularly vulnerable to natural hazards in Jefferson County.

(5) Emergency Services

- Strengthen Emergency Management capabilities to prepare for, and to respond to disasters of all types.
- Encourage the establishment of policies at the local level to help insure the prioritizing and implementation of mitigation strategies and/or projects designed to benefit critical/essential facilities, services, and infrastructure.
- Where appropriate, coordinate and integrate natural hazard mitigation activities with existing local emergency operations plans.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.
- Improve the interoperability capabilities among Emergency Services.
- Improve the survivability of communications and disaster response effectiveness of Emergency Service entities.

Multiple-Hazard Mitigation Action Items:

For the purpose of this plan, multiple-hazard action items are those strategies and/or activities that primarily pertain to damaging winds, drought, earthquake, flood, heat waves, land movement, public health emergencies, tsunami / seiche, wildland – urban fire and winter storms. Action items were not identified for avalanche, tornados or volcanoes as explained below:

The avalanche hazard in Jefferson County does not currently affect any populated areas. Due to the fact that avalanche is a concern only to those persons engaged in isolated, backcountry activities, specific mitigation action items were not identified for this hazard.

Tornado and volcanic events that directly affect Jefferson County are so rare that specific mitigation activities other than public education are not addressed.

The action items included in this section of the plan may be short-term (ST), long-term (LT), or on-going (OG) in nature. Long-term activities typically take longer than 3 years.

Some actions may include activities that jurisdictional agencies may implement with existing resources and authorities. Other more complex actions may require new or additional resources or authorities as well as multi-agency and/or multi-jurisdictional partnering.

Some of the mitigation actions and/or projects included in this plan are focused on reducing the effects of various natural hazards on new buildings and infrastructure. Examples of these mitigation actions and/or projects include:

- Mitigation strategies and/or ordinances and codes regarding building regulations and construction set- backs from unstable or steep slopes, alluvial fans and other critical areas.
- Community Rating System Program activities designed to reduce or limit damage from flooding to structures built within the 100-year floodplain.

Some of the mitigation actions and/or projects included in this plan are focused on reducing the effects of various natural hazards on existing buildings and infrastructure.

Examples of these mitigation actions and/or projects include:

- Construction and/or modification of critical facilities.
- Moving critical facilities out of danger zones.
- Buy-out and/or elevation of flood repetitive loss properties.

Multiple-Hazard Action Item #1 (OG-MH-0):

Each of the primary jurisdictions and special districts participating in the Plan shall adopt the **Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan** as its own official plan.

In order to maintain continuity in the mitigation planning process, each participant will designate a contact point for the primary jurisdictions to use in dealing with updates and follow-up to the plan.

LEAD AGENCY: Local elected governing body (board of county commissioners, city or Town council)
FUNDING SOURCE: Jurisdiction Budget and/or available grant funding
TIME-LINE: Within one (1) year of completion and promulgation of this plan

NOTE: Due to the lack of staff of many special purpose districts, *this action item does not apply to the special purpose districts that participate in this plan.* However, if a special purpose district elects to do so, the district may participate in this process. Non-participation in this process does not preclude a special purpose district from membership on the Natural Hazards Mitigation Planning Committee.

Multiple-Hazard Action Item #2 (OG-MH-1):

Identify and pursue funding opportunities to develop and implement local and county mitigation activities.

LEAD AGENCY: Jurisdiction and/or Public Works Department
FUNDING SOURCE: Jurisdiction Budget and/or available grant funding TIME-LINE: Ongoing

Multiple-Hazard Action Item #3 (OG-MH-2):

Identify, improve, and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk to natural hazards:

- Make the **Jefferson County Natural Hazards Mitigation Plan** available to the public by providing a link to the plan on local jurisdictional websites.
- Continue and/or enhance and expand the Neighborhood Emergency Response Team Program.
- Continue the National Flood Insurance Program Community Rating System Program to inform citizens in participating jurisdictions about the flood risk in Jefferson County.
- Continue to make public awareness materials and programs available from various sources available to the
  public to help inform the citizens of all communities within Jefferson County as to the risks associated with various natural hazards.

LEAD AGENCIES: Jefferson County Department of Emergency Management and local Community Rating System coordinators
FUNDING SOURCES: Jurisdiction Budget; Region 2 Homeland Safety Council Budget; various grant monies such as Washington State Department of Ecology Flood Control Assistance Account Program (FCAAP) funds
TIME-LINE: These programs are currently active and on-going

Multiple-Hazard Action Item #4 (OG-MH-3):

Train personnel on how to react in a natural disaster.

LEAD AGENCY: JCDEM, PTPD, JCSO, JCFD1 – JCFD5

FUNDING SOURCE: Local Jurisdictional Funding via Budget Process TIME-LINE: On-going

Multiple-Hazard Action Item #5 (OG-MH-4):

Educate employees regarding hazards & develop Emergency Response Plan

LEAD AGENCY: City of Port Townsend, Jefferson County, Port of Port Townsend; All School Districts
FUNDING SOURCE: Local Jurisdictional Funding via Budget Process/Grants
TIME-LINE: On-going

Multiple-Hazard Action Item #6 (OG-MH-5):

Regular Review of Capital Improvement Plan to include newly identified mitigation plans.

LEAD AGENCY: City of Port Townsend; Port of Port Townsend
FUNDING SOURCE: Budget and/or available grant funding

TIME-LINE: On-going

Multiple-Hazard Action Item #7 (ST-MH-1):

Establish procedures for the Jefferson Natural Hazards Mitigation Planning Committee for the development of a sustainable process for monitoring and evaluating multi-jurisdictional mitigation activities. Possible ideas include:

- Develop roles/responsibilities for members of the Jefferson Natural Hazards Mitigation Planning Committee.
- Develop surveys and/or identify and utilize other reporting methods to monitor hazard mitigation activities implemented by participating entities.
- Develop procedures to facilitate annual review of current mitigation activities.
- Develop procedures to enable the modification of current mitigation activities to meet newly identified goals and objectives.
- Develop procedures to facilitate a full review of the **Jefferson County Natural Hazards Mitigation Plan** every 5 years.

LEAD AGENCY: Jefferson County Department of Emergency Management; Jefferson

Natural Hazards Mitigation Planning Committee

FUNDING SOURCE: Local Jurisdictional Funding via Budget Process

TIME-LINE: Within two (2) years of completion and promulgation of this plan

Multiple-Hazard Action Item #8 (ST-MH-2):

Where appropriate, incorporate the goals and action items identified in this section of the **Jefferson County Natural Hazards Mitigation Plan** into other existing plans and/or regulatory documents and programs. Possible plans, documents, and programs include:

- Jurisdictional Code(s)
- Jurisdictional Ordinance(s)
- Jurisdictional Comprehensive Plan
- Jurisdictional Capital Facilities and/or Improvement Plan
- Jurisdictional Critical Areas Ordinance(s)
- Jefferson County Comprehensive Economic Development Strategy
- Growth Management Act
- Coordinated Water System Plan
- Jurisdictional Flood Plan(s)
- Jurisdictional National Flood Insurance Program Community Rating System Program

LEAD AGENCY: Jurisdiction and/or Community Development Department
FUNDING SOURCE: Jurisdiction Budget and/or available grant funding
TIME-LINE: Upon completion and promulgation of this plan and as each jurisdictions adoption process allows

It is important to note that the development and adoption of a multi-jurisdictional natural hazards mitigation plan is a new concept for the Indian tribes, jurisdictions and special purpose districts of Jefferson County. Some jurisdictions, Indian tribes, and special purpose districts have begun this activity and listed in those entities portions of SECTION IV of this plan are links between on-going mitigation activities and in-place plans, programs, and directional documents. Unless stated otherwise within an individual entities portion of SECTION IV of this plan, the process by which mitigation action items and/or activities will be incorporated into existing plans, documents and programs should (at a minimum) involve the following components:

1. Lead Agency identifies appropriate plans, programs, and directional documents where mitigation actions items and/or activities may be inserted.
2. Public hearings and participation of all involved agencies throughout the incorporation process.
3. Inter-jurisdictional and/or inter-agency cooperation and partnering formalized by signed inter-local agreements.
4. Inter-jurisdictional and/or inter-agency studies or work sessions.
5. Final approval by the local elected governing body such as the board of county commissioners, city or town council, tribal senate or tribal council, school board, or special purpose district board of commissioners.

Multiple-Hazard Action Item #9 (ST-MH-3):

Develop partnerships with various jurisdictions and agencies as well as private business and industry to identify and pursue funding opportunities to implement local mitigation activities and to foster coordination and collaboration of natural hazard mitigation goals, strategies, and projects within Jefferson County. Possible actions include:

- Identify and encourage partnering with various agencies and organizations within Jefferson County that have an interest in or have established natural hazard

mitigation programs.

- Identify and encourage partnering with various state and federal agencies that have programs that support
  natural hazard mitigation programs such as the Flood Control Assistance Account Program administered by the Washington State Department of Ecology.

LEAD AGENCY: Local elected officials; jurisdiction/Indian tribe department/agency directors; Jefferson County Department of Emergency Management; Jefferson Natural Hazards Mitigation Planning Committee
FUNDING SOURCE: Local Jurisdictional/Private Business Funding via Budget Process
TIME-LINE: Short term (less than 3 years from funding)

Multiple-Hazard Action Item #10 (ST-MH-4):

Improve facilities to survive earthquakes and storms better. Provide continuity of service.
LEAD AGENCY: Jefferson Transit Authority
FUNDING SOURCE: Local Jurisdictional Funding via Budget Process
TIME-LINE: Completed – 2016 New Transit Center built to current earthquake standards at Four Corners Rd.

Multiple-Hazard Action Item #11 (ST-MH-5):

Build new 911 Dispatch Center and new Emergency Operation Center
LEAD AGENCY: Jefferson County Department of Emergency Management; JeffCOM 911
FUNDING SOURCE: Department Budget and/or available grant funding
TIME-LINE: Completed - 2005

Multiple-Hazard Action Item #12 (ST-MH-6):

Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.

LEAD AGENCY: Jefferson County Department of Emergency Management; Jefferson Department of Community Development
FUNDING SOURCE: Local Jurisdictional Funding via Budget Process
TIME-LINE: Within three (3) years of completion and promulgation of this plan

Multiple-Hazard Action Item #13 (ST-MH-7):

Evaluate and integrate citizen ideas into planning and implementation efforts.
LEAD AGENCY: Jefferson Department of Emergency Management
FUNDING SOURCE: Local Jurisdictional Funding via Budget Process
TIME-LINE: Within three (3) years of completion and promulgation of this plan

Multiple-Hazard Action Item #14 (ST-MH-8):

Improve interoperability through coordinated acquisition and use of compatible radio & communications equipment across public safety districts throughout the county and throughout the Olympic Peninsula with the OPSCAN program.

LEAD AGENCY: Locally: County Fire Chiefs Association; Peninsula-wide: Washington State Patrol

FUNDING SOURCE: Local Special District Funding via Region 2 DHS Allocation via Jefferson County Department of Emergency Management. Peninsula-wide building of backbone by WSP funded with a$5.2 million dollar grant from DHS.
TIME-LINE: Ongoing

Multiple-Hazard Action Item #15 (LT-MH-1):

Strengthen emergency services preparedness and response by linking emergency services with natural hazard mitigation programs. Possible ideas include:

- Promote inter-agency response planning and training among various first response agencies within Jefferson County.
- Continue involvement at the county level with the Northwest Region Fire Defense Board and the Northwest Region Fire Mobilization Plan.
- Encourage local fire service, emergency medical, and law enforcement agencies to include Jefferson C.E.R.T. members in training opportunities.

LEAD AGENCY: Jefferson County Department of Emergency Management
FUNDING SOURCE: Department of Emergency Management Budget and/or available grant funding
TIME-LINE: Ongoing

Multiple-Hazard Action Item #16 (LT-MH-2):

Develop, enhance, and implement education programs aimed at educating the general public on area hazards, mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses and schools through general awareness. Increase and improve all-hazard disaster education, including routine (winter storm), catastrophic (earthquake, tsunami), climate change (sea level rise and increasing disaster impacts), and all other hazards listed in this plan (including tornado, volcanic activity, avalanche, etc.). Partner with local agencies to provide subject matter expertise and expand reach.

LEAD AGENCY: Jefferson County Department of Emergency Management
PARTNER AGENCIES: Fire Districts (wildfire); Law enforcement (terrorism, public safety); Port of Port Townsend (coastal hazards); Public Works, Public Utility District #1 (winter storms, road safety); WA State EMD (tsunami, earthquake, other geologic hazards); Jefferson Search and Rescue (avalanche, outdoor safety)

FUNDING SOURCE: Department of Emergency Management Budget and/or available grant funding
TIME-LINE: Ongoing

Multiple-Hazard Action Item #17 (LT-MH-3):

Use technical knowledge of natural ecosystems and events to link natural resource management and land use organizations to mitigation activities and technical assistance. Promote inter-agency response planning and training among various first response agencies within Jefferson County.

LEAD AGENCY: Jefferson County Department of Emergency Management

FUNDING SOURCE: Department of Emergency Management Budget and/or

available grant funding
TIME-LINE: Short term (less than 3 years from funding)

Prioritization of Mitigation Measures:

Because this plan is multi-jurisdictional, the prioritizing of mitigation measures will be made at the jurisdictional level with direct involvement of the designated lead agency as well as the local elected governing body such as the board of county commissioners, city or town council, tribal senate or tribal council, school board, or special purpose district board of commissioners.

Due to local budget constraints, most of the mitigation measures incorporated into this plan are dependent upon local jurisdictions receiving outside funding; as a general rule, local funding is not available. As a result, local jurisdictions are unsure as to when these mitigation measures will be implemented and the conditions and/or requirements under which implementation may occur.

Unless stated otherwise within an individual entities portion of SECTION IV of this plan, the individual entities participating in this plan should prioritize their proposed mitigation measures based on the following factors:

- Mitigation measures that have a positive benefit/cost analysis with a BCR > 1.0.
- Mitigation measures that reduce or eliminate repetitive loss properties.
- Mitigation measures that are multi-jurisdictional and or multi-agency in nature.
- Mitigation measures that provide the greatest good for the greatest number.
- Mitigation measures that have broad-based public and/or elected official approval.
- Mitigation measures for which funding has already been secured.
- Mitigation measures that qualify for alternate and/or matching funding.

The Jefferson County Natural Hazard Planning Committee will maintain an expertise in Benefit/Cost Analysis to help the small jurisdictions and special districts that do not have the resources to maintain that capability on their own.

For jurisdictions and Indian tribes with a mitigation planning committee, the mitigation planning committee is charged with the responsibility to develop a prioritized preliminary list of mitigation measures. This prioritized list is then recommended to the jurisdictional or tribal governing body for final prioritization.

While it is highly recommended that each of the entities participating in this plan utilize the above-listed factors in prioritizing their mitigation measures, it is recognized that final prioritization of mitigation measures is determined by the entities elected governing body. A change in local elected officials, changing environmental requirements, public acceptance of a project, or the occurrence of an actual disaster event may dramatically affect the priority ranking of mitigation measures at the local level.

If federal funding is involved in the implementation of a hazard mitigation project, the jurisdiction, Indian tribe, or special purpose district will conduct a cost/benefit analysis based on guidelines provided by the United States Department of Homeland Security (FEMA) and the Washington State Military Department, Emergency Management Division on how to determine cost-effectiveness of mitigation projects and how to calculate the benefit-cost ratio. The purpose of the benefit-cost analysis is to determine if the benefits of the project exceed the federal costs of the project. Both the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Grant Program require a benefit-

cost ratio of at least 1.0 for a project to be considered for funding. While it may be important to emphasize a positive cost/benefit analysis in the prioritizing of mitigation measures, it is also important to recognize the influence of local political factors, sovereign authority, community needs, traditional and cultural customs and values, historic properties, and habitat and environmental issues upon the selection of specific mitigation measures.

Implementation of Mitigation Measures:

Mitigation measures that are already in place at the jurisdiction level through existing plans, codes, and ordinances as well as programs such as the National Flood Insurance Program Community Rating System Program or the Neighborhood Emergency Response Team Program are current and on-going programs funded through existing and established budgets.

The implementation of new and/or additional mitigation measures is dependent upon the approval of the local elected governing body such as the board of county commissioners, city or town council, tribal senate or tribal council, school board, or special purpose district board of commissioners as well as obtaining funding from outside sources that have not been secured at this time. As a general rule, local funds are not available for implementation of new mitigation measures. Funding for mitigation measures is largely dependent upon individual entities applying for and receiving federal and/or state hazard mitigation grant funding.

For each action item listed and described above (as well as the entity-specific mitigation measures contained in SECTION IV) every effort has been made to identify lead agencies, current or possible funding sources, and a time- line for implementation as part of the planning process.

It should be noted that ***short term*** action items and/or mitigation measures are those activities that are expected to be completed in less than 3 years from the receipt of funding by the local entity. ***Long term*** action items and/or mitigation measures are those activities that are expected to require more than 3 years to completion from the receipt of funding by the local entity. Those action items and/or mitigation measures that are current and on-going have been so indicated.

Funding of Mitigation Measures:

The entities participating in the **Jefferson County Natural Hazards Mitigation Plan** have a variety of local, state, and federal resources available to support the implementing and administering of the mitigation actions. The Jefferson Natural Hazards Mitigation Planning Committee will continue to identify additional resources to support the implementation of the action items. At this time, possible implementation funding sources include the following:

Local Funding Sources

Local implementation resources vary based on each entity's scope of function(s), authorities, and operational capability and capacity. They may include:

- Use of zoning ordinance and building codes.
- Enforcement of flood plain management ordinance.
- Participation in the NFIP Community Rating System.
- Incorporation into local emergency response plan(s).
- Incorporation into local economic development plan(s).

- Use and support of existing local personnel (planners, floodplain managers, city engineers, GIS specialists, emergency managers).
- Capital improvement project funding.
- Authority to levy taxes, special bonds.
- Fees for services.
- Other sources yet to be identified.

The current economic condition and funding level of the participating local entities drastically limits the use of local resources. State or federal funding will be needed to accomplish many of the action items and mitigation measures referenced in this plan.

State Funding Sources

- Growth management act requirements.
- Comprehensive plan requirements.
- State administered Hazard Mitigation Grant Program, Flood Mitigation Act and Pre-Disaster Mitigation Program.
- Department of Ecology Flood Control Assistance Account Program (FCAAP).
- Department of Transportation Emergency Relief Program.
- Office of Community Development Community Development Block Grants
- Programs administered by the Washington State Transportation Improvement Board
- Programs administered by the Washington State County Road Administration Board
- Other sources as yet to be identified.

NOTE: An extensive listing of state funding opportunities is available at the following web site:

www.infrafunding.wa.gov

Federal Funding Sources

- Stafford Act, Section 406 – Public Assistance Program Mitigation Grants.
- Stafford Act, Section 404 – Hazard Mitigation Grant Program.
- Disaster Mitigation Act of 2000– Pre-Disaster Mitigation Program Competitive Grants.
- United States Fire Administration – Assistance to Firefighters Grants.
- United States Small Business Administration Pre and Post Disaster Mitigation Loans.
- United States Department of Economic Development Administration grants.
- United States Department of Housing and Urban Development Grants such as the Community Development Block Grant Program.
- United States Army Corps of Engineers.
- United States Department of the Interior, Bureau of Land Management.
- Federal Highway Administration.
- Other sources as yet to be identified.

CITIZEN SUGGESTIONS & ANALYTICAL REPORTS RECOMMENDED MITIGATION STRATEGIES AND PROJECTS

The following list is a compilation of comments and suggestions made by various stakeholders, interested parties, and the public regarding possible mitigation strategies and projects. Those that start with an asterisk (*) are known to be underway, regardless of whether the idea came from the public or was internally generated.

The Hazard Mitigation Planning Committee received a total of 82 survey responses suggesting projects in the community, and all major/viable projects are reviewed below, organized by their major thematic elements.

The following mitigation strategies and/or projects have been suggested by various stakeholders and citizens as part of the plan development process. Some may be in conflict with existing policies and procedures; others may be viable but lack funding. All will be looked at to see if and how they can fit into a comprehensive mitigation effort.

Some of these strategies and/or projects are currently funded, on-going programs within many of the participating communities. **However, funding for some of these strategies and/or projects is currently very limited; for many of these strategies and/or projects, local funding is simply not available at this time. Funding for the majority of these mitigation strategies and/or projects is heavily dependent upon local entities receiving future federal and/or state hazard mitigation grant funding.**

CITIZEN SUGGESTED MITIGATION STRATEGIES

Alert and Warning:

- 20 of the survey responses were advocating for better alert and warning practices, specifically as it relates to tsunamis and usage of the All Hazard Alert and Broadcast (AHAB) sirens.
- Several responses advocated for additional AHAB sirens to be deployed in the community, including:
    - Discovery Bay
    - Kala Point
    - and Port Ludlow, which received by far the most responses/requests from the public.
- Other community members requested additional or more frequent testing.
- Others noted the poor clarity and difficulty in hearing broadcast announcements from the AHAB sirens.
- It was suggested that additional public education increase awareness and understanding of the AHAB sirens and their purpose.
- This project will be dependent on work with the Washington State Emergency Management Division, which helps manage the statewide AHAB and Alert and Warning program.

Animal Evacuation Welfare:

- Preparedness to take care of animals after a disaster was another major theme in citizen feedback. Many requested improved or updated plans to evacuate, shelter, and feed both pets and livestock during a major emergency.
- Horses were specifically seen as a major concern, with many horse owners in Jefferson County unsure of how to evacuate with their horses in case of a tsunami or wildfire. Lack of sheltering space and transportation options were both noted. Groups of horse owners exist as a potential planning and outreach partnership option.
- Marrowstone Island was identified as a particular area of concern, given a prevalence of animal owners and limited evacuation options from the island.
- One project idea was to pre-identify and communicate potential animal shelter/evacuation locations.
    - One specifically requested improvements to the paddock at Jefferson County Fairgrounds.

Power and Utility Resiliency:

- It was suggested utility providers bury power lines to mitigate disruptions during inclement weather, although it was noted the cost for this is typically prohibitively high.
- Back up power via generator was suggested for Quilcene Schools and Brinnon Fire Department, as well as any other critical facility lacking a proper back up.
- Identify ways to provide solar power and battery backup for as many Jefferson County residents as possible.
- Finally, some suggested more investment in sustainable power generation, such as solar, hydro, or wind power.

Community Resilience:

- Multiple requests were made for DEM, another government entity, or a non-profit to provide emergency supplies such as food, water, medical equipment, medication, and/or fuel to the general public to help promote resiliency.
- Several other responses requested continued education and promotion of personal preparedness.
- One response advised additional development of community resilience centers, whether they be for evacuation sheltering, sheltering during extreme weather (heat, cold, smoke) events, or to serve as Community Points of Distribution (CPODs).

Post-disaster Sanitation and Hygiene:

- The most detailed project proposal from a citizen focused on the need for human waste disposal after a major catastrophic event, when sewer and septic systems may be damaged.
- Neighborhood Preparedness (NPREP) has historically conducted training and outreach regarding this matter, promoting use of the “two bucket system,” as well as other hygiene and sanitation practices. This proposal called for a renewed effort with regards to this outreach.

- It was suggested that as part of this effort, NPREP coordinate more closely with PHLUSH, a local non-profit specifically focusing on issues of sanitation and hygiene.
- Other elements of this project proposal include the following recommendations:
    - Conduct awareness campaigns that engage the public in positive, effective, and empowering ways to address the overlapping threats of climate change, cyber terrorism, impaired infrastructure, and interruption of government services.
    - Convene a session for selected officials to reflect on water and sanitation disaster scenarios and their impact.
    - Assess - with partner agencies and the Board of Health - the feasibility of prototyping and pilot projects to develop ecological sanitation technologies that meet WE Stand or other code and are appropriate for local conditions.
    - Advocate at the State level for decentralized technologies for greywater reuse, rainwater harvesting, and dry toilet systems.

Non-traditional Mitigation Measures:

- As the community survey was conducted near the tail end of the COVID-19 pandemic, that concern was still on everyone's mind; one survey participant noted studies that showed COVID could be found in deer populations, and requested testing of the local deer population, perhaps in partnership with the Department of Fish and Wildlife. This survey respondent noted that deer often served as a leading indicator of COVID in the human population, and expressed concerns about transmission between species due to the abundance of deer in populated areas, specifically in Port Townsend.
- Another respondent recommended reduction of the use of roundabouts in Port Townsend and Jefferson County in an effort to (in their words) cut down on traffic collisions, and decrease frustration and confusion amongst motorists, specifically tourists (who may be unlikely to return given a bad experience). However, as of this writing, additional roundabouts are being installed in partnership with the Washington State Department of Transportation, as studies show they actually improve safety.

Miscellaneous Mitigation Measures:

A number of other mitigation measures were suggested that fell into the realm of All-Hazard projects, or otherwise didn't fit neatly into one of the thematic elements above. They are:

- Identify additional evacuation routes through Jefferson County's forested areas, so that residents may safely evacuate when primary routes are blocked or congested.
- Maintain caches of food and water for mass distribution post disaster.
- Additional retrofitting of City and County facilities.
- Construction of additional affordable housing to help ease the housing crisis and improve retention of employees, specifically those in health or emergency services.
- Creation of a web-based volunteer management system for emergency volunteers (completed in late 2023).
- Reduce building along cliffs and waterfront.

- Slow tree removal and maintain green spaces.
- Additional study and planning regarding Port Townsend's major economic hubs, specifically Water Street. Better understand its disaster vulnerability and potential economic losses; educate the general public.
- Improve post-disaster communication strategies, specifically for contact Jefferson County's West End, as well as the Hoh Tribe and other Tribes.
- Develop a civil disturbance plan, whether it be due to pandemic restrictions or political unrest.
- Expand Lord's Lake reservoir to increase its water supply, making Port Townsend more resilient to drought.
- Improve and update landslide hazard maps, and conduct an education/outreach campaign.
- Multiple respondents requested additional outreach and education opportunities as it relates to wildfire.
- Finally, upgrade and improve outdated communication systems in the county.

RISK REPORT FOR JEFFERSON COUNTY INCLUDING CITY OF PORT TOWNSEND AND THE HOH TRIBE (Relevant Excerpts)

"The Jefferson County Hazard Mitigation Plan, which expired June 6, 2015, identified the following Hazard Mitigation Projects that can be aided by the information in this Risk Report. The County is currently updating their Plan." Table RR-1 is the "Risk Report" analysis of the 2009 Plan and how the authors feel their report can be used to enhance the 2016 Revision of the Plan. Some of that has already been included in the Hazard Profiles in this document.

Table RR-1 – Jefferson County Hazard Mitigation Plan Analysis

Hazard	Projects	Additional information from Risk Report
Multi-hazard	Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.	Use information from the Risk Report and Risk Database to inform public outreach campaigns.
Earthquake	Create an earthquake awareness program conducted by various jurisdictions in which the vulnerability to earthquakes is high.	Use information from the Risk Report and Risk Database to identify areas with high earthquake vulnerability.
Multi-hazard	Encourage the establishment of policies at the local level to help ensure the prioritizing and implementation of mitigation strategies and/or projects designed to benefit critical/essential facilities, services, and infrastructure.	Use information from the Risk Report and Risk Database to identify critical facilities and other structures most vulnerable and most in need of mitigation.
Multi-hazard	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	Use information from the Risk Report and Risk Database to develop inventories and prioritize mitigation projects.

Based on the recommendations in Table RR-1, the *Risk Report for Jefferson County* suggested the strategies in Table RR-2.

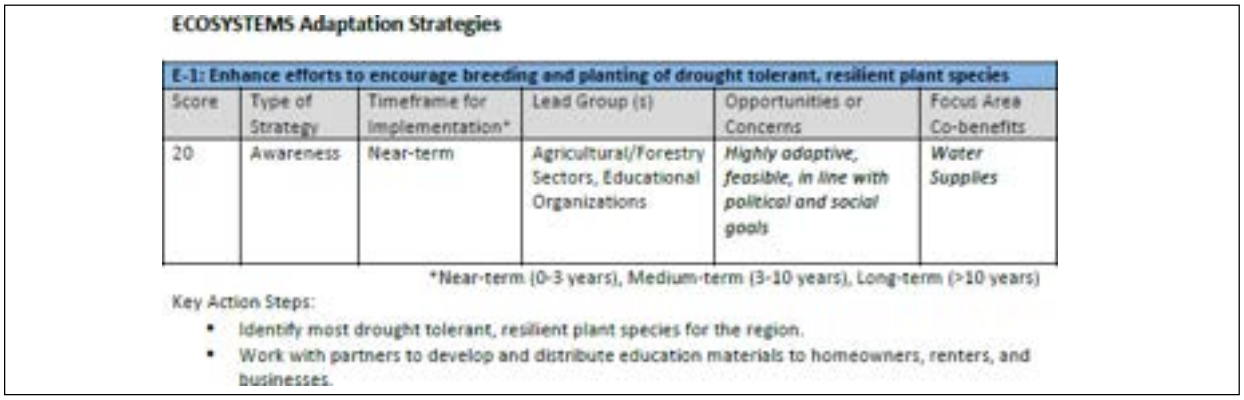
Table RR-2 – Jefferson County Recommended Mitigation Strategies

Problem Statement	*Recommended Strategy*
Jefferson County has 681 properties in the Special Flood Hazard Area (but only 162 flood insurance policies), representing $4.9 million in losses after a 1-percent-annual-chance flood.	• Develop an outreach strategy to help homeowners, realtors, and insurance agents understand the value of flood insurance. • Use the Risk Report to conduct a Benefit-Cost Analysis and apply for FEMA funding to elevate or relocate structures out of the floodplain.
Jefferson County has 8 percent of its buildings located in the moderate-high liquefaction zone, with 2,139 of them built before modern building codes, increasing the risk of significant damage to an earthquake.	• Develop priority list for essential facility earthquake retrofit. • Develop an outreach strategy or mitigation program for homeowners or businesses to retrofit older buildings.
Jefferson County's building dollar losses are $164 million for a Whidbey M7.4 earthquake. Essential facilities and infrastructure are of particular concern and are likely to lose function immediately after an event.	• Develop priority list for essential facility earthquake retrofit.

Climate Change Preparedness Plan for the North Olympic Peninsula

The *Climate Change Preparedness Plan*, developed under the auspices of the North Olympic Peninsula Resource Conservation and Development Council (NOPRCD), analyzes the potential climatic change for Jefferson County and vicinity, and recommends strategies for anticipation those potential changes. Appendix "A" of that document provides a comprehensive list of strategies. Extracts of the analysis and some recommendations have been included throughout the Plan.

Since that appendix is thirty pages long, we incorporate it by reference rather than adding to the weight of this tome. The illustration below shows the format of each recommendation in *Climate Change Preparedness Plan* Appendix "A":



ECOSYSTEMS Adaptation Strategies

E-1: Enhance efforts to encourage breeding and planting of drought tolerant, resilient plant species

Score	Type of Strategy	Timeframe for Implementation*	Lead Group (s)	Opportunities or Concerns	Focus Area Co-benefits
20	Awareness	Near-term	Agricultural/Forestry Sectors, Educational Organizations	*Highly adaptive, feasible, in line with political and social goals*	*Water Supplies*

*Near-term (0-3 years), Medium-term (3-10 years), Long-term (>10 years)

Key Action Steps:

- Identify most drought tolerant, resilient plant species for the region.
- Work with partners to develop and distribute education materials to homeowners, renters, and businesses.

References – Risk Report for Jefferson County

1. *Comments on the Jefferson County Hazard Mitigation Plan*, by Robert Bindschadler (NASA Emeritus Scientist) and Cindy Jayne, Email to Hazard Mitigation Plan Project Coordinator, January 6, 2017, p.6.

2. "FEMA, WADNR, WAECY, RiskMAP, and Resilienceaction Partners, *Risk Report for Jefferson County, including the City of Port Townsend and the Hoh Tribe*, January 2016, p. 25.
3. http://www.jeffcoeoc.org/documents/JeffersonCounty_RiskReport_Final_508.pdf

4. Ibid.

5. Ibid.

6. Petersen, S., Bell, J., Miller, I., Jayne, C., Dean, K., Fougerat, M., 2015. Climate Change Preparedness Plan for the North Olympic Peninsula. A Project of the North Olympic Peninsula Resource Conservation & Development Council and the Washington Department of Commerce, funded by the Environmental Protection Agency, Appendix A. Available: www.noprcd.org.

Tables – Risk Report for Jefferson County

RR-1 Jefferson County Hazard Mitigation Plan Analysis
RR-2 Jefferson County Recommended Mitigation Strategies

SECTION IV

Jurisdiction Specific Mitigation

CITY OF PORT TOWNSEND

Jurisdiction-Specific Vulnerability Assessment & Mitigation Strategies

The purpose of this section of the plan is to assess the vulnerability of the City of Port Townsend in regards to the various natural hazards previously identified in SECTION II of this plan. In addition, mitigation strategies that are currently in place relating to these natural hazards as well as newly proposed mitigation strategies have been included in this section of the plan.

As part of the vulnerability assessment process, City of Port Townsend government started an inventory of all critical facilities and is considering these critical facilities in our planning and mitigation strategy development process. Basic information on these facilities is available from public sources, and therefore, it is included in this report. Sensitive information about critical facilities has not been published.

Representatives from City of Port Townsend government worked closely with other jurisdictions, agencies, and the Jefferson County Natural Hazards Planning Committee to develop a comprehensive, coordinated mitigation plan intended to reduce the vulnerability to natural hazards within the City of Port Townsend.

The information contained in this document presents the results of this effort to identify the specific natural hazards threatening the City of Port Townsend, to characterize the vulnerability of the City of Port Townsend regarding these hazards, and to identify current as well as proposed mitigation strategies, projects and/or programs to address those vulnerabilities.

The analyses conducted by Port Townsend staff were based on the best currently available information and data regarding the characteristics of the neighborhoods identified, the natural hazards that threaten the people, property, and environment of these neighborhoods as well as the impacts these neighborhoods have suffered in past disasters. This information includes, when available, United States Census data, local tax records, local and national geographic information system data, Flood Insurance Rate Maps, hazard specific analyses, and other environmental and demographic facts. However, very often authoritative or current information simply was not available for the planning effort. In these cases, the experience, knowledge and judgment of local officials representing the City of Port Townsend, the judgment of knowledgeable officials and simplified analyses is considered acceptable at this stage to allow the participating organizations to complete the tasks needed to develop this multi-jurisdictional natural hazards mitigation plan. As the planning continues in future years, or at the time when a proposed mitigation initiative is intended to be funded and/or implemented, the participating organizations/jurisdictions recognize that additional information and analyses may be required.

The City of Port Townsend government is committed to the implementation of the mitigation related projects/programs described in this section of the plan when and if resources become available. City of Port Townsend government is also committed to continuing the mitigation planning process that has resulted in the development of this document, and to the ongoing cooperation with other agencies, organizations, and

jurisdictions to make the City more resistant to the damages and hardships that could otherwise be the result of future natural disasters.

Port Townsend Overview:
Contact Information:

360-379-5047 **Port Townsend City Hall**
250 Madison St
Port Townsend WA 98368

Population of Jurisdiction: 10, 288 (2022 Census Estimate)

Principal Economic Base: Pulp and Paper; Marine Trades / Boatbuilding; Wood Products / Logging; Diversified Manufacturing; Tourism; and Health Care

Current Hazard Mitigation Codes/Plans/Ordinances:

- Comprehensive Land Use Plan
- Shoreline Master Program
- Port Townsend Zoning Code (PTMC Title 17)
- Adopted Building Codes (International Building Codes, State Historic Building Code)
- Adopted Fire or Life Safety Code (International Fire Code)
- Local Water Quality Plan
- Municipal Code
- Flood Damage Prevention Ordinances (PTMC Chapter 16.08, Portions of Title 17 Zoning, 18 Land Division, and 19.05 Environmentally Sensitive Areas)
- Participation in NFIP Program
- 2016 Jefferson County – City of Port Townsend Hazard Mitigation Plan

NFIP PARTICIPATION [1,2,3]

Date Joined NFIP: **06/11/1975**	Total Number of Paid Claims: 0
CID: **520070#**	$ Amount of Paid Claims: $0
Last Community Assistance Visit: 03/29/21	Total Number of Repetitive Claim Properties: **1**
Nbr of NFIP policies in Jurisdiction: **61 (06/2016)**	Value of Repetitive Claim Properties: **$303,150**
Floodplain Ordinance: **PTMC Chapter 16.08**	

1 Policy Information by State, NFIP BureauNet, June 30, 2016. Accessed September 2016. Available at: http://bsa.nfipstat.fema.gov/reports/1011.htm#WAT

2 Claim Information by State, NFIP, June 30, 2016. Accessed September 2016. Available at: http://bsa.nfipstat.fema.gov/reports/1040.htm#WAT

3 WYO and Direct Data by Community with County and State, June 30, 2016, Accessed September 2016. Available at: http://bsa.nfipstat.fema.gov/reports/w2rhudrp.htm

The Planning and Community Development Director is the Floodplain Administrator for the City of Port Townsend per City Code Chapter 2.34.030.E. Within that same subsection the Director appoints the City Building Official who is the designee to administer Title 16 Building and Construction which contains the City's Flood Damage Prevention provisions in Chapter 16.08.

These two individuals work as a team with the entire department to administer floodplain regulations consistent with the National Flood Insurance Program to ensure that floodplain regulations are enforced and within the Special Flood Hazard Area through regular permitting and code compliance activities consistent with Chapter 16.08 Port Townsend Municipal Code.

Post-event activities are prioritized in the near-term after a flood disaster under the umbrella of an Emergency Operation Center or alternative mobilization action in the County Emergency Management Plan (such as activation by the City's Public Works Director following minor flooding emergencies in the special flood hazard area). At the direction of the Director, Building Official activities include being a part of the incident command's damage assessment team. The Building Official and their inspector staff would conduct building condition surveys to determine re-entry safety and permit requirements for re-occupancy. They are tasked to provide notice to those affected property owners with this information and indicate if the building is obviously substantially damaged or could be substantially damaged. This team will also post the properties indicating SAFE or KEEP OUT.

The department as a whole is tasked to provide assistance to property owners seeking flood development permits to rectify substantial damage and review the permits to ensure compliance. This may occur in an Incident Command EOC setting or as part of normal activities and functions that the department maintains for permit review and technical assistance.

The City of Port Townsend is a participant in good standing in the NFIP program. NFIP participation has been institutionalized as part of the City's risk management efforts, thus assuring that NFIP requirements are routinely reviewed and that changes to local ordinances, the Shoreline Master Program, etc. are made consistent with those requirements. Since the City's Comprehensive Use Plan, its Shoreline Master Program, and others have specific review and update cycles, NFIP-related changes normally occur during a planned review and update unless specific circumstances such as an externally mandated implementation date dictates otherwise. No additional priority has been attached to NFIP participation per se because the process to stay current has been institutionalized. The City pays its NFIP insurance premiums as part of the Association of Washington Cities (AWC) Risk Pool and thus has the additional benefit of having the AWC also monitoring requirements and notifying the City when changes are required

Planning Methodologies

To make jurisdiction-wide analysis of the population at risk for each hazard type feasible and practical for mitigation planning purposes, a simplified approach has been used. The estimate of the population at risk for specific hazards is accomplished in the following manner: The population in a specific neighborhood is estimated by local planners, based on readily available data or their best judgment in the absence of suitable data. The population could be residents, workers, visitors, institutionalized individuals, mixed population types, etc., depending on the characteristics of the neighborhood. The percentage of the area of the specific neighborhood threatened by the identified hazard is then estimated by local planners, again based on readily available data or their best judgment. The percent of the neighborhood at risk is then used as a multiplier to determine the estimated number of people at risk from that hazard. The methodology is simplistic but conservative, in that it assumes occupied structures are uniformly distributed throughout the neighborhood in relation to the area of risk, that the population is present in the neighborhood on a 24 hour, 7-day basis, and that all individuals are equally vulnerable to the impacts of the hazard event. The derived estimates for the number of people at risk may therefore be higher than actually is the case, but the estimates are considered satisfactory to support the local mitigation planning process.

To make jurisdiction-wide analysis of the dollar value of properties at risk for each hazard type feasible and practical for mitigation planning purposes, a simplified approach has been used to provide input to the cost benefit analysis. The estimate of the dollar value of properties at risk for specific hazards is accomplished in the following manner: The number of structures in a specific neighborhood and the average dollar value for those structures is estimated by local planners, based on readily available data or their best judgment in the absence of suitable data. The percentage of the specific neighborhood threatened by the identified hazard is then estimated by local planners, again based on readily available data or their best judgment. The percent of the neighborhood at risk is then used as a multiplier to determine the estimated number of structures at risk from that hazard. This number is then multiplied by the estimated average cost of the structures to derive an estimated total value of the property at risk of damage in that neighborhood from the identified hazard. The methodology is simplistic but conservative, in that it assumes structures are uniformly distributed throughout the neighborhood in relation to the area of risk; that the hazard threatens the entire value of each structure; and that structures are equally vulnerable to the impacts of the hazard. The derived estimates for the dollar value of property at risk may therefore be higher than would actually be the case, but the estimates are considered satisfactory to support the local mitigation planning process.

To make analysis of the dollar value of critical assets for each hazard type, insurance records were obtained for all public buildings. Tax roles were used for the valuation of districts and of specific buildings or locations, as appropriate.

DISASTER EVENTS - PORT TOWNSEND

NO	DATE	LOCATION	DESCRIPTION
1	Dec 27, 1866	Downtown Port Townsend	Flood Tide inundated all of downtown. Water was reported as being up to the armpits of a man at the current location of the Bishop Hotel.
2	Jan 6, 1880	Port Townsend	Major Snow Storm; 4 feet of snow; drifts up to 10 feet high.
3	Jan 1893	Port Townsend	Major Snow Storm
4	Feb 3, 1916	Port Townsend	Major Snow Storm; Reported as 30.5 inches in 24 hours.
5	Dec 25, 1919	Port Townsend	Major Snow Storm
6	Dec 22, 1955	Port Townsend	Major Snow Storm
7	Oct 12, 1962	Region	Columbus Day Storm; Blew roof off of building that currently houses PTPD. Many trees down. Much damage.
8	Dec 28-29 1968	Port Townsend	Ice Storm
9	2002	Port Townsend	Prolonged Drought. Port Townsend Paper lays off workers and shuts down production to conserve Port Townsend's water supply.
10	2009	Region / Port Townsend	Major Snow Storm – PA applied for in the amount of $17,500 for snow removal.
11	2014 - 2015	Region	Prolonged Drought. Lords Lake reservoir down to 11 feet which is critically low. Planning shutdown of Port Townsend Paper if water level drops below 3 feet.[2]
	2015	Region	Severe Windstorm.
	2016	Region	Severe Winter Storm, Straight-Line Winds, Flooding, Landslides, Mudslides, and a Tornado.
	2019	Region	Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides, Tornado counties.
	2021	Region	Severe Winter Storms, Snowstorms, Straight-line Winds, Flooding.
	2022	Region	Flooding and mudslides.
12	2023	Region	Severe Winter Storms, Snowstorms, Straight-line Winds, Flooding.
13	2023	Region	Severe winter storm, straight-line winds, flooding, landslides, and mudslides. Dec 27, 2023 – King tide event

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION

DOCUMENT	PURPOSE	REVIEW SCHEDULE
Comprehensive Land Use Plan[3]	Reduce city exposure to flooding and landslides, and to minimize reliance on federal and state programs for disaster mitigation, protect public and private property, save lives, and use community resources wisely. (a) Integrate regulatory standards such as buffers and setbacks with hazard avoidances measures. (b) Coordinate hazard vulnerability assessments with programs for purchase or preservation of open space. (c) Update hazard mitigation and disaster plans every three years. (d) Coordinate related activities of city departments with the County, State, and Federal agencies. a. Mapping designations - Continue to revise and compile mapping of vulnerable areas by using City, County, State, and Federal databases... Development Regulations - Revise the Zoning, Subdivision, Critical Areas Ordinances and the regulations portion of the Shoreline Master Program to incorporate hazard avoidance provisions and assure consistency of definitions and mapping. Policy 8.7: Assess the risks (e.g., increased incidence of drought, flooding, and sea level rise) and potential impacts on both City government operations and on the larger community due to climate change. The assessment of risk and potential responses – both in terms of mitigation and adaptation – should evaluate the full range of issues, paying particular attention to those arising from the city's location on Puget Sound. 8.7.1: Develop a climate change risk assessment and impact analysis for city government facilities and operations.	Annual Minor Reviews & Updates – Major Periodic Review under way. Due December 2025 to be effective thru 2045.

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION

DOCUMENT	PURPOSE	REVIEW SCHEDULE
	8.7.2: Develop a climate change risk assessment and impact analysis for the community which considers the potential long-term impacts to economic, land use, and other community patterns as well as the risks associated with periodic weather or climate events.	
Engineering Design Standards	The purpose of the Engineering Design Standards is to establish minimum requirements for all development in the City relating to water, sewer. storm drainage, transportation, utilities, clearing and grading, erosion control and construction activities.[5] These standards are notable in that a significant amount of its focus is dealing with the 100-year flood plain. See the FEMA FIRMS in the FLOOD topic in Section II of the Plan.	On Demand or as a subset of the regular review process for the Comprehensive Plan.
Port Townsend Municipal Code	PTMC Chapter 9.40 EMERGENCY MANAGEMENT PROGRAM 9.40.020 Emergency management policy. It is the policy of the city of Port Townsend to make effective preparation and use of manpower, resources, and facilities for dealing with any emergency or disaster that may occur. Disasters and emergencies, by their very nature, may disrupt or destroy existing systems and the capability of the city of Port Townsend to respond to protect life, public health, and public property. Therefore, citizens are advised to be prepared to be on their own for up to 72 hours should an emergency or disaster occur. (Ord. 2452 § 1, 1995). ***Commentary:*** Recommendations will be made to City Council to update Chapter 9.40.020. City recommends replacing 72 hours with 1-3 weeks for wide-scale event. (2016) 9.40.090 Emergency operations center (EOC).	As needed. In constant revision.

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION

DOCUMENT	PURPOSE	REVIEW SCHEDULE
	Emergency services shall establish and staff an emergency operations center equipped with a communications system to support government operations and emergencies and provide other essential facilities and equipment for agencies and activities assigned an emergency function. The second floor of the city library shall be so designated as the emergency operations center (EOC). (Ord. 2452 § 1, 1995). ***Commentary:*** Recommendations will be made to City Council to update Chapter 9.40 to reflect the current set-up of JCFD1 Fire Station 1-6 as the City's primary EOC, with the city library being the command center for policy makers. (2016) Paragraph 9.40.090 is the City EOC for policy makers, but JCFD1 Station 1-6 is set up as an Alternate EOC for the County, and the City Command Center for operational coordination between the County and the City during crises. It has a full range of communications to mirror the County EOC, along with an Alternate 9-1-1 console to backup JeffCom.	
	PTMC Chapter 17.50 ESSENTIAL PUBLIC FACILITIES **17.50.010 Purpose.** The purpose of this chapter is to fulfill the requirements of the Growth Management Act by accommodating essential public facilities of statewide or regional significance, including but not limited to airports, state education facilities, state or regional transportation facilities; prisons, jails and other correctional facilities; secure community transition facilities; and solid waste facilities. (Ord. 2879 § 6.4, 2005).	

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION		
DOCUMENT	**PURPOSE**	**REVIEW SCHEDULE**
	PTMC Chapter 19.05 Critical Areas.	
	a. **19.05.010 Purpose.** The Washington Growth Management Act (GMA) requires that critical areas within the city are to be protected by establishing protection standards for minimizing the impact of development of properties within critical areas. The goal of this chapter is to protect and improve the city of Port Townsend's critical areas for the present and future generations. Critical areas provide a variety of valuable biological and physical functions that benefit the city of Port Townsend and its residents, and/or may pose a threat to human safety or to public or private property. Managing critical areas is also key to improving the city's resiliency in light of anticipated climate change. Critical areas include wetlands; critical aquifer recharge areas; fish and wildlife habitat conservation areas; frequently flooded areas; critical drainage corridors; and geologically hazardous areas. These are termed "critical areas," which also include their protective buffers, and are of special concern to the city and the citizens of the state. This chapter addresses only the city's critical areas – city council has determined that the city will not designate any natural resource lands as defined by the Growth Management Act. It is the intent of this chapter to protect the public health, safety, and welfare by: A. Reducing the potential for personal injury, loss of life or property damage due to flooding, erosion, landslides, seismic events or soil subsidence; B. Using the ARC approach to mitigate critical area impacts – avoid, reduce, and compensate:	

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION		
DOCUMENT	**PURPOSE**	**REVIEW SCHEDULE**
	1. First, if at all possible, avoid adverse impacts; 2. Second, if that is not reasonable or possible, reduce adverse impacts; 3. Finally, compensate for the impact; C. Protecting against publicly financed expenditures as a result of the misuse of critical areas when that misuse causes on-site or off-site: 1. Unnecessary maintenance and replacement of public facilities; 2. Mitigation for avoidable impacts; 3. Cost for public emergency rescue and relief operations where the causes are avoidable; 4. Degradation of the natural environment; D. Maintaining healthy, functioning ecosystems through the protection of unique, fragile and valuable elements of the environment, including ground and surface waters, wetlands, fish and wildlife, and their habitats; E. Alerting appraisers, assessors, owners, potential buyers or lessees to the development limitations of critical areas; F. Providing city officials with sufficient information to adequately protect critical areas when approving, conditioning or denying public or private development proposals; G. Implementing the policies of the State Environmental Policy Act, the State Growth Management Act, this code, and the city Comprehensive Plan. (Ord. 3198 § 3 (Exh. A), 2018; Ord. 2899 § 1, 2005; Ord. 2319 § 1, 1992).	

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION

DOCUMENT	PURPOSE	REVIEW SCHEDULE
Quality Management Plan	Objectives: (a) Prevent property damage from flooding, (b) Perform the necessary analysis and recommend solutions for existing flooding problems, (c) Employ management strategies in flood- prone areas to ensure that new development is not exposed to significant flood risk, (d) Preserve wetlands and implement a wetlands management strategy, (e) Review the city's critical areas ordinances to ensure consistency with the surface water management program goals, (f) Ensure adequate funding for program implementation, (g) Coordinate the City Storm Water program with the Jefferson County program.	6 Year
Shoreline Master Program	In order to protect the public interest in the preservation and reasonable use of the shorelines of the state, the Shoreline Management Act establishes a planning program coordinated between the state and local jurisdictions to address the types and effects of development occurring along the state's shorelines. By law, the City is responsible for the following: A. Development of an inventory of the natural characteristics and land use patterns along "shorelines of the state" within the City's territorial limits. B. Preparation of a "Shoreline Master Program" to determine the future of the shorelines. This future is defined through the goals developed for the following land and water use elements: economic development, public access, circulation, recreation, shoreline use, conservation, historical/cultural protection, and floodplain management. **Policy 6.3.1** Protect the environment through implementation of this Master Program in concert with the City's Critical Areas Ordinance and through the use of the AMRRC mitigation sequence (Avoid, Minimize, Rectify, Reduce, Compensate) (WAC 173-26-201(e)).	Last amended Dec. 12, 2018 (Ord. 3198) Per RCW 90.58.080, the City's periodic review cycle is 2020 and every ten years thereafter. The City is currently working on completion of the 2020 periodic review.

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION		
DOCUMENT	**PURPOSE**	**REVIEW SCHEDULE**
	Policy 6.7.1 Ensure that new development in areas prone to periodic flooding comply with the City's Flood Damage Prevention standards (Chapter 16.08, PTMC) to minimize health hazards and property damage due to flooding. **Policy 6.7.2** Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses and schools. **Policy 6.7.3** Encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in frequently flooded areas. **Policy 6.7.4** Coordinate and support the development of improved tsunami warning systems.	
Comprehensive Storm Water Plan	This title is intended to require compliance with the city's *Engineering Design Standards* manual for public improvements necessary to serve all areas of the city and the out-of-city water service areas, to ensure that appropriate public services and facilities, including utilities, are provided concurrently with development in accordance with the Growth Management Act, Chapter 36.70A RCW, and to ensure that all properties in the city uniformly comply with all regulatory standards and requirements to protect public health, safety and welfare and the protection of the built environment.	

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION

DOCUMENT	PURPOSE	REVIEW SCHEDULE
Flood Damage Prevention Ordinance[3] PTMC Chapter 16.08	It is the purpose of this ordinance to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed: (1) to protect human life and health; (2) to minimize expenditure of public money and costly flood control projects; (3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; (4) To minimize prolonged business interruptions; (5) To minimize damage to public facilities and utilities such as water and gas providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; (7) To ensure that potential buyers are notified that property is in an area of special flood hazard; and, (8) To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions. mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard; (6) To help maintain a stable tax base by	As needed to improve the PTMC or required by external agencies.
International Building Code	International Building Code - The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures within this jurisdiction.	
International Fire Code	International Fire Code - this code prescribes regulations consistent with nationally recognized good practice for the safeguarding to a reasonable degree of life and property from the hazards of fire, explosion, and dangerous conditions arising from the storage, handling and use of hazardous materials and devices, and from conditions hazardous to life or property in the use or occupancy of buildings or premises and provisions to assist emergency response personnel.	
Jefferson County – City of Port Townsend Hazard Mitigation Plan (Hazmit Plan)	This Plan documents the County, City, and participating Special Districts strategic planning to reduce the effects of natural disasters in Jefferson County. This Hazmit Plan is unique in that: (1) It is an All-Hazard Plan that not only deals with natural disasters, but those man-made disasters that can significantly impact one or more of the participants of the Plan, e.g the presence here of the second largest Navy	FEMA requires a major update every 5 years. The current Plan (2009) expired in

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION

DOCUMENT	PURPOSE	REVIEW SCHEDULE
	Munitions Depot on the west coast adds the risk of an Ordnance Mishap that other locales do not have. (2) In 2016, where appropriate, commentary on climate change having an effect on a type of natural disaster has been added. This was requested by FEMA, but is voluntary and consistent with the attitudes of local government officials.	June, 2015. The 2016 Update is underway.

LIST OF INFORMATION FOR HAZARD MITIGATION PLAN

NO.	REQUEST	AVAILABLE YES/NO/?	LOCATION OF INFORMATION	MAINTAINED BY	NOTES
1	Critical Areas Maps	Yes	PTG1S	Tyler Johnson, Public Works	See Coastal Zone Atlas for Jefferson County, Stormwater Management Plan
2	Parks Plan Map	Yes	Parks Dept.	Engineering	
3	Sewer Plan Map	Yes	Engineering	Engineering	
4	Storm Sewer Plan Map	Yes	Engineering	Engineering	
5	Street/Bridge Map	Yes	Engineering	Engineering	
5.1	Zoning Map	Yes	Planning/Bldg.	Engineering	
6	Critical Facilities Map	Yes	PTGIS	Public Works	
7	ISO Rating - Fire	Yes	Fire Department	Fire Department	

LIST OF INFORMATION FOR HAZARD MITIGATION PLAN

NO.	REQUEST	AVAILABLE YES/NO/?	LOCATION OF INFORMATION	MAINTAINED BY	NOTES
8	BCEG Rating - Building	Yes	Building Dept.	Building Official	
9	Repetitive Loss Properties And *Address*	Yes	Building Dept.	Building Official	
10	List of Recent Events	Yes	Building Dept.	Building Dept.	
11	Comprehensive Land Use Plan	Yes	Planning Dept.	Tyler Johnson, Public Works	
12	Comprehensive *Storm Water Plan*	Yes	Public Works	Public Works	Identifies drainage basins, general soil conditions, recommends drainage ordinances and drainage system development
13	Comp. Transportation Plan	Yes		Public Works	
14	Comp Wastewater Plan	Yes	Public Works	Public Works	
15	Comp. Water System Plan	Yes	Public Works	Public Works	
17	Disaster Preparedness Plan	Yes	Various	Public Safety Public Works	Under the purview of the Jefferson County Department of Emergency Management.
18	Parks,Recreation and Open Space Functional Plan	Yes	Parks Dept	Planning	
19	Capital Improvement Plan	Yes	Planning	Planning	

LIST OF INFORMATION FOR HAZARD MITIGATION PLAN

NO.	REQUEST	AVAILABLE YES/NO/?	LOCATION OF INFORMATION	MAINTAINED BY	NOTES
20	Building Code	Yes	Building Dept.	Building Official	International Building Code
21	Fire Code	Yes	Fire Dept.	Fire Marshal	International Fire Code
22	Surface Water Management Code	Yes			
23	Critical Areas Code	Yes	Planning Dept.	Planning Dir.	
24	Zoning Code	Yes	Planning Dept.	Planning Dir.	
25	Subdivision Code	Yes	Planning Dept. Engineering Dept.	Planning Dir./ City Engineer	
26	Sewer Code		Public Works	Public Works	
27	Traffic and Street Code				Uniform Traffic code adopted by Reference
28	Total Acreage of city and UGA	Yes	Jefferson Co. Planning	Jefferson Co. Planning	
29	Zoning Acreage Breakdown	Yes	Jefferson Co. Planning	Jefferson Co. Planning	
30	Vacant land available for development	Yes	Jefferson Co. Planning	Jefferson Co. Planning	
31	20 year population forecast	Yes	Jefferson Co. Planning	Jefferson Co. Planning	

LIST OF INFORMATION FOR HAZARD MITIGATION PLAN

NO.	REQUEST	AVAILABLE YES/NO/?	LOCATION OF INFORMATION	MAINTAINED BY	NOTES
32	Water Shortage Response Plan	Yes	Public Works	Public Works	Includes Paper Mill water use curtailment based on 2021 Water Supply Agreement.

CITY OF PORT TOWNSEND PRIORITIZATION OF ACTION ITEMS

The City of Port Townsend operates under the requirements of the Growth Management Act of the State of Washington. City government format is a Council - Manager form of government. City staff evaluates actions based on community needs as expressed in the growth management act and the various comprehensive plans adopted by council. Staff prepares recommendations for specific actions to the council for consideration. Council weighs the input from staff and citizens before making any decision.

Before an action may proceed there must be a demonstrated need and funding must be secured. When funding is available and approval of council is given, the project is included in the annual budget. Need for an action to proceed may be determined in a variety of ways including but not limited to: action items identified in adopted plans, benefit cost analysis, necessary service, emergency, directive from state or federal agency, safety or other benefit to the community. For planning purposes projects are evaluated and included in the annual update of the 6-year capital facilities plan. Many projects in the capital facilities plan are dependent of outside funding. Possible sources of funding are the general fund, capital improvement funds, utility reserves, local improvement district, grant funding from a variety of sources including but not limited to private agencies, economic development organizations, state agencies, federal agencies and philanthropic sources. Other sources of funding may, from time to time, become available for specified actions that may or may not be included in the community planning process.

Economic Analysis of Mitigation Projects

The Federal Emergency Management Agency's approaches to identify costs and benefits associated with natural hazard mitigation strategies or projects fall into two general categories: benefit/cost analysis (BCA) and cost-effectiveness analysis. Where appropriate, proposed activities will be evaluated using the BCA tools and Hazus modeling software, along with empirical data to assess whether or not the mitigation strategy is justified.

Repetitive Loss Properties

The City of Port Townsend has one repetitive loss property. It is a residence built within 100' of the Puget Sound and the building is valued at $303,150 based on current assessments. Since there is only one repetitive loss property at risk, identifying its location more specifically would violate federal disclosure regulations.

Port Townsend Assets at Risk

City of Port Townsend - 2016 Art Asset Schedule

Loc #	Description	Address	Value	Dept.	Year Built	Added	Modified
0	Bronze "Courting Guillemots"	431 Water St	$24,235			5/14/2014	3/28/24
0	Haller Fountain - Galatea statue, foundation, pumps	Washington and Taylor Sts.	$90,883			6/19/2009	3/28/24
0	Salish Sea Circle	200 Battery Way	$84,824	PW-Parks		8/8/2014	3/28/24
2	"LEAFWING" JAQUA SCULPTURE	LARRY SCOTT TRAIL	$64,297			12/11/2006	3/28/24
3	WAVE GALLERY	MADISON & WATER STREETS	$321,485			12/11/2006	3/28/24
4	JAQUA SCULPTURE CITY HALL RAILING	250 Madison St	$64,297			12/11/2006	3/28/24
18	"Chief Chetzemoka" BRONZE STATUE	1948 Blaine St	$32,792			12/8/2005	3/28/24
19	Great Blue	620 Tyler St	$36,353			9/29/14	3/28/24
20	For Willene	2409 Jefferson St.	$72,706			1/18/17	3/28/24
21	Raccoon Lodge	1320 Cass Street	$5,000			9/26/23	3/28/24
		Grand Totals:	**796,872**				

Fleet Name	YEAR	MAKE	VEH MODEL	DEPARTMENT	SERIAL NUMBER	Equipment Type	Original Purchase Cost

Group: City Facilities

69	1994	KOHLER	JD POWER	City Facilities	354115	Generator	0.00
52	1991	FORD	F70	City Facilities	1FDNF70J2MVA31597	Bucket Truck	7553.00
325	2003	FORD	CROWN VICTORIA	City Facilities	2FAHP71W33X187496	Passenger Vehicle	27578.56
149	2022	FORD	RANGER	City Facilities	1FTER1FH1NLD53268	Pick-up	30471.24
145	2007	FORD	RANGER	City Facilities	1FTZR14U97PA83316	Pick-up	14233.32

123	2010	CHEVY	COLORADO	City Facilities	1GCESBD91A8126603	Pick-up	16661.75

Group Total: 10

Group: DSD

101	2004	CHEVY	COLORADO	DSD	1GCCS1986481522 64	Pick-up	16064.00

Group Total: 1

Group: Equipment Rental

8	1987	SPEED AIRE		Equipment Rental	165872	Air Compressor	0.00
6E	1995	GEN-PRO	CH25GS	Equipment Rental	2719804277	Generator	7000.00
29	2017	FORD	F250	Equipment Rental	1FTBF2B62HEB85963	Pick-up	27000.00
151E	1996	PETROVEND	PUMPS & TANKS	Equipment Rental		Fuel Pumps	0.00

Group Total: 7

Group: IT

303	2008	FORD	EXPLORER	IT	1FMEU7398UA50115	SUV	29040.09

Group Total: 2

Group: Library

119	2004	FORD	CROWN VICTORIA	Library	2FAFP71W34X150084	Passenger Vehicle	5600.00

Group Total: 1

Group: Parks

T3	2003	CHRYSLER	GEM	Parks	5ASAK27432F031001	Elec. Cart	4876.00
T2	2003	CHRYSLER	GEM	Parks	5ASAK27422F023326	Elec. Cart	4876.00

T1	2003	CHRYSLER	GEM	Parks	5ASAK27442F028351	Elec. Cart	4876.00
81	1981	LES SCOT	UTILITY TRAILER	Parks		Utility Trailer	0.00
58	2009	SALT DOG	SANDER	Parks		In-bed Sander	0.00
47T	1989	PARKS DEPT.	FLATBED	Parks		Equipment Trailer	17757.85
44	2013	TRAILER	UTILITY	Parks		Utility Trailer	0.00
306	2008	FORD	F-250	Parks	1FTSX21508ED64024	Pick-up	24323.69
19	2011	FORD	RANGER	Parks	1FTKR4EE0BPA33407	Pick-up	18351.33
15	2000	INTERSTATE	CARGO TRAILER	Parks	4RACS121XYN009495	Utility Trailer	0.00
133	2022	KUBOTA	RTV-X1120WL-H	Parks	A5HF1GDBHNG039010	Side-by-Side	20284.35
131	1994	CHEVY	3500	Parks	1GBJC34K2R	Pick-up	25000.00

					E271493		
13	2023	FORD	F-150	Parks	1FTMF1EP4PKF01712	Pick-up	41971.86
11	1992	CHEVY	2500 4X4	Parks	1GCGK24N1NE176494	Pick-up	20000.00
1	2012	BRUSH MOWER	DRW FBM180E	Parks	ATM 123382	Mower	0.00
#83	2010	KUBOTA	BK/HO	Parks	52044	Backhoe	30000.00
#32	2009	BOSS	SD 7.5	Parks		Snowplow	0.00

Group Total: 32

Group: Police

342	2023	FORD	EXPLORER	Police	1FM5K8AB8PGB69145	Patrol Vehicle	50016.33
341	2023	FORD	EXPLORER	Police	1FM5K8AB7PGB68343	Patrol Vehicle	50016.33
340	2022	FORD	EXPLORER	Police	1FM5K8AW1	Patrol Vehicle	43103.09

					NNA14156		
339	2022	FORD	EXPLORER	Police	1FM5K8AW9NNA14227	Patrol Vehicle	43103.09
338	2020	FORD	UTILITY	Police	1FM5K8AB5LGA42234	Patrol Vehicle	37857.62
337	2020	FORD	UTILITY	Police	1FM5K8AB7LGA42235	Patrol Vehicle	37857.62
336	2020	FORD	UTILITY	Police	1FM5K8AB9LGA42236	Patrol Vehicle	37802.33
335	2017	FORD	UTILITY	Police	1FM5K8AR1HGB08413	Patrol Vehicle	31134.08
334	2017	FORD	UTILITY	Police	1FM5K8ARXHGB08412	Patrol Vehicle	31134.08
333	2017	FORD	UTILITY	Police	1FM5K8AR8HGB08411	Patrol Vehicle	31134.08

332	2014	FORD	UTILITY	Police	1FM5K8AR6EGA81110	Patrol Vehicle	40399.63
331	2014	FORD	UTILITY	Police	1FM5K8ARXEGA81109	Patrol Vehicle	40399.63
330	2019	CHEVY	IMPALA	Police	2G11Z5S33K9139880	Passenger Vehicle	22791.00
329	2011	CHEVY	TAHOE	Police	1GNSK4E01BR229280	SUV	16000.00
327	2008	FORD	ESCAPE	Police	1FMCU92Z28KD65986	SUV	0.00
324	2008	FORD	RANGER	Police	1FTYR14U38PA96429	Pick-up	13541.11
323	2008	CHEVY	MALIBU	Police	1G1ZF57588F278747	Passenger Vehicle	23922.00
322	2010	FORD	FUSION	Police	3FAHP0GA5A	Passenger Vehicle	16629.29

					R321522		
321	2007	FORD	CROWN VICTORIA	Police	2FAFP71W97X156475	Patrol Vehicle	28361.41
121U	2006	JOHN DEERE	GATOR 4X4 9871M	Police	MHOP4GTO40006	Side-by-Side	13390.20
120T	2006	PARO CUSTOM	UTILITY	Police	490US101865002457	Utility Trailer for Gator	2000.00
119T	1996	RADAR TRAILER	MIGHTY MOVER	Police		Radar Trailer	22639.72
118	2008	FOREST RIVER	UTILITY	Police	5NHUBL6278T419511	Enclosed Trailer	8000.00

Group Total: 29

Group: Public Works Admin

E2	2003	HONDA	CIVIC HYBRID	Public Works Admin	JHMES96683S025560	Passenger Vehicle	20500.15
E1	2003	HONDA	CIVIC HYBRID	Public Works Admin	JHMWA9664	Passenger Vehicle	20500.15

					3S021215		
304	2023	FORD	MAVERICK	Public Works Admin	3FTTW8E37PRA12279	Passenger Vehicle	27092.45
300	2010	FORD	CROWN VICTORIA	Public Works Admin	2FABP7BV1AX130108	Passenger Vehicle	28361.41

Group Total: 5

Group: Public Works Engineering

94	2004	JEEP	LIBERTY	Public Works Engineering	1J4GL48K44W243018	SUV	19046.05

Group Total: 1

Group: Stormwater

77	2007	FORD	RANGER	Stormwater	1FTZR14U47PA83319	Pick-up	14233.32
43A	2002	ELGIN	CROSSWIND J	Stormwater	49HAADBY1DJ48427	Street Sweeper	125000.00

27	1989	JOHN DEERE	672B GRADER	Stormwater	DW672BX527529	Road Grader	150000.00
24	2006	NEWHOLLAND	TS115A	Stormwater	ACP277400	Tractor with US Mower attachment	80000.00

Group Total: 4

Group: Streets

92	2004	CHEVY	3500	Streets	1GBJC34U44E276575	Pick-up	17500.00
73E	1975	SANDER	SANDER	Streets		Tailgate Sander	0.00
73	2004	PATCH KING	PK-4H	Streets		Pothole Patcher	0.00
70A	2010	MONROE	SANDER	Streets	9/8/3223	Tailgate Sander	2907.00
70	1991	GMC	7000	Streets	1GDM7H1J5MJ501531	Dump Truck 5yd	75000.00
55E	1998	FRINK SNOWPLOW	2255PN	Streets	2255PN	Snowplow	0.00
54	1986	GMC	7000	Streets	1GDM7D1E3	Dump Truck 5yd	5000.00

					FV619617		
53	2024	KENWORTH	T880	Streets	3BKZXPEX0RF357927	Dump Truck 10yd	270635.49
51E	2007	MONROE	MS966	Streets		Tailgate Sander	0.00
50E	1996	MEYER	PLOW	Streets		Snowplow	0.00
50	2007	AMERICAN	3910 PISA RR85	Streets	JD0844	Snowplow	0.00
49	2007	INTERNATIONAL	WORKSTAR 7400SFA	Streets	1HTWDAZR98J632669	Dump Truck 5yd	120881.14
45	2004	CHEVY	2500 4X2	Streets	1GCHC24U64E283029	Pick-up	17758.00
41	1997	INGERSOLL RAND	ROLLER	Streets	C22761	Roller	85000.00
31	2009	BOSS	SNOWPLOW	Streets	BOSS HD 10 PLOW	Snowplow	0.00
28	2022	K&M INTERNATIONAL	KM 8000TEDD	Streets	1K9BU182XPN246227	HMA Asphalt Trailer	41750.00

26	2022	BOMAG	BW 900-50	Streets	961834651523	Roller	24356.63
25T	1979	MILLER	OT 640	Streets		Equipment Trailer	0.00
25	1999	BROCE	RC350	Streets	89199	Street Sweeper	18496.00
23	2018	HITACHI	ZX85USB-5N	Streets	HCMDEF60P00019941	Excavator	113000.00
144E	1996	MONROE	SANDER	Streets		Tailgate Sander	0.00
142	1995	INGERSOL RAND	COMPRESSOR/JACK	Streets	181070U89178	Air Compressor	0.00
14	2018	SUMMIT	ALPINE UTILITY	Streets	59KBU1012J1002505	Utility Trailer	1877.00
124	2019	FORD	F-150	Streets	1FTEX1EB8KKD58133	Pick-up	30473.41
32	2024	JD	333G	Streets		Skid Steer w/attachments	167000.00
105	2002	BRUSH BANDIT	250	Streets	17902	Woodchipper	10000.00

Group Total: 68

Group: Wastewater Biosolids

99	2020	JOHN DEERE	544L	Wastewater Biosolids	1DW544LSALF708603	Loader	196695.87
78	2004	GRASSHOPPER	928D 2	Wastewater Biosolids	MULTI-MACHINE	Mower	6000.00
55	2005	CHEVY 1500	SILVERADO	Wastewater Biosolids	1GCEC14V75Z245616	Pick-up	15000.00
34	2005	JOHN DEERE	310SG	Wastewater Biosolids	T0310SG945443	Backhoe	60000.00
151	1998	CASE	621B LOADER	Wastewater Biosolids	JEE00563664	Loader	91800.00
128	2023	DOPPSTADT	SM617.2	Wastewater Biosolids	W09522173P2D38926	Trommal Screen	368362.68
122	1994	INTERNATIONAL 4900	4900 6X4	Wastewater Biosolids	1HTSHAAR4RH571903	Dump Truck 15 yd	60000.00
#127	2009	ROTO MIX	MIXER	Wastewater Biosolids		Compost Mixer	84782.89

Group Total: 11

Group: Wastewater Collection

46	1998	INTERNATIONAL	4900	Wastewater Collection	1HTSDADR6XH636268	Dump Truck 5yd	78645.00
42A	1998	INTERNATIONAL	99-03V---6776	Wastewater Collection	1HTGBADR1XH663616	Vactor	213000.00
20	1990	JOHN DEERE	544E	Wastewater Collection	DW544EB525714	Loader	120000.00
2	2018	FREIGHTLINER/VACTOR	114SD	Wastewater Collection	1FVAG3F32KHKM9381	Vactor	456497.15
18	2010	CHEVY	COLORADO	Wastewater Collection	1GCESBD99A8126820	Pick-up	16661.75
155	2006	MQ POWER	DCA-45SSIU3	Wastewater Collection	720-3767	Generator 50kw	9617.07
121	2021	FORD	RANGER	Wastewater Collection	1FTER1FH1MLD90044	Pick-up	29995.36

12	2007	BOSS INDUSTRIES	BHP154MH	Wastewater Collection	C06-10-01863	Snowplow	23701.15
10	2024	Ford	Transit	Wastewater Collection	WT03101302	CUES Sewer Camera Van	300000.00
#21	2013	JOHN DEERE	410TK	Wastewater Collection	1T0410TKEDE239075	Backhoe	129470.20

Group Total: 12

Group: Wastewater Treatment

156	2015	GENERAC	SD250	Wastewater Treatment	3000114559	Generator	0.00
154	1998	KATOLIGHT	50KW	Wastewater Treatment	109FS0819WP83223	Generator 50kw	14850.00
113G	1990	GENPRO	GENPRO	Wastewater Treatment	QC-18-1	Generator	0.00
#22	2011	FORD	F-250	Wastewater Treatment	1FTBF2B69BEC12163	Pick-up	25494.11
#122	2004	CHEVY	1500	Wastewater Treatment	1GCEC14V04Z257394	Pick-up	15390.50

Group Total: 7

Group: Water Operations

89	2020	FORD	RANGER	Water Operations	1FTER1FH5LLA80834	Pick-up	29168.27
88	2007	FORD	RANGER	Water Operations	1FTZR14U27PA83318	Pick-up	14233.32
744	2018	INGERSOLL RAND	2475F13GH	Water Operations	CBV587474	Compressor truck mounted	0.00
627	2021	NORTHSTAR	M109163I.2	Water Operations	02219414	Generator	590.42
610	2005	NORTHSTAR	109160A	Water Operations	S109160 109170	Generator	0.00
61	2004	CHEVY 3500	3500	Water Operations	1GBJK34U24E283950	Pick-up	27196.00
603	2019	BUYERS PRODUCTS	EX80 II	Water Operations	M062202230	Snowplow	0.00
602	2019	BUYERS PRODUCTS	SALT DOG SPREADER	Water Operations	9617	In Bed Sander	0.00

48	1995	JOHN DEERE	310D	Water Operations	T0310DG808213	Backhoe	65000.00
39	2019	FORD	F-550	Water Operations	1FD0X5HT7KEG52865	Pick-up with dump bed.	86575.83
37A	2018	FORD	F350	Water Operations	1FDRF3H64JED02570	Pick-up	47300.00
132	2021	FORD	RANGER	Water Operations	1FTER1FH6MLD88001	Pick-up	29995.36

Group Total: 57

Group: Water Quality

97E	2011	GENERAC	58820	Water Quality	6078283	Generator	0.00
68	2018	FORD	F150 4X4	Water Quality	1FTEX1EB6JKE50968	Pick-up	33596.41
67	2007	CHEVY	COLORADO	Water Quality	1GCDT13E378221349	Pick-up	21199.81

623	1995	NORTH STAR	8000PPG	Water Quality		Generator	0.00
30	2023	KUBOTA	L3902	Water Quality	KBULMBHRLPJA17349	Backhoe	50767.97
152	2010	CHEVY	COLORADO 4X4	Water Quality	1GCKTBDE9A8125728	Pick-up	20706.26
150	2017	FORD	F150	Water Quality	1FTMF1E84HFA27487	Pick-up	24000.00
135E	2007	GENERAC	52420	Water Quality	4669990	Generator	0.00
130G	2003	VOLVO	TAD520GE	Water Quality	5300732015	Generator	0.00
11M	2017	HUSQVARNA	Z254	Water Quality	060117C013008	Mower	3000.00
118E	1993	UTILITY TRAILER	WATER TANK	Water Quality	WATER TRAILER	Water Trailer	0.00

Port Townsend Assets at Risk

City of Port Townsend - 2016 Building Asset Schedule

Loc #	Description	Address	Vacant	Building Value	Contents Value	Total Value	Dept.	Sq.Ft.	Year Built	Date
0	Golf Course Maintenance Building	1948 Blaine St		$262,500	$0	$262,500	Public Works Parks	2400	2009	3/28/24
0	Irrigation System Civic District	Water, Madison, Monroe Streets	NO	$30,000	$0	$30,000		50000	2011	12/11/12
0	Mt. View - main building	1925 Blaine St		$7,717,200	$654,000	$8,371,200		26042	1961	3/28/24
0	Mt. View - Pool/Gym - Library/Cafeteria	1919 Blaine St	NO	$7,381,600	$125,000	$7,506,600		18547	1984	3/28/24
0	Mt. View - portables one single, one double	1925 Blaine St		$596,200	$0	$596,200		3000	1995	3/28/24
1	SEWAGE LIFT STATION	SEC MONROE ON WATER STREET		$84,360	$703,240	787,600		300	1967	3/28/24
2	SEWAGE LIFT STATION	SEC GAINES ON WATER STREET		$1,276,020	$998,680	$2,274,700		500	2023	3/28/24
3	TREATMENT PLANT & MAIN CONTROL CENTER	5300 Kuhn St		$19,988,770	$585,830	$20,574,600		5320	1993	3/28/24
4	SEWAGE LIFT STATION	– Port Lift Station		$58,582	$58,582	$117,164		100	1971	
6	Cotton Building & Public Restrooms	607 Water ST		$2,000,000	$45,695	$2,045,695		2350	1896	9/15/11
7	LIBRARY (Historic)	1232 Lawrence St		$3,375,000	$1,839,500	$5,214,500		5882	1913	3/28/24
9	WATERWORKS WAREHOUSE	1234 Garfield St		$21,793	$0	$21,793		4108	1910	

Port Townsend Assets at Risk
City of Port Townsend - 2016 Building Asset Schedule

Loc #	Description	Address	Vacant	Building Value	Contents Value	Total Value	De pt.	Sq.Ft.	Year Built	Date
11	SHOPS	1818 Beach St		$462,816	$105,449	$568,265		14772	1980	
13	(COMPOST COVER) BUILDING	603 Landfill Rd		$276,020	$0	$276,020		7728	1993	8/12/04
14	(OFFICE) BUILDING	603 Landfill Rd		$16,792	$5,858	$22,650		200	1993	
15	(EQUIPMENT STORAGE) BUILDING	603 Landfill Rd		$15,102	$292,914	$308,016		310	1993	
19	OFFICE	5210 Kuhn St		$314,900	$110,000	$424,900		1443	1901	3/28/24
21	CARETAKERS DWELLING	CHETZEMOKA PARK		$88,327	$53,060	$141,387		797	1930	8/12/04
24	POPE MARINE PARK BLDG	100 Madison St		$509,300	$0	$509,300		1896	1992	3/28/24
26	SEWAGE LIFT STATION	ISLAND VISTA BLVD		$29,291	$35,149	$64,440		339	1985	
27	SEWAGE LIFT STATION	31ST STREET		$58,582	$35,149	$93,731		339	1996	
28	GAEL STUART BUILDING	1610 Blaine St		$0	$191,342	$191,342		1000	1951	3/10/04
30	GIRL SCOUT HOUSE	848 Tyler St		$187,466	$0	$187,466		1050	1940	
31	HALLER FOUNTAIN	TAYLOR & WASHINGTON		$58,582	$0	$58,582		50	1993	
33	SEWAGE LIFT STATION	POINT HUDSON		$29,291	$29,291	$58,582		64	1985	
34	SEWAGE LIFT STATION	HAMILTON HEIGHTS		$58,582	$117,165	$175,747		96	1997	
35	STORMWATER LIFT STATION	KEARNEY STREET		$0	$29,291	$29,291		200	1983	

Port Townsend Assets at Risk
City of Port Townsend - 2016 Building Asset Schedule

Loc #	Description	Address	Vacant	Building Value	Contents Value	Total Value	De pt.	Sq.Ft.	Year Built	Date
36	PINK HOUSE (Historic)	1256 Lawrence St		$354,742	$128,406	$483,148		2070	1867	12/5/05
40	STANDPIPE RESERVOIR, 1 MILLION GALLON	2911 20th St		$1,951,800		$1,951,800		2000	1996	3/28/24
41	RESERVOIR, 5 MILLION GALLON	2911 20th St		$6,753,400		6,753,400		50000	2018	3/28/24
42	CARETAKER'S HOUSE	End of FS Rd 2600-010 - 2005 Big Quilcene River Rd		$234,333	$11,716	$246,049		700	1927	
43	CHLORINE STATION	530 Grouse Ln		$305,200	$0	$$305,200		100	1980	3/28/24
44	SCREEN ROOM	530 Grouse Ln		$708,200	22,700	$730,900		800	1927	3/28/24
45	SHOP	530 Grouse Ln		$51,200	$20,000	$71,200		800	1927	3/28/24
46	CARETAKER'S HOUSE	530 Grouse Ln		$308,900	$15,000	$323,900		700	1927	3/28/24
51	GOLF COURSE MAIN CLUBHOUSE	1948 Blaine St		$468,663	$0	$468,663		4200	1990	
52	GOLF COURSE--FOUR-CAR GARAGE	1948 Blaine St		$46,866	$0	$46,866		1200	1990	
53	PUMP STATION	F and Chestnut		$1,083,900	$0	$1,083,900		800	2004	3/28/24
54	LITTLE QUILCENE DIVERSION	Little Quilcene River		$386,428	$0	$386,428		500	1994	3/15/04
55	HYDROPNEUMATIC TANK	Reed Street		$44,163	$0	$44,163		200	2004	3/11/04

Port Townsend Assets at Risk
City of Port Townsend - 2016 Building Asset Schedule

Loc #	Description	Address	Vacant	Building Value	Contents Value	Total Value	Dept.	Sq.Ft.	Year Built	Date
56	BIG QUILCENE DIVERSION	Big Quilcene River		$552,040	$0	$552,040		1600	1929	3/15/04
78	ANTENNA & ICE BRIDGE	701 Harrison St		$54,121	$0	$54,121		100	2005	12/8/05
80	BELL TOWER	Tyler St		$703,500	$0	$703,500		400	1890	3/28/24
81	CHETZEMOKA GARAGE	Jackson St		$43,297	$0	$43,297		250	1930	12/8/05
82	CHETZEMOKA GAZEBO	Jackson St		$54,121	$0	$54,121		400	1930	12/8/05
83	CHETZEMOKA KITCHEN & SHELTER	Jackson St		$54,121	$0	$54,121		500	1930	12/8/05
84	CHETZEMOKA PLAYGROUND EQUIPMENT	Jackson St		$64,945	$0	$64,945		250	1930	12/8/05
85	CHETZEMOKA RESTROOMS	Jackson St		$184,300	$0	$184,300		500	1930	3/28/24
86	CITY HALL	540 WATER ST/250 MADISON ST		$12,740,900	$1,179,500	$13,978,500		11795	2005	3/28/24
87	GOLF COURSE GREENS	1948 Blaine St		$270,608	$0	$270,608		100000	1930	12/8/05
88	GOLF COURSE IRRIGATION SYSTEM	1948 Blaine St		$703,581	$0	$703,581		100000	1938	12/8/05
89	KAH TAI RESTROMMS (12th & Landes)	1235 Landes St		$108,243	$0	$108,243		250	1985	12/8/05
91	SKATEPARK	Monroe & Jackson		$862,900	$38,100	$901,000		25000	2005	3/28/24
93	CHLORINE TRANSFER STATION	2002 20th St		$212,242	$0	$212,242		500	1996	

Port Townsend Assets at Risk
City of Port Townsend - 2016 Building Asset Schedule

Loc #	Description	Address	Vacant	Building Value	Contents Value	Total Value	De pt.	Sq.Ft.	Year Built	Date
94	Monroe Lift Station	131 Monroe		$787,600		$787,600			1971	3/28/24
			Grand Totals:	**$47,283,450**	**$5,792,941**	**$53,076,391**				

Port Townsend Public Assets at Risk

City of Port Townsend – 2024 Public Asset Schedule Totals

Asset Type	Asset Schedule Value
Art	**$796,872**
Auto	**$1,904,610**
Building	**$53,076,391**
Inland Marine	**$1,216,235**
Grand Total:	**$56,760,719**

Critical Facility Categories

Critical facilities are any facility or combination of facilities that if severely damaged or destroyed would cause significant risk to: Public Health and Safety, Economic vitality, or the environment. The facilities listed here are for both the city and the county.

Emergency Service Centers (Fire, police, 911 PSAP)

Six City/County Fire Districts
- JCFD1 - dba East Jefferson Fire & Rescue
- JCFD2 - dba Quilcene Volunteer Fire Department
- JCFD3
- JCFD4 - dba Brinnon Fire Department
- JCFD5 – dba Discovery Bay Volunteer Fire Department
- JCFD8 – contracted to Clallam County Fire District 3 for service to Gardner area.

Port Townsend Fire Department has been absorbed by Jefferson County Fire District 1, which is doing business as East Jefferson Fire & Rescue.

Three Sheriff's Office Facilities: Port Hadlock, Quilcene, Clearwater.
One Police Department Headquarters Station: Port Townsend (Mountain View)
- Primary 911 PSAP - 81 Elkins Road, Port Hadlock
- Back-up 911 PSAP - 701 Harrison St, Port Townsend

Emergency Operations Center

- Primary EOC - 81 Elkins Road, Port Hadlock
- Alternate EOC - 701 Harrison St, Port Townsend
- City Command Center - 701 Harrison St, Port Townsend
- Back-up City Command Center – Port Townsend Police Dept @ Mountain View
- Public Works Facility
- County Road Maintenance - Port Hadlock
- County Road Shops - Quilcene Shop; Brinnon Shop; Clearwater Shop.

Hazardous Materials Facility - See SARA Title III List Hospital
- Jefferson General Hospital, 834 Sheridan, Port Townsend

Nursing Home / Rehabilitation Center
- Life Care Center of Port Townsend, 751 Kearney St, Port Townsend

Critical Community Employer Port
- Townsend Paper Company
- Naval Magazine Indian Island
- County Government (Courthouse)
- City Government (City Hall)
- Port of Port Townsend

Library

- Jefferson County Library System
- Port Townsend Library

School

- Chimacum School District
- Quilcene School District
- Brinnon School District
- Port Townsend School District
- Queets / Clearwater School District
- Quillayute Valley School District

Transportation Facility

- Jefferson Transit Authority
- Washington Ferry System

Key Transportation/Evacuation Routes Hood Canal Bridge (Highway 104 E)

- Discovery Bay (Highway 101 W)
- Duckabush River Bridge (Highway 101 S)

Utilities Facilities

- Kearney St Substation (JPUD)
- Discovery Bay Substation (JPUD)
- Olympic Gravity Water System (Diversions, 30-mile pipeline, reservoirs and associated Dams)
- City Water Treatment Facility and Reservoirs (20th Street)
- City Backup Well (Golf Course)
- City Water Distribution System (80 miles of pipe within the City Limits)
- City Wastewater Treatment Facility (Kuhn Street)

Port Townsend Police Department

Critical Facilities (Leased by City):

1. 1925 Blaine Street approximate value: $6,510,500

Equipment:

Vehicle	$412,670
Equipment	$187,465
Contents	$133.000
Total:	$7,243,635

Value of Area Served: $1,340,801,391

Outline of Area Served: The Port Townsend Police Department serves the only incorporated city within Jefferson County, serving a permanent population of more than 9,485 residents in 5,300 housing units. The City of Port Townsend is 6.3 Sq. Mi. located on the most northern tip of East Jefferson County.

Current and Anticipated Service Trends: The response area of the Port Townsend Police Department continues to grow at moderate levels with crime rates escalating. Serving an aging population base and a high tourist area the calls for service have increased dramatically and will continue to do so.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)	
Type of Event	Date Total Public Damage
Earthquake	02/28/2001 Minor damage

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Damaging Winds
2. Winter Storms
3. Earthquake
4. Tsunami

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Not Applicable

Proposed Natural Hazard Mitigation Measures

Mitigation Activity	Mitigation Measure	Lead Agency	Funding Source	Time Line
~~LT-EQ-7*~~	Move current police station, out of tsunami, flood, and liquefaction zone.	Public Works	City Budget	**Completed September 2009**
Existing Applicable OG-MH-3 1. See "Codes	**Hazard Mitigation** Public Education Comprehensive Through the Citizen's Academy Program	**Associated** PTPD & and City of Port Townsend and Sheriff.	**Plans and/or Documents** Grant/City Budget PortTownsend	Annual
~~ST-MH-8*~~	Improve interoperability through coordinated purchase and use of communications equipment, and OPSCAN program.	DEM, JeffCom 911, PTPD, JCSO, and all Fire Districts including PTFD.	DHS Grants	**Completed 2007 2009**

Existing Applicable Hazard Mitigation Associated Plans and/or Documents

See "Codes and Comprehensive Plans" for City of Port Townsend

Port Townsend Library

Property Profile:

Critical Facilities:

1. Library (the Library is a community resource and a gathering/meeting place for the community)

- Estimated cost to build the Library: $ 7,000,000 in 2016 dollars. (Seismic Retrofit Completed – 2014)
- Estimated cost of contents: $700.000
- Estimated cost of volumes: $1.500.000

HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
Severe Local Storm	Annually since 2007	
Earthquake	Periodic	None since 1975

Natural Hazard Vulnerability Analysis Rating

This property is most vulnerable to the following natural hazards ranked in order:

1. Severe Local Storm
2. Earthquakes
3. Volcanic Activity

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. See City of Port Townsend "Codes and Comprehensive Plans" above.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity	Mitigation Measure	Lead Agency	Funding Source	Time Line
~~LT-EQ-8~~*	Seismic Reinforcement of Historic Carnegie Building	City Manager; City Council	PDM-2007 - $1,238 million award; 25% match from city and/or corporate donors.	Start: 09/2009. Completed: 2012

City of Port Townsend Water System

Water District Profile

The City of Port Townsend is supplied by a water system known as the Olympic Gravity Water Supply System that delivers the water required by Port Townsend and the Port Townsend Paper Company. The Paper Company paid for the construction of the system, and operates the system under an agreement with the City. The City owns the system and is responsible for paying the costs when it becomes necessary to replace the system. The system has a delivery capacity of 20 million gallons per day, most of which is used by the Paper Company. **Due to both drought and economic conditions, the Port**

Townsend Paper Company has been working to reduce its demand on water resources and has cut its daily consumption to less than 10 million gallons.

In the present agreement, the City is responsible for all capital improvements, unless a facility item is irreparably damaged due to an "Act of God", such as earthquake, landslide, or flooding event. Under this circumstance, the City and Company share in the replacement of the structure.

The system consists of two water surface diversion structures, Lords Lake, City Lake and 30 miles of pipeline. Replacement costs have been estimated at $54,000,000 for total replacement of the pipeline, $300,000 for the dam at the Big Quilcene River Diversion, and $500,000 for hydraulic structures and gates at the diversion dams.

Natural Hazard Vulnerability Analysis Rating

This Water District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Severe Storm

Proposed Natural Hazard Mitigation Measures

Mitigation Activity	Mitigation Measure	Lead Agency	Funding Source
See City List			

Port Townsend Local Hazard Assessment (Maps)

The following 10 maps are intended to portray the local hazard assessment for Port Townsend graphically. GIS databases are available to document the source data used to create them.

These maps are for illustration only. The source maps are often poster size, and do not shrink to page size well without significant changes to text size and positioning. We just want to demonstrate that we know what our situation is and are working to improve it.

1. City of Port Townsend Street Map
2. City of Port Townsend Relief Map & Bathymetry

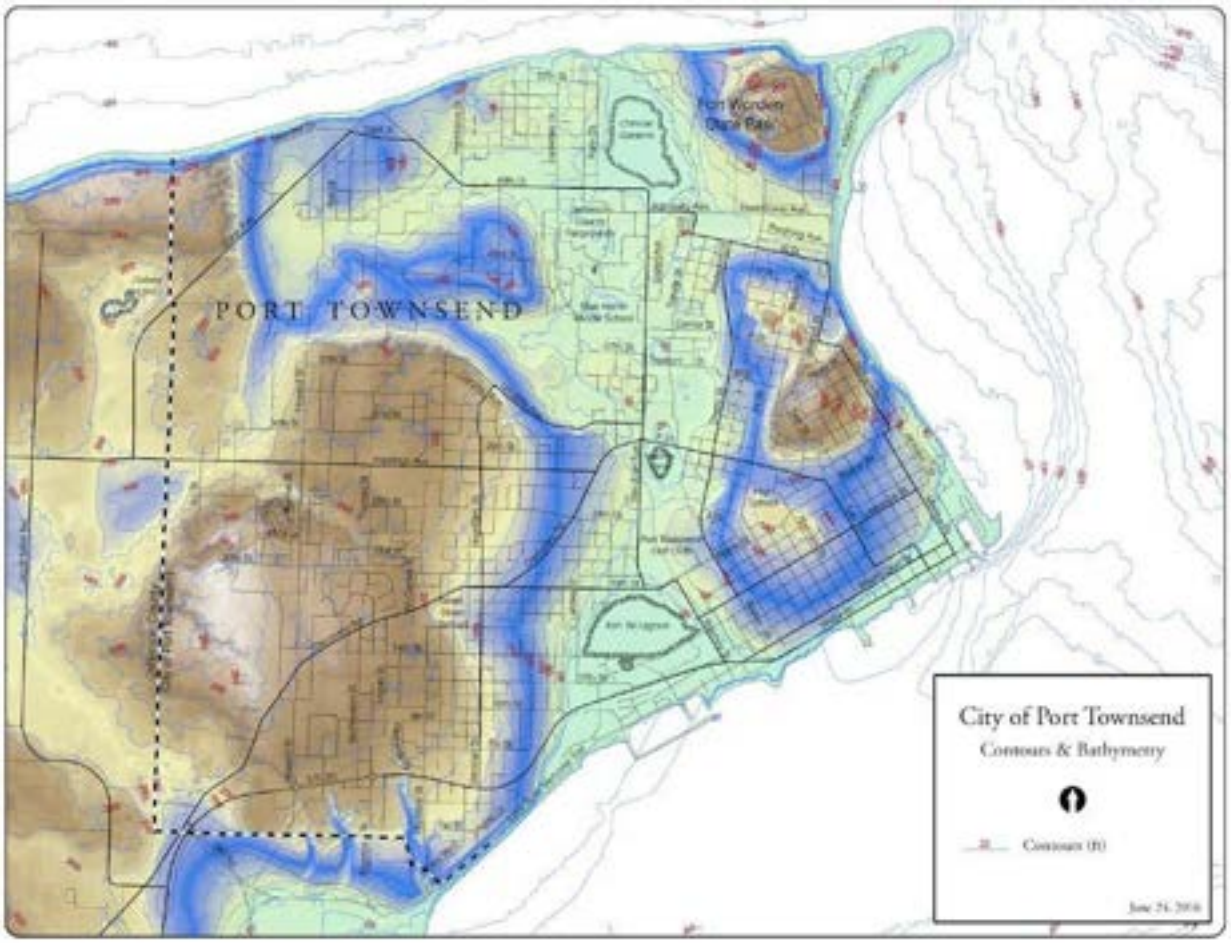
3. Environmentally Sensitive Areas
4. Sample FEMA Preliminary FIRMS (Draft February 2016) for Port Townsend
5. Critical Drainage Corridors & Frequently Flooded Areas
6. Seismic, Landslide, and Erosion Hazard Areas
7. Shoreline Modifications
8. Port Townsend Tsunami Evacuation Routes
9. Wildfire - Urban Interface Atlas Sample
10. Location of Critical Buildings

1. City of Port Townsend Street Map

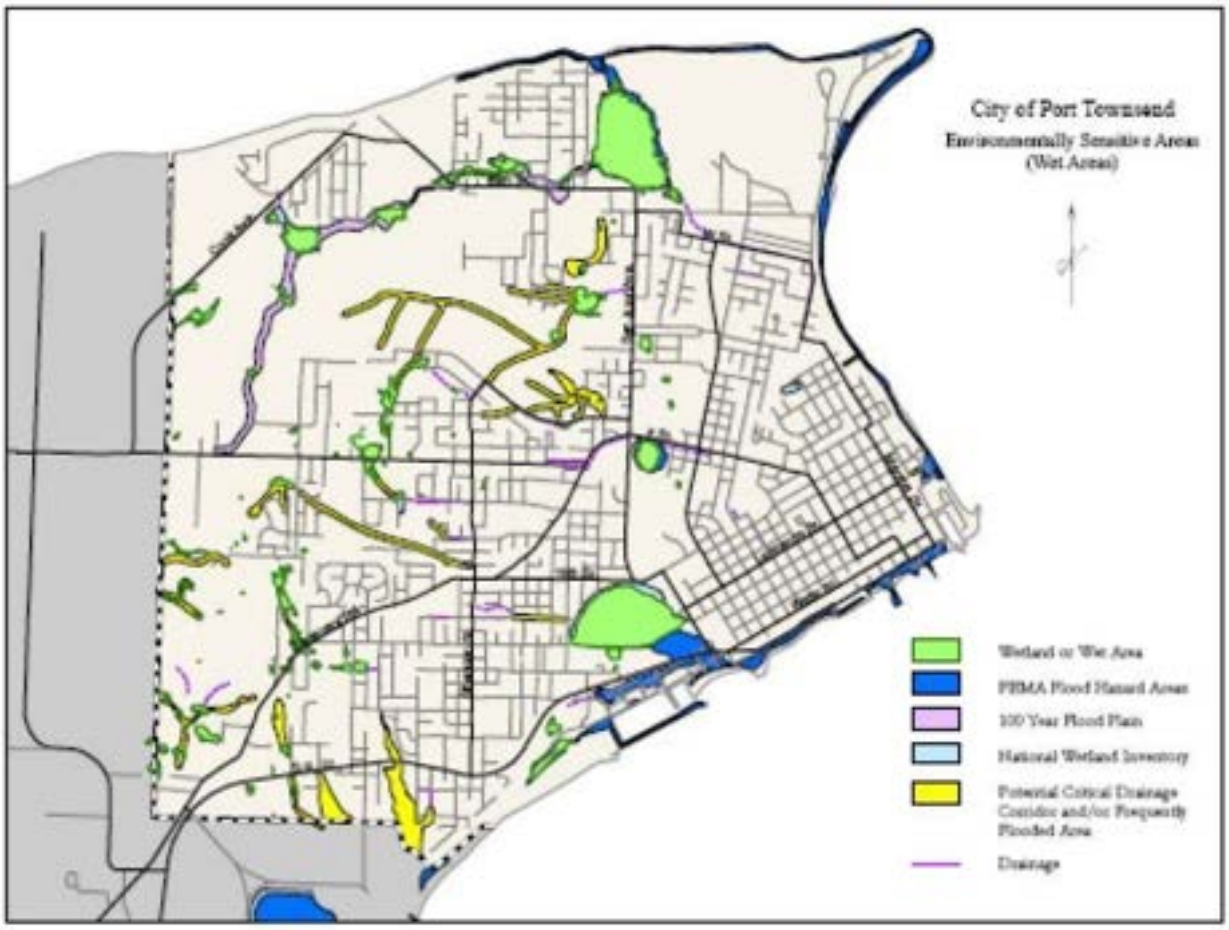


ort Townsend GIS

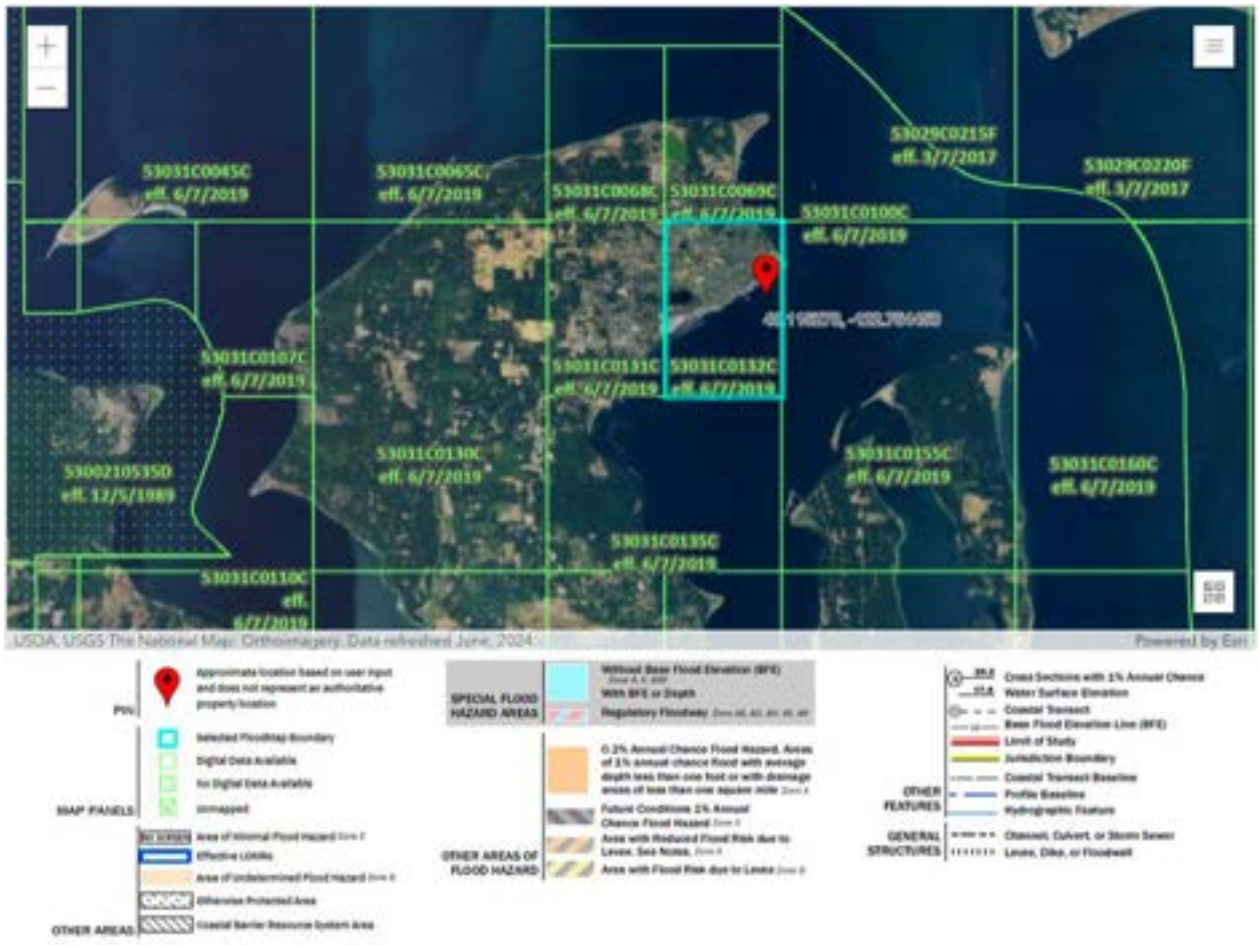
2. City of Port Townsend Relief & Bathymetry Map



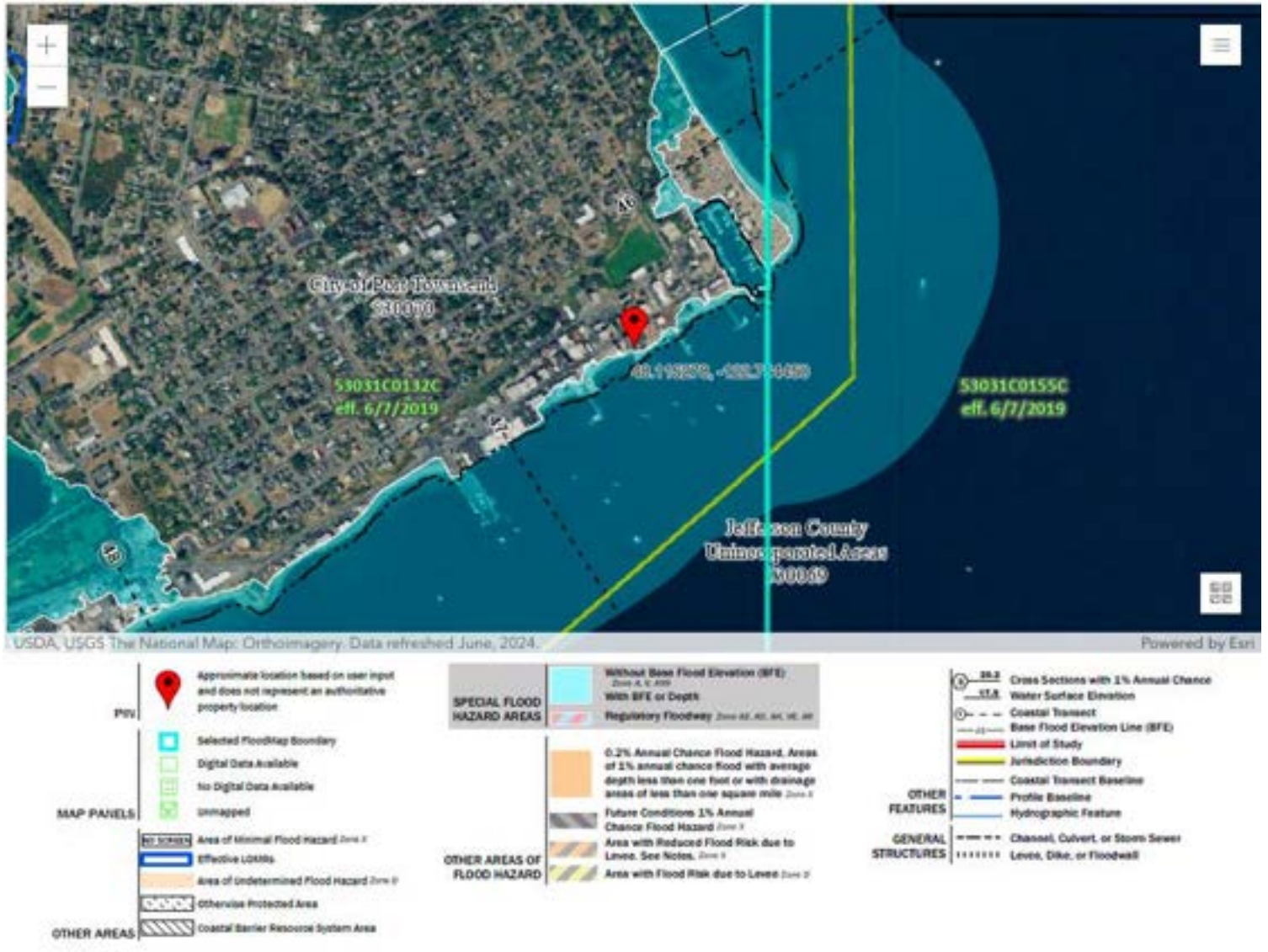
3. Environmentally Sensitive Areas



4. FEMA – FIRMS for Port Townsend (2019)

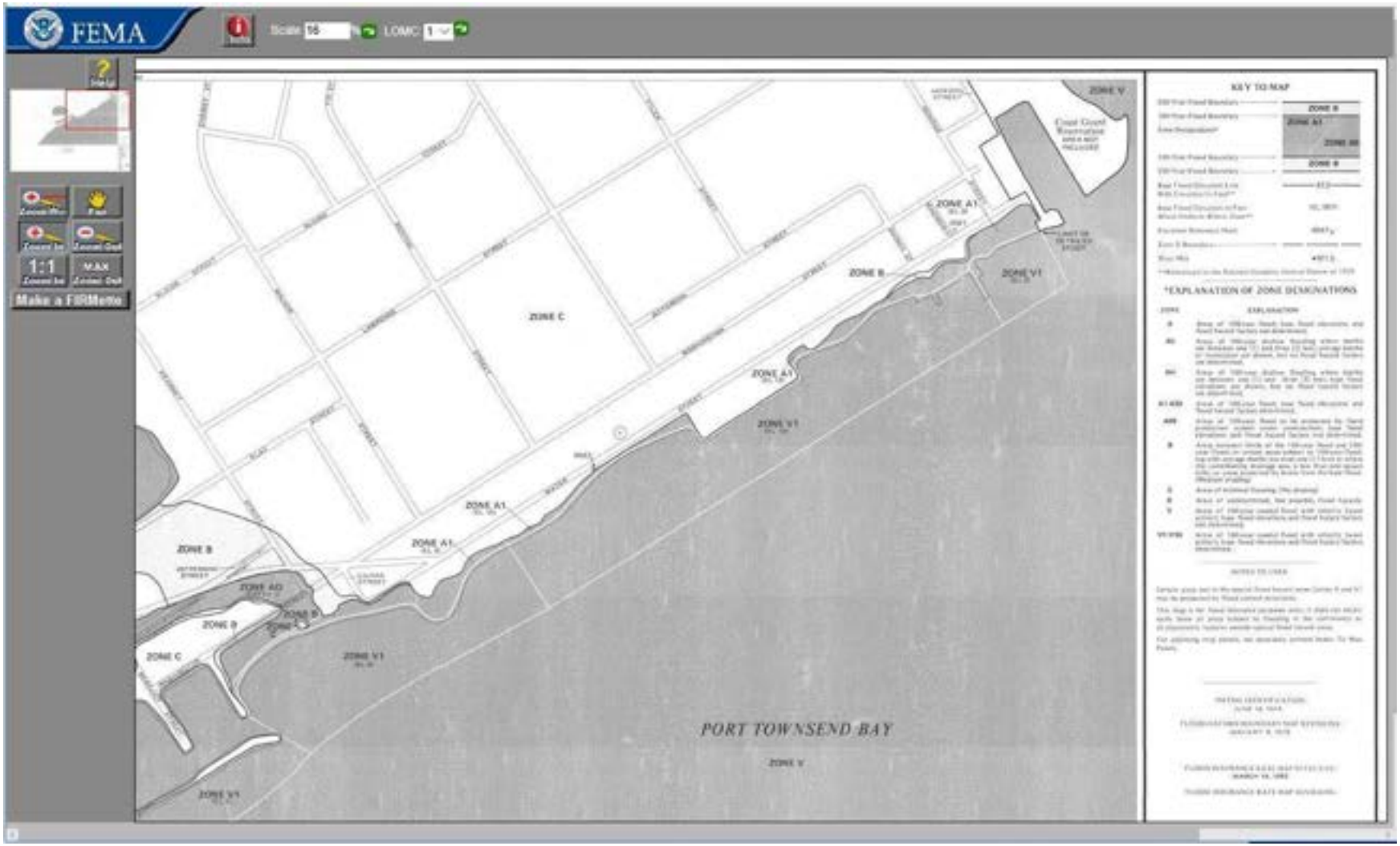


Sample FEMA FIRM (Cont.)

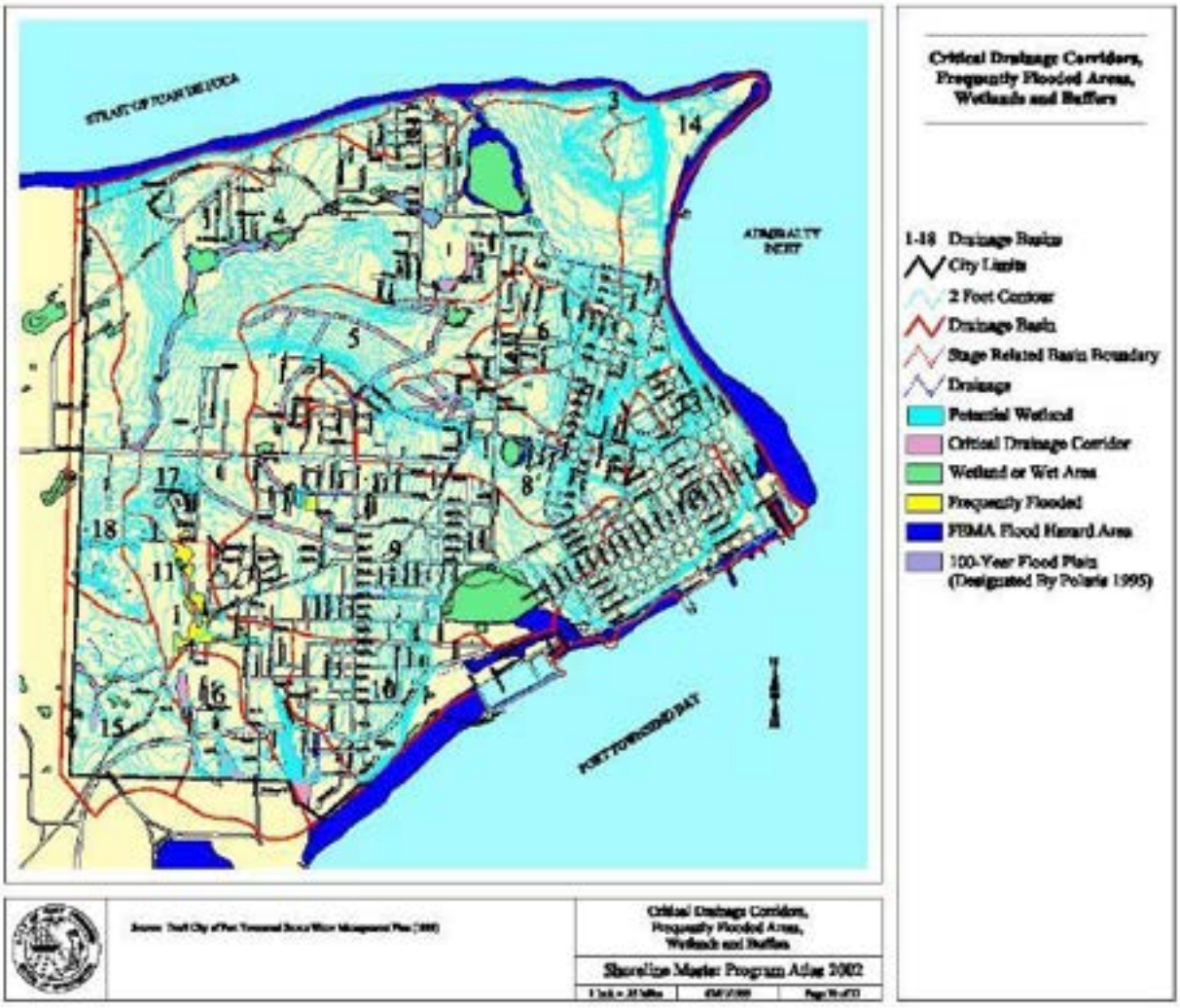


The maps are 24” x 36” and can be downloaded as a PDF at https://hazards.fema.gov/femaportal/prelimdownload/searchResult.action .

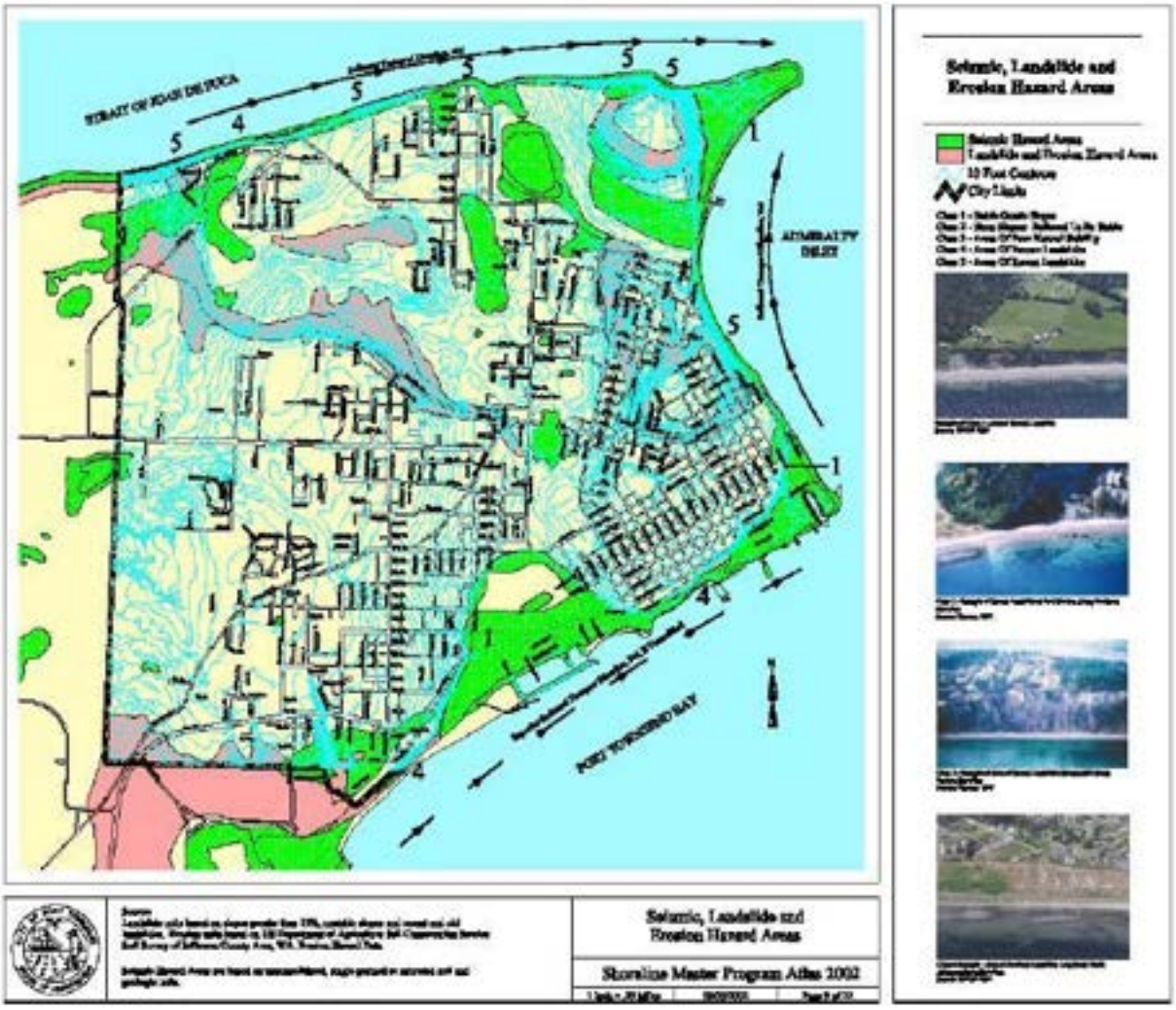
Old FEMA FIRMs Can Still Be Obtained at: https://msc.fema.gov/portal/



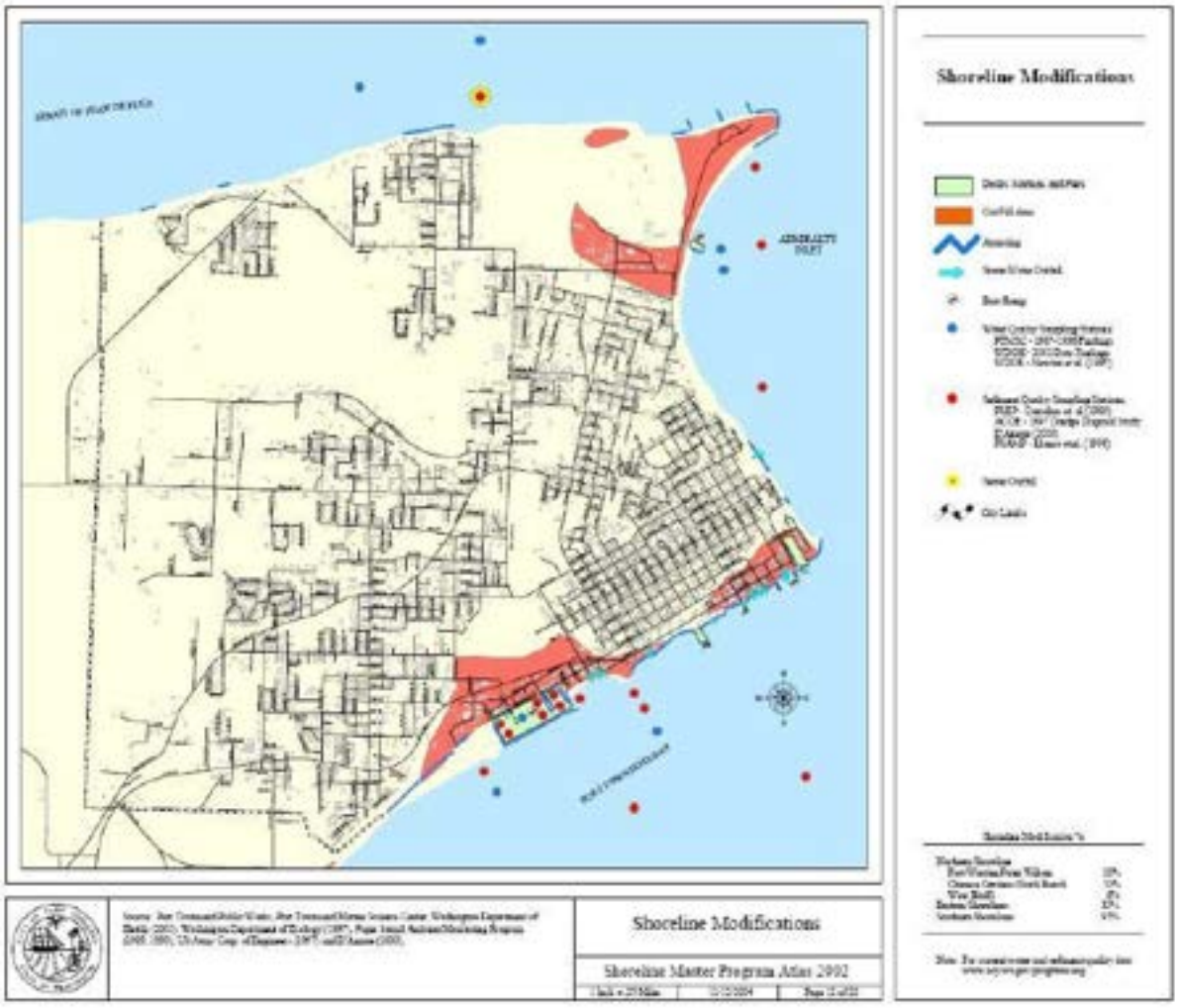
5. Critical Drainage Corridors & Frequently Flooded Areas



6. Seismic, Landslide and Erosion Hazard Areas

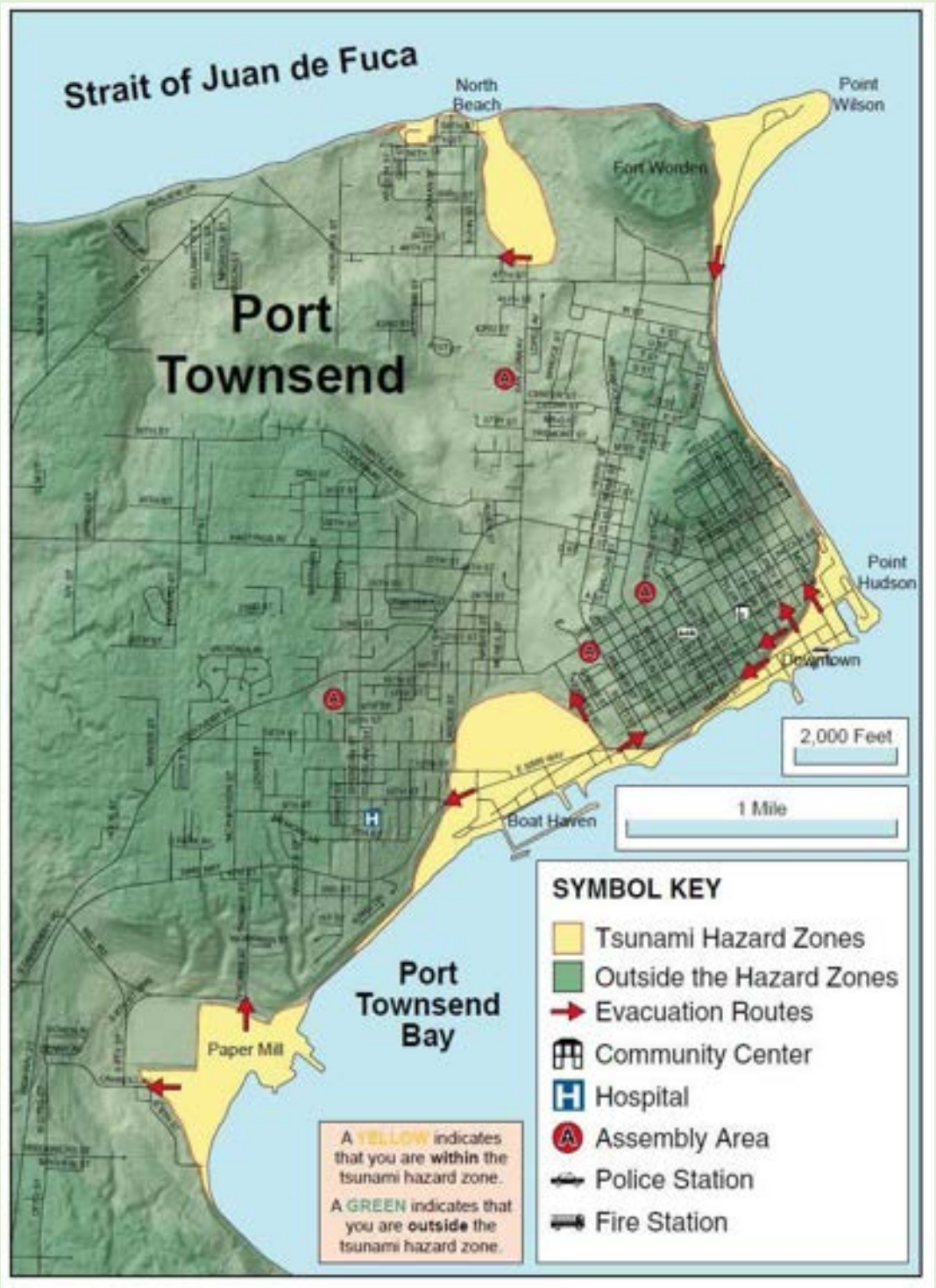


7. Shoreline Modifications



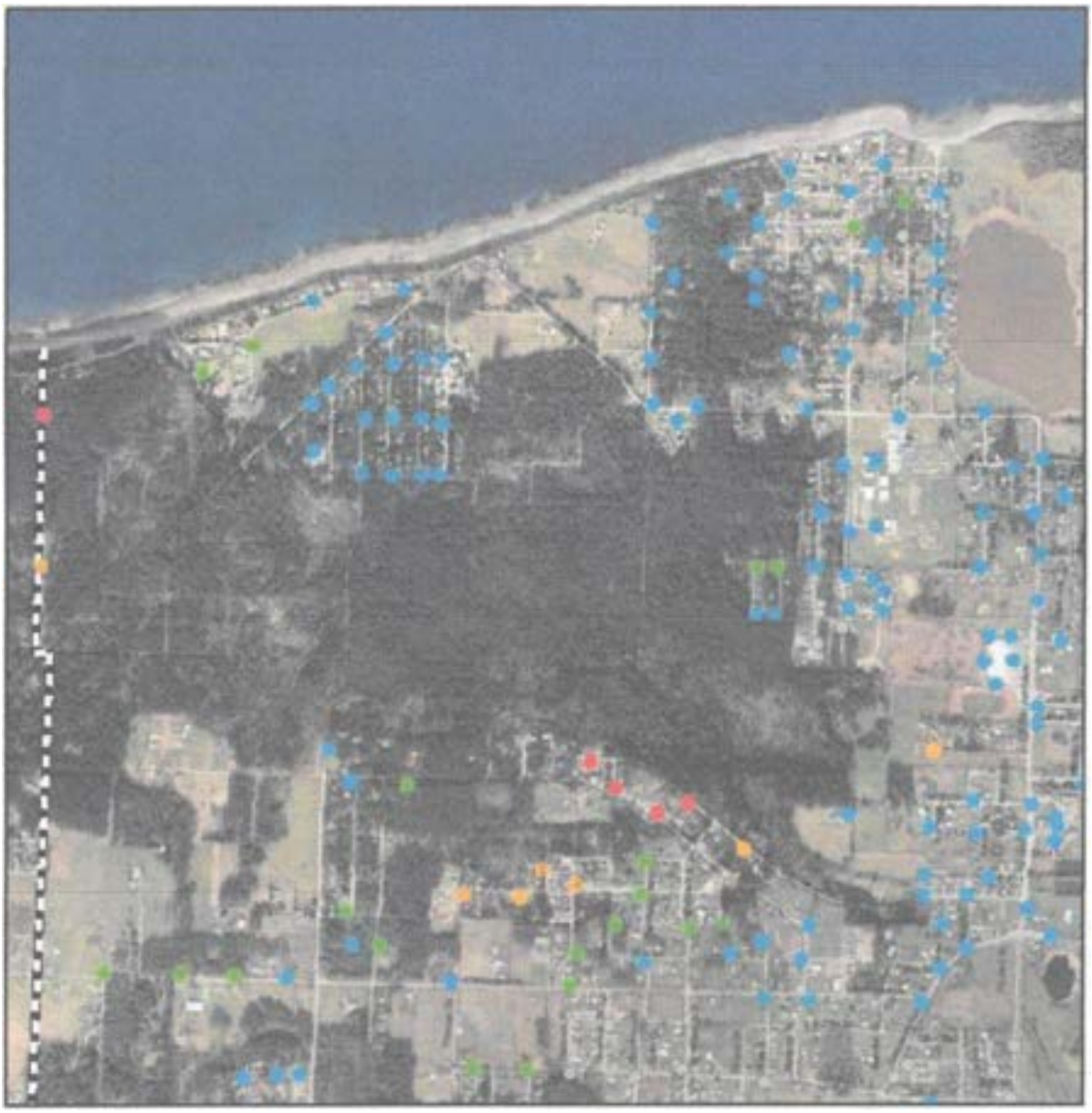
8. Tsunami Evacuation Routes – Port Townsend

Port Townsend Inundation Zones and Evacuation Routes



Source: Washington State DNR

9. Wildfire - Urban Interface Atlas Sample



10. Location of Critical Buildings



City of Port Townsend - Mitigation Strategies	
Activity ID	***Mitigation Activity Description***
OG-MH-O	Adopt and Participate in the Jefferson County - City of Port Townsend Hazard Mitigation Plan as official plan.
OG-MH-1	Identify and pursue funding opportunities to develop and implement city and county mitigation activities.
OG-MH-2	Identify, improve, and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk to natural hazards.
OG-MH-3	Educate the citizenry in the role of the 1st Responder through Citizen's Police Academy.
OG-MH-4	Train personnel on how to react in a natural disaster.

ST-MH-1	Establish a formal role for the Jefferson County Natural Hazards Mitigation Advisory Committee to develop a sustainable process for implementing, monitoring, and evaluating countywide mitigation activities.
~~ST-MH-2~~* **Complete**	Integrate goals and action items from the Jefferson County Natural Hazard Mitigation Plan into existing regulatory documents and programs where appropriate. **Processes for updating the Comprehensive Plan, etc. now include policy dovetailing with the Hazard Mitigation Plan.**
ST-MH-3*	Develop public and private partnerships to foster natural hazard mitigation program coordination in Jefferson County.
ST-MH-6	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.
ST-MH-7*	Evaluate and integrate citizen ideas into planning and implementation efforts. **(Integrated into both City planning processes and Mitigation Plan update cycle.)**
~~ST-MH-8~~* Completed 2009	Improve interoperability through coordinated purchasing, grant seeking, development of procedures and use of communications equipment and OPSCAN 1st-Responder back bone. (Rev. 2009)
~~LT-MH-1~~* **Ongoing**	Strengthen emergency services preparedness and Long-Term response by linking emergency services with natural Multi-Hazard hazard mitigation programs, and enhancing public education on a regional scale. **(This is being done with NPREP, neighborhood participation in the multiagency Cascade Rising Exercise (CRX) and with coordination with other counties.)**
LT-MH-3	Use technical knowledge of natural ecosystems and events to link natural resource management and land use organizations to mitigation activities and technical assistance.
~~ST-DR-1~~* Completed 2015	Coordinate drought policies with Port Townsend Paper. Most recent reiteration of the process occurred in 2015 as the result of Lords Lake reservoir dropping to 11 feet from its normal 70 feet. If the reservoir hits 3 feet, Port Townsend Paper will stop operations.
LT-EQ-1	Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable.

City of Port Townsend - Mitigation Strategies	
Activity ID	***Mitigation Activity Description***
~~LT-EQ-2~~* Completed	Seismically Retrofit Tunnel Lids throughout the Historic Downtown Business District. (High Priority - Underway starting in 2009.) (Rev. 2009)
LT-EQ-3	Encourage seismic strength evaluations of critical facilities in the City to identify vulnerabilities for mitigation.
LT-EQ-4	Encourage reduction of nonstructural and structural hazards in homes, schools, business, and government offices.
~~LT-EQ-5~~* Completed	Seismically retrofit Port Townsend Historical City Hall. (Completed - 2005) (Rev. 2009)

~~LT-EQ-6~~* Completed 2006	Replace Port Townsend Fire Station with seismically sound station. (Completed - 2006) (Rev. 2009)
~~LT-EQ-7~~* Completed 2009	Move Port Townsend Police Station outside of liquefaction zone. (Completed - 2009) (Rev. 2009)
~~LT-EQ-8~~* Completed 2012	Seismically Reinforce Port Townsend Library (High Priority -Under way - 2009) (Rev. 2009)
~~ST-FL-2~~* Completed 2012	Recommend revisions to standards required for development within the flood plain, where appropriate. **(Shoreline Master Plan updated.)**
ST-FL-3	Develop better flood warning systems.
~~LT-FL-2~~* **Completed 2012**	Encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in the floodplain. **(Policy included in Shoreline Master Plan update in 2012.)**
ST-WS-1	Enhance strategies for debris management for severe winter storm events.
ST-WS-2	Develop and implement programs to identify and remove hazard trees located in public right-of-way to reduce potential danger to lives, property, and public infrastructure during windstorms events. (Under way since 2007.)
LT-WS-1	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms.
~~LT-WS-2~~* **Complete**	Increase public awareness of severe winter storm mitigation activities. **Ongoing as needed through JPREP and NPREP.**
LT-WS-4	Support/encourage electrical utilities in mitigation activities to reduce power outages from storms.
~~LT-TS-1~~* Completed 2009	Move PT Police Station outside of inundation zone. (Completed Sept 2009.) (Rev. 2009)
~~ST-WF-1~~* **N/A**	Enhance Emergency Services to increase efficiency of wildfire response and recovery activities. **(Responsibility of JCFD1; not Port Townsend.)**
ST-WF-2	Educate district personnel on federal cost-share and grant programs, Fire Protection agreements, etc. so that full array of assistance to local agencies is understood.
City of Port Townsend - Mitigation Strategies	
Activity ID	***Mitigation Activity Description***
ST-WF-3	Create wildfire hazard atlas for City of Port Townsend.
LT-WF-1	Encourage development and dissemination of maps relating to the fire hazard to help educate and assist builders and homeowners in being engaged in wildfire mitigation activities, and to help guide emergency services during response.

LT-WF-3	Increase communication, coordination, and collaboration between wildland/urban interface property owners, local and county planners, and fire prevention crews and officials to address risks, existing mitigation measures, and federal assistance.
Completed 2009	Consolidate PTFD and District 6 to make more effective use of apparatus and personnel on wildfires. **(Completed PTFD and JCFD6 have been annexed by JCFD1 dba East Jefferson Fire & Rescue.)**
Completed 2006	Develop a “battalion” strategy to more effectively coordinate rural districts on wildfires. **(Completed - 2006.) (Rev. 2009)**

High Hazard Potential Dam Hazard Mitigation Planning

1. Introduction

High Hazard Potential is a classification standard for any dam whose failure or mis-operation will cause loss of human life and significant property destruction.

2. High Hazard Potential Dams in Jefferson County

Within the boundaries of Jefferson County, there are two High Hazard Potential Dams (HHPDs): Lords Lake East Dam and Lords Lake North Dam, both owned by the city of Port Townsend.



3. Incorporation of Existing Plans, Studies, Reports, and Technical Information for High Hazard Potential Dams

The Washington State Department of Ecology Dam Safety Office (DSO) and city of Port Townsend were engaged to identify existing plans, studies, reports, and technical information

relevant to the HHPD dams located within the boundaries of Jefferson County. The following are attached as appendices to this section of the Jefferson County Hazard Mitigation Plan (HMP):

Appendix A – Inventory of Dams – Jefferson County (Sep 2020)

This document is a compilation of all dams located in Jefferson County taken from Washington Department of Ecology's Inventory of Dams Report. The inventory includes information on the size, storage volume, location, hazard category, age, and owner of the dams.

Appendix B – Lords Lake Reservoir Emergency Action Plan

This document describes the procedures for responding to emergencies at Lords Lake Reservoir. It includes the following maps provided by the Washington State Department of Ecology – Dam Safety Office:

- Lords Lake East Dam – Flood Depth Map
- Lords Lake East Dam – Flood Arrival Time Map
- Lords Lake East Dam – Maximum Depth x Maximum Velocity Map
- Lords Lake North Dam – Flood Depth Map
- Lords Lake North Dam – Flood Arrival Time Map
- Lords Lake North Dam – Maximum Depth x Maximum Velocity Map

4. Risk Assessment of High Hazard Potential Dams

The following risk assessment provides an overview and analysis of the vulnerability of the city of Port Townsend and the community of Quilcene to hazards and potential losses due to HHPDs within the boundaries of Jefferson County. DSO has coordinated with the owners of HHPDs in Jefferson County to determine which issues and risks the dam is facing so that it could be included in this section of the County HMP. The following list of HHPDs identified by DSO includes summarized vulnerabilities and the potential consequences associated with dam incidents.

Lords Lake Reservoir (North Dam and East Dam)

Owner: City of Port Townsend

Vulnerabilities from Hazards:

The dams are considered together due to their close proximity. Lords Lake North and East dams are vulnerable to storms, seismic events, and landslides, as well as potential cascading impacts of these events. A dam breach due to these events would have downstream flooding potential. A breach or non-breach incident has the potential to impact the operation of the city's domestic water system.

There are potentially significant economic, environmental, and social impacts associated with incidents that result in the damage to these dams. Lords Lake Reservoir is the secondary supply of domestic water for the city of Port Townsend and industrial process water for the Port Townsend Paper Corporation.

Consequences Associated with Dam Incidents:

- Inundation of farms, businesses and over 100 homes in and around the community of Quilcene as well as roads, bridges at Highway 101 and Center Road, and city of Port Townsend water transmission pipeline.

- Disruption of domestic and industrial water supply to the city of Port Townsend and Port Townsend Paper Corporation.

These dams are rated as hazard class 1A, High downstream hazard potential (>100 homes at risk)

5. Mitigation Actions Accomplished or Ongoing to Reduce Vulnerabilities from High Hazard Potential Dams

The City of Port Townsend's Water Resources Operations Manager (under the Dept of Public Works) is responsible for overseeing and/or coordinating completion of below mitigation actions.

Daily Actions

- Record reservoir level to ensure that maximum capacity is not exceeded.
- Inspect the drainage system installed at the base of the Lords Lake East Dam.

Seasonal Actions

- Late spring, summer, and early fall – reservoir grounds maintenance and brushing which, among other benefits, prevents unwanted root growth which can compromise integrity of the earthen dams and facilitates ease of routine dam inspections.

Weekend Actions (Saturday and Sunday)

- Check structural integrity of North Dam and overflow structure. Ensure overflow intake and chute are free of debris.
- Record reservoir water level and check structural integrity of East Dam and outlet tower.

Monthly Actions

- Piezometer readings and seepage measurements are taken from all monitoring points in the East and North Dams. Observations or readings that indicate potential dam failure require activating the dam failure emergency action plan. Readings that fall slightly outside the normal shall activate a more frequent testing program until cause is determined or readings return to normal.

Annual Actions

- Conduct Annual Dam Owner Inspection and submit finding to Washington State Department of Ecology – Dam Safety Office.
- Correct any deficiencies identified in the Annual Dam Owner Inspection Report.

Quinquennial Actions

- Periodic Inspection of Lords Lake North and East Dams performed by Washington State Department of Ecology – Dam Safety Office.
- Address any deficiencies identified in the Periodic Inspection Report.
- Survey settlement monuments in the crest of the East and North Dams, and the spillway wall. Compare results with previous surveys to identify possible vertical movement in the structures.

Like other mitigation projects identified in this plan, high hazard dam mitigation actions will be continually reassessed and prioritized based on the following criteria:

- Mitigation measures that have a positive benefit/cost analysis with a BCR > 1.0.
- Mitigation measures that reduce or eliminate repetitive loss properties.
- Mitigation measures that are multi-jurisdictional and or multi-agency in nature.
- Mitigation measures that provide the greatest good for the greatest number.
- Mitigation measures that have broad-based public and/or elected official approval.
- Mitigation measures for which funding has already been secured.
- Mitigation measures that qualify for alternate and/or matching funding.

6. Mitigation Goal to Reduce Long-Term Vulnerabilities from High Hazard Potential Dams

The following objectives are a part of the long-term plan to mitigate hazards associated with high hazard potential dams within Jefferson County. Objectives listed include proposed timeline and funding sources.

- Evaluate the extent of potentially liquefiable material contained within the interior of the Lords Lake East Dam. If the risk of deformation is unacceptable, develop alternatives and complete improvements for stability under seismic loading conditions to ensure the dam meets the minimum stability requirements as per the dam safety guidelines; and to reduce earthquake-induced embankment deformations to minimize the risks of an uncontrolled release of the reservoir contents.
  Status: Engineering consultant selection was made in 2022. Geotechnical investigation, analysis and preliminary design are planned for 2023. Funding sources are city of Port Townsend and FEMA's Rehabilitation of High Hazard Potential Dams (HHPD) Grant Program. Schedule for completion of design and construction of improvements is anticipated in 2025 subject to availability of additional grant funding.
- Establish alarm levels for piezometers in the Lords Lake East and North Dams. Alarm levels would represent anomalous but not necessarily hazardous conditions. Piezometer readings at or above these levels will trigger additional monitoring and will require follow up by the engineering consultant to determine if further action is required.
  Status: Engineering consultant selection was made in 2022. Analysis is planned for 2023. Funding sources are city of Port Townsend and FEMA's Rehabilitation of High Hazard Potential Dams (HHPD) Grant Program.

Appendix A – Dam Inventory (located in Supporting Documents)

Appendix B – Lords Lake Reservoir Emergency Action Plan (located in Supporting Documents)

Jefferson County - Dam Inventory

Dam Name		Owner Name		State ID	National ID	Year Completed	Hazard Category
River or Stream Name		Impoundment Name		Latitude	Longitude	Sec Twnsfip Range	WRIA ID
Dam Types	Resevoir Purposes	Crest Lengtfi Dam Height	Surface Area	Storage Qty	Max Storage	Max Discharge	Drainage Area
Contractors Cseek Discovery Bay Dam		Disc overy eay Land Co.		JE17-2000	WA02000		J
Contractors Creek		unnamed		48.0470620 deg	122.874695 deg		
RE	R	280 ft	7 ft	10 acre—ft	13 acre ft		565.00 sq mi
Lords Lake East Dam Tr—		Port Townsend City, City Engineer		JEJ7 357	WA00357	J956	JA
Howe Creek		Lords Lake		47.8808330 deg	J22.931498 deg	T28 NR02 W533	J7
RE	S	600 ft	42 ft	560 acres	1480 acre—ft	JBRO acre—ft	J90 cfs	0.50 sq mi
Lords Lake North Dam Tr—		Port Townsend City, City Engineer		JEJ7 243	WA00243	J957	
Howe Creek		Lord s Lake		47.8877300 deg	122.93761 2 deg	728 NR02 W528	
RE	S	165 ft	42 ft	56.0 acres	1480 acre—ft	1850 acre—ft	250 cfs	0.50 sq mi
Miles Sand & Gravel Shine Reservoi r		Miles Sand & GHavel		JEJ7 2049	WA02049	20 J2	3
0 ff—stream		Miles Sand & Gravel Shine Reservoir		47.8647110 deg	J22.745749 deg		J7
RE	Q S	680 ft	24 ft	acres	acre—ft	J6 acre ft	9 cfs	0.03 sq mi
Port Townsend Paper ASB Pond		Port Townsend Paper Company		JEJ7 726	WA00726	J978	2E
0 ffstream		Port Townsend papet ASB Pond		48.0931 24 0 deg	122.805158 deg	73 0 NR01 W5 J 6	
RE	Q		28 ft	31.0 acres	550 acre-ft	615 acre-ft	0 cfs	0.05 sq mi
Wilbe Dam		James M Kelly		JEJ7 J068	WA0J068	J965	3
Tr—Puget Sound		unnamed		47.9301610 deg	J22.734325 deg	T28 NR01 ES07	J7
RE	R	310 ft	J4 ft	5.0 acres	5 acre ft	J4acre ft	J2 cfs	0.00 sq mi

LORDS LAKE RESERVOIR EMERGENCY ACTION PLAN

Jefferson County

Owner: City of Port Townsend

Revised: April 3, 2024

I. GENERAL DESCRIPTION

A. INTRODUCTION

The purpose of this "Emergency Action Plan" is to provide the pipeline supervisor and crew members with information and procedures to follow in the event of an emergency situation or unusual occurrence.

An emergency is defined as any situation which may endanger the structural integrity of the reservoir, human life and downstream property, and demands immediate attention. An unusual occurrence is defined as a situation or condition not normally encountered in the routine operation of the reservoir which may cause damage and require a temporary or permanent deviation from standard operating procedure.

Official Dam Name: Lords Lake Reservoir

Located on: Unnamed tributary to Howe Creek, tributary of Little Quilcene River

Section: 28, 33 **Township:** 28 **Range:** 2W

Dam Owner: City of Port Townsend

Dam Operator: Port Townsend Paper Corporation

Type of Dam: Earthen

North Dam Height: 40’ **Crest Length:** 165’ **Crest Width:** 15’

East Dam Height: 42’ **Crest Length:** 600’ **Crest Width:** 15’

Downstream Flood Path: Unnamed tributary, to Howe Creek, to Little Quilcene River

Downstream Hazard Classification: 1A High downstream hazard potential (>100 homes at risk)

Number of Homes in Floodplain: 144

Downstream Property Description: Over 100 homes and businesses, farms, roads, bridges at Highway 101 and Center Road, and City of Port Townsend water transmission pipeline.

Driving Directions:

From the town of Quilcene, travel approximately 2 miles north on US Highway 101. Turn west on Lords Lake Loop Road and continue for 3.4 miles to a hairpin curve located at the toe of the East Dam. Vehicle access to the East Dam is made by turning left on FS Road 28 (unmarked)and traveling a short distance to the access driveway located on the west side of the road. To access the North Dam, continue north on Lords Lake Loop Road around the hairpin curve and travel approximately 0.5 to the access road located on the west side of the road. Locked gates restrict access to site.

Alternate route to Lords Lake; from US Highway 101, approximately 6 miles north of Quilcene, turn west on Snow Creek Road. Travel 3.4 miles then turn left on Lords Lake Loop Road. In approximately 1.6 miles, the access road to North Dam will be on the right or continue another half mile to the East Dam.

B. NOTIFICATION

In the event of an emergency situation or unusual occurrence, the pipeline superintendent and/or crew member shall immediately notify Port Townsend Paper Corporation, Jefferson County Sheriff Dispatcher, and the City of Port Townsend.

The superintendent and/or crew member shall enter into the Lords Lake monitoring record the following information:

Time and Date:
Name of Person Filing Report:
Subject: (The nature of the emergency or unusual occurrence)
Location: (Where incident occurred)
Names of Persons and Agencies Notified:
Summary: (Briefly describe what occurred)

FAILURE IS IMMINENT OR IN PROGRESS

If a **failure is imminent or in progress**, downstream evacuation of the floodplain must be started immediately in accordance with the following:

1. **Contact Jefferson County Emergency Services and Jefferson County Sheriff Department to assist in notifying persons immediately downstream (see attached list for downstream addresses):**
   - Jefferson County Emergency Services - 360-385-3836 or "911"
   - Jefferson County Sheriff Department - 360-385-3831 or "911"

2. **Contact Port Townsend Paper Corporation;**

   - Pulp Mill Foreman — Mill – 360-379-2196
   - Mill Gate House — Mill - 360-379-2110

3. **Contact City of Port Townsend;**

   - Port Townsend Public Works — Office – 360-379-5096
   - City Administration — Office – 360-385-3000
   - Emergency After Hours Duty Person — Phone - 360-379-4879

4. **State Division of Emergency Management;**
   Clearly state that this is a **"dam safety emergency"**
   - Duty Officer — 24 hour – 800-258-5990

5. Contact State Dam Safety Office during regular office hours;

- Dam Safety Office 360-407-6872

This information shall be conveyed orally and in writing. Once key personnel and agencies have been alerted the following notification sequence shall be put into effect for emergency or unusual occurrence.

- Port Townsend Paper Corporation General Manager - Contact key personnel and agencies listed on the Emergency Action Call Sheet (See attached Emergency Call Sheet)

- Jefferson County Dispatcher - Sheriff Department

- City of Port Townsend Public Works - Contact key personnel on Emergency Action Call Sheet. (See attached Emergency Call Sheet)

- Washington State Patrol, Port Angeles, Washington.

A follow-up report on action taken, pending action and/or disruption of services shall be submitted by Port Townsend Paper Corporation /Port Townsend Public Works to the following state and local agencies.

- State of Washington: Department of Ecology Dam Safety Division

SLOWLY DEVELOPING FAILURE OR UNUSUAL SITUATION

If there is a **slowly developing failure** or **unusual situation**, where failure is not imminent but could occur if no action is taken, the pipeline crew should:

1. **Notify Jefferson County Emergency Services of the potential problem and keep them advised of the situation.**
   - Jefferson County Emergency Services - 360-385-3836 or "911"

2. **Contact Port Townsend Paper Corporation;**

   - Pulp Mill Foreman — Mill – 360-379-2196
   - Mill Gate House — Mill - 360-379-2110

3. **Contact City of Port Townsend;**

   - Port Townsend Public Works — Office – 360-379-5096
   - City Administration — Office – 360-385-3000
   - Emergency After Hours Duty Person — Phone - 360-379-4879

4. **Contact State Dam Safety Office for an evaluation of the dam;**

   - Dam Safety Office — 360-407-6872
   - Gustavo Ordonez — Office - 360-407-6619
Cell - 360-742-7925
gord461@ecy.wa.gov

During these contacts, find out if there are any immediate actions that can be taken to reduce the risk of failure.

If necessary, implement preventative actions described on pages 6-9 of this plan.

If situation deteriorates, be prepared to implement Notification Flowchart on Page 3.

II. EMERGENCY OR UNUSUAL OCCURRENCE

A. FAILURE OR IMPENDING FAILURE OF LORDS LAKE DAMS OR DAM

Downstream Hazard Potential: Failure of the East Dam and/or North Dam at Lords Lake Reservoir could present a hazardous situation to persons and property within the flood plain.

In the event the dams were to fail, downstream evacuation of the floodplain must begin immediately. Procedures are as follows:

1) Contact Jefferson County Sheriff by two-way radio, telephone or any available means.
2) Contact Port Townsend Paper Corporation and the City of Port Townsend Public Works Department.
3) Initiate shutdown procedures for the Big Quilcene River Diversion Dam and the Little Quilcene River Diversion Dam at the intake structures to reduce the possibility of additional flooding through damage to the main pipeline where it junctions with the reservoir below the east dam, and to stop the flow of water entering Lords Lake Reservoir.
4) If possible lower the Lords Lake level by sending water to City Lake.) Make all possible effort to assist the Sheriff's Department in alerting residents in the floodplain.

If the Pipeline Superintendent or Crew Members suspect impending failure, contact the following:

1) Contact the Port Townsend Paper Corporation or designee by two-way radio or telephone and provide as much information as possible to assist him in evaluating the situation and to determine what course of action should be taken to reduce the risk of failure. Receive instructions as to what other actions are required and implement same.
2) City of Port Townsend Public Works Department.
3) Continue monitoring the dam and providing information until the Plant Engineer or designee arrives on scene, then assist him as required.

NOTE: A determination of impending failure should be verified and notification of the Sheriff's Department should be made as soon as possible. It is imperative that all officials fully understand the situation and the questionability of failure.

B. EARTHQUAKE

Lords Lake Reservoir is located in an area subject to earthquakes of a moderate to heavy intensity. An earthquake with a magnitude of 6.5 or greater could cause damage to the East and/or North Dam. The East Dam is rated as the most susceptible to earthquake dam.

In case of an earthquake, take the following action:

1) Conduct a thorough inspection of both dams and the outlet tower. If serious damage has been sustained, immediately expedite the procedures for (Section 2A) Failure or Impending Failure of the East Dam.
2) If either dam has sustained visible damage but are still intact, report the following information to the Port Townsend Paper Corporation and City of Port Townsend as soon as possible:

a. Note the reservoir level. Briefly describe location, type and degree of damage. If surface fissures and/or slides are evident, note their location on the dam and indicate whether or not slides have subsided. Note any evidence of new springs, seeps or mire, weather conditions, unusual sounds, and other observations that may be of use in determining the extent of damage and likelihood of failure.

b. Take seepage measurements at all monitoring points. Continue taking seepage measurements, monitoring damaged areas and report any changes. Inspect entire facility and report findings. Note any turbidity in seepage.

c. If damaged areas appear to stabilize and there is no imminent danger of dam failure, take piezometer readings at all stations of both dams every 8 hours for at least 48 hours, reporting any changes or fluctuations. Be certain to report any aftershocks which may occur and whether or not they compound the situation.

3) If no danger is apparent at the time of the earthquake, continue inspection and monitoring procedures since structural damage may not always surface immediately. Secondary inspections should continue for a minimum of two weeks after all seismic activity has ceased.

NOTE: Once conditions at the dam have stabilized, an inspection of the entire Olympic Water Gravity System should be completed as soon as possible.

C. FLOODING

The possibility of flooding exists. However, due to the relatively low volume of inflow normally experienced at the reservoir throughout the year, the likelihood of flooding is minimal. The spillway located on the North Dam flows into the Little Quilcene River via Howe Creek. This overflow and drainage system is adequate to handle run-off occurring from weather patterns typical of this area.

Were a situation to develop causing the reservoir to rise above the normal surface elevation of 920 ft., the following procedures shall be initiated and reported to Port Townsend Paper Corporation General Manager or designee and City of Port Townsend.

1) Immediately shutdown the intake structure of the Little Quilcene River Diversion Dam which flows into the reservoir.

a. Note past, present and predicted weather conditions.

b. Note surface elevation of reservoir at time of shutdown.

c. Check spillway and drainage conditions at the North Dam.

d. Monitor rise rate of water surface.

e. Inspect both dams for signs of failure.

2) Initiate shutdown procedures for the Big Quilcene River Diversion Dam to reduce the possibility of additional flooding through damage to the main pipeline where it junctions with the reservoir below the east dam.

3) If possible, divert water from Lords Lake to City Lake.

4) Continue monitoring the facility until conditions stabilize.

5) If conditions continue to deteriorate, expedite procedures for (Section 2A) - Failure or impending failure of the East Dam.

D. EROSION, SLUMPING OR CRACKING OF THE DAM

1) Inspect damaged area and report the following:

a. Location and size of area affected (Note distance from top of dam).

b. Severity.

c. If discharge is evident, estimate the amount and whether discharge is clear or cloudy water.

d. Level of reservoir.

2) Contact Port Townsend Paper Corporation and City of Port Townsend, report findings, and await instructions.

E. NEW SPRINGS, SEEPS, BOGGY AREAS, SANDBOILS OR INCREASED DRAINAGE

1) Inspect the area and report the following:

a. Location and size of area affected.

b. If discharge is evident estimate the amount and whether discharge is clear or cloudy water.

c. Level of reservoir.

2) Contact Port Townsend Paper Corporation and City of Port Townsend, report findings, and await instructions.

F. LANDSLIDE

The west side of the reservoir and the area around the spillway at the north dam are areas of concern because of the steep, high mountainous terrain bordering them. Landslides in these areas could rapidly displace a large volume of water, creating wave activity and pressure capable of endangering the structural integrity of either dam.

1) If evidence of a landslide is apparent report the following information to Port Townsend Paper Corporation and City of Port Townsend:

a. Determine size and possible cause of landslide.

b. Probability of other slides or additional movement due to instability.

c. Inspect dams and outlet tower for signs of damage.

d. Level of reservoir.

e. Shut down the Little Quilcene River Diversion Dam intake structure.

The probability of a landslide occurring downstream of the dam is minimal. However, were one to occur follow the action outline in (1a), and (1b) above.

G. SEVERE STORMS

Lords Lake Reservoir is located in an area subject to severe storms. During these storms access to the reservoir can be limited because of road blockage resulting from fallen powerlines and trees.

As soon as possible, inspect the reservoir and Little Quilcene River Diversion Dam for possible damage. Note condition of access roads and report findings to Port Townsend Paper Corporation.

H. VANDALISM

Once it has been established that damage has been done to the reservoir complex through breaking, entering, or other acts of vandalism:

1) Immediately notify Jefferson County Sheriff's Office, Port Hadlock, Washington and await the arrival of a deputy.

2) Effect temporary/permanent repairs as required upon completion of investigation.

Report findings to Port Townsend Paper Corporation and the City of Port Townsend.

III. INUNDATION MAP

Inundation maps outlining the area which would be affected by dam failure have been prepared and distributed by the City of Port Townsend to all residents living in the Little Quilcene River floodplain. (See appendix)

The following is an abbreviated list of structures and populated areas within the floodplain.

- Scattered farms and homes along the Little Quilcene River.
- County and private roads along the Little Quilcene River.
- Portions of State Highway 101.
- Northern border of Quilcene, WA.
- East Quilcene.
- Olympic Gravity Water System transmission line.

In the event of dam failure, water would reach State Highway 101, the northern border of Quilcene, and East Quilcene in approximately 12-15 minutes.

IV. ATTENDANCE AND COMMUNICATIONS PROCEDURES

Port Townsend Paper Corporation employs a full-time pipeline superintendent and two full time crew members.

The pipeline supervisor resides at City Lake and is responsible for the maintenance and operation of the Olympic Water Gravity System which includes Lords Lake Reservoir. One crew member resides at the Big Quilcene River Diversion Dam and the other lives near Quilcene. All are on call 24 hours a day.

Communication for the pipeline crew is by cellular telephone and landline telephone at City Lake.

Port Townsend Paper Corporation is contacted by phone.

Refer to the Emergency Call Sheet (page 12) for phone numbers and methods of communications for the above personnel, offices, and departments.

V. WARNING SYSTEM

There are two phases which makeup the Lords Lake Reservoir Warning System:

Phase 1 - Impending Danger of Dam Failure.
Phase 2 - Dam Failure

It is the responsibility of the pipeline supervisor and crew members to identify emergency or unusual situations at the reservoir, analyze the severity of the

situation, explore all possible avenues to prevent dam failure, and initiate the notification procedures outlined in this plan.

It is the responsibility of key personnel listed in the notification procedure to notify affected local and state authorities to evacuate the floodplain.

Port Townsend Paper Corporation General Manager or designee is responsible for initiating Phase 1 and Phase 2 messages. Phase 1 message is released if there is a possibility of failure and floodplain evacuation preparations are in order. Phase 2 message is released if dam failure is imminent or in progress. Actual evacuation of the floodplain should begin immediately.

There is no audible warning system for Lords Lake Reservoir.

VI. CONSTRUCTION EQUIPMENT, MATERIALS, LABOR, AND ENGINEERING EXPERTISE

Every effort will be put forth to prevent dam failure after an emergency or unusual occurrence has been detected.

Heavy equipment is not available at the reservoir. Port Townsend Paper Corporation would contact Port Townsend Public Works Water Resources Manager, Jefferson County Road Superintendent, Port Townsend, Washington, private contractors and/or the U.S. Forest Service Office, Quilcene, Washington to arrange for necessary equipment, materials and labor.

Engineering expertise is furnished by Port Townsend Paper Corporation and Port Townsend Public Works Department.

VII. REVIEW OF EMERGENCY ACTION PLAN

Development of this Emergency Action Plan has been discussed with all key players in local, county and state agencies. Copies of this plan were furnished to these agencies requesting each to provide any input that would aid in assuring development of a viable emergency action plan.

Significant changes to this plan should be submitted and agreed upon by the above mentioned agencies prior to incorporating said changes into the plan.

VIII EMERGENCY CALL SHEET

Please refer to attachment (Page 12-13).

EMERGENCY CALL SHEET

PORT TOWNSEND PAPER CORPORATION

Pipeline Superintendent	Cell – 360-301-3363
Pipeline Crew Member	Cell – 360-301-6457
Pipeline Crew Member	Cell – 909-518-7880
Pulp Mill Foreman	Mill – 360-379-2196
Mill Gate House	Mill - 360-379-2110

CITY OF PORT TOWNSEND

Public Works Manager – Steve King	Office – 360-379-5090 Cell - 360-531-1631 sking@cityofpt.us
Water Resources Manager – Michael Spears	Office – 360-379-5001 Cell - 360-381-5091 Home - 360-774-2908 mspears@cityofpt.us
Port Townsend Public Works	Office – 360-379-5096
City Administration	Office – 360-385-3000
Emergency After Hours Duty Person (5pm-8am (M-F), Weekends & Holidays	Cell - 360-381-5084

JEFFERSON COUNTY

Sheriff's Department	Office – 360-385-3831 or "911"
Quilcene Fire Department	Office – 360-765-3333 or "911"
East Jefferson Fire Department	Office – 360-385-2626 or "911"
Jefferson County Emergency Services	Office – 360-385-3836 or "911"

Road Superintendent – Dale Brownfield	Cell – 360-301-0078
Jefferson County Maintenance Compound, Quilcene (For Heavy Equipment)	Office – 360-765-3699
Area Road Foreman – Rick Bancroft	Cell – 360-302-0029
U.S. FOREST SERVICE	
Quilcene Ranger Station	Office – 360-765-2200
WASHINGTON STATE PATROL	
Port Angeles	Office – 360-452-3394
SETON CONSTRUCTION (HEAVY EQUIPMENT)	Office – 360-385-0213
WASHINGTON STATE DEPARTMENT OF ECOLOGY	
Dam Safety Office (regular business hours)	360-407-6872
Dam Safety Office (after hours emergencies)	360-972-4426
Dam Safety Supervisor	Office - 360-407-6603 Cell - 360-972-4426
Geotechnical Engineer – Gustavo Ordonez	Office - 360-407-6619 Cell - 360-742-7925 gus.ordonez@ecy.wa.gov
WASHINGTON STATE EMERGENCY MANAGEMENT	
Clearly state that this is a **"dam safety emergency"**	
Duty Officer	24 hour – 800-258-5990

LORDS LAKE RESERVOIR WARNING MESSAGE

Phase 1 - Impending Danger of Dam Failure

Date:_____Time: _____

This is_____(Name and Title) with Port Townsend Paper Corporation in_____. I have a warning message for you regarding impending danger of dam failure at Lords Lake Reservoir, affecting Jefferson County. It is advised that persons living within the Little Quilcene River floodplain be notified of impending danger of dam failure. Preparations should begin immediately for possible evacuation.
The pipeline crew have discovered: (Brief description of problem.)

_____
_____
_____
_____

All attempts to resolve the situation are in progress. Further information regarding the stability of the dam will be issued.
Information Update: (Crews are onsite - description of progress.)

_____
_____
_____
_____

For additional information please contact _____
_____.

Phase 1 Cancellation: Floodplain is out of danger.

Evacuation is no longer necessary.

_____

Signature and Title
Port Townsend Paper Corp.

Phase 2 - Dam Failure

Date: _____ Time: _____

This is _____ with Port Townsend Paper Corporation in _____. Dam failure is imminent/the dam has failed, and it is imperative that evacuation of the Little Quilcene River floodplain begin immediately. Life threatening flooding will extend throughout the entire floodplain. Seek the nearest high ground.

For additional information please contact _____ _____.

_____

Signature and Title
Port Townsend Paper Corp.

Approval of the Plan

The undersigned persons have reviewed this Emergency Action plan and concur with
sed notification procedures.

Dam Own er: Deceased Owner Public works, city of Port Townsend

Dam Operator: Yvonne Starkey, Port Townsend Paper Corp

Local Emergency Services: R. Y "" "

Dam Safety Office: Chuck

is

DEPARTMENT OF
ECOLOGY
State of Washington

Wildfire Impacts on Dams

Please read, then insert into the Emergency Action Plan (EAP) for your dam.

Emergency Level 1 - Non-emergency, unusual event; needs response to reduce risk or likelihood of a Level 2 incident

- Incident: **Wildfire at the dam or in the upstream watershed**.
  Responses:
  - Inspect and assess damage to dam, spillways, and appurtenant facilities.
  - Assess whether access to the dam may be vulnerable to blockage by debris flows.
  - Assess whether spillways may be vulnerable to blockage by debris flows or by floating debris in the reservoir.
  - Assess increased hydrologic risk. Watershed assessment by a qualified engineer or engineering hydrologist. See Burned Watershed guidance from the Dam Safety Office at https://ecology.wa.gov/Water-Shorelines/Water-supply/Dams/Emergency-planning-response/Risk-analysis-planning
  - Determine access routes and procedures for safe access to the dam during adverse conditions, and communications procedures to activate the EAP.

- Incident: **Forecast for rain** in the vicinity of the dam or upstream watershed.
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Flash Flood Watch** (not Warning) issued by National Weather Service for the vicinity of the dam or upstream watershed.
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Actual rain** in the vicinity of the dam or upstream watershed.
  Responses:
  - Observe rnnoff and spillway performance, be prepared to respond.

Emergency Level 2 - potential failure situation; needs timely response to reduce risk or likelihood of a dam failure

- Incident: **Forecast for heavy rain** in the vicinity of the dam or upstream watershed . .
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Flash Flood Warning** issued by National Weather Service for the vicinity of the dam or upstream watershed.
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Heavy rain or thunderstorm** in the vicinity of the dam or upstream watershed.
  Responses:
  - Observe runoff and spillway performance, be prepared to respond.

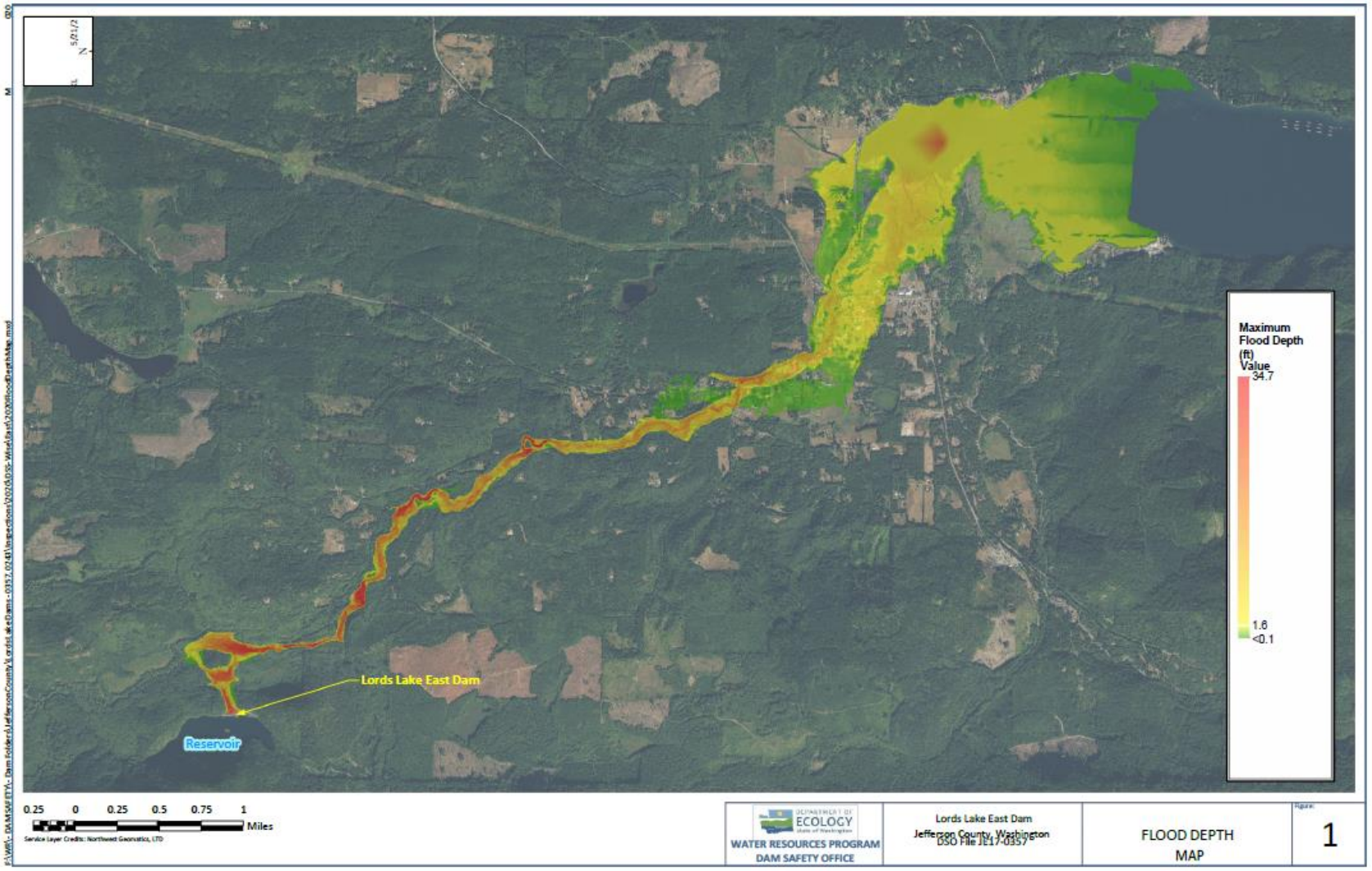
Publication No. 15-11-015 July 2015

Wildfire Impacts on Dams (con't)

Emergency Level 3 - urgent; dam failure is imminent

- Incident: Spillway begins to erode
  Response:
  - Follow Level 3 protocol in your EAP.

- Incident: Dam overtopping
  Response:
  - Follow Level 3 protocol in your EAP.

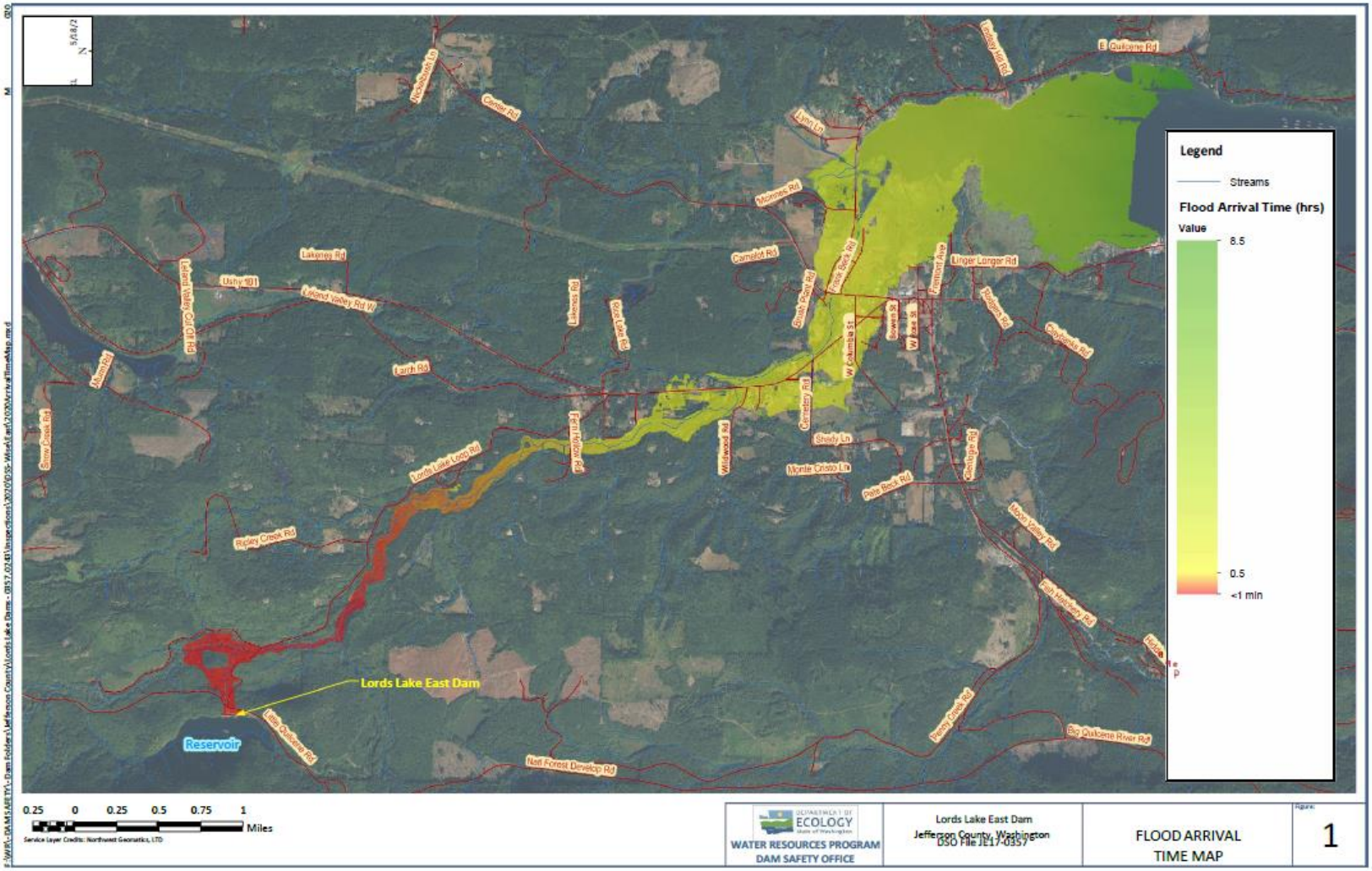


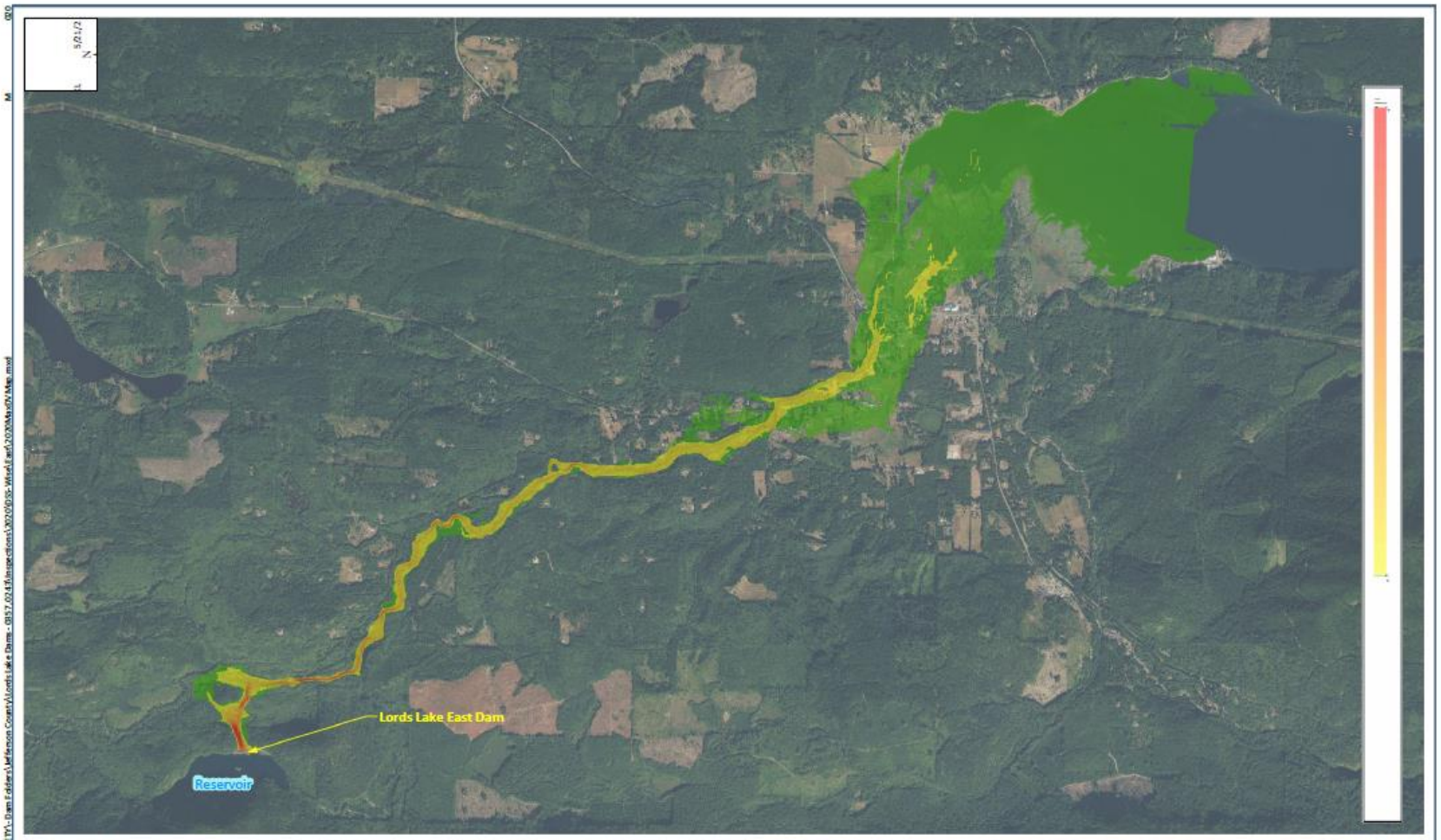
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357

FLOOD DEPTH MAP

Figure: 1


Legend
Streams
Flood Arrival Time (hrs)
Value
8.5
0.5
<1 min
Lords Lake East Dam
Reservoir
Lakeway Rd
Ushy 101
Leland Valley Rd W
Larch Rd
Lords Lake Loop Rd
Ripley Creek Rd
Monroes Rd
Camelot Rd
Linger Longer Rd
E Quilcene Rd
Big Quilcene River Rd
Nat Forest Develop Rd
Monte Cristo Ln
Pete Rock Rd
Shady Ln
Moore Valley Rd
0.25 0 0.25 0.5 0.75 1
Miles
Service Layer Credits: Northwest Geomatics, LTD
DEPARTMENT OF ECOLOGY
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE
Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357
FLOOD ARRIVAL TIME MAP
Figure:
1

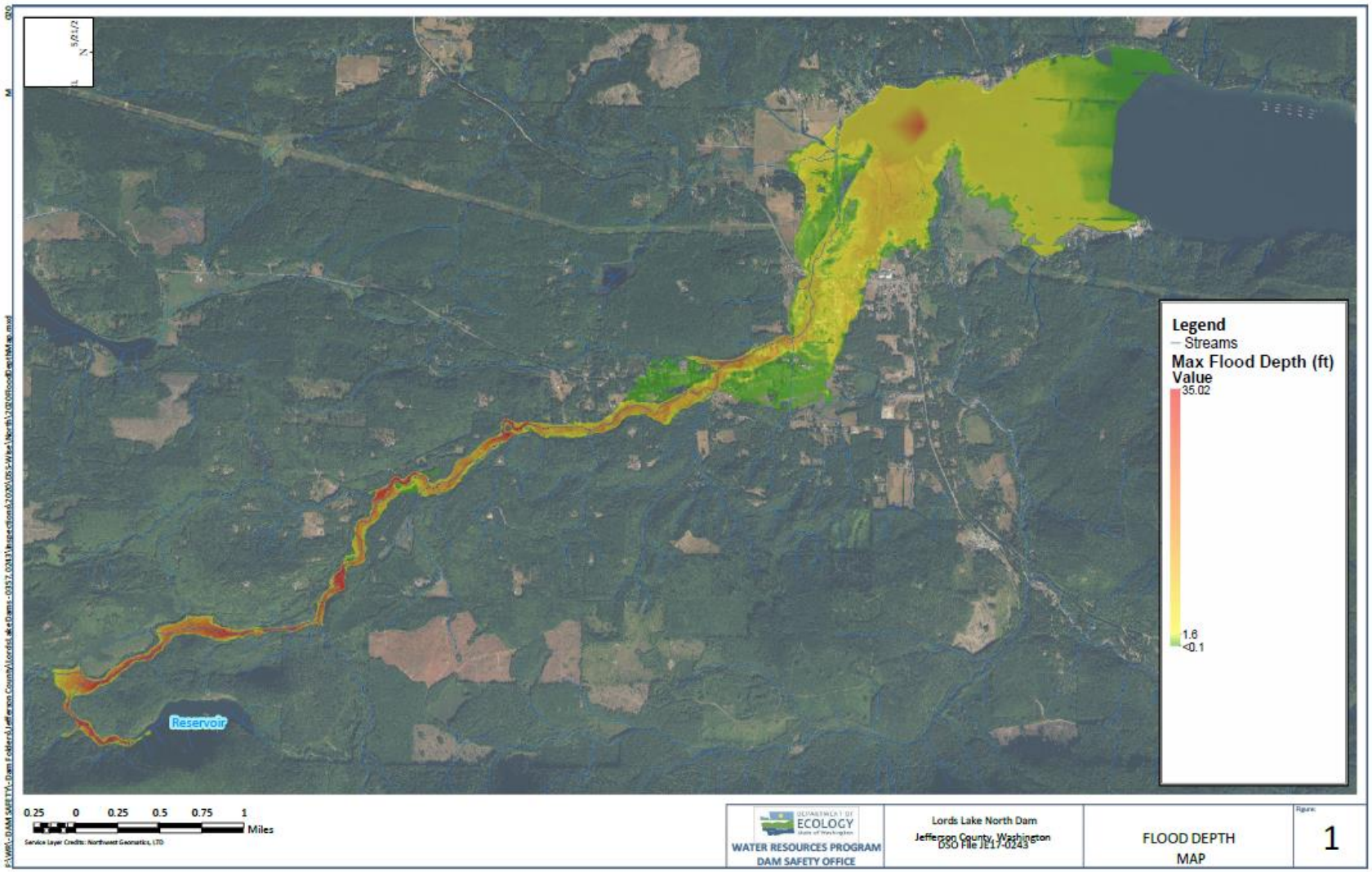


DEPARTMENT OF ECOLOGY
State of Washington
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

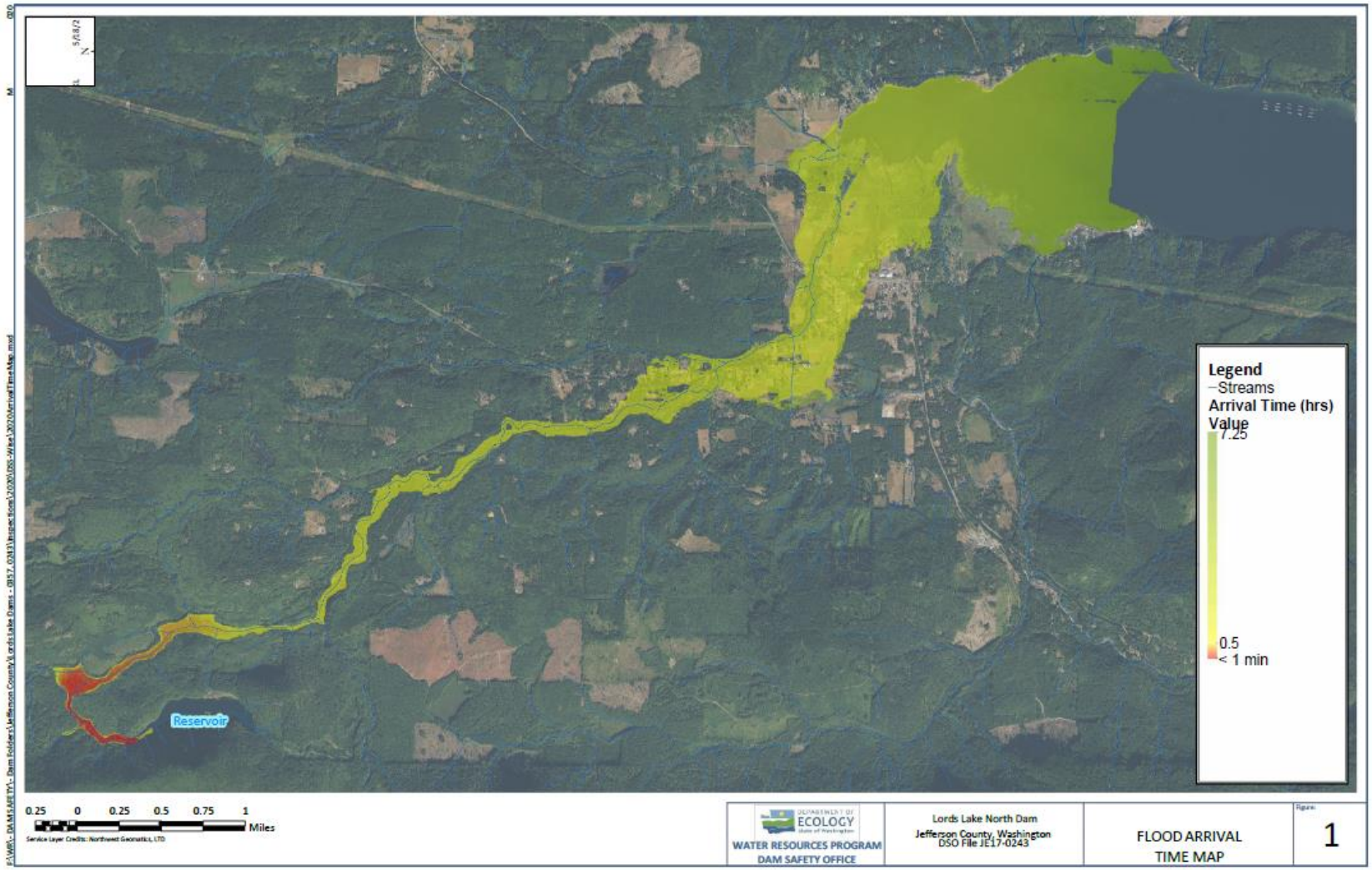
Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357

MAXIMUM DEPTH x
MAXIMUM VELOCITY MAP

Figure
1



WATER RESOURCES PROGRAM DAM SAFETY OFFICE	Lords Lake North Dam Jefferson County, Washington DSO File JE17-0243	FLOOD DEPTH MAP	Figure: 1

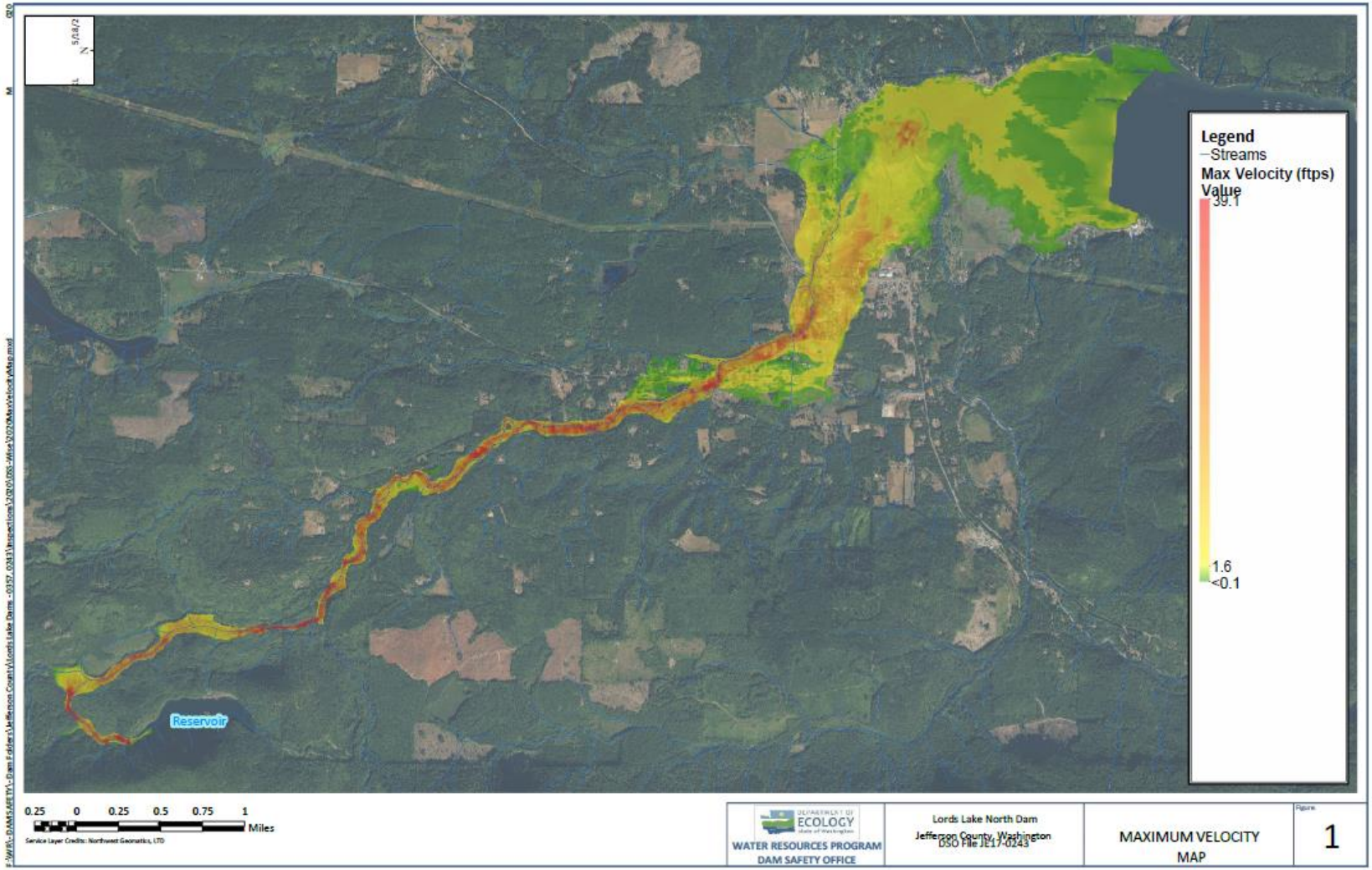


WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake North Dam
Jefferson County, Washington
DSO File JE17-0243

FLOOD ARRIVAL TIME MAP

Figure: 1



DEPARTMENT OF ECOLOGY
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake North Dam
Jefferson County, Washington
DSO File JE17-0243

MAXIMUM VELOCITY MAP

Figure 1

Unincorporated Jefferson County

Unincorporated Jefferson County Jurisdiction-Specific Vulnerability Assessment

As part of the vulnerability assessment process, Jefferson County government started an inventory of all critical facilities and is considering these critical facilities in our planning and mitigation strategy development process. Basic information on these facilities is available from public sources, and therefore, it is included in this report. Sensitive information about critical facilities has not been published.

The information contained in this document presents the results of this effort to identify the specific natural hazards threatening Jefferson County, to characterize die vulnerability of Jefferson County regarding these hazards, and to identify current as well as proposed mitigation strategies, projects and/or programs to address those vulnerabilities.

The analyses conducted by the County staff were based on the best currently available information and data regarding the characteristics of the neighborhoods identified, the natural hazards that threaten the people, property, and environment of these neighborhoods as well as the impacts these neighborhoods have suffered in past disasters. This information includes, when available, United States Census data, local tax records, local and national geographic information system data, Flood Insurance Rate Maps, hazard specific analyses, and other environmental and demographic facts. However, very often authoritative or current information simply was not available for the planning effort. In these cases, the experience, knowledge and judgment of local officials representing Jefferson County, the judgment of knowledgeable officials and simplified analyses is considered acceptable at this stage to allow the participating organizations to complete the tasks needed to develop this multi-jurisdictional natural hazards mitigation plan. As the planning continues in future years, or at the time when a proposed mitigation initiative is intended to be funded and/or implemented, the participating organizations/jurisdictions recognize that additional information and analyses may be required.

Jefferson County is committed to the implementation of the mitigation related projects/programs described in this section of the plan when and if resources become available. County government is also committed to continuing the mitigation planning process that has resulted in the development of this document, and to the ongoing cooperation with other agencies, organizations, and jurisdictions to make the County more resistant to the damages and hardships that could otherwise be the result of future natural disasters.

Jefferson County

Contact
(360) 385-8100
County Courthouse
1820 Jefferson St
Port Townsend, WA 98368

Population of Jurisdiction: 33,589 (2022 Census Estimate)
23,301 (Unincorporated)

Principle Economic Base: Government, Pulp and Paper; Marine Trades / Boatbuilding; Wood Products/Logging; Diversified Manufacturing; Tourism; and Health Care

Current Hazard Mitigation Codes/Plans/Ordinances:

- Comprehensive Plan under the Growth Management Act
- Adopted Unified Development Code (January 2002)
- Adopted Fire Code
- Adopted Building Code (2018 International Code)
- Local Water Quality Plan
- County Code
- Flood Damage Prevention Ordinances
- Participation in NFIP Program

Jefferson County is a participant in good standing in the NFIP program. NFIP participation has been institutionalized as part of the county's risk management efforts, thus assuring that NFIP requirements are routinely reviewed and that changes to local ordinances, the Shoreline Master Plan, etc. are made consistent with those requirements. Since the county's Comprehensive Use Plan, its Shoreline Master Plan, and others have specific review and update cycles, NFIP-related changes normally occur during a planned review and update unless specific circumstances such as an externally mandated implementation date dictates otherwise.

Jefferson County attempted to become a participant in the Community Rating System (CRS) in 2008, but the effort fell short due to the loss of key personnel working on the project. In 2009 and 2010, the Jefferson County Department of Community Development (DCD) was reduced by 50% due to the loss of revenue from construction permits. This resulted in the effort to become a CRS participant being pushed back in priority as the remaining staff focused primarily on revenue generating activities and external mandates.
The county is still operating with reduced staffing in DCD.

National Flood Insurance Program (NFIP) Participation

Date Joined NFIP: **07/19/82**[2] CID: **530069** Last Community Assistance Visit: **08/16/2005** Number of NFIP policies in force: 140[1] Floodplain Ordinance: **Chap 15.15 Jefferson County Code** **NFIP Status:** **Initial Flood Hazard Boundary Map (FHBM)** Initial FHBM Identified: 06/21/77[2] Initial Flood Insurance Rate Map (FIRM)	Current Effective Map Date: 06/07/19[2] FIRM Identified: 07/19/82[2] Total Number of Paid Claims (2017-2022): **5**[3] $ Amount of Paid Claims: **$127,773.96**[2] Total Number of Repetitive Claim Properties: **1** Value of Repetitive Claim Properties: **$70,695 (2016)**

1. Policy Information by State, NFIP BureauNet, 8/31/2023. Accessed October 2023. Available at: https://nfipservices.floodsmart.gov//reports-flood-insurance-data
2. Community Status Book https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book
3. Historical NFIP Claims Information and Trends https://www.floodsmart.gov/historical-nfip-claims-information-and-trends

Jefferson County is a participant in good standing in the NFIP program, with the Department of Community Development tasked as the lead county agency in charge of carrying out NFIP requirements. NFIP participation has been institutionalized as part of the county's risk management efforts, thus assuring that NFIP requirements are routinely reviewed and that changes to local ordinances, the Shoreline Master Plan, etc. are made consistent with those requirements. Since the county's Comprehensive Use Plan, its Shoreline Master Plan, and others have specific review and update cycles, NFIP-related changes normally occur during a planned review and update unless specific circumstances such as an externally mandated implementation date dictates otherwise.

Jefferson County applied to become a Community Rating System (CRS) participating municipality in 2006 after FEMA's 2005 CAV (see attached). FEMA recognized the city's floodplain management efforts and rated it a CRS 7 community, followed by an improved rating the following year where Jefferson County was rated a CRS 6 community in 2007. During the 2008/09 great recession, county staff could no longer comply with the CRS program documentation requirements due to layoffs. In 2009 and 2010, the Jefferson County Department of Community Development (DCD) was reduced by 50% due to the loss of revenue from construction permits. This resulted in the county's failure to comply and removal from the CRS program. Nonetheless, Jefferson County remained a member of the National Flood Insurance Program, and the institutionalized floodplain management review procedures largely continued.

Beginning in 2021, the county renewed its efforts to streamline flood management process, educate staff, and re-enroll in CRS and NFIP participation is institutionalized as part of the county's risk and floodplain management efforts, thus assuring that NFIP requirements are routinely reviewed. Changes to local flood damage prevention ordinance were adopted in 2024, and a thorough review and update of policies, procedures, and inspections occurred upon the completion of the 2023 Community Assistance Visit and Jefferson County is now attempting to re-enroll in the CRS program.

The county has one residential repetitive loss property.

Planning Methodologies

To make jurisdiction-wide analysis of the population at risk for each hazard type feasible and practical for mitigation planning purposes, a simplified approach has been used. The estimate of the population at risk for specific hazards is accomplished in the following manner: The population in a specific neighborhood is estimated by local planners, based on readily available data or their best judgment in the absence of suitable data. The population could be residents, workers, visitors, institutionalized individuals, mixed population types, etc., depending on the characteristics of the neighborhood. The percentage of the area of the specific neighborhood threatened by the identified hazard is then estimated by local planners, again based on readily available data or their best judgment. The percent of the neighborhood at risk is then used as a multiplier to determine the estimated number of people at risk from that hazard. The methodology is simplistic but conservative, in that it assumes occupied structures are uniformly distributed throughout the neighborhood in relation to the area of risk, that the population is present in the neighborhood on a 24 hour, 7-day basis, and that all individuals are equally vulnerable to the impacts of the hazard event. The derived estimates for the number of people at risk may therefore be higher than actually is the case, but the estimates are considered satisfactory to support the local mitigation planning process.

To make jurisdiction-wide analysis of the dollar value of properties at risk for each hazard type feasible and practical for mitigation planning purposes, a simplified approach has been used. The estimate of the dollar value of properties at risk for specific hazards is accomplished in the following manner: The number of structures in a specific neighborhood and the average dollar value for those structures is estimated by local planners, based on readily available data or their best judgment in the absence of suitable data. The percentage of the specific neighborhood threatened by the identified hazard is then estimated by local planners, again based on readily available data or their best judgment. The percent of the neighborhood at risk is then used as a multiplier to determine the estimated number of structures at risk from that hazard. This number is then multiplied by the estimated average cost of the structures to derive an estimated total value of the property at risk of damage in that neighborhood from the identified hazard. The methodology is simplistic but conservative, in that it assumes structures are uniformly distributed throughout the neighborhood in relation to the area of risk; that the hazard threatens the entire value of each structure; and that structures are equally vulnerable to the impacts of the hazard. The derived estimates for the dollar value of property at risk may therefore be higher than would actually be the case, but the estimates are considered satisfactory to support the local mitigation planning process.

To make analysis of the dollar value of critical assets for each hazard type, insurance records were obtained for all public buildings. Tax roles were used for the valuation of districts and of specific buildings or locations, as appropriate.

DAMAGE & DISASTER EVENTS - JEFFERSON COUNTY[3]

The section following this one shows the Federal Disaster Declarations for Washington State for the last 67 years. However, every year since 2009, the County incurred significant damage from events that were not necessarily federally declared disasters. Most of the recovery funds came through a combination of county funds, Federal Highway Administration (FHWA), and the County Road Administration Board (CRAB).

Table 1. Disaster Expenditures on County Roads 2016 - 2022

Year	Expenditure
2016	$2,093,155.00
2017	$707,534.00
2018	$301,188.00
2019	$226,658.00
2020	$481,625.00
2022	$158,342.00

Table 2. Significant Road Damage FEMA Participated in Funding

Event Year	Amount	Characterization
2016	$1,450,000.00*	Undie Road Relocation
2016-2021	$250,000.00*	Various Windstorms
Seeking Funding to Assist Recovery		

2015	$700,000.00	Oil City Road; M.P. 8.8-8.9; Washout. Pending review of environmental documentation
2021	$500,000.00	Lord Lake Loop repair. Currently under review.
2021	$500,000.00	Shine Road Repair. Currently under review.
2024	$650,000	Upper Hoh Road Washout

*Approximate Valuation

DISASTER EVENTS - JEFFERSON COUNTY[4]

The following table shows the Federal Disaster Declarations for Washington State for the last 67 years. Declarations that directly affected Jefferson County are highlighted in **RED**, while declarations that affected adjacent counties are highlighted in **BLUE**. Jefferson County is impacted by disasters in neighboring counties in two ways:

1. It has mutual aid agreements with adjacent counties, so wildfires, windstorms, and landslides, for example, can and do result in Jefferson County resources being expended; and

2. Since Jefferson County is on a peninsula, strategically occurring disasters in neighboring counties can disrupt deliveries of food and fuel to Jefferson County just when it is needed most. An earthquake or storm that takes out the Hood Canal Bridge, for example, will cause major economic damage to Jefferson County.

Federal Disaster Declarations Washington State 1956-2023

Number	Date	Counties	Incident Description	Total Event P.A. Cost Estimate	Public Assistance Awarded	Declaration Type
5481	8/19/2023	Spokane county	Oregon Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5479	8/19/2023	Spokane county	Grey Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5472	7/30/2023	Okanogan (County)	Eagle Bluff Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5470	7/23/2023	Klickitat county	Newell Road Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5469	7/11/2023	Grant county	Baird Springs Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5468	7/5/2023	Mason county	Mcewan Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5467	7/3/2023	Skamania county	Tunnel Five Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
4682	1/12/2023	Clallam, Island, Jefferson, Lewis, Okanogan, Skagit, Skamania, Snohomish, and Wahkiakum Counties	Severe winter storm, straight-line winds, flooding, landslides, and mudslides	$17,752,607	Not Yet Available	Major Disaster Declaration
5456	10/17/2023	Clark, Skamania county	Nakia Creek Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration

5455	9/10/2022	King, Snohomish county	Bolt Creek Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5447	8/4/2022	Adams county	Lind Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
4650	3/29/2022	Cowlitz, Franklin, Grays Harbor, Jefferson, Klickitat, Lewis, Mason, Pacific, Skagit, Skamania, Thurston, and Wahkiakum Counties & Skokomish Indian Tribe, Quinault Indian Nation, Shoalwater Bay Indian Tribe of the Shoalwater Bay Indian Reservation, Squaxin Island Tribe of the Squaxin Island Reservation, Hoh Indian Tribe, Nisqually Indian Tribe, Confederated Tribes of the Chehalis Reservation, Swinomish Indian Tribal Community, and the Upper Skagit Indian Tribe	Severe Winter Storms, Snowstorms, Straight-line Winds, Flooding	$25,180,206	Not Yet Available	Major Disaster Declaration
4635	1/5/2022	Clallam, Hoh Indian Reservation, Island, Jefferson, Lewis, Lummi Indian Reservation, Nooksack Indian Reservation, Quileute Indian Reservation, San Juan, Skagit, Swinomish Indian Reservation, Whatcom counties	Flooding and mudslides	NO PDA AVAIL	Not Yet Available	Major Disaster Declaration
4631	6/21/2021	Colville Indian Reservation	Wildfire	$3,385,468	Not Yet Available	Major Disaster Declaration

5415	8/19/2021	Yakima Fire	Schneider Springs Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5414	8/18/2021	Chelan county	Twenty-five Mile Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5410	8/16/2021	Okanogan county	Muckamuck Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5411	8/16/2021	Stevens county	Ford Corkscrew Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5401	7/20/2021	Okanogan county	Cedar Creek Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5398	7/14/2021	Chelan county	Red Apple Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5397	7/13/2021	Colville Indian Reservation	Chuweah Creek Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5395	7/6/2021	Spokane county	Andrus Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
4593	4/4/2021	Clallam, Columbia, Cowlitz, Grays Harbor, Island, Jefferson, Klickitat, Lewis, Mason, Okanogan, Pacific, Pend Oreille, Puyallup Indian Reservation, Skagit, Skamania, Snohomish, Spokane, Wahkiakum counties	Severe Winter Storm, Straight-Line Winds, Flooding, Landslides, and Mudslides	$17,444,959	Not Yet Available	Major Disaster Declaration

4584	2/4/2021	Colville Indian Reservation, Douglas, Ferry (County), Franklin, Kittitas, Lincoln, Okanogan, Pend Oreille, Skamania, Whitman, Yakama Reservation, Yakima counties	Wildfires and straight-line winds	$37,116,261	Not Yet Available	Major Disaster Declaration
5360	9/9/2020	Pierce county	Summer Grade Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5359	9/9/2020	Thurston county	Bordeaux Road Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5355	9/8/2020	Spokane, Whitman county	Babb Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5351	9/7/2020	Colville Indian Reservation, Douglas, Okanogan counties	Cold Springs/Pearl Hill Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5352	9/7/2020	Chelan county	Apple Acres Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration

5342	9/1/2020	Yakima county	Evans Canyon Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5338	8/20/2020	Okanogan county	Palmer Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5330	8/17/2020	Yakama Reservation, Yakama county	North Brownstown Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5323	7/28/2020	Okanogan county	Anglin Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5320	7/12/2020	Douglas county	Road 11 Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
4539	4/23/2020	Columbia, Garfield, Grays Harbor, Island, King, Lewis, Mason, Pacific, San Juan, Skagit, Snohomish, Thurston, Wahkiakum, Walla Walla, and Whatcom Counties	Severe storms, flooding, landslides, and mudslides	$4,883,715	Not Yet Available	Major Disaster Declaration

4481	4/22/2022	ALL	COVID-19 Pandemic	NO PDA AVAIL	Not Yet Available	Major Disaster Declaration
3427	3/13/2020	ALL	COVID-19	NO PDA AVAIL	Not Yet Available	Emergency Declaration
3507	3/13/2020		Tulalip Tribes of Washington COVID -19	NO PDA AVAIL	Not Yet Available	Emergency Declaration
4418	3/4/2019	Clallam, Grays Harbor, Island, Jefferson, Mason, Pacific, Snohomish and Whatcom	Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides, Tornado counties	$17,779,710	Not Yet Available	Major Disaster Declaration
4384	8/17/2018	Confederated Tribes of Colville Indian Reservation	Flooding	$356,438	Not Yet Available	Major Disaster Declaration
5273	8/13/2018	Ferry County	Boyd's Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration

5271	8/12/2018	Douglas, Grant County	Grass Valley Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5270	8/11/2018	Yakama Reservation	Hawk Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5279	8/11/20218	Chelan county	Cougar Creek Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5266	8/4/2018	Lincoln county	Angel Springs Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5216	7/28/2018	Douglass county	Chelan Hills Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5257	7/20/2018	Grant county	Buckshot Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration

5254	7/17/2018	Spokane county	Upriver Beacon Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5253	7/10/2018	Kittitas county	Ryegrass Coulee Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5200	9/22/2017	Kittitas county	Jolly Mountain Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5187	6/28/2017	Yakima county	South Wenas Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5182	5/27.2017	Chelan county,	Stromberg Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
4309	4/21/2017	Adams, Benton, Columbia, Ferry, Franklin, Grant, King, Lewis, Lincoln, Pend Oreille, Skamania, Spokane, Wahkiakum, Walla Walla, Whatcom counties	Severe Winter Storms, Flooding, Landslides, and Mudslides	$26,612,080	Not Yet Available	Major Disaster Declaration

4253	2/2/2016	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Skamania, and Wahkiakum counties	Severe Winter Storm, Straight-Line Winds, Flooding, Landslides, Mudslides, and a Tornado	$19,258,007	$77,852.15	Major Disaster Declaration
4249	1/15/2016	Chelan, Clallam, Garfield, Island, Jefferson, Kittitas, Lewis, Lincoln, Mason, Pend Oreille, Skamania, Snohomish, Spokane, Stevens, Wahkiakum, and Whitman counties	Severe Storms, Straight-line Winds, Flooding, Landslides, and Mudslides	$21,743,433.00	$1,209,209.13	Major Disaster Declaration
4243	10/20/2015	Chelan, Ferry, Lincoln, Okanogan, Pend Oreille, Stevens, Whatcom and Yakima; as well as the Confederated Tribes of the Colville Reservation	Wildfires and Mudslides	$41,736,858	$4,809,743.86	Major Disaster Declaration
4242	10/15/2015	Clallam, Grays Harbor, Island, Jefferson, Snohomish and Whatcom counties	Severe Windstorm	$12,021,594	$1,222,139.66	Major Disaster Declaration
5113	9/14/2015	Klickitat County	Horsethief Butte Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5109	8/24/2015	Skagit and Whatcom counties	Goodell Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5108	8/21/2015	Ferry and Stevens County	Renner Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
3372	8/21/2015	Asotin, Chelan, Douglas, Ferry, Klickitat,	Wildfires	NO PDA AVAIL	Not Yet Available	Emergency Declaration

5106	8/19/2015	Okanogan County	Twisp River Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5104	8/15/2015	Okanogan County	Okanogan County Fire Complex	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5103	8/15/2015	Stevens County	Stevens County Fire Complex	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5101	8/15/2015	Ferry County	Stickpin Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5100	8/14/2015	Ferry County, Colville Reservation	Chelan Fire Complex	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5098	8/14/2015	Okanogan County	Nine Mile Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5094	8/5/2015	N/A	Highway 8 Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5090	7/21/2015	Walla Walla County	Blue Creek Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5087	6/29/2015	Chelan County	Sleepy Hollow Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
4188	8/11/2014	Kittitas County, Okanogan County and the Confederated Tribes of the Colville Reservation	Wildfires	$34,978,421	$23,679,025.91	Major Disaster Declaration
5072	8/8/2014	N/A	Hansel Fire	NO PDA AVAIL	$11,319.08	Fire Management Assistance Declaration
5071	8/3/2014	N/A	Snag Canyon Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration

3371	7/23/2014	State of Washington	Wildfires	NO PDA AVAIL	Not Yet Available	Emergency Declaration
5064	7/19/2014	N/A	Saddle Mountain Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5063	7/19/2014	N/A	Watermelon Hill Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5062	7/17/2014	N/A	Carlton Complex Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5061	7/17/2014	N/A	Chiwaukum Fire	NO PDA AVAIL	$47,278.34	Fire Management Assistance Declaration
5059	7/10/2014	N/A	Mills Canyon Fire	NO PDA AVAIL	$88,250.84	Fire Management Assistance Declaration
5058	7/10/2014	N/A	Lake Spokane Fire	NO PDA AVAIL	$272,586.98	Fire Management Assistance Declaration
4168	4/2/2014	Snohomish County, including the lands associated with the SaukSuiattle, Stillaguamish, and Tulalip Tribes	Flooding and Mudslides	$53,235,000	$27,351,662.07	Major Disaster Declaration
3370	3/24/2014	State of Washington	Flooding and Mudslides	NO PDA AVAIL	Not Yet Available	Emergency Declaration
5048	8/21/2013	N/A	Eagle Fire	NO PDA AVAIL	$2,273,317.23	Fire Management Assistance Declaration
5042	8/10/2013	N/A	Mile Post 10 Fire	NO PDA AVAIL	$908,893.49	Fire Management Assistance Declaration
5038	7/30/2013	N/A	Colockum Tarps Fire	NO PDA AVAIL	$6,824,731.93	Fire Management Assistance Declaration

4083	9/25/2012	Ferry and Okanogan counties and the Confederated Tribes of the Colville Reservation	Severe Storm, Straight-line Winds, and Flooding	NO PDA AVAIL	$2,860,240.58	Major Disaster Declaration
5020	9/20/2012	Kittitas and Chelan counties	Table Mountain Fire	NO PDA AVAIL	$3,030,510.33	Fire Management Assistance Declaration
5018	9/13/2012	Chelan County	Peavine Fire	NO PDA AVAIL	$285,252.85	Fire Management Assistance Declaration
5017	9/12/2012	Chelan County	Poison Fire	NO PDA AVAIL	Not Yet Available	Fire Management Assistance Declaration
5015	9/10/2012	Chelan County	Byrd Canyon Fire	NO PDA AVAIL	$219,570.61	Fire Management Assistance Declaration
5012	9/9/2012	Chelan County, Douglas and Grant counties	1st Canyon Fire	NO PDA AVAIL	$528,668.37	Fire Management Assistance Declaration
5013	9/9/2012	Chelan County	Barker Canyon Fire	NO PDA AVAIL	$775,643.48	Fire Management Assistance Declaration
5011	9/8/2012	N/A	Highway 141 Fire Complex	NO PDA AVAIL	$1,803,712.29	Fire Management Assistance Declaration
5005	8/14/2012	N/A	Taylor Bridge Fire	NO PDA AVAIL	$6,669,639.04	Fire Management Assistance Declaration
4056	3/5/2012	Clallam, Grays Harbor, King, Klickitat, Lewis, Mason, Pierce, Skamania, Snohomish, Thurston, and Wahkiakum	Severe Winter Storm, Flooding, Landslides, and Mudslides	$32,345,445	$29,701,941.59	Major Disaster Declaration
2966	9/8/2011	N/A	Monastery Fire Complex	NO PDA AVAIL	$1,392,551.94	Fire Management Assistance Declaration
1963	3/25/2011	King, Kittitas, Klickitat, Lewis, Skagit,	Severe Winter Storm, Flooding, Landslides, and Mudslides	$8,697,563	$3,480,030.93	Major Disaster Declaration

2854	8/27/2010	N/A	Slide Creek Fire	NO PDA AVAIL	$579,945.39	Fire Management Assistance Declaration
2848	7/19/2010	Yakima County	Cowiche Mills Fire	NO PDA AVAIL	$675,577.69	Fire Management Assistance Declaration
2827	8/22/2009	N/A	Dry Creek Fire Complex	NO PDA AVAIL	$225,175.41	Fire Management Assistance Declaration
2826	8/22/2009	N/A	Oden Road Fire	NO PDA AVAIL	$1,781,984.76	Fire Management Assistance Declaration
2823	7/29/2009	Chelan County	Union Valley Fire	NO PDA AVAIL	$640,027.58	Fire Management Assistance Declaration
1825	3/2/2009	Clallam, Clark, Columbia, Cowlitz, Garfield, Grays Harbor, Island, Jefferson, King, Klickitat, Lewis, Lincoln, Mason, Pacific, Pend Oreille, Skagit, Skamania, Snohomish, Spokane, Stevens, Thurston, Wahkiakum, Walla Walla, and Whatcom counties	Severe Winter Storm and Record and Near Record Snow	$28,544,162	$26,272,104.00	Major Disaster Declaration
1817	1/30/2009	Adams, Asotin, Benton, Chelan, Clallam, Columbia, Cowlitz, Franklin, Grays Harbor, Jefferson, King, Kittitas, Klickitat, Lewis, Mason, Pacific, Pierce, Skagit, Skamania, Snohomish,	Severe Winter Storm, Landslides, Mudslides, and Flooding	No P.A. Cost Estimate in the PDA	$51,030,994.18	Major Disaster Declaration

2663	8/8/2006	N/A	Valley Mill Fire	NO PDA AVAIL	$619,658.59	Fire Management Assistance Declaration
1641	5/17/2006	**Clallam,** Grays Harbor, **Island, Jefferson, Kitsap. Mason,** Pacific, Pend Oreille, San Juan, Snohomish, and Wahkiakum Counties	Severe Storms, Flooding, Tidal Surge, Landslides, and Mudslides	NO PDA AVAIL	$6,585,337.32	Major Disaster Declaration
3227	9/7/2005	**All 39 counties of Washington are included in the designation.**	Hurricane Katrina Evacuation	NO PDA AVAIL	$1,730,746.78	Emergency Declaration
2575	8/7/2005	Garfield and Columbia Counties	School Fire	NO PDA AVAIL	$3,986,571.64	Fire Management Assistance Declaration
2572	8/1/2005	Chelan County	Dirty Face Fire	NO PDA AVAIL	$1,061,643.32	Fire Management Assistance Declaration
2546	8/12/2004	Washington State	Mud Lake Fire	NO PDA AVAIL	$892,685.29	Fire Management Assistance Declaration
2543	8/11/2004	Washington State	Fischer Fire	NO PDA AVAIL	$3,033,966.29	Fire Management Assistance Declaration
2538	7/30/2004	Washington State	Elk Heights Fire	NO PDA AVAIL	$1,051,894.17	Fire Management Assistance Declaration
2537	7/30/2004	Washington State	Deep Harbor Fire	NO PDA AVAIL	$47,179.51	Fire Management Assistance Declaration
2527	7/6/2004	Washington State	Beebe Fire	NO PDA AVAIL	$721,938.56	Fire Management Assistance Declaration
1499	11/7/2003	**Clallam,** Grays Harbor, **Island, Jefferson, Kitsap. Mason,** Pacific, Pend Oreille, San Juan, Snohomish, and	Severe Storms and Flooding	NO PDA AVAIL	$9,125,551.24	Major Disaster Declaration

2783	7/11/2008	Spokane County	Spokane Valley Fire	NO PDA AVAIL	$1,816,465.98	Fire Management Assistance Declaration
2784	7/11/2008	N/A	Badger Mountain Fire Complex	NO PDA AVAIL	$2,020,851.57	Fire Management Assistance Declaration
1734	12/8/2007	Clallam, Grays Harbor, Jefferson, King, Kitsap, Lewis, Mason, Pacific, Skagit, Snohomish, Thurston and Wahkiakum Counties.	Severe Storms, Flooding, Landslides, and Mudslides	No P.A. Cost Estimate in the PDA	$60,627,680.14	Major Disaster Declaration
2731	9/21/2007	Skamania County	Broughton Fire	NO PDA AVAIL	$390,948.83	Fire Management Assistance Declaration
2714	7/16/2007	N/A	Tunk Grade Fire	NO PDA AVAIL	$1,115,187.66	Fire Management Assistance Declaration
2711	7/8/2007	State of Washington	Easy Street Fire	NO PDA AVAIL	$1,104,733.00	Fire Management Assistance Declaration
1682	2/14/2007	All counties in the State of Washington are eligible to apply for assistance under the Hazard Mitigation Grant Program	Severe Winter Storm, Landslides, and Mudslides	NO PDA AVAIL	$30,374,675.17	Major Disaster Declaration
1671	12/12/2006	All counties in the State of Washington are eligible to apply for assistance under the Hazard Mitigation Grant Program.	Severe Storms, Flooding, Landslides, and Mudslides	NO PDA AVAIL	$31,624,961.74	Major Disaster Declaration
2674	9/11/2006	N/A	Flick Creek Fire	NO PDA AVAIL	$80,510.28	Fire Management Assistance Declaration
2668	8/22/2006	N/A	Columbia Fire Complex	NO PDA AVAIL	$6,979,271.97	Fire Management Assistance Declaration

1361	3/1/2001	Benton, Chelan, Clallam, Clark, Cowlitz, Douglas, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Lewis, Mason, Pacific, Pierce, Skagit, Skamania, Snohomish, Thurston, Wahkiakum, Walla Walla, Whatcom, Yakima	Nisqually Earthquake	NO PDA AVAIL	$66,734,226.22	Major Disaster Declaration
2323	8/25/2000	Washington State	Mule Dry Fire	NO PDA AVAIL	$925,982.68	Fire Management Assistance Declaration
2313	7/22/2000	Okanogan County	Rocky Hull Fire	NO PDA AVAIL	$1,829,514.81	Fire Management Assistance Declaration
2311	2/29/2000	Benton County (Hanford Area)	Two Fork Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
1255	10/16/1998	Cowlitz County (Kelso)	Landslide In The City Of Kelso	NO PDA AVAIL	$6,183,513.64	Major Disaster Declaration
1252	10/5/1998	Ferry and Stevens Counties	Flooding	NO PDA AVAIL	$2,022,392.91	Major Disaster Declaration
2248	9/25/1998	Columbia County	Columbia County - Toncannen Fire	NO PDA AVAIL	$18,718.34	Fire Management Assistance Declaration
2237	9/3/1998	Cowlitz County	Cowlitz County - Ballpark Fire	NO PDA AVAIL	$230,928.14	Fire Management Assistance Declaration
2225	7/28/1998	Klickitat County	Cleveland County Fire	NO PDA AVAIL	$1,184,534.16	Fire Management Assistance Declaration
2194	8/27/1997	Department of Natural Resources	Olympia Command Fire	NO PDA AVAIL	$134,398.60	Fire Management Assistance Declaration

2498	9/8/2003	Washington State	Needle Fire	NO PDA AVAIL	$458,796.73	Fire Management Assistance Declaration
2481	7/16/2003	Washington State	Okanogan City Fire	NO PDA AVAIL	$71,060.87	Fire Management Assistance Declaration
2477	7/12/2003	Washington State	Middle Fork Fire	NO PDA AVAIL	$1,456,420.31	Fire Management Assistance Declaration
2451	7/25/2002	Washington State	Pickens Fire	NO PDA AVAIL	$449,514.35	Fire Management Assistance Declaration
2449	7/20/2002	Washington State	Deer Point Fire	NO PDA AVAIL	$2,573,214.31	Fire Management Assistance Declaration
2378	8/17/2001	Washington State	Mt. Leona FireComplex	NO PDA AVAIL	$1,641,186.86	Fire Management Assistance Declaration
2379	8/17/2001	Washington State	Rex Creek Fire Complex	NO PDA AVAIL	$1,008,947.13	Fire Management Assistance Declaration
2377	8/16/2001	Washington State	Spruce Dome Fire Complex	NO PDA AVAIL	$2,761,493.04	Fire Management Assistance Declaration
2376	8/16/2001	Washington State	Tonasket Fire Complex	NO PDA AVAIL	$536,017.54	Fire Management Assistance Declaration
2372	8/14/2001	Washington State	Virginia Lakes Fire Complex	NO PDA AVAIL	$1,707,296.80	Fire Management Assistance Declaration
2374	8/14/2001	Washington State	Icicle Fire Complex	NO PDA AVAIL	$1,186,851.58	Fire Management Assistance Declaration
2373	8/14/2001	Washington State	Brewster Fire Complex	NO PDA AVAIL	$2,722,101.81	Fire Management Assistance Declaration
2368	7/28/2001	Washington State	Union Valley Fire	NO PDA AVAIL	$1,121,445.74	Fire Management Assistance Declaration

1361	3/1/2001	Benton, Chelan, Clallam, Clark, Cowlitz, Douglas, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Lewis, Mason, Pacific, Pierce, Skagit, Skamania, Snohomish, Thurston, Wahkiakum, Walla Walla, Whatcom, Yakima	Nisqually Earthquake	NO PDA AVAIL	$66,734,226.22	Major Disaster Declaration
2323	8/25/2000	Washington State	Mule Dry Fire	NO PDA AVAIL	$925,982.68	Fire Management Assistance Declaration
2313	7/22/2000	Okanogan County	Rocky Hull Fire	NO PDA AVAIL	$1,829,514.81	Fire Management Assistance Declaration
2311	2/29/2000	Benton County (Hanford Area)	Two Fork Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
1255	10/16/1998	Cowlitz County (Kelso)	Landslide In The City Of Kelso	NO PDA AVAIL	$6,183,513.64	Major Disaster Declaration
1252	10/5/1998	Ferry and Stevens Counties	Flooding	NO PDA AVAIL	$2,022,392.91	Major Disaster Declaration
2248	9/25/1998	Columbia County	Columbia County - Toncannen Fire	NO PDA AVAIL	$18,718.34	Fire Management Assistance Declaration
2237	9/3/1998	Cowlitz County	Cowlitz County - Ballpark Fire	NO PDA AVAIL	$230,928.14	Fire Management Assistance Declaration
2225	7/28/1998	Klickitat County	Cleveland County Fire	NO PDA AVAIL	$1,184,534.16	Fire Management Assistance Declaration
2194	8/27/1997	Department of Natural Resources	Olympia Command Fire	NO PDA AVAIL	$134,398.60	Fire Management Assistance Declaration

1079	1/3/1996	Chelan, Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, King, Kittitas, Lewis, Mason, Pacific, Pierce, Skagit, Snohomish, Thurston, Wahkiakum, Whatcom, Yakima	Storms/High Winds/Floods	NO PDA AVAIL	Not Available	Major Disaster Declaration
1037	8/2/1994	Department of Natural Resources, Military Department	El Nino Effects (The Salmon Industry)	NO PDA AVAIL	Not Available	Major Disaster Declaration
2105	7/29/1994	N/A	White Salmon Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
2104	7/28/1994	Department of Natural Resources, Military Department	Hatchery Creek/Round Mountain Fire	NO PDA AVAIL	$12,218,145.60	Fire Management Assistance Declaration
2103	7/26/1994	Department of Natural Resources, Military Department	Tyee Wildfire	NO PDA AVAIL	$17,711,728.14	Fire Management Assistance Declaration
2101	7/11/1994	N/A	Riverside Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
981	3/4/1993	King, Lewis, Mason, Pierce, Snohomish, Thurston, Wahkiakum	Severe Storm, High Winds	NO PDA AVAIL	Not Available	Major Disaster Declaration
2085	8/6/1992	Department of Natural Resources	Skookum Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
922	11/13/1991	Pend Oreille, Spokane, Stevens, Whitman, Department of Natural Resources	Fires	NO PDA AVAIL	Not Available	Major Disaster Declaration
2079	10/18/1991	N/A	Eastern Washington Fires	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration

2193	8/14/1997	Department of Natural Resources	Tum-Tum Fire	NO PDA AVAIL	$537,898.90	Fire Management Assistance Declaration
2192	7/21/1997	Department of Natural Resources	Benton City Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
1182	7/21/1997	Pend Oreille	Snowmelt/Flooding	NO PDA AVAIL	Not Available	Major Disaster Declaration
1172	4/2/1997	Grays Harbor, Jefferson, King, Kitsap, Lincoln, Mason, Pacific, Pierce, Pend Oreille, Stevens	Severe Storms/Flooding/Landslides/Mudslides	NO PDA AVAIL	Not Available	Major Disaster Declaration
1159	1/17/1997	Adams, Asotin, Benton, Chelan, Clallam, Clark, Columbia, Cowlitz, Douglas, Ferry, Franklin, Garfield, Grant, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Oreille, Pierce, San Juan, Skagit, Skamania, Snohomish, Spokane, Stevens, Thurston, Walla Walla, Whatcom, Yakima	Severe Winter Storms/Flooding	NO PDA AVAIL	Not Available	Major Disaster Declaration
1152	1/7/1997	Klickitat, Pend Oreille and Spokane	Ice and Snow Storms	NO PDA AVAIL	Not Available	Major Disaster Declaration
2186	8/11/1996	Department of Natural Resources, Military Department	Bowie Road Fire	NO PDA AVAIL	$272,044.68	Fire Management Assistance Declaration
1100	2/9/1996	Adams, Asotin, Benton, Clark, Columbia, Cowlitz, Garfield, Grays Harbor,	Severe Storms/Flooding	NO PDA AVAIL	Not Available	Major Disaster Declaration

896	3/8/1991	Island, Jefferson, King, Kitsap, Lewis, Pierce, San Juan, Skagit, Snohomish, Whatcom	High Tides, Severe Storm	NO PDA AVAIL	Not Available	Major Disaster Declaration
883	11/26/1990	Chelan, Clallam, Grays, Harbor, Island, Jefferson, King, Kitsap, Kittitas, Lewis, Mason, Pacific, Pierce, San Juan, Skagit, Snohomish, Thurston, Wahkiakum, Whatcom, Yakima	Flooding, Severe Storm	NO PDA AVAIL	Not Available	Major Disaster Declaration
852	1/18/1990	Benton, Grays Harbor, King, Lewis, Pierce, Thurston, Wahkiakum	Flooding, Severe Storm	NO PDA AVAIL	Not Available	Major Disaster Declaration
822	4/14/1989	Douglas, Okanogan, Stevens, Whitman	Heavy Rains, Flooding, Mudslides	NO PDA AVAIL	Not Available	Major Disaster Declaration
2070	9/8/1988	Department of Natural Resources	Dinkleman Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
784	12/15/1986	Cowlitz, King, Lewis, Pacific, Snohomish, Wahkiakum	SEVERE STORMS, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
769	7/26/1986	Spokane	SEVERE STORMS, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
762	3/19/1986	Cowlitz	Heavy Rains, Flooding, Landslides	NO PDA AVAIL	Not Available	Major Disaster Declaration
757	2/15/1986	Clallam, Jefferson, King	SEVERE STORMS, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
2058	8/30/1985	Department of Natural Resources	Tonasket/Baker Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration

676	1/27/1983	Whatcom	SEVERE STORMS, HIGH TIDES, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
3086	8/19/1982	Skamania, Cowlitz, US Army Corps of Engineers, National Weather Service, US Geological Survey	Threat of Flooding at Spirit Lake	NO PDA AVAIL	Not Available	Emergency Declaration
623	5/21/1980	**All 39 counties**	VOLCANIC ERUPTION, MT. ST. HELENS	NO PDA AVAIL	Not Available	Major Disaster Declaration
612	12/31/1979	**Clallam,** Grays Harbor, **Jefferson,** King, **Mason,** Skagit, Snohomish, Whatcom	STORMS, HIGH TIDES, MUDSLIDES, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
2033	7/23/1979	Department of Natural Resources	Salmon Creek Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
3070	3/12/1979	Town of Mesa, Franklin County	Flooding	NO PDA AVAIL	Not Available	Emergency Declaration
545	12/10/1977	Benton, Clark, Cowlitz, Garfield, Grays Harbor, King, Kittitas, Klickitat, Lewis, Pacific, Pierce, Snohomish, Thurston, Wahkiakum, Whitman, Yakima	SEVERE STORMS,MUDSLIDES, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
3037	3/31/1977	Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, Yakima	Drought	NO PDA AVAIL	Not Available	Emergency Declaration

492	12/13/1975	Benton, Cowlitz, Grays Harbor, King, Kittitas, Lewis, **Mason,** Pierce, Skagit, Snohomish, Thurston, Whatcom, Yakima	SEVERE STORMS, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
414	1/25/1974	Asotin, Benton, Columbia, Ferry, **Kitsap,** Klickitat, Lewis, **Mason,** Pend Oreille, Stevens, Thurston, Whitman, Yakima	SEVERE STORMS, SNOWMELT, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
334	6/10/1972	Chelan, Douglas, Okanogan	SEVERE STORMS, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
328	3/24/1972	King, Pierce, Thurston	Heavy Rains, Flooding	NO PDA AVAIL	Not Available	Major Disaster Declaration
322	2/1/1972	Asotin, Cowlitz, Grays Harbor, Lewis, Pacific, Skamania, Thurston, Wahkiakum, Whitman	SEVERE STORMS, FLOODING	NO PDA AVAIL	Not Available	Major Disaster Declaration
300	2/9/1971	Columbia, Garfield, Grays Harbor, Lewis, Skagit, Whatcom, Yakima	Heavy Rains, Melting Snow, Flooding	NO PDA AVAIL	Not Available	Major Disaster Declaration
2002	7/18/1970	Department of Natural Resources	Grassland & Forest Fire	NO PDA AVAIL	Not Available	Fire Management Assistance Declaration
196	5/11/1965	King, **Kitsap, Mason,** Pierce, Snohomish, Thurston	Earthquake	NO PDA AVAIL	Not Available	Major Disaster Declaration
185	12/29/1964	Asotin, Benton, Clark, Columbia, Cowlitz, Garfield, Grays Harbor, King, Kittitas, Klickitat, Lewis, **Mason,** Pacific, Pierce, Skamania, Snohomish, Wahkiakum, Walla Walla, Whitman,	Heavy Rains & Flooding	NO PDA AVAIL	Not Available	Major Disaster Declaration

146	3/2/1963	Columbia, Garfield, Grant, Whitman, City of Spokane	FLOODS	NO PDA AVAIL	Not Available	Major Disaster Declaration
137	10/20/1962	Clark, Cowlitz, Grays Harbor, Jefferson, Kitsap, Lewis, Mason, Pacific, Pierce, Skagit, Snohomish, Thurston, Wahkiakum, Whatcom	SEVERE STORMS	NO PDA AVAIL	Not Available	Major Disaster Declaration
70	3/6/1957	Douglas, Grant, Lincoln	FLOODS	NO PDA AVAIL	Not Available	Major Disaster Declaration
50	2/25/1956	Adams, Benton, Franklin	FLOOD	NO PDA AVAIL	Not Available	Major Disaster Declaration

Source: https://www.fema.gov/disaster/declarations

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION		
DOCUMENT	**PURPOSE**	**REVIEW SCHEDULE**
Comprehensive Land Use Plan[3]	Reduce county exposure to flooding and landslides, and to minimize reliance on federal and state programs for disaster mitigation, protect public and private property, save lives, and use community resources wisely. (a) Integrate regulatory standards such as buffers and setbacks with hazard avoidances measures. (b) Coordinate hazard vulnerability assessments with programs for purchase or preservation of open space. (c) Update hazard mitigation and disaster plans every three years. (d) Coordinate related activities of city departments with the City, State, and Federal agencies. a. Mapping designations - Continue to revise and compile mapping of vulnerable areas by using City, County, State, and Federal databases... Development Regulations - Revise the Zoning, Subdivision, Critical Areas Ordinances and the regulations portion of the Shoreline Master Program to incorporate hazard avoidance provisions and assure consistency of definitions and mapping. Goals: **ENG 9.0** Ensure that landslide and erosion hazard areas are appropriately designated and that measures to protect public health and safety are implemented for hazardous areas. **ENG 10.0** Minimize seismic risk to life and property on new and existing structures. **ENG 11.0** Protect flood hazard areas from development and uses that compromise the flow, storage and buffering of flood waters, normal channel functions, and fish and wildlife habitat and to minimize flood and river process risk to life and property. **ENG 13.0** Protect aquifer recharge areas from depletion of aquifer quantity or degradation of aquifer quality. **ENG 14.0** Protect and enhance wetlands in all their functions.	Annual - Major Review under way. Due June 2018.

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION		
Jefferson County Code Title 18 UNIFIED DEVELOPMENT CODE	(2) Purpose. The general purposes of this Unified Development Code are: (a) To encourage land use decision-making in accordance with the public interest, protection of private property rights and the public good, and applicable laws of the state of Washington. (b) To protect the general public health, safety, and welfare and encourage orderly economic development. (c) To implement the Jefferson County Comprehensive Plan goals and policies through land use and other regulations. (d) To provide for the economic, social, and aesthetic advantages of orderly development through harmonious groupings of compatible and complementary land uses and the application of appropriate development standards; (e) To provide for adequate public facilities and services in conjunction with development; and (f) To promote general public safety by regulating development of lands containing physical hazards and to minimize the adverse environmental impacts of development.	

CODES AND COMPREHENSIVE PLANS for NATURAL HAZARD REDUCTION		
JCC 18.22 CRITICAL AREAS[2]	**18.22.010 Purpose – Generally. No longer included JCC Chapter 18.22** The purpose of the Jefferson County critical areas ordinance is to comply with state law and to describe authorized methods and procedures established to ensure the functions and values of critical areas are not degraded when allowing approved uses and development activities in the county. This regulation offers landowners a choice of two methods for ensuring the functions and values of critical areas are not degraded: (1) For any critical area, landowners may use a prescriptive method, as described herein; or (2) For fish and wildlife habitat conservation areas (FWHCA) and wetlands, landowners may choose an adaptive method by providing a site-specific stewardship plan (see Article IX, JCC 18.22.460). No longer included in JCC Chapter 18,22	

JEFFERSON COUNTY

PRIORITIZATION OF ACTION ITEMS

Jefferson County operates under the requirements of the Growth Management Act of the State of Washington. County government format is a county administrator with board of commissioners. County staff evaluates actions based on community needs as expressed in the growth management act and the various comprehensive plans adopted by the commissioners. Staff prepares recommendations for specific actions to the commissioners for consideration. Board of Commissioners weighs the input from staff and citizens before making any decision.

Before an action may proceed there must be a demonstrated need and funding must be secured. When funding is available and approval of the Board is given, the project is included in the annual budget. Need for an action to proceed may be determined in a variety of ways including but not limited to: action items identified in adopted plans, cost benefit analysis, necessary service, emergency, directive from state or federal agency, safety or other benefit to the community. For planning purposes projects are evaluated and included in the annual update of the 6-year capital facilities plan. Many projects in the capital facilities plan are dependent of outside funding. Possible sources of funding are the general fund, capital improvement funds, utility reserves, local improvement district, grant funding from a variety of sources including but not limited to private agencies, economic development organizations, state agencies, federal agencies and philanthropic sources. Other sources of funding may, from time to time, become available for specified actions that may or may not be included in the community planning process.

Economic Analysis of Mitigation Projects

The Federal Emergency Management Agency's approaches to identify costs and benefits associated with natural hazard mitigation strategies or projects fall into two general categories: benefit/cost analysis (BCA) and cost-effectiveness analysis. Where appropriate, proposed activities will be evaluated using the BCA tools and HazusMH modeling software, along with empirical data to assess whether or not the mitigation strategy is justified.

Repetitive Loss Properties

Jefferson County has one repetitive loss property. It is a residence built within 150' of a small river in the south of the county. The building is valued at $70,695, based on current assessments. Since there is only one repetitive loss property at risk, identifying its location more specifically would violate federal disclosure regulations. Suffice to say, it is located near U.S. HWY 101 within the 100-year FEMA Flood Zones.

Jefferson County Assets at Risk

Jefferson County 2023 Building Asset Schedule

Asset Number	Location Name	Building Name	Replacement Cost New
JF-11-1-1	COURTHOUSE - PORT TOWNSEND	COURTHOUSE - PORT TOWNSEND	$20,972,000.00
JF-11-1-2	COURTHOUSE - PORT TOWNSEND	COURTHOUSE ANNEX	$ 209,300.00
JF-11-1-3	COURTHOUSE - PORT TOWNSEND	COURTHOUSE PARK	-
JF-40-2-1	COMMUNITY CENTER - PORT TOWNSEND	COMMUNITY CENTER - PORT TOWNSEND	$4,309,000.00
JF-65-3-2	RECYCLING CENTER	LANDFILL FLARE	$190,600.00
JF-65-3-3	RECYCLING CENTER	TRANSFER STATION	$917,200.00
JF-65-3-4	RECYCLING CENTER	STORAGE GARAGE	$65,000.00
JF-65-3-5	RECYCLING CENTER	TRANSFER STATION OFFICE	$9,300.00
JF-65-3-6	RECYCLING CENTER	SCALE HOUSE	$190,400.00
JF-65-3-7	RECYCLING CENTER	RECYCLING CENTER	$1,516,000.00
JF-55-4-1	CLEARWATER ANNEX - CORRECTION FACILITY	CLEARWATER ANNEX - CORRECTION FACILITY	$954,200.00
JF-55-4-2	CLEARWATER ANNEX - CORRECTION FACILITY	EQUIPMENT STORAGE	$219,900.00
JF-50-5-1	CLEARWATER EQUIPMENT SHED	CLEARWATER EQUIPMENT SHED	$79,461.00
JF-20-6-1	HOH MAINTENANCE SHOP	HOH MAINTENANCE SHOP	$438,900.00
JF-20-6-2	HOH MAINTENANCE SHOP	EQUIPMENT STORAGE	$253,500.00
JF-40-7-1	QUILCENE COMMUNITY CENTER	QUILCENE COMMUNITY CENTER	$716,200.00

Asset Number	Location Name	Building Name	Replacement Cost New
JF-40-7-2	QUILCENE COMMUNITY CENTER	PORTABLE OFFICE (STORAGE)	$131,300.00
JF-55-8-1	JEFFERSON COUNTY DETENTION	DISPATCH / CORRECTIONS CENTER / E.O.C.	$7,993,000.00
JF-20-9-1	PUBLIC WORKS / FLEET SERVICES - PORT HADLOCK	MAINTENANCE SHOP	$1,566,000.00
JF-20-9-2	PUBLIC WORKS / FLEET SERVICES - PORT HADLOCK	EQUIPMENT STORAGE 1 - EAST	$544,400.00
JF-20-9-3	PUBLIC WORKS / FLEET SERVICES - PORT HADLOCK	EQUIPMENT STORAGE 2 - SOUTH	$288,300.00
JF-20-9-4	PUBLIC WORKS / FLEET SERVICES - PORT HADLOCK	EQUIPMENT STORAGE 3 - WASH	$22,358.00
JF-20-9-5	PUBLIC WORKS / FLEET SERVICES - PORT HADLOCK	SURVEYOR'S ANNEX	$328,000.00
JF-20-9-6	PUBLIC WORKS / FLEET SERVICES - PORT HADLOCK	HADLOCK SHOP FUEL STATION	$32,000.00
JF-80-10-1	GARDINER COMMUNITY CENTER	GARDINER COMMUNITY CENTER	$821,300.00
JF-20-11-1	DISCOVERY BAY EQUIPMENT SHOP	DISCOVERY BAY EQUIPMENT SHOP	$71,242.00
JF-80-12-1	ANIMAL SHELTER	ANIMAL SHELTER	$406,000.00
JF-40-13-1	TRI AREA COMMUNITY CENTER (CHIMACUM)	TRI AREA COMMUNITY CENTER (CHIMACUM)	$1,207,000.00
JF-40-14-1	BRINNON COMMUNITY CENTER / MOTEL	BRINNON COMMUNITY CENTER / MOTEL	$2,404,000.00
JF-30-15-1	FAIRGROUNDS	FAIRGROUNDS OFFICE / ERICKSON BUILDING	$1,618,000.00

Asset Number	Location Name	Building Name	Replacement Cost New
JF-30-15-2	FAIRGROUNDS	PORT TOWNSEND LITTLE LEAGUE FIELD	$12,200.00
JF-30-15-3	FAIRGROUNDS	ART BUILDING	$382,400.00
JF-30-15-4	FAIRGROUNDS	4H BUILDING	$382,400.00
JF-30-15-5	FAIRGROUNDS	YESTERYEAR MUSEUM	$352,700.00
JF-30-15-6	FAIRGROUNDS	4H CATS BUILDING	$154,600.00
JF-30-15-7	FAIRGROUNDS	COMMERCIAL EXHIBITS	$201,700.00
JF-30-15-8	FAIRGROUNDS	PORT TOWNSEND ROCK CLUB	$284,200.00
JF-30-15-9	FAIRGROUNDS	COMMERCIAL EXHIBITS 2	$426,000.00
JF-30-15-10	FAIRGROUNDS	RESTROOMS / CONCESSIONS	$287,200.00
JF-30-15-11	FAIRGROUNDS	SMALL STAGE AND PICNIC	$63,000.00
JF-30-15-12	FAIRGROUNDS	SMALL ANIMALS	$877,000.00
JF-30-15-13	FAIRGROUNDS	CAMPGROUND RESTROOMS	$427,400.00
JF-30-15-14	FAIRGROUNDS	HORSE BARN A	$168,400.00
JF-30-15-15	FAIRGROUNDS	HORSE BARN B	$148,200.00
JF-30-15-16	FAIRGROUNDS	CATTLE BARN	$358,300.00
JF-30-15-17	FAIRGROUNDS	STORAGE BUILDING	$17,300.00

Asset Number	Location Name	Building Name	Replacement Cost New
JF-30-15-18	FAIRGROUNDS	4H ARENA BUILDING	$24,400.00
JF-30-15-19	FAIRGROUNDS	HORTICULTURE BUILDING	$358,300.00
JF-30-15-20	FAIRGROUNDS	MAIN GRANDSTAND	$418,400.00
JF-30-15-21	FAIRGROUNDS	CRAFT VENDOR TENT	$5,000.00
JF-30-15-22	FAIRGROUNDS	BBQ	$9,300.00
JF-30-15-23	FAIRGROUNDS	INFORMATION BOOTH	$2,500.00
JF-80-16-1	PORT LUDLOW RADIO TOWER	PORT LUDLOW RADIO TOWER	$ 18,204.00
JF-70-17-1	LAKE LELAND PARK	LAKE LELAND PARK	$32,133.00
JF-70-18-1	UPPER OAK BAY PARK	UPPER OAK BAY PARK	$23,206.00
JF-70-19-1	LOWER OAK BAY PARK	LOWER OAK BAY PARK	$9,834.00
JF-70-20-1	NORTH BEACH PARK	NORTH BEACH	$34,251.00
JF-70-21-1	IRONDALE PARK	IRONDALE	$20,133.00
JF-70-22-1	CHIMACUM PARK	CHIMACUM	$32,100.00
JF-70-22-2	CHIMACUM PARK	WATERLESS RESTROOM 1	$3,100.00
JF-70-22-3	CHIMACUM PARK	WATERLESS RESTROOM 2	$3,100.00
JF-70-23-1	QUILCENE (MAIN) LIBRARY	QUILCENE (MAIN)	$46,481.00
JF-70-24-2	MEMORIAL FIELD	GRANDSTAND	$918,600.00
JF-70-24-4	MEMORIAL FIELD	MAINTENANCE SHOP	$33,200.00

Asset Number	Location Name	Building Name	Replacement Cost New
JF-70-24-5	MEMORIAL FIELD	CONCESSION STAND	$12,200.00
JF-70-25-1	INDIAN ISLAND	INDIAN ISLAND	$8,240.00
JF-70-26-1	EAST BEACH	EAST BEACH	$35,179.00
JF-70-27-1	BEAUSITE LAKE CAMP	BEAUSITE LAKE CAMP LODGE	$583,300.00
JF-70-27-2	BEAUSITE LAKE CAMP	BEAUSITE LAKE CAMP CARETAKER	$216,300.00
JF-70-27-3	BEAUSITE LAKE CAMP	BEAUSITE LAKE BATHHOUSE	$234,300.00
JF-70-27-4	BEAUSITE LAKE CAMP	SWAN HOUSE / EAGLE HOUSE	$363,800.00
JF-70-27-5	BEAUSITE LAKE CAMP	FROG HOUSE / OWL HOUSE	$363,800.00
JF-70-28-2	GIBBS LAKE FACILITY	GIBBS LAKE CARETAKERS RESIDENCE	$147,800.00
JF-70-28-4	GIBBS LAKE FACILITY	GIBBS LAKE SHOP BLDG	$40,000.00
JF-70-28-5	GIBBS LAKE FACILITY	GIBBS LAKE RESTROOM BLDG.	$6,500.00
JF-70-29-1	PT. COMMUNITY CENTER PARK	PT. COMMUNITY CENTER PARK	$24,660.00
JF-70-30-1	QUILCENE PARK	QUILCENE PARK	$35,179.00
JF-70-31-1	SEAGULL FIELD ? EAST JEFFERSON	SEAGULL FIELD ? EAST JEFFERSON	$95,543.00
JF-70-32-1	DEEMA SMAKMAN FIELD	DEEMA SMAKMAN FIELD	$22,594.00
JF-70-32-2	DEEMA SMAKMAN FIELD	IRONDALE BEACH (17 ACRES)	$5,000.00
JF-20-33-1	QUILCENE MAINTENANCE SHOP	QUILCENE MAINTENANCE SHOP	$79,761.00
JF-20-35-1	BRINNON MAINTENANCE SHOP	BRINNON MAINTENANCE SHOP	$109,000.00
JF-70-36-1	US FOREST RESIDENCE	US FOREST RESIDENCE	-
JF-70-37-1	H.J. CARROLL PARK	HJ CARROLL PARK AND PICNIC PAVILION 1	$53,500.00

Asset Number	Location Name	Building Name	Replacement Cost New
JF-70-37-3	H.J. CARROLL PARK	CONCESSIONS AND RESTROOMS	$203,700.00
JF-70-37-4	H.J. CARROLL PARK	SHOP / CARETAKER	$25,200.00
JF-70-37-5	H.J. CARROLL PARK	BASKETBALL COURTS	-
JF-70-37-6	H.J. CARROLL PARK	PICNIC PAVILION	$172,000.00
JF-70-37-7	H.J. CARROLL PARK	INFORMATION KIOSK	$8,900.00
JF-65-38-1	MRW FACILITY	MRW FACILITY	$26,000.00
JF-10-39-1	CASTLE HILL COMPLEX - BLDG. #1	BUILDING #1 - PUBLIC HEALTH / COMMUNITY DEVELOPMENT	$4,024,000.00
JF-20-43-1	CASTLE HILL ANNEX - BLDG. #2, PW	BUILDING #2 - PUBLIC WORKS OFFICE	$1,770,000.00
JF-50-44-1	SHERIFF'S ADMINISTRATION BUILDING	SHERIFF'S ADMINISTRATION BUILDING	$2,417,000.00
JF-20-45-1	QUILCENE PUBLIC WORKS	QUILCENE FUEL STATION	$32,000.00
JF-20-45-2	QUILCENE PUBLIC WORKS	PUBLIC WORKS SHOP	$373,000.00
JF-20-45-3	QUILCENE PUBLIC WORKS	PUBLIC WORKS PORTABLE OFFICE	$129,700.00
JF-70-46-1	LARRY SCOTT MEMORIAL TRAIL	LARRY SCOTT MEMORIAL TRAIL	-
JF-70-47-1	VISITORS CENTER	VISITORS CENTER	$83,325.00
JF-60-49-1	FIRE HALL COMMUNICATION TOWER	FIRE HALL COMMUNICATION TOWER	$86,720.00
JF-10-50-1	KIVLEY CENTER - WSU COEX	KIVLEY CENTER	-
JF-10-50-2	KIVLEY CENTER - WSU COEX	KIVLEY CENTER	-
JF-10-50-3	KIVLEY CENTER - WSU COEX	KIVLEY CENTER	-
JF 10-50-4	KIVLEY CENTER - WSU COEX	KIVLEY CENTER	-

Source: BOCC

Jefferson County Assets at Risk

Jefferson County 2023 Movable Equipment Asset Schedule

Asset Number	Description	Serial Number	Replacement Cost New
1742	2020 KOHLER 10RESV	334JGVGF0237	$6,183.57
1741	2020 HUSTLER		$10,000.00
1740	HUSTLER 936849	19124584	$10,000.00
1739	JOHN DEERE 325G TRACK	1T0325GLALJ372350	$62,488.41
1738	CASE CX80C	NJS682094	$135,593.04
1737	2020 MONROE 15'		$55,160.21
1736	2017 US MOWER	60FSM-XHD4VB	$47,705.75
1715	2020 DJI MAVIC 2	298DG7PR01D392	$4,707.71
1714	2019 CASE CX145D	DAC145K7NKS7E1718	$195,808.69
1713	2017 NEW HOLLAND T4.90	ZHLE50867	$54,126.14
1712	2016 MOHAWK MP-18 HOIST		$94,041.24
1711	2015 US MOWER HS-60FSM	102805	$26,208.86
1710	2016 MORBARK M15RX	4S8SZ1614GW041012	$69,518.02
1709	2015 US MOWER		$63,534.92
1708	2015 FLINK		$21,835.58
1707	2015 FLINK		$16,506.96
1706	2015 US MOWER		$26,651.59
1705	2013 TOYOTA FORKLIFT	8FGU32-38380	$32,638.96

Asset Number	Description	Serial Number	Replacement Cost New
1699	2019 AUTO FLAGGER AF-54		$14,646.88
1698	2019 AUTO FLAGGER AF-54		$14,646.88
1697	2019 FLINK 201		$16,178.87
1696	2019 MB-CO TKH-TR		$13,771.29
1695	2018 FLINK SNOW ATTACHMENT		$1,798.50
1694	2018 FLINK SPREADER		$1,798.50
1693	2018 FLINK SPREADER		$1,798.50
1682	2018 BUYERS SALT SPREADER	4621	$1,747.00
1681	2018 GRIZZLY COMPACTOR	18564	$174,242.00
1680	2018 BUFFALO TURF BLOWER	B8543C	$15,429.00
1679	2017 STEEL INC. EXPRESS SNOW PLOW		$45,000.00
1678	2018 CAT 938 WASTE HANDLER LOADER	CAT0938MJJ3R05709	$297,384.00
1677	2017 CONEQTEC PAVEMENT GRINDER	C13053	$15,751.00
1663	2017 JD ONRAMP MOWER DECK	1P0H130XLG018483	-
1662	2015 FLINK SNOW PLOW	125	$15,790.83
1661	2015 FLINK SNOW PLOW	197	$16,178.87
1660	EQUIP-PW-CHIPSPREADER	CSV157238	$298,642.00
1659	EQUIP-PW-PAVEMENT-GRINDERS	C13053	$15,750.50
1611	2015 NEW HOLLAND T6.155	ZFBD02318	$76,823.53

Asset Number	Description	Serial Number	Replacement Cost New
1610	2015 NEW HOLLAND T4.85	ZFJT50308	$45,820.94
1609	2015 TOYOTA FORKLIFT	8FGU18	$22,984.39
1608	2015 CATERPILLAR 140M3	CAT0140MAN9M00141	$262,159.39
1607	2015 CATERPILLAR 430F2	CAT0430FHHWE00350	$126,119.54
1606	2014 CATERPILLAR 938K	CAT0938KTSWL03760	$211,580.99
1605	2015 NEW HOLLAND T4.85	ZEJT50348	$49,584.50
14648	ROADS RADIO SYSTEM		-
14647	SHERIFF RADIOS		-
14638	2014 US MOWER BRUSHCUTTER ATTACHMENT	102505	$63,534.92
14636	COATS 5040A TIRE CHANGER	1412104337	$3,815.00
14635	COATS 1175A WHEEL BALANCER	CMB1404999	$4,349.10
14630	2014 LIFTMOORE L-8 CRANE	14-8685W117	$2,506.98
14628	2014 JONES ANIMAL CENTRAL UNIT		$10,107.57
14416	2014 JD 62D ONRAMP MOWER #844	M02362ACEM0740109	$2,885.06
14415	2014 JD 62 D ONRAMP MOWER #844	1M02362AKEM070110	$2,885.06
14414	2014 JD 2025R TRACTOR-PARKS	1LV2025RKDH110607	$17,088.06
13911	CUMMINS REPAIR SOFTWARE		$1,574.22
13910	BOBCAT 225 NT WELDER	LB229897	$5,869.35
13909	MOHAWK ABOVE GROUND 1-A HOIST	9603420	$5,071.30
13908	MOHAWK TR50 SHOP TRUCK HOIST	95121912	$52,331.00

Asset Number	Description	Serial Number	Replacement Cost New
13907	WHEEL BALANCER/ADJUSTOR	50392454	$4,451.63
13906	2013 MONROE V-BOX SANDER	12/6/7593	$17,963.20
13903	8' P/U SNOW PLOW	M062002771	$4,575.48
13881	WASHRACK - ULTRASORB SYSTEM	31141	$22,163.68
13880	RICE LAKE HP FLOOR SCALE -MRW	A08185/RL3000A	$2,372.82
13879	MANTLE TRUCK SCALES	24035-10C	$45,438.00
13875	ONAN 40DGBC GENERATOR	H970647879	$24,443.67
13874	EQUIPMENT - SIGN MFG. S&S		$2,145.00
13864	2011 ELGIN VACUUM BROOM BEAR	1HTJTSKN9CJ440106	$201,341.36
13862	2012 ROSCO FRONT MT BROOM	83786	$73,466.00
12428	2009 LEBOY 3000 BELT LOADER	55545	$188,464.24
11152	TRAILER	4P2UB12189U094421	$12,000.00
8785	2001 LEESHORE BOAT	NRGZ4PJCG101	$29,870.00
8784	TARPING TRAILING	71C417127	$15,350.98
8783	2003 EC0134 SNAPON AC RECYCLER	0319C0122	$2,579.76
8782	EQUIPMENT - MECHANCIAL SHOP		$52,675.00
8781	MONROE V-HOPPER SANDER	MV-180-84-56 WA	$14,374.08
8780	2000 TAILGATE SANDER	85605	$ 2,152.45
8778	SWENSON EV100 V-BOX SANDER	75840	$11,561.17
8775	SWENSON EV100 SLIP-IN SANDER	65598	$9,597.34
8774	SWENSON MODEL SA TAILGT SANDER	62156	$1,731.20

Asset Number	Description	Serial Number	Replacement Cost New
8773	SWENSON MODEL SA TAILGT SANDER	62116	$1,731.20
8769	TOYOTA 7FGU30 FORKLIFT-HADSHOP	65230	$27,390.83
8766	2004 10' FRINK SNOW PLOW	3910 PISA RR85	$7,085.05
8763	FRINK MODEL 3911 SNOW PLOW	3911 PISA-347PF	$6,674.10
8762	FRINK MODEL 3910 SNOW PLOW	3910 PISA-360PF	$6,674.10
8761	FRINK MODEL 3910 SNOW PLOW	3910 PISA-358PF	$6,674.10
8760	FRINK MODEL 3910 SNOW PLOW	3910 PISA-357PF	$6,674.10
8758	FRINK 3911 SNOW PLOW	3911P1SA75PH	$7,654.61
8757	TENCO TC132TE 11' SNOWPLOW	7756	$8,020.87
8755	1999 11' FRINK SNOW PLOW	3932 RR-3847	$8,869.15
8754	2000 LAYTON BOX F525 PAVER	F10791N00/EH38630	$28,190.51
8753	2000 PATCH KING PK30H HOTBOX	6439	$23,372.08
8751	AQUATECH SJ600P CULVERT FLUSHR	20101056	$33,192.45
8748	1980 MILLER CURB MAC/650S -GAS	1549/MTR 5965669	$5,285.20
8747	2005 INGERSOLL-RAND COMPACTOR	185331	$72,944.00
8746	2001 INGERSOLL DD24 COMPACTOR	167348	$31,280.00
8745	1989 D4C WIDE TRACK TRACTOR/D	4GH01519	$44,885.28
8733	CUTMASTER 100 PLASMA CUTTER	SY105402231	$2,767.76
8732	ROTOTILLER 550	M*00550X120715*	$1,935.01
8731	SEVERE SERVICE ASPHALT CUTTER	190BM-231SRB	$2,546.44

Source: BOCC

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Equip-Attach-Snow-Plow-10'	000482	1991 Frink 3910	3910 PISA-357PF	Er&R	County Roads	6674.10	12/31/91	Active
Equip-Attach-Snow-Plow-10'	000483	1991 Frink 3910	3910 PISA-358PF	Er&R	County Roads	6674.10	12/31/91	Active
Equip-Attach-Snow-Plow-10'	000484	1991 Frink 3910	3910 PISA-360PF	Er&R	County Roads	6674.10	12/31/91	Active
Equip-Attach-Snow-Plow-10'	000722	2004 Frink 3910	3910 PISA RR85	Er&R	County Roads	7085.05	11/30/03	Active
Equip-Attach-Snow-Plow-10'	000875	2015 Flink 10PA38CT	125	Er&R	County Roads	15790.83	12/27/17	Active
Equip-Attach-Snow-Plow-11'	000485	1991 Frink 3911	3911 PISA-347PF	Er&R	County Roads	6674.10	12/31/91	Active
Equip-Attach-Snow-Plow-11'	000513	1993 Frink 3911	3911P1SA75 PH	Er&R	County Roads	7654.61	4/30/93	Active
Equip-Attach-Snow-Plow-11'	000603	1996 Tenco TC132TE	7756	Er&R	County Roads	8020.87	7/31/96	Active
Equip-Attach-Snow-Plow-11'	000644	1999 Frink 3911	3932 RR-3847	Er&R	County Roads	8869.15	6/30/99	Active
Equip-Attach-Snow-Plow-11'	000878	2015 Flink 11PA48CT	197	Er&R	County Roads	16178.87	12/27/17	Active
Equip-Attach-Snow-Plow-11'	000971	2019 FLINK 201	P11PA3054009	Er&R	County Roads	16178.87	6/13/19	Active
Equip-Attach-Snow-SpreaderInsert	000554	1994 Swenson EV100-13	65598	Er&R	County Roads	9597.34	5/31/94	Removed from svc
Equip-Attach-Snow-SpreaderInsert	000591	1995 Swenson EV100-15-54	73737	Er&R	County Roads	11137.03	12/31/95	Active 2nd life
Equip-Attach-Snow-	000591	1995 Swenson EV100-15-54	73737	Er&R	County Roads	11137.03	12/31/95	Active 2nd life

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
SpreaderInsert								
Equip-Attach-Snow-SpreaderInsert	000606	1996 Swenson EV100	75840	Er&R	County Roads	11561.17	6/30/96	Active
Equip-Attach-Snow-SpreaderInsert	000825	2013 Monroe MV-120-78-	12-06-7593	Er&R	County Roads	17963.20	7/31/12	Active
Equip-Attach-Snow-SpreaderInsert	000876	2015 Flink HG085184S40004	10229	Er&R	County Roads	16506.96	5/31/16	Active
Equip-Attach-Snow-SpreaderInsert	000879	2015 Flink HG145782S40002	10230	Er&R	County Roads	21835.58	7/14/16	Active
Equip-Attach-Snow-SpreaderInsert	000950	2018 Buyers TGS03	004621	Er&R	Solid Waste	2314.05	3/21/18	Active
Equip-Attach-Snow-SpreaderInsert	000950	2018 Buyers TGS03	004621	Er&R	Solid Waste	2314.05	3/21/18	Active
Equip-Attach-Snow-SpreaderInsert	000953	2018 Flink Spreader HG14578	10478	Er&R	County Roads	21835.58	6/24/19	Active
Equip-Attach-Snow-SpreaderInsert	000953	2018 Flink Spreader HG14578	10478	Er&R	County Roads	1798.50	6/25/19	Active
Equip-Attach-Snow-SpreaderInsert	000954	2018 Flink Spreader HG14578	10479	Er&R	County Roads	21835.58	6/24/19	Active
Equip-Attach-Snow-SpreaderInsert	000954	2018 Flink Spreader HG14578	10479	Er&R	County Roads	1798.50	6/24/19	Active
Equip-Attach-Snow-SpreaderInsert	000963	2018 Flink H6085184S40007	10477	Er&R	County Roads	16507.40	2/26/19	Active
Equip-Attach-Snow-	000963	2018 Flink H6085184S40007	10477	Er&R	County Roads	1798.50	6/24/19	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
SpreaderInsert								
Equip-Attach-Snow-SpreaderInsert	000981	2020 Monroe 15'		Er&R	County Roads	55160.21	4/26/21	Active
Equip-Attach-Snow-SpreaderInsert	001004	2022 Monroe MCV-180-84-56-W	219068	Er&R	County Roads	55210.82	4/27/23	Active
Equip-Attach-Snow-SpreaderInsert	001018	2023 Monroe 15'		Er&R	County Roads	61376.10	3/9/22	Upfitting / prep
Equip-Attach-Snow-SpreaderTailgate	000477	1991 Swenson SA		Er&R	County Roads	0.00	9/26/91	Removed from svc
Equip-Attach-Snow-SpreaderTailgate	000504	1992 Swenson SA	62116	Er&R	County Roads	1731.20	2/28/93	Active
Equip-Attach-Snow-SpreaderTailgate	000671	2000 Swenson SA	85605	Er&R	County Roads	2152.45	8/31/00	Active
Equip-Attach-Snow-Plow-Light	009808	2011 SNOWDOGG EX80	M062002771*	Solid Waste	Solid Waste	500.00	7/3/18	Active
Equip-Attach-Grounds-MowerDeck	000855	2014 John Deere 62D OnRamp	1M02362AKEM070110	Er&R	Parks & Recreation	2885.06	6/30/14	Active
Equip-Attach-Grounds-MowerDeck	000856	2014 John Deere 62D OnRamp	M02362ACEM0740109	Er&R	Parks & Recreation	2885.06	6/30/14	Active
Equip-Attach-Grounds-MowerDeck	000923	2016 John Deere 62D OnRamp	1P0H130XLGX018483	Er&R	Parks & Rec-Memorial Field	2784.74	3/1/17	Active
Equip-Attach-Grounds-MowerDeck	000926	2017 US Mower HS-60FSM-XHD4VB		Er&R	County Roads	47705.75	7/31/18	Active
Equip-Attach-Grounds-MowerDeck	LF0080	2020 Hustler			Solid Waste			Active
Equip-Attach-Grounds-ShoulderMower	000868	2015 US Mower HS60FSM	102664	Er&R	County Roads	26651.59	7/20/15	Active
Equip-Attach-Grounds-ShoulderMower	000868	2015 US Mower HS60FSM	102664	Er&R	County Roads	26651.59	7/20/15	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Equip-Attach-Grounds-ShoulderMower	000868	2015 US Mower HS60FSM	102664	Er&R	County Roads	26651.59	7/20/15	Active
Equip-Attach-Grounds-ShoulderMower	000902	2015 US Mower HS-60FSM	102805	Er&R	County Roads	26208.86	2/22/16	Active
Equip-Attach-Grounds-ShoulderMower	000902	2015 US Mower HS-60FSM	102805	Er&R	County Roads	26208.86	2/22/16	Active
Equip-Attach-Grounds-ShoulderMower	000902	2015 US Mower HS-60FSM	102805	Er&R	County Roads	26208.86	2/22/16	Active
Equip-Attach-Grounds-BrushCutter	000893	2015 US Mower 135MM23-GG	102668/102669	Er&R	County Roads	63534.92	7/30/15	Active
Equip-Attach-Grounds-BrushCutter	000893	2015 US Mower 135MM23-GG	102668/102669	Er&R	County Roads	63534.92	7/30/15	Active
Equip-Attach-Grounds-BrushCutter	000990	2020 Caterpillar HMF210	WFM00214	Er&R	County Roads	12739.92	7/14/20	Active
Equip-Attach-Grounds-BrushCutter	001010	2021 US Mower EX50HDR		Er&R	County Roads	17623.93	10/5/21	Active
Equip-Attach-Grounds-BrushCutter	001012	2022 US Mower EX50HDR		Er&R	County Roads	19124.97	2/7/22	Active
Equip-Attach-Construction-Tamper	001015	2022 Case SC-60	C05934	Er&R	County Roads	9152.62	7/25/22	Active
Equip-Attach-Construction-Tamper	001016	2022 Case SC-80		Er&R	County Roads	11040.83	7/25/22	Active
Equip-Attach-Construction-Other	000937	2017 Coneqtec AP450-HDE 18"	C13053	Er&R	County Roads	15750.50	12/8/17	Active
Equip-Attach-	000969	2019 MB-Co TKH-TR	MB-06036	Er&R	County Roads	13771.29	7/22/19	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Construction-Other								
Equip-Attach-Other	000668	2000 Patch King PK30H	6439	Er&R	County Roads	23372.08	4/30/00	Active
Equip-TrailerMtd-Utility-Other	000972	2019 Auto Flagger AF-54	1S9FP0618LR981095	Er&R	County Roads	14646.88	9/23/19	Active
Equip-TrailerMtd-Utility-Other	000973	2019 Auto Flagger AF-54	1S9FP0618LR981097	Er&R	County Roads	16580.37	9/23/19	Active
Equip-TrailerMtd-Utility-Other	000975	2019 Ver-Mac Inc. PCMS-548	2S9US2112KS132474	Er&R	Solid Waste	18280.00	11/7/19	Active
Equip-TrailerMtd-Utility-Other	000985	2020 Autoflagger AF-54	1S9FP0618LR981099	Er&R	County Roads	15512.88	6/4/20	Active
Equip-TrailerMtd-Utility-Other	000986	2020 Autoflagger AF-54	1S9FP0618LR981092	Er&R	County Roads	15512.88	6/4/20	Active
Equip-TrailerMtd-Utility-Other	000987	2020 Autoflagger AF-54		Er&R	County Roads	15512.88	6/4/20	Active
Equip-TrailerMtd-Utility-Other	000988	2020 Autoflagger AF-54		Er&R	County Roads	15512.88	6/4/20	Active
Equip-TrailerMtd-Utility-Other	000995	2021 Ver-Mac PCMS548	1V9US2116MH223066	Er&R	County Roads	15941.25	3/8/21	Active
Equip-TrailerMtd-Utility-Other	000996	2021 Ver-Mac PCMS548	1V9US2116MH223052	Er&R	County Roads	15941.25	3/8/21	Active
Equip-TrailerMtd-Utility-Other	000997	2021 Ver-Mac PCMS548	1V9US2115MH223060	Er&R	County Roads	15941.25	3/8/21	Active
Equip-TrailerMtd-Utility-Other	000998	2021 Ver-Mac PCMS548	1V9US211XMH223118	Er&R	County Roads	15941.25	3/8/21	Active
Equip-TrailerMtd-Utility-Other	009953	2017 MPH Industries Speed Monitor		Sheriff's Office	Sheriff's Office	13324.16	4/25/17	Active
Equip-TrailerMtd-Sewer-JetRodders	000672	2000 Aquatech SJ600P	20101056	Er&R	County Roads	33192.45	11/30/00	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Equip-VehMtd-MIGWelder	000685	2002 Bobcat 225 NT	LB229897	Er&R	Er&R	5869.35	9/30/01	Active
Equip-VehMtd-Utility-Other	000861	2014 Liftmoore L-8	14-8685W117	Er&R	County Roads	2506.98	6/30/14	Active
Equip-VehMtd-TarPot	000783	1999 PB 220-PT	1P9TS1319X1100934	Er&R	County Roads	7588.00	5/12/08	Active
Equip-Stationary-Other	000136	HandTools Various		County Roads	County Roads	0.00	12/31/85	Active
Equip-Stationary-Other	000520	Motorola Radios		Er&R	Sheriff's Office	1.00	12/31/93	Active
Equip-Stationary-Other	000525	Motorola Radios		Er&R	County Roads	1.00	1/1/12	Active
Equip-Stationary-Other	000530	Petrovend K2500M-4		Er&R	Er&R	7807.72	6/30/93	Removed from svc
Equip-Stationary-Other	000531	1993 Fuel system Hadlock		Er&R	Er&R	138161.77	11/30/93	Active
Equip-Stationary-Other	000532	1993 Fuel system		Er&R	Er&R	157596.43	11/30/93	Active
Equip-Stationary-Other	000701	2002 Petrovend System2		Er&R	Er&R	13552.02	3/31/02	Active
Equip-Stationary-Other	000789	Fuel System		Er&R	Er&R	5340.77	12/24/08	Active
Equip-Stationary-Other	000843	Fuel System		Er&R	Er&R	47656.30	12/31/13	Active
Equip-Stationary-Other	000843	Fuel System		Er&R	Er&R	48786.25	1/23/23	Active
Equip-Stationary-Other	000870	2014 Coats 1175A	CMB1404999	Er&R	Er&R	4349.10	12/31/14	Active
Equip-Stationary-Other	000871	2014 Coats 5040A	1412104337	Er&R	Er&R	3815.00	12/31/14	Active
Equip-Stationary-Other	000884	2015 Marathon RJ250HT/25	53031232	Er&R	Solid Waste	31513.56	3/31/15	Active
Equip-Stationary-Other	000885	2015 Marathon RJ250HT/25	53031233	Er&R	Solid Waste	31513.55	3/31/15	Active
Equip-Stationary-Other	000886	2015 Marathon RJ250 Power Uni		Er&R	Solid Waste	2142.31	3/31/15	Active
Equip-Stationary-Other	000898	2015 Ace Roto-Mold VT10500-2800		Er&R	County Roads	9378.06	12/31/15	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Equip-Stationary-Other	001020	2022 Mi-T-M WTR-10-0M10		Er&R	County Roads	21946.34	7/26/22	Active
Equip-Stationary-Other	007275	HandTools Various		Parks & Recreation	Parks & Recreation			Active
Equip-Stationary-Other	007467	GasCan GasCan		Er&R	Er&R			Active
Equip-Stationary-Other	009924	FuelCard Unleaded		Sheriff's Office	Sheriff's Office	0.00	1/1/90	Active
Equip-Stationary-Other	009929	FuelCard Unleaded		Solid Waste	Solid Waste	0.00	1/1/90	Active
Equip-Stationary-Other	009932	FuelCard Diesel		Solid Waste	Solid Waste	0.00	1/1/90	Active
Equip-Stationary-Other	LF0036	scales	24035-10C	Solid Waste	Solid Waste	0.00	1/1/90	Active
Equip-Stationary-Other	LF0054	tarp trailer	71C417127	Solid Waste	Solid Waste	0.00	1/1/90	Active
Equip-Stationary-Other	LF0057	1997 Grizzly		Solid Waste	Solid Waste	0.00	1/1/90	Removed from svc
Equip-Stationary-Other	MR0005		A08185/RL3000A	Solid Waste	Solid Waste	0.00	1/1/90	Active
Equip-Stationary-Generator-<100kW	000623	1997 Onan 40DGBC	H970647879	Er&R	County Roads	24443.67	10/31/97	Active
Equip-Stationary-Generator-<100kW	000989	2020 Kohler 10RESV	334JGVGF0237	Er&R	County Roads	6183.57	6/17/20	Active
Equip-Stationary-Generator-<100kW	001039	2023 GENERAC'S GUARDIAN 26KW	3012921062	Er&R	County Roads	18482.63	11/3/23	Active
Equip-Stationary-MIGWelder	000750	2005 Blue Star 185DX		Er&R	Er&R	2528.32	9/30/05	Active
Equip-Stationary-PlasmaCutter	000704	Cutmaster 100	SY105402231	Er&R	Er&R	2767.76	8/31/02	Active
Equip-Stationary-AirComp-	000809	2011 Mi-T-M	20119698	Er&R	Er&R	7495.86	12/31/10	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
50-150CFM								
Equip-Stationary-Pressure Washer	000932	2017 Shark HPB353007A	11091100-100165	Er&R	County Roads	4310.95	12/18/17	Active
Equip-Stationary-Hoist-Light	000979	2020 Bendpak XPR-10AXLS		Er&R	Er&R	3616.00	2/3/20	Active
Equip-Grounds-WoodChipper	000812	2011 Brush Bandit 250XP	4FMUS1611BR024217	Er&R	County Roads	46001.77	6/30/11	Active
Equip-Grounds-WoodChipper	000812	2011 Brush Bandit 250XP	4FMUS1611BR024217	Er&R	County Roads	46001.77	6/30/11	Active
Equip-Grounds-WoodChipper	000900	2016 Morbark M15RX	4S8SZ1614GW041012	Er&R	County Roads	69518.02	11/7/16	Active
Equip-Grounds-WoodChipper	000900	2016 Morbark M15RX	4S8SZ1614GW041012	Er&R	County Roads	69518.02	11/7/16	Active
Equip-Grounds-WoodChipper	001035	2023 Morbark 1621X	4S8SZ1914PW041765	Er&R	County Roads	104361.20	7/10/23	On order
Equip-Grounds-Rototiller	000550	1994	M*00550X120715*	Er&R	Parks & Recreation	1935.01	2/28/94	Active
Trailer-Flatbed-<6000GVW	000367	B/M 830	2-3419 MODEL 3-11	Er&R	County Roads	3839.72	7/31/88	Active
Trailer-Flatbed-<6000GVW	000667	2000 Layton PT505	1L9PTE174YS105309	Er&R	County Roads	8199.30	4/30/00	Active
Trailer-Flatbed-<6000GVW	009952	2016 Outlaw OU610SA	1L9BU1011G3428271	Parks & Recreation	Parks & Recreation	1864.86	3/1/17	Active
Trailer-Flatbed-6001-10,000GVW	000091	1977	WA7444203	Er&R	Parks & Rec-Memorial Field	722.72	4/1/77	Active
Trailer-Flatbed-6001-10,000GVW	000889	2015 Eagle EFB712TA2	184BU1229FC017807	Er&R	County Roads	5453.45	4/30/15	Active
Trailer-Flatbed-6001-	009956	2017 Bulldog Flatbed	4RJFS1828H1105744	Sheriff's Office	Sheriff's Office	0.00	4/27/17	Active

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10,000GVW								
Trailer-Flatbed->10,001GVW	000521	1993 Walton AR1010	1W9DS1027P1063817	Er&R	County Roads	3234.00	5/31/93	Active
Trailer-Flatbed->10,001GVW	000800	2004 Spectre	4W8UF222231004144	Er&R	Er&R	3698.00	8/31/10	Active
Trailer-Flatbed->10,001GVW	000970	2019 Speedy Bleacher SPBL2707	1S9AJ3223KJ840649	Er&R	Parks & Rec-Memorial Field	23074.20	5/20/19	Active
Trailer-Flatbed-<6000GVW-2yrPMA	009946	2006 Paros utility trailer	490US101X6S002458	Sheriff's Office	Sheriff's Office	1425.00	3/14/06	Active
Trailer-Tiltbed->10,001GVW	000773	2007 Olympic 20TDT-2	1C9TF29227T997338	Er&R	County Roads	19833.95	7/30/07	Active
Trailer-Tiltbed->10,001GVW	000881	2015 Olympic 30TDT-3SC	1C9TF3638FT997183	Er&R	County Roads	32771.83	4/30/15	Active
Trailer-Tiltbed->10,001GVW	000899	2015 Olympic 30TDT-3SC	1C9TF3636GT997023	Er&R	County Roads	32771.83	12/29/15	Active
Trailer-Tiltbed->10,001GVW	000915	2017 Olympic OM12-2E	1C9TF1628HT997005	Er&R	Parks & Recreation	6695.54	12/7/16	Active
Trailer-Tiltbed->10,001GVW	000960	2020 Olympic 30TDT-3	1H9TF3638LT726098	Er&R	County Roads	42014.41	4/20/20	Active
Trailer-Tiltbed->10,001GVW	001008	2021 Olympic OM14-2E	1H9TF2024LT726724	Er&R	County Roads	13078.74	8/12/21	Active
Trailer-Tiltbed->10,001GVW	001013	2022 Olympic 33TDT-3AFW	1H9TF403NT726087	Er&R	County Roads	65290.26	10/12/22	Active
Trailer-Tiltbed->10,001GVW	001014	2022 Olympic 20TDT-2	1H9TF2925NT726088	Er&R	County Roads	44052.90	10/12/22	Active
Trailer-Enclosed-<6000GVW	009902	1998 Buz's EquipTrailer	BUZ090498WBUZ1907	Sheriff's Office	Sheriff's Office	7317.00	9/21/98	Active
Trailer-Enclosed-<6000GVW	009941	2009 Pace Cargo	4P2UB12149U096652	Sheriff's Office	Sheriff's Office	15772.00	6/11/09	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Trailer-Enclosed-<6000GVW	009942	2013 Wells Cargo 5x8	575200C13E4088927	Emergency Management	Emergency Management	2067.98	12/5/13	Active
Trailer-Enclosed-<6000GVW	009943	2008 TNT Cargo	5WBBE12128W002826	Sheriff's Office	Sheriff's Office	1500.00	7/8/13	Active
Trailer-Enclosed-<6000GVW	009947	2009 Conquest 7x12 Tandem	4PUUB12189U094421*	Emergency Management	Emergency Management	12000.00	7/1/08	Active
Trailer-Enclosed-<6000GVW	009965	1998 Wells Cargo GW141	1WC200F10W4031370		Sheriff's Office			Active
Trailer-Enclosed->10,001GVW	MR0007	TRAILER ENCLOSE	4P2AB16291U023710	Solid Waste	Solid Waste	0.00	1/1/90	Active
Trailer-Dump->10,001GVW	000663	2000 Northend 2-axle	NTE2AS5001124701	Er&R	County Roads	28338.66	5/31/00	Active
Trailer-Dump->10,001GVW	000664	2000 Northend 2-axle	NTE2AS5001124702	Er&R	County Roads	28338.66	5/31/00	Active
Trailer-Boat-<6000GVW	009934	2002 EZLoader boat trailer	1ZEADMTG82A002548	Sheriff's Office	Sheriff's Office	3861.00	11/4/01	Active
Trailer-Boat-<6000GVW	009951	2017 Shore Land'r LUV2314XXL	1MDAJAU15HA61456	Public Health	Public Health	2393.00	11/4/16	Active
Trailer-Boat-6001-10,000GVW	009945	2013 EZLoader boat trailer	1ZEVABZG4DA005312	Sheriff's Office	Sheriff's Office	8211.00	10/9/13	Active
Trailer-Semi-Flatbed	000715	2004 Trail King TK110HDG	1TKJ052344M084436	Er&R	County Roads	47972.32	8/31/03	Active 2nd life
Trailer-Semi-Flatbed	009964	2016 Hustler 936062	16105461		Parks & Recreation			Active
Trailer-Semi-Flatbed	009969	2020 Hustler 936849	19124584	Parks & Recreation	Parks & Recreation			Active
Trailer-Semi-Flatbed	009970	2022 Hustler 943407	22060924	Parks & Recreation	Parks & Recreation	10515.00	7/6/22	Active
Trailer-Semi-Flatbed	009970	2022 Hustler 943407	22060924	Parks & Recreation	Parks & Recreation	10515.00	7/6/22	Active
Trailer-Semi-Tank	000092	1953 Beall Tank	T55053	Er&R	County Roads	11964.50	3/1/53	Active

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Equip-Other-PortableTool-Non-powerd	000860	2014 Jones AnimalControl	2306	Er&R	Sheriff's Office	10107.57	8/31/14	Active
Equip-Other-PortableTool-Powered	001033	2023 Bomag BT65		Er&R	County Roads	4231.99	2/16/23	On order
Equip-Other-PortableTool-Powered	001034	2023 Bomag BVP/18/45		Er&R	County Roads	2495.12	2/16/23	On order
Equip-Portable-Hoist-Heavy	000903	2016 Mohawk MP-18		Er&R	Er&R	94041.24	2/1/16	Active
C1-LightVehicle-Cart-ATV	009926	John Deere Gator HPX	MOHP4GT040002	Sheriff's Office	Sheriff's Office	13390.00	3/14/06	Active
C1-LightVehicle-Cart-ATV	009954	2017 Polaris Sportsman 450	4XASEE500HA078369	Sheriff's Office	Sheriff's Office	7621.64	4/27/17	Active
C1-LightVehicle-Cart-ATV	009955	2017 Polaris Sportsman 450	4XASEE507HA078370	Sheriff's Office	Sheriff's Office	7621.64	4/27/17	Active
C1-Auto-Compact-Sedan	000863	2015 Toyota Prius C	JTDKDTB34E1077610	Er&R	Public Health	20667.15	12/25/14	Active
C1-Auto-Compact-Sedan	000864	2015 Toyota Prius C	JTDKDTB33E1084080	Er&R	Public Health	20667.15	12/25/14	Active
C1-Auto-Compact-Sedan	000978	2020 Chevrolet Bolt EVLT/1FB48	1G1FY6S00L4110930	Er&R	Er&R	37373.07	1/31/20	Active
C1-Auto-Midsize-Sedan	000816	2012 Ford Focus	1FAHP3F24CL404534	Er&R	Er&R	17532.90	5/31/12	Active
C1-Auto-Midsize-Sedan	000824	2012 Ford Focus	1FAHP3F29CL430675	Er&R	Roads-Administration	17532.90	6/20/12	Active
C1-Auto-Midsize-Sedan	000895	2016 Ford Fusion Hybrid	3FA6P0UU0GR248056	Er&R	Public Health	26082.05	11/30/15	Active
C1-Auto-Midsize-Sedan	000896	2016 Ford Fusion Hybrid	3FA6P0UU2GR248057	Er&R	Public Health	26082.05	11/30/15	Active
C1-Auto-Midsize-Sedan	007873	2015 Ford Fusion Hybrid	3FA6P0UU9FR307801	Er&R	Er&R	11866.50	2/16/18	Active
C1-Auto-Midsize-Sedan	007873	2015 Ford Fusion Hybrid	3FA6P0UU9FR307801	Er&R	Er&R	11866.50	2/16/18	Active

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C1-Auto-Midsize-Sedan	009958	2005 Ford Taurus	1FAHP53205A271253	Wsu Extension		1300.00	2/27/18	Active
C1-Auto-Midsize-Sedan	009958	2005 Ford Taurus	1FAHP53205A271253	Wsu Extension	Wsu Extension	1300.00	2/27/18	Active
C1-Auto-Fullsize-Sedan	000872	2016 Ford Fusion	3FA6P0G70GR123886	Er&R	Juvenile Court Services	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	000880	2016 Ford Fusion	3FA6P0G72GR123887	Er&R	Parks & Recreation	18414.00	5/31/15	Active
C1-Auto-Fullsize-Sedan	009909	1951 Ford	H1CH173079	Sheriff's Office	Sheriff's Office	5000.00	4/25/05	Active
C1-Auto-Fullsize-Pursuit2WD	000802	2011 Ford Crown Victoria	2FABP7BV7BX121012	Er&R	Sheriff's Office	28018.14	12/31/10	Removed from svc

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C1-Auto-Fullsize-Pursuit2WD	000806	2011 Ford Crown Victoria	2FABP7BV5BX121011	Er&R	Sheriff's Office	27493.72	12/31/10	Removed from svc
C1-Auto-Fullsize-Pursuit2WD	007806	2011 Ford Crown Victoria	2FABP7BV5BX121011*	Er&R	Sheriff's Office			Active 2nd life
C1-Auto-Fullsize-Pursuit2WD	007806	2011 Ford Crown Victoria	2FABP7BV5BX121011*	Er&R	Juvenile Court Services			Active 2nd life
C1-Auto-Fullsize-Pursuit2WD	009921	2005 Ford Crown Victoria	2FAHP71W55X133359	Sheriff's Office	Sheriff's Office	1530.00	10/31/09	Active 2nd life
C1-Auto-Fullsize-Pursuit4WD	000835	2013 Ford Taurus Intercep	1FAHP2MK8DG213500	Er&R	Sheriff's Office	29533.77	4/30/13	Removed from svc
C1-Auto-Fullsize-Pursuit4WD	000838	2013 Ford Taurus Intercep	1FAHP2MKXDG213501	Er&R	Sheriff's Office	29533.77	4/30/13	Removed from svc
C1-Auto-Fullsize-Pursuit4WD	000931	2017 Dodge Charger	2C3CDXKT6HH661058	Er&R	Sheriff's Office	38438.45	11/8/17	Active
C1-Auto-Fullsize-Pursuit4WD	000935	2018 Dodge Charger	2C3CDXKT1JH295628	Er&R	Sheriff's Office	42218.00	9/12/18	Active
C1-Auto-Fullsize-Pursuit4WD	000940	2018 Dodge Charger	2C3CDXKT0JH316436	Er&R	Sheriff's Office	42328.00	9/12/18	Active
C1-Auto-Fullsize-Pursuit4WD	000941	2019 Dodge Charger	2C3CDXKTXKH617698	Er&R	Sheriff's Office	46343.40	7/16/19	Active
C1-Auto-Fullsize-Pursuit4WD	000967	2019 Dodge Charger	2C3CDXKT0KH576997	Er&R	Sheriff's Office	40994.64	7/15/19	Active
C1-Auto-Fullsize-Pursuit4WD	000991	2020 Dodge Charger	2C3CDXKT8LH189437	Er&R	Sheriff's Office	48859.07	3/8/21	Active
C1-Auto-Fullsize-Pursuit4WD	000992	2020 Dodge Charger	2C3CDXKT2LH190860	Er&R	Sheriff's Office	48859.07	3/8/21	Active
C1-Auto-Fullsize-Pursuit4WD	000993	2020 Dodge Charger	2C3CDXKT9LH193688	Er&R	Sheriff's Office	48859.07	3/8/21	Active
C1-Auto-Fullsize-	007835	2013 Ford Taurus Intercep		Er&R	Er&R			Active 2nd life

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Pursuit4WD								
C1-Auto-Fullsize-Pursuit4WD	007838	2013 Ford Taurus Intercep	*1FAHP2MKXDG213501*	Er&R	Sheriff's Office			Active 2nd life
C1-Auto-Fullsize-Pursuit4WD	009835	2013 Ford Taurus Intercep	*1FAHP2MK8DG213500	Sheriff's Office	Sheriff's Office			Removed from svc
C1-Auto-Fullsize-Pursuit4WD	009838	2013 Ford Taurus Intercep	1FAHP2MKXDG213501*	Sheriff's Office	Sheriff's Office	29533.77	4/30/13	Removed from svc
C1-Van-Window-Passenger	000982	2020 Ford Transitworks	1FTBR2C85LKB09056	Er&R	Sheriff's Office	70545.78	12/14/20	Active
C1-Van-Window-Mini	009939	2003 Toyota Sienna	4T3ZF13C73U527454	Juvenile Court Services	Juvenile Court Services	8250.00	12/30/14	Active
C1-Van-Window-Mini	009940	1995 Dodge Grand Caravan S	2B4GP44R6WR546470	Juvenile Court Services	Juvenile Court Services	4800.00	1/1/07	Active
C1-Van-Cargo-StandardVan	000865	2015 Chevrolet Express G2500	1GCWGFFF4F1132654	Er&R	Facilities	23331.94	11/30/14	Active
C1-Van-Cargo-StandardVan	000866	2015 Chevrolet Express G2500	1GCWGFFF1F1133275	Er&R	Facilities	23331.94	11/30/14	Active
C1-Van-Cargo-StandardVan	009972	2009 Ford Econoline	1FTSS34S79DA73761		Emergency Management			Active
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000757	2006 Ford Freestar	2FTZA546X6BA53876	Er&R	Info Svcs - Records Mngmt	13968.23	4/30/06	Active 2nd life
C1-Van-Cargo-Mini	000834	2013 Ford Transit Connect	NM0LS6AN8DT144501	Er&R	Roads - Transportation	23125.65	4/30/13	Active
C1-Van-Cargo-Mini	000834	2013 Ford Transit Connect	NM0LS6AN8DT144501	Er&R	Roads - Transportation	23125.65	4/30/13	Active
C1-Van-Cargo-Mini	001023	2023 Ford Mini Connect	NM0LS6S29P1548086	Er&R		37285.26	9/12/22	On order
C1-Van-Cargo-Mini	001038	2021 Dodge Promaster	ZFBHRFAB2M6V75511	Er&R	Public Health	35536.05	6/5/23	Active
C1-Pickup-Compact-4WD	000694	2002 Ford Ranger	1FTZR15E22PA97798	Er&R	Parks & Rec - Recreation	17336.99	4/30/02	Active 2nd life
C1-Pickup-Compact-4WD	009692	2002 Ford Ranger	1FTZR15E82PA96901**	Jefferson County Assessor	Jefferson County Assessor	4382.00	12/2/16	Active
C1-Pickup-Compact-4WD	009914	1995 Chevrolet S10	1GCCT19Z9S8233732	Jefferson County Assessor	Jefferson County Assessor	1669.19	5/1/02	Removed from svc
C1-Pickup-Compact-4WD	009923	2004 Chevrolet Colorado	1GCDT196348166056	Jefferson County Assessor	Jefferson County Assessor	5000.00	8/9/11	Active
C1-Pickup-HalfTon-4WD	000859	2014 Ford F150	1FTFW1EF5EKE85825	Er&R	Sheriff's Office	29847.62	8/31/14	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000910	2016 Ford F150	1FTMF1EF2GKF26423	Er&R	County Roads	32603.63	9/12/16	Active
C1-Pickup-HalfTon-4WD	000912	2016 Ford F150	1FTMF1EF4GKF26424	Er&R	Roads - Transportation	1585.93	9/12/16	Active
C1-Pickup-HalfTon-4WD	000912	2016 Ford F150	1FTMF1EF4GKF26424	Er&R	Roads - Transportation	32057.38	9/12/16	Active
C1-Pickup-HalfTon-4WD	000928	2018 Ford F150	1FTFW1EG5JKC97521	Er&R	Sheriff's Office	51213.26	2/12/18	Active
C1-Pickup-HalfTon-4WD	000929	2018 Ford F150	1FTFW1EG7JKC97522	Er&R	Sheriff's Office	51213.26	2/12/18	Active
C1-Pickup-HalfTon-4WD	000943	2018 Ford F150	1FTEW1E55JKC27172	Er&R	Sheriff's Office	37518.32	3/26/18	Active
C1-Pickup-HalfTon-4WD	000943	2018 Ford F150	1FTEW1E55JKC27172	Er&R	Sheriff's Office	2635.62	6/25/18	Active
C1-Pickup-HalfTon-4WD	000946	2018 Ford F150	1FTEX1EB0JFD87522	Er&R	Public Health	30520.02	9/10/18	Active
C1-Pickup-HalfTon-4WD	000951	2018 Ford F150	1FTEX1EB2JFD87523	Er&R	Public Health	30520.02	9/10/18	Active
C1-Pickup-HalfTon-4WD	001019	2022 Dodge 1500	1C6RR7ST1NS233191	Er&R	Sheriff's Office	48242.25	1/23/23	Active
C1-Pickup-HalfTon-4WD	001021	2023 Ford F150	1FTFX1E55PKD81746	Er&R	County Roads	47662.97	5/8/23	On order
C1-Pickup-HalfTon-4WD	001022	2023 Ford F150	1FTFX1E56PKD81996	Er&R	County Roads	47662.97	5/8/23	On order
C1-Pickup-	001029	2023 Dodge Ram 1500		Er&R	Sheriff's Office	66000.00	6/7/23	On order

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HalfTon-4WD								
C1-Pickup-HalfTon-4WD	007796	2010 Ford F150	1FTEX1EW3AFB27277*	Er&R	Er&R	10901.00	6/1/17	Active
C1-Pickup-HalfTon-4WD	007796	2010 Ford F150	1FTEX1EW3AFB27277*	Er&R	Er&R	10901.00	6/1/17	Active
C1-Pickup-HalfTon-4WD	009781	2008 Ford F150	1FTRF14W28KD70439	Sheriff's Office	Public Health	5000.00	10/15/18	Active 2nd life
C1-Pickup-HalfTon-4WD	009781	2008 Ford F150	1FTRF14W28KD70439	Sheriff's Office	Sheriff's Office	5000.00	10/15/18	Active 2nd life
C1-Pickup-HalfTon-4WD	009963	2006 Toyota Tacoma	5TEUU42N56Z254320		Sheriff's Office			Active
C1-Pickup-3/4Ton-2WD	000659	2000 Dodge Ram 2500	3B7KC26Z11M255059	Er&R	Facilities	17969.05	2/29/00	Active 2nd life
C1-Pickup-3/4Ton-2WD	000829	2013 Ford F250	1FTBF2A60DEA93083	Er&R	County Roads	22266.65	3/31/13	Active
C1-Pickup-3/4Ton-2WD	000830	2013 Ford F250	1FTBF2A67DEA86941	Er&R	County Roads	22287.41	3/31/13	Active
C1-Pickup-3/4Ton-2WD	001036	2005 Ford F250	1FTSX21515EC20722**	Er&R	Facilities	5600.00	3/23/23	Upfitting/ prep
C1-Pickup-3/4Ton-2WD	007767	2008 Ford F250	1FTNF20508EA09274 /2	Er&R	Parks & Recreation	5000.00	1/26/17	Active
C1-Pickup-3/4Ton-2WD	007767	2008 Ford F250	1FTNF20508EA09274 /2	Er&R	Parks & Recreation	5000.00	1/26/17	Active
C1-Pickup-3/4Ton-2WD	007767	2008 Ford F250	1FTNF20508EA09274 /2	Er&R	Parks & Recreation	5000.00	1/26/17	Active
C1-Pickup-3/4Ton-2WD	007767	2008 Ford F250	1FTNF20508EA09274 /2	Er&R	Parks & Recreation	5000.00	1/26/17	Active
C1-Pickup-3/4Ton-2WD	007826	2012 Ford F250	1FT7X2B69CEC33115	Er&R	Parks & Rec-Memorial Field	6500.00	8/30/19	Upfitting/ prep

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C1-Pickup-3/4Ton-2WD	007826	2012 Ford F250	1FT7X2B69CEC33115	Er&R	Parks & Rec-Memorial Field	6500.00	8/30/19	Upfitting/ prep
C1-Pickup-3/4Ton-2WD	009743	2005 Ford F250	1FTSX21515EC20722*	Sheriff's Office	Sheriff's Office	2246.19	2/29/16	Removed from svc
C1-Pickup-3/4Ton-2WD	009931	2005 Dodge Ram 2500	3D7KR26D25G781570	Sheriff's Office	Sheriff's Office	16342.04	2/17/05	Active
C1-Pickup-3/4Ton-4WD	000908	2017 Ford F250	1FTBF2B61HEB19517	Er&R	County Roads	34280.20	10/10/16	Active
C1-Pickup-3/4Ton-4WD	000908	2017 Ford F250	1FTBF2B61HEB19517	Er&R	County Roads	34280.20	10/10/16	Active
C1-Pickup-3/4Ton-4WD	000909	2017 Ford F250	1FTBF2B63HEB19518	Er&R	County Roads	34280.20	10/10/16	Active
C1-Pickup-3/4Ton-4WD	000909	2017 Ford F250	1FTBF2B63HEB19518	Er&R	County Roads	34280.20	10/10/16	Active
C1-Pickup-3/4Ton-4WD	000920	2017 Ford F250	1FT7X2B61HED18828	Er&R	County Roads	36821.44	5/8/17	Active
C1-Pickup-3/4Ton-4WD	000921	2017 Ford F250	1FTBF2B67HED45139	Er&R	County Roads	34280.20	5/15/17	Active
C1-Pickup-3/4Ton-4WD	000927	2018 Ford F250	1FD7X2B64JEB41080	Er&R	County Roads	46692.15	2/12/18	Active
C1-Pickup-3/4Ton-4WD	000936	2018 Ford F250	1FT7X2B67JEC46880	Er&R	Solid Waste	36504.78	5/21/18	Active
C1-Pickup-3/4Ton-4WD	000964	2019 FORD F250	1FT7X2B62KEF56257	Er&R	County Roads	37649.49	7/15/19	Active
C1-Pickup-3/4Ton-4WD	001030	2023 Ford F250		Er&R	Roads - Maintenance	51688.37	11/8/22	On order
C1-Pickup-3/4Ton-4WD	001031	2023 Ford F250		Er&R	Roads - Maintenance	51688.37	11/8/22	On order
C1-Pickup-	009966	2019 Ford f250	1FT7W2B69KDF56243		Sheriff's Office	38841.89	10/18/19	Active

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3/4Ton-4WD								
C1-Pickup-3/4Ton-4WD	MR0004	1996 Ford F250	1FTHF25H1TLB57518	Solid Waste	Solid Waste	0.00	1/1/90	Active
C1-SUV-Compact-2WD	000778	2008 Ford Escape	1FMCU02Z38KD65975	Er&R	Community Development	16111.24	3/26/08	Active 2nd life
C1-SUV-Compact-4WD	000815	2012 Ford Escape	1FMCU9C75CKB33629	Er&R	Roads - Transportation	19464.27	3/31/12	Active
C1-SUV-Compact-4WD	000833	2013 Ford Escape	1FMCU9G91DUD11523	Er&R	Roads - Transportation	25882.97	3/31/13	Active
C1-SUV-Compact-4WD	000883	2016 Ford Explorer Base	1FM5K8B89GGA37398	Er&R	Sheriff's Office	31939.94	7/31/15	Active
C1-SUV-Compact-4WD	000887	2016 Ford Explorer Base	1FM5K8B86GGB13434	Er&R	Sheriff's Office	29277.82	11/30/15	Active
C1-SUV-Compact-4WD	000890	2016 Ford Explorer Base	1FM5K8B80GGA37399	Er&R	Roads - Transportation	28535.97	7/31/15	Active
C1-SUV-Compact-4WD	000894	2016 Ford Escape	1FMCU9GX7GUA69856	Er&R	Community Development	24332.84	9/1/15	Active
C1-SUV-Compact-4WD	000945	2018 Ford Escape	1FMCU9GD8JUC91125	Er&R	Community Development	25966.14	7/2/18	Active
C1-SUV-Compact-4WD	000968	2020 Ford Interceptor	1FM5K8AB7LGA97459	Er&R	Community Development	36912.37	1/27/20	Active
C1-SUV-Compact-4WD	000994	2020 Ford Escape	1FMCU9BZ5LUB84913	Er&R	Public Health	30623.00	10/12/20	Active
C1-SUV-Compact-4WD	001037	2023 Jeep Compass	3C4NJDAB7MT591382	Er&R	Public Health	27372.58	5/23/23	Active
C1-SUV-Compact-4WD	009949	2006 Jeep Liberty	1J8GL48K26W216983	Jefferson County Assessor	Jefferson County Assessor	0.00	1/10/16	Active
C1-SUV-Compact-4WD	009967	2012 Ford Escape	1FMCU9EG5CKC46526		Jefferson County Assessor	0.00	12/3/19	Active
C1-SUV-Compact-4WD	009971	2015 Jeep Patriot	1C4NJRBB0FD168793		Jefferson County Assessor	14500.00	3/22/23	Active
C1-SUV-Compact-Pursuit4WD	000820	2013 Ford Explorer Interc	1FM5K8AR3DGA34082	Er&R	Sheriff's Office	32161.54	6/30/12	Active 2nd life
C1-SUV-Compact-Pursuit4WD	000846	2014 Ford Explorer Interc	1FM5K8AT7EGC27199	Er&R	Sheriff's Office	43896.78	5/6/14	Removed from svc
C1-SUV-Compact-	000847	2014 Ford Explorer Interc	1FM5K8ATXEGC27200	Er&R	Sheriff's Office	43831.43	5/6/14	Removed

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Pursuit4WD								from svc
C1-SUV-Compact-Pursuit4WD	000905	2017 Ford Explorer Interc	1FM5K8AT8HGA79438	Er&R	Sheriff's Office	36283.75	11/21/16	Active
C1-SUV-Compact-Pursuit4WD	000905	2017 Ford Explorer Interc	1FM5K8AT8HGA79438	Er&R	Sheriff's Office	5733.40	11/21/16	Active
C1-SUV-Compact-Pursuit4WD	000907	2017 Ford Explorer Interc	1FM5K8AT9HGA63698	Er&R	Sheriff's Office	36092.06	2/13/17	Active
C1-SUV-Compact-Pursuit4WD	000907	2017 Ford Explorer Interc	1FM5K8AT9HGA63698	Er&R	Sheriff's Office	8605.80	2/13/17	Active
C1-SUV-Compact-Pursuit4WD	000913	2017 Ford Explorer Interc	1FM5K8AR1HGA94965	Er&R	County Roads	30490.78	10/24/16	Active
C1-SUV-Compact-Pursuit4WD	000913	2017 Ford Explorer Interc	1FM5K8AR1HGA94965	Er&R	County Roads	30490.78	10/24/16	Active
C1-SUV-Compact-Pursuit4WD	000914	2017 Ford Explorer Interc	1FM5K8AT7HGB71981	Er&R	Sheriff's Office	5345.29	5/16/17	Active
C1-SUV-Compact-Pursuit4WD	000914	2017 Ford Explorer Interc	1FM5K8AT7HGB71981	Er&R	Sheriff's Office	40002.85	5/16/17	Active
C1-SUV-Compact-Pursuit4WD	000957	2019 Dodge Durango	1C4SDJFT8KC711337	Er&R	Sheriff's Office	54807.89	7/16/19	Active
C1-SUV-Compact-Pursuit4WD	000958	2019 Dodge Durango	1C4SDJFTXKC711338	Er&R	Sheriff's Office	54807.89	7/16/19	Active
C1-SUV-Compact-Pursuit4WD	000959	2019 Dodge Durango	1C4SDJFT1KC711339	Er&R	Sheriff's Office	54807.89	7/16/19	Active
C1-SUV-Compact-Pursuit4WD	000974	2019 Dodge Durango	1C4SDJFT8KC812135	Er&R	Sheriff's Office	57969.85	1/14/20	Active
C1-SUV-Compact-Pursuit4WD	000976	2020 Dodge Durango	1C4SDJFT2LC309279	Er&R	Sheriff's Office	60465.82	8/6/20	Active
C1-SUV-Compact-Pursuit4WD	000977	2020 Dodge Durango	1C4SDJFT9LC309280	Er&R	Sheriff's Office	60465.82	9/23/20	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C1-SUV-Compact-Pursuit4WD	001000	2021 Dodge Durango	1C4RDJAG0MC544855	Er&R	Sheriff's Office	32560.97	5/24/21	Active
C1-SUV-Compact-Pursuit4WD	001011	2021 Dodge Durango	1C4SDJFT0MC799402	Er&R	Sheriff's Office	66060.00	3/10/22	Active
C1-SUV-Compact-Pursuit4WD	001025	2023 Dodge Durango		Er&R	Sheriff's Office	77470.60	10/20/22	On order
C1-SUV-Compact-Pursuit4WD	001026	2023 Dodge Durango		Er&R	Sheriff's Office	77470.60	10/20/22	On order
C1-SUV-Compact-Pursuit4WD	001027	2023 Dodge Durango		Er&R	Sheriff's Office	77470.60	10/20/22	On order
C1-SUV-Compact-Pursuit4WD	001028	2023 Dodge Durango		Er&R	Sheriff's Office	77470.60	10/20/22	On order
C1-SUV-Compact-Pursuit4WD	007846	2014 Ford Explorer Interc	1FM5K8AT7EGC27199*	Er&R	Sheriff's Office	4389.68	6/16/21	Active 2nd life
C1-SUV-Compact-Pursuit4WD	007847	2014 Ford Explorer Interc	1FM5K8ATXEGC27200*	Er&R	Sheriff's Office	4383.15	5/14/21	Active 2nd life
C1-SUV-Compact-Pursuit4WD	007897	2016 Ford Explorer Interc	1FM5K8AT3GGB74374*	Er&R	Sheriff's Office	3949.89	6/16/21	Active 2nd life
C1-SUV-Compact-Pursuit4WD	009848	2015 Ford Explorer Interc	*1FM5K8AR5FGA09946*	Er&R	Sheriff's Office			Removed from svc
C2-Van-Cargo-StandardVan	000841	2013 Ford Econoline	1FTNE1EW2DDA77624	Er&R	Facilities	20206.35	6/30/13	Active
C2-Van-Cargo-StandardVan	000862	2015 Chevrolet Express G3500	1GCZGUFF1F1113979	Er&R	Sheriff's Office	39680.85	9/30/14	Active
C2-Van-Cargo-StandardVan	009901	1995 Ford E250	1FBJS31HXSHB46581	Juvenile Court Services	Juvenile Court Services	14000.00	6/30/02	Active
C2-Pickup-OneTon-DRW	000782	2008 Ford F350	1FTWX30Y48ED93657	Er&R	Solid Waste	23105.32	5/12/08	Active 2nd life
C3-Van-Cargo-	009922	1992 Ford Ambulance	1FDKE30M0NHA10000	Sheriff's Office	Sheriff's Office	5000.00	9/14/10	Active

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CutawayAmbulance								
C3-StraightTruck-FlatBed	007801	2011 Ford F450	1FDUF4GY7BEB58288	Er&R	County Roads			Upfitting/ prep
C3-StraightTruck-Service-Mechanics	000677	2001 Ford F550	1FDAF57SX1EC92604	Er&R	Er&R	48811.85	4/30/01	Active
C3-StraightTruck-Service-Mechanics	000787	2008 Ford F450	1FDXF46Y88ED99820	Er&R	Er&R	25484.56	5/12/08	Active
C5-StraightTruck-FlatBed	000916	2017 Ford F450	1FDUF4HY1HEC23370	Er&R	Parks & Recreation	50879.34	3/22/17	Active
C5-StraightTruck-FlatBed	000917	2017 Ford F450	1FDUF4HY9HDA04470	Er&R	County Roads	39697.37	4/10/17	Active
C5-StraightTruck-FlatBed	000917	2017 Ford F450	1FDUF4HY9HDA04470	Er&R	County Roads	39697.37	4/10/17	Active
C5-StraightTruck-FlatBed	000917	2017 Ford F450	1FDUF4HY9HDA04470	Er&R	County Roads	39697.37	4/10/17	Active
C5-StraightTruck-FlatBed	000917	2017 Ford F450	1FDUF4HY9HDA04470	Er&R	County Roads	33938.99	2/12/18	Active
C5-StraightTruck-FlatBed	000917	2017 Ford F450	1FDUF4HY9HDA04470	Er&R	County Roads	33938.99	2/12/18	Active
C5-StraightTruck-FlatBed	000917	2017 Ford F450	1FDUF4HY9HDA04470	Er&R	County Roads	33938.99	2/12/18	Active
C5-StraightTruck-FlatBed	000948	2018 Ford F550	1FDUF5HY0JDA04496	Er&R	County Roads	98300.37	10/22/18	Active
C5-StraightTruck-FlatBed	000948	2018 Ford F550	1FDUF5HY0JDA04496	Er&R	County Roads	98300.37	10/22/18	Active
C5-StraightTruck-FlatBed	000949	2018 Ford F550	1FDUF5HY2JDA04497	Er&R	County Roads	104142.05	10/22/18	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C5-StraightTruck-FlatBed	000949	2018 Ford F550	1FDUF5HY2JDA04497	Er&R	County Roads	104142.05	10/22/18	Active
C5-StraightTruck-FlatBed	000965	2019 FORD F650	1FDNF6AY3KDF09910	Er&R	County Roads	115971.74	7/19/19	Active
C5-StraightTruck-FlatBed	000965	2019 FORD F650	1FDNF6AY3KDF09910	Er&R	County Roads	115971.74	7/19/19	Active
C5-StraightTruck-FlatBed	000999	2022 Ford F450	1FDTF4HN5NDA04351	Er&R	County Roads	92789.32	6/1/22	Active
C5-StraightTruck-FlatBed	000999	2022 Ford F450	1FDTF4HN5NDA04351	Er&R	County Roads	92789.32	6/1/22	Active
C5-StraightTruck-FlatBed	001032	2023 Ford F450	1FDU4HN1PED11498	Er&R	Parks & Recreation	70846.99	11/15/22	Upfitting/ prep
C5-StraightTruck-Police-Tactical	009898	2012 BAE CAIMAN			Sheriff's Office			Active
C7-StraightTruck-PW-SweeperAir	000814	2011 Elgin Cross-wind J	1HTJTSKN9CJ440106	Er&R	County Roads	201341.36	12/31/11	Active
C8-StraightTruck-DumpBed-1-axle	000874	2015 Freightliner 108SD	1FVAG5CY7GHGX4762	Er&R	County Roads	148925.65	5/31/16	Active
C8-StraightTruck-DumpBed-1-axle	000961	2018 Freightliner 108SD	1FVAG5FEXJHJX0132	Er&R	County Roads	161778.05	2/8/19	Active
C8-StraightTruck-DumpBed-1-axle	000962	2018 Freightliner 108SD	1FVAG5FE8JHJX0131	Er&R	County Roads	161778.05	2/8/19	Active
C8-StraightTruck-DumpBed-1-axle	007665	2000 International 2674	1HTGKAHR21H339706*	Er&R	Solid Waste	12500.00	3/1/19	Active 2nd life
C8-StraightTruck-Tanker	000211	1987 International 1954	1HTLDTVR2HHA10056	Er&R	County Roads	47956.92	9/30/86	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C8-StraightTruck-Tanker	000610	1996 International F2674	1HTGLAHT1TH261558	Er&R	County Roads	106379.66	1/31/97	Active
C8-StraightTruck-DumpBed-2-axle	000673	2001 International 2674	1HTGLAET41H399029	Er&R	County Roads	103284.23	8/31/01	Active
C8-StraightTruck-DumpBed-2-axle	000673	2001 International 2674	1HTGLAET41H399029	Er&R	County Roads	103284.23	8/31/01	Active
C8-StraightTruck-DumpBed-2-axle	000877	2015 Freightliner 114SD	1FVMG3DV4GHHA1725	Er&R	County Roads	191654.99	7/14/16	Active
C8-StraightTruck-DumpBed-2-axle	000944	2017 Freightliner 114SD	1FVHG3DV4JHJX0133	Er&R	County Roads	196451.00	9/10/18	Active
C8-StraightTruck-DumpBed-2-axle	000944	2017 Freightliner 114SD	1FVHG3DV4JHJX0133	Er&R	County Roads	196451.00	9/10/18	Active
C8-StraightTruck-DumpBed-2-axle	000952	2017 Freightliner 114SD	1FVHG3DVXJHJX3201	Er&R	County Roads	196450.99	9/10/18	Active
C8-StraightTruck-DumpBed-2-axle	000952	2017 Freightliner 114SD	1FVHG3DVXJHJX3201	Er&R	County Roads	196450.99	9/10/18	Active
C8-StraightTruck-DumpBed-2-axle	000955	2018 Freightliner 114SD	1FVHG3DV6JHJX0134	Er&R	County Roads	198710.26	10/4/18	Active
C8-StraightTruck-DumpBed-2-axle	000955	2018 Freightliner 114SD	1FVHG3DV6JHJX0134	Er&R	County Roads	198710.26	10/4/18	Active
C8-StraightTruck-DumpBed-2-axle	000980	2020 International HX520	3HTDPAPT6MN564917	Er&R	County Roads	226358.57	4/26/21	Active
C8-StraightTruck-DumpBed-2-axle	000980	2020 International HX520	3HTDPAPT6MN564917	Er&R	County Roads	226358.57	4/26/21	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C8-StraightTruck-DumpBed-2-axle	001005	2023 International HX520	3HTPAAPT3PN597294	Er&R	County Roads	234073.26	6/15/22	Active
C8-StraightTruck-DumpBed-2-axle	001017	2024 International HX520 SFA 6X4	3HTPAAPT4RN210125	Er&R	County Roads	262783.32	3/9/22	Upfitting/ prep
C8-StraightTruck-Utility-InsAerial	000919	2017 Freightliner M2-106	3ALACXFC4JDJM4282	Er&R	County Roads	293084.65	2/20/18	Active
C8-StraightTruck-Utility-InsAerial	000919	2017 Freightliner M2-106	3ALACXFC4JDJM4282	Er&R	County Roads	293084.65	2/20/18	Active
C8-StraightTruck-PW-AsphaltDstbtr	000652	2000 International 4900	1HTSDADR4YH248506	Er&R	County Roads	110786.16	12/31/99	Active
C8-StraightTruck-PW-AsphaltDstbtr	000652	2000 International 4900	1HTSDADR4YH248506	Er&R	County Roads	110786.16	12/31/99	Active
C8-StraightTruck-PW-AsphaltDstbtr	000652	2000 International 4900	1HTSDADR4YH248506	Er&R	County Roads	110786.16	12/31/99	Active
C8-StraightTruck-PW-AsphaltDstbtr	000717	2004 International 7600	1HTWYAHT64J015497	Er&R	County Roads	145632.65	11/30/03	Active
C8-StraightTruck-PW-AsphaltDstbtr	000717	2004 International 7600	1HTWYAHT64J015497	Er&R	County Roads	145632.65	11/30/03	Active
C8-StraightTruck-PW-AsphaltDstbtr	000717	2004 International 7600	1HTWYAHT64J015497	Er&R	County Roads	145632.65	11/30/03	Active
C8-StraightTruck-PW-AsphaltDstbtr	000717	2004 International 7600	1HTWYAHT64J015497	Er&R	County Roads	145632.65	11/30/03	Active
C8-SemiTruck-Conventional	000930	2009 VOLVO VNL84T	4V4N99TJ69N284114	Er&R	Solid Waste	45276.50	10/23/17	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
C8-SemiTruck-Conventional	000933	2010 Volvo ET-16	4V4N99TJ9AN284127	Er&R	County Roads	49005.00	11/20/17	Active
C8-SemiTruck-Conventional	000933	2010 Volvo ET-16	4V4N99TJ9AN284127	Er&R	County Roads	49005.00	11/20/17	Active
C8-SemiTruck-YardTractor	000854	2014 Capacity TJ6500	4LMDF7138EL024844	Er&R	Solid Waste	130515.51	4/30/14	Active
SelfPropelledEquipment	009974	2023 KAWASAKI KAF400PFNN	JKAFEP1XPB515496	County Roads				Active
Equip-Wheeled-Artic'dLoader-2-4yd	000619	1997 Case 621B	JEE0053979	Er&R	County Roads	92089.54	5/31/97	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000619	1997 Case 621B	JEE0053979	Er&R	County Roads	92089.54	5/31/97	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000619	1997 Case 621B	JEE0053979	Er&R	County Roads	92089.54	5/31/97	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000619	1997 Case 621B	JEE0053979	Er&R	County Roads	92089.54	5/31/97	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000670	2000 Case 621C	JEE0124703	Er&R	County Roads	100095.54	10/31/00	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000670	2000 Case 621C	JEE0124703	Er&R	County Roads	100095.54	10/31/00	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000670	2000 Case 621C	JEE0124703	Er&R	County Roads	100095.54	10/31/00	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000670	2000 Case 621C	JEE0124703	Er&R	County Roads	100095.54	10/31/00	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000891	2014 Caterpillar 938K	CAT0938KTSWL03760	Er&R	County Roads	211580.99	4/30/15	Active
Equip-Wheeled-Artic'dLoader-2-4yd	000938	2018 CAT 938 High Lift	CAT0938MJJ3R05709	Er&R	Solid Waste	297383.61	7/3/18	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Equip-Wheeled-BackhoeLoader-Medium	000924	2017 John Deere 310SL	1T0310SLLHF311783	Er&R	Solid Waste	108817.97	5/15/17	Active
Equip-Wheeled-BackhoeLoader-Medium	000924	2017 John Deere 310SL	1T0310SLLHF311783	Er&R	Solid Waste	9467.07	5/15/17	Active
Equip-Wheeled-BackhoeLoader-Heavy	000785	2008 John Deere 410J	T0410JK164884	Er&R	County Roads	106239.93	6/9/08	Removed from svc
Equip-Wheeled-BackhoeLoader-Heavy	000785	2008 John Deere 410J	T0410JK164884	Er&R	County Roads	106239.93	6/9/08	Removed from svc
Equip-Wheeled-BackhoeLoader-Heavy	000785	2008 John Deere 410J	T0410JK164884	Er&R	County Roads	106239.93	6/9/08	Removed from svc
Equip-Wheeled-BackhoeLoader-Heavy	000785	2008 John Deere 410J	T0410JK164884	Er&R	County Roads	106239.93	6/9/08	Removed from svc
Equip-Wheeled-BackhoeLoader-Heavy	000882	2015 Caterpillar 430F2	CAT0430FHHWE00350	Er&R	County Roads	126119.54	11/15/15	Active
Equip-Wheeled-BackhoeLoader-Heavy	000882	2015 Caterpillar 430F2	CAT0430FHHWE00350	Er&R	County Roads	126119.54	11/15/15	Active
Equip-Wheeled-BackhoeLoader-Heavy	007785	2008 John Deere 410J	*T0410JK164884	Er&R	County Roads			Active 2nd life
Equip-Wheeled-Grader	000869	2015 Caterpillar 140M3	CAT0140MAN9M00141	Er&R	County Roads	262159.39	4/30/15	Active
Equip-Wheeled-Grader	001006	2022 John Deere 672G	1DW672GPCNF713175	Er&R	County Roads	299911.71	1/25/22	Active
Equip-Wheeled-Grader	001006	2022 John Deere 672G	1DW672GPCNF713175	Er&R	County Roads	299911.71	1/25/22	Active
Equip-Tracked-SkidSteer Loader	000984	2020 John Deere 325G Track	1T0325GLALJ372350	Er&R	County Roads	62488.41	6/4/20	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Equip-Tracked-SkidSteer Loader	000984	2020 John Deere 325G Track	1T0325GLALJ372350	Er&R	County Roads	62488.41	6/4/20	Active
Equip-Tracked-Dozer	000400	1989 Caterpillar D4C	4GH01519	Er&R	County Roads	44885.28	8/31/89	Active
Equip-Tracked-Dozer	000400	1989 Caterpillar D4C	4GH01519	Er&R	County Roads	44885.28	8/31/89	Active
Equip-Tracked-Excavator	000904	2014 Caterpillar A26B	LLS03155	Er&R	County Roads	3706.00	4/12/16	Active
Equip-Tracked-Excavator	000947	2018 Grizzly 215 SW	18564	Er&R	Solid Waste	240524.31	12/24/18	Active
Equip-Tracked-Excavator	000947	2018 Grizzly 215 SW	18564	Er&R	Solid Waste	26455.14	10/25/23	Active
Equip-Tracked-Excavator	000966	2019 CASE CX145D	DAC145K7NKS7E1718	Er&R	County Roads	195808.69	7/19/19	Active
Equip-Tracked-Excavator	000966	2019 CASE CX145D	DAC145K7NKS7E1718	Er&R	County Roads	195808.69	7/19/19	Active
Equip-Tracked-Excavator	000966	2019 CASE CX145D	DAC145K7NKS7E1718	Er&R	County Roads	195808.69	7/19/19	Active
Equip-Tracked-Excavator	000983	2020 Case CX80C	NJS6B2094	Er&R	County Roads	135593.04	4/10/20	Active
Equip-Tracked-Excavator	001007	2021 Case CX80	DAC080K6NMS6B2585	Er&R	County Roads	150535.50	12/29/21	Active
Equip-Tracked-Excavator	001007	2021 Case CX80	DAC080K6NMS6B2585	Er&R	County Roads	150535.50	12/29/21	Active
Equip-Tracked-Excavator	001009	2022 Case CX80	DCA080K6NMS6B2756	Er&R		154624.63	4/13/22	Active
Equip-Tracked-Excavator	001009	2022 Case CX80	DCA080K6NMS6B2756	Er&R		154624.63	4/13/22	Active
Equip-MaterialHndl-Forklift	000732	2004 Toyota 7FGU30	65230	Er&R	County Roads	27390.83	5/31/04	Active
Equip-MaterialHndl-Forklift	000842	2013 Toyota 8FGU30	8FGU32-38380	Er&R	Solid Waste	32638.96	10/31/13	Active
Equip-MaterialHndl-Forklift	001002	2021 Cascade PSM48		Er&R	Roads - Maintenance	1055.00	6/14/21	On order
Equip-MaterialHndl-MaterialLoader	000795	2009 Leeboy 3000	55545	Er&R	County Roads	188464.24	6/30/09	Active
Equip-PW-	000827	2012 Rosco Challenger 6	491083786	Er&R	County Roads	73466.00	12/31/12	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Sweeper-Riding								
Equip-PW-Sweeper-Riding	000827	2012 Rosco Challenger 6	491083786	Er&R	County Roads	73466.00	12/31/12	Active
Equip-PW-Sweeper-Riding	000827	2012 Rosco Challenger 6	491083786	Er&R	County Roads	73466.00	12/31/12	Active
Equip-PW-Sweeper-Riding	000827	2012 Rosco Challenger 6	491083786	Er&R	County Roads	73466.00	12/31/12	Active
Equip-PW-Sweeper-Riding	000906	2012 Rosco SweepPro	489079849	Er&R	County Roads	29162.00	8/8/16	Active
Equip-PW-Sweeper-Riding	000906	2012 Rosco SweepPro	489079849	Er&R	County Roads	29162.00	8/8/16	Active
Equip-PW-Sweeper-Riding	000942	2018 Buffalo Mega BT	28534	Er&R	County Roads	15429.48	1/23/18	Active
Equip-PW-Sweeper-Riding	001024	2022 MB HLP/HTP	MB-07662	Er&R	County Roads	16055.06	9/22/22	Active
Equip-PW-Pavement-Patchers	000939	2017 Steel inc. Express Snow Pu		Er&R	County Roads	1962.00	1/5/18	Active
Equip-PW-Pavement-Pavement Saw	000547	1994	190BM-231SRB	Er&R	County Roads	2546.44	3/4/94	Active
Equip-PW-Paver-Wheeled	000669	2000 Layton F525	F10791N00/EH38630	Er&R	County Roads	28190.51	8/31/00	Active
Equip-PW-Paver-Wheeled	000669	2000 Layton F525	F10791N00/EH38630	Er&R	County Roads	28190.51	8/31/00	Active
Equip-PW-Paver-Wheeled	000669	2000 Layton F525	F10791N00/EH38630	Er&R	County Roads	28190.51	8/31/00	Active
Equip-PW-Roller-Steel	000682	2001 Ingersoll-Rand DD24	167348	Er&R	County Roads	31280.00	5/31/01	Active
Equip-PW-	000748	2005 Ingersoll-Rand SD77DX	185331	Er&R	County Roads	72944.00	9/30/05	Active 2nd life

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
Roller-Steel								
Equip-PW-Roller-Steel	000748	2005 Ingersoll-Rand SD77DX	185331	Er&R	County Roads	72944.00	9/30/05	Active 2nd life
Equip-PW-Roller-Steel	000918	2017 Caterpillar CS44B	CATCS44BLCS300390	Er&R	County Roads	122403.48	3/22/17	Active
Equip-PW-Roller-Steel	000918	2017 Caterpillar CS44B	CATCS44BLCS300390	Er&R	County Roads	122403.48	3/22/17	Active
Equip-PW-Roller-Rubber	000549	1994 Hamm GRW5	36593	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000549	1994 Hamm GRW5	36593	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000549	1994 Hamm GRW5	36593	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000549	1994 Hamm GRW5	36593	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000551	1994 Hamm GRW5	36594	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000551	1994 Hamm GRW5	36594	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000551	1994 Hamm GRW5	36594	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Roller-Rubber	000551	1994 Hamm GRW5	36594	Er&R	County Roads	43749.28	4/27/94	Active
Equip-PW-Auger	001001	2021 John Deere PA30B		Er&R	Roads - Maintenance	3073.78	6/14/21	Active
Equip-PW-CurbMachine	000047	1980 Miller 650S	1549/MTR 5965669	Er&R	County Roads	5285.20	12/1/80	Active
Equip-PW-ChipSpreader	000934	2017 Leeboy CSV816	CVS157238	Er&R	County Roads	298642.00	12/26/17	Active
Equip-Grounds-	009957	2017 Husqvarna GTH52XLS	102716A004434	Parks & Recreation	Parks & Recreation			Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
RidingMower->15hp								
Equip-Grounds-UtltyTractor-15-30hp	000844	2014 John Deere 2025R	1LV2025RKDH110607	Er&R	Parks & Recreation	17088.06	6/30/14	Active
Equip-Grounds-UtltyTractor-15-30hp	000922	2016 John Deere 2025R	1LV2025RVFH119623	Er&R	Parks & Rec-Memorial Field	19247.63	3/1/17	Active
Equip-Grounds-UtltyTractor-15-30hp	LF0081	2020 John Deere Gator	1M04X2SJKLM150915		Solid Waste			Active
Equip-Grounds-UtltyTractor-70-100hp	000867	2015 New Holland T4.85	ZFJT50308	Er&R	County Roads	45820.94	5/31/15	Active
Equip-Grounds-UtltyTractor-70-100hp	000867	2015 New Holland T4.85	ZFJT50308	Er&R	County Roads	45820.94	5/31/15	Active
Equip-Grounds-UtltyTractor-70-100hp	000867	2015 New Holland T4.85	ZFJT50308	Er&R	County Roads	45820.94	5/31/15	Active
Equip-Grounds-UtltyTractor-70-100hp	000901	2015 New Holland T4.85	ZEJT50348	Er&R	County Roads	49584.50	12/7/15	Active
Equip-Grounds-UtltyTractor-70-100hp	000901	2015 New Holland T4.85	ZEJT50348	Er&R	County Roads	49584.50	12/7/15	Active
Equip-Grounds-UtltyTractor-70-100hp	000901	2015 New Holland T4.85	ZEJT50348	Er&R	County Roads	49584.50	12/7/15	Active
Equip-Grounds-UtltyTractor-70-100hp	000925	2017 New Holland T4.90	ZHLE50867	Er&R	County Roads	54126.14	5/14/18	Active
Equip-Grounds-UtltyTractor-70-100hp	001003	2021 John Deere X330	1M0X330ACMM113336	Er&R	Er&R	3053.84	5/5/21	On order
Equip-Grounds-	000892	2015 New Holland T6.155	ZFBD02318	Er&R	County Roads	76823.53	5/31/15	Active

Category	Fleet #	Year Make Model	VINSerial No	Owner Dept/Div	Assigned Dept/Div	Acq Cost	Acq Date	Status
UtltyTractor->100hp								
Equip-Watercraft-Boat	009919	2001 Leeshore boat	NRGZ4PJCG101	Sheriff's Office	Sheriff's Office	29870.00	9/1/01	Active
Equip-Watercraft-Boat	009944	2013 Leeshore 28 boat	LSB28070I313	Sheriff's Office	Sheriff's Office	249531.00	10/9/13	Active
Equip-Watercraft-Boat-26+hp OBM	009950	2017 Lund Alaskan Z18ALD	LBBHJ228I617	Public Health	Public Health	23700.20	11/4/16	Active
Equip-Aviation-RotaryWing-IC	009968	2020 DJI Mavic 2	298DG7PR01D392		Roads - Maintenance	4707.71	1/6/20	Active

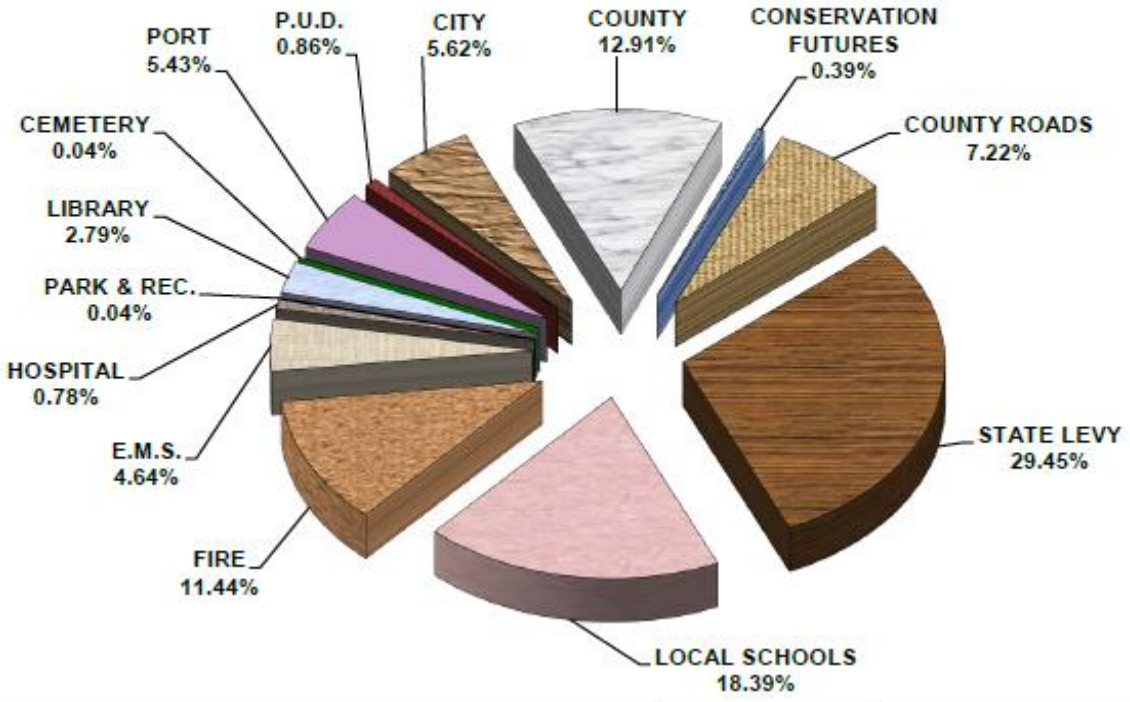
Jefferson County Public Assets at Risk

Jefferson County - 2022 Public Asset Schedule Totals

Asset Type	Asset Schedule Value
Building	$66,797,304
Movable Equipment	$3,932,919
Vehicle	$20,659,485
Grand Total:	$91,389,708

2023 REAL & PERSONAL PROPERTY TAX DISTRIBUTION

PERCENTAGE DISTRIBUTION FOR TAX YEAR 2023



TAXING DISTRICT:	LEVY AMOUNT	%
STATE LEVIES (SCHOOL):	$20,185,453.00	29.45%
LOCAL SCHOOLS:	$12,603,065.88	18.39%
FIRE DISTRICTS:	$7,839,393.65	11.44%
EMERGENCY MEDICAL SERVICES:	$3,178,397.95	4.64%
HOSPITAL DISTRICTS:	$537,427.91	0.78%
PARK & RECREATION DISTRICT #1:	$27,300.00	0.04%
LIBRARY DISTRICT #1:	$1,914,931.32	2.79%
CEMETERY DISTRICTS:	$24,299.98	0.04%
PORT OF PORT TOWNSEND:	$3,726,604.98	5.43%
PUBLIC UTILITY DISTRICT #1:	$586,401.23	0.86%
CITY OF PORT TOWNSEND:	$3,854,614.38	5.62%
COUNTY CURRENT EXPENSE (w/ M.H., D.D., & V.R.):	$8,846,429.10	12.91%
CONSERVATION FUTURES	$265,269.26	0.39%
COUNTY ROADS (w/DIVERSION):	$4,949,528.51	7.22%
TOTAL:	**$68,539,117.15**	**100.00%**

LOCALLY ASSESSED REAL & PERSONAL VALUATION:	$8,684,417,661	
LESS SENIOR CITIZEN EXEMPTIONS (A & B):		$96,828,872
PUBLIC UTILITIES ASSESSED VALUATION:	$23,911,209	
TOTAL TAXABLE VALUE:		**$8,611,499,998**
COUNTY WIDE NEW CONSTRUCTION IN 2022:		$94,251,427

TOTAL AMOUNT FORCASTED FOR TIMBER TAX DISTRIBUTION:	FOR BOND LEVIES:	$84,171.92
	FOR SCHOOL EP & O LEVIES:	$110,323.17
	FOR REMAINING DISTRICTS:	$708,639.19
	RESERVE FOR 2024 DISTRIBUTION:	$180,626.86

JEFFERSON COUNTY ABSTRACT OF ASSESSED VALUES, LEVY RATES, AND TAX AMOUNTS
2022 ASSESSMENTS PAYABLE IN 2023

TAXING DISTRICT	REAL/PERSONAL PROPERTY A.V.	TIMBER A.V.	LEVY RATE (/1000)	TAX AMOUNT	
				REAL & PERSONAL	TIMBER
STATE LEVY (SCHOOL):					
Part 1	8,610,130,690		1.5337741639	$13,205,996.00	
Part 2	8,507,526,200		0.8203861893	$6,979,457.00	
COUNTY:					
Current Expense	8,611,499,998		1.0097124859	$8,695,139.07	
		211,171,030			$213,222.03
Mental Health	8,611,499,998		0.0058316588	$50,219.33	
		211,171,030			$1,231.48
Development Disabilities	8,611,499,998		0.0058316588	$50,219.33	
		211,171,030			$1,231.48
Veteran's Relief	8,611,499,998		0.0059050537	$50,851.37	
		211,171,030			$1,246.98
		COUNTY TOTAL =	**1.0272808572**	**$8,846,429.10**	**$216,931.97**
COUNTY:					
Conservation Futures	8,611,499,998		0.0308040713	$265,269.26	
		211,171,030			$6,504.93
JEFFERSON COUNTY ROADS:					
General	5,955,074,390		0.7270318096	$4,329,528.51	
		211,160,796			$153,520.62
Diversion	5,955,074,390		0.1041128892	$620,000.00	
		211,160,796			$21,984.56
		CO ROAD TOTAL =	**0.8311446988**	**$4,949,528.51**	**$175,505.18**
CITY OF PORT TOWNSEND:					
General	2,656,425,608		0.9492721394	$2,521,670.82	
		10,234			$9.71
Library LID Lift	2,656,425,608		0.4453142397	$1,182,944.15	
		10,234			$4.56
		CITY TOTAL =	**1.3945863791**	**$3,704,614.97**	**$14.27**
Mt. View Bond	2,617,369,399		0.0573092257	$149,999.41	
		10,234			$0.59
PORT OF PORT TOWNSEND:					
General	8,611,499,998		0.1268438693	$1,092,315.98	
		211,171,030			$26,785.75
IDD	8,611,499,998		0.3059036173	$2,634,289.00	
		211,171,030			$64,597.98
P.U.D. NO. 1:					
General	8,611,499,998		0.0680951321	$586,401.23	
		211,171,030			$14,379.72
LIBRARY DISTRICT #1:					
General	5,955,074,390		0.3215629553	$1,914,931.32	
		211,160,796			$67,901.49
HOSPITAL DISTRICTS:					
HOSPITAL DISTRICT #1:					
General	39,790,691		0.5930487611	$23,597.82	
		115,535,880			$68,518.41
HOSPITAL DISTRICT #2:					
General	8,571,359,123		0.0340471197	$291,830.09	
		75,764,252			$2,579.55
Admin. Bond	8,571,359,123		0.0259002099	$222,000.00	
		75,764,252			$1,962.31

JEFFERSON COUNTY ABSTRACT OF ASSESSED VALUES, LEVY RATES, AND TAX AMOUNTS
2022 ASSESSMENTS PAYABLE IN 2023

TAXING DISTRICT	REAL/PERSONAL PROPERTY A.V.	TIMBER A.V.*	LEVY RATE (/1000)	TAX AMOUNT	
				REAL & PERSONAL	TIMBER
LOCAL SCHOOLS:					
SCHOOL DISTRICT #20 (Queets-Clearwater):					
EP & O	14,000,471		1.2331719709	$17,264.99	
		46,818,297			$57,735.01
SCHOOL DISTRICT #46 (Brinnon):					
EP & O	389,943,518		0.7683596959	$299,616.88	
		11,864,023			$9,115.84
SCHOOL DISTRICT #48 (Quilcene):					
EP & O	533,035,311		1.1368465230	$605,979.34	
		12,846,633			$14,604.65
SCHOOL DISTRICT #49 (Chimacum):					
2018 Capital Project	3,150,081,333		0.4188365189	$1,319,369.10	
		18,280,140			$7,656.39
EP & O	3,150,081,333		0.6816036628	$2,147,106.97	
		9,140,070			$6,229.91
SCHOOL DISTRICT #50 (Port Townsend):					
2022 Capital Project	4,281,831,332		0.4083070818	$1,748,302.06	
		7,742,026			$3,161.12
2016 Bond	4,281,831,332		0.6537980601	$2,799,453.02	
		7,742,026			$5,061.72
EP & O	4,281,831,332		0.8059633712	$3,450,999.22	
		3,871,013			$3,119.89
SCHOOL DISTRICT #323 (Sequim):					
2021 Capital Project	113,902,193		0.4549724454	$51,822.36	
		320,774			$145.94
EP & O	113,902,193		0.9029956565	$102,853.19	
		233,324			$210.69
SCHOOL DISTRICT #402 (Quillayute Valley):					
1998 & 2009 Bond	26,101,350		1.3857293816	$36,169.41	
		41,770,183			$57,882.17
EP & O	26,101,350		0.9244480350	$24,129.34	
		20,885,092			$19,307.18

*School EP & O Levies, only 1/2 Timber A.V. or 80% of the 1983 Timber Roll (whichever is greater) is used.

JEFFERSON COUNTY ABSTRACT OF ASSESSED VALUES, LEVY RATES, AND TAX AMOUNTS
2022 ASSESSMENTS PAYABLE IN 2023

TAXING DISTRICT	REAL/PERSONAL PROPERTY A.V.	TIMBER A.V.	LEVY RATE (/1000)	TAX AMOUNT	
				REAL & PERSONAL	TIMBER
FIRE DISTRICTS:					
FIRE DISTRICT #1:					
General: City Chimacum	5,493,067,377		0.8462763536	$4,648,653.03	
Kala Point Cape George		2,012,915			$1,703.48
FIRE DISTRICT #2:					
General:	552,508,866		0.8917043876	$492,674.58	
Quilcene		9,028,273			$8,050.55
FIRE DISTRICT #3:					
General:	1,848,738,197		1.0220032523	$1,889,416.45	
Port Ludlow Shine		3,692,450			$3,773.70
FIRE DISTRICT #4:					
General:	393,651,000		0.9391843537	$369,710.86	
Brinnon		19,424,929			$18,243.59
FIRE DISTRICT #4:					
Bond:	389,943,518		0.3384327379	$131,969.65	
Brinnon		23,728,046			$8,030.35
FIRE DISTRICT #5:					
General:	132,751,395		0.9566859166	$127,001.39	
Discovery Bay		2,767,295			$2,647.43
FIRE DISTRICT #5:					
Bond:	133,372,599		0.2659194345	$35,466.37	
Discovery Bay		8,399,664			$2,233.63
FIRE DISTRICT #7:					
General:	4,285,922		0.3499830375	$1,500.00	
Clearwater		6,525			$2.28
CLALLAM-JEFFERSON FIRE DISTRICT #8:					
General:	123,796,767		1.1318819308	$140,123.32	
Gardiner		123,639			$139.94
CLALLAM-JEFFERSON FIRE DISTRICT #9:					
General:	5,676,238		0.5070264629	$2,878.00	
Forks		573,008			$290.53
EMERGENCY MEDICAL SERVICES:					
FIRE DIST #1 E.M.S.:					
General: Chimacum	5,496,839,855		0.3599902439	$1,978,808.72	
Kala Point Cape George		5,308,172			$1,910.89
FIRE DISTRICT #2 E.M.S.:					
General:	557,347,693		0.5000000000	$278,673.85	
Quilcene		18,267,978			$9,133.99
FIRE DIST #3 E.M.S.:					
General:	1,853,277,965		0.3653673452	$677,127.25	
Port Ludlow Shine		9,482,932			$3,464.75
FIRE DIST #4 E.M.S.:					
General:	394,823,522		0.3633480834	$143,458.37	
Brinnon		23,728,046			$8,621.54
FIRE DIST #5 E.M.S.:					
General:	135,220,166		0.4018405805	$54,336.95	
Discovery Bay		8,399,664			$3,375.33
CLALLAM-JEFFERSON FIRE DISTRICT #8 E.M.S.:					
General:	124,267,735		0.3701106413	$45,992.81	
Gardiner		536,375			$198.52

JEFFERSON COUNTY ABSTRACT OF ASSESSED VALUES, LEVY RATES, AND TAX AMOUNTS
2022 ASSESSMENTS PAYABLE IN 2023

TAXING DISTRICT	REAL/PERSONAL PROPERTY A.V.	TIMBER A.V.*	LEVY RATE (/1000)	TAX AMOUNT	
				REAL & PERSONAL	TIMBER
LOCAL SCHOOLS:					
SCHOOL DISTRICT #20 (Queets-Clearwater):					
EP & O	14,000,471		1.2331719709	$17,264.99	
		46,818,297			$57,735.01
SCHOOL DISTRICT #46 (Brinnon):					
EP & O	389,943,518		0.7683596959	$299,616.88	
		11,864,023			$9,115.84
SCHOOL DISTRICT #48 (Quilcene):					
EP & O	533,035,311		1.1368465230	$605,979.34	
		12,846,633			$14,604.65
SCHOOL DISTRICT #49 (Chimacum):					
2018 Capital Project	3,150,081,333		0.4188365189	$1,319,369.10	
		18,280,140			$7,656.39
EP & O	3,150,081,333		0.6816036628	$2,147,106.97	
		9,140,070			$6,229.91
SCHOOL DISTRICT #50 (Port Townsend):					
2022 Capital Project	4,281,831,332		0.4083070818	$1,748,302.06	
		7,742,026			$3,161.12
2016 Bond	4,281,831,332		0.6537980601	$2,799,453.02	
		7,742,026			$5,061.72
EP & O	4,281,831,332		0.8059633712	$3,450,999.22	
		3,871,013			$3,119.89
SCHOOL DISTRICT #323 (Sequim):					
2021 Capital Project	113,902,193		0.4549724454	$51,822.36	
		320,774			$145.94
EP & O	113,902,193		0.9029956565	$102,853.19	
		233,324			$210.69
SCHOOL DISTRICT #402 (Quillayute Valley):					
1998 & 2009 Bond	26,101,350		1.3857293816	$36,169.41	
		41,770,183			$57,882.17
EP & O	26,101,350		0.9244480350	$24,129.34	
		20,885,092			$19,307.18

*School EP & O Levies, only 1/2 Timber A.V. or 80% of the 1983 Timber Roll (whichever is greater) is used.

Data source: Value, Levy, & Data for Tax Year 2023: https://www.co.jefferson.wa.us/152/Levies-Taxing-Districts

Critical Facility Categories

Critical Facility Categories (Repeated from the Port Townsend Section)

Critical facilities are any facility or combination of facilities that if severely damaged or destroyed would cause significant risk to: Public Health and Safety, Economic vitality, or the environment. The facilities listed here are for both the city and the county.

Emergency Service Centers (Fire, police, 911 PSAP)

Six City/County Fire Districts

- JCFD1 - dba East Jefferson Fire & Rescue
- JCFD2 - dba Quilcene Volunteer Fire Department
- JCFD3
- JCFD4 - dba Brinnon Fire Department
- JCFD5 – dba Discovery Bay Volunteer Fire Department
- JCFD6 - Merged into JCFD1; no longer exists as a stand-alone department.
- JCFD7 - Clearwater
- East Jefferson Fire & Rescue has merged with Port Ludlow Fire – Rescue effective January 2021.
- JCFD8 – contracted to Clallam County Fire District 3 for service to Gardner area.

Three Sheriff's Office Facilities: Port Hadlock, Quilcene, Clearwater.
One Police Department Headquarters Station: Port Townsend
Primary 911 PSAP - 81 Elkins Road, Port Hadlock
Back-up 911 PSAP - 701 Harrison St, Port Townsend

Emergency Operations Center

- Primary EOC - 81 Elkins Road, Port Hadlock
- Alternate EOC - 701 Harrison St, Port Townsend
- Command Center - 701 Harrison St, Port Townsend
- Back-up City Command Center - Port Townsend Library
- Public Works Facility
- County Road Maintenance - Port Hadlock
- County Road Shops - Quilcene Shop; Brinnon Shop; Clearwater Shop.

Hazardous Materials Facility - See SARA Title III List Hospital

- Jefferson General Hospital, 834 Sheridan, Port Townsend

Nursing Home / Rehabilitation Center

- Life Care Center of Port Townsend, 751 Kearney St, Port Townsend

Critical Community Employer Port

- Townsend Paper Company
- Naval Magazine Indian Island
- County Government (Courthouse)
- City Government (City Hall)
- Port of Port Townsend

Library System
- Jefferson County Library
- Port Townsend Library

School
- Chimacum School District
- Quilcene School District
- Brinnon School District
- Port Townsend School District
- Queets / Clearwater School District
- Quillayute Valley School District

Transportation Facility Jefferson Transit Authority
- Washington Ferry System

Key Transportation/Evacuation Routes Hood Canal Bridge (Highway 104 E)
- Discovery Bay (Highway 101 W)
- Duckabush River Bridger (Highway 101 S)

Utilities Facilities
- Kearney St Substation (JPUD)
- Discovery Bay Substation (JPUD)
- City Water Distribution System (Lords Lake Dam Complex)
- City Wastewater Treatment Facility (China Lake)

Jefferson County Sheriff Department

Critical Facilities (Owned by District):

1. Sheriff's Admin Building, 78 Elkins Rd approximate value: $3,055,000

Equipment:

Apparatus	$550,000
Contents	$251,000

Value of Area Served: $5,105,510,157

Outline of Area Served: The Jefferson County Sheriff's Office serves all of Jefferson County, serving a permanent population of more than 29,542. The City of Port Townsend is the County Seat, located on the most northern tip of East Jefferson County.

Current and Anticipated Service Trends: The response rate of the Sheriff's Department continues to grow at moderate levels with crime rates escalating. Serving an aging population base and a high tourist area the calls for service have increased dramatically and will continue to do so.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)	
Type of Event	**Date - Total Public Damage**
Earthquake	02/28/2001 – Minor Damage

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Local Severe Storms (Wind)
3. Flood

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Not Applicable

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
~~OG-MH-3~~	~~Public Education through the Citizen's Academy Program~~	~~PTPD & Sheriff~~	~~Budget/Grant~~	~~Annual~~
~~ST-MH-8*~~	Improve interoperability through coordinated purchase and use of communications equipment, and OPSCAN Program.	DEM, JeffCom 911, PTPD, JCSO, and all Fire Districts including PTFD.	**Completed 2007 - 2009**	Short-Term

Existing Applicable Hazard Mitigation Associated Plans and/or Documents

1. Refer to Jefferson County Codes and Comprehensive Plans.

Jefferson County Corrections and Emergency Operations Center

Critical Facilities (Owned by District):

1. Corrections Facility	approximate value: $2,955,929
2 JeffCom 9-1-1 and Emergency Operations Center	approximate value: $413,718

Equipment:

Apparatus (See Jefferson County Vehicle Schedule.)	$0
Contents	$386,833

Value of Area Served: **$5,105,510,157**

Outline of Area Served: JeffCom **911** and the Emergency Operations Center are to be co-housed in a new building at **81** Elkins road in the Sheriffs complex. The physical boundary of the County remains the current service area.

Current and Anticipated Service Trends: The aging of the county population, increased build out in unincorporated areas of the county, increasing incidence of illegal drug labs, and the heightened risk of terrorism all combine to increase the call rate for JeffCom **911,** and the need for increased involvement of Emergency Management Services.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)	
Type of Event	**Date - Total Public Damage**
Earthquake	02/28/2001 – Minor Damage

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Local Severe Storms (Wind)
3. Flood

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Not Applicable

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
~~ST-MH-5*~~	Build new dispatch and EOC center.	JeffCom 911 & Jefferson DEM	**Completed 2005**	Summer **2004**
~~ST-MH-8*~~	Improve interoperability through coordinated purchase and use of communications equipment, and OPSCAN Program.	DEM, JeffCom 911, PTPD, JCSO, and all Fire Districts including PTFD.	**Completed 2007 - 2009**	Short-Term

Existing Applicable Hazard Mitigation Associated Plans and/or Documents

1. Refer to Jefferson County Codes and Comprehensive Plans.

Changes in Development since Last Mitigation Plan

The biggest change in Jefferson County since the 2016 HazMit plan was the opening of the Port Hadlock Sewer in 2024. While the County has yet to see a major increase in development as a result, the Sewer promises to bring additional development to the Hadlock/Irondale/Chimacum “Tri-Area” including one planned affordable housing development and multiple businesses. Most of these developments will not take place in hazard prone areas (like inundation zones or urban/wildland interfaces) increased population density may place an increased strain on local emergency services.

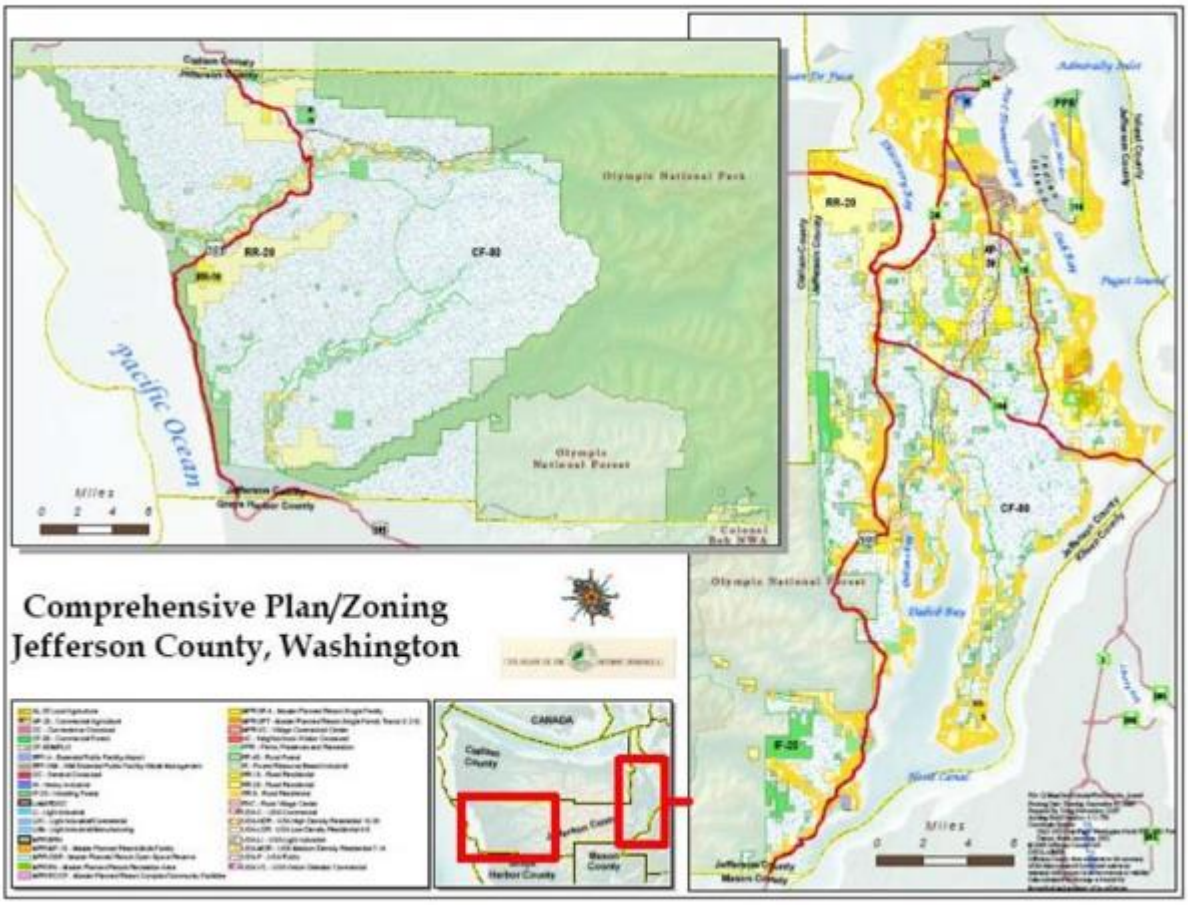
The 2020 Census showed an increase in population in Jefferson County of 10.4% over the previous census. Many of the new residential properties built in Jefferson County are primarily at risk in areas near forests that prevent wildland fire risks. New housing developments include properties near Port Ludlow and outside the City of Port Townsend.

Jefferson County Local Hazard Assessment (Maps)

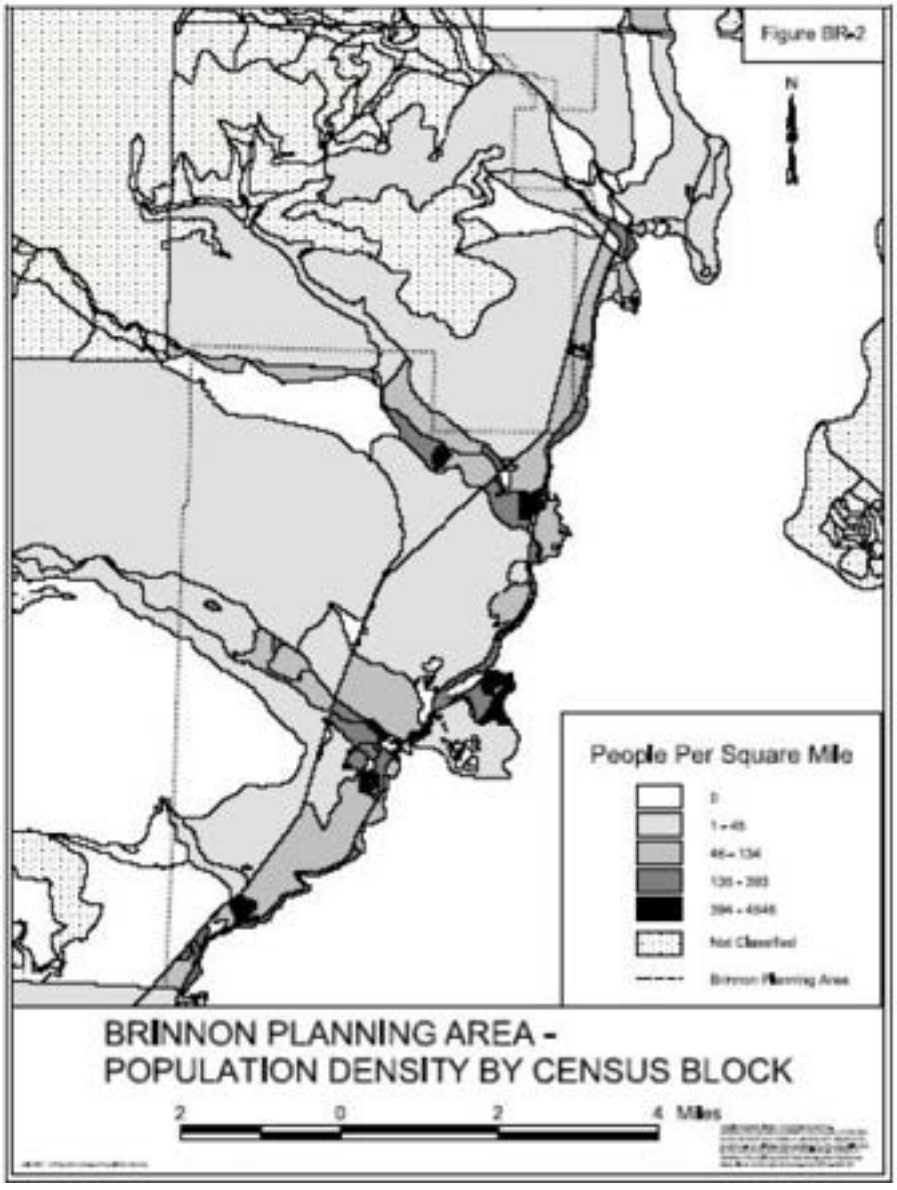
The following maps are intended to portray the local hazard assessments for Jefferson County graphically. “Critical Area” maps have already been shown in Section II. These are new maps which address natural hazard issues in unincorporated population centers within the County. The Land Use maps are for representational use only since the originals may have been amended since these were created.

1. Comprehensive Plan / Zoning - Jefferson County
2. Brinnon Population Density
3. Brinnon Land Use
4. Brinnon Landslide, Erosion, and Seismic Hazards
5. Brinnon Frequently Flooded
6. Marrowstone Island Salt Water Intrusion
7. Seawater Intrusion Protection Zones
8. Wawa Point - Environmentally Sensitive & Frequently Flooded

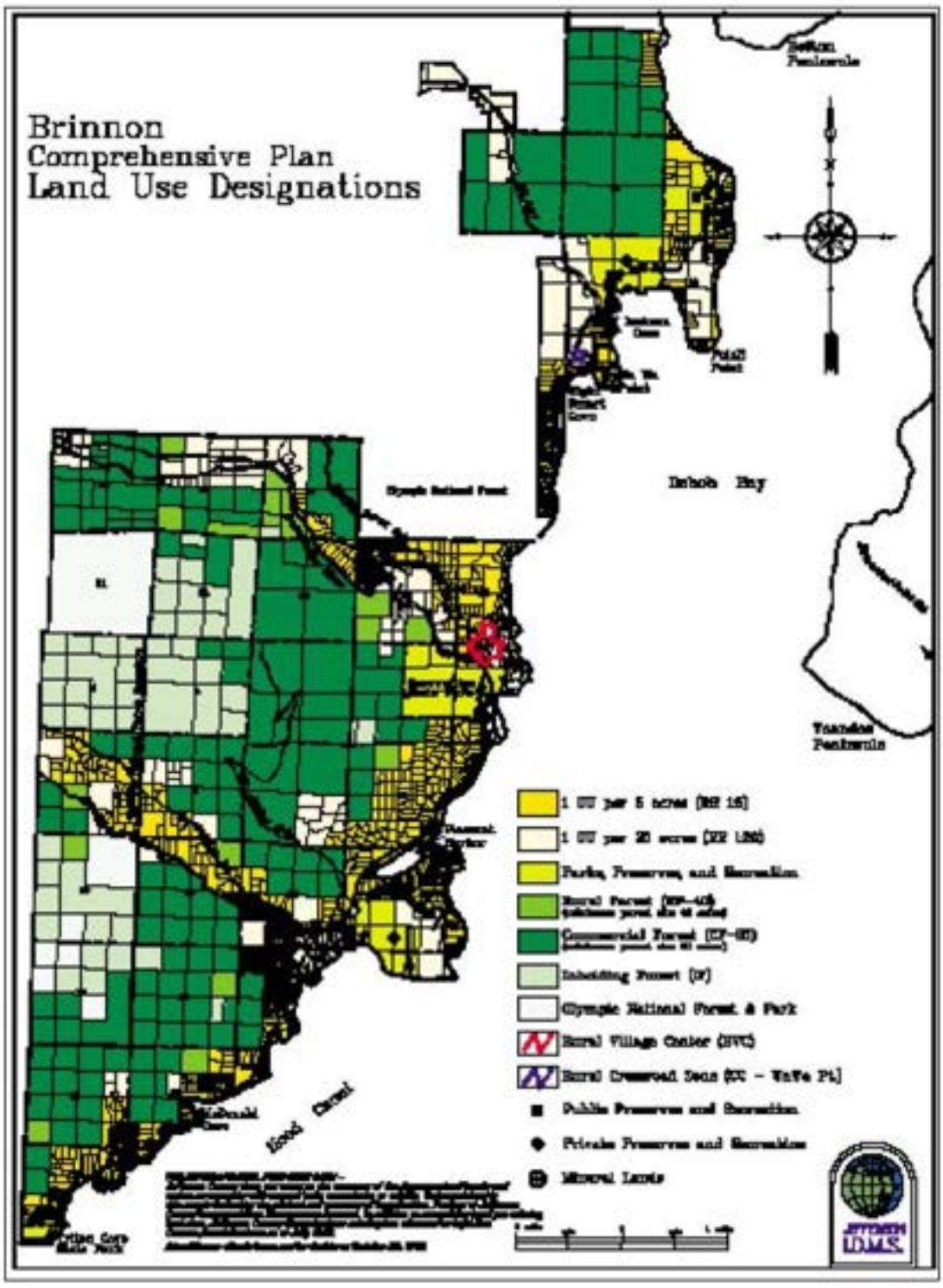
1. Jefferson County - Comprehensive Plan / Zoning



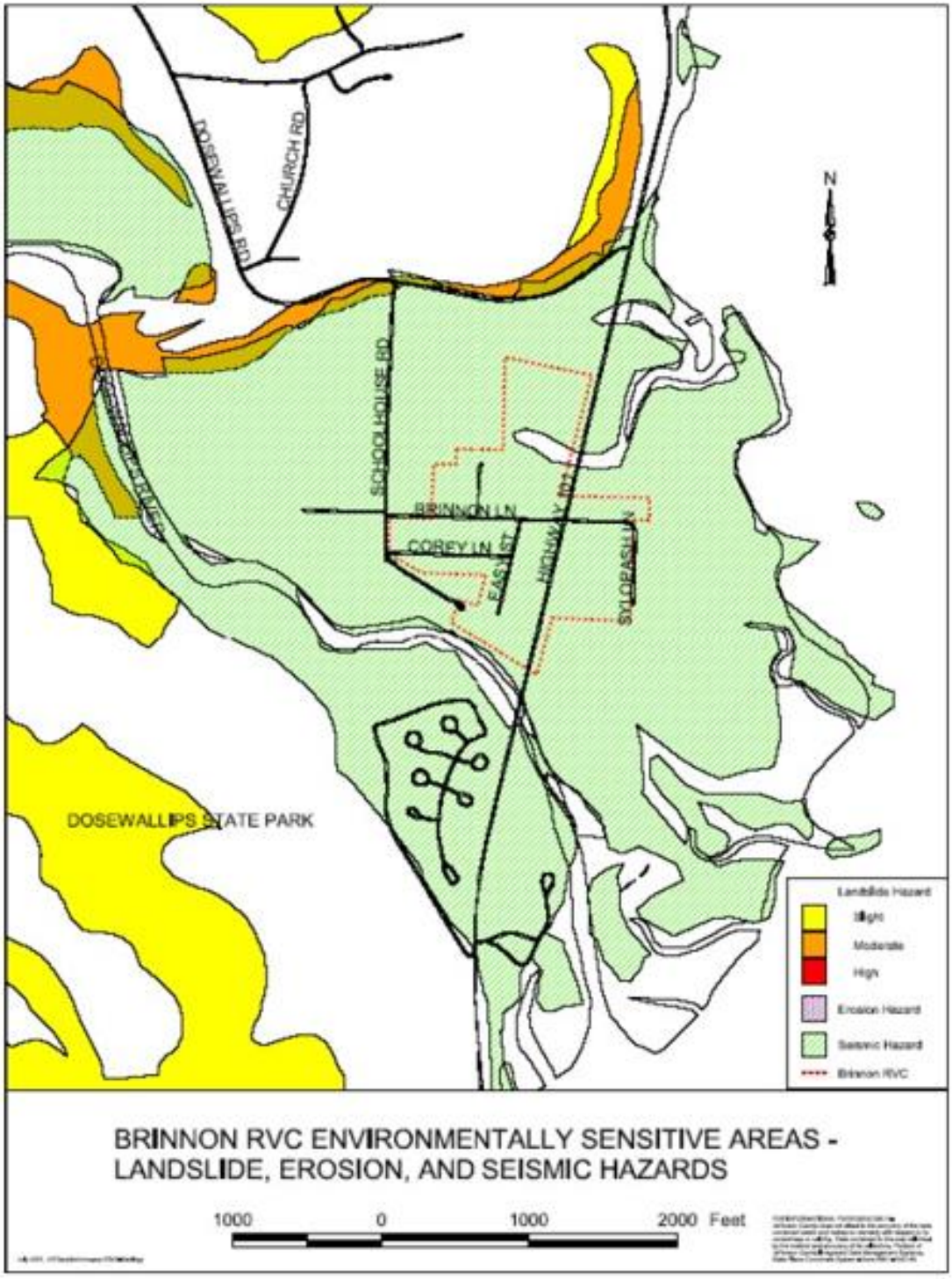
2. BRINNON POPULATION DENSITY



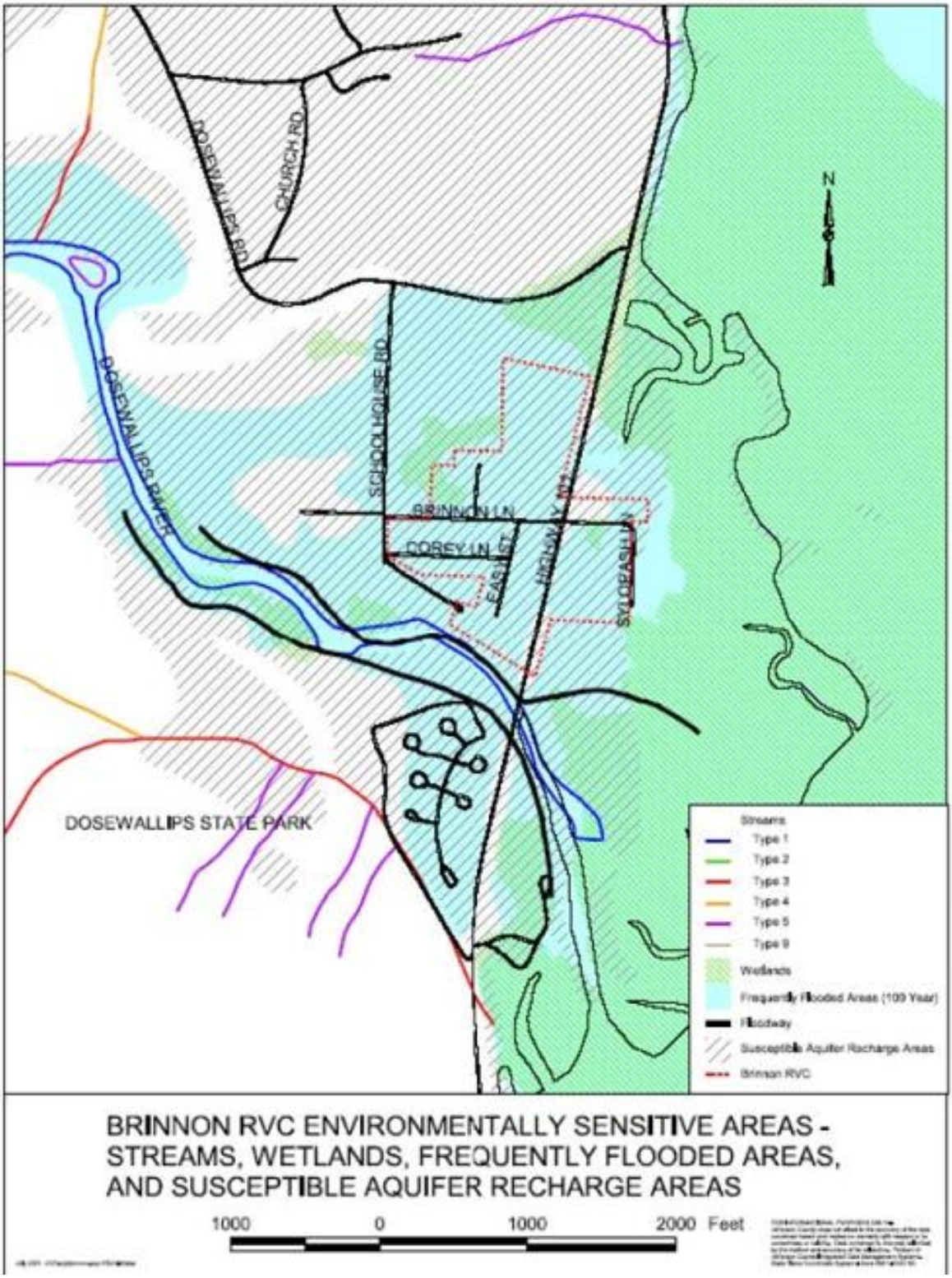
3. Brinnon Comprehensive Plan



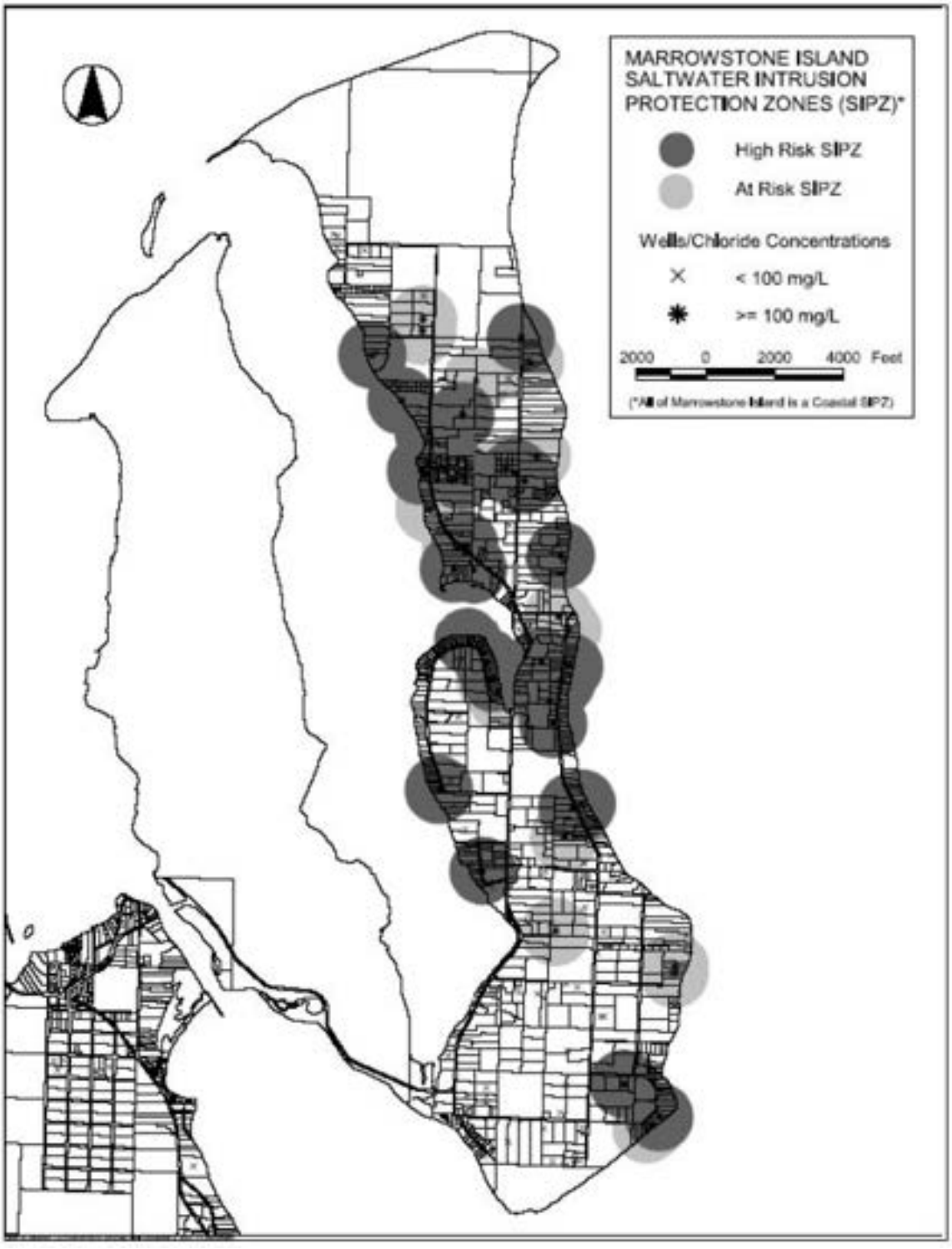
4. Brinnon Landslide, Erosion, and Seismic Hazards



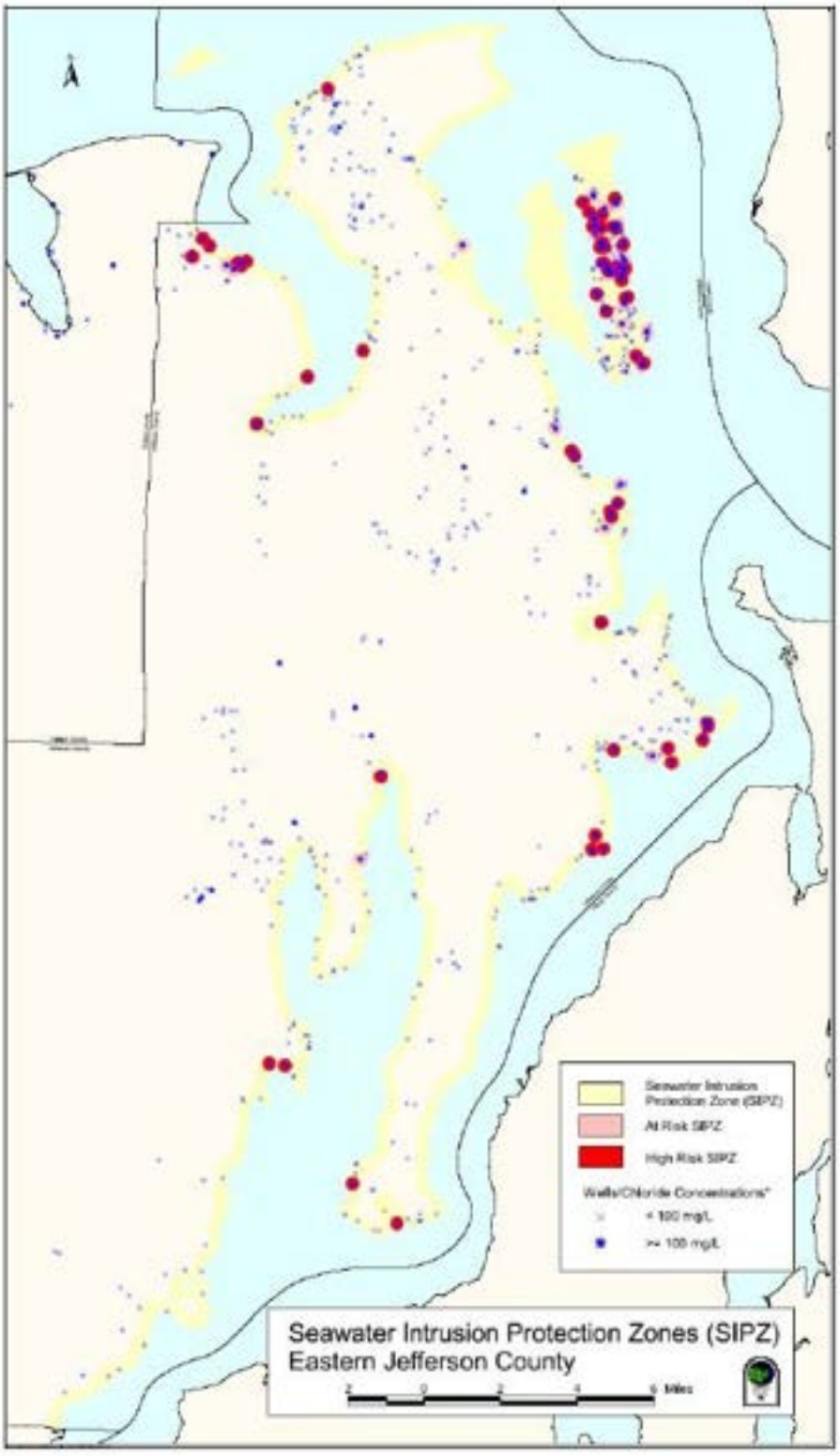
5. Brinnon Frequently Flooded Areas



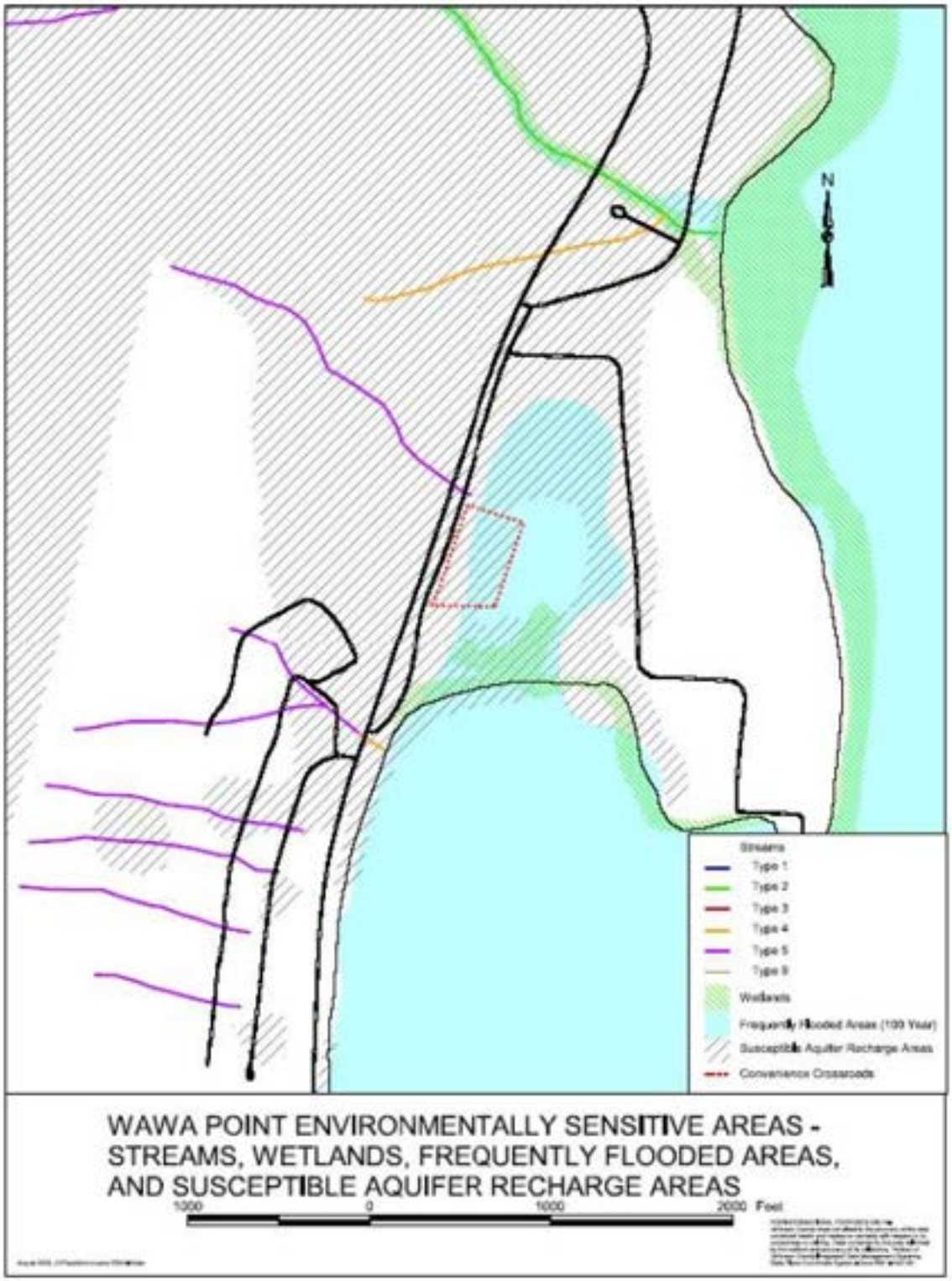
6. Marrowstone Island Salt Water Intrusion



7. Seawater Intrusion Protection Zones



8. Wawa Point -Frequently Flooded



Jefferson County - Mitigation Strategies

Activity ID	*Mitigation Activity Description*	*Lead Agency*	*Funding Source*	*Timeline*
OG-MH-O*	Adopt and Participate in the 2016 Jefferson County - City of Port Townsend Hazard Mitigation Plan as official plan.	Jefferson County Dept of Emergency Management	2014 PDM	Sept 2016
OG-MH-1	Identify and pursue funding opportunities to develop and implement local and county mitigation activities.	Jefferson County, City of Port Townsend and all Special Districts	City of Port Townsend and Jefferson County	Ongoing
OG-MH-2	Identify, improve, and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk to natural hazards.	Team Jefferson, Jefferson County Realtor Association	Jefferson County	Ongoing
OG-MH-3	Educate the citizenry in the role of the 1st Responder through Citizen's Police Academy.	PTPD / JCSO	Departmental Budgets	Annually from Feb to April
OG-MH-4*	Train personnel on how to react in a natural disaster.	JCDEM	Departmental Budget / Ad hoc grants.	Ongoing
ST-MH-1	Establish a formal role for the Jefferson County Natural Hazards Mitigation Advisory Committee to develop a sustainable process for implementing, monitoring, and evaluating countywide mitigation activities.	Hazard Mitigation Advisory Committee	Jefferson County	
ST-MH-2	Integrate goals and action items from the Jefferson County Natural Hazard Mitigation Plan into existing regulatory documents and programs where appropriate.	Jefferson County Board of County Commissioners, Planning Commission and DCD	Jefferson County departmental budgets	Ongoing
ST-MH-3	Develop public and private partnerships to foster natural hazard mitigation program coordination in Jefferson County	DEM	Departmental budget	Ongoing
~~ST-MH-5~~*	Build new 911 Dispatch Center and new Emergency Operation Center	**Completed**		

Jefferson County - Mitigation Strategies				
Activity ID	***Mitigation Activity Description***	***Lead Agency***	***Funding Source***	***Timeline***
ST-MH-6	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	DEM, DSD, DCD and GIS		
ST-MH-7	Evaluate and integrate citizen ideas into planning and implementation efforts.	Jefferson County, City of Port Townsend, DSD and DCD	Jefferson County and City of Port Townsend	Ongoing
~~ST-MH-8*~~	Improve interoperability through coordinated purchase, development of procedures and use of communications equipment, and OPSCAN Ist-Responder back bone.	JeffCom 911, DEM, PTPD, JCSO, All Fire Districts	Jefferson County	Short-term **Completed**
LT-MH-1*	Strengthen emergency services preparedness and Long-Term response by linking emergency services with natural Multi-Hazard hazard mitigation programs, and enhancing public education on a regional scale.	DEM, DSD, DCD	City and County departmental budgets	~~Short-term~~ Ongoing
LT-MH-2	Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses and schools.	DEM, DSD, DCD	City and County departmental budgets	Long-term
LT-MH-3	Use technical knowledge of natural ecosystems and events to link natural resource management and land use organizations to mitigation activities and technical assistance.	DCD, DSD	City and County departmental budgets	Long-term
ST-EQ-1	Integrate new earthquake mapping data and improve technical analysis of earthquake hazards.	USGS, GIS	USGS and County departmental budget	Short-term
LT-EQ-1	Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable.	DEM	Jefferson County	Ongoing
LT-EQ-2*	Participate in Cascadia Rising Exercise (CRX) – Multi-state, Multi-jurisdictional earthquake response exercise predicated on the Cascadia Subduction Zone producing a 9.0+ magnitude event.	Federal, State, County and City are all part of CRX. JCDEM is lead agency for Jefferson County.	NONE! At the County level.	2014 – 2016; CRX 6/6 – 6/10; AAR by 9/30/2016

Jefferson County - Mitigation Strategies				
Activity ID	***Mitigation Activity Description***	***Lead Agency***	***Funding Source***	***Timeline***
LT-EQ-3	Encourage seismic strength evaluations of critical facilities in the County to identify vulnerabilities for mitigation.	Jefferson County Facilities	Jefferson County	Ongoing
LT-EQ-4	Encourage reduction of nonstructural and structural hazards in homes, schools, business, and government offices.	City and County government	City and County	Long-term
ST-FL-1	Analyze each repetitive flood property within Jefferson County and identify feasible mitigation options.	FEMA, DCD, DSD	City and County	Ongoing
ST-FL-2	Recommend revisions to standards required for development occurring within the floodplain, where appropriate.	FEMA, DCD, DSD	City and County	Ongoing
ST-FL-3*	Develop better flood warning systems.	DEM	Jefferson County	Short-term; **Adapted AHAB system for flood in addition to tsunami. 2007**.
LT-FL-1*	Enhance data and mapping for floodplain information within the County, and identify and map flood-prone areas outside of designated floodplains.	FEMA, GIS	FEMA, Jefferson County	Long-term; FEMA updated FIRMS draft released Feb. 2016. Due 2017.
LT-FL-2	Encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in the floodplain.	City of Port Townsend, Jefferson County, Jefferson County Land Trust, Salmon Recovery Office	Jefferson County government, Washington State	Ongoing
LT-FL-3	Identify surface water drainage obstructions for all parts of unincorporated Jefferson County.	Jefferson County Public Works	Jefferson County	Long-term

LT-FL-4	Establish a framework to compile and coordinate surface water management plans and data throughout the county.	Jefferson County Public Works	Jefferson County	Long-term

Jefferson County - Mitigation Strategies				
Activity ID	***Mitigation Activity Description***	***Lead Agency***	***Funding Source***	***Timeline***
LT-FL-6	Coordinate with Fish & Wildlife to develop Hoh River mitigation plan.	Jefferson County Public Works	Jefferson County	Long-term; Mitigation efforts underway. 2008-2009.
ST-LS-1	Improve knowledge of landslide hazard areas and understanding of vulnerability and risk to life and property in hazardprone areas.	DCD	Jefferson County departmental budget	Ongoing
ST-LS-2	Identify safe evacuation routes in highrisk debris flow and landslide areas.	DEM	Jefferson County	Short-term
LT-LS-1	Evaluate current landslide warning systems to ensure effectiveness and efficiency and increase coordination between local jurisdictions.	DEM	Jefferson County	Long-term
LT-LS-2	Limit activities in identified potential and historical landslide areas through regulation and public outreach.	DCD	Jefferson County departmental budget	Ongoing
LT-LS-3*	Relocate Undie Road to prevent further destruction of the road by landslides.	County Public Works	**Long-Term – Seeking Funding Help from FEMA & Highway Dept.**	Long-Term – contingent on funding help.
ST-WS-1	Enhance strategies for debris management for severe winter storm events.	DEM, Jefferson County Public Works	Jefferson County	Ongoing
ST-WS-2	Develop and implement programs to identify and remove hazard trees located in public right-of-way to reduce potential danger to lives, property, and public infrastructure during windstorms events.	Puget Sound Energy	Budget	
ST-WS-3	Map and publicize locations around the county that have the highest incidence of extreme storms.	DEM	Jefferson County	Short-term

LT-WS-1*	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms.	Public Works	Jefferson County	Long-term

Jefferson County - Mitigation Strategies				
Activity ID	***Mitigation Activity Description***	***Lead Agency***	***Funding Source***	***Timeline***
LT-WS-2	Increase public awareness of severe winter storm mitigation activities.	DEM	Jefferson County	Long-term
~~LT-WS-3~~*	Enhance Courthouse clock tower to be able to withstand 70-knot winds.	**Completed**		**Complete 2007.**
LT-WS-4*	Support/encourage electrical utilities in mitigation activities to reduce power outages from storms.	DEM, PUD#1	PUD#1	Long-term; PUD has volunteer agency rep on the Incident Management Team.
ST-VO-1	Find ash fall models that are specific to Jefferson County.	DEM	Jefferson County	
ST-WF-1	Enhance Emergency Services to increase efficiency of wildfire response and recovery activities.	DEM, JC Fire Districts	Jefferson County	
ST-WF-2	Educate district personnel on federal cost-share and grant programs, Fire Protection agreements, etc. so that full array of assistance to local agencies is understood.	DEM, JC Fire Districts	Jefferson County, Jefferson County Fire Districts	
LT-WF-1	Encourage development and dissemination of maps relating to the fire hazard to help educate and assist builders and homeowners in being engaged in wildfire mitigation activities, and to help guide emergency services during response.	East Jefferson Fire & Rescue	Budget	

LT-WF-2	Enhance outreach and education programs aimed at mitigating wildfire hazards and reducing or preventing the exposure of citizens, public agencies, private property owners, and businesses to natural hazards.	JC Fire Districts	JC Fire Districts	Long-term

Jefferson County - Mitigation Strategies				
Activity ID	***Mitigation Activity Description***	***Lead Agency***	***Funding Source***	***Timeline***
LT-WF-3	Increase communication, coordination, and collaboration between wildland/urban interface property owners, local and county planners, and fire prevention crews and officials to address risks, existing mitigation measures, and federal assistance.	City and County	City and County	Long-term

Completed Mitigation:
Jefferson County mapped the Channel Migration Zones (CMZ) for the Hoh River, Big Quilcene River, Dosewallips River and Duckabush River and adopted protection standards in JCC 18.22 to reduce the risk of property damage.

Jefferson County adopted the Duckabush and Dosewallips Comprehensive Flood Hazard Management Plan on August 10, 2009 for the purpose of evaluating and reducing flooding risks from the two river systems.

Jefferson County is giving the Hoh River Road to the Olympic National Park. This road is a repetitive damage structure and the county does not have the resources to continuously repair or find a permanent solution to the damages. 2009.

Hoh Tribe of Indians has acquired land through swaps with the Olympic National Forest and through purchases from private entities to allow them to move their public facilities out of a frequently flooded area. Relocation is underway in 2009.

Project to relocate the Dowans Creek road. 2008 event that to time to acquire permits and rights of way. Completed in 2015 due to the length of time to get permits and acquire rights-of-way.

Seismic retrofit of Courthouse Clock Tower.

Port Ludlow Drainage District
(Opt Out – 2024)

District Profile (as of 2009)

Miles of Ditches:	15 Miles
Value of Ditches:	$1,600,000
Number of Catch Basins:	65
Value of Catch Basins:	$130,000
Number if Detention Systems:	1
Value of Detention Systems:	$100,000
Value of Area Served: *includes facilities in Jefferson County Public rights-of-way.	$1,820,000

Critical Facilities (Owned by District):

1. N/A	Approximate Value:

Outline of Area Served:

North Bay development of Port Ludlow. Comprises the area north and west of Port Ludlow Bay.



Current and Anticipated Service Trends: Upgrading of the existing facilities.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975 – PRESENT)		
Type of Event	**Date**	**Total Public Damage**
Rain on snow / runoff	1996	No Value Documented

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earth Movement - quake or slides, especially at coastal bluffs.
2. Large Precipitation / runoff events; localized flooding and erosion.

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Earthquake Mitigation Procedure (District Facilities) Jefferson County/City of PT Disaster Plan (2009)
2. Jefferson County Unified Development Code

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
~~LT-EQ-13~~*	Upgrade existing drainage facilities to withstand earthquakes.	PLDD – Opted Out in 2015.	DHS Grants	Long-term
~~LT-FL-7~~*	Upgrade drainage conveyance to handle 100-year flood event.	Port Ludlow Drainage District **(Opted Out 2016)**	Grants	Long-Term

Existing Applicable Hazard Mitigation Associated Plans and/or Documents

1. Same as above

Jefferson County Fire District No 1
dba East Jefferson Fire Rescue (EJFR)
District Profile

East Jefferson Fire Rescue (EJFR) in Washington State is the product of three mergers. Fire Protection Districts 1 and 6 merged in 2006, the City of Port Townsend was annexed into EJFR in 2019 and Fire District 3 formally known as Port Ludlow Fire Rescue merged in to EJFR in 2023. It is located on the eastern side of the Olympic Peninsula in western Washington state. EJFR is a combination career and volunteer department. We currently employ approximately 59 career staff, consisting of admin and firefighter/EMTs. EJFR. Additionally, 40 volunteers support the agency in a variety of roles ranging from administration assistants, public education and public information. EJFR is equipped with one Ladder Truck, seven Engines, four Tenders, 10 Ambulances, three Brush Trucks, Rescue Truck & Trailer, two Marine Vessels, and 10 Staff Vehicles. EJFR typically responds to a little over 6,000 calls for service each year, to a wide variety of emergencies ranging from medical calls to motor vehicle accidents and commercial structure fires.	Contact: East Jefferson Fire Rescue 24 Seton Rd. Port Townsend, WA 98368 (360) 385-2626 Chief Black: black@ejfr.org Hazard Mitigation Liaison: Deputy Chief Pete Brummel: pbrummel@ejfr.org
Mission: Protecting life and property while providing compassionate service that meets the needs of our varied community through prevention, education and emergency response.	
Source: www.ejfr.org	

Asset Summary: Risk of isolation due to rural service area(s). Several unstaffed or occasionally staffed stations (i.e. Marrowstone Island).

Critical Facilities (Owned by District):

Station Designation	Station Location	Value
Station 1	Uptown Station 701 Harrison St Port Townsend, WA 98368	$10,000,000
Station 2	Henry Miller Station 35 Critter Lane Port Townsend, WA 98368	$9,000,000
Station 3 Volunteer Response	Cape George Station 3850 Cape George Rd Port Townsend, WA 98368	$701,915
Station 4 Volunteer Response	Airport Station 50 Airport Rd Port Townsend, WA 98368	$350,000
Station 5 Volunteer Response	Marrowstone Island 6693 Flagler Rd Nordland, WA 98358	$500,000
Station 6	Wally Westergaard Station 9193 Rhody Drive Chimacum, WA 98325	$9,200,000
Station 7	Ludlow Main Office 7650 Oak Bay Road Port Ludlow, WA 98365	$9,500,000
Station 8	South Point 7650 Oak Bay Road Port Ludlow, WA 98365	$3,500,000
Station 9	Paradise Bay 121 West Alder St Port Ludlow, WA 98365	$299,689

Equipment:

Apparatus	$21,156,677
Contents	5,000,000
Value of Area Served:	**$7,800,138,764**

Outline of Area Served:

Fire Protection District 1 d.b.a East Jefferson Fire Rescue provides service coverage for the incorporated City of Port Townsend and unincorporated Jefferson County communities of Cape George, Chimacum, Irondale, Kala Point, Marrowstone Island, Port Hadlock, Paradise Bay, Shine, Bridgehaven, Mats Mats, Swansonville, Beaver Valley, South Point and Port Ludlow, Washington.

EJFR encompasses 176 square miles. From the City of Port Townsend South past Hwy 104 into the Coyle Peninsula, West from Sr 20 and Discovery Bay, East to Paradise Bay Road and the Hood Canal.

The District 1 Service Area is shown at right in tan and is labeled “East Jefferson Fire & Rescue FD1.”



Current and Anticipated Service Trends: Rapid population growth has caused alarm totals to increase from under 3,000 in 2008 to an anticipated 6800 alarms in 2024, requiring additional personnel and apparatus.

PLANNING SECTION

See “The Planning Process” for how EJFR integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District’s goal is to work internally to assure that EJFR is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. To accomplish this, EJFR Officers and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the District’s mission and the Plan’s goal.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- IFSAC – International Fire Service Accreditation Congress
- WAC 296-305-05503 Safety Standards for Firefighters
- WAC 246-976 Emergency Medical Systems and Trauma Care Systems
- NFPA 1001 – Standard for Fire Fighter Professional
- NFPA 1021 – Standard for Fire Officer Professional
- NFPA 1041
- NFPA 1710 – Standards of Response
- Jefferson County Code
- Port Townsend City Code

Policies and Plans:

- 2023 EJFR Strategic Plan
- EJFR Standard Operating Procedures
- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- Fire District Board of Commissioners
- Fire District Officers
- Jefferson County Fire Chiefs Association
- Washington State Auditor

Fiscal Capabilities:

- City and County Fire Levys
- Authority to Issue Bonds
- Transport Fees
- Annual Fire & EMS Operating Budget
- Fire Apparatus / Equipment Replacement Fund
- EMS Equipment Replacement Fund
- Capital Project Budget
- FEMA Grants
- Assistance to Firefighter Grants (AFG)
- Fire Prevention & Safety Grants (FP&S)
- Staffing for Adequate Fire and Emergency Response (SAFER) Grants

Community Outreach Programs

- Fire & Rescue Fest
- Firewise

- Farmers Markets (Port Townsend and Chimacum)
- Jefferson County Fair

- All-County Picnic
- Website: EJFR.org
- Twitter: EastJeffFirePIO
- Facebook: facebook.com/EastJeffFirePIO
- Instagram

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that East Jefferson Fire Rescue has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Natural Hazard Event History*

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Windstorm	1992	$1,000,000+
Snowstorm/Flood	1996	Unknown
Nisqually Earthquake	02/28/2001	Minor Damage
Drought	2001/2002/ 2004	Unknown
Drought	2009	Unknown
Major Snowstorm	2009	Applied for $17,500 PA

Natural Hazard Vulnerability Analysis Rating

See the "Natural Hazard Rating Process (pp. 412 – 416)" and the *Natural Hazard Rating by Jurisdiction* table (p. 417) for how the rankings were developed and applied for each jurisdiction and hazard.

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Windstorm

3. Wildland Fire
4. Tsunami

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
~~ST-MH-8~~*	Improve interoperability through coordinated purchase and use of communications equipment, and OPSCAN program.	DEM, JeffCom 911, PTPD, JCSO, and all Fire Districts including EJFR.	DHS Grants	Short-Term
~~LT-EQ-15~~*	Replace Station 1-1 with seismically sound station.	JCFD1		**COMPLETED 2014**
LT-WF-2*	Firewise Program to educate public in wildfire mitigation.	JCFD1, WSU	CWDG Grants	Long-Term Continuous
~~LT-WF-4~~*	Consolidate Fire Districts to improve equipment availability on wildfires.	JCFD1	Tax Levy	**COMPLETED**
~~LT-WF-5~~*	Implement a Battalion response policy to put more resources on wildfires.	All Jefferson County Fire Agencies	Budget	**COMPLETED**
NEW*	Replace Marrowstone Station with one that is seismically sound.	JCFD1	Capital Budget	**TBD**

Jefferson County Fire District No 2 dba Quilcene Fire Rescue (QFR)

District Profile

Quilcene Fire Rescue serves numerous neighborhoods from three different stations over 72 square miles. In 2014 we responded to 389 requests for service. We serve a population of 2,500 residents and many visitors on the Olympic Peninsula in Jefferson County, WA. In addition to our historic village core, our service area includes famous oyster-rich bays, salmon-bearing rivers, forested canyons, farms and rural neighborhoods, all set in our world-class scenic recreation area. An estimated 1.6 million cars use HWY 101 annually through Quilcene. (WSDOT 2008)	 Station 21 **Contact:** 70 Herbert Street Quilcene, WA 98376 (360) 765-3333 Email: quilcenefire@qvfd.org Chief Karp: chief@qvfd.org (Hazard Mitigation Liaison)
Mission: We, the members of the Jefferson County Fire District #2, will provide to the citizens of Quilcene/Coyle competent and professional fire, rescue, and emergency services while ensuring thesafety, education, and well-being of our members.	
Source: www.qvfd.org	**Website:** www.qvfd.org

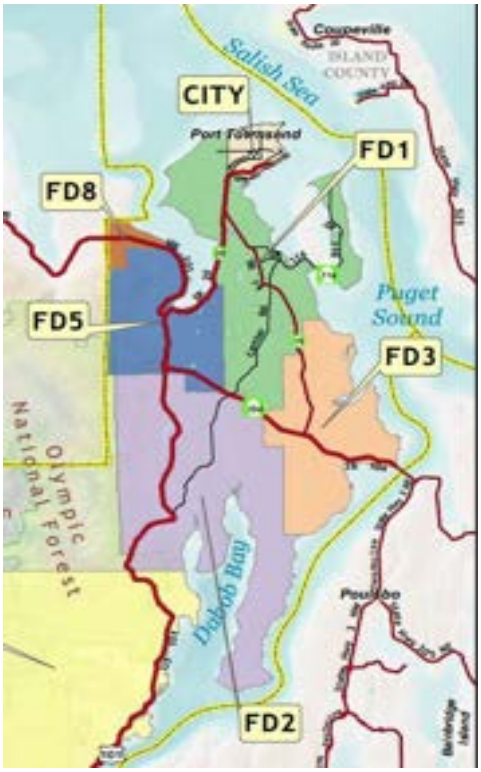
Asset Summary: Risk of isolation due to rural service area(s).

Critical Facilities (Owned by District):

Station Designation	Station Location	Value
Station 2-1	**70 Herbert Street Quilcene, WA 98376 (360) 765-3333**	**$840,000**
Station 2-2	**30 Whitney Road Quilcene, WA 98376**	**$100,000**
Station 2-3	**3281 Dabob Road Quilcene, WA 98376**	**$100,000**

Equipment:

Apparatus	$1,720,000
Contents	$650,000
Value of Area Served: (72 square miles)	**$342,485,352**

Outline of Area Served: Our service area includes 72 square miles, covered by **three stations**. This includes remote beaches, high wooded ridges and everything in between. We serve a population of 2,500. We provide services to the communities of Quilcene, Dabob, and Coyle. This covers from the 299-mile marker on US Hwy 101 (near Falls View Campground headed for Brinnon on the slope of Mount Walker) through Quilcene and out to Snow Creek Ranch Road, and from Center Road up to and including part of Hwy 104. We cover the Boulton Peninsula, (AKA East Quilcene) and the Toandos Peninsula, minus the Thorndyke area. The District Two Service Area is shown at right in light purple.	

Current and Anticipated Service Trends: Response to a bedroom community, motor vehicle traffic collisions and wildland interface events – along with the day-to-day EMS events.

PLANNING SECTION

QFR integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that QFR is continuously improving its survivability in a major disaster to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. To accomplish this, QFR Officers and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the District's mission and the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- IFSAC – International Fire Service Accreditation Congress
- WAC 296-305-05503 Safety Standards for Firefighters
- WAC 246-976 Emergency Medical Systems and Trauma Care Systems
- NFPA 1001 – Standard for Fire Fighter Professional
- NFPA 1021 – Standard for Fire Officer Professional
- NFPA 1041
- NFPA 1710 – Standards of Response
- Jefferson County Code

Policies and Plans:

- Quilcene Fire Rescue 2014 - 2018 Strategic Plan
- QFR Standard Operating Procedures
- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- Fire District Board of Commissioners
- Fire District Officers
- Jefferson County Fire Chiefs Association
- Washington State Auditor

Fiscal Capabilities:

- City and County Fire Levies
- Authority to Issue Bonds
- Transport Fees
- Annual Fire & EMS Operating Budget
- Fire Apparatus / Equipment Replacement Fund
- EMS Equipment Replacement Fund
- Capital Project Budget
- FEMA Grants
- Assistance to Firefighter Grants (AFG)
- Fire Prevention & Safety Grants (FP&S)
- Staffing for Adequate Fire and Emergency Response (SAFER) Grants

Community Outreach Programs

- Host Community Activities at Station 21
- Firewise
- Quilcene Days Festival
- Jefferson County Fair
- All-County Picnic
- Website: qvfd.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** proof that Quilcene Fire Rescue has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Nisqually Earthquake	02/28/2001	Unknown
Wildland Fires	Minor events each year	Unknown
Flooding – Little Quilcene River	2014	$14,000

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Flooding
3. Severe Storm

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MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST-EQ-8	Retrofit fire station for earthquake protection.	JCFD2 (QVFD)	DHS Grants / Budget	Short-Term – Not Done Yet
~~ST-MH-8~~	Improve interoperability through coordinated purchase and use of communications equipment & OPSCAN program.	DEM, JeffCom 911, PTPD, JCSO, and all fire districts.	DHS Grants / Budget	**COMPLETED 2007-2009**
LT-WF-2	Firewise Program to educate public in wildfire mitigation.	JCFD2	CWDG Grants	Long-Term Annual
OG-WF-2	Public Education	JCFD2 Commissioners.	Local Budget	Yearly Classes - Ongoing
NEW	Upgrade Fire Station 21.	JCFD2 Chief	Capital Budget; Levy Increase	On 5-year Strategic Plan

Jefferson County Fire District No 4
dba Brinnon Fire Department

District Profile

The Brinnon Fire Department protects approximately 132 square miles of rural Jefferson County, Washington. The district contains vast wilderness including the Olympic National Forest and land managed by the US Forest Service and Department of Natural Resources.

Brinnon is small rural town with a Post Office, Marina, State Parks, and abundant recreational opportunities from hiking and camping to water activities. We are located along US Highway 101 between Olympia and Port Angeles.

Brinnon Fire employees six full-time positions: 1 Fire Chief, 4 Fire Fighter/EMTs, and one administrative assistant/office manager.

The department also relies on a very dedicated and talented volunteer staff. Fire and EMS services are provided 24/7 from our headquarters stations, and two other outlying stations are staffed by volunteers.

Contact:

Fire Headquarters
Station No. 4-1
272 Schoolhouse Road
Brinnon, WA 98320

360-796-4450 phone
360-796-3999 fax

Chief: Tim Manly (Hazard Mitigation Liaison) Email: **tmanly@brinnonfire.com**
District Secretary: Peggy Ware
Email: peggyw@brinnonfire.com

Source: www.brinnonfire.org

Asset Summary: Risk of isolation due to rural service area(s).

Critical Facilities (Owned by District):

Station Designation	Station Location	Value
Station 4-1	**272 Schoolhouse Road Brinnon, WA, 98320 (360) 796-4450**	**$1,300,000.00**

Equipment:

Station 4-1:

Apparatus:	$1,660,000.00
Contents:	$1,000,000.00

Total Equipment:

Apparatus: $1,600,000.00 Contents: $1,000,000.00

Value of Area Served: **$331,634,611.00**

Source: Jefferson County Assessor

Outline of Area Served:

On the North end from MP299 on Highway 101 to the
Jefferson/Mason county line on the south end, to the Olympic National Forrest on the west side to the middle of the Hood Canal on the east side.

With first due fire and EMS service to the US Forrest and the Olympic National Park.

District 4 service area is shown in yellow at the right.



Current and Anticipated Service Trends: Currently the Brinnon area is growing in both population and area covered. The demographics of the population have increased to where the average age is over 65, this equates to more medical calls rather than fire calls. This is not to say that there is no fire danger. With DNR losing funding on a yearly basis the need for more localized wildland firefighting capabilities is paramount. Especially given that a majority of the properties purchased over the last 15 years were for vacation homes and now that those individuals are retiring and converting those vacation homes to full time residents. There is also the approval and development of the Black Point Resort. This development will create more demand for services especially during an event. There are some plans in the FEIS for the resort that will assist with reducing but not eliminating the impact that the population growth will have on both fire and EMS services.

PLANNING SECTION

The Brinnon Fire Department integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that it is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. To accomplish this, Brinnon Fire Department Officers and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the District's mission and the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- IFSAC – International Fire Service Accreditation Congress
- WAC 296-305-05503 Safety Standards for Firefighters
- WAC 246-976 Emergency Medical Systems and Trauma Care Systems
- NFPA 1001 – Standard for Fire Fighter Professional
- NFPA 1021 – Standard for Fire Officer Professional
- NFPA 1041
- NFPA 1710 – Standards of Response
- Jefferson County Code

Policies and Plans:

- Jefferson County Comprehensive Emergency Management Plan
- Brinnon Area Disaster Response Plan
- Brinnon School Emergency Preparedness Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- Fire District Board of Commissioners
- Fire District Officers
- East Jefferson County Fire Chiefs Association
- Washington State Auditor

Fiscal Capabilities:

- City and County Fire Levies
- Authority to Issue Bonds
- Transport Fees
- Annual Fire & EMS Operating Budget
- Fire Apparatus / Equipment Replacement Fund
- EMS Equipment Replacement Fund
- Capital Project Budget
- FEMA Grants
- Assistance to Firefighter Grants (AFG)
- Fire Prevention & Safety Grants (FP&S)
- Staffing for Adequate Fire and Emergency Response (SAFER) Grants

Community Outreach Programs

- Firewise
- Jefferson County Fair
- All-County Picnic
- Website: brinnonfire.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that Brinnon Fire & Rescue has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks *where they vary from the risks facing the entire planning area.*

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Earthquake	2001	Unknown
River Flooding	2007/2008	$12,000
Wildland Fire	2009	None
Wildland Fire	2012	None
Wildland Fire x 3	2013	None
River Flooding	2014	$1.8 million; $150,000 Fire Dept. Loss
River Flooding	2015	Not Available

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. River Flooding
3. Landslides

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-FL-5	Move Station 42 out of Flood Zone Completed 2017	Brinnon FD, JC Environmental Health	FEMA Flood Mitigation; Salmon Recovery Board Funding	**Negotiating with Salmon Coalition (2017)**
~~ST-MH-8~~	Improve interoperability through coordinated purchase and use of communications equipment.	DEM, JeffCOM 911, PTPD, JCSO, and all fire districts.	DHS Grants / Budget	**Completed 2009**

Jefferson County Fire District No 5 dba
Discovery Bay Volunteer Fire & Rescue (DBVFR)

District Profile

Discovery Bay Volunteer Fire & Rescue is a dedicated volunteer fire service serving about 75 square miles with a population of 500 full-time residents and additional 500 temporary residents, centered at the head of Discovery Bay. District boundaries: Highway 101 from milepost 276.2, east of Gardiner to milepost 286 at Snow Creek Ranch Road, south of Discovery Bay. This includes State Route 104 from Highway 101 to milepost 4 just west of Center Valley Road and SR 20 from Highway 101 to Anderson Lake Road, and Eaglemount Road from SR 20 just west of Brothers Road, including all secondary routes inside this area.

Source: Discovery Bay Volunteer Firefighter's Association (www.dbvffa.org)

Contact:

Chief Willie Knoepfle
Discovery Bay Volunteer Fire Department
12 Bentley Pl
Port Townsend, WA 98368

360-379-6839 phone

Email: Chief Willie Knoepfle: **wkoepfle@dbvfr.org**
(Hazard Mitigation Liaison)

Critical Facilities (Owned by District)

Station	Location	Approximate Value
Discovery Bay – Station 5-1	12 Bentley Place Port Townsend, Wa 98368	$62,625
Gardiner - Station 5-2	2000 Old Gardiner Rd Sequim, Wa 98382-8750	$643,000

Value of Apparatus / Contents

Station		Apparatus / Content Value
Discovery Bay – Station 5-1		$120,000
Gardiner - Station 5-2		$240,000

Value of Area Served:	**$73,135,652**

Outline of Area Served: District boundaries: Highway 101 from milepost 276.2, east of Gardiner to milepost 286 at Snow Creek Ranch Road, south of Discovery Bay. This includes State Route 104 from Highway 101 to milepost 4 just west of Center Valley Road and SR 20 from Highway 101 to Anderson Lake Road, and Eaglemount Road from SR 20 just west of Brothers Road, including all secondary routes inside this area. The service area is labeled “FD5” in the map at the right.	

Current and Anticipated Service Trends: Not applicable.

Asset Summary: Risk of isolation due to rural service area(s).

PLANNING SECTION

The DBVFR integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District’s goal is to work internally to assure that DBVFR is continuously improving its survivability in a major disaster to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. To accomplish this, DBVFR Officers and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the District’s mission and the Plan’s goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- IFSAC – International Fire Service Accreditation Congress
- WAC 296-305-05503 Safety Standards for Firefighters
- WAC 246-976 Emergency Medical Systems and Trauma Care Systems
- NFPA 1001 – Standard for Fire Fighter Professional
- NFPA 1021 – Standard for Fire Officer Professional
- NFPA 1041
- NFPA 1710 – Standards of Response
- Jefferson County Code

Policies and Plans:

- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- Fire District Board of Commissioners
- Fire District Officers
- Jefferson County Fire Chiefs Association
- Washington State Auditor

Fiscal Capabilities:

- County Fire Levies
- Authority to Issue Bonds
- Transport Fees
- Annual Fire & EMS Operating Budget
- Fire Apparatus / Equipment Replacement Fund
- EMS Equipment Replacement Fund
- Capital Project Budget
- FEMA Grants
- Assistance to Firefighter Grants (AFG)
- Fire Prevention & Safety Grants (FP&S)
- Staffing for Adequate Fire and Emergency Response (SAFER) Grants

Community Outreach Programs

- Jefferson County Fair
- All-County Picnic
- Website: dbvfr.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that Discovery Bay Volunteer Fire & Rescue has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks *where they vary from the risks facing the entire planning area.*

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Windstorm	Unknown	Unknown
Nisqually Earthquake	02/28/2001	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Windstorm
2. Earthquake
3. Wildland Fire

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
~~ST-MH-8~~	Improve interoperability through coordinated purchase and use of communications equipment, and OPSCAN program.	DEM, JeffCom 911, PTPD, JCSO, and all Fire Districts including EJFR.	DHS Grants	Short-Term
NEW	Replace Station 5-1 with one that is seismically sound	JCFD5	Bond Passed in 2016	**TBD**

	and includes community center.			



Station 5-1 is to be replaced with combination station / community center. Source: dvbfr.org

Port Townsend School District No. 50
(PTSD)
School District Profile

Motto:
"Learning through a sense of place"

Mission:
Through community focused maritime place-based projects, students develop effective thinking, effective action and effective relationships. As a result, our students demonstrate meaningful accomplishments as engaged citizens.

Core Principles:
- Innovation impacts real community needs
- Empowered learners own their learning
- Learning is connected day-to-day and year-to-year
- Learning is embedded in authentic activities and projects
- Meaningful relationships develop while learning
- Our maritime community, in all its facets, provides rich resources for place-based learning

Adopted June 27, 2016

The District had an annual average full-time equivalent (FTE) enrollment for the 2021-22 school year of 1,190.

Fast Facts – Port Townsend School District 2015-2016 School Year:

Budgeted Enrollment:	1,169
Certified Staff:	70.9
Certificated Administrative:	6.3
Classified Staff:	55.895

Operating Budget for (2015-2016): $14,715,441

Location: Port Townsend, Wa
Website: www.ptschools.org

Schools:

Port Townsend High School	Grades 9-12
Blue Heron Middle School	Grades 4-8
Grant Street Elementary	Grades Pre-K-3
	OPEPO
OCEAN*	Grades K-12

*OCEAN stands for Opportunity, Community, Experience, Academics, Navigation, an alternative program.

Contact: Dr. Lind Rosenbury, Superintendent
Phone: 360 379-4501
Email: lrosenbury@ptschools.org
(Hazard Mitigation Liaison)

Direct Requests for Public Records to:
Mary Colton, Administrative Assistant to the Superintendent
360 379-4501
mcolton@ptschools.org

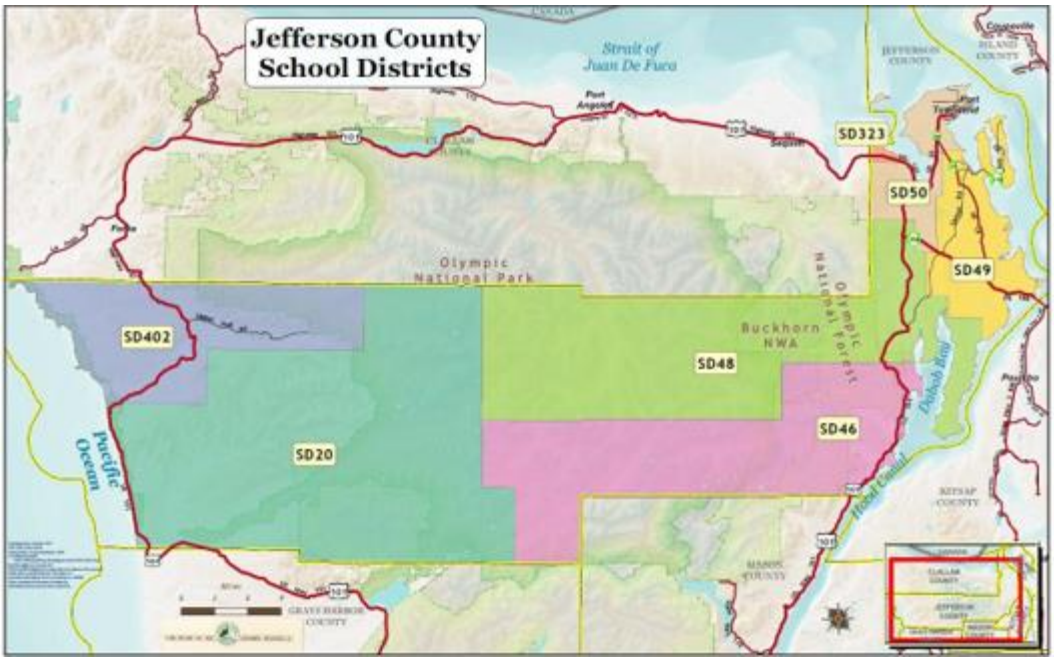
Name: Port Townsend School District #50
Address: 1610 Blaine St
Port Townsend, Washington 98368
Phone: (360) 379-4501

Asset Summary: Risk of isolation or inundation due to proximity to tsunami inundation zone(s). Need to bring all facilities up to modern earthquake standards.

Port Townsend School District Properties Owned					
School Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
Port Townsend High School	1500 Van Ness	Yes	$17,945,940	$1,631,708	$19,577,650
Blue Heron Middle School	3939 San Juan	Yes	$8,159,993	$987,446	$9,147,459
Mountain View	1919 Blaine	Yes	Unk		
Grant Street	1637 Grant St	Yes	$3.938,096	$881,846	$4,819,942
Lincoln Building	450 Fir St	No	$2,350,219	$500,000	$2,850,219
Maintenance Shop	1101 Harrison	Yes	$378,144	$177,969	$556,113
Total Value:					$36,951,383

Outline of Area Served:

The Port Townsend School District No. 50 serves the City of Port Townsend and north County west to the Clallam County border. The area is colored beige in the map below, and is labeled "SD50." Source: Jefferson County



PLANNING SECTION

PTSD integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that PTSD is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation. To accomplish this, PTSD Officials and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Mandated ASB Reports
- Board Policies and Procedures
- Jefferson County Code

- Port Townsend City Code

Plans and Policies:

- School Closure Plan
- Evacuation Plan
- Lockdown Plan
- Bomb Threat Assessment Guide
- Emergency Response Plan
- Capital Facilities Plan
- 2017 – 2021 Strategic Plan
- Policies and Procedures
- School Safety and Security Cooperative (PT, Chimacum, Quilcene, Brinnon) (Every 4 months)
- Jefferson County Education Partnership (JCEP) (Quarterly)
- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- School Board
- Superintendent
- Parent Teacher Association
- Public School Employees
- Port Townsend Public Library Collaboration
- Port Townsend Education Foundation
- Office of Superintendent of Public Instruction
- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA
- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA

Fiscal Capabilities:

- Authority to Levy Taxes
- Authority to Issue Bonds
- General Fund
- Capital Project Fund
- Debt Service Fund
- FEMA Grants
- HUD "CDBG" Grants
- Foundation Grants
- Legislative Funding / Grants
- Local In-kind gifts/donations and other grants

Community Outreach Programs

- District Newsletter
- Grant Street Elementary Public Safety Fair

- Jefferson County Fair
- Website: ptschools.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that the Port Townsend School District has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks *where they vary from the risks facing the entire planning area.*

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Nisqually Earthquake	02/28/2001	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Volcanic Action).
3. Local Severe Storms

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
~~ST-WS-6~~	Replace roof on High School Annex	Port Townsend School District		**Complete - 2013**
OG-MH-0	Participate in Jefferson County Natural Hazard Mitigation Plan	Jefferson County Hazard Mitigation	Local Budget	5 year update cycle
Mitigation Activity ID	**Mitigation Measure**	**Lead Agency**	**Funding Source**	**Timeline**
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	School Dist; DEM	Local Budget	Ongoing Education; PTSD developed core Emergency Response Plan in June 2009.
LT-EQ-14	Nonstructural retrofitting of structures that are identified as seismically vulnerable.	School Districts	Bond, Capital Budget	Ongoing

NEW	Build new elementary school to earthquake standards.	PTSD50	Bond	Construction will begin in the Spring 0f 2017.
NEW	If Remodel or repurpose Lincoln Building, bring up to earthquake standards.	PTSD50	Capital budget, bond	In Planning Stage

Funding sources for Capital Budget come from retained earnings, bonding, grants, and taxes.

Brinnon School District No. 46
(BSD)

School District Profile

Brinnon is a small, rural town with a constant population of about 3500 in the winter and approximately 5000 in the summer. We also have a a four legged population of elk. You'll frequently see the elk walking through town and our community members are used to sharing the road with them

The school is one of the major employers in the area. The majority of the businesses in the area cater to the tourist industry.

Many of our teachers and classified staff have been in the community for many years; some have spent their own elementary years attending the Brinnon School. They are well connected with the community and provide the foundation for our community school.

The school is a member of the Cooperative Library Association Network (C.L.A.N.) Students have access to the Jefferson County Rural Library, Port Townsend City and Quilcene School Library. Materials are delivered weekly via the Jefferson County Rural Library's Bookmobile, enhancing our students' access to educational materials.



Brinnon School

Contact:

Name: Brinnon School District No. 46
Address: 46 Schoolhouse Road
Brinnon, Wa 98320 Phone:
Phone: (360) 796-4646
Website: bsd46.org

District Superintendent: **Patricia Beathard**
(Hazard Mitigation Liaison)
Email: pbeathard@bsd46.org

Source: http://bsd46.org/

Asset Summary: Risk of isolation due to rural service area. Need to bring facility to modern earthquake standards.

Properties Owned by the School District

Brinnon School District Properties Owned					
School Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
Brinnon School K-8	46 Schoolhouse Road	Yes	$3.5 million	$500,000	$4 million
Total Value:			$3.5 million	$500,000	$4 million

Outline of Area Served: The community of Brinnon is located on the beautiful shores of Hood Canal, and borders the majestic Olympic National Forest and Park on the west. The Brinnon School District No. 46 is shown as pink in the map below, and is labeled "SD46."



Source: Jefferson County Map Database

PLANNING SECTION

The Brinnon School District (BSD) integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that BSD is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation. To accomplish this, BSD Officials and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Mandated ASB Reports
- Board Policies and Procedures
- Jefferson County Code

Plans and Policies:

- BSD Policies and Procedures
- Brinnon Comprehensive Plan
- School Safety and Security Cooperative (PT, Chimacum, Quilcene, Brinnon) (Every 4 months)
- Jefferson County Education Partnership (JCEP) (Quarterly)
- Jefferson County Comprehensive Plan
- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- School Board
- Superintendent
- Parent Teacher Organization
- Public School Employees
- Jefferson County Library
- Office of Superintendent of Public Instruction
- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA

- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA

Fiscal Capabilities:

- Authority to Levy Taxes
- Authority to Issue Bonds
- General Fund
- Capital Project Fund
- Debt Service Fund
- FEMA Grants
- HUD “CDBG” Grants
- Legislative Funding / Grants
- Other Grants
- Local In-kind gifts/donations
- Fundraisers: Book Fairs, Community Sales, Box Tops for Education, Bake Sales
- Amazon.com Associate

Community Outreach Programs

- District Newsletter
- Fall Fest
- Brinnon School Surveys
- Website: bsd46.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that the Brinnon School District has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction’s risks where they vary from the risks facing the entire planning area.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Nisqually Earthquake	02/28/2001	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Flood
2. Earthquake
3. Local Severe Storms

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-EQ-14	Nonstructural **retrofitting of structures that are identified as seismically vulnerable.**	Brinnon School District	Ongoing – Longterm	Protect Life & Property
OG-MH-0	Participate in Jefferson County Natural Hazard Mitigation Plan	Jefferson County Hazard Mitigation	Local Budget	Annual
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	School Dist; DEM	Local Budget	Short-Term

Funding sources for Capital Budget come from retained earnings, bonding, grants, and taxes.

Chimacum School District No. 49 (CSD49)

School District Profile

The Chimacum School District employs approximately 5 administrative; 50 certificated; and 80 classified staff. The total district general fund budget is approximately $17 million, with about 19% of that total raised through local levies. Personnel costs account for approximately 80% of all expenditures. We serve 700 students in grades Pre-K-12. The schools within the District are:

Chimacum Junior/Senior High School
Chimacum Elementary
Chimacum Creek Primary
Pi Program



Chimacum School District: Main Campus
Source: PTLeader.com

Contact:

Name: Chimacum School District #49
Mailing Address: P.O. Box 278
Chimacum, WA 98325-0278

Phone: (360) 385-3922
Location: 91 West Valley Rd
Chimacum, WA 98325

Website: http://csd49.org/

Dr. Scott Mauk, Superintendent
scott_mauk@csd49.org
(360) 302-5896 (Hazard Mitigation Liaison)

Source: http://csd49.org/

Asset Summary: Risk of isolation due to rural service area. Need to bring facilities to modern earthquake standards.

Properties Owned by the School District

Chimacum School District Properties Owned (2017 est.)					
School Facility	**Address**	**Critical**	**Bldg Value**	**Equip Value**	**Total Values**
Chimacum Jr/Sr High School	91 West Valley Rd. Chimacum WA, 98325	Yes	$19,611,041	$1,476,485	$21,085,526
Chimacum Elementary School	91 West Valley Rd. Chimacum WA, 98325	Yes	$13,811,538	$862,397	$14,673,935
Former Chimacum Elementary School (Not Occupied)	91 West Valley Rd. Chimacum WA, 98325	Yes	$20,709,586	$2,033,738	$22,743,324
Chimacum Creek Primary School	313 Ness Corner Road Chimacum WA, 98325	Yes	$9,961,099	$310,702	$10,271,801
Chimacum Transportation Dept	91 West Valley Rd. Chimacum WA, 98325	Yes	$1,825,616	$86,897	$1,912,513
Chimacum Maintenance Dept	91 West Valley Rd. Chimacum WA, 98325	Yes	$1,399,280	$107,495	$1,506,775
Chimacum High School Greenhouse	91 West Valley Rd. Chimacum WA, 98325		$104,795	$7,405	$112,200
Chimacum School District Uniforms and Instruments	91 West Valley Rd. Chimacum WA, 98325		$0	$104,675	$104,675

Chimacum School District Properties Owned					
Total Value:			**$67,461,104**	**$4,989,794**	**$72,450,897**

Value of Area Served: $3,364,463,082 (2024 valuation)

Outline of Area Served: The Chimacum School District covers a 100 square mile area, which includes the communities of Port Ludlow, Port Hadlock, Irondale, Chimacum, Shine, Paradise Bay and Marrowstone Island. It is shown as the goldenrod colored area on the map below, and is labeled "SD49."



Source: Jefferson County Map Database

PLANNING SECTION

CSD49 integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that CSD49 is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation. To accomplish this, CSD49 Officials and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Mandated ASB Fund Reports
- Board Policies and Procedures
- Jefferson County Code

Plans and Policies:

- School Closure Plan/Policy
- Evacuation Plan
- Lockdown Plan
- Bomb Threat Assessment Guide
- Chimacum District Emergency Procedures Plan
- Facilities Master Plan
- Policies and Procedures
- Jefferson County Education Partnership (JCEP) (Quarterly)
- Jefferson County Comprehensive Emergency Management Plan
- **Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)**
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- School Board
- Superintendent
- Parent Teacher Association
- Public School Employees
- Friends of Chimacum Schools (FOCS)
- Jefferson County Library
- Office of Superintendent of Public Instruction

- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA
- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA

Fiscal Capabilities:

- Authority to Levy Taxes – EP&O and Capital Projects
- Authority to Issue Bonds
- General Fund
- Capital Project Fund
- Debt Service Fund
- FEMA/ESSER Grants
- Foundation Grants
- Legislative Funding / Grants
- Other Grants
- Local In-kind gifts/donations

Community Outreach Programs

- District Newsletters to multiple Stakeholders
- Class Dojo
- School Messenger- SMS, Email, Voicemails
- Social Media
- Website: csd49.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that the Chimacum School District has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks ***where they vary from the risks facing the entire planning area.***

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Nisqually Earthquake	02/28/2001	Unknown
Wind Storm	05/23/2017	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Local Severe Storms
3. Fire

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
OG-MH-0	Participate in Jefferson County Natural Hazard Mitigation Plan	Jefferson County Hazard Mitigation	Budget	Annual
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	School Dist., Local EMS (including JCSO And EJFR)	Budget	Ongoing
NEW	Replace roof, HVAC, Siding on Chimacum Jr/Sr High School.	Chimacum School District	Budget	**Beginning Summer 2025**
NEW	Facility Condition Assessment on all District Facilities	Chimacum School District	Budget	Contracted to Meng Analysis for the Spring of 2021.

Funding sources for Capital Budget come from retained earnings, levies, grants, and taxes.

Queets - Clearwater School District No. 20 (QCSD)

School District Profile

Queets-Clearwater School District is located in west Washington. Queets-Clearwater School District has 640.35 square miles of land area and 76.29 square miles of water area.
As of 2010-2014, the total Queets-Clearwater School District population is 789. Queets-Clearwater School District median household income is $34,063 in 2010-2014. Queets-Clearwater School
District median house value is $77,500 in 2010-2014. On average, Queets-Clearwater School District is much better than the state average in quality.
Source: http://www.usa.com/schooldistrict-5301380.htm



Queets School

Contact:
Name: Queets – Clearwater School District No. 20
Mailing Address: 146000 Hwy 101
Forks, WA 98331
Phone: (360) 962-2395
Email: **scarter@qcsd.wednet.edu**

Website: http://www.qcsd.wednet.edu/

Superintendent: Scott M. Carter (Hazard Mitigation Liaison)

Source: http://www.qcsd.wednet.edu/

Asset Summary: Risk of isolation due to rural service area, especially given unique nature of Jefferson County's West End. No emergency services available in West Jefferson.

Properties Owned by the School District

Queets – Clearwater School District Properties Owned					
School Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
Queets – Clearwater School	146000 Hwy 101 Forks, WA 98331	Yes	$370,000	$0	$370,000
Total Value:			**$370,000**	**$0**	**$370,000**

Value of Area Served: $11,669,305

Outline of Area Served: The area served by the Queets – Clearwater School District is shown below in the "aqua" color, and is labeled as "SD20."



Source: Jefferson County Map Database

PLANNING SECTION

QCSD integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that QCSD is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation. To accomplish this, QCSD Officials and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Mandated ASB Reports
- Board Policies and Procedures
- Jefferson County Code

Plans and Policies:

- Emergency Response Plan
- Capital Facilities Plan
- Policies and Procedures
- Washington Schools Risk Management
- Jefferson County Comprehensive Emergency Management Plan
- **Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)**
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- School Board
- Superintendent
- Parent Teacher Association
- Public School Employees
- Office of Superintendent of Public Instruction
- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA
- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA

Fiscal Capabilities:

- Authority to Levy Taxes
- Authority to Issue Bonds
- General Fund
- Capital Project Fund
- Debt Service Fund
- FEMA Grants
- HUD “CDBG” Grants
- Foundation Grants
- Legislative Funding / Grants
- Other Grants
- Local In-kind gifts/donations

Community Outreach Programs

- District Newsletter
- Website: qcsd.wednet.edu

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that QCSD has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction’s risks where they vary from the risks facing the entire planning area.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Distant Tsunami (36” wave)	03/2011	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Local Severe Storms
2. Earthquake
3. Fire

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST-WF-4	Install fire doors and fire suppression system.	Queets / Clearwater Commissioners	Capital Budget or grant	Short-Term
ST-WS-7	Acquire generator to provide emergency power to school buildings.	Queets / Clearwater Commissioners	HMGP Grant	Short-Term
OG-MH-0	Participate in Jefferson County Natural Hazard Mitigation Plan	Jefferson County Dept of Emergency Management	Local Budget	Ongoing – Participation in update – 2024 Adoption – after FEMA review
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	School Dist; DEM	Local Budget	Short-Term

Quilcene School District No. 48
(QSD)

School District Profile

The Quilcene School District serves approximately 700 students from pre-school through 12th grade on one main campus that is divided into Elementary (K-6), Middle School (7-8), High School (9-12), and our P.E.A.R.L. Program (K-8). We also serve neighboring Brinnon's high school students. The district has 40+ certificated staff and 40+ classified staff and an operating budget of approximately $10.6 million. We have numerous educational, athletic, and extracurricular programs and dedicated staff to carry them out.

QUILCENE SCHOOL DISTRICT

Source: QSD48 Emergency Procedures Handbook

Contact:

Name: Quilcene School District No. 48
Address: 294715 US Highway 101
P.O. Box 40
Quilcene, Wa 98376
Phone: (360) 765-3363
Email: wlis@qsd48.org

Website: http://www.quilcene.wednet.edu/

Superintendent: Ron Moag
(Hazard Mitigation Liaison)

Source: http://www.quilcene.wednet.edu/

Asset Summary: Risk of isolation due to rural service area. Proximity to tsunami inundation zone.

Properties Owned by the School District

Quilcene School District Properties Owned					
School Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
Quilcene High School	294715 Highway 101	YES	$2,793,000	$2,547,000	$5,340,000
Quilcene Middle School & District Office	294715 Highway 101	YES	$2,581,000	$1,347,700	$3,928,000
Quilcene Elementary	294715 Highway 101	YES	$2,861,000	$1,347,700	$4,208,000
Maintenance Building	294715 Highway 101	YES	$1,166,000	$80,000	$1,296,000
Multi-Purpose Building	294715 Highway 101	YES	$8,672,000	$3,538,000	$12,210,000
Bus Garage	294715 Highway 101	YES	Included in Maintenance Building	$50,000	$50,000
Portable Classrooms	294715 Highway 101	YES	$375,000	$300,000	$675,000
Football Field	294715 Highway 101		$500,000		$500,000
Baseball Field	294715 Highway 101		$500,000		$500,000
Bus Barn	106 E. Rose St.	YES	$1,800,000	$50,000	$1,850,000
Total Value:			**$21,248,000**	**$9,260,400**	**$30,508,000**

Value of Area Served: $545,881,944

Outline of Area Served:

The Quilcene School District is colored green in the map below, and is labeled “SD48.”



Source: Jefferson County Map Database

PLANNING SECTION

QSD integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District’s goal is to work internally to assure that QSD is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation. To accomplish this, QSD Officials and staff use existing authorities, policies, fiscal capabilities, and

continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Mandated ASB Reports
- Board Policies and Procedures
- Jefferson County Code

Plans and Policies:

- School Board Policies
- Safety / Accident Prevention Program
- Emergency Procedures Handbook
- School Technology Plan
- School Improvement Plan
- Strategic Plan 2015 - 2020
- Policies and Procedures
- School Safety and Security Cooperative (PT, Chimacum, Quilcene, Brinnon) (Every 4 months)
- Jefferson County Education Partnership (JCEP) (Quarterly)
- Jefferson County Comprehensive Plan
- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- School Board
- Superintendent
- Parent Teacher Association
- Public School Employees
- Quilcene Alumni Association
- Quilcene PTK
- Quilcene Booster Club
- Office of Superintendent of Public Instruction
- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA
- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA

Fiscal Capabilities:

- Authority to Levy Taxes
- Authority to Issue Bonds
- 2016/2017 Budget
- General Fund
- Capital Project Fund
- Debt Service Fund
- FEMA Grants
- HUD “CDBG” Grants
- Legislative Funding / Grants
- Other Grants
- Local In-kind gifts/donations

Community Outreach Programs

- District Newsletter “The Ranger Times”
- Website: Quilcene.wednet.edu

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that the Quilcene School District has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction’s risks where they vary from the risks facing the entire planning area.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Nisqually Earthquake	02/28/2001	Unknown

Natural Hazard Vulnerability Analysis Rating

See the “Natural Hazard Rating Process and the *Natural Hazard Rating by Jurisdiction* table for how the rankings were developed and applied for each jurisdiction and hazard. This District is most vulnerable to the following natural hazards - ranked in order:

1. Fire
2. Earthquake
3. Local Severe Storms

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
NEW	Develop a plan to remodel or replace old buildings. Need to continue to build new facilities for the future. Consider a bond to replace some of our older facilities.	Quilcene School District	Not Yet Determined; possibly bond, capital budget, grants	**Placed on the District Action Plan**
~~ST-WS-8~~	Replace roofs in Shop, Bus Barn, and Admin Bldg to handle weather. Severe snow would put most roofs in jeopardy of collapse.	Quilcene School District	Local budget	~~**Short Term**~~ **COMPLETED**
OG-MH-0	Participate in Jefferson County Natural Hazard Mitigation Plan	Jefferson County Hazard Mitigation	Local budget	Annual
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	School Dist; DEM	Local budget	On-going
LT-EQ-14	Nonstructural retrofitting of structures that are identified as seismically vulnerable.	School Districts	Ongoing – Longterm	1. Protect Life & Property,

Funding sources for Capital Budget come from retained earnings, bonding, grants, and taxes.

Quillayute Valley School District No. 402
(QVSD)

School District Profile

Quillayute Valley School District is located in Forks, Washington on the Olympic Peninsula. The Olympic National Park, Pacific Ocean, and Hoh Rain Forest surround our schools with natural beauty. Our district serves approximately 3500 students with 900 full-time equivalents (FTE) in our brick and mortar schools on 50 acres of land that was once known as the Forks Prairie. Our Alternative Learning Education (ALE) virtual program, Insight School of Washington serves approximately 2500 K-12 students across the state. The district employs approximately 200 staff members, which serve our brick and mortar students. We partner with Stride Inc. to provide services for our on-line students.

QVSD has its own district hazard mitigation plan. QVSD Hazard Mitigation Plan Mission Statement is to:

The mission is to proactively facilitate and support district-wide policies, practices and programs that make the Quillayute Valley School District more disaster resistant and disaster resilient. The Forks High School gymnasium is designated as a Red Cross station in the event of a need for emergency response within the greater Forks area. Quillayute Valley School District No 402 Hazard Mitigation Plan

Quillayute Valley School District No. 402

Name: Quillayute Valley School District No. 402
Address: P.O. Box 60
411 S Spartan Ave
Forks, Wa 98331

Phone: (360) 374-6262
Email: Diana.reaume@qvschools.org

Website: www.qvschools.org

Superintendent: Diana Reaume (Hazard Mitigation Liaison to Jefferson County – City of Port Townsend Plan)

Source: http://www.qvschools.org

Mission: We believe that every student will be successful. The Quillayute Valley School District Board of Directors and staff believe that every student can and will be successful in our schools. By celebrating small successes, we create momentum for bigger successes. Success begins right here in Forks, in the classroom, on the field, in the gym, on the mat, in the lab or on stage! Through hard work, perseverance and modeling the Core Covenants of respect, integrity and commitment, every student and staff member will be successful.

Vision: The Quillayute Valley School District Board of Directors and staff believe that every student will be successful. We also believe in ourselves, our teams, and our district. We believe in the Forks community, and will never give up. We believe in modeling respect, having a sense of integrity, and showing commitment while we are in our schools and in our community, as well as when we visit other communities.

Asset Summary: Risk of isolation due to rural service area; some facilities lie in Clallam County.

Properties Owned by the School District

Quillayute Valley School District Properties Owned					
School Facility	**Address**	**Critical**	**Bldg Value**	**Equip Value**	**Total Value**
Forks Elementary School	301 S. Elderberry, Forks	Yes	$15.415.100	$1,000,000.00	$16,415,100.00
Forks Middle School	121 South Spartan Avenue, Forks	Yes	$12,942,800.00	$1,600,00.00	$14,542,800.00
Forks High School	261 South Spartan Avenue, Forks	Yes	$26,823,700.00	$3,000,000.00	$39,828,700.00
Forks Alternative School	161 East ‘E’ Street, Forks	Yes	$491,000.00	$200,000.00	$691,000.00

Quillayute Valley School District Properties Owned					
Spartan Stadium	261 South Spartan Avenuve	Yes	$5,900,000.00	$200,000.00	$7,100,000.00
Transportation Complex	521 North Forks Ave.	Yes	$2,579,300.00	$4,000,000.00	$6,579,300.00
Administrative Complex	411 South Spartan Avenue	Yes	$1,600,000.00	$750,000.00	$2,350,000.00
FHS Auto Tech Building	382-390 South Forks Avenue	Yes	$1,450,000.00	$500,000.00	$1,950,000.00
Total Value:					$92,032,00.00

Value of Area Served: $17,797,830

Outline of Area Served: The Quillayute Valley School District is shown in purple on the map below. It is labeled as “SD402.”



PLANNING SECTION

PTSD integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that PTSD is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation.

"An important aspect of the Plan's integration into ongoing programs will be the inclusions of the Plan's hazard, vulnerability and risk evaluations and mitigation Action items, into ongoing capital improvement planning and other district activities..." (QVSD Hazard Mitigation Plan) To accomplish this, QVSD Officials and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Mandated ASB Reports
- Forks Municipal Code
- Clallam County Department of Community Development
- Forks Planning Commission

Plans and Policies:

- School Board Policies
- School Closure Telephone Plan
- Evacuation Plan
- Lockdown Plan
- Bomb Threat Assessment Guide
- Quillayute Valley Schools Emergency Response Plan
- Washington State Prepared Response Plan
- Capital Facilities Plan
- Five Year Plan
- Strategic Plan
- Policies and Procedures
- District Safety Plan
- Maintenance Cold Weather Plan
- Washington Schools Risk Management
- Jefferson County Comprehensive Emergency Management Plan
- Clallam County Hazard Mitigation Plan and Emergency Response Plan

- City of Forks Hazard Mitigation Plan and Emergency Response Plan
- Quillayute Valley School District Hazard Mitigation Plan (June 23, 2015)

Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2024) Resources:

- School Board
- Superintendent
- Parent Teacher Association
- Teachers Association/Union
- Public School Employees
- Interlocal Agreements with Clallam Transit System (CTS) and Jefferson County Transit Authority (JTA)
- Safety Committee
- Operations Committee
- Office of Superintendent of Public Instruction
- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA
- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA
- Rapid Responder System
- Education Service District 114

Fiscal Capabilities:

- Authority to Levy Taxes
- Authority to Issue Bonds
- Funds o General Fund o Capital Project Fund
  - Debt Service Fund
  - Transportation Vehicle Fund
  - Trust Fund
  - Booster Funds
- OSPI School Construction Assistance Program
- FEMA Grants
- HUD "CDBG" Grants
- Foundation Grants
- Legislative Funding / Grants
- Other Grants
- Local In-kind gifts/donations

Community Outreach Programs

- District Newsletter
- Ready Washington
- District Website: qvschools.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See ***Appendix F*** for proof that QVSD has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction's risks *where they vary from the risks facing the entire planning area.*

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)			
Type of Event	Facility Affected	Date	Total Public Damage
Wildfire	Transportation	8/22/1991	$6,035.20
Water Damage	HS Library	12/27/1995	$28,210.05
Severe Winds	High School Gym Roof	12/26/1998	$362,825.88
Flood Damage	Alternative School	10/09/2000	$1,160.00
Lightning Damage	Elementary School	01/01/2003	$15,428.94
Total Damage			$413,660.07

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Severe Wind
2. Flooding
3. Wildfire

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Quillayute Valley School District Mitigation Action Items

Hazard	Action Item	Timeline	Source of Funds	Lead Agency	Plan Goals Addressed			
					Life Safety	Protect Facilities	Enhance Emergency Planning	Enhance Awareness and Education
Multi-Hazard Mitigation Action Items								
Short-Term #1	Investigate designating Forks High School as a community Emergency Shelter. Install a back-up power system (generator).	1-5 Years	Local, Grant	QVSD, Clallam County, City of Forks	X	X	X	X
Long-Term #1	Integrate the findings and action items in the mitigation plan into ongoing programs and practices for the district.	Ongoing	Local, Grant	QVSD M&O Dept.	X	X	X	X
Long-Term #2	Review emergency and evacuation planning to incorporate hazard and risk information from the mitigation plan.	Ongoing	Local	QVSD M&O Dept.	X	X	X	X
Long-Term #3	Consider natural hazards whenever siting new facilities and locate new facilities outside of high hazard areas.	Ongoing	Local, Grant Bond, Levy	QVSD, City of Forks	X	X	X	X
Long-Term #4	Ensure that new facilities are adequately designed to minimize risk from natural hazards.	Ongoing	Local, Grant Bond, Levy	QVSD M&O Dept.	X	X	X	X
Long-Term #5	Maintain, update and enhance facility data and natural hazards data in the ICOS database.	Ongoing	Local	QVSD M&O Dept.	X	X	X	X
Long-Term #6	Develop and distribute educational materials regarding natural hazards, vulnerability and risk for K-12 facilities.	Ongoing	Local, Grant	QVSD, Clallam County	X		X	X
Long-Term #7	Seek FEMA funding for repairs if district facilities suffer damage in a FEMA declared disaster.	Ongoing	Local, Grant	QVSD, FEMA, Clallam County	X	X		X
Long-Term #8	Pursue pre- and post-disaster mitigation grants from FEMA and other sources.	Ongoing	Local, Grant	QVSD M&O Dept.	X	X		X
Long-Term #9	Post the district's mitigation plan on the website and encourage comments from stakeholders for the ongoing review and periodic update of the mitigation plan.	Ongoing	Local	QVSD M&O Dept.	X			X

Quillayute Valley School District Mitigation Action Items Continued

Hazard	Action Item	Timeline	Source of Funds	Lead Agency	Plan Goals Addressed			
					Life Safety	Protect Facilities	Enhance Emergency Planning	Enhance Awareness and Education
Earthquake Mitigation Action Items								
Short-Term #1	Identify district buildings that do not meet the ASCE 41-13 criteria for being post-benchmark year and thus do not meet the screening criteria for life safety.	1 Year	Local	QVSD M&O Dept.	X	X		X
Short-Term #2	Complete ASCE 41-13 Tier 1 evaluations for the above buildings. If funding is limited, prioritize based on discussions with a structural engineer, building structural types, year built and a quick inspection of each building.	1-5 Years	Local, Grants Bond, Levy	QVSD M&O Dept.	X	X		X
Short-Term #3	Assess the ASCE 41-13 results and select buildings that have the greatest vulnerability for more detailed evaluations.	1-5 Years	Local, Grant	QVSD M&O Dept.	X	X		X
Short-Term #4	Seek OSPI and FEMA funding for replacement of Forks Intermediate School with a new building that meets or exceeds the seismic provisions in the current building code.	3-5 Years	Local, Grants, Bond, Levy	QVSD M&O Dept.	X	X	X	X
Long-Term #1	Prioritize and implement seismic retrofits or replacements based on the results of the detailed evaluations, as funding becomes available.	Ongoing	Local, Grants, Bond, Levy	QVSD M&O Dept.	X	X		X
Long-Term #2	Maintain and update building data for seismic risk assessments in the OSPI ICOS PDM database.	Ongoing	Local	QVSD M&O Dept.	X		X	X
Long-Term #3	Enhance emergency planning for earthquakes including Drop, Cover & Hold On and evacuation drills.	Ongoing	Local	QVSD M&O Dept.	X		X	X

Quillayute Valley School District Mitigation Action Items Continued

Hazard	Action Item	Timeline	Source of Funds	Lead Agency	Plan Goals Addressed			
					Life Safety	Protect Facilities	Enhance Emergency Planning	Enhance Awareness and Education
Flood Mitigation Action Items								
Short-Term #1	Complete building-level flood risk assessments for campuses for which this is recommended by the OSPI ICOS PDM database campus-level flood report.	1-2 Years	Local, Grant	QVSD, FEMA, City of Forks	X	X	X	X
Short-Term #2	Enhance emergency planning, including flood response measures, for all campuses that have or may have significant flood risk.	1-2 Years	Local, Grant	QVSD M&O Dept.	X	X	X	X
Short-Term #3	Complete at least a preliminary flood risk study for campuses not within FEMA-mapped floodplain that meet any of the "opt-in" criteria for completing the flood data inputs in the OSPI ICOS PDM database.	3 Years	Local, Grant	QVSD M&O Dept.	X	X	X	X
Short-Term #4	Seek OSPI and FEMA funding for replacement of Forks Intermediate School with a new building that meets or exceeds current building code and is engineered to stand up to Forks weather patterns (pitched roof, leak-resistant windows, etc.)	3-5 Years	Local, Grant, Bond, Levy	QVSD M&O Dept.	X	X	X	X
Long-Term #1	Evaluate and implement flood mitigation measures for campuses or buildings that have been determined to have high flood risk based on the campus-level flood report and/or local flood studies that have been completed, as funding becomes available.	Ongoing	Local, Grant	QVSD M&O Dept.	X	X	X	X
Long-Term #2	Locate new campuses outside of FEMA-mapped floodplains or other flood-prone areas whenever possible or construct new buildings in flood-prone areas at elevations as high as possible to minimize flood risk.	Ongoing	Local, Grant, Bond, Levy	QVSD M&O Dept.	X	X	X	X
Long-Term #3	Annually ensure that all district-owned storm water drains are cleaned out prior to the fall/winter rainy season.	Ongoing/ Annually	Local	QVSD M&O Dept.	X	X		

Quillayute Valley School District Mitigation Action Items Continued

Hazard	Action Item	Timeline	Source of Funds	Lead Agency	Plan Goals Addressed			
					Life Safety	Protect Facilities	Enhance Emergency Planning	Enhance Awareness and Education
Other Natural Hazards Mitigation Action Items								
Short-Term #1	Evaluate portable buildings to make sure that they are adequately tied down to resist high winds and implement mitigation measures, if necessary.	1-3 Years	Local	QVSD M&O Dept.	X	X	X	X
Short-Term #2	Annually inspect and trim trees near above ground electric power lines feeding the schools or large trees near school buildings.	1-3 Years	Local	QVSD M&O Dept.	X	X	X	X
Short-Term #3	Install wind-resistant roofing materials for buildings prone to high-wind damage.	1-5 Years	Local, Grant, Bond, Levy	QVSD M&O Dept.		X	X	X
Short-Term #4	Seek OSPI and FEMA funding for replacement of Forks Intermediate School with a new building that meets or exceeds current building code and is engineered to stand up to Forks weather patterns (pitched roof, leak-resistant windows, etc.)	3-5 Years	Local, Grant, Bond, Levy	QVSD M&O Dept.	X	X	X	X
Long-Term #1	Maintain heating and cooling systems in good working order and replace systems near the end of their useful life.	Ongoing	Local, Grant, Bond, Levy	QVSD M&O Dept.		X		
Long-Term #2	Insulate water pipes with a history of freezing or with poor insulation.	Ongoing	Local	QVSD M&O Dept.		X		

Brinnon School District No. 46
(BSD)

School District Profile

Brinnon is a small, rural town with a constant population of about 3500 in the winter and approximately 5000 in the summer. We also have a four-legged population of elk. You'll frequently see the elk walking through town and our community members are used to sharing the road with them

The school is one of the major employers in the area. The majority of the businesses in the area cater to the tourist industry.

Many of our teachers and classified staff have been in the community for many years; some have spent their own elementary years attending the Brinnon School. They are well connected with the community and provide the foundation for our community school.

The school is a member of the Cooperative Libraries of the Eastern Olympics (CLEO). Students have access to the Jefferson County Rural Library, Port Townsend City and Quilcene School Library. Materials are delivered weekly via the Jefferson County Rural Library's Bookmobile, enhancing our students' access to educational materials.



Brinnon School

Contact:

Name: Brinnon School District No. 46

Address: 46 Schoolhouse Road
Brinnon, Wa 98320

Phone: (360) 796-4646

Website: www.bsd46.org

District Superintendent: **Patricia Beathard**

Email: pbeathard@bsd46.org
(Hazard Mitigation Liaison)

Source: http://bsd46.org/

Asset Summary: Risk of isolation due to rural service area. Proximity to tsunami inundation zone and floodplains of Dosewallips and Duckabush River.

Properties Owned by the School District

Brinnon School District Properties Owned					
School Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
Brinnon School K-8	46 Schoolhouse Road	Yes	$3.5 million	$500,000	$4 million
Total Value:			$3.5 million	$500,000	$4 million

Value of Area Served: $26,057,703

Outline of Area Served: The community of Brinnon is located on the beautiful shores of Hood Canal, and borders the majestic Olympic National Forest and Park on the west. The Brinnon School District No. 46 is shown as pink in the map below, and is labeled "SD46."



Source: Jefferson County Map Database

PLANNING SECTION

The Brinnon School District (BSD) integrates its hazard mitigation planning into its local policies and authorities and participates in continuous public interaction regarding mitigation.

The District's goal is to work internally to assure that BSD is continuously improving its survivability in a major disaster in order to meet its responsibilities to the public, and to work with surround jurisdictions to improve the resiliency of both structures and processes. District staff has broad experience with the siting of new schools, construction, maintenance and modernization of schools that is directly applicable to hazard mitigation. To accomplish this, BSD Officials and staff use existing authorities, policies, fiscal capabilities, and continuous community outreach to meet the integrate activities into the capital budget planning consistent with the Plan's goals.

Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach

Authorities:

- RCW 28A – Common School Provisions
- WAC Title 392 – Office of Superintendent of Public Instruction
- Board Policies and Procedures
- Jefferson County Code

Plans and Policies:

- BSD Policies and Procedures
- Brinnon Comprehensive Plan
- School Safety and Security Cooperative (PT, Chimacum, Quilcene, Brinnon) (Every 4 months)
- Jefferson County Education Partnership (JCEP) (Quarterly)
- Jefferson County Comprehensive Plan
- Jefferson County Comprehensive Emergency Management Plan
- Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan (Rev. 2016)
- Earthquake Mitigation Procedure (District Facilities)
- Jefferson County Disaster Plan

Resources:

- School Board
- Superintendent
- Parent Teacher Organization
- Public School Employees
- Jefferson County Library
- Office of Superintendent of Public Instruction
- Washington State School Directors' Association – WSSDA
- Washington Association of School Administrators – WASA
- Washington Association of School Business Officials – WASBO
- Washington Association of Maintenance and Operations Administrators – WAMOA

Fiscal Capabilities:

- Authority to Levy Taxes
- Authority to Issue Bonds
- General Fund
- Capital Project Fund
- Debt Service Fund
- FEMA Grants
- HUD “CDBG” Grants
- Legislative Funding / Grants
- Other Grants
- Local In-kind gifts/donations
- Fundraisers: Book Fairs, Community Sales, Box Tops for Education
- Amazon.com Associate

Community Outreach Programs

- District Newsletter
- Community Newsletter – Crier
- District Facebook page
- Brinnon School Surveys
- Website: www.bsd46.org

PLAN PARTICIPATION SECTION

44 CFR § 201.6 (a)(4) Multi-jurisdiction plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

See **Appendix F** for proof that the Brinnon School District has adopted this Plan.

HAZARD IDENTIFICATION & RISK ASSESSMENT SECTION

44 CFR § 201.6 (c)(2)(iii) For multi-jurisdiction plans, the risk assessment section must assess each jurisdiction’s risks **where they vary from the risks facing the entire planning area.**

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Cost
Nisqually Earthquake	02/28/2001	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Flood
2. Earthquake
3. Local Severe Storms

MITIGATION STRATEGY SECTION

44 CFR § 201.6 (c)(3)(iv) For multi-jurisdiction plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-EQ-14	Nonstructural retrofitting of structures that are identified as seismically vulnerable.	Brinnon School District	Ongoing – Longterm	1. Protect Life & Property,
OG-MH-0	Participate in Jefferson County Natural Hazard Mitigation Plan	Jefferson County Hazard Mitigation	Grants or Budget	Annual
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	School Dist; DEM	Grants or Budget	Short-Term

Funding sources for Capital Budget come from retained earnings, bonding, grants, and taxes.

Jefferson County – Jeffcom 911

District Profile

Jeffcom 911 Communications provides dispatching services for first responders in Jefferson County, WA.	**Contact:** Jeffcom 911 Communications 81 Elkins Road Port Hadlock, WA 98339 360-344-9779 phone Email: Director Matt Stewart: director@jeffcom911.us
	Source: Jeffcom 911 Communications

Asset Summary: Radio towers lie in potentially hard to reach areas accessible by only service roads. Towers are in mountainous areas potentially impacted by fire or winter storm.

Critical Facilities (Owned by District):

Equipment:

Facility Location	Value
Radio Tower, Lawrence St.	
Tower	$106,669
Contents	$0
Radio Tower, 20th St	
Building/Tower	$679,000
Contents	$254,800
Dispatch Center	
Building	$0
Contents	$1,450,000
Radio Tower, Coyle Road	
Building/Tower	$122,500
Contents	$389,500
Radio Equipment / Shelter, Green Mountain	
Building	$306,197
Contents	$414,651
Radio Tower, Maynard	
Building/Tower	$323,800
Contents	$543,100
Radio Equipment / Shelter, Teal Lake	
Building	$0
Contents	$296,600
IT Office, Elkins Road	
Building	$43,100
Contents	$61,000
Total Value:	
Building/Tower	$1,581,266
Contents	$3,409,651

Value of Area Served: Source: Jefferson County Assessor **$4,639,984,525**

Outline of Area Served: Jeffcom 911 Communications and the Emergency Operations Center are co-housed in a building at 81 Elkins Road in the Sheriff's complex. The physical boundary of the County remains the current service area. Jefferson County is shown in **red** in the map to the right. Source: Generic map from Internet	

Current and Anticipated Service Trends: The aging of the county population and increased build out in unincorporated areas of the county combine to increase the call rate for JeffCOM 911 Communications and the need for increased involvement of Emergency Management Services.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Damage
Earthquake	02/28/2001	Minor Damage

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Local Severe Storms (Wind)
3. Flood

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Jefferson County Comprehensive Emergency Management Plan

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-EQ-16	Continue hardening and upgrading infrastructure at tower sites	Jeffcom 911	Budget	**Ongoing**
~~ST-MH-8~~	Improve interoperability through coordinated purchase and use of communications equipment	DEM, Jeffcom 911, PTPD, JCSO, and all fire districts.	DHS Grants / Budget	**Completed 2009**

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. Jefferson County Codes and Comprehensive Plans.
2. 2016 Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan

Jefferson County Public Hospital District No 2
(dba Jefferson Healthcare)

District Profile

Jefferson Healthcare is a DNV accredited, integrated health care system.

The hospital is a 25-bed, critical access hospital that has 24-hour physician coverage for our admitted patients as well as our Emergency Department patients. Jefferson Healthcare has top rated surgical services and includes lab services, swing bed unit, the latest in digital imaging and comprehensive array of physical, speech and occupational rehabilitation therapies.

Jefferson Healthcare has a home health, hospice, and palliative care program.

The organization has a comprehensive medical group, offering dental care, same day appointments, primary care, pediatrics, internal medicine, specialty services, and behavioral health. Jefferson Healthcare serves residents of East Jefferson County, with facilities located in Port Townsend, Quilcene, and Port Ludlow.





Source: www.jeffersonhealthcare.org; Jefferson Healthcare

Jefferson Healthcare
834 Sheridan Street
Port Townsend, WA 98368

Asset Summary: Impacts from storms, tsunami, or other event may create access issues for patients/staff to healthcare facilities.

Critical Facilities (Owned by District):

Name	Location	Value
Jefferson General Hospital Main Campus	834 Sheridan Street Port Townsend, WA 98368	$34,540,000
Jefferson Healthcare Sheridan Clinic	915 Sheridan Street Port Townsend, WA 98368	$3,352,600
Jefferson Healthcare Townsend Clinic	934 Sheridan Street Port Townsend, WA 98368	Unk
Jefferson Healthcare Watership Clinic	1010 Sheridan Street Port Townsend, WA 98368	Unk

Equipment:

Apparatus*	Included in building values.	
Contents*	Included in building values.	
Grand Total:		**$37,892,600**

Value of Area Served: **$4,610,454,953**

Outline of Area Served:	
The physical boundary of the County remains the current service area. Jefferson County is shown in red in the map to the right. Source: Generic map from Internet	

Current and Anticipated Service Trends:

Jefferson County remains home to one of the oldest demographics in the state (and the country); therefore, the organization has continued to see steady increases in the need for home care, primary care, and specialty services. Inpatient and emergency services have remained consistent over the last 2-3 years

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Fire
3. Local Severe Storms

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

Review/update "Existing Authorities, Policies, Fiscal Capabilities, and Community Outreach" under the "Planning Section" subheading. This is a list of plans, grant opportunities and other items that may support hazard mitigation capabilities. Add, delete, change year/name as needed in this section.

1. Jefferson County Comprehensive Emergency Operations Plan
2. Jefferson Healthcare Earthquake Response Plan
3. JH Emergency Procedures for Utility System Failure/Disruption
4. JH Inclement Weather Plan
5. JH Triage Management (Disaster Triage)
6. JH Surge Plan

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST WS 5	Replace windows on Jefferson Healthcare to withstand severe storms.	Commissioners	Grants/Budget	***Complete***
LT-EQ -10	Increase emergency food supply for staff and patients (72+ hours)	Commissioners	Grants/Budget	***Complete***

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST-MH-9	Increase our fuel supply for our generators to 72 hours and improve storage accessibility.	Commissioners	Grants / Budget	***Complete***
LT-EQ-11	Increase Emergency Water Supply capacity to meet 72-hour standard for emergency operations.	Commissioners	Budget	***In Progress Q4 2022***
	Pandemic mitigation/ response: establish the infrastructure to offer testing, treatment, and vaccines for COVID-19.	Commissioners	Budget	***Complete and ongoing 2020-present***
	Ensure timely communication in the event of phone disruption – purchase and distribute emergency operations radios.	Commissioners	Budget	***Complete Q1 2022***
	Plan to replace the 1965 building – in compliance with seismic engineering requirements.	Commissioners	Budget	***Planning – 2023/2024***
	Purchase a new decontamination trailer (to replace the trailer that was pulled as part of the pandemic response)	Commissioners	Budget	***In Progress Q3 2022***

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. Same as above
2. 2016 Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan

Jefferson County Rural Library District
(dba Jefferson County Library)

District Profile

Mission Feeding Minds. Fueling Dreams **Vision** A thriving community empowered by knowledge. **Values** As **LEADERS** we will: • Act with integrity. • Promote visionary thinking. • Inspire resilience. As a **TEAM** we will: • Communicate with transparency and respect. • Be flexible, responsive, helpful, and accountable. • Address issues thoughtfully and proactively. As **PARTNERS** we will: • Collaborate inclusively. • Invite diverse perspectives. • Listen, consider, and seek common ground. As **CHAMPIONS** for Literacy and Learning we will: • Ignite curiosity. • Demonstrate our commitment to diversity, equity, and inclusion. • Keep service and accessibility at the heart of what we do.	
Source: www.jclibrary.info	Dr. Tamara Meredith Director Jefferson County Library District 620 Cedar Avenue Port Hadlock, WA 98339 Phone: (360) 385-6544 tmeredith@jclibrary.info

Asset Summary: N/A

Critical Facilities (Owned by District):

Facility Designation	Facility Location	Value
Library Building & Contents	**620 Cedar Ave Port Hadlock, WA (360) 385-6544**	**$4,274,050**

Non-Critical Facilities (Owned by District)

Library Garage & Contents	**620 Cedar Ave Port Hadlock, WA**	**$234,800**

Equipment:

Bookmobile	$235,000
Courier Van	$24,310

Value of Area Served: **$7,096,416,106**

Outline of Area Served:

The Jefferson County Rural Library District serves unincorporated Jefferson County. It does not serve within the city limits of Port Townsend (in red) and contracts for service with the North Olympic Library System for Jefferson County residents who live on the Western edge of the county, along the Pacific Coast.

Source: Generic map from Internet



Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
Severe Local Storm	Periodic	None
Nisqually Earthquake	2001	Unknown

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Severe Local Storm
2. Earthquake
3. Volcanic Activity

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

The participation and adoption of the Jefferson County Multi-Jurisdictional Natural Hazards Mitigation Plan.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-MH-2	Support public outreach and education efforts around issues of resiliency and emergency prep	DEM, Library	Budget	Ongoing

Jefferson Transit Authority

District Profile

Our Mission

To provide reliable, safe, comfortable public transportation service in Jefferson County which is cost effective, reduces energy consumption and contributes to the cultural, environmental, and economic betterment of the residents of Jefferson County.



Name:
Jefferson Transit Authority

Address:
63 Four Corners Road
Port Townsend, WA 98368

Phone: (360) 385-4777
Toll Free: (800) 371-0497

Email: Nicole Gauthier, General Manager
ngauthier@jeffersontransit.com

Information / Cust Svc:

custserv@jeffersontransit.com



Jefferson Transit Authority Site Plan

Our Core Values

Jefferson Transit's Core Values are the operating principles that govern how Jefferson Transit employees act towards one another and their customers. Jefferson Transit employees value:

- **Acknowledgment and Support**
  We recognize Jefferson Transit to be the product of the concerted efforts of many well-intended people. We take time to commend the accomplishments of individuals and acknowledge their contributions toward the organizational goals of the agency.
- **Accountability**
  We take responsibility to uphold the mission statement and core values of Jefferson Transit. When challenged, we display fairness, trust and good judgment. Individually, we are sincerely interested in self-evaluation and personal growth.
- **Shared Responsibility**
  Collectively, we are responsible for the direction and image of the agency. This requires us to be flexible enough in our thinking to establish goals. We show a willingness to get involved and direct our efforts toward achieving positive outcomes and setting progressive objectives.
- **Communication**
  We express our thoughts and ideas appropriately. We are willing to listen to ideas contrary to our own. We recognize that good communication, compromise and diversity of opinion will strengthen Jefferson Transit.
- **Professionalism**
  We take pride in our skills and abilities to provide the community safe, friendly and reliable transportation. We place principles above personalities. We strive for a positive impact through our demeanor and appearance.
- **Stewardship**
  We will be stewards of the environment, of our customers, of the most vulnerable in our community, and of public funds. JTA will take an environmental leadership role in reducing both community emissions and JTA fleet vehicle emissions by continuing to invest in alternative fuel vehicles. We will also work to reduce our environmental impacts in ways big and small throughout our operations.

Source: jeffersontransit.com

Asset Summary: Radio towers lie in potentially hard to reach areas accessible by only service roads.

Critical Facilities (Owned by District):

1. Transit Administration Offices, Maintenance Facility, Bus Wash/Equipment Shed, Fueling Island system/ Bike Barn/Shelters, public charging stations approximate value: $6,972,146 63 Four Corners Road Port Townsend, WA, 98368
2. 111 Four Corners Rd- Land w/ structures approximate value $95,792.
3. Haines Place Park and Ride Haines Place; Building/Shelters/Bathroom $818,727 Port Townsend, WA

Equipment:

Apparatus – Transit and support vehicles, Radio Repeater Station (Mt Walker)
Radio Repeater Station (Manard Mt)

$9,210,000

Contents – Office and mobile equipment $817,838

Value of Area Served: $17,914,503.00

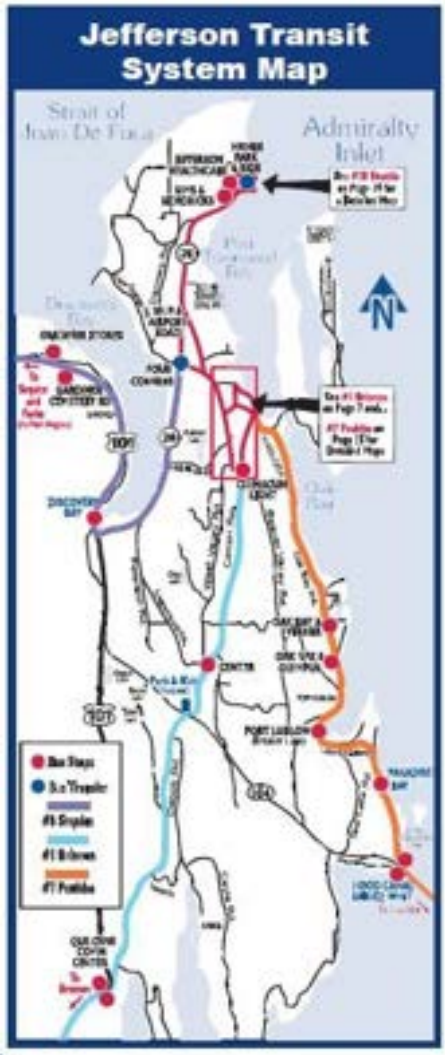
Outline of Area Served: Jefferson Transit Authority operates in Jefferson County, Washington. The county encompasses just under 1804 square miles of land area and is divided by the Olympic Mountain range. The Olympic National Park, Olympic National Forest, and State Land covers 75 percent of Jefferson County. Jefferson Transit Service Area covers 259 square miles.



Location of Jefferson County in Washington



West Jefferson County



East Jefferson County

Current and Anticipated Service Trends: Jefferson Transit is a rural transit system that provides a variety of public transportation services. Services include fixed-routes, ADA paratransit service, and vanpool. Regional and intercity transit connections are provided to Clallam, Grays Harbor, Kitsap, and Mason counties. Jefferson Transit operates service between Forks and Amanda Park in western Jefferson County.

In Port Townsend, service is used by tourists and residents to travel between the park and ride facility and the downtown Historic District. There is also service between neighborhoods and communities within the County, including Port Ludlow, Port Hadlock, Chimacum, Irondale, Brinnon, and Quilcene. Jefferson Transit carried more than 235,000 passengers in 2023. It is expected that ridership will continue to grow along with population growth in Jefferson County.

Public Transportation Management System

Owned Facility Inventory

Agency/Organization: **Jefferson Transit Authority**

Date: **December 27, 2023**

	Facility Code	**Facility Name**	**Condition** (points)	**Age** (years)	**Remaining Useful Life** (years)	**Replacement Cost** ($)	**Comments** *(If more than two lines, please attach a separate comment page)*
1	9	Haines Place Park & Ride	85	15	16	$818,727	
2	24	Administrative and Maintenance Center at 63 4 Corners	100	N/A	N/A	$6,972,146	
3		111 4 Corners	N/A	N/A	N/A	$95,792	
4		20,0000 Gallon Fuel Tank	1	N/A	$276,231	Included in Facility Cost	
5		Eco Lift	1	N/A	$120,000	Included in Facility Cost	

East-End Fixed Route Fleet (Port Townsend)

No.	Year	Make/model	Actual life odometer	Meets financial needs of SGR? Yes/no	Agency's ULB (Year)	Agency's ULB (Miles)	ADA access? Yes/no	Seating capacity	Fuel type	WSDOT title? Yes/no
1	2011	GILLIG LOW FLOOR 29'	452,012	NO	10	350,000	YES	22	BD	NO
2	2011	GILLIG LOW FLOOR 29'	433,212	YES	10	350,000	YES	22	BD	NO
3	2011	GILLIG LOW FLOOR 35'	433,365	YES	10	350,000	YES	32	BD	NO
4	2011	GILLIG LOW FLOOR 35'	443,482	YES	10	350,000	YES	32	BD	NO
5	2018	GILLIG LOW FLOOR 35'	119,864	YES	10	350,000	YES	32	BD	YES
6	2018	GILLIG LOW FLOOR 35'	110,429	YES	10	350,000	YES	32	BD	YES
7	2018	GILLIG LOW FLOOR 29'	76,509	YES	10	350,000	YES	26	BD	YES
8	2018	GILLIG LOW FLOOR 29'	87,871	YES	10	350,000	YES	26	BD	YES
9	2019	GILLIG LOW FLOOR 29'	21,018	YES	10	350,000	YES	26	BD	NO
10	2020	GILLIG LOW FLOOR 29'	7,464	YES	10	350,000	YES	26	BD	YES
11	2020	GILLIG LOW FLOOR 29'	7,811	YES	10	350,000	YES	26	BD	YES
12	2020	GILLIG LOW FLOOR 35'	5,175	YES	10	350,000	YES	30	BD	YES
13	2020	GILLIG LOW FLOOR 35'	3,384	YES	10	350,000	YES	30	BD	YES
14	2022	GILLIG LOW FLOOR 29' TROLLEY	2,725	YES	10	350,000	YES	26	BD	YES
15	2023	GILLIG LOW FLOOR ELECTRIC		YES	12	500,000	YES	31	ELEC	YES
16	2014	FORD F550/CHAMPION	118,626	YES	5	150,000	YES	22	BD	YES

West-End Fixed Route Fleet (Forks)

No.	Year	Make/model	Actual life odometer	Meets financial needs of SGR? Yes/no	Agency's ULB (Year)	Agency's ULB (Miles)	ADA access? Yes/no	Seating capacity	Fuel type	WSDOT title? Yes/no
1	2017	FORD F550	132,664	YES	7	200,000	YES	22	D	NO
2	2017	FORD F550	137,084	YES	7	200,000	YES	22	D	NO
3	2017	FORD F550	140,528	YES	7	200,000	YES	22	D	NO

East-End Paratransit Fleet (Port Townsend)

No.	Year	Make/model	Actual life odometer	Meets financial needs of SGR? Yes/no	Agency's ULB (Year)	Agency's ULB (Miles)	ADA access? Yes/no	Seating capacity	Fuel type	WSDOT title? Yes/no
1	2013	DODGE GRAND CARAVAN	56,373	YES	4	100,000	YES	4	G	NO
2	2013	DODGE GRAND CARAVAN	49,637	YES	4	100,000	YES	4	G	NO
3	2013	DODGE GRAND CARAVAN	50,404	YES	4	100,000	YES	4	G	NO
4	2013	DODGE GRAND CARAVAN	46,965	YES	4	100,000	YES	4	G	NO
5	2019	FORD E450 VAN	10,766	YES	5	150,000	YES	8+2	G	NO
6	2019	FORD E450 VAN	7,175	YES	5	150,000	YES	8+2	G	NO
7	2023	FORD E450 VAN		YES	5	150,000	YES	8+2	G	YES
8	2023	FORD E450 VAN		YES	5	150,000	YES	8+2	G	YES

East-End Rideshare Fleet (Port Townsend)

No.	Year	Make/model	Actual life odometer	Meets financial needs of SGR? Yes/no	Agency's ULB (Year)	Agency's ULB (Miles)	ADA access? Yes/no	Seating capacity	Fuel type	WSDOT title? Yes/no
1	2009	DODGE CARAVAN	109,301	YES	4	100,000	YES	7	G	NO
2	2009	DODGE CARAVAN	69,460	YES	4	100,000	YES	7	G	NO
3	2013	DODGE GRAND CARAVAN	50,027	YES	4	100,000	YES	7	G	NO
4	2013	DODGE GRAND CARAVAN	117,202	YES	4	100,000	YES	7	G	NO
5	2013	DODGE GRAND CARAVAN	71,028	YES	4	100,000	YES	7	G	NO
6	2018	CHEVY EXPRESS G3500	2,329	YES	4	100,000	YES	10	G	NO
7	2018	CHEVY EXPRESS G3500	27,089	YES	4	100,000	YES	10	G	NO

Facility Vehicles & Equipment (Port Townsend)

No.	Year	Make/model	Actual life odometer	Meets financial needs of SGR? Yes/no	Agency's ULB (Year)	Agency's ULB (Miles)	ADA access? Yes/no	Seating capacity	Fuel type	WSDOT title? Yes/no
1	1999	MERCURY MOUNTAINEER		YES		N/A	NO	4	GAS	NO
2	2010	FORD ESCAPE XLS		YES		N/A	NO	5	GAS	NO
3	2018	FORD EXPLORER		YES		N/A	NO	5	GAS	NO
4	2018	FORD EXPLORER		YES		N/A	NO	5	GAS	NO
5	2021	FORD EXPLORER		YES		N/A	NO	7	GAS	NO
6	2022	FORD MACH E		YES		N/A	NO	4	ELECTRIC	NO
7	2022	FORD MACH E		YES		N/A	NO	4	ELECTRIC	NO
8	1984	CHEVY FLATBED TRUCK		YES		N/A	NO	2	GAS	NO

9	2019	HUSQVARANA ZERO-TURN MOWER		YES		N/A	NO	1		NO
10	1999	HYDRO PRESS. WASHER		YES		N/A	NO	N/A	GAS/DIESEL	NO
11	2007	CHEVY AMERIVAN		YES		N/A	NO	5	GAS	NO
12	2007	CHEVY AMERIVAN		YES		N/A	NO	4	GAS	NO
13	2010	TOYOTA FORK LIFT		YES		N/A	NO	N/A	PROPANE	NO
14	2007	INTERSTATE BOX TRAILER		YES		N/A	NO	N/A	N/A	NO
15	2013	FORD F250 XL 4X4 TRUCK		YES		N/A	NO	6	DIESEL	NO
16	2016	GENIE BOOM LIFT		YES		N/A	NO	0		NO
17	2017	TILT TRAILER 22' 16+6 21K		YES		N/A	NO	N/A	N/A	NO
18	2016	TENNANT S30 SWEEPER		YES		N/A	NO	N/A		NO
19	2019	FREIGHTLINER WALK IN VAN		YES		N/A	NO	2	DIESEL	NO
20	2020	LS TRACTOR MT2255S		YES		N/A	NO	1	DIESEL	NO
21	2023	FORD F350 XL 4X4 TRUCK		YES		N/A	NO	6	GAS	NO

Jefferson Transit Facilities (Port Townsend)

No.	Facility code	Facility name	Age (year)	Remaining useful life
1	23	(MOAC) Maintenance, Operation & Administration Center	7	23
2	6	(HPTC) Haines Place Transit Center office building	23	7
3	21	Fuel Island, Bus wash, Canopy, Equip Shed	7	13
4	9	63 4 Corners Park & Ride	5	15
5	9	Haines place Park & Ride	27	3
6	19	63 4 Corners bus yard w/ light poles	7	23
7	24	63 4 Corners Bike Barn	7	3
8	24	HPTC Bathroom Structure	3	7

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public Damage
earthquake	2/28/01	none

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Earthquake
2. Severe local storm
3. Wildfire

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Jefferson County/City of Port Townsend Comprehensive Plans

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
	Creating an agency Climate Action Plan	Jefferson Transit	Budget	2024
	Participating in the County Climate Action Committee	Jefferson Transit	Budget	On-going

Existing Applicable Hazard Mitigation Associated Plans and/or Documents

1. Idling Policy
2. Jefferson Transit Climate Action Plan

Port of Port Townsend

District Profile

Our mission: to serve the citizens of Jefferson County by responsibly maintaining and developing property and facilities to promote sustainable economic growth, to provide community access to Port facilities and services, and to protect and maintain our community resources and maritime heritage.	 Source: enjoypt.com
Source: www.portofpt.com	Executive Director: Eron Berg Port of Port Townsend Mailing Address: **P.O. Box 1180, Port Townsend, WA 98368** Administration/Finance Office/Lost & Found: **2701 Jefferson Street, Port Townsend, WA 98368 (360) 385-0656**

Asset Summary: Marinas, Boat Haven, and Admin Office all located on/near the water and subject to both potential tsunami inundation and impacts from sea level rise and/or king tides. Airport runway may experience impacts from earthquake that may impact emergency usage.

Critical Facilities (Owned by District):

Facility Designation	Facility Location	Value
Administrative / Finance Offices	**2701 Jefferson Street Port Townsend, WA 98368 (360) 385-0656**	**$3,840,000**
Jefferson County International Airport	**Airport Cutoff Road Port Townsend, WA 98368 (360) 385-0656**	**$12,300,000**
Port Townsend Boat Haven	**2601 Washington Street Port Townsend, WA 98368 (360) 385-2355**	**$98,000,000**
Herb Beck Marina / Quilcene Boat Haven	**1731 Linger Longer Road Quilcene, WA 98376 (360) 765-3131**	**$6,400,000**

Point Hudson Marina & RV Park	**103 Hudson Street Port Townsend, WA 98368 (360) 385-2828**	**$14,500,000**

Equipment:

Apparatus

Contents

Value of Area Served: **$8,611,499,998 (2022)**

Outline of Area Served: The physical boundary of the County remains the current service area. Jefferson County is shown in red in the map to the right. Source: Generic map from Internet	

Current and Anticipated Service Trends:

The Port of Port Townsend anticipates growth in usage of all of its facilities during this planning period. Further details are provided with each facility description provided in this plan.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
Natural Hazard Events will be listed by facility, which have been separately profiled.		

Natural Hazard Vulnerability Analysis Rating

Natural Hazard Vulnerabilities will be listed with the facility to which they pertain.

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Port of Port Townsend Capital Improvement Plan (CIP).WSDOT SLIP, FAA CIP 2. Routine mowing & clearing reduce fuel to reduce risk of fire spreading from nearby forest.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
Proposed Natural Hazard Mitigation Measures will be presented with the facility to which they pertain.				

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. Same as above
2. 2016 Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan

Port of Port Townsend
Boat Haven Marina and Boatyard in Port Townsend

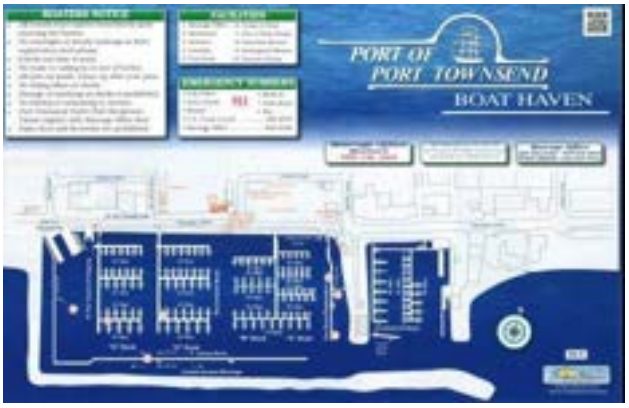
District Profile

Located on the northeast corner of the Olympic Peninsula in historic Port Townsend, on the primary route to the San Juan Islands, this modern full service marina has an abundant supply of guest moorage. Home to 475 commercial and recreational vessels and more than sixty marine trades businesses, the Boat Haven provides more than 6,000 overnight guest moorage accommodations for visiting boats every year. (Maximum vessel length is 100′.)

The Port of Port Townsend Boat Haven is 62 acres, zoned as MII(A). It contains the following critical components:

- Breakwater;
- Floating Docks & Piles;
- Travel-Lift Piers;
- Vessel Repair/Refit Yard/Buildings
- Marine Trade/Administration Offices;
- U.S.C.G. Facility; and
- Fueling System.

Utilities / Improvements include electricity, water, sanitary sewer, storm sewer, communications, fueling, washdown system, launch ramp, streets, and a regional multi-use trail.



Source: http://portofpt.com/marine-services/marinas/

Source: www.portofpt.com

Port of Port Townsend Boat Haven:
2601 Washington Street
Port Townsend, WA 98368
(360) 385-2355

48° 6.389′ N, 122° 46.257′ W

Critical Facilities (Owned by Port District):

Facility Designation	Facility Location	Value
Port of Port Townsend Boat Haven (Structures, properties)	**2601 Washington Street Port Townsend, WA 98368 (360) 385-2355**	**$98,000,000**

Equipment: Apparatus	300 TN, 75 TN, 70 TN, Travel Lift, and Fleet Vehicles
Contents	
Value of Area Served:	**$8,611,499,998 (2022)**

Outline of Area Served:

The Boat Haven is located just to the west of the main part of downtown Port Townsend, on the north shore of Port Townsend Bay, just over a mile from Point Hudson. The entrance is at the southeast corner of the marina.

The location of the Port of Port Townsend Boat Haven is shown at right:



Source: https://portofpt.com/port-townsend-boatyard/

Current and Anticipated Service Trends:

Current full utilization and occupancy of buildings and yard, with planned substantial expansion to the north and west for the boatyard during this HMP planning period.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
Severe Winter Storm	December 1990	$20,000
Severe Winter Storm	December 2007	$80,000
Storm Surge/King Tide	January 2022	>$5,000,000
Storm Surge/King Tide	December 2022	>$1,000,000

Natural Hazard Vulnerability Analysis Rating

1. Coastal Flooding
2. Severe Winter Storm
3. Extended Power Outage
4. Marine Incident

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Port of Port Townsend Capital Improvement Plan (CIP)
2. Regular operation and maintenance activities including; dock repair, grounds keeping, boat ramp maintenance, utility repairs, boat yard upkeep, facility restoration, and site inspections.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
BH-01-012	Sea Level Rise Project – Bulkhead and/or armoring – Entire Boat Haven Frontage	Senior Management	Capital Budget, BRIC grants	Long Term
OG-MH-5	Educate employees about potential hazards and develop Emergency Response Plans	Senior Management	Operating & Capital Budget	Ongoing
OG-MH-6*	Regularly review CIP to include newly identified mitigation projects	Senior Management	Operating & Capital Budget	Annual

ST-TS-1*	Breakwater/Jetty and Wingwall improvements and/or replacement	Senior Management	Capital Budget	Short Term
LT-EQ-12	Boat Yard Upland Redevelopment Storm	Senior Management	Capital Budget	Short Term

***Funding sources for Capital Budget come from retained earnings, bonding, grants, and taxes.**

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. 2016 Jefferson County – Port of Port Townsend Natural Hazard Mitigation Pan
2. Hazard Vulnerability Assessment_HzScoreSheet_Port_of_PT

Port of Port Townsend
Herb Beck Marina in Quilcene

District Profile

The Herb Beck Marina in Quilcene consists of 50 acres zoned as Rural Residential 1:5 & 1:20. Utilities / improvements consist of:

- Electricity,
- Water system,
- Septic system,
- Communications,
- RV Campground,
- Floats,
- Breakwaters,
- Launch ramps,
- Shoreline,
- Restrooms,
- Marina Office,
- Yacht Club, &
- Parking.

It contains the following components that are critical to its operation:

- Breakwater jetty and wingwall
- Floating Docks
- Boat Launch
- Marina Office
- Utilities
- RV Campground
- Public Roads



Source:
http://portofpt.com/wpcontent/uploads/quilcene_500.jpg

Herb Beck Marina, Quilcene Boat Haven
1731 Linger Longer Road
Quilcene, WA 98376
(360) 765-3131

47° 48.06′ N, 122° 51.92′ W

Critical Facilities (Owned by District):

Facility Designation	Facility Location	Value
Herb Beck Marina / Quilcene Boat Haven	**1731 Linger Longer Road Quilcene, WA 98376 (360) 765-3131**	**$6,400,000**

Equipment:

Apparatus

Contents

Value of Area Served: **$8,611,499,998 (2022)**

Outline of Area Served:

The Herb Beck Marina is located on the west side of Quilcene Bay, opening to the Hood Canal, south of Port Townsend and the Hood Canal Bridge.



Source: Generic map from Internet

Current and Anticipated Service Trends:

Marina enjoys local and regional usage including swimming and picnicking, anticipated usage to increase with planned improvements to boating and recreational facilities scheduled for this HMP period, including the re-establishment of a campground.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
Severe winter storm	December 1990	$18,000
Severe winter storm	November 2008	$89,000
Severe winter storm	November 2022	<$1,000,000

Natural Hazard Vulnerability Analysis Rating

1. Coastal Flooding
2. Severe Winter Storm
3. Extended Power Outage
4. Marine Incident

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

5. Port of Port Townsend Capital Improvement Plan (CIP).
6. Regular operation and maintenance activities including; dock repair, grounds keeping, ramp maintenance, utility repairs, facility restoration, and site inspections.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-EQ-12	Upland development will meet new building codes	Senior Management	Capital Budget	Long Term
ST-EQ-3	Water system upgrade, improvements to reservoir and distribution lines.	Senior Management	Operating Budget	Short Term
OG-MH-5	Educate employees about potential hazards and develop emergency response plans.	Senior Management	Operating Budget	Ongoing
OG-MH-6	Regularly review CIP to include newly identified mitigation projects.	Senior Management	Operating/Capital Budget	Annual – Latest revision 2022;

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. 2016 Jefferson County – Port of Port Townsend Natural Hazard Mitigation Plan
2. Hazard Vulnerability Assessment_HzScoreSheet_Port_of_PT

Port of Port Townsend
Jefferson County International Airport (0S9)

District Profile

The ***Jefferson County International Airport*** consists of 361 acres zoned, zoned as an "Essential Public Facility." Critical components of the facility include: • Runway and Taxiway & associated infrastructure; • Fuel Facility; and • All Weather Observation System (AWOS). Jefferson County International Airport is located approximately four miles southwest of Port Townsend, between State Routes 19 and 20, with the driving entrance from Route 19. This general aviation airport has a single 3,000 foot east-west runway.	 Source: http://portofpt.com/air-services/jefferson-countyinternational-airport/
Source: www.portofpt.com	Executive Director: Eron Berg Port of Port Townsend Mailing Address: **P.O. Box 1180, Port Townsend, WA 98368** Administration/Finance Office/Lost & Found: **2701 Jefferson Street, Port Townsend, WA 98368** **(360) 385-0656**

Critical Facilities (Owned by District):

Facility Designation	Facility Location	Value
Jefferson County International Airport	**Airport Cutoff Road Port Townsend, WA 98368 (360) 385-0656**	**$12,300,000**

Equipment:

Apparatus

Contents

Value of Area Served: **$8,611,499,998 (2022)**

Outline of Area Served: The physical boundary of the County is the current service area. Jefferson County is shown in red in the map to the right. Source: Generic map from Internet	

Current and Anticipated Service Trends:

Usage of the JCIA, including hangars and auxiliary buildings is expected to hold steady or grow, with potential development of aviation related and industrial buildings to occur during this planning period.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
None	None	

Natural Hazard Vulnerability Analysis Rating

1. Earthquake
2. Severe Storm
3. Fire

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Port of Port Townsend Capital Improvement Plan (CIP), WSDOT SLIP, FAA CIP
2. Routine mowing & clearing reduce fuel to reduce risk of fire spreading from nearby forest and adjacent residential properties and to ensure efficacy of stormwater system.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
OG-MH-5	Educate employees about potential hazards and develop Emergency Response Plan.	**Port Staff**	**Port General Fund**	**Ongoing**
OG-MH-6*	Regularly review CIP to include newly identified mitigation projects.	**Port Management**	**N/A**	**Annual**

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. 2016 Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan

Port of Port Townsend
Point Hudson Marina & RV Park in Port Townsend

District Profile

Point Hudson consists of 32 acres zoned as M II (B). Its utilities and improvements are: • Electricity, • Water, • Sanitary Sewer, • Storm Sewer, • Communications, • Floating Docks, • Breakwater, • Navigation Aids, • Marine Trade Businesses, • RV Campground • State & Federal Government Office, • Historical Buildings, • Public Trails and Wildlife Viewing, & • Shoreline. It contains the following components that are critical to its operation: • Protected Marina • RV Campground • Shoreline • Historical Buildings	 Source: http://portofpt.com/marine-services/marinas/
	Point Hudson Marina & RV Park 103 Hudson Street Port Townsend, WA 98368 (360) 385-2828 **48° 6.96′ N, 122° 44.88′ W**

Critical Facilities (Owned by District):

Facility Designation	Facility Location	Value
Point Hudson Marina & RV Park	**103 Hudson Street Port Townsend, WA 98368 (360) 385-2828**	**$14,500,000**

Equipment:

Apparatus

Contents

Value of Area Served: **$8,611,499,998 (2022)**

Outline of Area Served: Point Hudson is located just beyond the end of Water Street at the northeast corner of Port Townsend's commercial district. Source: Generic map from Internet	

Current and Anticipated Service Trends:

Current full utilization of the marina. With an annual program of planned renovation of buildings on campus during this HMP period buildings are anticipated to be brought to full occupancy and utility.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)		
Type of Event	Date	Total Public
Severe Winter Storm	November 2022	>$1,000,000

Natural Hazard Vulnerability Analysis Rating

1. Coastal Flooding
2. Severe Winter Storm
3. Extended Power Outage
4. Marine Incident

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Port of Port Townsend Capital Improvement Plan (CIP)
2. Regular operation and maintenance activities including; dock repair, grounds keeping, boat ramp maintenance, utility repairs, boat yard upkeep, facility restoration, and site inspections.

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST-TS-1	Breakwater improvements	Senior Staff	Capital Budget	Short Term – North Jetty complete, South Jetty 2024
LT-EQ-12	Upland development (Building preservation) will meet new building codes	Senior Staff	Operating/Capital Budget	Ongoing
OG-MH-5	Educate employees about potential hazards and develop emergency response plans.	Senior Staff	Operating Budget	Ongoing
OG-MH-6	Regularly review CIP to include newly identified mitigation projects.	Senior Staff	Operating/Capital Budget	Annual.

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. 2016 Jefferson County – Port of Port Townsend Natural Hazard Mitigation Plan
2. Hazard Vulnerability Assessment_HzScoreSheet_Port_of_PT

Public Utility District No. 1 of Jefferson County (Electricity)

District Profile

In November 2008, Jefferson County citizens approved Proposition 1 authorizing Jefferson County PUD#1 to pursue the acquisition of power service for Jefferson County. On May 3, 2010, the PUD accepted the terms of a non-binding letter of intent to purchase Puget Sound Energy's Jefferson County assets and services. The PUD's intent was to become the local power provider by May 2013 (actual date was April 1, 2013). The resulting electrical utility consists of: **Land Area:** Eastern Jefferson County, N. of Mount Walker **Nbr of Customers:** 18,500 meters **Elec Lines O/H:** 379 Miles **Elec Lines U/G:** 379 Miles **Substations:** **7**	Name: Public Utility District No. 1 of Jefferson County Address: 310 Four Corners Road Port Townsend, WA 98368 **Kevin Streett, General Manager** kstreett@jeffpud.org
Source: jeffpud.org	

Asset Summary: Power lines vulnerable to winter storm impacts i.e. heavy winds or freezing rain.

Critical Facilities (Owned by District):		
Station Designation	**Station Location**	**Value**
Electric Utility	**310 Four Corners Road Port Townsend, WA 98368 (360) 385-5800**	**$93,000,000 Present Value less depreciation.**

Value of Area Served:	**$4,639,984,525**

Public Utility District No.1 of Jefferson County - Properties Owned (Electrical System)					
Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
PUD #1 Operations Facility	310 Four Corners Road	Yes	$0	$0	$1,000,000.00.
Irondale Substation		Yes			$2,807,000.00
Discover Bay Substation		Yes			$1,513,000.00
Quilcene Substation		Yes			$1,500,000.00
Hastings Substation		Yes			$2,100,000.00
Kearney Substation		Yes			$2,700,000.00
Chimacum Substation		Yes			$3,000,000.00
Port Ludlow Substation		Yes			$1,800,000.00
Distribution	System	Yes			$ 76,066,528.00
Transmission	System	Yes			$ 4,733,609.00
Electrical System Total Value:					$ 93,281,137.00

Outline of Area Served:

PUD #1 of Jefferson County services all of Eastern Jefferson County less the portion South of Mount Walker, which is serviced by PUD#1 of Mason County. The West End of Jefferson County is served by Clallam and Grays Harbor PUDs.



Source: PUD SW2 Presentation

Current and Anticipated Service Trends: The current service area is unlikely to change in the near or distant future. Climate change may increase severity/frequency of winter storms and therefore power outage incidents.

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)			
Type of Event	Facility Affected	Date	Total Public Damage
Severe Storms	O/H Conductor	Feb 2014	$ 100,000
Severe Storms	O/H Conductor	Dec 2014	$500,000
Severe Storms	O/H Conductor	Jan 2015	$150,000
Wind Storm	All	Nov 22	$650,000

Natural Hazard Vulnerability Analysis Rating

This District is most vulnerable to the following natural hazards - ranked in order:

1. Severe local storms
2. Earthquake
3. Landslide

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Robust system with SCADA and looping/ switching capabilities
2. Backup/ Redundant Transformers (Substations)
3. Tree trimming policies and plans
4. Coordination and planning with adjacent utilities and contractors

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
LT-MH-4	Expand SCADA Controls	PUD #1 Operations	Operating Budget	Short-Term Long-Term
LT-MH-5	Backup Transformer For Substation	PUD #1 Operations	Operating Budget	Long-Term
Mitigation Activity ID	**Mitigation Measure**	**Lead Agency**	**Funding Source**	**Timeline**
ST-WS-10	Establish Tree Trimming Protocols	PUD #1 Operations	Operating Budget	Short-Term
LT-MH-6	Underground Conductor where possible	PUD #1 Operations	Operating Budget	Short-Term Long-Term
OG-MH-4	Train staff on how to react during various hazard occurrences	PUD #1 Operations	Operating Budget	Short-Term

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. Same as above
2. 2016 Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan

Public Utility District No. 1 of Jefferson County

(Water & Wastewater/Sewer)

District Profile

The water utility portion of the PUD consists of: **Land Area:** Eastern Jefferson County, excluding City of Port Townsend **Number of Water Customers:** 4,400 meters **Water Pipeline:** 171 miles **Water Systems Total Value:** $20,350,464 **Number of Wastewater/Sewer Customers:** 355 **Large On-site Septic System (LOSS) Total Value:** $3,911,746 (includes community drain fields.)	Name: Public Utility District No. 1 of Jefferson County Address: 310 Four Corners Road Port Townsend, WA 98368 Phone: Samantha Harper (360) 385-5800 Email: kstreett@jeffpud.org Kevin Streett, General Manager Source: www.jeffpud.org

Asset Summary: Well systems will require inspection and potential repair after large earthquake. Drought may impact available water supply.

Critical Facilities (Owned by District):

The total values include distribution piping, hydrants, booster pumps, water treatment facilities, reservoirs, and source facilities.

Public Utility District No.1 of Jefferson County - Properties Owned **(Water System)**					
Facility	***Address***	***Critical***	***Bldg Value***	***Equip Value***	***Total Values***
PUD Office Building	310 Four Corners Road Port Townsend, WA 98368	Yes	Unk		
Gardiner (LUD No. 1) Water System	Gardiner, WA	Yes			$1,043,467
Coyle Water System	Quilcene, WA	Yes			$131,000
Triton Cove (LUD No. 6) Water System	Brinnon, WA	Yes			$474,656

Lazy-C (LUD No. 8) Water System	Brinnon, WA	Yes			$806,495
Bywater Bay Water System	Port Ludlow, WA	Yes			$1,536,744
Quimper (Kala Pt., Olympic Mobile, GCS, MI, LUD No. 3) Water System	Port Townsend, Port Hadlock, Chimacum, Nordland, WA	Yes			$15,163,694
Snow Creek Water System	Quilcene, WA	Yes			$162,557
Vandecar Water System	Port Townsend, WA	Yes			$50,342
Valiani Water System	Port Townsend, WA	Yes			$5,990
Skywater Water System	Port Hadlock, WA	Yes			$112,878
Mats View Water System	Port Ludlow, WA	Yes			$190,955
Bishop Heights	Chimacum, WA	Yes			$41,614
Quilcene Water System	Quilcene, WA	Yes			$630,072
				Water System Total Value:	**$20,350,464**

Public Utility District No.1 of Jefferson County - Owned

(Large On-site Septic Systems (Community Drain Fields)

Facility	Address	Critical	Bldg Value	Equip Value	Total Values
Beckett Point LOSS (LUD No. 15)	Port Townsend, WA	Yes			$2,498,329
Coyle Peninsula LOSS	Port Ludlow, WA	Yes			$158,000
Discovery Ridge LOSS	Port Townsend, WA	Yes			
House / Roose LOSS	Port Ludlow, WA	Yes			$40,000
Kala Point LOSS	Port Townsend, WA	Yes			
Levine LOSS	Gardiner, WA	Yes			$15,000
Mats View LOSS	Port Ludlow, WA	Yes			$206,864
Ocean Grove LOSS (LUD No. 5)	Port Townsend, WA	Yes			$676,366

Portage Bay LOSS	Port Hadlock, WA	Yes			$22,156
Rookard LOSS	Gardiner, WA	Yes			$45,000
Senior 7 LOSS	Port Hadlock, WA	Yes			
Squamish View LOSS	Port Ludlow, WA	Yes			$20,000
Trails End LOSS	Port Ludlow, WA	Yes			$230,031
				Wastewater System Total Value:	**$3,911,746**

Outline of Area Served:
The PUD – Jefferson County's longtime satellite system agency (SMA) through either ownership or contracting for a variety of services, provides for operation and maintenance of small and large water systems. The PUD's SMA service area is located fully within Jefferson County, as established in the Jefferson County Coordinated Water System Plan. The PUD has no agreements or plans to provide service outside of Jefferson County. The PUD owns and or operates 15 water systems.

Current and Anticipated Service Trends:
Since the PUD acquisition of both Kala Point and Coyle Water Systems in 2012, the PUD has not acquired addition water system. The PUD continues to work on consolidations of water systems in East Jefferson County, both in construction and feasibility study phases.

The PUD is working with Jefferson County as the possible sewer systems operator (both wastewater treatment plant and distribution system) for the Port Hadlock Urban Growth Area. The PUD is also looking at long range planning for several areas in East Jefferson County that could benefit from the installation of Large On-site Septic Systems (LOSS).

Natural Hazard Event History

NATURAL HAZARD EVENTS (1975-PRESENT)			
Type of Event	Facility Affected	Date	Total Public Damage

Natural Hazard Vulnerability Analysis Rating
This District is most vulnerable to the following natural hazards ranked in order:

1. Drought
2. Earthquake
3. Severe Storm

Existing Applicable Natural Hazard Mitigation Policies, Ordinances, and Codes

1. Jefferson County Comprehensive Emergency Management Plan (CEMP) (Jefferson County, WA, 2018)
2. Jefferson County All Hazard Mitigation Plan 2016 (Jefferson County, WAS, 2016)
3. 1997 Coordinated Water System Plan
4. 2021 Update PUD No. 1 of Jefferson County (PUD) Water System Plan
5. PUD's Emergency Response Plan (Prepared by Tetra Tech November 2021)
6. PUD's Water Shortage Response Plan (2021 Update Water System Plan Appendix 10-4)

Proposed Natural Hazard Mitigation Measures

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST-EQ-5	Purchase specialized equipment for water shortage emergencies.	PUD Operations	Operating Budget	Short-Term
ST-EQ-6	Secure equipment to floors and walls.	PUD Operations	Operating Budget	Short-Term
ST-EQ-7	Put automatic shut-off valves on critical reservoirs.	PUD Operations	Capital Budget	Short-Term
	Install isolation valves within distribution system	PUD Operations	Capital Budget	
	Install seismic valves at critical reservoirs	PUD Operations	Capital Budget	
	Provide a back-up generator on all sources and booster pump stations	PUD Operations	Capital Budget	

Mitigation Activity ID	Mitigation Measure	Lead Agency	Funding Source	Timeline
ST-WS-4	Intertie water systems as much as possible.	PUD Operations	Capital Budget	Short-Term
OG-MH-4	Train staff on how to react during various hazard occurrences	PUD Operations	Operating Budget	Short-Term

Existing Applicable District Hazard Mitigation Associated Plans and Documents

1. 2016 Jefferson County – City of Port Townsend Natural Hazard Mitigation Plan

SECTION V
Mitigation Strategy

Mitigation Strategy

This section of the Natural Hazards Mitigation Plan contains proposed mitigation strategies for all of the participating jurisdictions. Some of the mitigation strategies are universal, and everyone will participate in them to the extent their resources allow. Other strategies are peculiar to the unique circumstances of the particular district or entity that brought them forth.

Mitigation Goals

The natural hazard mitigation goals listed in this portion of the plan are multi-jurisdictional in nature and are intended to help guide the direction of and prioritize future natural hazard mitigation activities at the local level aimed at reducing risk and preventing loss from natural hazards.

The plan goals describe the overall direction that Jefferson County and Port Townsend agencies, organizations, special districts, private industry and citizens can take toward mitigating risk from natural hazards. The goals are the guiding principles from the broad direction of the mission statement to the specific recommendations of the action items.

(1) Protect Life and Property

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards.
- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventive measures for existing development in areas vulnerable to natural hazards.
- Enhance the Jefferson Community Emergency Response Team (C.E.R.T.) Program to provide citizens from all areas of Jefferson County with the information and tools they need to help them, their families, and their neighbors in the hours and days immediately following an emergency or disaster event.
- Encourage homeowners and businesses to purchase insurance coverage for damages caused by natural hazards.
- Encourage homeowners and businesses to take preventative actions in areas that are especially vulnerable to natural hazards.

(2) Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.
- Develop and implement additional education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Continue the current flood awareness programs conducted by various jurisdictions as part of the National Flood Insurance Program Community Rating System.
- Create an earthquake awareness program conducted by various jurisdictions in which the vulnerability to earthquakes is high.

- Enhance the awareness programs for Wildland – Urban Interface fire risks, particularly with Homeowners Associations in wildland settings.

(3) Natural Systems

- Balance watershed planning, natural resource planning, and land use planning with natural hazard mitigation to protect life, property, the economy, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

(4) Partnerships and Implementation

- Encourage leadership within private and public sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.
- Strengthen inter-jurisdiction and inter-agency communication and coordination and partnering of jurisdictions and agencies within Jefferson County to foster the establishment and implementation of natural hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- Strengthen inter-jurisdiction and inter-agency communication and coordination and partnering of jurisdictions and agencies between Jefferson County and its bordering neighbors to foster the establishment and implementation of natural hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.
- Develop a partnership with the local and regional newspapers to produce a series of in-depth articles on each natural hazard and both personal and public mitigation techniques.
- Develop and strengthen coordination and cooperation with local business and industries that are particularly vulnerable to natural hazards in Jefferson County.

(5) Emergency Services

- Encourage the establishment of policies at the local level to help insure the prioritizing and implementation of mitigation strategies and/or projects designed to benefit critical/essential facilities, services, and infrastructure.
- Where appropriate, coordinate and integrate natural hazard mitigation activities with existing local emergency operations plans.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

The Action Plan Matrix

The *action items* are a listing of activities in which county and city agencies and jurisdictions and citizens can be engaged to reduce risk. **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 within one to three years.
- *Long-term action items (LT)* may require new or additional resources or authorities, and may take between one and five years to implement.

- *Ongoing action items (OG)* are continuous activities such as the annual review and update of the mitigation plan, itself.

The action items are organized within the following matrix, which lists all of the multi-hazard and hazard-specific action items included in the mitigation plan. These action items are the culmination of the data collection, research and analysis, and public participation process leading up to this plan. The Action Plan Matrix organizes this information into a management tool to be used in implementing the actions. The matrix includes the following information for each action item:

- **Natural Hazard.** A unique identifier within the document that tells the type of action item (short-term or long-term), the type of hazard, and the action item number for that action in the plan. New or changed items in the list for 2022 are flagged with an "*".

- **Action Item.** A description of the action to be taken.

- **Champions.** The organizations or individuals who are taking the lead responsibility in making the action happen. This can be the public agency with regulatory responsibility to address natural hazards, or that is willing and able to oversee activity, implementation, monitoring, and evaluation. Champions may include local, county, regional public and private agencies, businesses or individuals that are capable of or willing to be responsible for implementing activities and programs.

- **Timeline.** Action items include both short-term and long-term activities. The time-line attempts to put a gross estimate of the time it will take to implement the action given the availability of resources needed. Some items will be an ongoing effort that effectively requires a lifestyle change or permanent allocation of resources, while other items may be events or programs with specific accomplishments by a specific time.

- **Plan Goals.** This cell of the matrix contains the item numbers of the plan goals from the previous page that this activity seeks to meet.

- **Action Item Lifecycle Stage.** Each activity that is not continuous has a life cycle that it goes through: action item concept, public input & planning, funding, execution of action item, adoption or implementation, maintenance, monitor and evaluate. This grid within the matrix provides a visual quick reference to progress on a given activity. Life Cycle Stages include:

  (1) Action Item Concept - Indicates a concrete idea or plan has been developed to take forward in the process.

  (2) Public Input & Planning – Indicates that the process is at the stage where it is collecting public input and planning, if appropriate.

  (3) Funding – Indicates that funds are being sought to implement the action as appropriate. This can be from budget, grants, donations, etc.

  (4) Execution of Action Item – May be drafting of a report, ado

  (5) Adoption of policy resolutions, implementation of building projects, etc.

(6) Adoption or Implement – Adoption of resolutions to implement plans or approve projects.

(7) Maintain, Monitor, and Evaluate - Review, evaluate and maintain the project or plan as defined by the project charter.

The format of the matrix is to have one table with the action items in it and a second table that marks the progress on the action items. The layout is intended to allow the user to open the Plan in a book format and have the corresponding pieces of both tables opposite each other for easy viewing. Elements that have changed in the revisions have their Natural Hazard ID marked with an asterisk. If the item has been completed, it also has a strike-through of the ID. Comments added for the 2016 Revision are in Blue.

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Multi-Hazard Mitigation Action Items				
OG-MH-0*	Adopt and Participate in the Jefferson County – City of Port Townsend Hazard Mitigation Plan as official plan.	Jefferson County, City of Port Townsend, and all Special Districts	Ongoing – Participation in update – 2022; Adoption – after FEMA review.	4. Partnerships and Implementation 5. Emergency Services
OG-MH-1	Identify and pursue funding opportunities to develop and implement local and county mitigation activities.	Jefferson County, City of Port Townsend and all Special Districts.	Ongoing	4. Partnerships and Implementation
OG-MH-2	Identify, improve, and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk to natural hazards.	DEM, Economic Development Council	Ongoing	1. Protect Life & Property, 2. Public Awareness, 4. Partnerships and Implementation
OG-MH-3	Educate the citizenry in the role of the 1st Responder through Citizen's Police Academy.	Port Townsend Police and Jefferson County Sheriff's Office	Ongoing	2. Public Awareness,

OG-MH-4*	Train personnel on how to react in a natural disaster.	PTPD, JCSO, JCFD1, **JCPUD1**	Ongoing	1. Protect Life & Property. 5. Emergency Services

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Multi-Hazard Mitigation Action Items						
OG-MH-0	✓	✓	✓	✓		✓
OG-MH-1	✓	✓	✓	✓		✓
OG-MH-2	✓	✓	✓	✓		✓
OG-MH-3	✓	✓	✓	✓		✓
OG-MH-4*	✓	✓	✓	✓		✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Multi-Hazard Mitigation Action Items				
OG-MH-5	Educate employees regarding hazards & develop Emergency Response Plan	JCDEM, Port of Port Townsend, All School Districts.	Ongoing	1. Protect Life & Property, 4. Partnerships and Implementation 5. Emergency Services
OG-MH-6	Regular Review of Capital Improvement Plan to include newly identified mitigation plans.	Port of Port Townsend	Annual – Latest revision 2015; Prioritization in January 2016.	1. Protect Life & Property, 5. Emergency Services
ST-MH-1*	Establish a formal role for the Jefferson County Natural Hazards Mitigation Advisory Committee to develop a sustainable process for implementing, monitoring, and evaluating countywide mitigation activities.	Hazard Mitigation Advisory Committee	Short-Term – Reconstitute for 2022 update.	4. Partnerships and Implementation
ST-MH-2	Integrate goals and action items from the Jefferson County Natural Hazard Mitigation Plan into existing regulatory documents and programs where appropriate.	Hazard Mitigation Advisory Committee	Ongoing	4. Partnerships and Implementation

ST-MH-3	Develop public and private partnerships to foster natural hazard mitigation program coordination in Jefferson County	DEM, DCD, Economic Development Council; Neighborhood Emergency Groups	On-going	4. Partnerships and Implementation

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Multi-Hazard Mitigation Action Items						
OG-MH-5	✓	✓	✓	✓		
OG-MH-6*	✓	✓	✓	✓		✓
ST-MH-1*	✓	✓		✓		✓
ST-MH-2	✓	✓		✓		✓
ST-MH-3	✓	✓		✓		✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Multi-Hazard Mitigation Action Items				
~~ST-MH-4*~~	Improve facilities to survive earthquakes and storms better. Provide continuity of service.	Jefferson County Water Districts 1,2,3 **Opted Out in 2009**	Short-Term	1. Protect Life & Property, 4. Partnerships and Implementation
~~ST-MH-5~~*	Build new 911 Dispatch Center and new Emergency Operation Center	DEM, JeffCom	**Completed 2005**	1. Protect Life & Property, . Partnerships and Implementation . Emergency
ST-MH-6*	Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.	DEM, DSD, DCD, and GIS	Short-Term – Updated for 2016	Protect Life & Property 4. Partnerships and Implementation
ST-MH-7*	Evaluate and integrate citizen ideas into planning and implementation efforts.	Jefferson County, Port Townsend **and all participating Special Districts.**	Short-Term	1. Protect Life & Property 4. Partnerships and Implementation
~~ST-MH-8~~*	Improve interoperability through coordinated use of communications & OPSCAN Program.	JeffCom 911, DEM, PTPD, JCSO, All Fire Districts	**Completed 2007 - 2009**	1. Protect Life & Property, 4. Partnerships and Implementation 5. Emergency
ST-MH-9*	Increase fuel supply for generators to 72 hours and improve storage accessibility.	Jefferson County Hospital District 2 dba Jefferson Healthcare	Target: 12/31/2016	1. Protect Life & Property,
ST-MH-10*	Plan for Emergency Specialty Services Building power generation & fuel supply.	Jefferson County Hospital District 2 dba Jefferson Healthcare	Target: 12/31/2016	1. Protect Life & Property,

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Multi-Hazard Mitigation Action Items						
~~ST-MH-4*~~	✓	✓	✓	✓	✓	✓
~~ST-MH-5~~*	✓	✓	✓		✓	✓
ST-MH-6*	✓	✓	✓	✓		
ST-MH-7*	✓	✓				
~~ST-MH-8*~~	✓	✓	✓	✓	✓	✓
ST-MH-9*	✓	✓	✓	✓		
ST-MH-10*	✓	✓	✓	✓		

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Multi-Hazard Mitigation Action Items (cont.)				
LT-MH-1	Strengthen emergency services preparedness and Long-Term response by linking emergency services with Multi-Hazard mitigation programs, and enhancing public education on a regional scale.	DEM, DSD, DCD	Long-Term	5. Emergency Services
LT-MH-2	Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses and schools.	JCDEM	Long-Term	1. Protect Life & Property, 2. Public Awareness
LT-MH-3*	Use technical knowledge of natural ecosystems and events to link natural resource management and land use organizations to mitigation activities and technical assistance.	DCD, DSD	Long-Term	3. Natural Systems
LT-MH-4*	Expand SCADA Controls	JCPUD1	Long Term	1. Protect Life & Property
LT-MH-5*	Backup Transformer for Substation	JCPUD1	Long Term	1. Protect Life & Property
LT-MH-6*	Underground conductor where possible.	JCPUD1	Long Term	1. Protect Life & Property

LT-MH-7*	Create and build Port Townsend Resiliency Center	Port Townsend, PTSD50, JCPHD2, YMCA	Long Term	1. Protect Life & Property, 4.Partnerships and Implementation

Five-Year Action Plan Matrix: Action Item Lifecycle

Mitigation Task ID	Action Item Concept	Public Input & Planning	Funding	Execution of Action Item	Completion	Maintain, Monitor, and Evaluate
Multi-Hazard Mitigation Action Items (Cont.)						
LT-MH-1	✓	✓		✓		
LT-MH-2	✓	✓		✓		
LT-MH-3	✓	✓		✓		
LT-MH-4*	✓	✓	✓	✓		
LT-MH-5*	✓	✓	✓	✓		
LT-MH-6*	✓	✓	✓	✓		
LT-MH-7*	✓	✓				

Five-Year Action Plan Matrix

Mitigation Task ID	Action Item	Champion	Timeline	Plan Goals
Avalanche Mitigation Action Items				
ST-AV-1	None Identified			
LT-AV-1	None Identified			

Five-Year Action Plan Matrix: Action Item Lifecycle

Mitigation Task ID	Action Item Concept	Public Input & Planning	Funding	Execution of Action Item	Completion	Maintain, Monitor, and Evaluate
Avalanche Mitigation Action Items						
ST-AV-1	N/A					
LT-AV-1	N/A					

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Drought Mitigation Action Items				
ST-DR-1*	Coordinate drought policies with Port Townsend Paper.	Port Townsend Public Works	Active review during 2015 due to City water sources approaching critical levels due to drought.	1. Protect Life, Property and Local Economy

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Drought Mitigation Action Items						
ST-DR-1*	✓	✓		✓		✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Earthquake Mitigation Action Items				
ST-EQ-1	Integrate new earthquake mapping data and improve technical analysis of earthquake hazards.	USGS, JC-GIS	2 Years	1. Protect Life & Property, 4.Partnerships and Implementation
ST-EQ-2	Structural Bracing of Shelving;	JC Library	Short-term	1. Protect Life & Property,
ST-EQ-3	Port Water System Upgrade Improvements; Improvements to Quilcene reservoir and distribution lines.	Port of Port Townsend	Short-term	1. Protect Life & Property,
~~ST-EQ-4~~*	Build new Transit Facility to current earthquake codes.	Jefferson Transit Authority	Long-term **Competed June 15, 2015**	1. Protect Life & Property, 5.Emergency Services
ST-EQ-5	Purchase specialized equipment for water shortage emergencies	JCPUD1	Short-term	1. Protect Life & Property, 5.Emergency Services
ST-EQ-6	Secure Equipment to Floors & Walls	JCPUD1	Short-term	1. Protect Life & Property,
ST-EQ-7	Put automatic shut-off valves on all reservoirs.	JCPUD1	Short-term	1. Protect Life & Property,
ST-EQ-8*	Retrofit Fire Station for Earthquake Protection	JCFD2	Short-term – Not Done Yet.	1. Protect Life & Property
~~ST-EQ-8~~*	Retrofit Fire Station for Earthquake Protection	JCFD3	**Complete**	1. Protect Life & Property
ST-EQ-9	Seismically retrofit High School Gym; add seismic shut-off valves to propane tanks.	Chimacum School District	Short-term	1. Protect Life & Property
LT-EQ-1	Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable.	City & County Government	Ongoing – Longterm	1. Protect Life & Property, 2. Public Awareness 4. Partnerships and Implementation

~~LT-EQ-2~~*	Seismically Retrofit Tunnel Lids throughout the Historic Downtown Business District. (High Priority - Underway starting in 2009.) (Rev. 2009).	All entities	Ongoing – Long Term	1. Protect Life & Property, 4. Partnerships and Implementation

Five-Year Action Plan Matrix: Action Item Lifecycle

Mitigation Task ID	Action Item Concept	Public Input & Planning	Funding	Execution of Action Item	Completion	Maintain, Monitor, and Evaluate
Earthquake Mitigation Action Items						
ST-EQ-1	✓					
ST-EQ-2	✓	✓				
ST-EQ-3*	✓	✓	✓	✓	✓	✓
ST-EQ-4*	✓	✓	✓	✓	✓	✓
ST-EQ-5*	✓	✓	✓	✓	✓	✓
ST-EQ-6*	✓	✓	✓	✓	✓	✓
ST-EQ-7*	✓	✓	✓	✓	✓	✓
ST-EQ-8*	✓	✓	✓	✓	✓	✓
ST-EQ-9	✓	✓	✓	✓		
LT-EQ-1	✓	✓		✓		✓
LT-EQ-2*	✓	✓	✓	✓	✓	✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Earthquake Mitigation Action Items				
LT-EQ-3	Encourage seismic strength evaluations of critical facilities in the County to identify vulnerabilities for mitigation.	City & County Government	Long-Term – started in 2007.	1. Protect Life & Property
LT-EQ-4	Encourage reduction of nonstructural and structural hazards in homes, schools, business, and government offices.	City & County Government	Long-Term	2. Public Awareness 4. Partnerships and Implementation
~~LT-EQ-5~~*	Seismically retrofit Port Townsend Historical City Hall.	PT Public Works	**Long-Term – Completed 2005**	1. Protect Life & Property
~~LT-EQ-6~~*	Replace Port Townsend Fire Station with seismically sound station.	PT Public Works & PTFD Construction Underway	**Completed 2005**	. Protect Life & Property 5. Emergency Services
~~LT-EQ-7~~*	Move Port Townsend Police Station outside of liquefaction zone.	PT Government - Planning Underway	**Completed 2009**	. Protect Life & Property 5. Emergency Services
~~LT-EQ-8~~*	Seismically Reinforce Port Townsend Library	Port Townsend	**Long-term –1st piece of funding via PDM 2007. Completed 2013.**	1. Protect Life & Property
~~LT-EQ-9~~*	Seismically Reinforce Port Townsend Tunnel Lids	Port Townsend	**Long-term – Funded via Budget, DR1682, DR-1734, and DR-1817. Completed.**	1. Protect Life & Property, 5.Emergency Services
~~LT-EQ-10~~*	Increase Emergency food supply for staff and patients.	JC Hospital Dist. 2	**Completed.**	1. Protect Life & Property,
LT-EQ-11*	Increase Emergency Water supply for staff and patients.	JC Hospital Dist. 2	**Not Yet Completed.**	1. Protect Life & Property 4. Partnerships and Implementation 5.Emergency Services

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Earthquake Mitigation Action Items						
LT-EQ-3	✓					
LT-EQ-4	✓					
~~LT-EQ-5~~*	✓	✓	✓	✓	✓	✓
~~LT-EQ-6~~*	✓	✓	✓	✓	✓	✓
~~LT-EQ-7~~*	✓	✓	✓	✓	✓	✓
~~LT-EQ-8~~*	✓	✓	✓	✓	✓	✓
~~LT-EQ-9~~*	✓	✓	✓	✓	✓	✓
~~LT-EQ-10~~*	✓	✓	✓	✓	✓	✓
~~LT-EQ-11~~*	✓	✓	✓	✓	✓	✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Earthquake Mitigation Action Items				
LT-EQ-12*	Marina redevelopment to new building codes; Upland development in Quilcene will meet new building codes.	Port of Port Townsend	Long-term; Planning is Short Term.	1. Protect Life & Property 4. Partnerships and Implementation 5. Emergency Services
~~LT-EQ-13~~*	Upgrade existing facilities to withstand earthquakes better.	Port Ludlow Drainage District **(Opted Out – 2016)**	Long-term	1. Protect Life & Property,
LT-EQ-14*	Nonstructural retrofitting of structures that are identified as seismically vulnerable.	School Districts: PTSD50; Brinnon SD46; Chimacum SD49; QVSD402	Ongoing – Longterm	1. Protect Life & Property,
~~LT-EQ-15~~*	Replace Station 1-1 with seismically sound station.	JCFD1	**Completed - 2014**	1. Protect Life & Property,
LT-EQ-16*	Continue hardening and upgrading infrastructure at tower sites.	JeffCom	Long Term	1. Protect Life & Property,
LT-EQ-17*	Expansion of the Library will allow the opportunity to seismically retrofit existing facilities.	Jefferson County Library District	Long-term – no immediate date.	1. Protect Life & Property
LT-EQ-18*	Enhance fire station 6-2 seismically.	Port of Port Townsend	New CIP being developed.	1. Protect Life & Property

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Earthquake Mitigation Action Items						
LT-EQ-12	✓	✓				
~~LT-EQ-13~~*	✓	✓	✓	✓	✓	✓
LT-EQ-14	✓	✓				
~~LT-EQ-15~~*	✓	✓	✓	✓	✓	✓
LT-EQ-16*	✓	✓	✓	✓		
LT-EQ-17*	✓					

LT-EQ-18*	✓	✓				

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Flood Mitigation Action Items				
ST-FL-1	Analyze each repetitive flood property within Jefferson County and identify feasible mitigation options.	DCD, DSD, **Wa Dept. of Ecology, FEMA**	Short-Term	1. Protect Life & Property 3.Natural Systems 4.Partnerships and Implementation
ST-FL-2	Recommend revisions to standards required for development occurring within the floodplain, where appropriate.	DCD, DSD	Short-Term	1. Protect Life & Property 3. Natural Systems
~~ST-FL-3~~*	Develop better flood warning systems.	JCDEM, DCD, DSD	**Complete – Using AHAB system.**	1. Protect Life & Property 4.Partnerships and Implementation 5.Emergency Services
LT-FL-1	Enhance data and mapping for floodplain information within the County, and identify and map flood-prone areas outside of designated floodplains.	DSD	**Long-Term – FEMA FIRMS update to be completed in 2016**.	1. Protect Life & Property 3. Natural Systems 5. Emergency Services
LT-FL-2	Encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in the floodplain.	**City of Port Townsend, Jefferson County, Jefferson County Land Trust, and the Salmon Recovery Office**	Long-Term	1. Protect Life & Property 3.Natural Systems 4.Partnerships and Implementation

LT-FL-3	Identify surface water drainage obstructions for all parts of unincorporated Jefferson County.	Jefferson County	Long-Term	1. Protect Life & Property 3. Natural Systems

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Flood Mitigation Action Items						
ST-FL-1*	✓	✓		✓		
ST-FL-2	✓	✓		✓		
ST-FL-3*	✓	✓		✓		
LT-FL-1*	✓	✓		✓		
LT-FL-2*	✓	✓		✓		
LT-FL-3	✓	✓		✓		

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Flood Mitigation Action Items (cont.)				
LT-FL-4	Establish a framework to compile and coordinate surface water management plans and data throughout the county.	**Jefferson County Public Works**	Long-Term	3. Natural Systems 4. Partnerships and Implementation
~~LT-FL-5~~	Move JCFD4 Fire Station 4-2 out of repetitive flood zone.	JCFD4	**Long-Term – Completed - 2010**	1. Protect Life & Property 3. Natural Systems 5. Emergency Services
LT-FL-6	Coordinate with Fish & Wildlife to develop Hoh River mitigation plan.	JC Public Works	Long-Term – Underway	1. Protect Life & Property 3. Natural Systems 4. Partnerships and Implementation
~~LT-FL-7~~	Upgrade drainage conveyance to handle 100-year flood event.	Port Ludlow Drainage District **(Opted Out – 2016)**	Long-Term	1. Protect Life & Property 3. Natural Systems

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Flood Mitigation Action Items (cont.)						
LT-FL-4	✓					
~~LT-FL-5~~	✓	✓	✓	✓	✓	✓
LT-FL-6	✓	✓		✓		
LT-FL-7	✓	✓			N/A	

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Landslide Mitigation Action Items				
ST-LS-1	Improve knowledge of landslide hazard areas and understanding of vulnerability and risk to life and property in hazard-prone areas.	JC Public Works, DEM	Short-Term	1. Protect Life & Property 2. Public Awareness 3. Natural Systems
ST-LS-2*	Identify safe evacuation routes in high-risk debris flow and landslide areas.	**JC Public Works,** DEM	Short-Term	1. Protect Life & Property 2. Public Awareness 3. Natural Systems
LT-LS-1	Evaluate current landslide warning systems to ensure effectiveness and efficiency and increase coordination between local jurisdictions.	DEM	Long-Term	1. Protect Life & Property 4. Partnerships and Implementation 5. Emergency Services
LT-LS-2*	Limit activities in identified potential and historical landslide areas through regulation and public outreach.	County Government	Long-Term – Under review.	1. Protect Life & Property 2. Public Awareness 3. Natural Systems
LT-LS-3*	Relocate Undie Road to prevent further destruction of the road by landslides.	County Public Works	Long-Term – Seeking Funding Help.	1. Protect Life & Property 3. Natural Systems

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Landslide Mitigation Action Items						
ST-LS-1	✓	✓				
ST-LS-2*	✓	✓				
LT-LS-1	✓					
LT-LS-2*	✓	✓				

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Severe Local Storm Mitigation Action Items				
ST-WS-1	Enhance strategies for debris management for severe winter storm events.	PT Public works, JC Public Works	Short-Term	1. Protect Life & Property 4. Partnerships & Implementation
ST-WS-2*	Develop and implement programs to identify and remove hazard trees located in public right-of-way to reduce potential danger to lives, property, and public infrastructure during windstorms events.	PT Public works, JC Public Works Puget Sound Energy sold Jefferson County assets to Jefferson County PUD #1 (JCPUD1).	Short-Term	1. Protect Life & Property 4. Partnerships & Implementation
ST-WS-3	Map and publicize locations around the county that have the highest incidence of extreme storms.	DEM	Short-Term	2. Public Awareness 4. Partnerships & Implementation
ST-WS-4	Replace flat office roof with gable roof to shed snow.	JCPUD1	Short-Term	1. Protect Life & Property
~~ST-WS-5~~*	Replace windows on Jefferson General Hospital to withstand storms.	JC Hospital Dist. #2	**Short-Term – Completed 2008**	1. Protect Life & Property
~~ST-WS-6~~*	Replace roof on PT High School Annex	PT School Dist.	**Completed - 2013**	1. Protect Life & Property
ST-WS-7	Provide emergency backup power for school building.	Queets / Clearwater School Dist.	Short-Term	1. Protect Life & Property
~~ST-WS-8~~*	Replace roof of Shop, Bus Barn & Admin Building.to handle weather. Severe snow would put most roofs in jeopardy of collapse.	Quilcene School District	**Completed**	1. Protect Life & Property

ST-WS-9*	Develop and Implement storm water pollution and protection plan through DOE.	Quillayute School District	**Long / Short Term**	1. Protect Life & Property

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Severe Local Storm Mitigation Action Items						
ST-WS-1	✓					
ST-WS-2	✓					
ST-WS-3	✓					
ST-WS-4	✓	✓				
~~ST-WS-5~~*	✓	✓	✓	✓	✓	✓
~~ST-WS-6~~*	✓	✓	✓	✓	✓	✓
ST-WS-7	✓	✓				
~~ST-WS-8~~*	✓	✓				
ST-WS-9*	✓	✓	✓	✓		

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Severe Local Storm Mitigation Action Items (cont.)				
ST-WS-10*	Establish Tree Trimming Protocols	JCPUD1	Short Term	1. Protect Life & Property
ST-WS-11*	Intertie water systems as much as possible.	JCPUD1	Short Term	1. Protect Life & Property
LT-WS-1*	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms.	**PT Public works, JC Public Works**	Long-Term	1. Protect Life & Property 4. Partnerships & Implementation
LT-WS-2	Increase public awareness of severe winter storm mitigation activities.	County & City Governments	Long-Term	2. Public Awareness 4. Partnerships & Implementation
~~LT-WS-3~~	Enhance Courthouse clock tower to be able to withstand 70-knot winds.	County & City Governments	**Long-Term – Completed 2008.**	1. Protect Life & Property
~~LT-WS-4~~	Support/encourage electrical utilities in mitigation activities to reduce power outages from storms.	DEM, County & City Governments	**Complete – PUD representative is now present at EOC during activations – and participates in Incident Management Team training. PUD also does pre-storm briefings and prunes rights-ofway to reduce downfall.**	1. Protect Life & Property 4. Partnerships & Implementation

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Severe Local Storm Mitigation Action Items (cont.)						
ST-WS-10*	✓	✓	✓	✓		
ST-WS-11*	✓	✓				
LT-WS-1*	✓	✓	✓	✓		
LT-WS-2	✓			✓		
~~LT-WS-3~~	✓	✓	✓	✓	✓	✓
~~LT-WS-4~~	✓	✓		✓	✓	✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Tsunami / Seiche Mitigation Action Items				
ST-TS-1*	Breakwater Jetty / Wingwall Improvement	Port of Port Townsend	Long Term; Planning is Short Term	1. Protect Life & Property
~~LT-TS-1~~	Move PT Police Station outside of inundation zone.	Port Townsend	**Long-Term – Completed 2009.**	1. Protect Life & Property 4. Emergency Services

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Volcanic Event Mitigation Action Items						
ST-TS-1	✓	✓				
~~LT-TS-2~~	✓	✓	✓	✓	✓	✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Volcanic Event Mitigation Action Items				
ST-VO-1	Find ash fall models that are specific to Jefferson County.	DEM, JC GIS	Short-Term	1. Protect Life & Property 2. Public Awareness 3. Natural Systems

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Volcanic Event Mitigation Action Items						
ST-VO-1	✓	✓		✓		

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Wildfire Mitigation Action Items				
OG-WF-1				
OG-WF-2*	Public Education	JCFD2 Commissioners	Yearly Classes - Ongoing	1. Public Awareness
ST-WF-1	Enhance Emergency Services to increase efficiency of wildfire response and recovery activities.	EJFR – JCFD5, DEM	Short-Term	1. Protect Life & Property 4. Partnerships and Implementation 5. Emergency Services
ST-WF-2	Educate district personnel on federal cost-share and grant programs etc. so that full array of assistance to local agencies is understood.	JCFD1 – JCFD5	Short-Term	1. Protect Life & Property 4. Partnerships and Implementation 5. Emergency Services
ST-WF-3	Create wildfire hazard atlas for City of Port Townsend.	EJFR	Short-Term	1. Protect Life & Property 5. Emergency Services
ST-WF-4	Install fire doors and fire suppression system.	Queets Clearwater School District	Short-Term	1. Protect Life & Property

LT-WF-1	Development and dissemination of maps relating to the fire hazard to help educate and assist builders and homeowners in being engaged in wildfire mitigation activities, and to help guide emergency services during response.	EJFR	Long-Term	1. Protect Life & Property 2. Public Awareness 4. Partnerships and Implementation 5. Emergency Services

Five-Year Action Plan Matrix

Mitigation Task ID	Action Item	Champion	Timeline	Plan Goals
LT-WF-2*	Firewise Program - Enhance outreach and education programs aimed at mitigating wildfire hazards and reducing or preventing the exposure of citizens, public agencies, private property owners, and businesses to natural hazards.	JCFD1, WSU, JCFD2, JCFD3	Long-Term Annual	1. Protect Life & Property 2. Public Awareness 4. Partnerships and Implementation

Five-Year Action Plan Matrix: Action Item Lifecycle

Mitigation Task ID	Action Item Concept	Public Input & Planning	Funding	Execution of Action Item	Completion	Maintain, Monitor, and Evaluate
Wildfire Mitigation Action Items						
OG-WF-1*						
OG-WF-2*	✓	✓	✓	✓	✓	✓
ST-WF-1	✓					
ST-WF-2	✓					
ST-WF-3	✓	✓	✓	✓		
ST-WF-4	✓	✓	✓	✓		
LT-WF-1	✓					
LT-WF-2*	✓	✓	✓	✓	✓	✓

Five-Year Action Plan Matrix				
Mitigation Task ID	**Action Item**	**Champion**	**Timeline**	**Plan Goals**
Wildfire Mitigation Action Items (cont.)				
LT-WF-3	Increase communication, coordination, and collaboration between wildland/urban interface property owners, local and county planners, and fire prevention crews and officials to address risks, existing mitigation measures, and federal assistance.	City & County Government	Long-Term	2. Public Awareness 4. Partnerships and Implementation 5. Emergency Services
~~LT-WF-4~~	Consolidate fire districts to put more apparatus and personnel on wildfires.	PTFD & JCFD6 merged into JCFD1; JCFD3 & Kitsap County	Long-Term **JCFD1 Completed; JCFD3 executed MOU with Kitsap**	1. Protect Life & Property 4. Partnerships and Implementation 5. Emergency Services
~~LT-WF-5~~	Develop a "battalion" strategy to more effectively coordinate rural districts on wildfires.	JCFD1 through JCFD5	Long-Term – **Completed in 2006.**	1.Protect Life & Property 4. Partnerships and Implementation 5. Emergency Services

Five-Year Action Plan Matrix: Action Item Lifecycle						
Mitigation Task ID	**Action Item Concept**	**Public Input & Planning**	**Funding**	**Execution of Action Item**	**Completion**	**Maintain, Monitor, and Evaluate**
Wildfire Mitigation Action Items (cont.)						
LT-WF-3	✓					
~~LT-WF-4~~	✓	✓	✓	✓	✓	✓
~~LT-WF-5~~	✓	✓	✓	✓	✓	✓

SECTION VI
Coordinating Entities

Propane Providers

Port Townsend and Jefferson County do not have a natural gas provider. Consequently, heating and cooking are done with wood, electricity, or propane. The primary providers are Cenex, Ferrellgas, Suburban Propane, Mountain Propane, Sunshine Propane, and Propane Northwest, Inc., whose combined service area is shown in the map below.



Propane Providers - Coordination Issues

Earthquake: Our nightmare scenario is a Magnitude 7 or higher earthquake that detaches 1000 propane tanks from their moorings and starts explosions and fires everywhere. Simulations have shown that a magnitude-7 earthquake centered on the Whidbey Island Fault would devastate Quimper Peninsula, where the majority of Jefferson County's population is. There is no question that we will eventually be hit with a large earthquake; the only question is when.

Partnering with the local propane providers to educate consumers about building codes related to propane tanks, and earthquake resistant set-ups for tanks will help reduce the effects when "the big one" becomes a reality.

Two large and damaging explosions recently took place in the central Puget Sound; one a propane tank explosion in a home in Port Orchard on Feb. 23, 2016 resulted in two fatalities. The other was a natural gas explosion in the Greenwood distinct of Seattle on Mar. 9, 2016. Both explosions were widely heard and also reported by some as feeling like an earthquake.[1]

[1] *"Explosion* "*Earthquake"*, PNSN Blog, Pacific Northwest Seismic Network, by Steve Malone, March 10, 2016.

U.S. Coast Guard - Port Townsend[1]

Established: The 13th Coast Guard District commissioned the U.S. Coast Guard Cutter Osprey, the first 87-foot cutter for the District, on June 19, 1999, at Union Wharf Pier in Port Townsend, Wash. The 87-foot cutter, built by Bollinger Shipyard, in Lockport, La., is the first to arrive in the Northwest, replacing the 82-foot Point Class Patrol Boats. The cutter brings with it money and timesaving technology such as updated bridge radar and controls, and more safety features including the rear~ deploying small boat. The Osprey also has the capability to support a co-ed crew. The aluminum superstructure and steel hull and main deck are designed for a 25-year service life. The new design has several enhancements over the aging 82-foot patrol boats that it is replacing. Improvements include stability in open ocean (up to 8~ foot seas), significantly upgraded habitability (allowing for a mixed-gender, 10-person crew with 11 berths max), 25~ knot maximum speed, and compliance with all current and projected environmental protection laws. The 87-footer employs an innovative stern launch and recovery system using an aluminum-hulled inboard diesel-powered water jet small boat.

The ship's vastly larger pilothouse is equipped with an integrated bridge system including an electronic chart display information system, which interfaces with the Coast Guard's new surface search radar.

Accomplished Operations: Law enforcement, search and rescue, marine environmental response, recreational boating safety enforcement and military readiness. The Osprey was the lead Coast Guard asset in a cocaine seizure from the motor vessel Western Wind in February 2000. This was the largest seizure of cocaine in the Northwest, 2.5 tons with a street value of more than $200 million.



The Thirteenth Coast Guard District Public Affairs Office (ipa) created this page on January 25, 1999 and last modified it April 22, 2003. This page may be reproduced locally. If any changes are needed please notify D13 (ipa) at 206.220.7237. More Coast Guard information can be accessed at http://www.uscg.mil and a complete list of these fact sheets is at http://www.uscg.mil/d13.

[1] www.uscg.mil/d13/docs/factsheets/uscgc_osprey.pdf

USCG - Coordination Issues

Law Enforcement and Fire: Heightened patrol requirements mean that the Coast Guard contingent is not always available for search and recovery within the Port Townsend Bay. This also includes supporting the U.S. Navy operations in the region. The Sheriff's Department Marine Patrol and the Port Townsend Fire Department are working to coordinate efforts. Depending on availability, the Coast Guard may assume incident command, but the fire department in particular is the only unit in the bay with a waterborne firefighting capability.

Law Enforcement and Fire may have roles to play at sea in conjunction with the Coast Guard during the aftermath of severe local storms or tsunami. PTFD also provides assistance during oil spills or events that may threaten an ecological disaster.

Terrorist: A seaborne terrorist event would undoubtedly result in a response of the Navy, Coast Guard, and appropriate elements of local law and fire departments. The nature of the incident would determine the roles.

U.S. Naval Magazine - Indian Island[1]

Naval Magazine Indian Island (NAVMAG II) officially joined the four major US Navy installations of Navy Region Northwest during a brief ceremony on April 27th, 2000. The 2,716-acre facility reports directly to the Navy Region Northwest Commander.

Indian Island is approximately five miles long and oriented on a north-south axis between Marrowstone Island and the mainland of the Quimper Peninsula, between the waters of Port Townsend and Kilisut Harbor.

The commander of NAVMAG II is typically in that position no longer than 2-to-3 years due to how the military structures itself. Much of the institutional knowledge and expertise rests upon the individual civilian employees and most importantly the installation Emergency Manager. The NAVMAG Emergency Manager is, and has traditionally been an integrated member of the Jefferson County Incident Management Team and Department of Emergency Management.

The NAVMAG II mission is to provide ordnance operations support including the receipt, storage, inspection and issue of naval ordnance. Staffing levels of active duty members, civil service and contract employees remains static and Navy Region Northwest tugs provide docking evolution support to vessels berthed at the wharf.

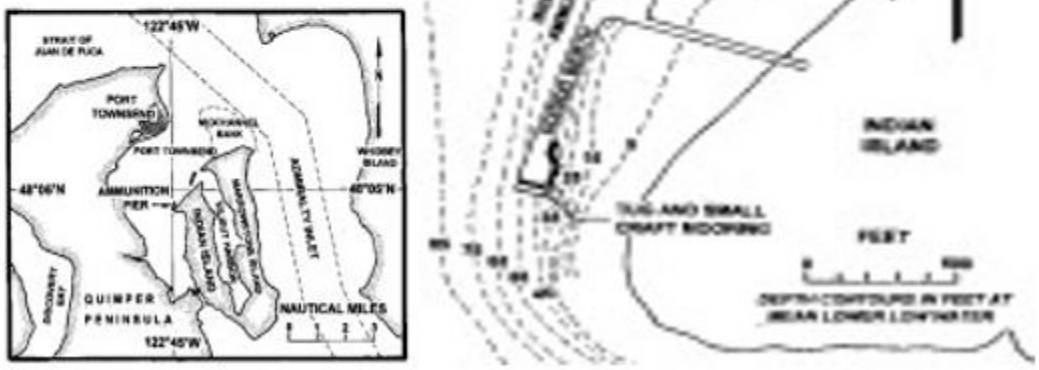
The Ammunition Wharf is located on the extreme northwest part of the island at approximately 48°04'30"N 122°45'00"W. The pier is the primary maritime facility of NAVMAG II and is large enough to accommodate a Nimitz class aircraft carrier (1,040 ft. long/91,487 to 96,358 tons). The pier is 1,500 ft. (457 m) long. Alongside depths at the wharf are 50 ft. (15.2 m) or more.

Three mooring buoys are located south of the south end of the ammunition pier and are utilized as moorage for moorage floats, USN Ship Training, and foul weather anchorages. The Explosive Anchorages listed on Chart 18464 are no longer utilized.
United States Coast Pilot 7 mentions a "usual" anchorage of unspecified holding quality about 0.5 to 0.7 nmi south of the “railroad ferry terminal” at Port Townsend, on a muddy bottom in depths of 48 to 60 ft (14.6 to 18.3 m). The location would place the anchorage approximately 1.4 nmi north-northwest of the NAVMAG II Pier. The same document states that in southerly gales, better anchorage is afforded close inshore off the north end of Marrowstone Island or near the head of the bay on a muddy bottom in “moderate depths.”

Because of its protected location on Port Townsend Bay, wave motion is not an issue at the wharf and currents are not a significant problem. Prevailing currents within Port Townsend bay north of the wharf are circular, and may set clockwise or counter-clockwise, depending on wind flow and the tide. Harbor pilots who service ships at the wharf, state that ebb tides cause strong currents in Admiralty Inlet. Because of the relatively narrow entrance channel, ships destined for the wharf must keep at least 10 kt steerageway until well west of a line between Point Wilson and Marrowstone Point. A strong north-setting current passes west of Indian Island through Port Townsend Canal (between Indian Island and the mainland of the Quimper Peninsula) during an ebb tide, but the waters of Port Townsend bay largely diffuse it before it reaches the wharf.

[1] http://www.mybaseguide.com/navy/14-550/nb_kitsap_naval_magazine_indian_island

Strong southerly winds are the primary hazard for wharf is strong southerly winds that move north around both sides of Indian Island, reaching the pier as south south-easterly. Arriving ships normally approach the pier in a wide, counterclockwise turn, and moor starboard side to the pier



Naval Magazine Indian Island - Coordination Issues

Law Enforcement and Fire: NAVMAG II has an internal security and fire department to respond to on-base incidents. Personnel work closely with Jefferson County authorities to facilitate mutual understanding of the hazards on the naval base and conduct joint drills with local agencies at least semi-annually. Depending on its nature, a hazardous material incident could involve local and state agency response and support, affecting communities close to the base. No large quantities of regulated hazardous material are stored or used at NAVMAG II and the base environmental department ensures all regulated hazardous waste is removed from the facility within 90 days as prescribed by the Washington State Department of Ecology permit.

Washington State Department of Transportation[1] (WSDOT)

The Washington State Department of Transportation is the steward of a multimodal transportation system and responsible for ensuring that people and goods move safely and efficiently. In addition to building, maintaining, and operating the state highway system, WSDOT is responsible for the state ferry system, and works in partnership with others to maintain and improve local roads, railroads and airports, as well as to support alternatives to driving, such as public transportation, bicycles and pedestrian programs.

Mission Statement: The mission of WSDOT is to keep people and business moving by operating and improving the state's transportation systems vital to our taxpayers and communities.

WSDOT management principles:

Leadership: We are committed that WSDOT provide strategic vision and leadership for our state's transportation needs.

Delivery and Accountability: We shall manage the resources taxpayers and the legislature entrusted to us for the highest possible return on value. We shall be disciplined in our use of both time and money. We shall account for our achievements, our shortcomings and our challenges to citizens, to elected officials, and to other public agencies.

Business Practices: We shall encourage progressive business management practices in delivering cost effective and efficient transportation services. Our quest for short-term cost savings and business process improvement shall be balanced by the long term need to preserve and improve the state's transportation systems through sound fiscal planning and asset management.

Safety: Concern for the health and safety of the people who use and work on our transportation facilities shall be a paramount value in every area of our business.

Environmental Responsibility: Our work shall incorporate the principles of environmental protection and stewardship into the day-to-day operations of the department as well as the on-going development of the state's transportation facilities.

Excellence and Integrity: Our employees shall work in a culture of workplace excellence and diversity that encourages creativity and personal responsibility, values teamwork, and always respects the contributions of one another and of those with whom we do business. We shall

[1] http://www.wsdot.wa.gov/

adhere to the highest standards of courtesy, integrity and ethical conduct. We shall encourage and recognize our employees' professionalism and their career growth.

Communications: We shall stress the importance of sharing clear, concise and timely information with WSDOT employees, elected officials, community leaders, businesses, citizens and taxpayers, others in the transportation community, with the press and other media. We shall strive for the effectiveness of all our employees in meeting WSDOT's communications standards.

Department of Transportation - Coordination Issues

Survivability of Transportation to Jefferson County: Jefferson County is on a peninsula, but its primary supply routes make it feel like an island: two of the three major transportation links, the Ferry System and the Hood Canal Bridge, cross water. Both the ferry system and the Hood Canal Bridge are susceptible to severe winter storms, tsunami, and earthquakes. The photo below shows the 1973 storm that destroyed a section of the Hood Canal Bridge.



An earthquake – tsunami combination could take out all of the major transportation routes into Jefferson County, resulting in the County needing to be self-sufficient for many days, and then to be supplemented by emergency transportation assistance.

Washington Military Department
Emergency Management Division[1]

The mission of the Washington Military Department's Emergency Management Division (EMD) is to minimize the impact of emergencies and disasters on the people, property, environment, and economy of Washington State.

The Division notifies and alerts state agencies and local governments of impending emergencies and disasters. During state emergencies, EMD manages the State Emergency Operations Center located on Camp Murray, near Tacoma, and coordinates the response to ensure help is provided to those who need it quickly and effectively. The EOC is designated as the central location for information gathering, disaster analysis, and response coordination. Other state agencies with emergency roles may come to the EOC to help coordinate the state response. Federal government agencies, along with state and local volunteer organizations, also may provide representatives.

At the EOC, information gathered is used by executives to make decisions concerning emergency actions and to identify and prioritize the use of state resources needed to respond to the emergency. The EOC may issue emergency warnings or disseminate critical information and instructions to government personnel and the public who may need to take emergency protective actions.

Emergency Management Division - Coordination Issues

Activation Protocols: The Jefferson County Emergency Operations Center has a policy of "leaning forward" when events are predictable, e.g a severe windstorm predicted a day ahead of time. It will activate before the storm hits with an appropriate level of staffing based on weather predictions.

In the past, at times like this, the State EOC is manned by a Duty Watch Officer (DWO). When a storm or other event hits multiple counties, the response time from the State EOC may be impacted between the time the DWO starts handling multiple requests and the time additional staffing can be mustered to deal with a growing event.

WebEOC Availability: Jefferson County is becoming adept at using WebEOC, particularly to facilitate communications when under Area Command. During the windstorm event named locally by JCDEM as "16 Charlie", WebEOC was taken off line by the State EOC so that it would not be corrupted while the change-over was made to emergency power. This impacted Jefferson County's ability to document, disseminate and coordinate operations among fire districts and the PUD under Area Command.

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[1] http://mil.wa.gov/emergency-management-division/emd-about-us

Logistics Coordination: There are Indian tribes within Jefferson County that have the legal right to go straight to the State for logistics. In the past, there have been instances when resources requests were made directly to the State, but the tribe called Jefferson County to find out where their stuff was. The WebEOC Logistics page is supposed to allow the County to track resource orders, but we have to know about them before we will track them

Logistics Bottleneck: During a major event, it is likely that the State EOC Logistics person will be overwhelmed by requests from multiple jurisdictions. This has the potential to create significant bottlenecks at a critical time.

Washington State Patrol[1]

The WSP is a professional law enforcement agency made up of dedicated professionals who work hard to improve the quality of life of our citizens and prevent the unnecessary loss of life on a daily basis. We will continue to work aggressively to enforce laws around the state while protecting the people of Washington from injury and grief.

The 600 or so troopers patrolling the highways every day are the most visible part of this agency, but there are also over 1,000 civilian employees who are less visible and just as important. They include those who work for the State Fire Marshal to help prevent fires in the home or workplace; those who work as technicians and scientists in our crime labs processing DNA samples to help prosecute criminal cases; and they include investigative support staff who maintain our criminal records and databases so that sex offenders don't end up working with children.

Keeping our state safe is a huge job, even with our commissioned and civilian staff. That is why we routinely partner with other law enforcement, traffic safety, and criminal justice agencies to provide the highest quality of service to the citizens of this state.

Locally, approximately 18 troopers and 2 sergeants are assigned across the North Olympic Peninsula to cover all of Jefferson and Clallam Counties with a detachment office along SR 101 just east of Port Angeles.

Washington State Patrol - Coordination Issues

Communications Interoperability: Communications is a significant challenge in the Olympic Peninsula because of geographical considerations with the rugged Olympic Mountains and the Strait of Juan de Fuca. Dealing with a host of agencies all working on different radio platforms continues to hamper effective multi-agency response to incidents.

WSP Staffing: During a major event, the WSP will have a significant role in maintaining the viability of State Highways. Having sufficient staff to provide liaison with county emergency departments and the State while keeping control of the State highway system will be of paramount importance. Yet, due to a combination of economic and sociologic issues, it is very difficult to recruit officers for the WSP in 2016. This has the potential to severely hamper response and recovery during regional disaster events requiring a police presence.

WSP Response Time: Jefferson County and the City of Port Townsend do not have the resources to maintain a "full function" police department or sheriff's office. Thus, neither has a crime lab or bomb squad or an armored vehicle, etc. As a result, in a major law incident that requires a more esoteric response, they rely on the resources of the WSP.

In 2016, for example, a school worker found an old pipe bomb in his school building and carried it to the police station in Port Townsend. This resulted in the evacuation of the police station and the other agencies resident in the building used by the PTPD, e.g. the food bank,

[1] http://www.wsp.wa.gov/

the Red Cross, and KPTZ FM radio. The city police called in the WSP Bomb Squad to take possession of the pipe bomb and detonate it – but even with a team ready-to-go, it takes the bomb squad 2 – 3 hours to get to Port Townsend from its home base.

There is no good fix for this. It is not economically feasible to have a bomb squad, etc. stationed in every town and city that could have a problem. In a really extreme situation, a small unit such as the bomb squad could be airlifted to the incident by helicopter – but even this is expensive and would not always be a viable solution.

The best that can be done is to have good communications among agencies and established contingency plans for rapid deployment of needed assets during a major incident. For example, the State Ferry System is considered part of Washington's highway system. In an incident, such as a bomb found on board while at the Port Townsend dock, both the WSP and the USCG could have overlapping jurisdiction, along with coordination needed with the city police. It is best to have easily recognized scenarios preplanned for, rather than attempting to establish responsibilities at the time of the incident.

Clallam County
Fire Protection District No.3 (CCFD3)
including Jefferson County Fire District 8 (JCFD8)

Clallam County Fire District No.3 (CCFD3) is approximately 140 square miles in size and occupies the Eastern portion of Clallam County. The city of Sequim is served by the district through annexation. The Fire District begins at the Clallam-Jefferson county line on the East and extends to its Western boundary, approximately six miles East of Port Angeles, just East of Deer Park Rd. Highway 101 runs the entire length of the district. The north boundary is the Strait of Juan de Fuca, while the Olympic National Forest forms the southern boundary.[1] By contract, CCFD3 also covers the Gardiner area of Jefferson County, which is designated as Jefferson County Fire District 8 (JCFD8). The value of property protected in Jefferson County in 2021 is $104,725,667. Estimated taxes are $47,405.88.

Phone: (360) 683-4242 **Fax:** (360) 683-6834

Email: info@clallamfire3.org

Headquarters Office
860 Carlsborg Rd. Unit C
Sequim, WA 98382

Clallam County Fire District 3 (CCFD3) - Coordination Issues

Same issues as CCFD1, above. In a disaster scenario, Jefferson County neighborhoods are being trained to work with the Jefferson County Department of Emergency Management. Emergency calls will go to CCFD3 via JeffCOM 9-1-1. The Director of JeffCOM 9-1-1 has been given authority over both Jefferson and Clallam County 9-1-1 Dispatch, so coordination among emergency responders should be improved across county lines.

[1] http://www.clallamfire3.org/about-us/district-overview/

Clallam County Public Utility District

Clallam PUD Background - Revenue & Expenditures

Revenues
Electric Fund $72,074,239 Water Fund $4,897,312 Sewer Fund $74,332

Expenditures
Electric Fund $58,318,371 Water Fund $3,539,326 Sewer Fund $89,271

Customers: The PUD provided service to 33,216 electric customers, 4,684 water customers, and 85 sewer customers. Electric customers were composed of 29,744 residential, 3,471 commercial, and 1 industrial. Water customers included 4,339 residential and 345 commercial. Sewer customers were all residential. Residential customers consumed 69.9 percent of the PUD's total load, commercial customers used 26.9 percent, and industrial customer used 3.2 percent.

Average Rates: Electric rates averaged 11.2 cents per kWh for residential customers, 9.2 cents per kWh for commercial customers, and 7.1 cents per kWh for industrial customer. Rates are set by the Board of Commissioners annually during its Fall budget hearings. Notices of Rate Hearings are published in the legal classified section of local newspapers.

Purchased Power & Water: The cost to purchase electrical energy for customers and the PUD was $29,298,450, and the cost for purchased and pumped water was $265,411.

Conservation & Non-hydro Renewable Resources: The total expended for energy conservation programs was $448,646, which was from general rates and a BPA Rate Credit. The total expended for non-hydro renewable resources was $817,243.40.

Energy Assistance Programs: The total expended for low-income energy assistance programs was $393,952. Low-income programs were funded from customer contributions and from general rates.

Taxes: The PUD paid a total of $3,741,843 in taxes in 2021. Of that amount, $1,261 was paid for federal taxes, $3,686,219 for state taxes, and $54,363 for local taxes.

New Service Orders: The PUD completed 391 new electric, 49 new water, and 4 new sewer service orders.

Clallam PUD Coordination Issues

Scenario 1 – Puget Sound Earthquake: A significant earthquake centered on one of the many Puget Sound faults could take down power lines serving Jefferson County, but leave the Clallam PUD line undamaged. In this scenario, JCPUD1 could obtain limited power from Clallam, through a 2016 Agreement for Payment for Backup Power Supply, to support portions of the grid until repairs are made and power is restored through normal channels.

Fort Worden State Park

Originally designed as a military base to protect Puget Sound, Fort Worden evolved into an iconic and cherished state park. The fort – featuring 94 historic structures – spans two miles of saltwater shoreline with views of the Olympic and Cascade Mountains, and the San Juan Islands. The fort offers exceptional meeting space, comfortable accommodations and delectable dining options, all within a campus-like setting. Located within a couple of miles from historic downtown Port Townsend, shopping and sightseeing opportunities are just minutes away.[1]

Fort Worden is designated a National Landmark Historic District beloved by many people.[2] Nestled on 434-acres of public lands, Fort Worden offers 30 forested campsites, and 50 beach campsites.[13] Ninety-five acres are leased to the Fort Worden Public Development Authority (PDA), which manages the Lifelong Learning Center that consists of all hotel, restaurant, housekeeping and entertainment facets of the park.

Fort Worden State Park - Coordination Issues

Two and a half miles of sandy beach in a Tsunami zone: Part of the attraction of Fort Worden is the 2.5 miles of sandy beaches and adjacent RV campsites. The problem is that the area surrounding Jefferson County is a veritable spaghetti farm of earthquake faults. The South Whidbey Island Fault, for example, splits the distance between Fort Worden and Whidbey Island. This fault is capable of producing a 7.2 or greater earthquake under the Admiralty Inlet – followed by a tsunami or seiche. Patrons of the park must head for high ground as soon as the shaking has stopped. There will not be time for park officials or emergency management to ascertain if a tsunami has been generated and trigger the AHAB tsunami warning system.

Large Seasonal Crowds & RV's on the Shoreline: In a local earthquake / tsunami event, it is possible to have hundreds of people on the beach and all 50 beach campsites full with RV's so that the immediate response is shock and inaction, trapping many between the beach and the high ground.

In a "Distant Tsunami" event in which there are multiple hours before the wave arrives, warning sirens and notification can energize campers to pull their rigs out of the beach area, resulting in a bottleneck at the parade grounds, park exits and in the city streets adjacent to the park.

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[1] http://fortworden.org/about/

[2] http://fortworden.org/about/support-the-fort/

[13] http://fortworden.org/stay-here/

The Hoh Tribe of Indians[1]

The Hoh River Indians Reservation in Washington State consists of 443 acres. The Hoh Reservation has approximately one mile of beachfront running east from the mouth of the Hoh River, and south to Ruby Beach. The Hoh Reservation was logged in 1954 and it will be 40-60 years before the second growth will be of commercial value. None of this land has been allotted. The Hoh Indian Reservation was established by an Executive Order of September 11, 1963. The Hoh Tribe has formed Tribal Government under Public Law 89655, providing for a basic roll of tribal members. The livelihood of the Hoh Indians is primarily fishing although a few of the residents make traditional baskets, carved canoes for ocean going or river use, and other carvings. The local people dip for smelts on the beaches and use smokehouses for preserving food for future use. The tidelands are abundant with razor clams, butter clams, crab and perch fishing.

Hoh Village, 1905



[1] http://hohtribe-nsn.org/

Hoh Tribal Business Committee
2464 Lower Hoh Rd, Forks, WA 98331
360-374-6582



Hoh Tribal Center, Forks, WA

About the Tribe

History: The Hoh River Indians are considered a band of the Quileutes but are recognized as a separate tribe. The Hoh Reservation consists of 443 acres located 28 miles south of Forks, and 80 miles north of Aberdeen. The Hoh Reservation has approximately one mile of beachfront running east from the mouth of the Hoh River, and south to Ruby Beach. The Hoh Reservation was logged in 1954 and it will be 40-60 years before the second growth will be of commercial value. None of this land has been allotted. The Hoh Indian Reservation was established by an Executive Order of September 11, 1963. The Hoh Tribe has formed a Tribal Government under Public Law 89-655, providing for a basic roll of tribal members. The Governing body is elected by secret ballot biannually in November. The livelihood of the Hoh Indians is primarily fishing although a few of the residents make traditional decorative baskets, carved canoes for ocean going or river use and other decorative carvings. The local people dip for smelts on the beaches and still use smokehouses for preserving food for future use. The tidelands are abundant with razor clams, butter clams, crab and perch fishing.

About the Area

Geography: Reservation is 443 acres about 28 miles south of Forks, Washington. City: Forks, population 2,870, elevation 300, (logging community on Highway 101 between Port Angeles and Pacific Coast). County: Clallam, population 53,400; Native American, 2,275, 58% of nonwhite population, 4% of total. 1,752 square miles. (Strait of Juan de Fuca and Pacific Coast nearby.) County's assessed value averages $1,554 per acre. County: Jefferson, population 18,100, Native American 349, 45% of nonwhite and 2% of total population. As of 2022, there are 80 Tribal residents. 1,805 square miles (extends from Pacific Coast through Olympic Peninsula to Puget Sound). County's assessed value averages $805 an acre. Principal industries: Tourism, wood products, agriculture and fishing.

Members: 274 enrolled members.

Other Offices and Programs: Law enforcement and community hall, no economic development plan. The Hoh Indian Tribe has elected to do its own Natural Hazard Mitigation Plan.

Total Tribal Employees: Approximately 29 FTEs.

The Hoh Indian Tribe Coordination Issues

Flood and Tsunami: The Hoh River opens out to the Pacific Ocean where it serves as a funnel for tsunami. It is also a collector for the Hoh River basin which meanders significantly and which frequently floods. The Hoh Indian Tribe Reservation sits near the mouth of the river, and is perennially dealing with flood issues. In 2009, the Hoh Tribe of Indians was able to swap land with local private owners and with the federal government to provide higher ground to which to move critical facilities.

Coordination with Jefferson County Department of Emergency Management: The Jefferson County Department of Emergency Management has been working with the Tribal Council to find ways to assist the tribe in an emergency. Efforts include the acquisition of a warning siren to call the tribe together in an emergency, and the moving of buildings outside of areas of repeated flooding.

Coordination with Jefferson County Public Works: Part of the issues surrounding the flooding of the Hoh river involve the meanders of the river, and the placing of rip rap to protect vulnerable sections of roads running parallel to the river. Jefferson County Public Works fights an ongoing problem of the river flooding and undercutting roads resulting in landslides where sections of the road break loose. The Hoh Tribe of Indians, Jefferson County Public Works, and the Washington Department of Fish and Wildlife need to coordinate on a river plan that will protect the roads, accommodate wildlife, and mitigate the effects of repetitive flooding.

KPTZ & Emergency Preparedness

KPTZ Goals and Responsibilities

KPTZ's role is to pass on vital information in partnership with the Jefferson County Emergency Operation Center (JCEOC). In an emergency, KPTZ's Emergency Response Team's (ETeam) objective is to get the right KPTZ people to the right place at the right time.

The KPTZ ETeam's primary role is to provide vital and timely information for events that are designated as emergencies by the JCEOC; that is, where lives or property are in real danger. An ongoing goal is to educate community members on how to prepare for an emergency.

While KPTZ endeavors to report on significant local events from start to finish, the station's volunteer staff may not be adequate to respond consistently to road closures, traffic accidents and other important, but not catastrophic, situations. Meanwhile, the staff endeavors to incorporate timely information for many of the events broadcast on the Nixle system.

https://kptz.org/emergency-response/

About KPTZ

The KPTZ Emergency Response Team is made up of 6-8 rotating on call volunteers, and several additional members with various support roles, in partnership with DEM Director Willie Bence and PIO Keppie Keplinger, of the JCEOC.

The KPTZ ETeam has been meeting regularly since January 2013 and over the years has conducted many tests of station systems, most of which are documented for staff use. KPTZ participates annually in the Shakeout Drill each October, providing information about the importance of disaster preparation.

KPTZ is officially a trusted partner with the JCEOC, a rare association among community radio stations. As a result vetted ETeam members are permitted to embed in the JCEOC and will broadcast directly from that facility, as necessary.

Several team members have passed the 4 basic FEMA classes in order to be credentialed by the JCEOC and therefore allowed to be embedded.

ETeam Systems

KPTZ has reliable backup systems consisting of uninterrupted power supply, generators and fuel at both the primary studio and transmitter site.

The VHS Radio link between EOC and KPTZ's main studio will allow communication even if the phone lines are down.

KPTZ will broadcast from a backup studio at the transmitter site in situations where the primary studio is inoperable.

KPTZ plans to implement a handheld radio network for communication among team members and with the EOC.

KPTZ's programming and news leads will maintain the station's readiness in order to provide a network of individuals to provide field information in the case of any emergency.

KPTZ Coordination Issues During an Emergency

KPTZ ETeam members will expediently look after the safety and well-being of their own families first before attending to the needs of the station. In the case of a widespread emergency, there may be a delay before information can be disseminated on-air.

What KPTZ Still Needs to Do

- Add new members to the ETeam, including EOC certification.
- Train additional station staff on emergency procedures.
- Improve procedural documentation.
- Reinstate the microwave communications linkage between network sites.
- Further develop its news team.
- Increase ETeam coordination within the county, including NPREP and JPREP cross communications.

Port Townsend Paper[1]

PT Paper CEO: Amy Orr

Port Townsend Paper Corp. Mission

Port Townsend Paper Corporation's mission is to be the answer to our customers' need for fiber-based packaging. To accomplish this goal, we have dramatically increased our productivity, established a long-term, stable fiber supply, and refocused on important markets in North America.



Customer Base: Port Townsend Paper is committed to our customers, to whom we sell unbleached kraft pulp, jumbo roll kraft paper, and kraft linerboard. We have more than 380 customers in over 15 countries worldwide, with the largest concentration of our customers in North America and Asia. Our focus in North America is on selling to converters of kraft jumbo rolls. The mill sells almost 100% of its pulp overseas and thousands of tons of kraft paper grades and linerboard annually.

Customers range from family-owned converters that sell their products within a local region to huge international companies. A small customer may purchase 45,000 pounds (one truckload) of paper per month, while a large customer may require 1 to 2.5 million pounds of paper or pulp per month. Ongoing customer relationships account for much of our business, but continued success is based on providing the products customers need on a timely basis and at a competitive price.

Logistics: To meet the needs of our customers and to keep up with production, we operate and ship 24 hours a day each day of the year. In an average month, more than 800 trucks are loaded at the mill, along with an occasional barge. Since Port Townsend last had rail service in 1988, any shipments requiring boxcars are trucked to Tacoma and transferred to rail cars.

Raw materials include wood chips and old corrugated cardboard (OCC). Almost 2,000 trucks and 10-15 barges a month deliver the chips from the Olympic Peninsula and other locations, and more than 300 trucks bring OCC for our recycling plant. For efficiency and pollution reduction, we reload as many of these trucks as possible with outbound product.

Community Involvement: Port Townsend Paper Corporation contributes more to the community than the $27 million it puts into the local economy. Many mill employees are personally involved in the community.

Port Townsend Paper makes a 50% match to its employees' considerable contributions to United Good Neighbors (UGN), a local service organization. The mill's contribution to UGN is a longstanding tradition and a point of pride.

[1] http://www.ptpc.com/

Education has always been a mill priority too. The company often participates in internship programs, offers scholarships, and provides tours and educational programs to school children. The mill also works with educational organizations like Centrum.

Port Townsend Paper maintains active memberships on teams that address local environmental issues such as the Solid Waste Advisory Council and the Emergency Preparedness Council. We provide specialized safety training to our employees, local emergency response teams and to the general public. In fact, mill employees constitute a large portion of volunteer emergency crews in Jefferson County.

The Company participates in many other groups and on many other projects that support community businesses, economics, education, and youth activities. Among these are the School Board, coaching for local youth athletic teams, the Economic Development Council, Chamber of Commerce, and at the Washington Pulp & Paper Foundation at the University of Washington.

Port Townsend Paper - Coordination Issues

Drought: Port Townsend Paper is one of the few businesses directly impacted by drought conditions in the County. During severe drought they have curtailed operations to assure adequate water supplies for the population.

Wildfire: The perimeter of the Port Townsend Paper is either waterfront or rural with a heavy interlacing of urban wilderness. In addition, mountains of wood chips are stored on site in the open as raw material for the paper making process. Port Townsend Paper coordinates with multiple fire districts to respond in the case of either structural or wildfire situations in and about their facilities.

Earthquake, Flood, and Tsunami: Port Townsend Paper is built in a flood, tsunami and seismic hazard area. The characteristics that make this location vulnerable happen to be the characteristics that made it a desirable place for the paper plant in 1927.

Water Shortage: Port Townsend Paper is one of the few businesses directly impacted by low water tables and growth in the Jefferson County area. In 2009, the lake supplying water to the region got down to a 20-day supply. Port Townsend Paper has agreements that it will stop operations when the water level reaches a 15-day supply, thus protecting the area's water supply but hurting its economy.

Washington Military Department
Emergency Management Division [26]

The state Emergency Operation Center (EOC) serves as the focal point for state responses to emergencies and disasters. These emergencies or disasters are the result of natural, technological or human-caused hazards.

The division notifies and alerts state agencies and local governments of impending emergencies and disasters. In the EOC, staff coordinates with state, federal and local government agencies, non-government organizations, private businesses and industry to effectively respond to a natural or technological emergency.

The numerous primary and back-up communications systems allow the state to warn local and state agencies, and the public, of an emergency and to communicate among all emergency response agencies during that event. During an emergency, representatives from other state agencies with emergency roles come to the EOC to help coordinate the state response. Federal government agencies, along with state and local volunteer organizations, also may provide representatives.

During an emergency or disaster, the EOC is designated as the central location for information gathering, disaster analysis and response coordination. Information gathered is used by executives to make decisions concerning emergency actions and to identify and prioritize the use of state resources needed to respond to the emergency. The EOC may issue emergency warnings or disseminate critical information and instructions to government personnel and the public who may need to take emergency protective actions.

[26] http://mil.wa.gov/emergency-management-division/emd-about-us

Clallam County
Fire District No.1 (CCFD1)
(Clallam / Jefferson)

CCFD1 covers the area centered around Forks, Wa. Through contractual arrangement this includes the West End of Jefferson County, which is known as Jefferson County Fire Districts 7 & 9 . As of February 2021, the relative assessed value of the areas served are: Clallam County: $ 433,307,991 Jefferson County: $ 7,931,718.

Clallam County Fire District 1 (CCFD1) - Coordination Issues

An earthquake disaster event in CCFD1 jurisdiction has the potential to create multiple "micro- islands".

Up to twenty "micro island" communities have been identified in Clallam County based on possible road and bridge damage. These are areas that will be cut off from each other and the rest of the Olympic Peninsula following a major earthquake. These micro-islands have been organized into five Area Commands. CCFD1 will have responsibility in Area 2, including a division focused on the western portions of Jefferson County and the Hoh tribal areas. The map below identifies these areas. Micro-islands are identified by letters. Area 2 consists of micro-islands C, D, G, H and, J.



Note that the micro-island areas are only identified up to the Jefferson County line. West end areas of Jefferson County are not individually identified on this map.

In a major disaster, communications will not be restored for a year. Communication from CCFD1, both internal and external, will be severely compromised and will likely take up to year to restore. External communications will have to rely on volunteer ham radio operators.

Clallam County
Emergency Operations Center [1]

The Division of Emergency Management plans for and responds to both natural and manmade disasters in Clallam County. These range from weather, floods, tsunamis, and earthquakes to incidents involving hazardous materials, or significant law enforcement events. The division prepares and implements a county-wide Comprehensive Emergency Management Plan, routinely conducts extensive exercises to test county emergency response capabilities and provides educational materials to the public to better prepare them for emergency events.

This section of the Sheriff's Office is Clallam counties liaison with federal and local agencies on emergencies of all kinds. Division staff members provide technical assistance to local governments as they prepare emergency plans and procedures and they also conduct emergency operations training for local governmental agencies.

Mailing Address
223 East 4th Street, Suite 12
Port Angeles, Washington 98362
Fax 360-417-2485
achastain@co.clallam.wa.us

Clallam County Emergency Operations Center
Coordination Issues

Jefferson County and Clallam County do not always activate at the same time for regional events, e.g. damaging storms, potential flooding, etc.: Clallam and Jefferson County EOC's do not always coordinate activations, therefore, there are times when Jefferson County is leaning forward to prepare for flood or storm conditions that Clallam is not activated. This reduces the opportunity for Clallam to gain intelligence because of Jefferson County's Pacific Coast contacts, and reduces the situational awareness Jefferson County can gain from events impacting Clallam before it hits Jefferson.

The Cascade Rising Exercise provided an opportunity for coordination of preparation efforts and training that can lead to closer coordination during storm events, etc.

[1] http://www.clallam.net/EmergencyManagement/

Neighborhood Emergency Preparedness Groups (NPREP)[1]

Emergency Preparedness

The Intent: A community's level of self-reliance and resilience is never more apparent—and critical– than when disaster strikes. This is true whether the disaster is an earthquake, a power outage or an economic collapse. While the activities of all Local 20/20 Action Groups enhance our ability to adapt to such an event, the Neighborhood Preparedness (NPREP) Action Group focuses on the particular needs that arise from a sudden plunge into radically different circumstances. We do this by assisting area residents through education and by example to become self-reliant before a disaster strikes, thus enhancing resilience throughout our community as we work to recover.

Projects, Past and Present

The main focus of the NPREP Action Group is to help neighbors organize so that they may work together when a disaster occurs, thereby enhancing the safety and comfort of all in such difficult times. Working with the Jefferson County Department of Emergency Management (DEM), this effort has facilitated the self-organization of over 100 neighborhoods since 2006. While the number of organized neighborhoods is significant, many more are needed in Jefferson County.

Such neighborhood cooperation is built on a foundation of preparedness by individual households. NPREP also worked with the Port Townsend Food Co-op to stage a store-wide special pricing and educational event, now held annually, featuring foods and supplies necessary for disaster preparedness.

Finally, all of NPREP's goals converge at the Annual All-County Picnic. The first Picnic, held in 2013, was a great success with a turnout of more than 1,000 people. The Picnic offers informational talks and booths, great music, free corn on the cob, hands-on survival techniques, and a chance for neighbors to gather as one community. People interested in organizing their own neighborhoods can meet with NPREP team members to learn about the process.

Opportunities to Participate

The NPREP Action Group is currently one of the most active of Local 20/20's action groups, and is working in partnership with the Jefferson County Department of Emergency Management (DEM) to strengthen pre and post-disaster collaboration between neighborhoods and the Emergency Operations Center in areas such as communication and damage assessment. We provide regular outreach events to educate the public on emergency preparedness matters and/or to recruit new neighborhood organizers. We coordinate training opportunities for our organizers and house ad hoc projects, such as the development of a plan for post-disaster sanitation.

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[1] http://l2020.org/emergency-preparedness/

NPREP—During the Pandemic

According to one of the NPREP leaders, neighborhoods were quite active especially early in the pandemic when the whole situation was evolving rapidly and everyone wanted information.

Neighbors were checking on one another—asking if anyone needed anything from the store if one neighbor was going shopping. Additionally, the neighborhood leads were actively forwarding email blasts to their members to include the Situation Reports that were sent out by the Department of Emergency Management weekly.

As time went on and people became more used to wearing masks and doing their own shopping, the need for neighborhood collaboration lessened.

Many people in the various neighborhoods were making cloth face masks for the community and continuing to check on their neighbors. In February of 2022, forty neighborhoods signed up to get masks which were distributed at a CPOD.

After that, many of the NPREP leads acknowledged that their neighborhoods had become fairly dormant. However, many are now interested in re-energizing their neighborhoods and others have stepped forward and spoken of an interest in organizing their neighborhoods.

As of 2022, there are 118 active organized neighborhoods in Jefferson County.

Contact:

NPREP@L2020.org
Source: I2020.org/emergency-preparedness

NPREP – Coordination Tactics

Levels of Commitment: With over 100 neighborhood emergency groups, there is a wide variety of knowledge, commitment, in the county. The success of any given group can be a function of the neighborhood leadership in pulling together a group and developing an “institutional” commitment so that the group doesn’t dissipate if a key member quits.

Communication Protocols: Some neighborhoods are large enough to support a communications unit, while others are dependent on individuals that have taken the initiative to get an amateur radio license or familiarity with FRS radios.

EOC Usage Protocols: It is clear that having communications with the NPREP groups can help the EOC develop situational awareness during an emergency. There is also a need to get the EOC procedures defined for handling the information coming into the EOC from this route in addition to its normal sources such as JeffCOM.

Washington Department of Ecology

The Department of Ecology (Ecology) is the state's environmental protection agency. Its mission is to protect, preserve, and enhance Washington's environment for current and future generations. Whenever possible it carries out its mission through innovative partnerships. As a result, Ecology is able to protect and sustain healthy land, air, and water in concert with a strong economy.

Ecology's responsibilities and capabilities are both proactive as well as reactive (i.e. emergency response). The former is accomplished through the design of laws, policies and regulations that give shape to the mission statement. It is enhanced through the scientific capacities of the Agency. Ecology's emergency response capabilities and deployment are carried out within the framework established by the Emergency Management Department (EMD). This framework builds on the planning concept of vertical integration of local, state and national response resources.

Planning Integration

Vertical Integration is the linking of state plans to link to county and federal plans, as applicable. Vertical integration meshes planning up and down the various levels of government. The State's plans, such as the Comprehensive Emergency Management Plan (CEMP) or State Enhanced Hazard Mitigation Plan (SEHMP) (https://mil.wa.gov/enhanced-hazard-mitigation-plan), are where state agencies outline their capabilities resources, and responsibilities. The CEMP Basic Plan, Emergency Support Functions (ESFs), and Incident Annexes describe specific roles, responsibilities, functions, and support relationships of state agencies. The CEMP also provides a framework for state, local, tribal, and whole community coordination and cooperation supporting response and recovery of local jurisdictions in times of emergencies and disasters.

Outlining Ecology's capabilities, resources, and responsibilities in the state plans, reduces duplication and liabilities by ensuring those state plans remain current for state, local, tribal, and federal reference.

Ecology Disaster Assistance

The State Emergency Operations Center (SEOC) serves as a single point of contact for the authorizing of state resources or actions in response to and recovery from natural, technological, or human-caused emergencies or disasters. The Alert and Warning Center (AWC) is a function of the State Emergency Operations Center (SEOC), which provides 24-hour, 7 days a week coverage for notifications, alerts, and warnings of emergency events and incidents affecting Washington State. The AWC is the Washington State Primary Warning Point providing the state with a single point to disseminate information and warnings to governmental officials, including other state agencies, when a hazardous situation could threaten or is threatening the general welfare, health, safety, and property of the state's population or environment.

Regional Approach: When local resources and capabilities of the impacted jurisdictions are exceeded, requests for assistance are elevated to the State. The Department of Ecology operates with a regional approach. To access Ecology resources during regular business hours, you can call the appropriate contacts: https://ecology.wa.gov/about-us/contact-us/region-contacts

Spill Response: Ecology is committed to rapid, aggressive, and well-coordinated responses. We respond 24 hours a day, seven days a week to spills that pose an immediate threat to public health and the environment. All oil and hazardous materials spills cause environmental damage. The sooner a spill is reported, the quicker it can be addressed, resulting in less harm. If you see a spill, report it by calling 1-800-OILS-911 (Washington Emergency Management Division, 24/7). Spills of oil or hazardous materials to water must be reported immediately to help reduce impacts to the environment. Report the spill immediately to BOTH:

- 1-800-258-5990 (Washington Emergency Management Division)
- 1-800-424-8802 (National Response Center)

[1] http://www.ecy.wa.gov/

[2] FEMA's https://www.fema.gov/emergency-managers/national-preparedness/plan Updated 2021.

[3] Washington Comprehensive Emergency Management Plan (CEMP), Basic Plan: https://mil.wa.gov/plans

Washington Department of Fish and Wildlife

The Washington Department of Fish and Wildlife's mandate is to protect and enhance fish and wildlife and their habitats and provide sustainable, fish and wildlife related recreational and commercial opportunities. RCW Title 77 defines the Department's regulatory authority over the management of species (e.g., hunting and fishing rules, scientific collection permits, bald eagle management). The Department's Hydraulic Project Approval program regulates construction or performance of work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or freshwaters of the state.

The Washington Department of Fish and Wildlife (WDFW) is dedicated to preserving, protecting, and perpetuating the state's fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. Headquartered in Olympia, the department maintains six regional offices and manages dozens of wildlife areas and hundreds of water access areas around the state, offering fishing, hunting, wildlife viewing, and other recreational opportunities for the residents of Washington.

The Department also provides technical assistance, science, and support to local governments and state agencies that share responsibility for fish and wildlife habitat protection and recovery. This includes, but is not limited to, work with city and county governments under the Growth Management Act and Shoreline Management Act related to planning, designation and protection of fish and wildlife habitat; assistance to local groups implementing salmon recovery plans; review of development proposals with potential habitat impacts; and review of timber harvest planning and forest practices.

The WDFW resources that are most likely to support Jefferson County in an emergency or disaster are its team of enforcement officers. WDFW officers are Washington State commissioned police officers. There are approximately 140 WDFW officers state-wide, five of whom are stationed in the Coastal Region. (It is anticipated that there will be one or two additional officers stationed here by the end of 2022.) In addition to their basic law enforcement qualifications some local WDFW officers also have specialized training including swift water rescue, scuba diving, and drone operation (FAA licensed).

At the local level, WDFW's advisory role in protecting fish and wildlife habitat owned by private citizens is set forth in GMA, State Environmental Policy Act (SEPA) and the Shoreline Management Act. Through these legislative acts, WDFW may provide comments on the accuracy of environmental documents and offer recommendations to reduce impacts of development on wildlife habitat. It is up to the city or county government to incorporate these comments and recommendations in their permits and planning activities, and WDFW's counsel may be modified or rejected by the local government.

Because over half of the land base in Washington State is privately owned, decisions made by local governments regarding land use planning and development, including the management of potential natural hazards, significantly affect fish and wildlife and their habitats. For that reason, WDW is a coordinating entity with expertise to lend to local planning.

Fish and Wildlife - Coordination Issues

Flood, Severe Local Weather and Ecologically Sensitive Areas: WDFW coordinates with the Jefferson County Public Works and special districts and jurisdictions which need to take fish and wildlife resources into account when proposing flood control and related mitigation activities. An example is the Duckabush and Dosewallips Comprehensive Flood Hazard Management Plan, involving WDFW, Jefferson County Public Works, and other local, state, federal, and tribal entities.

Jefferson County is located in the WDFW Coastal Regional Office which covers Clallam, Grays Harbor, Kitsap, Mason, Pacific, Pierce, Thurston, as well as Jefferson County. The WDFW resources that are most likely to support Jefferson County in an emergency or disaster are its team of enforcement officers. WDFW officers are Washington State commissioned police officers. There are approximately 140 WDFW officers state-wide, Five of whom are stationed in the Coastal Region. (It is anticipated that there will be one or two additional officers stationed here by the end of 2022.) In addition to their basic law enforcement qualifications some local WDFW officers also have specialized training including swift water rescue, scuba diving, and drone operation (FAA licensed). WDFW officers often cooperate with local fire and police agencies in law enforcement and rescue operations. In addition to patrol vehicles the Coastal Region has a 34 foot boat stationed in Port Angeles, a 28 foot rigid-hull inflatable stored on a trailer in the Forks area, and a drift boat and white water raft in the region.

[1] http://wdfw.wa.gov/

Washington Department of Natural Resources[1]

In 1957, the legislature created the Department of Natural Resources (DNR) to manage state trust lands for the people of Washington. Under the elected leadership of the Commissioner of Public Lands, DNR manages seven specific trusts to generate revenue and preserve forests, water, and habitat. DNR now manages 5.6 million acres of forest, range, agricultural, aquatic, and commercial lands for more than $200 million in annual financial benefit for public schools, state institutions, and county services.

Washington State Department of Natural Resources (DNR) protects our state's heritage of natural resources by sustainably managing millions of acres of state lands in forests, under the sea and across agricultural plains. With respect to assisting Jefferson County with disaster planning and response DNR has two areas of focus that are directly and critically important to our resiliency efforts. These two areas are:

- Preparation and response to wildland and interface fires
- Identification and understanding of geohazards by the Washington State Geological Survey

Our mission: In partnership with citizens and governments, the Washington State DNR provides innovative leadership and expertise to ensure environmental protection, public safety, perpetual funding for schools and communities, and a rich quality of life.
In today's firefighting in rural and forested areas of the state, traditional boundaries between those fighting wildfires and those battling structural fires give way to the common need to help one another. The Department of Natural Resources has established programs to assist Fire Protection Districts.

- Federal Excess Property Program
- State Surplus Sales
- Combined Fire District Assistance Grants

Maintaining the health and vitality of Washington forest land is a serious issue. Each year, in Eastern Washington, 13 percent of the forest's potential annual growth is lost to diseases. More than 1,000 earthquakes occur in the state annually. Washington has a record of at least 20 damaging earthquakes during the past 125 years.

Wildland Fire Program: The DNR Wildland Fire Management Division is the state's largest on-call fire department, with 1,200 temporary and permanent employees who fight wildfires on about 13 million acres of private and state-owned forestlands. DNR works with other state, federal and local agencies to respond to wildfires, and offers local fire districts support with fire protection and safety equipment requirements. In the Olympic Peninsula area DNR has

[1] http://www.dnr.wa.gov/

significant wildland fire response capabilities. During the summer they maintain nine wildland engines in this area (each staffed with three firefighters). These units are located as follows:

One in Center (Jefferson County)
Two in Port Angeles (Clallam County)
Three in Forks (Clallam County), and
Three in Aberdeen (Grays Harbor County)

DNR also has wildland overhead staff stationed in this area, the ability to draw additional resources from across the State, and an interface with the National Interagency Fire Center if needed. DNR also assists communities and homeowners in decreasing risks associated with wildland/interface fires through the Firewise program. Through the recently created Forest Resilience Division DNR provides resources to manage public and private forest lands in Washington State to promote forest health, which, in part makes wildland less susceptible to dangerous and damaging wildfires.

Volcanoes: The Pacific Coast of Washington is at risk from tsunamis. Coastal or submarine landslides or volcanism can cause these destructive waves, but large submarine earthquakes most commonly cause them.

Department of Natural Resources - Coordination Issues

Interoperability: DNR and the Jefferson County and Port Townsend fire districts frequently support each other on wildland fires. A DNR representative attends the East Jefferson County Chiefs Association meetings to facilitate cooperation at policy levels. Interoperability of equipment and procedures has been a key issue that the DNR and fire districts are working on to improve both the capabilities and the safety of the firefighter in the field.

Washington State Geologic Survey: The Washington State Geologic Survey (WSGS) is a Division of DNR. One of its core functions is the identification, mapping, and assessment of geologic hazards across Washington State. Jefferson County is subject to a range of such hazards and the WSGS has been and continues to be the primary source for information on those hazards to our local government. Some of the WSGS programs that infor emergency/disaster planning in Jefferson County include:

- **Tsunami mapping:** WSGS, in cooperation with NOAA and the University of Washington have modeled a tsunami generated by a Mw 9.0 Cascadia subduction zone megathrust earthquake scenario. Using this modeling new maps, published in 2022, show inundation extents for much of the Washington State marine shoreline, including the coastlines of both east and west Jefferson County.
- **School Seismic Safety Project:** Through this program screening-level assessments for seismic safety were conducted for selected school building throughout Washington State. These assessments included selected school buildings in all four of the school districts in Jefferson County (Brinnon, Chimacum, Port Townsend and Quilcene).
- Following the Oso landslide disaster the WSGS formed a team of geologists who are mapping existing landslides and landslide-prone areas across Washington State.

- WSGS (in cooperation with other agencies and institutions) is mapping the location of active faults, potentially capable of producing damaging earthquakes. Faults that have been or are being studied in the vicinity of Jefferson County include the Saddle Mountain Fault, the South Whidbey Island Fault, and the Lake Creek.
- WSGS prepares and publishes geologic maps of selected quadrangles across the State. The light green tint on the map below shows 1:24,000 geologic quadrangle maps completed by WSGS (or by the USGS). As shown all of eastern Jefferson County has now been mapped. (To date none of Western Jefferson County has been mapped.) These maps contain a range of information relevant to emergency/disaster planning including the location and age of faults, location of landslides and slide susceptible geologic units, and soft sediments that may be subject to amplification of seismic waves or seismically induced liquefaction.



SECTION VII

Appendices and Supporting Documents

SECTION VII
Appendices

Appendix A – Acronyms
Appendix B – Contact Points & Contributors
Appendix C – Endnotes (Moved behind each topic)
Appendix D – Frequently Asked Questions
Appendix E – Resources
Appendix F – Adoption Resolutions
Appendix G – Public Participation Documentation

Appendix A – Acronyms

Acronyms

Acronym	Description
A.D.*	Anno Domini - in the Christian era; used before dates after the supposed year Christ was born; "in AD 200"
AHAB*	All Hazard Alert Broadcast (Tsunami Warning System)
AMOC*	Atlantic Meridional Overturning Circulation
APSAP*	Alternate Public Safety Access Point
AV*	Avalanche
BCA	Benefit/Cost Analysis
BOCC*	Board of County Commissioners
BPA*	Bonneville Power Administration
BR*	Bankruptcy
BFD*	Brinnon Fire Department (JCFD4)
CCFD1*	Clallam County Fire District No. 1
CCFD3*	Clallam County Fire District No. 3
CFR	Code of Federal Regulations
CME*	Coronal Massive Ejection
CRS	Community Rating System
CRX*	Cascade Rising Exercise (Multi-State, Multi-agency, Cascadia Subduction Zone Event Exercise)
CWOP*	Closed Without Paying
DCD	Jefferson County Department of Community Development
DEM	Jefferson County Department of Emergency Management
DR*	Emergency Declaration or Drought, depending on context.
DSD	Port Townsend Developmental Services Department
DBVFD*	Discovery Bay Volunteer Fire Department (JCFD5)
DW*	Damaging Wind
DWO*	Duty Watch Officer
ECY*	Ecology
EJFR*	East Jefferson Fire & Rescue (JCFD1)
EMD*	Emergency Management Division
EOC*	Emergency Operations Center
EQ	Earthquake
FEMA	Federal Emergency Management Agency
FL	Flood
FS	Fire Suppression Declaration
Ga*	Billion Years
GIS	Geographic Information Systems
GMA	Growth Management Act
HAZMAT*	Hazardous Material
HAZMIT*	Hazard Mitigation
HEMP*	High Altitude Electromagnetic Pulse

Acronym	Description
HIVA	Hazard Identification and Vulnerability Assessment
HRI*	Heat Related Illness
IPCC*	Intergovernmental Panel on Climate Change
ISIS*	Islamic State in Iraq and Syria
JARC	Job Access Reverse Commute
JC	Jefferson County
JCC*	Jefferson County Code
JCDEM*	Jefferson County Department of Emergency Management
JCFD1*	Jefferson County Fire District No. 1 (East Jefferson Fire & Rescue)
JCFD2*	Jefferson County Fire District No. 2 (Quilcene Volunteer Fire Dept)
JCFD3*	Jefferson County Fire District No. 3 (Port Ludlow Fire & Rescue)
JCFD4*	Jefferson County Fire District No. 4 (Brinnon Volunteer Fire Dept)
JCFD5*	Jefferson County Fire District No. 5 (Discovery Bay / Gardiner)
JCFD6*	Jefferson County Fire District No. 6 (Cape George – annexed by JCFD1 (EJFR))
JCSO	Jefferson County Sheriff's Office
JPREP	Jefferson Peninsula Regional Emergency Planning Committee
ka*	Thousand Years
ky*	Kilo Years
LN	Landslide
LSR*	Local Storm Report
LT	Long-Term
Ma*	Million Years
MET*	The Met Office is the UK's National Meteorological Service.
MGD*	Million Gallons Per Day
NAVMAG II	Naval Magazine – Indian Island
NCDC*	National Climatic Data Center
NFIP	National Flood Insurance Program
nmi*	Nautical Mile
NOAA*	National Oceanic and Atmospheric Administration
NOPRCD*	North Olympic Peninsula Resource Conservation & Development
NPREP*	Neighborhood Preparedness (Action Groups)
OCEAN*	OCEAN stands for Opportunity, Community, Experience, Academics, Navigation, an alternative program.
OG	Ongoing
OGWS*	Olympic Gravity Water System
OPEPO*	OPEPO is a 1st-5th grade alternative multi-age program within the Port Townsend Public School District, where students work cooperatively with two teacher / facilitators.
OPS-CAN*	Olympic Public Safety Communications Alliance Network
PLFR	Port Ludlow Fire – Rescue (JCFD3)
PSAP*	Public Safety Access Point
PSP*	Paralytic Shellfish Poisoning
PT	Port Townsend
PUD*	Public Utility District
PW	Public Works
PTFD	Port Townsend Fire Department

Acronym	Description
PTMC*	Port Townsend Municipal Code
PTPD	Port Townsend Police Department
QFR*	Quilcene Fire & Rescue (JCFD2)
RL*	Repetitive Loss
SCADA	Supervisory Control and Data Acquisition
SD	School District
SO	Sheriff's Office
SORCE*	SOlar Radiation and Climate Experiment
SPC*	Storm Prediction Center
SRL*	Severe Repetitive Loss
ST	Short-Term
THC*	Thermohaline Circulation
TS	Tsunami
VO	Volcano
VSOP*	VSOP (planets) or Variations séculaires des orbites planétaires, mathematical theories for the calculation of the orbits and the positions of the planets
UK*	United Kingdom (Great Britain)
USCG*	United States Coast Guard
WebEOC*	WebEOC is the name of a software package run by the State to allow documentation of and communication with County EOC's during activations.
WRIA*	Water Resource Inventory Area
WS*	Winter Storm
WSAC*	Washington State Association of Counties
WSDNR*	Washington State Department of Natural Resources
WSDOT*	Washington State Department of Transportation
WSECY*	Washington State Department of Ecology
WSP*	Washington State Patrol
WUI*	Wildland Urban Interface
WWRHCC*	Western Washington Rural Health Care Collaborative

*Entry has been added or updated in the 2016 Revision.

Appendix B - Contact Points & Contributors

Contact Points

Jefferson County

MAILING ADDRESS:
Willie Bence Director
Jefferson County Department of Emergency Management
81 Elkins Road
Port Hadlock, WA 98339

TELEPHONE: (360) 385-9368
FAX: (360) 379-0521
E-MAIL: wbence@co.jefferson.wa.us

City of Port Townsend

MAILING ADDRESS:
Tom Olson Police Chief
Port Townsend Police Department City of
Port Townsend
2520 Blaine St, Ste 100
Port Townsend, WA 98368

TELEPHONE: (360) 531-4965
FAX: (360) 379-4438
E-MAIL: tolson@cityofpt.us

Appendix B
Jefferson County – City of Port Townsend
All Hazard Mitigation Plan Participants

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
Natural Hazard Mitigation Plan Steering Committee						
1.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 wbence@co.jefferson.wa.us	Willie Bence Director	360.385.9368		Steering Committee Member	Plan Sponsor; Plan Writer
2.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 jhausdorf@co.jefferson.wa.us	Bradley Brooks Planning Coordinator	360.385.9368		Steering Committee Member	Plan Sponsor; Plan Writer
3.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 kkeplinger@co.jefferson.wa.us	Keppie Keplinger Deputy Director/PIO	360.344-9786		Steering Committee Member	Plan Sponsor; Plan Writer
4.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 jbethel@co.jefferson.wa.us	John Bethel Volunteer Dept. of Emergency Management			Steering Committee Member	Geologic Hazards, Provide Resources
5.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 lguth@co.jefferson.wa.us	Laura Guth Volunteer Dept. of Emergency Management			Steering Committee Member	Plan Writer, Provide Resources

All Hazard Mitigation Plan Advisory Group and Stakeholders						
6.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 24 Seton Road Port Townsend, WA 98368 bblack@ejfr.org	Bret Black Fire Chief	360.385-2626		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
7.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 40 Seton Road Port Townsend, WA 98368 pbrummel@ejfr.org	Pete Brummel Deputy Fire Chief	360.385-2626		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
8.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 40 Seton Road Port Townsend, WA 98368 btracer@ejfr.org	Robert Wittenberg Community Risk Mgr.	360.385-2626		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
9.	Jefferson County Fire District Nbr 2 (JCFD2) Dba Quilcene Volunteer Fire Dept (QVFD) P.O. Box 433 Quilcene, WA 98376 chief@qvfd.org	Tim McKern Fire Chief	360.765.3333		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
10.	Jefferson County Fire District Station 7 East Jefferson Fire Rescue 7650 Oak Bay Road Port Ludlow, WA 98365 @plfr.org	Deputy Chief Pete Brummel	360.437.2236		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
11.	Jefferson County Fire District Nbr 4 (JCFD4) 272 Schoolhouse Rd P.O. Box 42 Brinnon, WA 98320 tmanly@brinnonfire.org	Tim Manly Fire Chief	360.796.4450		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

12.	Jefferson County Fire District Nbr 5 (JCFD5) dba Discovery Bay Fire and Rescue 12 Bentley Pl. Port Townsend, WA 98368 wkneopfle@dbvfr.org	Willie Kneopfle Fire Chief	360.379.6839		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
13.	Port Townsend Police Department 1925 Blaine St Port Townsend, WA 98368 tolson@cityofpt.us	Tom Olson Chief of Police	360.385.2322		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
14.	City of Port Townsend – Public Works 250 Madison St Port Townsend, WA 98368 sking@cityofpt.us	Steve King Director	360.379.5090		Stakeholder, Advisory Grp **Steering Committee**	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
15.	Jefferson Healthcare Hospital District #2 824 Sheridan St Port Townsend, WA 98368 sgroff@jeffersonhealthcare.org	Shannon Groff	360.385.2200		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
16.	Jefferson County Library District 620 Cedar Ave Port Hadlock, WA 98339 mwagner@jclibrary.info	Meredith Wagner Director	360.385.6544		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
17.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 samg@portofpt.com	Erin Berg Director	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

18.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 jim@portofpt.com	Eric Toews Deputy Director	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
19.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 snelson@portofpt.com	Sue Nelson Executive Assistant	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
20.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 eric@portofpt.com	Matt Klontz Director of Planning, Properties, and Environment	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
21.	Port Townsend School District No. 50 450 Fir St Port Townsend, WA 98368 jpolm@ptschools.org	Linda Rosenbury Superintendent of Schools	360.379.4501		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
22.	Port Townsend School District No. 50 450 Fir St Port Townsend, WA 98368 lrosenbury@ptschools.org	Justin Gray Director of Mtnc. & Facilities	360.379.4501		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
23.	Brinnon School District No. 46 46 Schoolhouse Rd Brinnon, WA 98320 pbeathard@bsd46.org	Patricia Beathard Superintendent	360.796-4646		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan

24.	Chimacum School District No. 49 P.O. Box 287 Chimacum, WA 98325-0278 @csd49.org	Scott Mauk Superintendent	360.302.5896		Stakeholder, Advisory Grp	Plan Review & Recommend Approval

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
25.	Queets / Clearwater School District No. 20 146000 HWY 101 Forks, WA 98331 scarter@qcsd.wednet.edu	Mr. Houtz Superintendent	360.962.2395		Stakeholder, Advisory Grp	Plan Review & Recommend Approval
26.	Quilcene School District No. 48 P.O. Box 40 Quilcene, WA 98376 wlis@qsd48.org	Ron Moag. Superintendent	360.765.3363		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
27.	Quillayute Valley School District No. 402 P.O. Box 60 Forks, WA 98331 diana.reaume@qvschools.org	Diana Reaume Superintendent	360.374.6262		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
28.	Jefferson Transit Authority 63 Four Corners Road Port Townsend, WA 98368 trubert@jeffersontransit.com	Nicole Gauthier General Manager	360.385.4777	Opted Out in 2009, 2016.	Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
29.	Public Utility District No. 1 of Jefferson County P.O. Box 929 230 Chimacum Road Port Hadlock, WA 98339 kstreett@jeffpud.org	Kevin Streett Director	360.385.5800		Stakeholder, Advisory Grp	Plan Review, Critique, and Recommend Approval
30.	Jefferson County – Dept of Community Development 621 Sheridan St Port Townsend, WA 98368	Brent Butler Chief Strategy Officer	360.379.4450		Stakeholder, Advisory Grp	Plan Review, Critique, and Recommend Approval

31.	Jefferson County – Dept of Public Works 623 Sheridan St Port Townsend, WA 98368	Monte Reinders Director	360.385-9160		Stakeholder, Advisory Grp	Plan Review, Critique, and Recommend Approval

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
Stakeholder – Reviewers - Contributors						
32.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 pmorely@co.jefferson.wa.us	Mark McCauley County Administrator	360.385.9500		Stakeholder	Plan Direction, Provide Resources
33.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 pjohnson@co.jefferson.wa.us	Kate Dean County Commissioner, District 1	360.385.9100		Stakeholder, Review & Approve	Review & Adopt Plan
34.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 dsullivan@co.jefferson.wa.us	Heidi Eisenhour County Commissioner, District 2	360.385.9100		Stakeholder, Review & Approve	Review & Adopt Plan
35.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 kkler@co.jefferson.wa.us	Greg Brotherton County Commissioner, District 3	360.385.9100		Stakeholder, Review & Approve	Review & Adopt Plan
36.	Jefferson County Dept. of Community Development 621 Sheridan St Port Townsend, WA 98368 dgoldsmith@co.jefferson.wa.us	Josh Peters, Director of DCD	360.379.4450	Preceded Patty Charnas as Interim Director until replacement for Carl Smith found.	Stakeholder	County Planning, Plan Direction, Provide Resources

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks

37.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 treasurerstaff@co.jefferson.wa.us	Stacie Prada Jefferson County Treasurer	360.385.9150		Stakeholder, Provide Input	Provide Financial Profile of County; County Assets at risk.
38.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 racarroll@co.jefferson.wa.us	Brenda Huntingford Jefferson County Auditor	360.385.9121 (Accounting)		Stakeholder, Provide Input	Provide elected officials contacts; political profile of County.
39.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 jchapman@co.jefferson.wa.us	Jeff Chapman Jefferson County Assessor	360.385.9105		Stakeholder, Provide Input	Provide private assets at risk within the County.
40.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 dtimmons@cityofpt.us	John Mauro City Manager	360.379.5043		Stakeholder, Authorized Agent for City	Plan Direction, Provide Resources
41.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 dstinson@cityofpt.us	David Faber Mayor	360.379.5047		Mayor, City Council	Advise, Review & Adopt Plan
42.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 crobinson@cityofpt.us	Amy Howard	360.379.5047		Deputy Mayor, City Council	Advise, Review & Adopt Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
43.	City of Port Townsend 250 Madison St Port Townsend, WA 98368	Ben Thomas Position #1	360.379.5047		City Council	Advise, Review & Adopt Plan
44.	City of Port Townsend 250 Madison St Port Townsend, WA 98368	Aislinn Diamanti Position 2	360.379.5047		City Council	Advise, Review & Adopt Plan

45.	City of Port Townsend 250 Madison St Port Townsend, WA 98368	Monica MickHager Position 3	360.379.5047		City Council	Advise, Review & Adopt Plan
46.	City of Port Townsend 250 Madison St Port Townsend, WA 98368	Owen Rowe Position 4	360.379.5047		City Council	Advise, Review & Adopt Plan
47.	City of Port Townsend 250 Madison St Port Townsend, WA 98368	Libby Urner Wennstrom Position 5	360.379.5047		City Council	Advise, Review & Adopt Plan
48.	City of Port Townsend Development Services Department 250 Madison St Port Townsend, WA 98368	Emma Bolin Director	360.390.4048		Steering Committee Member	City Planning; Provide Resources; Review & Critique

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
49.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 tjohnson@cityofpt.us	Tyler Johnson GIS Coordinator	360.390.4062			Provide cartographic support.
50.	Jefferson County – JeffCom 911 81 Elkins Road Port Hadlock, WA 98338 khatton@jcpsn.us	Matt Stewart Director	360.385.3831 x588		Stakeholder	Plan contributor, Review & Critique
51.	Jefferson County Sheriff Department 81 Elkins Road Port Hadlock, WA 98338 jnole@co.jefferson.wa.us	Joe Nole, Sheriff	360.385.3831		Stakeholder	Plan contributor, Review & Critique
52.	Port Ludlow Drainage District P.O. Box 65261 Port Ludlow, WA 98365	Nancy Lockett		Gray & Osborne, Inc – Consulting Engineers	Contractor Engineer, Contact	Hazard Profile & Assessment

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
53.	Jefferson County Fire District No. 2 dba Quilcene Volunteer Fire Department P.O. Box 130 Quilcene, WA quilcenefire@qvfd.org	Melody Bacchus			District Commissioner, Contact	Review & Adopt Plan
54.	Jefferson County Fire District Nbr 4 (JCFD4)	Tim Manly Fire Chief	360-301-4539		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
55.	Jefferson County Public Library District	Cheri Van Hoover Chairperson	360.385.6544		District Trustee	Plan Review & Adopt
56.	Port Townsend School District No. 50 450 Fir St Port Townsend, WA 98368 dengle@ptschools.org	Dr. David Engle Superintendent	360.379.4501		Stakeholder	Plan Review & Recommend Approval
57.	Brinnon School District No. 46 46 Schoolhouse Rd Brinnon, WA 98320 pbeathard@bsd46.org	Patricia Beathard Superintendent	360.796.4646		Stakeholder	Hazard Profile & Assessment, Determine Mitigation Activities, Plan Review
58.	Chimacum School District No. 49 P,O, Box 278, 91 W. Valley Rd Chimacum, WA 98325	Upuli Murray Exec. Asst. & Communications	360.302.5894		District Staff, Contact	Hazard Profile & Assessment, Determine Mitigation

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
59.	Chimacum School District No. 49 P,O, Box 278, 91 W. Valley Rd Chimacum, WA 98325 Art_clarke@csd49.org	Art Clarke, Director of Business & Finance	360.302.5895		Finance Operations	Profile Update, Turn-Around Docs; Plan Review
60.	Queets – Clearwater School District No. 20 146000 Hwy 101	Lyle Pfeifle	360.962.2395 Fax: 360.962.2038		District 1 Commissioner, Contact	Plan Review & Adopt
61.	Quilcene School District No. 48 P.O. Box 40 Quilcene, WA 98376	Mark Gudger Principal	360.765.3363		District Staff, Stakeholder	Hazard Profile & Assessment, Determine Mitigation Activities, Plan Review
62.	Quillayute Valley School District No. 402 P.O. Box 60 411 S Spartan Ave Forks, WA 98331	Shannon Dahlgren	360.374.6262		District 1 Commissioner, Contact	Plan Review & Adopt
63.	Jefferson County Public Utility District 310 Four Corners Road Port Townsend, WA 98368	Mike Bailey	360.385.8367		District Staff, Contact	Hazard Profile & Assessment, Determine Mitigation Activities, Plan Review

Additional Contributors						
64.	City of Port Townsend – Public Works 250 Monroe St Port Townsend, WA 98368 mspears@cityofpt.us	Michael Spears Water Quality Manager Asst Mgr.	360.379-5001		Stakeholder	Coordinate Water System Emergency Plan, Develop Mitigation Activity
65.	Jefferson County – Dept of Public Health	Lara Gaasland-Tatro			Staff - Contact	Provide County Water District Inventory
66.	Jefferson County – Public Works P.O. Box 1220 Port Townsend, WA 98368				Staff - Contact	Provide County Road Damage Figures & Photos due to Landslide
67.	Jefferson County – Public Works P.O. Box 1220 Port Townsend, WA 98368				Staff - Contact	Provide County River Channel Avulsion Research
68.	NAVMAG Indian Island (NMII)	Tim Callister	360-340-2779		Manager – NMII Emergency Management	Coordinating Entity Write-up Editing
69.	Citizen Contributor	Robert Bindschadler (NASA Emeritus Scientist)		Climatologist	Content Contribution	Significant Editing / Consultation re Climate Change
70.	Citizen Contributor	Pat Garrett			Content Contribution	
71.	Citizen Contributor	Deb Stinson			Content Contribution	
72.	Citizen Contributor	Larry Berger			Content Contribution	
73.	Citizen Contributor/DEM Staff	MJ Baker Scott			Content Contribution	
74.	Citizen Contributor	Pete Hubbard			Content Contribution	

75.	Citizen Contributor – North Olympic Peninsula Resource Conservation & Development	Cindy Jayne		Climate Change Preparedness Plan	Content Contribution	Significant Editing / Consultation re Climate Change
76.	Citizen Contributor	Rita Kepner (2016)			Content Contribution	

Jefferson County – City of Port Townsend
All Hazard Mitigation Plan Participants
(Stakeholders)

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
	Natural Hazard Mitigation Plan Steering Committee					
1.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 wbence@co.jefferson.wa.us	Willie Bence Director	360.385.9368		Steering Committee Member	Plan Sponsor; Plan Writer
2.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 jhausdorf@co.jefferson.wa.us	Jacob Hausdorf Director	360.385.9368		Steering Committee Member	Plan Sponsor; Plan Writer
3.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 kkeplinger@co.jefferson.wa.us	Keppie Keplinger Deputy Director	360.385-9368		Steering Committee Member	Plan Sponsor; Plan Writer
4.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 jbethel@co.jefferson.wa.us	John Bethel Volunteer Dept. of Emergency Management			Steering Committee Member	Geologic Hazards, Provide Resources
5.	Jefferson County Dept. of Emergency Management 81 Elkins Road Port Hadlock, WA 98338 lguth@co.jefferson.wa.us	Laura Guth Volunteer Dept. of Emergency Management			Steering Committee Member	Plan Writer, Provide Resources

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
6.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 lbailey@cityofpt.us	Lance Bailey Director Development Services Dept	360.390.4048		Steering Committee Member	Plan Direction, Provide Resources
All Hazard Mitigation Plan Advisory Group						
8.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 24 Seton Road Port Townsend, WA 98368 bblack@ejfr.org	Bret Black Fire Chief	360.385-2626		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
9.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 40 Seton Road Port Townsend, WA 98368 pbrummel@ejfr.org	Pete Brummel Asst Fire Chief	360.385-2626		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
10.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 40 Seton Road Port Townsend, WA 98368 btracer@ejfr.org	Brian Tracer Asst Fire Chief	360.385-2626		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
11.	Jefferson County Fire District Nbr 1 (JCFD1) dba East Jefferson Fire & Rescue (EJFR) 40 Seton Road Port Townsend, WA 98368 Tysseldyke-all@ejfr.org	Terri Ysseldyke-All District Secretary	360.385-2626		Stakeholder, Advisory Grp	Facilitator – Made sure the resolution was done.
12.	Jefferson County Fire District Nbr 2 (JCFD2) Dba Quilcene Volunteer Fire Dept (QVFD) P.O. Box 433 Quilcene, WA 98376 chief@qvfd.org	Tim McKern Fire Chief	360.765.3333		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
13.	Jefferson County Fire District Nbr 3 (JCFD3) dba Port Ludlow Fire - Rescue 7650 Oak Bay Road Port Ludlow, WA 98365 @plfr.org		360.437.2236		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
14.	Jefferson County Fire District Nbr 4 (JCFD4) 272 Schoolhouse Rd P.O. Box 42 Brinnon, WA 98320 tmanly@brinnonfire.org	Tim Manly Fire Chief	360.796.4450		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
15.	Jefferson County Fire District Nbr 5 (JCFD5) dba Discovery Bay Fire and Rescue 12 Bentley Pl. Port Townsend, WA 98368 wkneopfle@dbvfr.org	Willie Kneopfle Fire Chief	360.379.6839		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
16.	Port Townsend Police Department 1925 Blaine St Port Townsend, WA 98368 tolson@cityofpt.us	Tom Olson Chief of Police	360.385.2322		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
17.	City of Port Townsend – Public Works 250 Madison St Port Townsend, WA 98368 sking@cityofpt.us	Steve King Director	360.379.5090		Stakeholder, Advisory Grp **Steering Committee**	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
18.	Jefferson County Public Hospital District #2 824 Sheridan St Port Townsend, WA 98368 hwittington@jeffersonhealthcare.org	Hilary Whittington, Chief Financial Officer	360.385.2200		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
19.	Jefferson County Public Hospital District #2 824 Sheridan St Port Townsend, WA 98368 bhunt@jeffersonhealthcare.org	Bill Hunt, Emergency Manager	360.385.2200		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
20.	Jefferson County Public Hospital District #2 824 Sheridan St Port Townsend, WA 98368 eharland@jeffersonhealthcare.org	Elaina Harland	360.385.2200		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
21.	Jefferson County Public Hospital District #2 824 Sheridan St Port Townsend, WA 98368 mfeeny@jeffersonhealthcare.org	Mary Feeny	360.385.2200		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
22.	Jefferson County Library District 620 Cedar Ave Port Hadlock, WA 98339 mwagner@jclibrary.info	Meredith Wagner Director	360.385.6544		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
23.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 samg@portofpt.com	Sam Gibboney Director	360.385.0656	(Effective 06/01/2016)	Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
24.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 larry@portofpt.com	Larry Crockett Director	360.385.0656	Retired 5/31/2016	Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
25.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 jim@portofpt.com	Jim Pivarnik Deputy Director	360.385.0656	No longer with Port of PT.	Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
26.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 snelson@portofpt.com	Sue Nelson Executive Assistant	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
27.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 eric@portofpt.com	Eric Toews Director of Planning, Properties, and Environment	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
28.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368 greg@portofpt.com	Greg Englin Director of Operations	360.385.0656		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
29.	Port Townsend School District No. 50 450 Fir St Port Townsend, WA 98368 jpolm@ptschools.org	Linda Rosenbury Superintendent of Schools	360.379.4501		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
30.	Port Townsend School District No. 50 450 Fir St Port Townsend, WA 98368 lrosenbury@ptschools.org	Brad Taylor Director of Facilities	360.379.4501		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
31.	Brinnon School District No. 46 46 Schoolhouse Rd Brinnon, WA 98320 pbeathard@bsd46.org	Patricia Beathard Superintendent	360.796-4646		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
32.	Chimacum School District No. 49 P.O. Box 287 Chimacum, WA 98325-0278 @csd49.org	Scott Mauk Superintendent	360.302.5896		Stakeholder, Advisory Grp	Plan Review & Recommend Approval

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
33.	Queets / Clearwater School District No. 20 146000 HWY 101 Forks, WA 98331 scarter@qcsd.wednet.edu	Scott M. Carter Superintendent	360.962.2395		Stakeholder, Advisory Grp	Plan Review & Recommend Approval
34.	Quilcene School District No. 48 P.O. Box 40 Quilcene, WA 98376 wtis@qsd48.org	Wally F. Lis Superintendent	360.765.3363		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
35.	Quillayute Valley School District No. 402 P.O. Box 60 Forks, WA 98331 diana.reaume@qvschools.org	Diana Reaume Superintendent	360.374.6262		Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
37.	Jefferson Transit Authority 63 Four Corners Road Port Townsend, WA 98368 trubert@jeffersontransit.com	Tammi Rubert General Manager	360.385.4777	Opted Out in 2009, 2016.	Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Action, Review Plan
38.	Public Utility District No. 1 of Jefferson County P.O. Box 929 230 Chimacum Road Port Hadlock, WA 98339 kstreett@jeffpud.org	Kevin Streett Director	360.385.5800		Stakeholder, Advisory Grp	Plan Review, Critique, and Recommend Approval
39.	Jefferson County – Dept of Community Development 621 Sheridan St Port Townsend, WA 98368	Stacie Prada Mgr – Long Range Planning	360.379.4450	Elected as county treasurer. Position now vacant. (2016)	Stakeholder, Advisory Grp	Plan Review, Critique, and Recommend Approval
40.	Jefferson County – Dept of Public Works 623 Sheridan St Port Townsend, WA 98368	Joel Peterson Associate Planner	360.385-9160		Stakeholder, Advisory Grp	Plan Review, Critique, and Recommend Approval

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
	Stakeholder – Reviewers - Contributors					
41.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 pmorely@co.jefferson.wa.us	County Administrator	360.385.9500		Stakeholder	Plan Direction, Provide Resources
42.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 pjohnson@co.jefferson.wa.us	Phil Johnson County Commissioner, District 1	360.385.9100		Stakeholder, Review & Approve	Review & Adopt Plan
43.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 dsullivan@co.jefferson.wa.us	David Sullivan County Commissioner, District 2	360.385.9100		Stakeholder, Review & Approve	Review & Adopt Plan
44.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 kkler@co.jefferson.wa.us	Kathleen Kler County Commissioner, District 3	360.385.9100		Stakeholder, Review & Approve	Review & Adopt Plan
45.	Jefferson County 623 Sheridan St Port Townsend, WA 98368 mreinders@co.jefferson.wa.us	Monte Reinders, P.E. Director Jefferson County Public Works	3385.9160	Also, County Engineer	Stakeholder, Contributor	Provide input to the Plan
46.	Jefferson County Dept. of Community Development 621 Sheridan St Port Townsend, WA 98368 dgoldsmith@co.jefferson.wa.us	David Goldsmith Interim Director of DCD	360.379.4450	Preceded Patty Charnas as Interim Director until replacement for Carl Smith found.	Stakeholder	County Planning, Plan Direction, Provide Resources

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
49.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 treasurerstaff@co.jefferson.wa.us	Stacie Prada Jefferson County Treasurer	360.385.9150		Stakeholder, Provide Input	Provide Financial Profile of County; County Assets at risk.
50.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 racarroll@co.jefferson.wa.us	Rose Ann Carroll Jefferson County Auditor	360.385.9121 (Accounting)		Stakeholder, Provide Input	Provide elected officials contacts; political profile of County.
51.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368 jchapman@co.jefferson.wa.us	Jeff Chapman Jefferson County Assessor	360.385.9105		Stakeholder, Provide Input	Provide private assets at risk within the County.
52.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 dtimmons@cityofpt.us	David Timmons City Manager	360.379.5043		Stakeholder, Authorized Agent for City	Plan Direction, Provide Resources
53.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 dstinson@cityofpt.us	Deborah Stinson	360.379.5047		Mayor, City Council	Advise, Review & Adopt Plan
54.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 crobinson@cityofpt.us	Catharine Robinson	360.379.5047		Deputy Mayor, City Council	Advise, Review & Adopt Plan

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
55.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 msandoval@cityofpt.us	Michelle Sandoval	360.379.5047		City Council	Advise, Review & Adopt Plan
56.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 rgray@cityofpt.us	Robert Gray	360.379.5047		City Council	Advise, Review & Adopt Plan
57.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 ahoward@cityofpt.us	Amy Howard	360.379.5047		City Council	Advise, Review & Adopt Plan
58.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 padams@cityofpt.us	Pamela Adams	360.379.5047		City Council	Advise, Review & Adopt Plan
59.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 dfaber@cityofpt.us	David Faber	360.379.5047		City Council	Advise, Review & Adopt Plan
62.	City of Port Townsend Development Services Department 250 Madison St Port Townsend, WA 98368 lbailey@cityofpt.us	Lance Bailey Director	360.390.4048		Steering Committee Member	City Planning; Provide Resources; Review & Critique

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
65.	City of Port Townsend 250 Madison St Port Townsend, WA 98368 tjohnson@cityofpt.us	Tyler Johnson GIS Coordinator	360.390.4062			Provide cartographic support.
66.	Jefferson County – JeffCom 911 81 Elkins Road Port Hadlock, WA 98338 khatton@jcpsn.us	Karl Hattan Director	360.385.3831 x588		Stakeholder	Plan contributor, Review & Critique
67.	Jefferson County Sheriff Department 81 Elkins Road Port Hadlock, WA 98338 dstanko@co.jefferson.wa.us	David Stanko Sheriff	360.385.3831		Stakeholder	Plan contributor, Review & Critique
68.	Jefferson County Sheriff Department 81 Elkins Road Port Hadlock, WA 98338 jnole@co.jefferson.wa.us	Joe Nole Undersheriff	360.385.3831		Stakeholder	Plan contributor, Review & Critique
69.	Port Ludlow Drainage District P.O. Box 65261 Port Ludlow, WA 98365	Nancy Lockett		Gray & Osborne, Inc – Consulting Engineers	Contractor Engineer, Contact	Hazard Profile & Assessment

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
79.	Jefferson County Fire District No. 2 dba Quilcene Volunteer Fire Department P.O. Box 130 Quilcene, WA quilcenefire@qvfd.org	Melody Bacchus			District Commissioner, Contact	Review & Adopt Plan
85.	Jefferson County Fire District Nbr 4 (JCFD4)	Patrick Nicholson Fire Chief (Former)		Chief until 02/2016. Contributed initial updates to profile & hazard survey.	Stakeholder, Advisory Grp	Hazard Profile & Assessment, Determine Mitigation Activities, Review Plan
101.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368	Larry Crockett Director	(360) 385-0656		Stakeholder	Plan Review & Recommend Approval
102.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368	Jim Pivarnik Deputy Director	(360) 385-0656		Stakeholder	Plan Review & Recommend Approval
103.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368	Steve Tucker	(360) 385-0656		Commissioner Position 1	Plan Review & Adopt
104.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368	Brad Clinefelter	(360) 385-0656		Commissioner Position 2	Plan Review & Adopt
105.	Port of Port Townsend 2701 Jefferson St Port Townsend, WA 98368	Peter W. Hanke	(360) 385-0656		Commissioner Position 3	Plan Review & Adopt

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
119.	Brinnon School District No. 46 46 Schoolhouse Rd Brinnon, WA 98320 pbeathard@bsd46.org	Patricia Beathard Superintendent	360.796.4646		Stakeholder	Hazard Profile & Assessment, Determine Mitigation Activities, Plan Review
126.	Chimacum School District No. 49 P.O. Box 278, 91 W. Valley Rd Chimacum, WA 98325	Stephanie McCleary Admin Asst	360.302.5894		District Staff, Contact	Hazard Profile & Assessment, Determine Mitigation

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
						Activities, Plan Review
132.	Chimacum School District No. 49 P.O. Box 278, 91 W. Valley Rd Chimacum, WA 98325 Art_clarke@csd49.org	Art Clarke	360.302.5895		Finance Operations	Profile Update, Turn-Around Docs; Plan Review
134.	Queets – Clearwater School District No. 20 146000 Hwy 101	Lyle Pfeifle	360.962.2395 Fax: 360.962.2038		District 1 Commissioner, Contact	Plan Review & Adopt

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
	Forks, WA 98331					
139.	Quilcene School District No. 48 P.O. Box 40 Quilcene, WA 98376 gstebbins@qsd48.org	Dr. Gary Stebbins Principal	360.765.3363		District Staff, Stakeholder	Hazard Profile & Assessment, Determine Mitigation Activities, Plan Review
146.	Quillayute Valley School District No. 402 P.O. Box 60 411 S Spartan Ave Forks, WA 98331	Val James Giles	360.374.6262		District 1 Commissioner, Contact	Plan Review & Adopt

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
153.	Port of Port Townsend P.O. Box 1180 2701 Jefferson Street Port Townsend, WA 98368	Steve Tucker	360.385.0656		District 1 Commissioner	Plan Review & Adopt
154.	Port of Port Townsend P.O. Box 1180 2701 Jefferson Street Port Townsend, WA 98368	Brad Clinefelter	360.385.0656		District 2 Commissioner	Plan Review & Adopt
155.	Port of Port Townsend P.O. Box 1180 2701 Jefferson Street Port Townsend, WA 98368	Peter W. Hanke	360.385.0656		District 3 Commissioner	Plan Review & Adopt
156.	Jefferson County Public Utility District 310 Four Corners Road Port Townsend, WA 98368	Don McDaniel	360.385.5800		District Staff, Contact	Hazard Profile & Assessment, Determine Mitigation Activities, Plan Review

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
		Additional Contributors				
178.	City of Port Townsend – Public Works 250 Monroe St Port Townsend, WA 98368 ijablonski@cityofpt.us	Ian Jablonski Water Quality Manager Asst Mgr.	360 379-5001		Stakeholder	Coordinate Water System Emergency Plan, Develop Mitigation Activity
179.	Jefferson County – Central Services Dept. P.O. Box 1220 Port Townsend, WA 98368	Doug Noltemier			Staff - Contact	County GIS – Provide Maps
180.	Washington State – Dept of Natural Resources http://www.dnr.wa.gov/contact-us	Dave Christensen			Staff - Contact	Provide County CRS and NFIP Data for the Plan
181.	Jefferson County – Dept of Public Health	Susan Porto			Staff - Contact	Provide County Water District Inventory
182.	Jefferson County – Public Works P.O. Box 1220 Port Townsend, WA 98368 skilmer@co.jefferson.wa.us	Scott Kilmer			Staff - Contact	Provide County Road Damage Figures & Photos due to Landslide
183.	Jefferson County – Public Works P.O. Box 1220 Port Townsend, WA 98368 ssolomon@co.jefferson.wa.us	Shelly Solomon			Staff - Contact	Provide County River Channel Avulsion Research
184.	Jefferson County P.O. Box 1220 Port Townsend, WA 98368	Carl Smith (Retired) Prior County Administrator			Contact	Initiated Natural Hazard Mitigation Plan Project
185.	Citizen	Tom Camfield Author, Publisher			Contact	Provide Photos of Severe Weather
186.	Housing Authority of Kitsap & Jefferson Counties	Roy Sorsby Operations Manager			Contact after absorbing HAJC	Opt Out – No assets owned in Jefferson County
187.	NAVMAG Indian Island (NMII)	Cdr Nicholas Vande Griend			Commanding Officer	Review & Approve Coord Entity Write-up

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
189.	NAVMAG Indian Island (NMII)	Tim Callister			Manager – NMII Emergency Management	Coordinating Entity Write-up Editing
192.	Citizen Contributor	Robert Bindschadler (NASA Emeritus Scientist)		Climatologist	Content Contribution	Significant Editing / Consultation re Climate Change
193.	Citizen Contributor	Pam Clise			Content Contribution	
194.	Citizen Contributor	Dennis Crawford			Content Contribution	
195.	Citizen Contributor	Linda Davis (2016) Solstice Farm			Resilience Strategy Content	
196.	Citizen Contributor – Brinnon Emergency Group	Jacque Hartley			Content Contribution	
197.	Citizen Contributor	Jeffery Hartman			Content Contribution	
198.	Citizen Contributor	Sue Horvath (2016)			Content Contribution	
199.	Citizen Contributor	Pete Hubbard (2016)			Content Contribution	
200.	Citizen Contributor – North Olympic Peninsula Resource Conservation & Development	Cindy Jayne (2016)		Climate Change Preparedness Plan	Content Contribution	Significant Editing / Consultation re Climate Change

Line Nbr	Organization/Email Address	Contact Person & Position	Phone	Notes	Role	Tasks
201.	Citizen Contributor	Rita Kepner (2016)			Content Contribution	
202.	Citizen Contributor	Deborah Stinson			Content Contribution	
203.	Citizen Contributor	Vicki Young			Content Contribution	
204.	Citizen Contributor	Mike Zimmerman (2016)		Retired Park Ranger	Content Contribution	Marrowstone Island Estimate
205.	Washington State Military Department Emergency Management Division MS: TA-20, Building 20 Camp Murray, Washington 98430-5122	Bonnie Walker (2015 – Current) Hazard Mitigation Program Manager			State Review of Jefferson County Plan	Pre-FEMA State review and critique
206.	Washington State Military Department Emergency Management Division MS: TA-20, Building 20 Camp Murray, Washington 98430-5122	Tim Cook (2014-2015) Hazard Mitigation Program Manager			State Review of Jefferson County Plan	PDM Grant Coordination

Appendix C - Endnotes*

*Endnotes & citations have been moved to immediately behind their relevant topic.

Appendix D - Frequently Asked Questions

Frequently Asked Questions

What is natural hazard mitigation?

Natural hazard mitigation is the development and implementation of activities designed to reduce or eliminate losses resulting from natural hazards.

Why develop a natural hazards mitigation strategy?

Developing a mitigation strategy for Jefferson County completes the process of planning that began with the Jefferson County Hazard Identification and Vulnerability Assessment (HIVA). This report serves to establish a foundation for coordination and collaboration among local agencies, jurisdictions, and the citizens of Jefferson County in addition to providing a basis for identifying mitigation strategies and future mitigation projects as a means to assist in meeting the requirements of various federal assistance programs.

The rising cost of responding to and recovering from natural disasters has led to an increased interest in identifying effective ways to reduce the vulnerability to natural hazards and the disasters these hazards can create. Natural hazard mitigation plans assist communities in identifying the hazards that could impact them, determining the vulnerability of the community to these hazards, and identifying mitigation strategies to prevent or reduce the impacts these hazards pose to the community through a coordinated, multi-jurisdictional approach. To encourage such activity, Congress passed the Disaster Mitigation Act of 2000.

The Disaster Mitigation Act of 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. It encourages and rewards local and state pre-disaster planning and promotes sustainability as a strategy for disaster resistance.

To implement the new Disaster Mitigation Act of 2000 requirements, the Code of Federal Regulations (CFR) at 44 CFR Parts 201 and 206, establish planning and funding criteria for state and local governments.

The primary purpose of hazard mitigation is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide. This is accomplished by using a systematic process of learning about the hazards that can affect the community, setting clear goals, identifying appropriate actions, following through with an effective mitigation strategy, and keeping the plan current.

What are the benefits of hazard mitigation?

- ***Save lives and property*** – communities can save lives and reduce property damage from natural hazards through mitigation actions, such as moving families and their homes out of harm's way or by limiting development and/or regulating the type of construction or structures allowed in certain areas.

- ***Reduce vulnerability to future hazards*** – by having a mitigation strategy in place, communities are better prepared to take the proper steps that will permanently reduce the risk of future losses.

- ***Facilitate post-disaster funding*** – by identifying mitigation strategies and projects before the next disaster, Jefferson County communities will be in a better position to obtain post-disaster funding because much of the background work necessary for funding assistance will already be in place.

Who does the natural hazards mitigation plan benefit?

The ***Jefferson County – City of Port Townsend Natural Hazards Mitigation Plan*** was developed, written, and adopted as a multi-jurisdictional natural hazards mitigation plan for the benefit of the incorporated municipalities, various special purpose districts, and the unincorporated rural areas of Jefferson County. It is anticipated that a large number of county special purpose districts will also adopt this plan in order to benefit from future hazard mitigation funding.

The information contained in this plan is applicable countywide and serves to provide the framework for natural hazard mitigation within Jefferson County. Much has already been gained in simply developing this plan and establishing the basic mitigation strategies that have been incorporated into this document. It is hoped that the spirit of inter-jurisdictional cooperation that has begun with this planning effort will continue in the years to come thereby providing further benefits to all jurisdictions and agencies within the county as well as the citizens these jurisdictions and agency serve.

Furthermore, the Plan was developed following the process set forth in the Disaster Mitigation Act of 2000 as well as the requirements of the National Flood Insurance Program Community Rating System. By doing so, it is anticipated that the citizens living in those jurisdictions within Jefferson County that participate in the Community Rating System could possibly further benefit from this plan through an additional decrease in their flood insurance premiums.

What is it going to cost me?

The writing of the ***Jefferson County – City of Port Townsend Natural Hazards Mitigation Plan*** was funded by a combination of a grant from FEMA and matching funds from the City of Port Townsend. There will be some relatively minor costs incurred in staff time to gather the information to go into the Plan for your own district. Costs of the mitigation activities, themselves, belong to those jurisdictions and special districts that initiate them, and are funded as the originating entity deems most appropriate, whether by tax revenues, bonds, grants or loans.

Appendix E - Resources

RESOURCES

General

- Jefferson County – City of Port Townsend Hazard Mitigation Plan, 2009. Available at: http://www.jprephazmitplan.org or at: http://www.jeffcoeoc.org/documents/2009%20Hazard%20Mitigation%20Plan.pdf
- Jefferson County Hazard Identification and Vulnerability Assessment (THIRA), 2011. Available at: http://www.jeffcoeoc.org/documents/Jefferson%20Co%20HIVA%202011.pdf
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- DRAFT Risk Report for Jefferson County, including the City of Port Townsend and the Hoh Tribe, January, 2016. Available at: http://www.jeffcoeoc.org/documents/JeffersonCounty_RiskReport_Final_508.pdf
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- State of Washington RISKMAP Business Plan, 2011. Available at: http://www.ecy.wa.gov/programs/sea/floods/riskmap_pdf/riskmap_business_plan.pdf
- Washington State Natural Hazard Mitigation Plan, Washington Department of Emergency Management, 2014. Available at: http://mil.wa.gov/other-links/enhanced-hazard-mitigation-plan
- *Resources and Best Available Science Guidance*, Washington State Enhanced Hazard Mitigation Plan. Available at: http://mil.wa.gov/uploads/pdf/appendix_7_best_available_science-2014-update.pdf
- Washington State Department of Transportation 2007 – 2026. Available at: http://www.wsdot.wa.gov/NR/rdonlyres/B1E8FB10-D415-4228-817D-9C4BE4569128/0/WTPLinks2.pdf

- FEMA's "Multi-Hazard Identification and Risk Assessment", 1997. Available at: http://www.fema.gov/media-library/assets/documents/7251
- Hazard Mitigation Planning Process, FEMA, Last Updated: 03/2016. Available at: http://www.fema.gov/hazard-mitigation-planning-process
- Institute for Hazard Mitigation Planning and Research, University of Washington. Available at: http://mitigate.be.uw.edu/

Specific – Natural & Technological Hazards

Climate Change

- "Climate Change Preparedness Plan for the North Olympic Peninsula", North Olympic Peninsula Resource Conservation and Development Council and the Washington Department of Commerce, September 2015. Available at: www.noprcd.org
- "City of Port Townsend & Jefferson County 2011 Climate Action Plan", Adopted November 14, 2011. Available at: http://www.co.jefferson.wa.us/commdevelopment/PDFS/Climate_Change/FINAL%20CAP%20%20adopted%2011-14-2011.pdf
- FEMA Climate Change. Available at: http://www.fema.gov/climate-change

Avalanche

- "Northwest Weather and Avalanche Center" - Available at: http://www.nwac.noaa.gov/

Drought

- Washington's Water Supply, Washington Department of Ecology. Available at: http://www.ecy.wa.gov/drought/
- United States Drought Monitor. Available at: http://droughtmonitor.unl.edu/
- National Drought Mitigation Center. Available at: http://drought.unl.edu/Home.aspx
- National Integrated Drought System (NDIS). Available at: https://www.drought.gov/drought/
- NDIS Drought Early Warning System (DEWS). Available at: https://www.drought.gov/drought/dews/pacific-northwest

Earthquake

- *"Washington State Earthquake Hazards*" by Linda Lawrence Noson, Anthony Qamar, and Gerald W. Thorsen, Washington Division of Geology and Earth Resources Information Circular 95, 1988

- *"Cascadia Rising Newsletter No. 1*", by Bob Hamlin, Program Manager, Jefferson County Washington Department of Emergency Management, January 2016. http://www.jeffcoeoc.org/documents/CRZ%20Article%201%20JANUARY%202016.pdf

- *"Cascadia Rising Newsletter No. 2*", by Bob Hamlin, Program Manager, Jefferson County Washington Department of Emergency Management, February 2016. http://www.jeffcoeoc.org/documents/CRZ%202nd%20Edition%20February%202016.pdf

- *"Cascadia Rising Newsletter No. 3*", by Bob Hamlin, Program Manager, Jefferson County Washington Department of Emergency Management, March 2016. http://www.jeffcoeoc.org/documents/CRZ%20%203RD%20Edition%20March%202016.pdf

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- *"Cascadia Rising Newsletter No. 5*", by Bob Hamlin, Program Manager, Jefferson County Washington Department of Emergency Management, May 2016. http://www.jeffcoeoc.org/documents/CRZ%20Article%205%20May%202016.pdf

- *"Cascadia Rising Lessons Learned Summary*", Power Point Presentation by Bob Hamlin, Program Manager, Jefferson County Washington Department of Emergency Management, July 2016. http://www.jeffcoeoc.org/documents/CASCADIA%20SHORT.pptx

- "*Earthquake Risk Assessment*", DRAFT Risk Report for Jefferson County, including the City of Port Townsend and the Hoh Tribe, January, 2016, pp. 9 - 17. Available at: http://www.jeffcoeoc.org/documents/JeffersonCounty_RiskReport_Final_508.pdf

- *"The Really Big One"* by Kathryn Schulz, The New Yorker, July 20, 2015. (Awarded Pulitzer prize in 2016.) Available at: http://www.newyorker.com/magazine/2015/07/20/the-reallybig-one

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Flood

- "Channel Migration Zone Study for the Duckabush, Dosewallips, Big Quilcene, and Little Quilcene Rivers", U.S. Department of the Interior, Bureau of Reclamation, February 2004

- FEMA Digital Q3 Flood Data, Jefferson County

  http://www.ecy.wa.gov/services/gis/data/flood/jefferson.gif

- FEMA National Flood Insurance Program – Community Rating System, "*CRS Coordinator's Manual*", 2002

- "Hydraulic Modeling and Analysis of U.S. Highway 101 Milepost 174 Hoh River Erosion Project",
  Engineered Logjam Bank Protection, Herrera Environmental Consultants for Washington State Department of Transportation, July 2004

- Jefferson County Flood Damage Prevention Ordinance, Ordinance No. 18-1120-95

- "Lower Hoh River Channel Migration Study", Perkins Geosciences for the Hoh Tribe of Indians, June 2004

- Lower Big Qulcene Comprehensive Flood Hazard Plan, Jefferson County Department of Public Works, March 1998

- "Summary Report for the Geomorphic Assessment of the Hoh River in Washington State, U.S. Department of the Interior, Bureau of Reclamation, February 2004

- "*Flood Risk Assessment*", DRAFT Risk Report for Jefferson County, including the City of Port Townsend and the Hoh Tribe, January, 2016, pp. 4 - 8. Available at: http://www.jeffcoeoc.org/documents/JeffersonCounty_RiskReport_Final_508.pdf

- *Flood,* Washington State Enhanced Hazard Mitigation Plan, Washington Department of Emergency Management, Tab 5.6, May 2013. http://mil.wa.gov/uploads/pdf/HAZ-MIT-PLAN/Flood_Hazard_Profile.pdf

Landslide

- Annual Repair Costs Road Repair Necessitated by Landslides in Jefferson County 2015 - 2016, Email from Monte Reinders, Jefferson County Director of Public Works, April 27, 2016

- Deep-seated Landslide Inventory of the West-Central Olympic Peninsula by Wendy J. Gerstel, Washington Division of Geology and Earth Resources, Open File Report 99-2, July 1999

- "Puget Sound Landslides", Washington State Department of Ecology http://www.ecy.wa.gov/programs/sea/landslides/signs/signs.html

- "Slope Stability Map – Jefferson County", Coastal Zone Atlas, Washington Department of Ecology, 1979 http://www.ecy.wa.gov/programs/sea/femaweb/jefferson.htm

- "*Landslide Risk Assessment*", Risk Report for Jefferson County

- "Significant Deep Seated Landslides in Washington 1884 – 2014", http://file.dnr.wa.gov/publications/ger_list_large_landslides.pdf

- "*Landslide Risk Assessment*", DRAFT Risk Report for Jefferson County, including the City of Port Townsend and the Hoh Tribe, January, 2016, pp. 18 - 20. Available at: http://www.jeffcoeoc.org/documents/JeffersonCounty_RiskReport_Final_508.pdf

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- *"The 1962 Columbus Day Windstorm",* Wolf Read, September 16, 2001 http://www.climate.washington.edu/stormking/October1962.html
- *"*Columbus Day Storm, October 12, 1962*",* National Weather Service Portland, Oregon Presentation, NWS PQR on 5 October 2013. ***https://prezi.com/lrr7bpc9coz3/columbus-day-storm-october-121962/***
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Tornado

- *Severe Storm,* Washington State Enhanced Hazard Mitigation Plan, Washington Department of Emergency Management, Tab 5.7, 2014. http://mil.wa.gov/uploads/pdf/HAZ-MIT-

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  Management, Tab 5.5, 2014. Available at: http://mil.wa.gov/uploads/pdf/HAZ-MIT-PLAN/Tsunami_Hazard_Profile.pdf

Volcano

- Pierce County Hazard Identification and Risk Assessment, 2015. Available at: http://www.co.pierce.wa.us/DocumentCenter/View/7032

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Wildland/Forest/Interface Fire

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- State of Washington Department of Natural Resources

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- *Wildland Urban Fire,* Washington State Enhanced Hazard Mitigation Plan, Washington Department of Emergency Management, Tab 5.5, 2014. Available at: http://mil.wa.gov/uploads/pdf/wildland_fire_hazard_profile_2014-update.pdf

Dam Failure

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Terrorism

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Special Districts

City of Port Townsend

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Jefferson County

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Regional

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- FEMA Region X. Available at: http://www.fema.gov/region-x-ak-id-or-wa

Jefferson County - Dam Inventory

Dam Name		Owner Name		State ID	National ID	Year Completed	Hazard Category
River or Stream Name		Impoundment Name		Latitude	Longitude	Sec Twnsfip Range	WRIA ID
Dam Types	Resevoir Purposes	Crest Lengtfi Dam Height	Surface Area	Storage Qty	Max Storage	Max Discharge	Drainage Area
Contractors Cseek Discovery Bay Dam		Disc overy eay Land Co.		JE17-2000	WA02000		J
Contractors Creek		unnamed		48.0470620 deg	122.874695 deg		
RE	R	280 ft	7 ft	10 acre—ft	13 acre ft		565.00 sq mi
Lords Lake East Dam Tr—		Port Townsend City, City Engineer		JEJ7 357	WA00357	J956	JA
Howe Creek		Lords Lake		47.8808330 deg	J22.931498 deg	T28 NR02 W533	J7
RE	S	600 ft	42 ft	560 acres	1480 acre—ft	JBRO acre—ft	J90 cfs	0.50 sq mi
Lords Lake North Dam Tr—		Port Townsend City, City Engineer		JEJ7 243	WA00243	J957	
Howe Creek		Lord s Lake		47.8877300 deg	122.93761 2 deg	728 NR02 W528	
RE	S	165 ft	42 ft	56.0 acres	1480 acre—ft	1850 acre—ft	250 cfs	0.50 sq mi
Miles Sand & Gravel Shine Reservoi r		Miles Sand & GHavel		JEJ7 2049	WA02049	20 J2	3
0 ff—stream		Miles Sand & Gravel Shine Reservoir		47.8647110 deg	J22.745749 deg		J7
RE	Q S	680 ft	24 ft	acres	acre—ft	J6 acre ft	9 cfs	0.03 sq mi
Port Townsend Paper ASB Pond		Port Townsend Paper Company		JEJ7 726	WA00726	J978	2E
0 ffstream		Port Townsend papet ASB Pond		48.0931 24 0 deg	122.805158 deg	73 0 NR01 W5 J 6	
RE	Q		28 ft	31.0 acres	550 acre-ft	615 acre-ft	0 cfs	0.05 sq mi
Wilbe Dam		James M Kelly		JEJ7 J068	WA0J068	J965	3
Tr—Puget Sound		unnamed		47.9301610 deg	J22.734325 deg	T28 NR01 ES07	J7
RE	R	310 ft	J4 ft	5.0 acres	5 acre ft	J4acre ft	J2 cfs	0.00 sq mi

LORDS LAKE RESERVOIR EMERGENCY ACTION PLAN

Jefferson County

Owner: City of Port Townsend

Revised: April 3, 2024

I. GENERAL DESCRIPTION

A. INTRODUCTION

The purpose of this "Emergency Action Plan" is to provide the pipeline supervisor and crew members with information and procedures to follow in the event of an emergency situation or unusual occurrence.

An emergency is defined as any situation which may endanger the structural integrity of the reservoir, human life and downstream property, and demands immediate attention. An unusual occurrence is defined as a situation or condition not normally encountered in the routine operation of the reservoir which may cause damage and require a temporary or permanent deviation from standard operating procedure.

Official Dam Name: Lords Lake Reservoir

Located on: Unnamed tributary to Howe Creek, tributary of Little Quilcene River

Section: 28, 33 **Township:** 28 **Range:** 2W

Dam Owner: City of Port Townsend

Dam Operator: Port Townsend Paper Corporation

Type of Dam: Earthen

North Dam Height: 40’ **Crest Length:** 165’ **Crest Width:** 15’

East Dam Height: 42’ **Crest Length:** 600’ **Crest Width:** 15’

Downstream Flood Path: Unnamed tributary, to Howe Creek, to Little Quilcene River

Downstream Hazard Classification: 1A High downstream hazard potential (>100 homes at risk)

Number of Homes in Floodplain: 144

Downstream Property Description: Over 100 homes and businesses, farms, roads, bridges at Highway 101 and Center Road, and City of Port Townsend water transmission pipeline.

Driving Directions:

From the town of Quilcene, travel approximately 2 miles north on US Highway 101. Turn west on Lords Lake Loop Road and continue for 3.4 miles to a hairpin curve located at the toe of the East Dam. Vehicle access to the East Dam is made by turning left on FS Road 28 (unmarked)and traveling a short distance to the access driveway located on the west side of the road. To access the North Dam, continue north on Lords Lake Loop Road around the hairpin curve and travel approximately 0.5 to the access road located on the west side of the road. Locked gates restrict access to site.

Alternate route to Lords Lake; from US Highway 101, approximately 6 miles north of Quilcene, turn west on Snow Creek Road. Travel 3.4 miles then turn left on Lords Lake Loop Road. In approximately 1.6 miles, the access road to North Dam will be on the right or continue another half mile to the East Dam.

B. NOTIFICATION

In the event of an emergency situation or unusual occurrence, the pipeline superintendent and/or crew member shall immediately notify Port Townsend Paper Corporation, Jefferson County Sheriff Dispatcher, and the City of Port Townsend.

The superintendent and/or crew member shall enter into the Lords Lake monitoring record the following information:

Time and Date:
Name of Person Filing Report:
Subject: (The nature of the emergency or unusual occurrence)
Location: (Where incident occurred)
Names of Persons and Agencies Notified:
Summary: (Briefly describe what occurred)

FAILURE IS IMMINENT OR IN PROGRESS

If a **failure is imminent or in progress**, downstream evacuation of the floodplain must be started immediately in accordance with the following:

1. **Contact Jefferson County Emergency Services and Jefferson County Sheriff Department to assist in notifying persons immediately downstream (see attached list for downstream addresses):**
   - Jefferson County Emergency Services - 360-385-3836 or "911"
   - Jefferson County Sheriff Department - 360-385-3831 or "911"

2. **Contact Port Townsend Paper Corporation;**

   - Pulp Mill Foreman — Mill – 360-379-2196
   - Mill Gate House — Mill - 360-379-2110

3. **Contact City of Port Townsend;**

   - Port Townsend Public Works — Office – 360-379-5096
   - City Administration — Office – 360-385-3000
   - Emergency After Hours Duty Person — Phone - 360-379-4879

4. **State Division of Emergency Management;**
   Clearly state that this is a **"dam safety emergency"**
   - Duty Officer — 24 hour – 800-258-5990

5. Contact State Dam Safety Office during regular office hours;

- Dam Safety Office 360-407-6872

This information shall be conveyed orally and in writing. Once key personnel and agencies have been alerted the following notification sequence shall be put into effect for emergency or unusual occurrence.

- Port Townsend Paper Corporation General Manager - Contact key personnel and agencies listed on the Emergency Action Call Sheet (See attached Emergency Call Sheet)

- Jefferson County Dispatcher - Sheriff Department

- City of Port Townsend Public Works - Contact key personnel on Emergency Action Call Sheet. (See attached Emergency Call Sheet)

- Washington State Patrol, Port Angeles, Washington.

A follow-up report on action taken, pending action and/or disruption of services shall be submitted by Port Townsend Paper Corporation /Port Townsend Public Works to the following state and local agencies.

- State of Washington: Department of Ecology Dam Safety Division

SLOWLY DEVELOPING FAILURE OR UNUSUAL SITUATION

If there is a **slowly developing failure** or **unusual situation**, where failure is not imminent but could occur if no action is taken, the pipeline crew should:

1. **Notify Jefferson County Emergency Services of the potential problem and keep them advised of the situation.**
   - Jefferson County Emergency Services - 360-385-3836 or "911"

2. **Contact Port Townsend Paper Corporation;**

   - Pulp Mill Foreman — Mill – 360-379-2196
   - Mill Gate House — Mill - 360-379-2110

3. **Contact City of Port Townsend;**

   - Port Townsend Public Works — Office – 360-379-5096
   - City Administration — Office – 360-385-3000
   - Emergency After Hours Duty Person — Phone - 360-379-4879

4. **Contact State Dam Safety Office for an evaluation of the dam;**

   - Dam Safety Office — 360-407-6872
   - Gustavo Ordonez — Office - 360-407-6619
Cell - 360-742-7925
gord461@ecy.wa.gov

During these contacts, find out if there are any immediate actions that can be taken to reduce the risk of failure.

If necessary, implement preventative actions described on pages 6-9 of this plan.

If situation deteriorates, be prepared to implement Notification Flowchart on Page 3.

II. EMERGENCY OR UNUSUAL OCCURRENCE

A. FAILURE OR IMPENDING FAILURE OF LORDS LAKE DAMS OR DAM

Downstream Hazard Potential: Failure of the East Dam and/or North Dam at Lords Lake Reservoir could present a hazardous situation to persons and property within the flood plain.

In the event the dams were to fail, downstream evacuation of the floodplain must begin immediately. Procedures are as follows:

1) Contact Jefferson County Sheriff by two-way radio, telephone or any available means.
2) Contact Port Townsend Paper Corporation and the City of Port Townsend Public Works Department.
3) Initiate shutdown procedures for the Big Quilcene River Diversion Dam and the Little Quilcene River Diversion Dam at the intake structures to reduce the possibility of additional flooding through damage to the main pipeline where it junctions with the reservoir below the east dam, and to stop the flow of water entering Lords Lake Reservoir.
4) If possible lower the Lords Lake level by sending water to City Lake.) Make all possible effort to assist the Sheriff's Department in alerting residents in the floodplain.

If the Pipeline Superintendent or Crew Members suspect impending failure, contact the following:

1) Contact the Port Townsend Paper Corporation or designee by two-way radio or telephone and provide as much information as possible to assist him in evaluating the situation and to determine what course of action should be taken to reduce the risk of failure. Receive instructions as to what other actions are required and implement same.
2) City of Port Townsend Public Works Department.
3) Continue monitoring the dam and providing information until the Plant Engineer or designee arrives on scene, then assist him as required.

NOTE: A determination of impending failure should be verified and notification of the Sheriff's Department should be made as soon as possible. It is imperative that all officials fully understand the situation and the questionability of failure.

B. EARTHQUAKE

Lords Lake Reservoir is located in an area subject to earthquakes of a moderate to heavy intensity. An earthquake with a magnitude of 6.5 or greater could cause damage to the East and/or North Dam. The East Dam is rated as the most susceptible to earthquake dam.

In case of an earthquake, take the following action:

1) Conduct a thorough inspection of both dams and the outlet tower. If serious damage has been sustained, immediately expedite the procedures for (Section 2A) Failure or Impending Failure of the East Dam.
2) If either dam has sustained visible damage but are still intact, report the following information to the Port Townsend Paper Corporation and City of Port Townsend as soon as possible:

a. Note the reservoir level. Briefly describe location, type and degree of damage. If surface fissures and/or slides are evident, note their location on the dam and indicate whether or not slides have subsided. Note any evidence of new springs, seeps or mire, weather conditions, unusual sounds, and other observations that may be of use in determining the extent of damage and likelihood of failure.

b. Take seepage measurements at all monitoring points. Continue taking seepage measurements, monitoring damaged areas and report any changes. Inspect entire facility and report findings. Note any turbidity in seepage.

c. If damaged areas appear to stabilize and there is no imminent danger of dam failure, take piezometer readings at all stations of both dams every 8 hours for at least 48 hours, reporting any changes or fluctuations. Be certain to report any aftershocks which may occur and whether or not they compound the situation.

3) If no danger is apparent at the time of the earthquake, continue inspection and monitoring procedures since structural damage may not always surface immediately. Secondary inspections should continue for a minimum of two weeks after all seismic activity has ceased.

NOTE: Once conditions at the dam have stabilized, an inspection of the entire Olympic Water Gravity System should be completed as soon as possible.

C. FLOODING

The possibility of flooding exists. However, due to the relatively low volume of inflow normally experienced at the reservoir throughout the year, the likelihood of flooding is minimal. The spillway located on the North Dam flows into the Little Quilcene River via Howe Creek. This overflow and drainage system is adequate to handle run-off occurring from weather patterns typical of this area.

Were a situation to develop causing the reservoir to rise above the normal surface elevation of 920 ft., the following procedures shall be initiated and reported to Port Townsend Paper Corporation General Manager or designee and City of Port Townsend.

1) Immediately shutdown the intake structure of the Little Quilcene River Diversion Dam which flows into the reservoir.

a. Note past, present and predicted weather conditions.

b. Note surface elevation of reservoir at time of shutdown.

c. Check spillway and drainage conditions at the North Dam.

d. Monitor rise rate of water surface.

e. Inspect both dams for signs of failure.

2) Initiate shutdown procedures for the Big Quilcene River Diversion Dam to reduce the possibility of additional flooding through damage to the main pipeline where it junctions with the reservoir below the east dam.

3) If possible, divert water from Lords Lake to City Lake.

4) Continue monitoring the facility until conditions stabilize.

5) If conditions continue to deteriorate, expedite procedures for (Section 2A) - Failure or impending failure of the East Dam.

D. EROSION, SLUMPING OR CRACKING OF THE DAM

1) Inspect damaged area and report the following:

a. Location and size of area affected (Note distance from top of dam).

b. Severity.

c. If discharge is evident, estimate the amount and whether discharge is clear or cloudy water.

d. Level of reservoir.

2) Contact Port Townsend Paper Corporation and City of Port Townsend, report findings, and await instructions.

E. NEW SPRINGS, SEEPS, BOGGY AREAS, SANDBOILS OR INCREASED DRAINAGE

1) Inspect the area and report the following:

a. Location and size of area affected.

b. If discharge is evident estimate the amount and whether discharge is clear or cloudy water.

c. Level of reservoir.

2) Contact Port Townsend Paper Corporation and City of Port Townsend, report findings, and await instructions.

F. LANDSLIDE

The west side of the reservoir and the area around the spillway at the north dam are areas of concern because of the steep, high mountainous terrain bordering them. Landslides in these areas could rapidly displace a large volume of water, creating wave activity and pressure capable of endangering the structural integrity of either dam.

1) If evidence of a landslide is apparent report the following information to Port Townsend Paper Corporation and City of Port Townsend:

a. Determine size and possible cause of landslide.

b. Probability of other slides or additional movement due to instability.

c. Inspect dams and outlet tower for signs of damage.

d. Level of reservoir.

e. Shut down the Little Quilcene River Diversion Dam intake structure.

The probability of a landslide occurring downstream of the dam is minimal. However, were one to occur follow the action outline in (1a), and (1b) above.

G. SEVERE STORMS

Lords Lake Reservoir is located in an area subject to severe storms. During these storms access to the reservoir can be limited because of road blockage resulting from fallen powerlines and trees.

As soon as possible, inspect the reservoir and Little Quilcene River Diversion Dam for possible damage. Note condition of access roads and report findings to Port Townsend Paper Corporation.

H. VANDALISM

Once it has been established that damage has been done to the reservoir complex through breaking, entering, or other acts of vandalism:

1) Immediately notify Jefferson County Sheriff's Office, Port Hadlock, Washington and await the arrival of a deputy.

2) Effect temporary/permanent repairs as required upon completion of investigation.

Report findings to Port Townsend Paper Corporation and the City of Port Townsend.

III. INUNDATION MAP

Inundation maps outlining the area which would be affected by dam failure have been prepared and distributed by the City of Port Townsend to all residents living in the Little Quilcene River floodplain. (See appendix)

The following is an abbreviated list of structures and populated areas within the floodplain.

- Scattered farms and homes along the Little Quilcene River.
- County and private roads along the Little Quilcene River.
- Portions of State Highway 101.
- Northern border of Quilcene, WA.
- East Quilcene.
- Olympic Gravity Water System transmission line.

In the event of dam failure, water would reach State Highway 101, the northern border of Quilcene, and East Quilcene in approximately 12-15 minutes.

IV. ATTENDANCE AND COMMUNICATIONS PROCEDURES

Port Townsend Paper Corporation employs a full-time pipeline superintendent and two full time crew members.

The pipeline supervisor resides at City Lake and is responsible for the maintenance and operation of the Olympic Water Gravity System which includes Lords Lake Reservoir. One crew member resides at the Big Quilcene River Diversion Dam and the other lives near Quilcene. All are on call 24 hours a day.

Communication for the pipeline crew is by cellular telephone and landline telephone at City Lake.

Port Townsend Paper Corporation is contacted by phone.

Refer to the Emergency Call Sheet (page 12) for phone numbers and methods of communications for the above personnel, offices, and departments.

V. WARNING SYSTEM

There are two phases which makeup the Lords Lake Reservoir Warning System:

Phase 1 - Impending Danger of Dam Failure.
Phase 2 - Dam Failure

It is the responsibility of the pipeline supervisor and crew members to identify emergency or unusual situations at the reservoir, analyze the severity of the

situation, explore all possible avenues to prevent dam failure, and initiate the notification procedures outlined in this plan.

It is the responsibility of key personnel listed in the notification procedure to notify affected local and state authorities to evacuate the floodplain.

Port Townsend Paper Corporation General Manager or designee is responsible for initiating Phase 1 and Phase 2 messages. Phase 1 message is released if there is a possibility of failure and floodplain evacuation preparations are in order. Phase 2 message is released if dam failure is imminent or in progress. Actual evacuation of the floodplain should begin immediately.

There is no audible warning system for Lords Lake Reservoir.

VI. CONSTRUCTION EQUIPMENT, MATERIALS, LABOR, AND ENGINEERING EXPERTISE

Every effort will be put forth to prevent dam failure after an emergency or unusual occurrence has been detected.

Heavy equipment is not available at the reservoir. Port Townsend Paper Corporation would contact Port Townsend Public Works Water Resources Manager, Jefferson County Road Superintendent, Port Townsend, Washington, private contractors and/or the U.S. Forest Service Office, Quilcene, Washington to arrange for necessary equipment, materials and labor.

Engineering expertise is furnished by Port Townsend Paper Corporation and Port Townsend Public Works Department.

VII. REVIEW OF EMERGENCY ACTION PLAN

Development of this Emergency Action Plan has been discussed with all key players in local, county and state agencies. Copies of this plan were furnished to these agencies requesting each to provide any input that would aid in assuring development of a viable emergency action plan.

Significant changes to this plan should be submitted and agreed upon by the above mentioned agencies prior to incorporating said changes into the plan.

VIII EMERGENCY CALL SHEET

Please refer to attachment (Page 12-13).

EMERGENCY CALL SHEET

PORT TOWNSEND PAPER CORPORATION

Pipeline Superintendent	Cell – 360-301-3363
Pipeline Crew Member	Cell – 360-301-6457
Pipeline Crew Member	Cell – 909-518-7880
Pulp Mill Foreman	Mill – 360-379-2196
Mill Gate House	Mill - 360-379-2110

CITY OF PORT TOWNSEND

Public Works Manager – Steve King	Office – 360-379-5090 Cell - 360-531-1631 sking@cityofpt.us
Water Resources Manager – Michael Spears	Office – 360-379-5001 Cell - 360-381-5091 Home - 360-774-2908 mspears@cityofpt.us
Port Townsend Public Works	Office – 360-379-5096
City Administration	Office – 360-385-3000
Emergency After Hours Duty Person (5pm-8am (M-F), Weekends & Holidays	Cell - 360-381-5084

JEFFERSON COUNTY

Sheriff's Department	Office – 360-385-3831 or "911"
Quilcene Fire Department	Office – 360-765-3333 or "911"
East Jefferson Fire Department	Office – 360-385-2626 or "911"
Jefferson County Emergency Services	Office – 360-385-3836 or "911"

Road Superintendent – Dale Brownfield	Cell – 360-301-0078
Jefferson County Maintenance Compound, Quilcene (For Heavy Equipment)	Office – 360-765-3699
Area Road Foreman – Rick Bancroft	Cell – 360-302-0029
U.S. FOREST SERVICE	
Quilcene Ranger Station	Office – 360-765-2200
WASHINGTON STATE PATROL	
Port Angeles	Office – 360-452-3394
SETON CONSTRUCTION (HEAVY EQUIPMENT)	Office – 360-385-0213
WASHINGTON STATE DEPARTMENT OF ECOLOGY	
Dam Safety Office (regular business hours)	360-407-6872
Dam Safety Office (after hours emergencies)	360-972-4426
Dam Safety Supervisor	Office - 360-407-6603 Cell - 360-972-4426
Geotechnical Engineer – Gustavo Ordonez	Office - 360-407-6619 Cell - 360-742-7925 gus.ordonez@ecy.wa.gov
WASHINGTON STATE EMERGENCY MANAGEMENT	
Clearly state that this is a **"dam safety emergency"**	
Duty Officer	24 hour – 800-258-5990

LORDS LAKE RESERVOIR WARNING MESSAGE

Phase 1 - Impending Danger of Dam Failure

Date:_____Time: _____

This is_____(Name and Title) with Port Townsend Paper Corporation in_____. I have a warning message for you regarding impending danger of dam failure at Lords Lake Reservoir, affecting Jefferson County. It is advised that persons living within the Little Quilcene River floodplain be notified of impending danger of dam failure. Preparations should begin immediately for possible evacuation.
The pipeline crew have discovered: (Brief description of problem.)

_____
_____
_____
_____

All attempts to resolve the situation are in progress. Further information regarding the stability of the dam will be issued.
Information Update: (Crews are onsite - description of progress.)

_____
_____
_____
_____

For additional information please contact _____
_____.

Phase 1 Cancellation: Floodplain is out of danger.

Evacuation is no longer necessary.

_____

Signature and Title
Port Townsend Paper Corp.

Phase 2 - Dam Failure

Date: _____ Time: _____

This is _____ with Port Townsend Paper Corporation in _____. Dam failure is imminent/the dam has failed, and it is imperative that evacuation of the Little Quilcene River floodplain begin immediately. Life threatening flooding will extend throughout the entire floodplain. Seek the nearest high ground.

For additional information please contact _____ _____.

_____

Signature and Title
Port Townsend Paper Corp.

Approval of the Plan

The undersigned persons have reviewed this Emergency Action plan and concur with
sed notification procedures.

Dam Own er: Deceased Owner Public works, city of Port Townsend

Dam Operator: Yvonne Starkey, Port Townsend Paper Corp

Local Emergency Services: R. Y "" "

Dam Safety Office: Chuck

is

DEPARTMENT OF
ECOLOGY
State of Washington

Wildfire Impacts on Dams

Please read, then insert into the Emergency Action Plan (EAP) for your dam.

Emergency Level 1 - Non-emergency, unusual event; needs response to reduce risk or likelihood of a Level 2 incident

- Incident: **Wildfire at the dam or in the upstream watershed**.
  Responses:
  - Inspect and assess damage to dam, spillways, and appurtenant facilities.
  - Assess whether access to the dam may be vulnerable to blockage by debris flows.
  - Assess whether spillways may be vulnerable to blockage by debris flows or by floating debris in the reservoir.
  - Assess increased hydrologic risk. Watershed assessment by a qualified engineer or engineering hydrologist. See Burned Watershed guidance from the Dam Safety Office at https://ecology.wa.gov/Water-Shorelines/Water-supply/Dams/Emergency-planning-response/Risk-analysis-planning
  - Determine access routes and procedures for safe access to the dam during adverse conditions, and communications procedures to activate the EAP.

- Incident: **Forecast for rain** in the vicinity of the dam or upstream watershed.
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Flash Flood Watch** (not Warning) issued by National Weather Service for the vicinity of the dam or upstream watershed.
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Actual rain** in the vicinity of the dam or upstream watershed.
  Responses:
  - Observe rnnoff and spillway performance, be prepared to respond.

Emergency Level 2 - potential failure situation; needs timely response to reduce risk or likelihood of a dam failure

- Incident: **Forecast for heavy rain** in the vicinity of the dam or upstream watershed . .
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Flash Flood Warning** issued by National Weather Service for the vicinity of the dam or upstream watershed.
  Responses:
  - Observe for actual rainfall, be prepared to respond.

- Incident: **Heavy rain or thunderstorm** in the vicinity of the dam or upstream watershed.
  Responses:
  - Observe runoff and spillway performance, be prepared to respond.

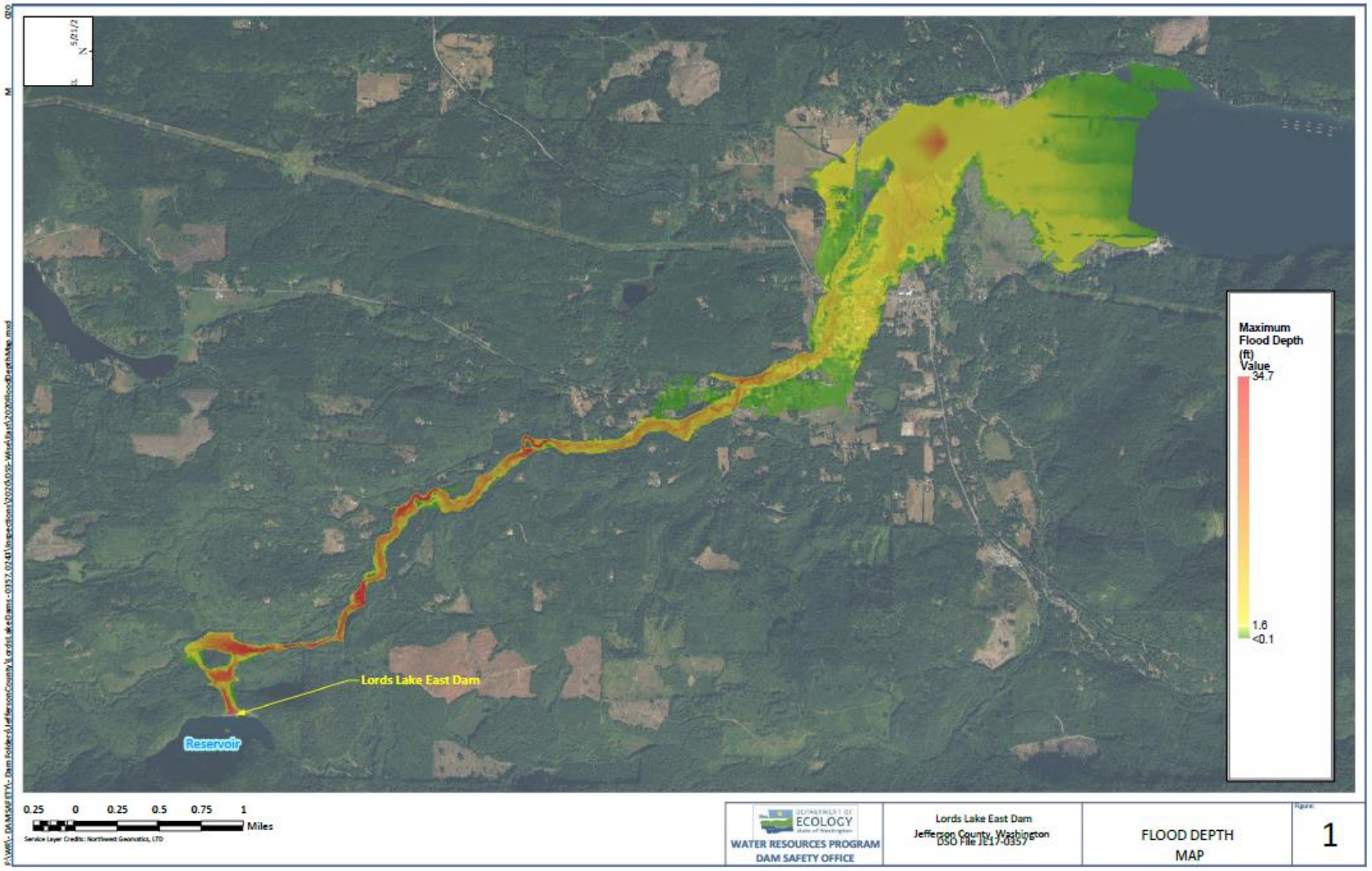
Publication No. 15-11-015 July 2015

Wildfire Impacts on Dams (con't)

Emergency Level 3 - urgent; dam failure is imminent

- Incident: Spillway begins to erode
  Response:
  - Follow Level 3 protocol in your EAP.

- Incident: Dam overtopping
  Response:
  - Follow Level 3 protocol in your EAP.

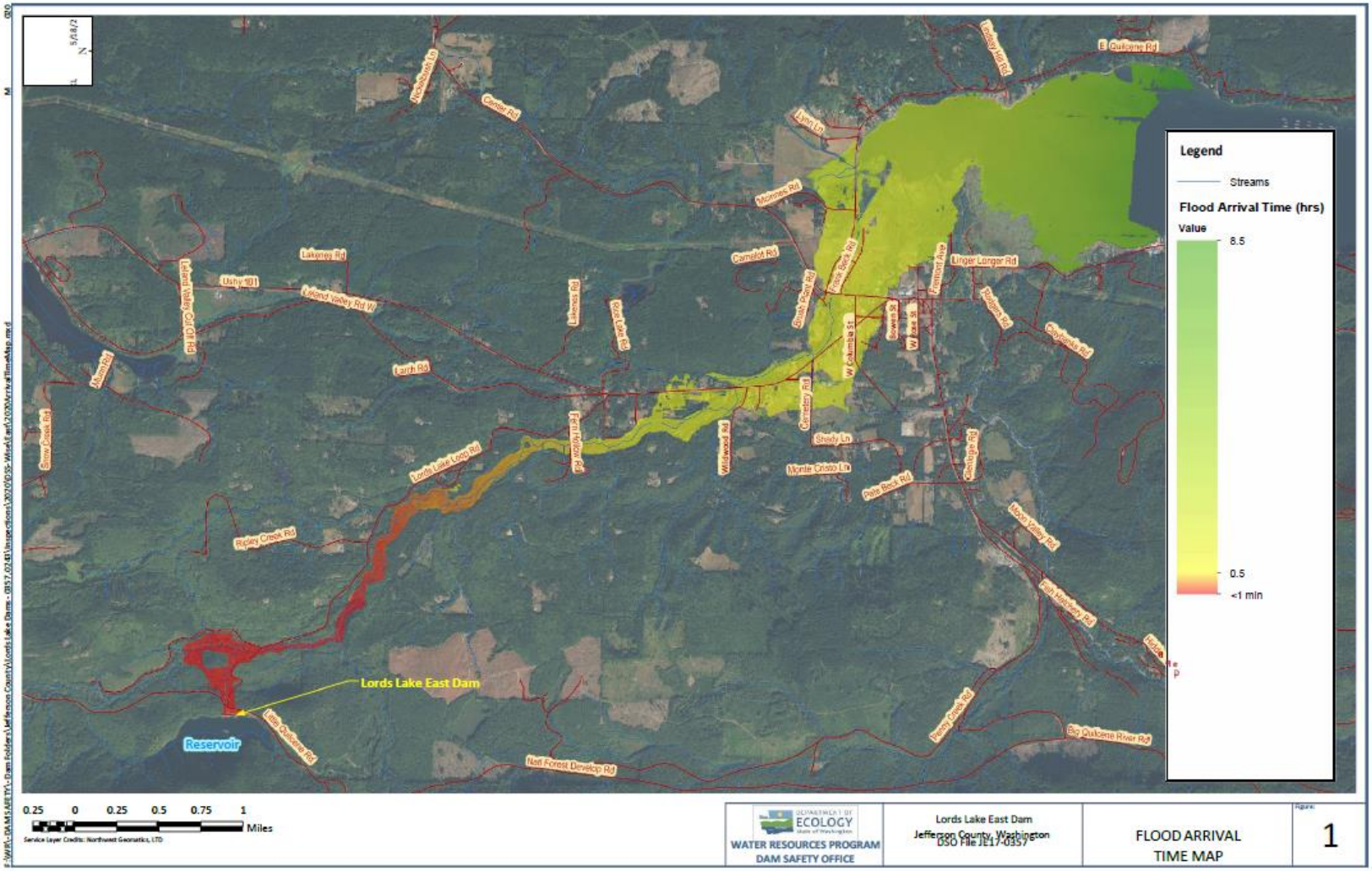


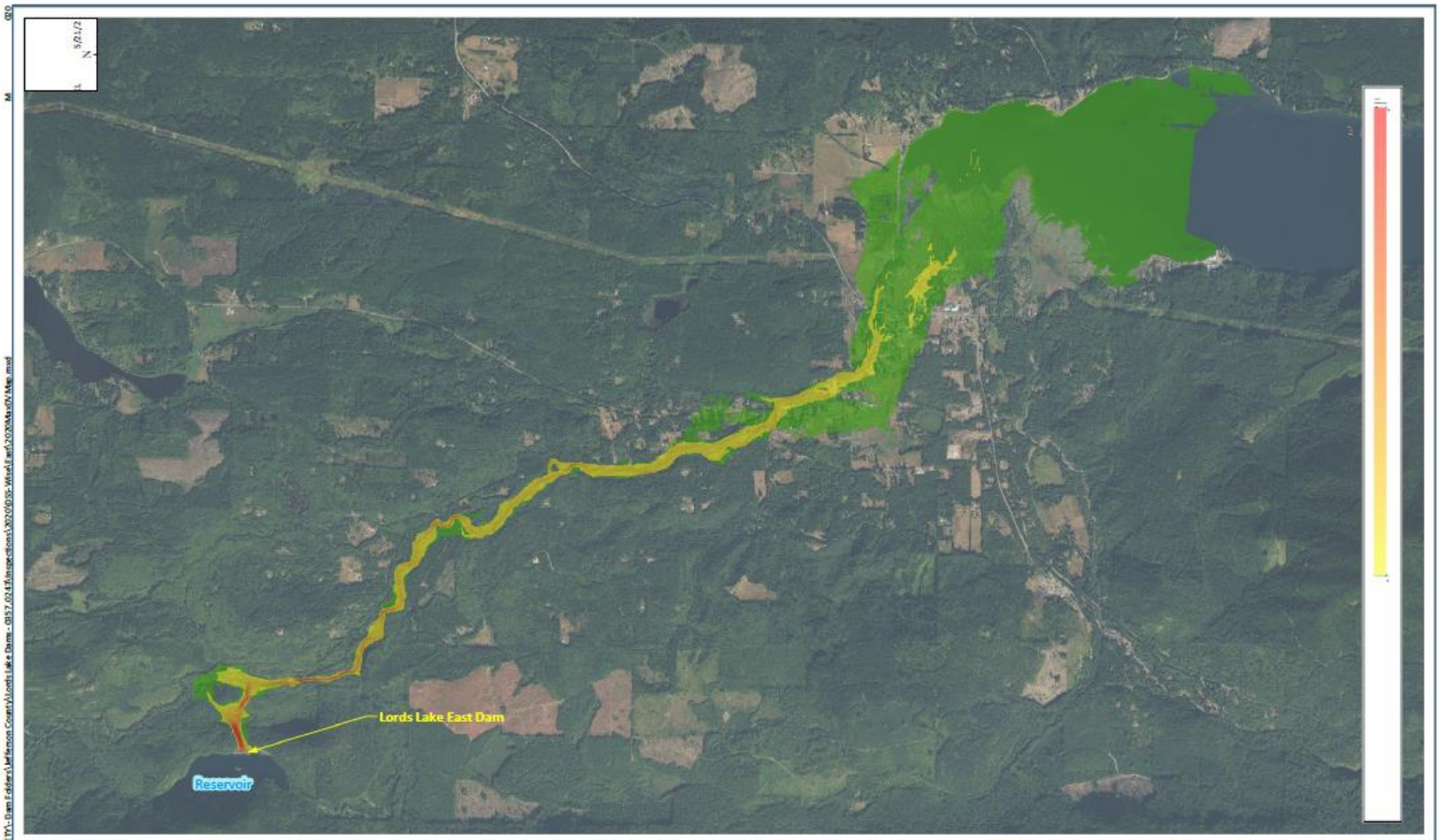
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357

FLOOD DEPTH MAP

Figure: 1


Legend
Streams
Flood Arrival Time (hrs)
Value
8.5
0.5
<1 min
Lords Lake East Dam
Reservoir
Lakeway Rd
Ushy 101
Leland Valley Rd W
Larch Rd
Lords Lake Loop Rd
Ripley Creek Rd
Monroes Rd
Camelot Rd
Linger Longer Rd
E Quilcene Rd
Big Quilcene River Rd
Nat Forest Develop Rd
Monte Cristo Ln
Pete Rock Rd
Shady Ln
Moore Valley Rd
0.25 0 0.25 0.5 0.75 1
Miles
Service Layer Credits: Northwest Geomatics, LTD
DEPARTMENT OF ECOLOGY
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE
Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357
FLOOD ARRIVAL TIME MAP
Figure:
1

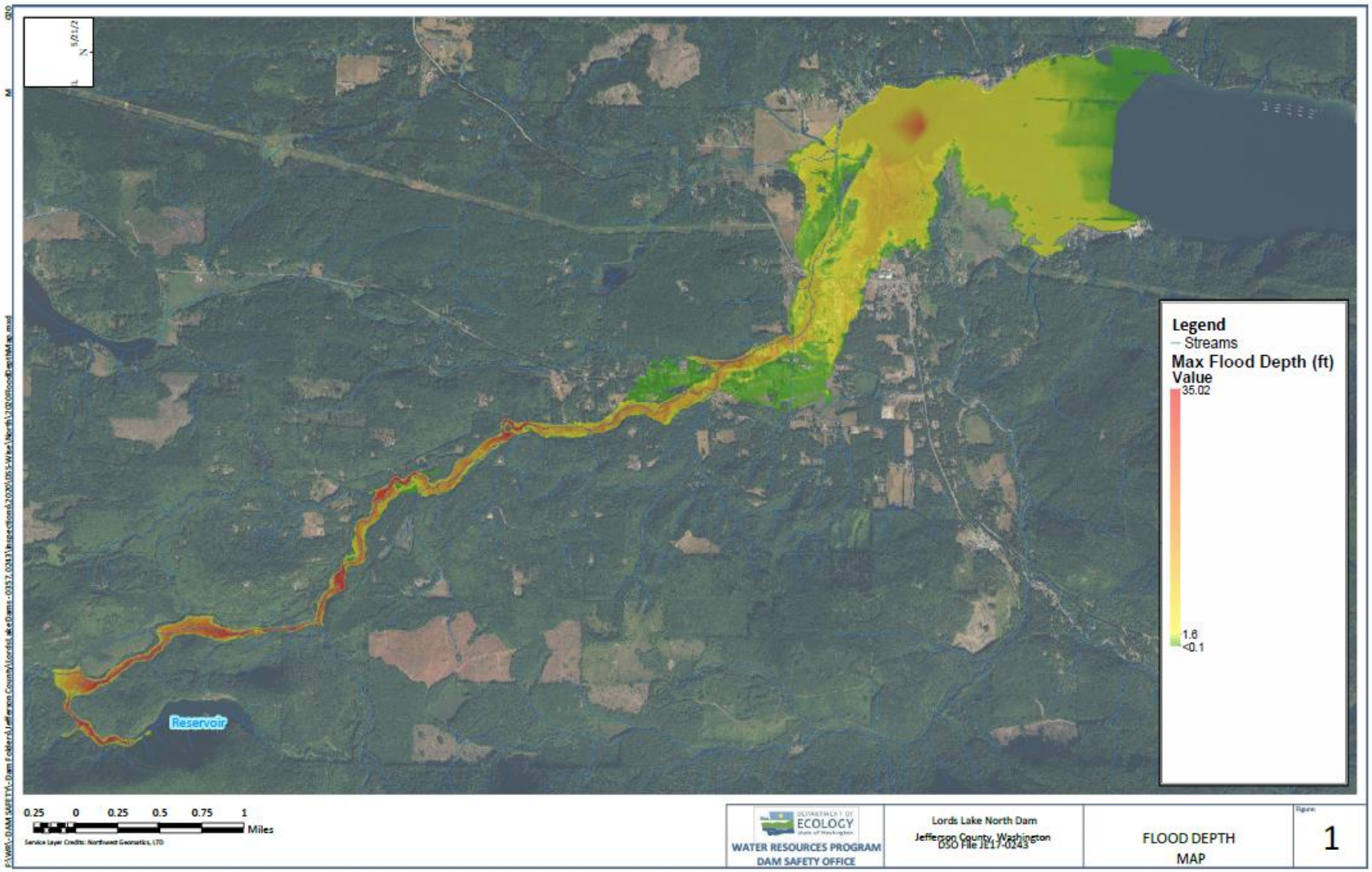


DEPARTMENT OF ECOLOGY
State of Washington
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

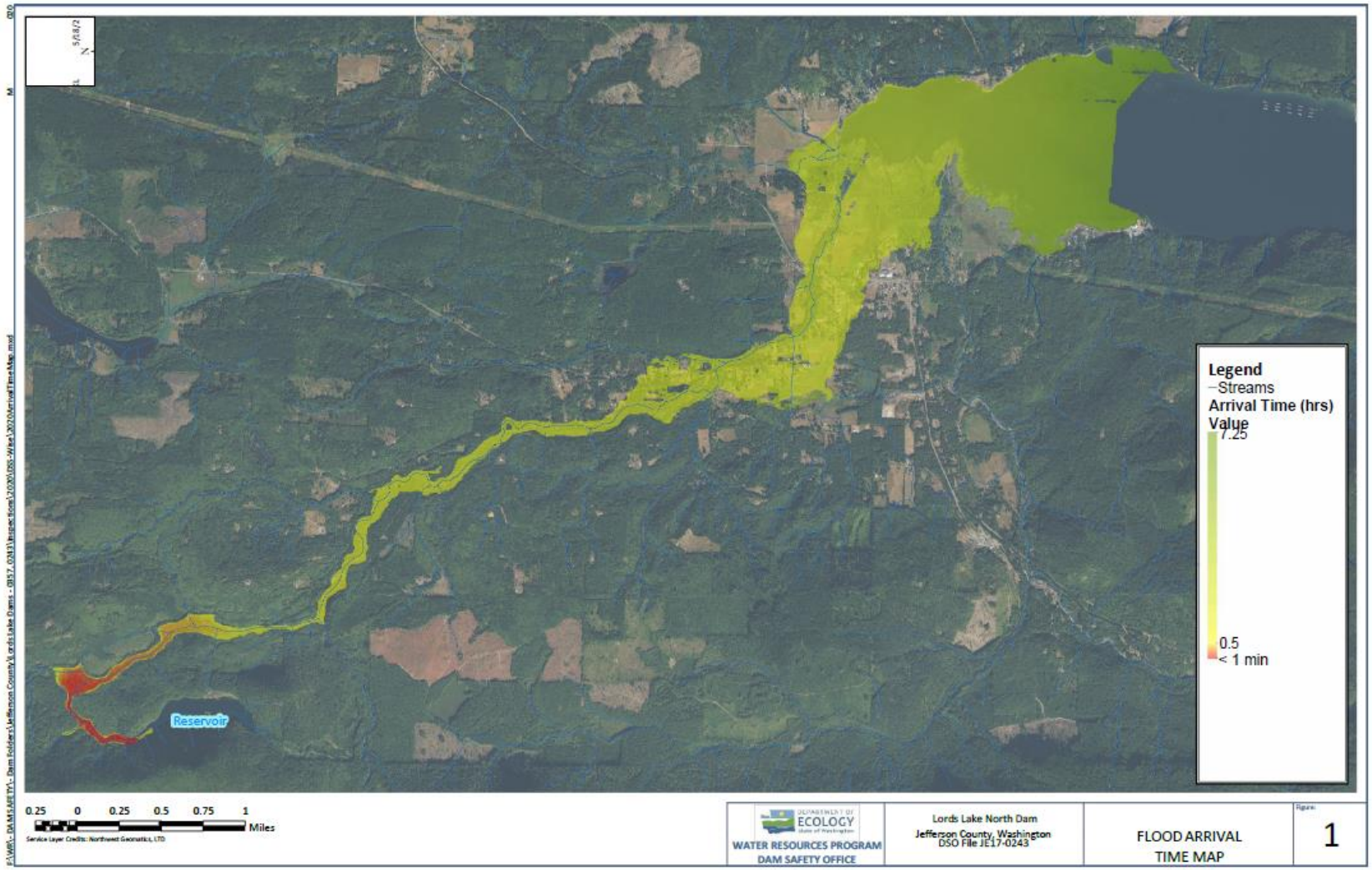
Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357

MAXIMUM DEPTH x
MAXIMUM VELOCITY MAP

Figure
1



WATER RESOURCES PROGRAM DAM SAFETY OFFICE	Lords Lake North Dam Jefferson County, Washington DSO File JE17-0243	FLOOD DEPTH MAP	Figure: 1

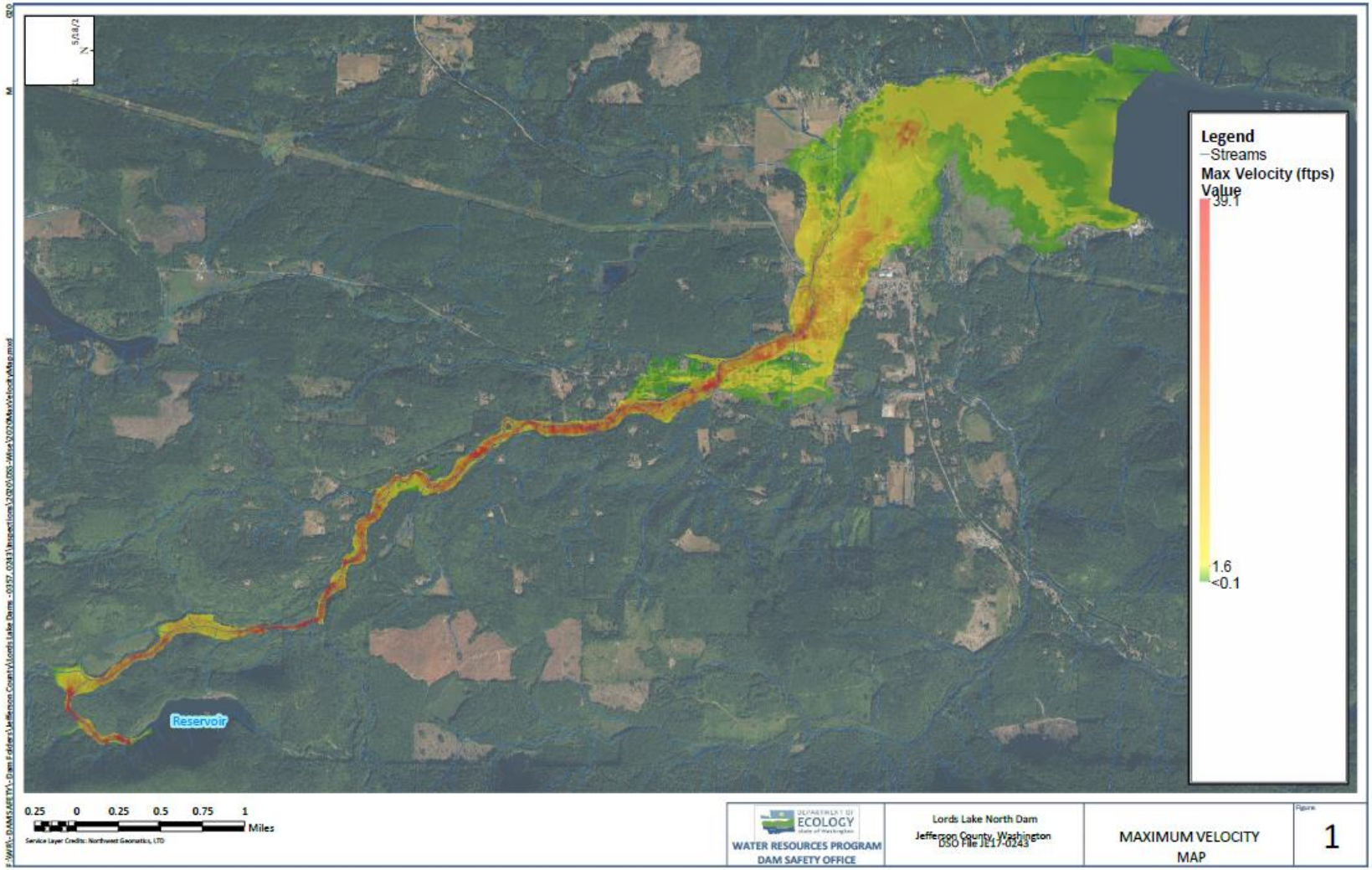


WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake North Dam
Jefferson County, Washington
DSO File JE17-0243

FLOOD ARRIVAL TIME MAP

Figure: 1

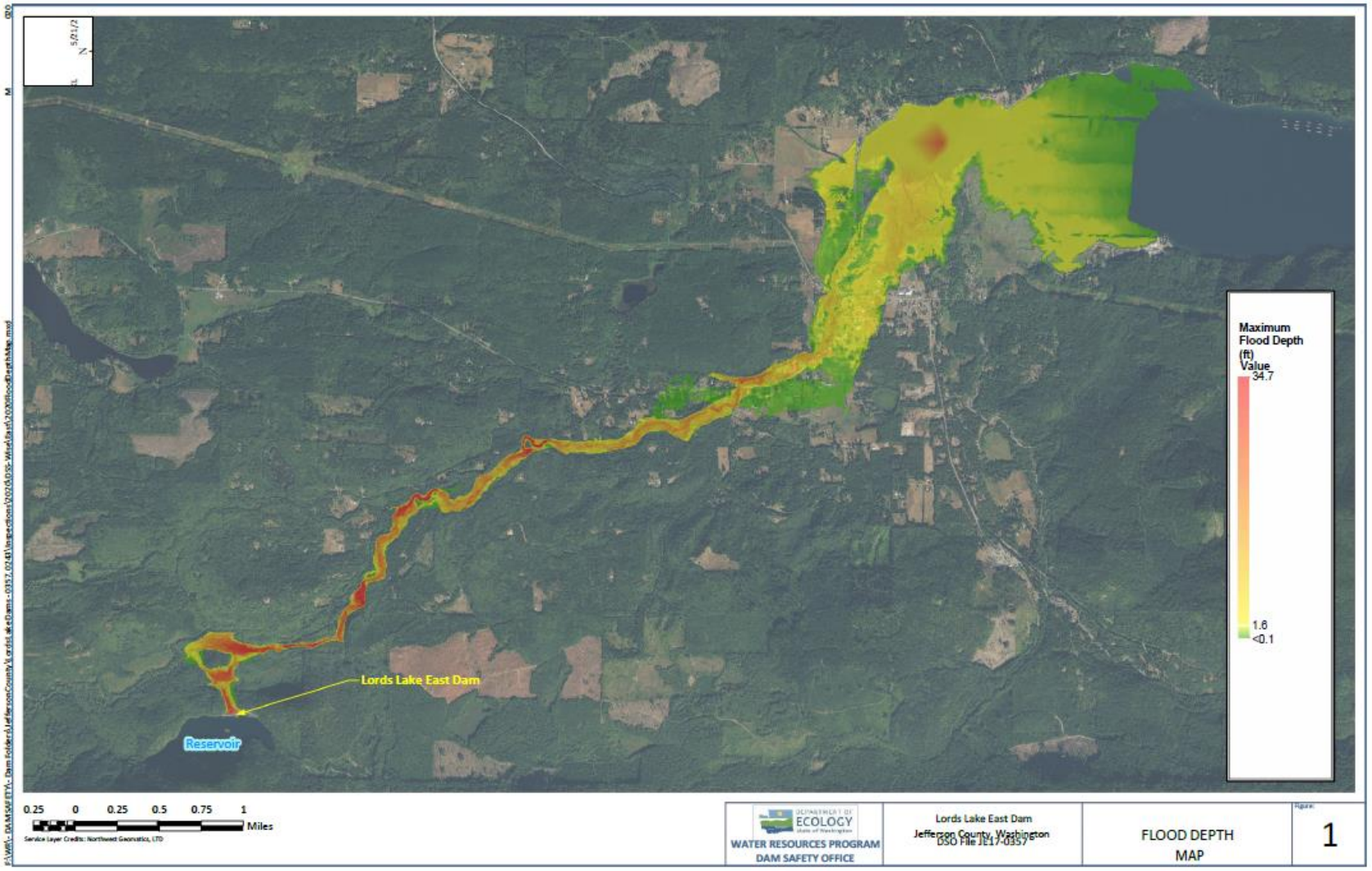


DEPARTMENT OF ECOLOGY
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake North Dam
Jefferson County, Washington
DSO File JE17-0243

MAXIMUM VELOCITY MAP

Figure 1

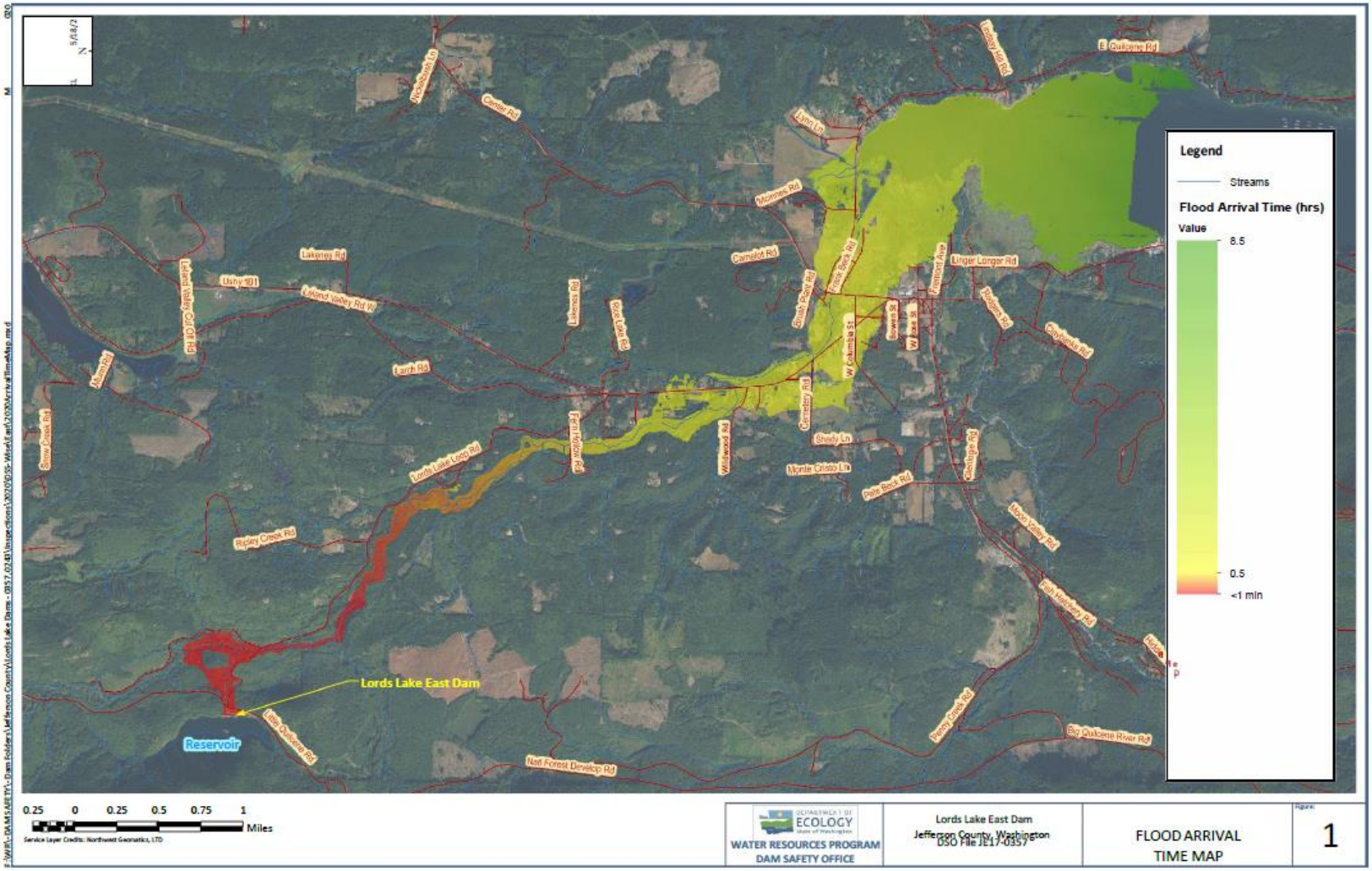


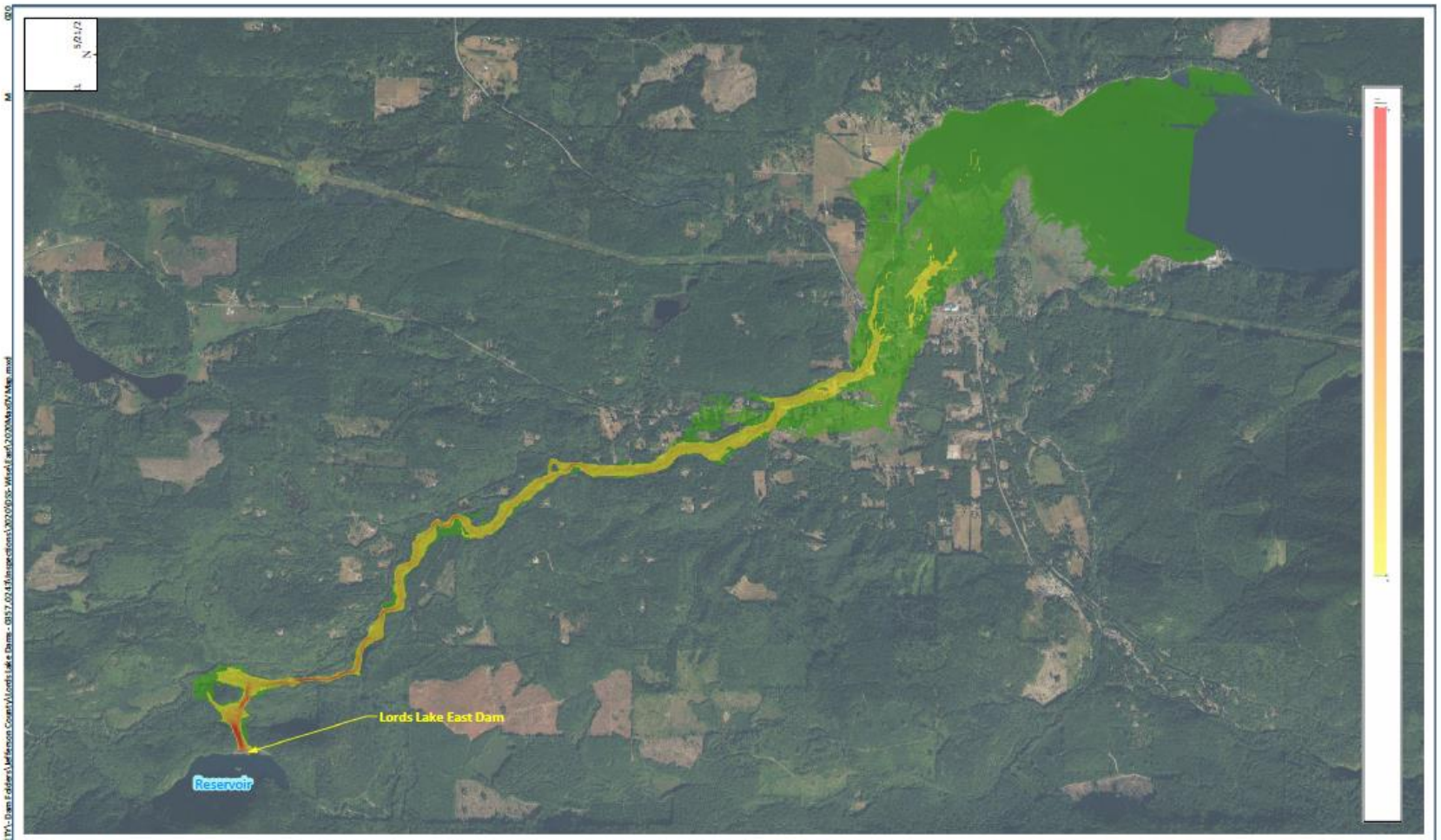
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357

FLOOD DEPTH MAP

Figure: 1


Legend
Streams
Flood Arrival Time (hrs)
Value
8.5
0.5
<1 min
Lords Lake East Dam
Reservoir
Lakeway Rd
Ushy 101
Leland Valley Rd W
Larch Rd
Lords Lake Loop Rd
Ripley Creek Rd
Monroes Rd
Camelot Rd
Linger Longer Rd
E Quilcene Rd
Big Quilcene River Rd
Nat Forest Develop Rd
Monte Cristo Ln
Pete Rock Rd
Shady Ln
Moore Valley Rd
0.25 0 0.25 0.5 0.75 1
Miles
Service Layer Credits: Northwest Geomatics, LTD
DEPARTMENT OF ECOLOGY
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE
Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357
FLOOD ARRIVAL TIME MAP
Figure:
1

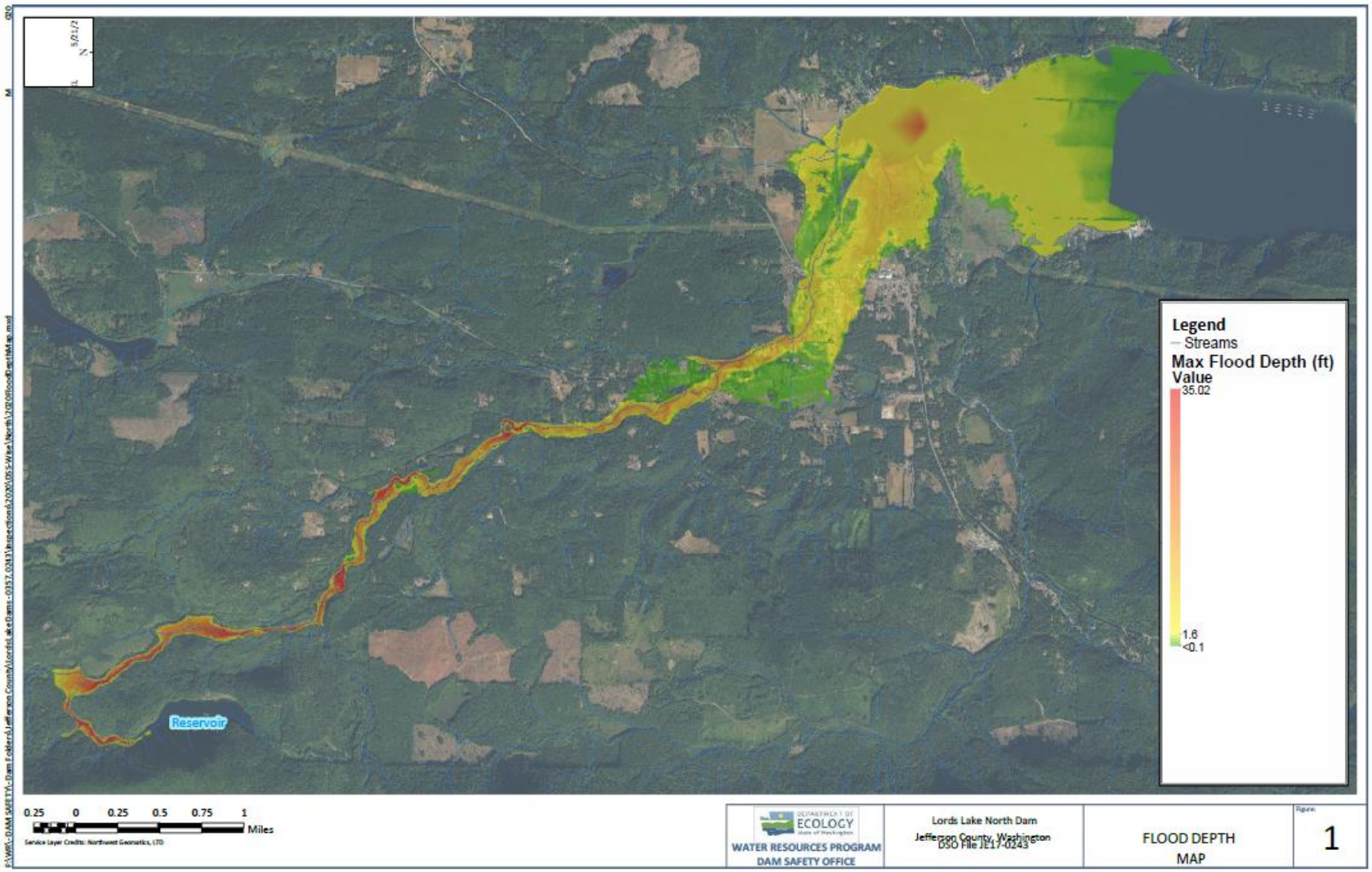


DEPARTMENT OF ECOLOGY
State of Washington
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

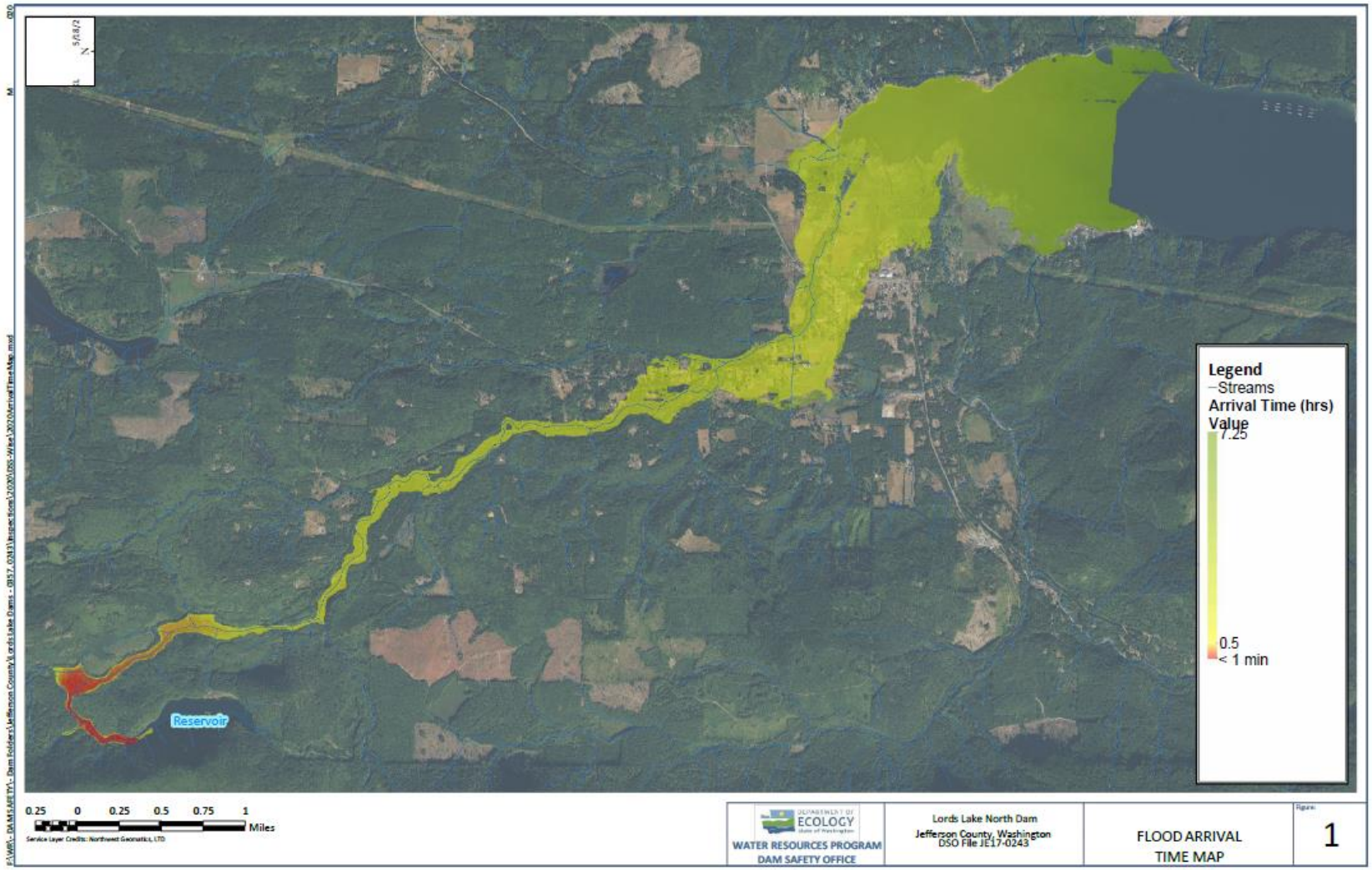
Lords Lake East Dam
Jefferson County, Washington
DSO File JE17-0357

MAXIMUM DEPTH x
MAXIMUM VELOCITY MAP

Figure
1



WATER RESOURCES PROGRAM DAM SAFETY OFFICE	Lords Lake North Dam Jefferson County, Washington DSO File JE17-0243	FLOOD DEPTH MAP	Figure: 1

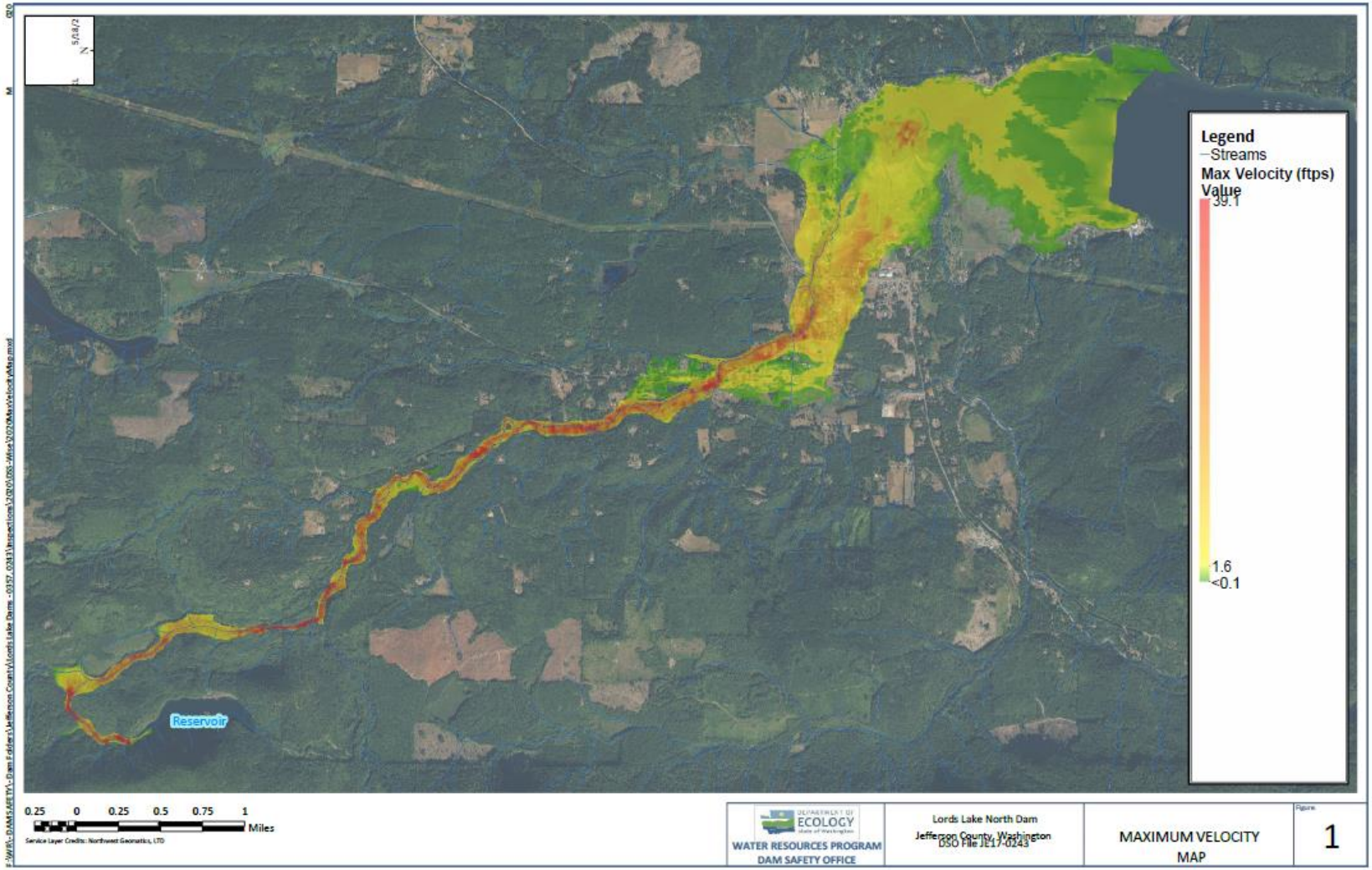


WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake North Dam
Jefferson County, Washington
DSO File JE17-0243

FLOOD ARRIVAL TIME MAP

Figure: 1



DEPARTMENT OF ECOLOGY
WATER RESOURCES PROGRAM
DAM SAFETY OFFICE

Lords Lake North Dam
Jefferson County, Washington
DSO File JE17-0243

MAXIMUM VELOCITY MAP

Figure 1

COMMUNITY FEEDBACK RESPONSES

https://www.co.jefferson.wa.us/DocumentCenter/View/3318/2016-Hazard-Mitigation-Plan?bidId=
Pg 385
CITIZEN SUGGESTIONS & ANALYTICAL REPORTS RECOMMENDED MITIGATION STRATEGIES AND PROJECTS The following list is a compilation of comments and suggestions made by various stakeholders, interested parties, and the public regarding possible mitigation strategies and projects. Those that start with an asterisk (*) are known to be underway, regardless of whether the idea came from the public or was internally generated. The following mitigation strategies and/or projects have been suggested by various stakeholders and citizens as part of the plan development process. Some may be in conflict with existing policies and procedures; others may be viable but lack funding. All will be looked at to see if and how they can fit into a comprehensive mitigation effort. Some of these strategies and/or projects are currently funded, on-going programs within many of the participating communities. However, funding for some of these strategies and/or projects is currently very limited; for many of these strategies and/or projects, local funding is simply not available at this time. Funding for the majority of these mitigation strategies and/or projects is heavily dependent upon local entities receiving future federal and/or state hazard mitigation grant funding. The organization of the ideas are by hazard in the same order as the hazards were presented in Section II, Multijurisdictional Hazard Identification. This is followed by excerpts from two reports that were developed to assess the vulnerability of Jefferson County and its inhabitants, and to assess the Olympic Peninsula's climate situation and propose how to adapt to changing conditions.
They are: 1. FEMA, WADNR, WAECY, RiskMAP, and Resilienceaction Partners, Risk Report for Jefferson County, including the City of Port Townsend and the Hoh Tribe (Risk Report), January 2016. Available at:
http://www.jeffcoeoc.org/documents/JeffersonCounty_RiskReport_Final_508.pdf 2. Petersen, S., Bell, J., Miller, I., Jayne, C., Dean, K., Fougerat, M., 2015. Climate Change Preparedness Plan for the North Olympic Peninsula. (NOPRCD Report) A Project of the North Olympic Peninsula Resource Conservation & Development Council and the Washington Department of Commerce, funded by the Environmental Protection Agency. Available at: www.noprcd.org
Sections of the Risk Report that specifically address mitigation efforts in this Plan have been excerpted and added to suggested strategies for review by the various jurisdictions impacted. Mitigation strategies (30 pages) presented in the NOPRCD report are included by reference.
Jefferson County – City of Port Townsend All Hazard Mitigation Plan (Rev. 2016) Vs. 5 389 September 2016 CITIZEN SUGGESTED MITIGATION STRATEGIES ALL NATURAL HAZARDS: • *Preserve open space (e.g. Jefferson Land Trust; public acquisition) • Building to current code • *Cooperative efforts to obtain funding • *Encourage the implementation of a variety of public education programs to better inform the public about natural hazards • *Preparedness plans • Prepare 72 hour kits in advance • *Include block watch and CERT members in communities • Provide NOAA Weather Radios to high risk areas • Provide NOAA Weather Radios to CERT Teams • *Seattle TV alert systems should cover Jefferson County too • *Better public information over cable, scanners, TV • *Improve communications among first responders • *Educate the public about the "AHAB" capabilities • Maintain current technology • Early Warning Systems • Spanish & Russian Emergency Alert messages • Provide back-up generators for all critical facilities • *Codes, regulations and ordinances • Create a database to coordinate resources (volunteers with skills, farmers, etc.) during a local or regional disaster. (rev. 2016) AVALANCHE: • Avalanche is not a major concern in Jefferson County's populated areas. • Avalanche risk in Jefferson County is limited to the confines of the Olympic National Park, which is Federal jurisdiction. DROUGHT: • Much of the drought mitigation goals coincide

with fire mitigation goals. • Conservation and assistance for private water districts in replenishing tanks were discussed. It is very expensive to replenish the private water districts tanks after they have been drained for fire. Perhaps a payback system could be established? • *Work with Port Townsend Paper on water consumption policies for drought. Jefferson County – City of Port Townsend All Hazard Mitigation Plan (Rev. 2016) Vs. 5 390 September 2016 EARTHQUAKE: Jefferson County is located in seismic zone 3 as determined by the Uniform Building Code. Damage and loss due to earthquake was experienced as recently as the 2001 Nisqually earthquake when Port Ludlow Fire Station 3-2 was split in half. • Build to current seismic code (and/or improve current seismic code) • *Educate the public by providing maps and liquefaction information. • *Retrofit (rev. 2009) • Secure hot water tanks and other non-structural mitigation • *Upgrade buildings • Utility company retrofits (water, communications, gas, etc.) • *Infrastructure retrofit • Bladders in unused reservoir for emergency water supply. • Geodesic Dome to cover the unused reservoir and make it pass State requirements • Unused Reservoir is plumbed for a tank which could be installed in it for storage of emergency water supplies. • Rotate food stores at schools for use as emergency kitchens. • Underground the power lines that cross escape routes from Blue Heron Elementary School (rev. 2016). • Seismically retrofit KPTZ (2016) FIRE: • *Fire Wise Program (Washington State University Learning Center; Port Townsend Fire Dept; Jefferson County Fire Districts) • Fire breaks • Update building codes in high risk areas • Public Education (recreational vs. refuse burning, smart building, etc.) • Youth Education (Fire Safety House) • *Fire Works enforcement • *Burn Ban education • Educate the public regarding the fact that local fire districts need to be equipped and trained to fight wildland fire. A red card is needed and that requires 36 hours of additional training. • It is not a matter of “if” but rather a matter of “when” a wildland fire will occur. • Enforce codes regarding propane tank placement. FLOOD: A significant portion of Jefferson County’s economic base is located within the 100-year floodplain. In addition, portions of the County are located within a designated floodway or are located in a coastal high-hazard V zone. • *Follow or establish better codes and ordinances (such as: building code, zoning code and critical areas ordinances) (Rev. 2009) • *Make code and ordinances more available to the public (i.e.: post on the internet and improve newspaper notices to include the title and/or purpose of the code and/or ordinance) • Educate the public about codes and ordinances • *Government efforts to inform the public need to be improved (Rev. 2009) Jefferson County – City of Port Townsend All Hazard Mitigation Plan (Rev. 2016) Vs. 5 391 September 2016 • *Open space preservation • Acquisition of flood prone properties (Rev. 2009) • Restrict building in flood prone areas • *Provide evacuation routes and education • Elevate structures • *Flood proof structures • *Educate the public about flood risk and flood insurance • Real Estate Disclosure • *Shelters • Maintaining and expanding current programs (CRS activities, etc.) (Rev. 2009) • *Red Cross relations • *Evacuation plans • *Flood structure projects (i.e.: engineered logjams, etc.) • Dredging (nearly impossible and expensive as we would have to maintain after the first time) • Promote projects which reduce constriction to flood waters - especially transportation system barriersand prohibit projects which add to restriction. • Provide 100-year flood protection for all water treatment facilities within the floodplain • Provide 100-year flood protection for all of the wastewater facilities within the floodplain • Develop and implement a variety of flood control projects designed to reduce peak flow rates of the Hoh River during flood events LAND MOVEMENT: Portions of Jefferson County are prone to landslide due to steep slopes, soil erosion, fractured rock faces, etc. Landslides occur with some frequency during winter storms, resulting in temporary road closures. • Reduce or eliminate development in slide prone areas • *Move roads and/or improve roadside drainage • Surface water management • Educate the public • *Critical Areas Ordinance enforcement • Land acquisition in slide prone areas • Denial is a big issue. • *Notification of Road Closures need to improve • *Blockage plan • Increase building set-back requirements from known unstable slopes and alluvial fans • River Plans where rivers and roads parallel and are frequently flooded • Engineered logjams and rip rap to armor banks against erosion SEVERE STORMS: Jefferson

County is located in a borderline high wind area. The design wind speed for Jefferson County is 80 mph. Some portions of Jefferson County are located in exposure B (1997 UBC) areas where some protection from winds is provided by forests and hills. Other portions of the County are in exposure C areas where there is little or no protection from high wind. • Build to Snow Load code • Wind Code • *Educate the public with Damage Reduction Programs (i.e.: cut trees back) Jefferson County – City of Port Townsend All Hazard Mitigation Plan (Rev. 2016) Vs. 5 392 September 2016 • Open space preservation • Retrofit • Tie-Downs TSUNAMI: • Additional AHAB Units to provide better coverage. (rev. 2009) • *Early Warning. (Nixle, media) (rev. 2016) • *Education – work with Marine Science Center on public outreach. (rev. 2009) • *Evacuation Routes VOLCANIC EVENT: • Relocate • *Early warning • *Public Education • *Use AHAB for volcanic events. (rev. 2009) • *Use Nixle for volcanic events (rev. 2016) WILDFIRE – FOREST / URBAN INTERFACE: • Brush Reduction Program • Defensible Landscaping (rev. 2009) • Fire Hazard Atlas for Housing Developments in the County • *Volunteer Firefighter Recruitment in the County • Emergency Call Trees at Homeowners Associations • *Firewise Education (rev. 2009) • *Evacuation Routes PORT TOWNSEND WATER SYSTEM (2016): Selected mitigation strategies from the NOPRCD Report that interested citizens felt could be added to the Port Townsend Water System section of the Port Townsend profile1 : • CI-16: Use homeowner outreach to encourage relocation outside floodplains • CI-17: Encourage relocation of infrastructure outside of coastal flood zone • E-5: Increase regional capacity for water storage (preferable with natural systems) • E-23: Develop a funding program appropriate for acquisition of high-risk structures in coastal or riverine flood zones • WS-1: Enhance education on drought and water supplies issues for the peninsula • WS-2: Adopt new regulations requiring water-efficient appliances • WS-3: Promote and incentivize smart irrigation technologies for agriculture • WS-12: Develop or increase incentives for low-water use landscaping • WS-13: Adjust rate structure for water use to incentivize conservation where needed • WS-14: Develop code and infrastructure for a municipal reclaimed water system • WS-15: Enhance residential water conservation through incentives and outreach Jefferson County – City of Port Townsend All Hazard Mitigation Plan (Rev. 2016) Vs. 5 393 September 2016 MARROWSTONE ISLAND (2016): • Rebuild Marrowstone Island Fire Station since it will be cut off from the mainland after a major earthquake event. (2016) • Staff Marrowstone Island Fire Station (rev. 2016) • Marrowstone Island Store is at a low spot on the island and will likely be lost in a tsunami. (2016) • Need to have emergency food on the island or a Plan for getting it there or a Plan for evacuation. (2016) • Mudslides will cut off Marrowstone for weeks; need a Plan for emergency shelter and food. (2016) • Fort Flagler could have large numbers of tourists during a catastrophic event. Estimated at 1,200 – 1,500 by a retired Park Ranger (2016) • *Seismically retrofit or replace bridge to Marrowstone Island (2016)

Tsunami siren

Tsunami warning siren

Tsunami siren near the marina to alert residents of earthquake and possible tsunami and/or flooding.

What is the desired mitigation project or activity you wish to see?

Planning for longer-term interruption of water and sanitary sewer infrastructure following a seismic event such as a CSZ earthquake or tsunami.

Risk = Probability X Impact (or Magnitude - Mitigation/Response Capacity) A CSZ event is unknown but anticipated, with much discussion of a timeline (See note 1.) So for this exercise can we assume a CSZ (M7, 8 or 9) is a magnitude 2.5 or 3?

Mitigation efforts in the current plan focus on seismic upgrades to save lives. There is little about strengthening shoreline wastewater treatment (WWTPs) facilities in the current plan. A large quake is also likely to compromise the 14,500 onsite sewer systems (OSS).

The March 2011 Christchurch, New Zealand quake shows that the destruction of a mere 5% of an urban sewer system can leave the majority of households without service for months and

years. By their very nature, end-of pipe-facilities - WWTPs and OSS - lack resilience. Moreover, such interruption of service will be particularly difficult for already-stressed residents used to flushing away their excreta.
Jefferson County Emergency Management promotes the twin bucket emergency toilet for household preparedness. Many households in neighborhoods where NPREP is active are prepared to manage their own urine and feces for the first-month post-incident. Continuing to equip households with this knowledge (plus a few items in an emergency toilet kit) allows professional emergency response teams to focus on the distribution of potable water, which will be a challenge in Port Townsend and other dry areas of the County.

People without drinking water can die within the week. People without sewerage can stave off disease for a month or more by practicing what is known as container-based sanitation (CBA) incorporating urine separation (see note 2).

The local nonprofit PHLUSH (Public Hygiene Lets Us Stay Human) collaborated with DEM in proposing household sanitation preparedness. I'm one of the volunteers who helped develop the tri-folds that explain the twin bucket toilet system to neighborhoods served both by WWTP and OSS. PHLUSH is also concerned about the lack of longer-term solutions for interruptions in toilet service. Can the WWTP risk language in the current plan (p. 441) be expanded? It can include not only earthquakes and floods, but also the impacts of sea-level rise, wind-driven high tide storm surges, or a cyber attack (See note 3.) that may disable the Port Townsend WWTP.

One feasible model for expanding local response capacity is a neighborhood system piloted by the Kailash EcoVillage in inner SE Portland, Oregon. The system has been operating successfully for a decade and it is now permitted by the City and State under ANSI/IAPMO/ICC WE Stand code. Neighbors bring their buckets to a thermophilic composting treatment center. Solids (feces + carbon substrate materials) are composted to a temperature of 140º+F for several days. Urine is treated in large totes for six months. Both final treated products are used on the eco-village gardens or on the landscape surrounding single-family homes of participants who do not live in the village apartment complex. (See note 4).

Beyond its legality, a key feature of the Kailash treatment facility is its ability to survive a serious earthquake. Constructed of non-mortared cement blocks covered with corrugated metal coverings; at worst, it will topple when shaken and can be quickly reconstructed.

At the request of the city official in charge of the Portland Neighborhood Emergency Teams (NETs), PHLUSH was asked to recommend approaches to planning for longer-term toilet systems. Unlike end-of-pipe systems, decentralized waterless systems need to meet a variety of criteria. These include the number of users, types of available materials, the feasibility of container-based aerobic or anaerobic treatment, water-table locations, vertical separation guidelines, proximity to shoreline, topography, geology, soil quality, and the potential for the disposal or reuse of post-treatment materials. To this effect, we developed a Disaster Sanitation Planning Guide, to be used by emergency managers and neighborhood teams. The facilitation guide lays out a series of steps and is accompanied by a 20-page Disaster Sanitation Resource List. (See note 5).

The project I propose for the 2022 update of the All-Hazard Mitigation Plan would ask DEM to:
A. Conduct awareness campaigns that engage the public in positive, effective, and empowering ways to address the overlapping threats of climate change, cyber terrorism, impaired infrastructure, and interruption of government services.

B. Convene a session for selected officials to reflect on water and sanitation disaster scenarios and their impact.
C. Assess - with partner Jefferson County agencies and the County Board of Health - the feasibility of prototyping and pilot projects to develop ecological sanitation technologies that meet WE Stand or other code and are appropriate for local conditions.
D. Advocate at the State level for decentralized technologies for greywater reuse, rainwater harvesting, and dry toilet systems.

Thank you for your consideration. Should you have questions, I'm happy to clarify.

Note 1. The first two highly readable works state the anticipation, informing both specialists and laypeople. The second two refer to new releases by the Department of Natural Resources stating “Experts estimate a 10-17% chance of a Cascadia mega-quake in the next 50 years.”

https://pubs.er.usgs.gov/publication/pp1707 The orphan tsunami of 1700—Japanese clues to a parent earthquake in North America. Brian F. Atwater, Satoko Musumi-Rokkaku, Kenji Satake, Yoshinobu Tsuji, Kazue Ueda, and David K. Yamaguchi. USGS Professional Paper 1707 Prepared in cooperation with the Geological Survey of Japan (National Institute of Advanced Industrial Science and Technology), the University of Tokyo, and the University of Washington. By: Brian F. Atwater, Satoko Musumi-Rokkaku, Kenji Satake, Yoshinobu Tsuji, Kazue

https://www.newyorker.com/magazine/2015/07/20/the-really-big-one The Really Big One
An earthquake will destroy a sizable portion of the coastal Northwest. The question is when. Kathryn Schulz. The New Yorker. July 13, 2015. The New Yorker does its fact-checking and the author interviews former FEMA Region 10 head.

https://twitter.com/waDNR/status/1483927299892256777 “A new DNR study details tsunami impacts of a magnitude 9.0 earthquake - The Big One - to the Olympic Peninsula. Experts estimate a 10-17% chance of a Cascadia mega-quake in the next 50 years.” Official Tweet from @waDNR January 19, 2022.

https://t.co/sI1b4Nn6a7 Tsunami maximum current speed of the Olympic Peninsula—Dungeness Including portions of Clallam and Jefferson Counties. Washington Geological Survey Map Series. Map Sheet 14 NOAA Center for Tsunami Research Pacific Marine Environmental Laboratory. January 2022.

Note 2. The Container-Based Sanitation Alliance offers excellent peer-reviewed resources, many from federally-funded research. https://cbsa.global/

Note 3. The All Hazards Mitigation Plan limits terrorism is limited to CBRNE i.e. Chemical, Biological, Radiological, Nuclear and Explosive. It should be expanded to include cyber attacks, as well as economic stresses resulting from any payment of cyber ransom. Note that federal funding is likely to become available for this.

https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/27/fact-sheet-biden-harris-administration-expands-public-private-cybersecurity-partnership-to-water-sector/ Fact Sheet: Biden-Harris Administration Expands Public-Private Cybersecurity Partnership to Water Sector. Briefing Room. The White House. January 27, 2022.

Note 4. These documents refer to a permitted neighborhood toilet facility

https://www.iapmo.org/we-stand# WE•Stand - Water Efficiency and Sanitation Standard is an American National Standard, replacing the Green Plumbing and Mechanical Code Supplement.

https://www.portlandoregon.gov/bds/appeals/index.cfm?action=getfile&appeal_id=21899&file_id=27548Composting Toilet and Urine Diversion System Operation and Maintenance Manual designed to meet IAPMO WE-Stand and NSF-41.
requirements

https://www.portlandoregon.gov/bds/appeals/index.cfm?action=entry&appeal_id=21899 City of Portland permitting.

https://iwaponline.com/bgs/article/1/1/33/69034/The-Kailash-Ecovillage-project-converting-human The Kailash Ecovillage project converting human excreta into organic foodstuffs and sanitized compost using new international building codes for compost toilet and urine diversion systems. Ole Ersson and Kimberly King. IWA Publishing. 2019.

https://www.portlandoregon.gov/bds/appeals/index.cfm?action=getfile&appeal_id=21899&file_id=27551 Site Plan for the Composting Processor.

https://www.portlandoregon.gov/bds/appeals/index.cfm?action=getfile&appeal_id=21899&file_id=27551 Floor plans showing how urine-diverting, dry toilet commodes are integrated into bathrooms of the apartment building.

Note 5. These may be of use to local emergency planners.

https://docs.google.com/document/d/14NRgCmHR7Y9EG236Z4j_IlQ9HOYswGyrnWv-M1ugz7s/edit Disaster Sanitation Planning Guide: Toilet system options for communities at risk of infrastructure failure. PHLUSH. November 2020.

https://docs.google.com/document/d/1WaEy7O3fHM4MS-SLaXcp0KH0H2FLwLKf8ZR7vvVAwFk/edit Disaster Sanitation Resource List. PHLUSH. February 2021.

Install tsunami alarms at the head of Discovery Bay. The valley there could face a 40-50 ft tsunami, but there is no alarm. The nearest alarm is at Diamond Point, which cannot be heard at Adelma Beach or Discovery Bay.
Burial of all power lines
A stand-by power supply for the Quilcene School District. A generator large enough to support the tech operation and food services operation. With the tech still operational they can have classes. With the full range of food services operational, students, staff and the community in major event can provide emergency meals.
Creation of an all county web based volunteer management system to be managed by a volunteer coordinator out of the DEM.
Not sure at this time.

Deer in many locations across the country have been positive for Covid 19 and the Omicron variant in surprisingly large numbers. This has been in areas where they have close human contact such as what is happening in Port Townsend. It seems critical that our local deer population would be tested to see if they are carrying Covid 19. People feed them, pet them, let them defecate in their yards and they are very present in public places like all the parks in town. Could Jefferson County have a partnership with Fish and Wildlife to dart and capture a sampling

of the deer population and then test them for Covid 19? This is very important in stopping the spread of this disease and understanding it better. As the deer population increases in other areas like Hadlock and Chimacum, perhaps other cities should have sampling done too? Thank you for asking for our feedback.
Underground Power (vital to life), Underground Internet (vital for communication)
Should we have a significant wildfire scenario, the fairgrounds could be an evacuation site for livestock. Unfortunately, the stalling facilities are in need of major repair in order to fulfill this potential need. There are volunteers who are willing to work with the managing agency to repair the stalls.
Emergency AM Broadcast Band Transmitter for wider coverage than KROH or KPTZ FM.
Have a plan for responding to a civil disturbance related to a potential COVID vaccine mandate.
Need a place to evacuate horses to in wildfire or other emergency
12 month plan to prepare
Reset the Port Ludlow Tsunami siren and hve biannual tests with advance notice.
Coyle
I would like the Tsunami Siren test reinstated on a regular basis.

Courthouse is extremely vulnerable to earthquake damage and houses a significant portion of county government. Planning for seismic retrofits and/or relocation of facilities needs to occur.
Jefferson County should peruse creation of a Landslide Hazard Map. This could be conducted in cooperation with the landslide hazard group at the Washington State Geologic Survey.
N/A
Community resilience before and after a hazard or disaster.
Siren
Tsunami warning system is not up and working. Would like to see quarterly tsunami warnings
Area wide tsunami alert signal
Review all hazards listed in the Hazard Mitigation Plan, and consider how the NPREP neighborhoods can improve their resilience to those hazards. There is a great base of information as part of that program already, but a review of the latest information in the HMP could identify if there are any additions needed.
Re-engage tsunami siren for Port Ludlow and test monthly at consistent date/time. i.e. 1st day of month at 12 Noon
Test
I am a horse owner on ten acres in Chimacum. I would like to see the County designate and fund multiple sites for emergency evacuation in case of events like wildfires or tsunamis. Many counties in Washington State have these prearranged evacuation sites for instance, in Ellensburg, the Fairgrounds are designated. There could be one at Jefferson County Fairgrounds and another one at perhaps Chimacum High School or HJ Carroll County Park. This could be a place horses as well as other livestock could be sheltered if a wildfire burned down barns and paddocks and property. People could be sheltered there too.
The paddocks at the Jefferson County Fairgrounds need a lot of repair, they are old and starting to show signs of wear and tear. I am a member of Back Country Horsemen of Washington, the Buckhorn Range Chapter. Some members have shown interest as volunteers to help repair these pens if there was some funding for them. This would help all members of the County for emergency situations but also for the County Fair and other important events for this community.
Thank you for this opportunity to give input.
Large animal evacuation and sheltering plan (primarily horse)
The Port Townsend waterfront, including the Mill, Boat Haven, Ferry Dock, Water Street, and Point Hudson, is the economic and employment hub of Jefferson County. This same area however appears to be at severe risk from earthquakes and tsunamis. Recent mapping shows

that much of this area would be inundated by a large tsunami. Many of the structures and much of the infrastructure appear to have been built on fill which may well be subject to seismically induced liquefaction. Much of the charm of Water Street comes from the numerous beautiful brick buildings, but many of this building are constructed of unreinforced masonry which is subject to catastrophic failure under seismic loading. Given the potential life/safety risks, the economic importance of this area and the serious and overlapping hazards, a focused and thorough assessment of hazards and vulnerabilities in this area should be conducted. That document should be used to develop options for addressing hazards. Theses might include remediation, reconstruction, or (if nothing else) emergency planning based of clearly identified vulnerabilities.

Jefferson PUD should consider the possibility of building some modest level of local renewable generation capacity. The local area might be surveyed for sites appropriate for small hydro facilities (Rocky Brook, a tributary to the Dosewallips River for example). Wind turbines on some isolated hilltops (Blynn Hill for example) might also be an option.

Install a Tsunami Siren by the Bay in Port Ludlow. This would give those living on the shoreline and those folks staying in the marina warning to evacuate in the event of Tsunami.

Information- communication- action

Marrowstone Island will need help if bridges are out, water supply is cut, etc. There are lots of elderly people here. I have horses - how will I get water (30 gal/day) and feed?

I'd like them removed. I've almost been hit multiple times from people using them incorrectly. They're an eye sore. I hate driving through them and actively avoid taking routes that I know have them. Going to the post office and the court house are always nerve-wracking. I'm afraid that someone is going to whip through them, and kill someone. People may have traveled too fast on that road on occasion, but they knew when to stop, and who's turn it was. Maybe put in speed bumps instead, or post an officer to write tickets if the problem is that bad, but the mini round abouts are dangerous. And what's the point of a road if residents are just going to avoid it.

As for Public Health Emergencies, I'd like to see the definition of a Public Health Emergency tightened up. Let's look at our Suicide rate. What are we doing to mitigate that problem? How about drugs?

More affordable housing needs to be built in town for workers and families. When people can't afford to live in the community where the work and have social connections, they will not be available to help in the case of a large scale disaster that cuts the Olympic Peninsula off from the rest of Washington. I know people who work essential jobs in PT (healthcare, etc) who would be extremely useful in a disaster, but because they can't afford housing here they commute from Port Angeles or even from across the Hood Canal bridge. Neighbors are usually the first responders in a disaster, and our community needs these people. If only wealthy elderly retired people can afford to live here, we are going to be in real trouble.

Cache of emergency food, water, and fuel for public distribution after a disaster.

Alternate evacuation routes should be established for ALL permanent residents. Presently many of us live on peninsulas with only one road connecting us to major highways (e.g. US 101). There are some forest or logging roads that could be connected with relatively minimal effort to provide these emergency routes. They could be gated or blocked with minimal obstructions to prevent them from being used in normal circumstances, yet opened for emergency use when the need arises.

Add GMRS communication layer between sparse FRS users and Ham Radio for neighborhood status to EOC.

Port Ludlow plans

Area-wide Tsunami Alert Signal

alarm. installation

Tsunami Siren

Wildfire
Bury the power lines along the Hwy 101 corridor (at least).
As evidenced by the recent winter storm, these power lines are subject to being pulled down by trees that fall in winter storms or heavy rains. This not only can result in an extended power outage for many residents, but also complicates efforts to clear debris and/or snow from Hwy 101. Since many residents rely on wells, a power outage means their well pumps don't work--no power, no water. This is a health hazard. Lack of heat is also a health hazard, especially in the frigid temperatures we had recently. And by complicating efforts to clear the road, this has implications for our supply chain and for access by emergency service vehicles; often there is no alternate way to get into or out of a neighborhood. If the power lines were buried, there should be fewer outages from treefalls, and it would take less time to reopen this road to essential traffic. By addressing the power issue along Hwy 101 to help prevent extended power outages, we can also mitigate follow-on effects to public health, transportation, and emergency services.
I focused on Hwy 101 because of our experience in the recent storm and because of its importance as a major thoroughfare, but I'm sure there are other areas of the county that deserve similar attention, as well as side roads that connect to Hwy 101 where treefalls frequently interrupt power. I believe the Hwy 101 corridor is probably the place to start, but I would like to see the project extended as far beyond that as is feasible.
The Box
Community Education
Two Emergency Sirens - one in North Bay and one in South Bay
Support for expanding Lords Lake reservoir and Dam to increase the amount of water Lords Lake can hold.
Kala Point cannot hear ANY sirens. More sirens needed
Emergency signage in businesses and on streets downtown
Tsunami siren in Port Ludlow
Area-wide Tsunami Alert Signal

Siren fir tsunami warninh
Communication stratagy for connecting with the Hoh Tribe in the event of a natural or man nade emergency.
Education and preparation regarding wildfires
We are having increased building on the shoreline and a major concern for landslides as homeowner are removing huge tree to help I crease their water view. 2 currently on Paradise Bay road.
Consistent solar charged battery power package available for all county residents.
Build a community resiliency center that can serve multiple needs. It could distribute emergency food, water and information during any type of emergency, provide filtered air during wildfires, be a cooling center during heat waves and heated area during power outages. Ideally, it would have solar panels and battery backup for longer term power outages, and there would be multiple centers throughout our community. This could be done with improvements to existing facilities, such as the PT Community Center.
Tsunami siren
Warning siren
Removal of trees from power lines and those trees too close to Highway 101.

Hazard Mitigation Team Meeting UPDATE

Please join my meeting from your computer, tablet or smartphone.
https://global.gotomeeting.com/join/893587893

You can also dial in using your phone.
United States: +1 (872) 240-3311

Access Code: 893-587-893

Hausdorf, Bethel, Guth, Keplinger

Jacob:
Reached out to LE and PUD, NAVMAG, got work done on Maritime Emergency and Power outage hazards; did Military Ordinance yesterday. Still waiting on LE.
On Saturday, went through the 2016 binder, adding notes about what needs to get done, changes that need to be made, etc. Brainstormed about different information like bringing in Pat Garret to contribute to the local financial status; Bill Hunt for Public Health Emergencies and Dave Seabrook to help with Drought and how it effects agriculture.
Bethel working with Earthquake, Tsunami and Landslides. Hoping to do some rewrite.
Re: Coastal flooding issues Dave Wilkinson, Local 2020, working with Ian Miller.

Laura: Aircraft incidents. Will mention the C141 accident (1975)

Jacob mentioned the increase in maritime traffic in the Puget Sound area over the past few years.

Laura: Expanding the hazardous materials part of the aircraft incidents possibility.

Deadline for getting information in to us was set for ~~Dec. 21.~~ **CHANGED TO JAN. 14**.

Bethel: You are talking about a draft not a final product?

Jacob: Yes:

Willie: The Survey opens on Dec. 10 and be open until Jan. 7. Let's have the first draft by Jan. 14 so we can take that week to review all the HIVA information.
Jan. 14 for the rough draft which gives people another 4-6 weeks to touch things up.

John: Has identified a significant chunk of stuff to work on. Concerned about connecting with other folks without having a good handle on where to begin. Would prefer to focus on the sections I have been assigned.

Willie: Are you taking a step back in leading this group and then just working on the sections you have been assigne? Jacob and Keppie are reaching out to people and they can reach out to you as a sounding board. Hearing that you would prefer to step back as a leader, but staying on the steering committee.

John: I feel comfortable with that.

Willie: I will add an organizational chart to define roles. What do we need to define on Friday's meeting?
The meeting was recorded. We had 20 people show up, but then we had a few other people join in that I didn't know. People were drawing unacceptable pictures to include a swastika. Then we had more people join and begin drawing on the screen, some people from India. After that I ended the presentation. There will be a waiting room where we will only allow those we know and recognize. If we don't recognize them, we won't let them in.

John: I sent out the version of the power point I had put together, don't know if that helped.

Willie: I merged your presentation with mine. I will send out the new hybrid, which includes yours and mine. Jacob and Keppie can talk about the things they have been working on and Laura, hope you can make the meeting. Jacob did some work to finalize the HIVA Survey, which will mostly be ranking hazards. It shouldn't take more than 10-20 minutes to fill it out. That's the plan for Friday.

We will be presenting this as a group. Everyone on the steering committee should be encouraged to add to this.

Jacob: I can take on severe weather.

Willie: We should encourage anyone at the meeting to jump in.

Any questions?
Laura: We need to include the historical info from the past 10 years and to indicate the biggest impact for us would be wildfire.

Willie: Include anything that has happened in Clallam, Kitsap, Grays Harbor or Mason. Shouldn't hesitate to include those things that have happened close to us.

Willie: Working with Local 2020 and will continue to include them when/where necessary. It's important to make roles clear, double-check with the task tracker. Re: Coastal Flooding, that would be a good fit for L2020.

John: Local 2020 is doing a good job of monitoring that.

Jacob: Will send out to everyone a new Google Drive account and that's where I will put the information that was in the Dropbox. The HIVA presentation will be added.

Willie: This meeting will go into the next year. Time and day will not change.
See you all on Friday, hopefully with no internet trolls.

Dec. 14 HazMit Steering Committee Meeting Notes

Jacob Hausdorf; MJ Baker Scott; Laura Guth

Jacob: Have contacted PUD and JCSO, haven't heard back.

Laura: Working on the aircraft mishap hazard. One that crashed in Forks in 2010 and doing some work on the Horizon Aircraft theft.

MJ: Talked to Willie yesterday about working on the plan. I have experience working on a Hazard mitigation Plan. Let me know what you want me to do.

Laura asked Jacob to send her the link to Google docs.

Keppie talked about the Flooding Hazard and making connection with the Hoh Tribe to contribute to the new plan.

The team discussed getting the survey out to additional groups: Peninsula Daily News; Port Townsend Leader; fire departments, law enforcement, KPTZ, City, County, and creating a handout with the link to the survey to handout at the vaccination clinic.

Feb. 15 Hazard Mitigation Update notes

https://global.gotomeeting.com/join/893587893

Willie Bence, Jacob Hausdorf, John Bethel, Laura Guth, K. Keplinger

Agenda:

Survey has closed. Rec'd many responses
Next steps on presentation to public
Status update

- Jacob: 80 responses.
- Location: 73 responses, most from Port Ludlow 25 responded. Quil then other next.
- PL took about one -third of the responses.
- 65 responses for where people lived in the county
- 74 Responses for What Hazards: tsunami, Earthquake, severe weather, wildfire and long-term power outages and then flooding. Aircraft mishaps rec'd three responses. And Mini roundabouts
- 64 responses, 20 in relation to tsunami sirens predominantly in the PL area; requesting more sirens or more tests. One consistent battery solar charge available to all; animal evacuation and sheltering, four answers there. Livestock was one of the concerns.
- More affordable housing in the community
- More tsunami siren requests
- Shelter requests at existing locations
- Review all hazards and how can NPREP help prepare for those hazards.
- Fairgrounds, HJ Carroll Park and Chimacum School for animal shelter.
- Roundabouts in PT: Should be completely removed.
- Definition of Public Health emergency should be tightened up.
- Test the entire population of deer in PT for COVID. People pet them, feed them.
- Fairgrounds for livestock shelter
- Five-page response, talking about wastewater treatment and 'pooping'
- Cyber terror;
- Bury all power lines because of severe weather events.
- Alternate evacuation routes (connect logging roads to main roads). Described as minimal effort to get t his done.
- Creation of a landslide hazard map. (HAZUS might have a map.)

Maybe we should look at some creative ways to get from Point A to Point B.

Port Ludlow: Don't see a need for a siren in PL. We should have a larger conversation with the Port Ludlow community. We could have our Tsunami Coordinators come and talk with the community.

We will have to do a little bit of editing when we present this to the community.

Community resilience Center has already been ID'd in the 2016 Plan. Looking at making some revisions for that building in PT. This will be a long shot to get funds for this.

March 4 is the next scheduled JPREP. We will use that meeting to run through the strategies. Let's look at other members to see if they have similar thoughts. We will have information out about that meeting by the end of the week. This will be another opportunity for public feedback on the planning.

We will work to put the JPREP agenda together.

Had another conversation from the State Mitigation office; the potential to fund this and extend this timeline. Asking to have a contractor go through this and that's still on the table and we still need to move ahead to get this done one time. Still a small sliver of hope we might be able to get some help.

Plan is due for renewal in mid-May. We should have the plan in FEMA's hands by May. Mid-march to the end of March is when we should have all our revisions in.

Maybe have one more meeting on March 18—one last time for the general public to speak up.

We have had some coordinating entities that have responded. Waiting to hear from the County and the City. The biggest area we might need help with is with the coordinating entities. If anyone has the time to help with that, let Willie know.

Will talk to MJ and see what more we need to do.

John Bethel: Hazard and tsunami piece are out. Sent a draft of the landslide and now working on volcanoes.

Question: If the survey is now closed or is it later today?

Willie: Jacob, will you open it up and close it again tomorrow?

Jacob: Done.

Willie: We will take feedback from the meeting on March 4.

Jacob: IT will get locked again at 10AM tomorrow.

Laura: Have been working on the Hazsus material. Sewage going into Port Hadlock Bay.

Willie: Got some help with Public Health from Ocean Mason and he will be working with Bill Hunt. He will have that to us by the end of the month.

Jacob is working on the plan introduction part and then we will be working on formatting. We have about a month and a half. Still might need some help on the coordinating entities.

Jacob: Please send me a list of who you have been working with.

Willie: We need to know who have been on the Steering Committee and the NPREP group helpers really anyone who has participated and who they have worked with.

We might get an extension, but six more weeks to go. Happy with the progress.

Laura: Re: letters for CERT.

Topic: Hazard Mitigation Plan
Initial Planning/Steering Committee Meeting

Time: Oct 19, 2021 01:00 PM Pacific Time (US and Canada)
Join Zoom Meeting
https://zoom.us/j/99891818439?pwd=Rk1aZlgzV3pjc1lpZERWdG9jRzNVdz09
Meeting ID: 998 9181 8439
Passcode: 484164

Attending: John Bethel, Willie Bence, Jacob Hausdorf, Laura Guth
MJ Baker Scott, K. Keplinger

Hazard Mitigation Plan is available on the DEM website and it's one version behind what has been approved by FEMA. Will get that fixed and send out the link.
The plan is an important part of FEMA funding. If it's not updated every 5 years, no money.
Last approved in May of 2017 and must be reapproved in May of 2022.
Applied for some funding, FEMA has not gotten back to use about funding. They did say they would be getting back to people in about a month and more before we have a decision.
Likely will have to be doing this all in-house.
We will have to have the plan in semi-final draft form to go to the state and then to FEMA in April for final changes. Have talked to FEMA R10 about an extension. They said they will not provide an extension. Apparently, the pandemic has not move FEMA to give us an extension.
Jacob has looked at the plan and there is a lot we can cut and streamline things.
Everything is up to us now and we need to look at when we need to accomplish in the next four months.
Plan objects, setting meeting schedule and any additional help. We will look at a second meeting perhaps in a week or two to decide on what we want to accomplish.
Want to recruit more members.
The Section 2, the multi-jurisdiction profile, it runs through all the bad things that could happen in the county from earthquakes to terrorism. There is a multi-jurisdictional profile and a hazard vulnerability section which is a survey with the community. . .a ranking system about what can happen here according to the residents. This will take a lot of research to update the county and hazard snapshot.
Want to see some community outreach about the findings and it will take a little bit of survey work to assemble hazard vulnerability portion.
John Bethel is a geologist and help recruit and mentor some people. (Section 2)
Section 3: mitigation strategies: community education, over-arching strategies.
Section 4: Jurisdiction profile and mitigation strategy. That will take outreach to community partners to help them do the research and collate it all. The City of PT, school Districts, Fire Districts, not research by us, but will need to all get pulled together.
MJ and Laura. . .one of you might like to work in that area. Maybe Jacob and perhaps we could bring in some others like someone from a fire district.
They provide their own strategies.
Section 5: Summary of strategies and consolidates them and that will take place toward the end.
Section 6: Coordinating Entities…Profiles, critical infrastructures, things they may want funding for and adopting the plan by resolution. These are groups we will work with who have provided input, their profiles, etc. Could be done by email.
Those are the main segments of the plan. There are some add'l segments: planning process.

Want to build a timeline and begin recruiting volunteers.
Send out an email through NPREP to folks who can help John and maybe some folks who can help with outreach and can help collate.
We will want to have regular meetings, every two weeks or so.
We will need a kick off meeting (suggest November) to tell the community what we are doing and what we are attempting to do.
Like to have a presentation about the hazard inventory. . .would like to work with John and ask community members to participate.
We will have people from all segments. . .
John: This would be a canned presentation?
Willie: Yes.
The outreach to all first they would be invited to the kick-off meeting and have them update their participation.
We will have a survey for general mitigation and vulnerability assessment and we will need a couple of public feedback meetings, one toward the end before we send it off. We will review the submissions from different groups. We need to document the fact that we have responded to public comment.
The final feedback should be in March and we should meet in April and one more meeting in May. That's what we need so far.
We have two JPREP meetings one in Dec. and one in March, but we will have public meetings in-between those meetings.

We need to start prepping for these various meetings and getting boots on the ground from NPREP as researchers or survey collators; need to have a kick-off meeting (NOV.) and put together a timeline for all of our meetings and presentations.
Laura: on the jurisdictions are those the ones who are eligible for public assistance?
Willie: Yes.
Some in the last plan, dropped out as participants. The state will understand they will be updating mitigation projects and other pertinent information.
We can write in our update process that we will be adding more projects.
John: The existing plan is large. . .you mentioned something about slimming down
Jacob: There is a lot that we can eliminate and there is some we just need to update, like phone numbers.
Willie: Will make a list of some of the new people who have joined other agencies.
John: What's our interaction with Tribal agencies?
Willie: Being a sovereign entity, they are not required to be a part of our plan. It is important to include them, but not a participating entity
For the timeline, we have two JPREP and a date to submit to the committee and the date to submit to FEMA.
Two weeks to do the outreach and plan on meeting the week of Nov. 1 for an objective meeting and kick off meeting sometime in the week of Nov. 8.
We have an IMT meeting on Nov. 3 where we can solicit some feedback. Let's do our objective meeting Nov. 3.
After the kickoff meeting, the week after that, we will do outreach to participating jurisdictions and coordinating entities.
Dec. 3 at the JPREP meeting we can use that for the Hazard presentation.
John: makes sense and that will work.
Willie: Let's give people a month from that meeting to submit HIVA results which will close Jan. 3 and the on Jan. 7 another meeting, we will just have to do some calculations and then presenting Jan. 7 on the HIVA results then open the survey for hazard mitigation strategy. It would be a short turn around and we can do a heavy push there.

Timeline will be included in what is sent out to this group.
That will close everything Feb. 14 and then March 4 is our JPREP where we can present the results and talk about the updates from jurisdictions.
From Jan. 7 until Feb. 14 we can meet once per week.
John: Working for the county Wed. and Thurs. try not to schedule meetings on those days.

Kickoff meeting Nov. 10: timeline for entities and jurisdictions, give them 2 months until Feb. and their opportunity will close the same time as the general public.
Final: March 4 with another round of feedback and submit March 11 to the State.
Will submit the timeline to the State Mitigation officer for their feedback. Want to make sure we give our partners plenty of time to submit their information.
John: If useful, do you have access to the County's GIS service?
Willie: Yes; Kevin Hitchcock.
Will put a list of people together. Will put out an email out through NPREP to find people
Laura: Lisa Neihaus would be someone to have on the team.
Willie: NAVMAG is a coordinating entity.
Laura: In Cape George. . .knows a person who would be good to get on the team.
Willie: Should prepare for our objective meeting.
Press Release for Nov. 10 public meeting and all the entities and jurisdictions and work with Willie on the distribution list.
Overview of the old plan from Jacob, start recruiting. . .
John: Would like to set up a time with you to talk about specifics.

Jefferson County Washington
Department of Emergency Management
EMERGENCY OPERATIONS CENTER, 81 Elkins Road, Port Hadlock, WA 98339
Phone: 360.385.9368 - Fax: 360.385.9376 - Email: jcdem@co.jefferson.wa.us
After hours (urgent): 360-385-3831, x1 - Web site: www.jeffcoeoc.org

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE IN PROCESS

Emergency Management will be seeking input from community members

PORT HADLOCK—Jefferson County Department of Emergency Management has begun the process of updating the county's Hazard Mitigation Plan—a process that occurs every five years. The plan identifies natural hazards that can and have occurred in Jefferson County as well as human-caused incidents such as cyberterrorism, civil disturbances, aircraft mishaps and more.

A vital part of the planning process involves soliciting input from local agencies, businesses, civic and environmental groups, schools and the community-at-large to create a safer, more disaster-resilient community.

The first meeting in the planning process is scheduled for Tues., Nov. 16, 10AM-12PM. The Zoom login information is at the bottom of the page.

All are welcome and encouraged to attend, whether you are a first responder, local agency or private business. Robust feedback is vital to our success.

We are also seeking volunteers to assist with the plan update process. Opportunities include researching, writing, technical editing and outreach. If you are interested in volunteering, please attend the meeting or contact us at JCDEM@co.jefferson.wa.us.

Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 2000, the state, tribal and local governments must develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance through the Hazard Mitigation Assistance Programs. The regulatory requirements for local hazard mitigation plans can be found at Title 44 Code of Federal Regulations 201.6

The goal of developing and maintaining a plan is to reduce the loss of life and property by increasing the awareness of hazards, risks and vulnerabilities focusing on local resources and communicating priorities to the state and federal officials.

As the planning process moves forward, additional meetings will be scheduled to include feedback opportunities from the entire community.

Zoom Meeting login:
https://zoom.us/j/95690862174?pwd=ZU9PNkZnK1J0dTA2bFZZQ2xwMUJyUT09
Meeting ID: 956 9086 2174
Passcode: 563734
Phone No:+12532158782,,,,Meeting ID: 95690862174#,,,,Access Code:*563734# US

Jefferson County Hazard and Vulnerability Analysis

INSTRUCTIONS:

Evaluate potential for event and response among the following categories using the hazard specific scale.

Issues to consider for **probability** include, but are not limited to:

1. Known risk
2. Historical data
3. Manufacturer/vendor statistics

Issues to consider for **response** include, but are not limited to:

1. Time to marshal an on-scene response
2. Scope of response capability
3. Historical evaluation of response success

Issues to consider for **human impact** include, but are not limited to:

1. Potential for staff death or injury
2. Potential for patient death or injury

Issues to consider for **property impact** include, but are not limited to:

1. Cost to replace
2. Cost to set up temporary replacement
3. Cost to repair

Issues to consider for **business impact** include, but are not limited to:

1. Business interruption
2. Employees unable to report to work
3. Customers unable to reach facility
4. Company in violation of contractual agreements
5. Imposition of fines and penalties or legal costs
6. Interruption of critical supplies
7. Interruption of product distribution

Issues to consider for **preparedness** include, but are not limited to:

1. Status of current plans
2. Training status
3. Insurance
4. Availability of back-up systems
5. Community resources

Issues to consider for **internal resources** include, but are not limited to:

1. Types of supplies on hand
2. Volume of supplies on hand
3. Staff availability
4. Coordination with MOB's

Issues to consider for **external resources** include, but are not limited to:

1. Types of agreements with community agencies
2. Coordination with local and state agencies
3. Coordination with proximal health care facilities
4. Coordination with treatment specific facilities

Complete all worksheets including Natural, Technological, Human and Hazmat. The summary section will automatically provide your specific and overall relative threat.

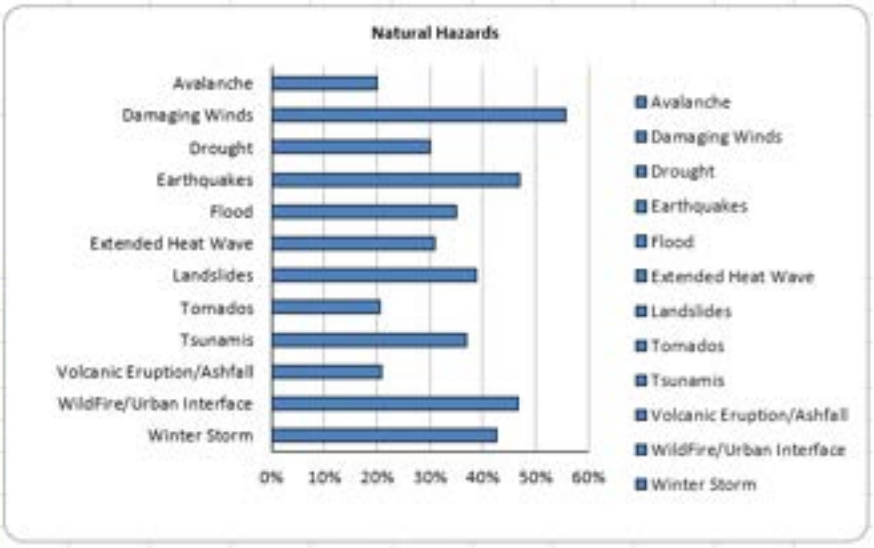
HAZARD AND VULNERABILITY ASSESSMENT TOOL
NATURALLY OCCURRING EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of critical services*	*Level of Preplanning you have undertaken*	*Capbilities of local resources to respond to impacts*	*Capacity of whole community to respond to impacts*	*Relative threat**
SCORE	1= Unkown but rare 2 = Unkown but anticipated 3 = One hundred years or less 4 = 25 years or less 5 = once per year or more	0 = No Impact 1= Some Impact 2 = Moderate Impact 3 = Catastrophic Impact	0 = No Impact 1= Some Impact 2 = Moderate Impact 3 = Catastrophic Impact	0 = No Impact 1= Some Impact 2 = Moderate Impact 3 = Catastrophic Impact	0 = Fully Prepared 1= Well Prepared 2 = Somewhat Prepared 3 = Not Prepared	0 = Fully Prepared 1= Well Prepared 2 = Somewhat Prepared 3 = Not Prepared	0 = Fully Prepared 1= Well Prepared 2 = Somewhat Prepared 3 = Not Prepared	*0 - 100%*
Avalanche	2	1	1	1	2	1.75	2.25	**20%**
Damaging Winds	5	1.5	1.75	1.5	1.75	1.5	2	**56%**
Drought	3	1	1	1	2	2	2	**30%**
Earthquakes	3.25	2.5	2.5	2.5	1.75	1.75	2	**47%**
Flood	3	1.25	1.75	1.5	2	2	2	**35%**
Extended Heat Wave	3	1.5	1	1	1.75	2	2	**31%**
Landslides	3.25	1.5	1.75	1.5	2	2	2	**39%**
Tornados	1.5	1.75	2	1.75	2.5	2	2.25	**20%**
Tsunamis	2.5	2.25	2.5	2.5	2	2	2	**37%**
Volcanic Eruption/Ashfall	1.75	1.5	1.5	1.5	2	2	2.25	**21%**
WildFire/Urban Interface	3.5	2	2.25	2	2	1.75	2	**47%**
Winter Storm	4.25	1.25	1.25	1.5	1.5	1.5	2	**43%**
AVERAGE SCORE	**3.00**	**1.58**	**1.69**	**1.60**	**1.94**	**1.85**	**2.06**	**36%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.36	**0.60**	**0.60**

56% Damaging Winds
47% Earthquakes
47% Wildfire/Urban Interface
43% Winter Storm
39% Landslides
37% Tsunami
36% Flood
31% Extended Heat Wave
30% Drought
21% Volcanic Eruption/Ashfall
20% Tornado
20% Avalanche

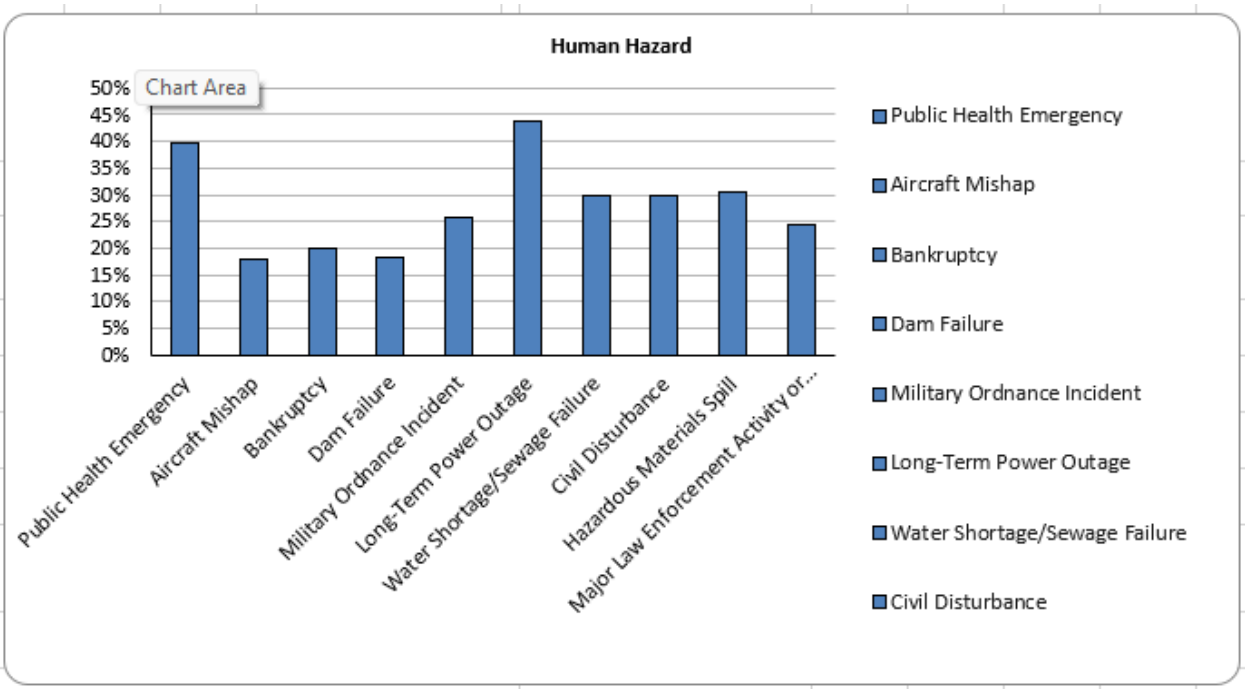


HAZARD AND VULNERABILITY ASSESSMENT TOOL
HUMAN RELATED EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of critical services*	*Level of Preplanning you have undertaken*	*Capabilities of local resources to respond to impacts*	*Capacity of whole community to respond to impacts*	*Relative threat**
SCORE	1= Unkown but rare 2 = Unkown but anticipated 3 = One hundred years or less 4 = 25 years or less 5 = once per year or more	0 = No Impact 1= Some Impact 2 = Moderate Impact 3 = Catastrophic Impact	0 = No Impact 1= Some Impact 2 = Moderate Impact 3 = Catastrophic Impact	0 = No Impact 1= Some Impact 2 = Moderate Impact 3 = Catastrophic Impact	0 = Fully Prepared 1= Well Prepared 2 = Somewhat Prepared 3 = Not Prepared	0 = Fully Prepared 1= Well Prepared 2 = Somewhat Prepared 3 = Not Prepared	0 = Fully Prepared 1= Well Prepared 2 = Somewhat Prepared 3 = Not Prepared	*0 - 100%*
Public Health Emergency	3.5	2	1	2	1.75	1.5	2	**40%**
Aircraft Mishap	1.75	1.25	1.25	0.75	2.25	1.5	2.25	**18%**
Bankruptcy	1.5	1.25	1.25	2.25	2.25	2.5	2.5	**20%**
Dam Failure	1.5	1.25	1.5	1.25	2.5	2	2.5	**18%**
Military Ordnance Incident	1.75	2.25	2.25	1.75	2.5	2	2.5	**26%**
Long-Term Power Outage	3.5	1.75	1.75	2	1.75	1.75	2.25	**44%**
Water Shortage/Sewage Failure	2.5	1.75	1.25	1.75	2	2	2	**30%**
Civil Disturbance	2.5	1.25	1.5	1.5	2	2	2.5	**30%**
Hazardous Materials Spill	2.5	1.5	1.5	1.5	2.25	1.75	2.5	**31%**
Major Law Enforcement Activity or Terrorism	2	1.5	1.5	1.75	2.25	1.75	2.25	**24%**
AVERAGE	**2.30**	**1.58**	**1.48**	**1.65**	**2.15**	**1.88**	**2.33**	**28%**

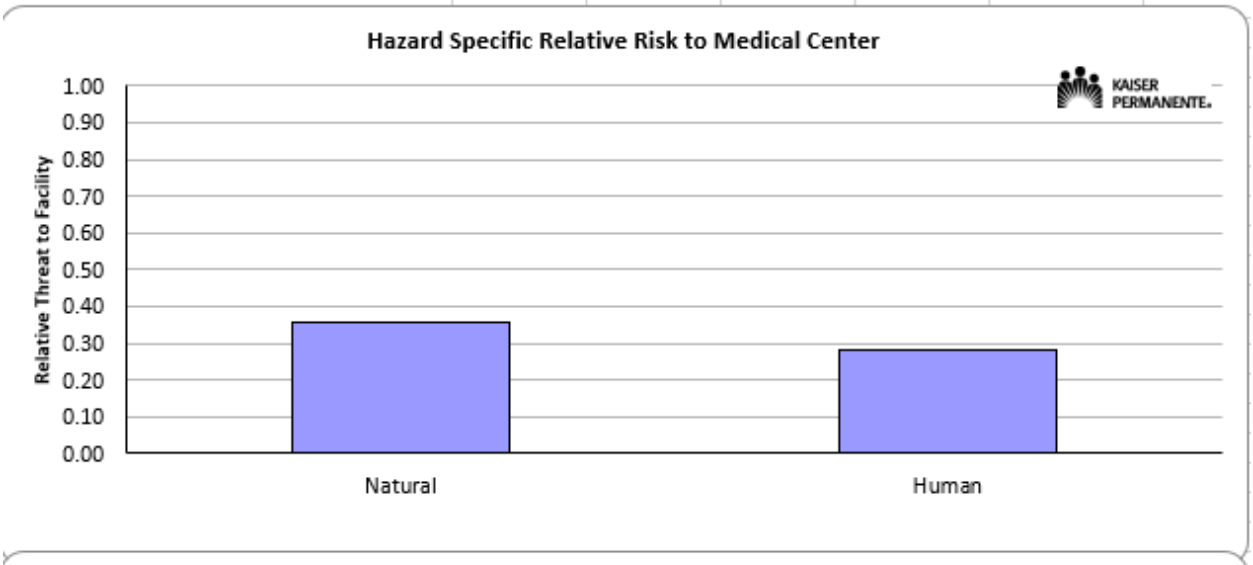
**Threat increases with percentage.*

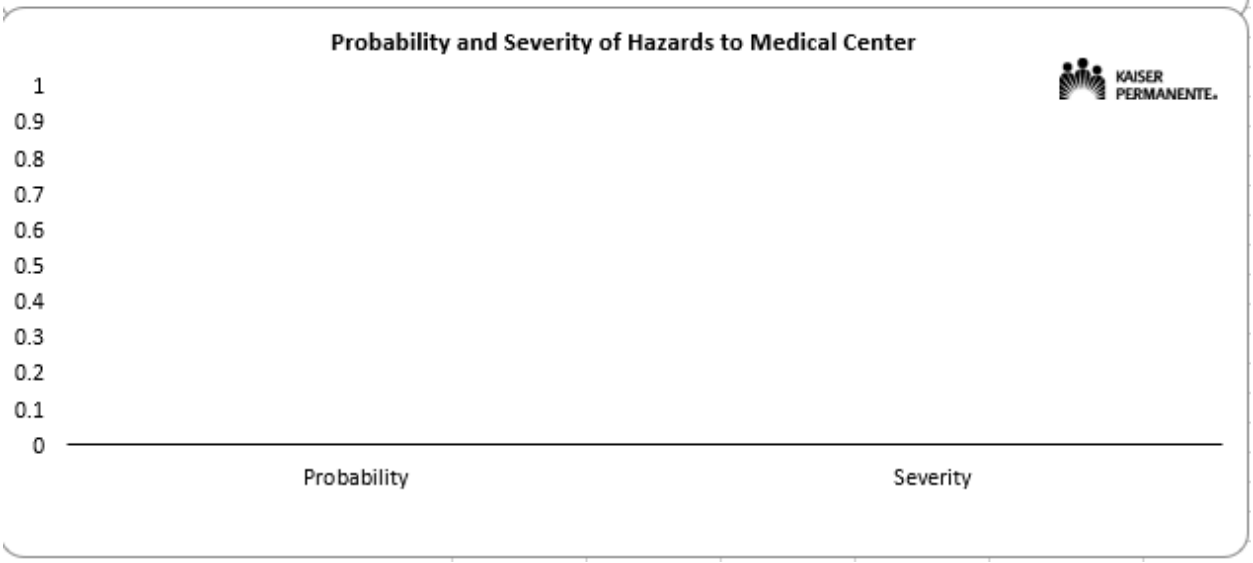
RISK = PROBABILITY * SEVERITY		
0.28	**0.46**	**0.61**


Human Hazard
Chart Area
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Public Health Emergency
Aircraft Mishap
Bankruptcy
Dam Failure
Military Ordnance Incident
Long-Term Power Outage
Water Shortage/Sewage Failure
Civil Disturbance
Hazardous Materials Spill
Major Law Enforcement Activity or...
Public Health Emergency
Aircraft Mishap
Bankruptcy
Dam Failure
Military Ordnance Incident
Long-Term Power Outage
Water Shortage/Sewage Failure
Civil Disturbance

SUMMARY OF JEFFERSON COUNTY HAZARDS ANALYSIS

	Natural	Human
Probability	0.60	0.46
Severity	0.60	0.61
Hazard Specific Relative Risk:	0.36	0.28





Hazard Mitigation Plan Kickoff Meeting December 11th, 2020

JEFFERSON COUNTY DEPARTMENT OF EMERGENCY MGMT.

MEETING WILL BEGIN AT 10:02AM

Today's Agenda

- 10:00 - 10:10 Welcome and Housekeeping
- 10:10 – 10:50 Hazard Mitigation Plan Overview
  - What is a hazard mitigation plan?
  - Why develop a hazard mitigation plan?
  - Outline of 2016 Mitigation Plan
- 10:50 – 11:00 Break

Today's Agenda

- 11:00 – 11:55 Hazard Mitigation Plan 2022 Update Overview
  - Planning team organizational structure(s)
  - Roles and responsibilities
  - Plan update cycle timeline
  - Call for volunteers and committee members
  - Next steps
- 11:50 – 11:55 Other announcements and "good of the order" reports
- 12:00 Adjourn

Housekeeping

- Due to the level of participation, ALL participants will be muted by organizer;
  - If you have a question, please type in the chat box.
  - I will give those on the phone an opportunity to ask question after each section.
- Yes, the presentation will be sent out after the meeting.
- If you have a question specific to your agency/jurisdiction/etc., please connect with me after the meeting instead of asking in front of the group.

Housekeeping

- PLEASE “sign-in” by typing your name and organization in chat

Mitigation Definition

- Mitigation:

the action of reducing the severity, seriousness, or painfulness of something.

Mitigation Definition

- Hazard Mitigation:

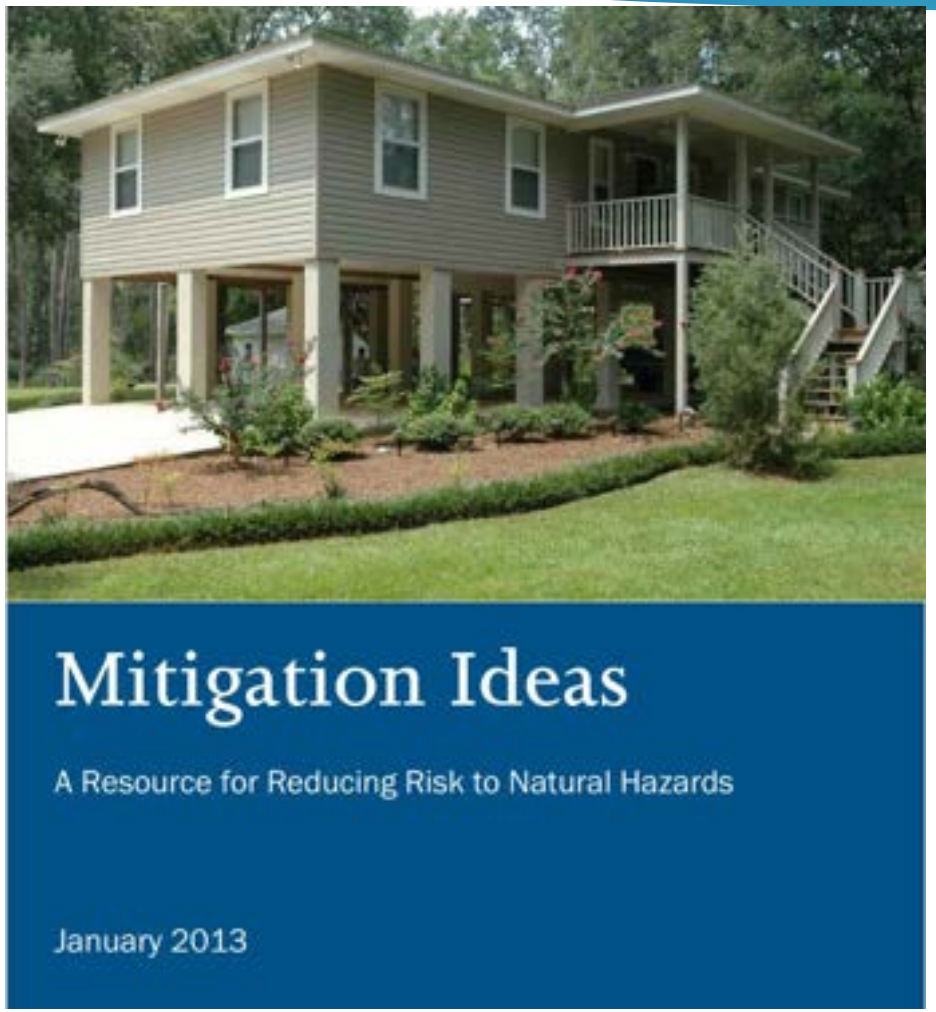
actions taken to help reduce or eliminate long-term risks caused by hazards or disasters

Emergency Management
Mitigation
Preparedness
Response
Recovery



Source: National Policy on Disaster Management[7]

Mitigation Examples



- Mitigation Ideas (https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdfema.gov)

Mitigation Examples Earthquakes

- Regulatory:
  - Adopt and enforce building codes that reduce risk and provide for stronger infrastructure
  - Ex: International Building Code (IBC) and International Residential Code (IRC).

Mitigation Examples Earthquakes

- Planning:
  - Developing an inventory of public and commercial buildings that may be particularly vulnerable to earthquake damage, including pre-1940s homes and homes with cripple wall foundations.
  - Collecting geologic information on seismic sources, soil conditions, and related potential hazards.
  - Using GIS to map hazard areas, at-risk structures, and associated hazards (e.g., liquefaction and landslides) to assess high-risk areas.

Mitigation Examples Earthquakes

- Protection:
  - Strengthening and retrofitting non-reinforced masonry buildings and non-ductile concrete facilities that are particularly vulnerable to ground shaking.
  - Retrofitting building veneers to prevent failure.
  - Installing window film to prevent injuries from shattered glass.

Mitigation Examples Earthquakes

- Education:
  - Working with insurance industry representatives to increase public awareness of the importance of earthquake insurance. Residential structural improvements can be factored into the process of obtaining insurance coverage or reduced deductibles.
  - Developing an outreach program about earthquake risk and mitigation activities in homes, schools, and businesses.
  - Educating on safety techniques to follow during and after an earthquake.

Hazard Mitigation Planning

- "Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters.
  - It begins with state, tribal and local governments identifying natural disaster risks and vulnerabilities that are common in their area.
  - After identifying these risks, they develop long-term strategies for protecting people and property from future events.
  - Mitigation plans are key to breaking the cycle of disaster damage, reconstruction, and repeated damage."
- FEMA then, mandates all communities must update plans on a five year cycle to be eligible for funding.

Plan Elements

- Step 1: Identify natural and man-made hazards presenting potential consequences to Jefferson County
  - Often called a "THIRA" (Threat and Hazard Identification and Readiness Assessment) or "HVA" (Hazard Vulnerability Assessment)
  - More than just a list of bad things that might happen, this represents a prioritization of hazards to plan and prepare for based on severity, frequency, scope, etc.

Plan Elements

- Step 2: Build a multi-jurisdictional community profile.
  - Includes information about Jefferson County, the City, and all participating and cooperating agencies assets and other information relevant to planning.
  - This includes things like:
    - core mission(s),
    - services,
    - service area,
    - population,
    - critical infrastructure,
    - staff,
    - assets owned and values,
    - previous disasters,
    - references to relevant plans and policies.

Plan Elements

- Step 3: Develop mitigation strategies.
  - Plan stakeholders create a five-year action plan matrix
  - Consists of strategies and projects designed to limit the impact of the hazards from Step 1, given the profile of Step 2
  - Public feedback and suggestions are ESSENTIAL to ensure a robust, viable plan
    - (Additionally, the planning process itself is valuable in the relationships the community builds)

Why a mitigation plan?

- Preventing loss of life and injury.
  - This is typically of paramount importance to most communities. The value of protecting buildings and infrastructure diminishes significantly if residents and property owners do not feel safe in their homes or places of business.

Why a mitigation plan?

- Reducing property damage to homes and businesses.
  - Minimizing physical damage to residential properties can help avoid expensive displacement costs, in addition to the cost of repairs. Any avoided damage to a business can help reduce loss of revenue and downtime for employees, in addition to the cost of repairs.

Why a mitigation plan?

- Reducing business interruption and revenue loss.
  - Businesses employ workers, provide for community needs and services, and generate revenue, allowing the community, both its members and government, to provide for itself. Reducing business interruption and revenue loss greatly aids in the speed and effectiveness of returning a community to self-sufficiency and vitality after a disaster.

Why a mitigation plan?

- Helping to lower emergency response and disaster recovery costs.
  - Emergency response costs can be lowered significantly when services such as fire safety, search and rescue, medical operations, disaster management, and other related services are needed less. Disaster recovery costs can also be lowered when prolonged activities such as long-term recovery planning, debris management, housing recovery, infrastructure recovery, natural resource recovery, and other related activities are needed less.

Why a mitigation plan?

- Protecting cultural and historical assets.
  - Seeking to preserve, protect, conserve, rehabilitate, recover, and restore cultural and historical resources can have a significant positive impact on a community's overall health.

Why a mitigation plan?

- Reducing environmental damage.
  - Environmental assets and natural resources are important to community identity and quality of life and support the economy through agriculture, tourism and recreation, and a variety of other ecosystem services, such as clean air and water. The natural environment also provides protective functions that reduce hazard impacts and increase resiliency.

Why a mitigation plan?

- Building a sense of place and peace of mind.
  - A safe, resilient community results in residents and business owners feeling more confident and secure about their assets and investments, and can lead to a stronger sense of place and, ultimately, peace of mind.

Why a mitigation plan?

“On average, a dollar spent by FEMA on hazard mitigation provides the nation about $4 in future benefits.”

Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities by the Multihazard Mitigation Council www.nibs.org/resource/resmgr/ MMC/hms_vol1.pdf

Why a mitigation plan?

"FEMA grants to mitigate the effects of floods, hurricanes, tornadoes, and earthquakes between 1993 and 2003 are expected to save more than 220 lives and prevent almost 4,700 injuries over approximately 50 years."

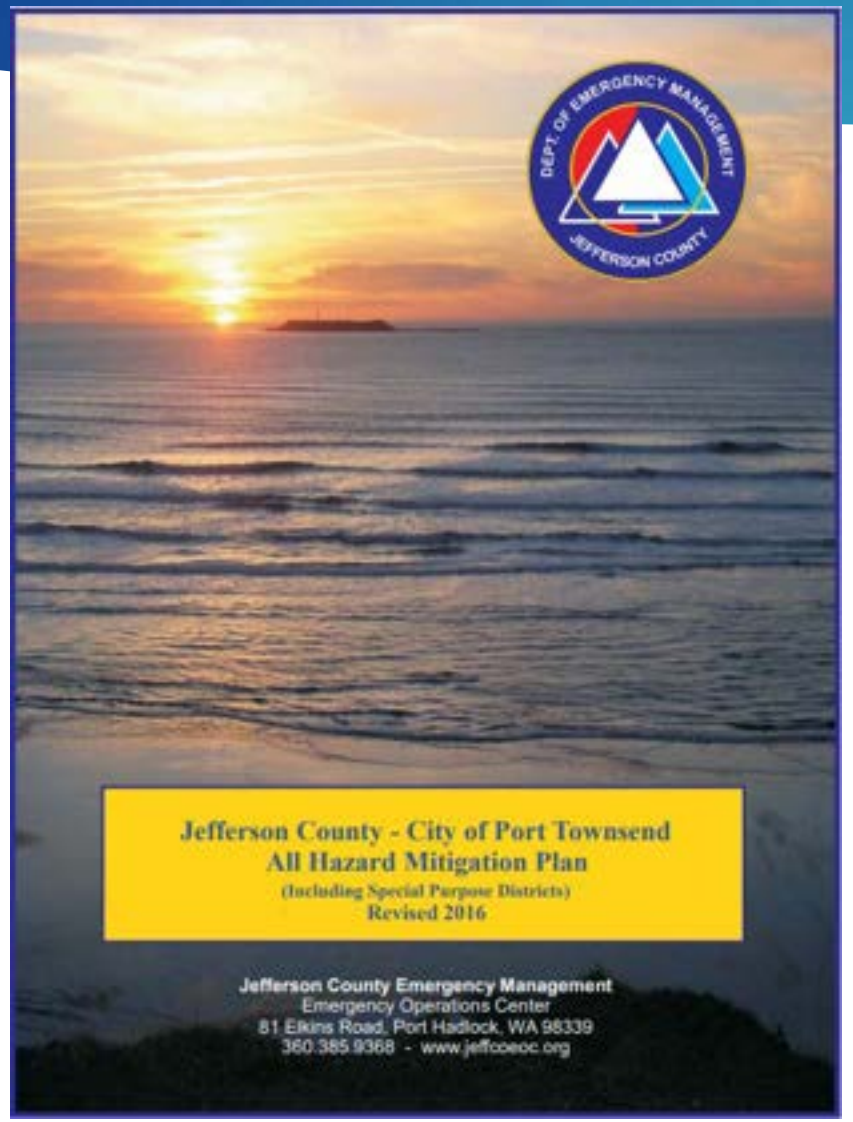
Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities by the Multihazard Mitigation Council www.nibs.org/resource/resmgr/ MMC/hms_vol1.pdf

Why a mitigation plan?

- A FEMA-approved hazard mitigation plan allows agencies to apply for pre- and post-disaster mitigation grant funding.



Previous Mitigation Plan



Available for viewing at bit.ly/jeffcohazmit

Participating Jurisdictions

- County
- City
- 5 Fire Districts
- JeffCom 9-1-1
- 2 Hospital Districts (PT and Forks)
- Port of PT
- County Library
- Port Ludlow Drainage District
- 6 School Districts
- Jefferson Transit
- Jeffco PUD (Electricity and Water)

Coordinating Entities

- Clallam County EOC
- Clallam County Fire 1 and 3 (West End and Sequim)
- Clallam County PUD
- Fort Worden
- Hoh Tribe
- KPTZ 91.9
- NPREP
- PT Paper
- Propane Providers
- Sequim School District 323
- USCG
- Naval Magazine – Indian Island
- WA State Dept of Ecology
- WA State Dept of Fish and Wildlife
- WA State Dept of Natural Resources
- WA State Dept of Transportation
- WA Mil Dept – Emergency Management Division
- Washington State Patrol

Stated Goals of Previous Plan

1. Protect Life and Property
2. Create Public Awareness
3. Natural Systems Protection
4. Improve Partnerships and Implementation
5. Increase Emergency Services Capacity

All mitigation activities tied to one or more stated goals.

Read more on pg. 14 of plan.

Quick Facts

- Over 200 individuals provided feedback or input
- 19 total jurisdictions or special districts contributed directly to the plan
- Updated all hazard-specific data and historical info; added Climate Change section
- Hazards include avalanche, wind, drought, EQ, flood, heat wave, landslide, public health emergency, tornado, tsunami, volcano, wildfire, winter storms.
- Man-made hazards include aircraft mishap, bankruptcy, civil disturbance, dam failure, hazmat, major fire activity, major law enforcement activity, oil spill, maritime emergency, military ordinance incident, power outage, terrorism, water shortage/sewer failure (extended)
- Participating agencies/jurisdiction identified over 400 projects to mitigate against the above hazards
- All told, our HazMit plan clocks in at 980 pages of light reading

FEMA Review

- FEMA commended the public feedback process used in 2016 and use of JPREP as an engagement outlet
- Some of the maps used were low-tech and hard to read; many public risk maps can be utilized to better display vulnerability data
- Our connection of codes and ordinances to mitigation strategies was noted as superb
- Need to better define mitigation project timeframes, integration with response plans
- Review of 2009 strategies was complete and in-depth
- Could have better describe how priorities changed from 2009 to 2016

BREAK

Summary from First Hour

- Hazard Mitigation reduces loss of life and property, improves response outcomes
- An approved HazMit plan makes us eligible for FEMA grant funding
- A plan is more than just a list of construction projects – it includes:
  - Vulnerability analysis
  - Community Profile
  - Projects, strategies, campaigns etc. to reduce harm from hazards based on the hazard analysis and community profile, with input from a wide array of stakeholders
- HazMit plans must be updated every five years to remain FEMA-compliant

HazMit Update Organization

- Hazard Mitigation Steering Committee
- JPREP -> Hazard Mitigation Planning Committee
- Participating Jurisdictions
- Coordinating Entities
- General Public

Hazard Mitigation Steering Committee

- Governing body that oversees plan development and keeps planning on track
- Establishes plan goals and objectives
- Ensures plan meets FEMA and other requirements
- Solicits and encourages participation in place by stakeholders
- Assist stakeholders in assembling information and data
- Organize and oversee public involvement
- Gather, assemble, synthesize, and review plan information and craft final plan document.

Hazard Mitigation Planning Committee

- JPREP, throughout the plan update cycle, will serve as the HMPC
- JPREP is typically attended by relevant stakeholder, jurisdictions, entities, and general public
- Will be used to solicit direct feedback, outlet for updates, and will act as "sounding board" for HMSC
- Opportunity for stakeholders to come together and discuss process and provide assistance to one another
- Contributes to hazard analysis and prioritization
- Reviews submitted mitigation strategies and assists with prioritization
- Outlet for direct community involvement and feedback in planning process

Participating Jurisdictions

- Full participants in plan, and must adopt final plan by governing body
- Provide full jurisdictional profile, including:
  - Staff, services, service area, and populations served
  - Assets, critical infrastructure, and values
  - Top-3 vulnerabilities (minimum)
  - At least one mitigation project or strategy per identified vulnerability
  - Codes, policies, or procedures relevant to plan
- Key participants in hazard vulnerability analysis at community level

Participating Jurisdictions

- County
- City
- 5 Fire Districts
- JeffCom 9-1-1
- 2 Hospital Districts (PT and Forks)
- Port of PT
- County Library
- Port Ludlow Drainage District
- 6 School Districts
- Jefferson Transit
- Jeffco PUD (Electricity and Water)

Coordinating Entities

- Are not full "Participating Jurisdictions" and do not need to formally adopt plan
- Provide input into plan and have short informational profile, including:
  - Org goals and responsibilities
  - Information on projects and other work
  - Opportunities to participate within community
  - Coordination issues
  - Other information the entity feels relevant
- Do not need to provide individual mitigation projects or strategies, but feedback welcome

Coordinating Entities

- Clallam County EOC
- Clallam County Fire 1 and 3 (West End and Sequim)
- Clallam County PUD
- Fort Worden
- Hoh Tribe
- KPTZ 91.9
- NPREP
- PT Paper
- Propane Providers
- Sequim School District 323
- USCG
- Naval Magazine – Indian Island
- WA State Dept of Ecology
- WA State Dept of Fish and Wildlife
- WA State Dept of Natural Resources
- WA State Dept of Transportation
- WA Mil Dept – Emergency Management Division
- Washington State Patrol

General Public

- Public participation and feedback is KEY
- Welcome at JPREP, but many can submit comments and review outside of formal group meetings
- All stakeholders are encouraged to raise awareness of plan, solicit feedback, and engage community
- Surveys will be developed to direct suggestions, comments, feedback, etc. to streamline process
- Goal is to build lasting relationships, recruit new volunteers and supporters, increase personal preparedness through awareness

Goals for ’22 Plan

1. 2022 HMP will build on the great work done in 2016 - no sense in reinventing the wheel.
2. The 2022 HMP will be a usable, functional document, one that can be taken off the shelf and used to quickly and easily find information. It will not be a massive, intimidating, whole record of every piece of data available, but rather a reference document designed and encouraged to be utilized and leveraged.
3. The plan will feature items that are concrete and actionable whenever possible - the document will not just be an quick reference, but a functional roadmap for our community.
4. The plan, and planning process, will be written and designed with collaboration and Whole Community in mind.
5. The plan will have a special emphasis on climate change, recognizing its existential threat as well as its cascading impacts with other natural and man-made hazards.
6. The 2022 will encourage All Hazard Planning whenever possible, encouraging flexibility in planning and mitigation activities that span multiple hazards. The plan will not create "tunnel vision" towards one hazard in particular and will promote resilience in the face of the potentially unpredictable.
7. The 2022 HMP will build towards the work required for the 2027 HMP and plans beyond.

Plan Update Timeline

- Today: Announcement plan update cycle has begun
- This week: Participating Jurisdictions/Coordinating Entities given initial notice
- **December 3rd**: Regular JPREP meeting, hazard inventory overview
  - Hazard Vulnerability Analysis survey opens
  - January 3rd: HVA survey closes

Plan Update Timeline

- **January 7th** – HVA survey results presented; mitigation strategy survey opens
- **February 14th** – strategy survey closes, all CA/PJ inputs due.
- **March 4th** – regular JPREP meeting, final plan presentation, incorporate final feedback

Plan Update Timeline

- **March 11th** – plan to EMD
- **April** – plan to FEMA
- **May** – approved!

Plan Update Timeline

- Ongoing: JPREP will review plan progress at least once per year over the next five years.
- Steering Committee, after plan approval, will reassess membership and will then look to meet no less than twice per year to solicit updates and provide information to JPREP

Call for Assistance

- Technical editor
  - Proofreads submissions and final plan
  - Help ensure plan is usable, readable document by layperson
  - Review for accuracy and clarity (content)
  - Review for organization, design (form)

Call for Assistance

- Subject Matter Experts needed to "adopt" sections of plan
  - Convert existing hazard profiles into updates format
  - Conduct research on hazard, incorporate latest information and recent history
  - For example, a geologist who may wish to work on the earthquake section of the HVA, or a group like Local 20/20's climate change working group to assist with climate change section

Call for Assistance

- Organizational "champions" to assist with PJ and CA profiles
  - Work closely with partner organization to help them put together section
  - Very similar to Hazard SMEs
  - Can work with multiple PJs or CAs

Next Steps

- Participating Jurisdictions and Coordinating Entities will be notified this week with formal request.
- Please let DEM Director Bence know if you are interested or available in participating at whatever level at your earliest convenience
- Prep for December 3rd JPREP and Hazard Analysis

Questions?



Jeff Co Hazard Mitigation Plan
Community Mitigation Strategy Survey Results
March 4th, 2022

Meeting will start at 10:02

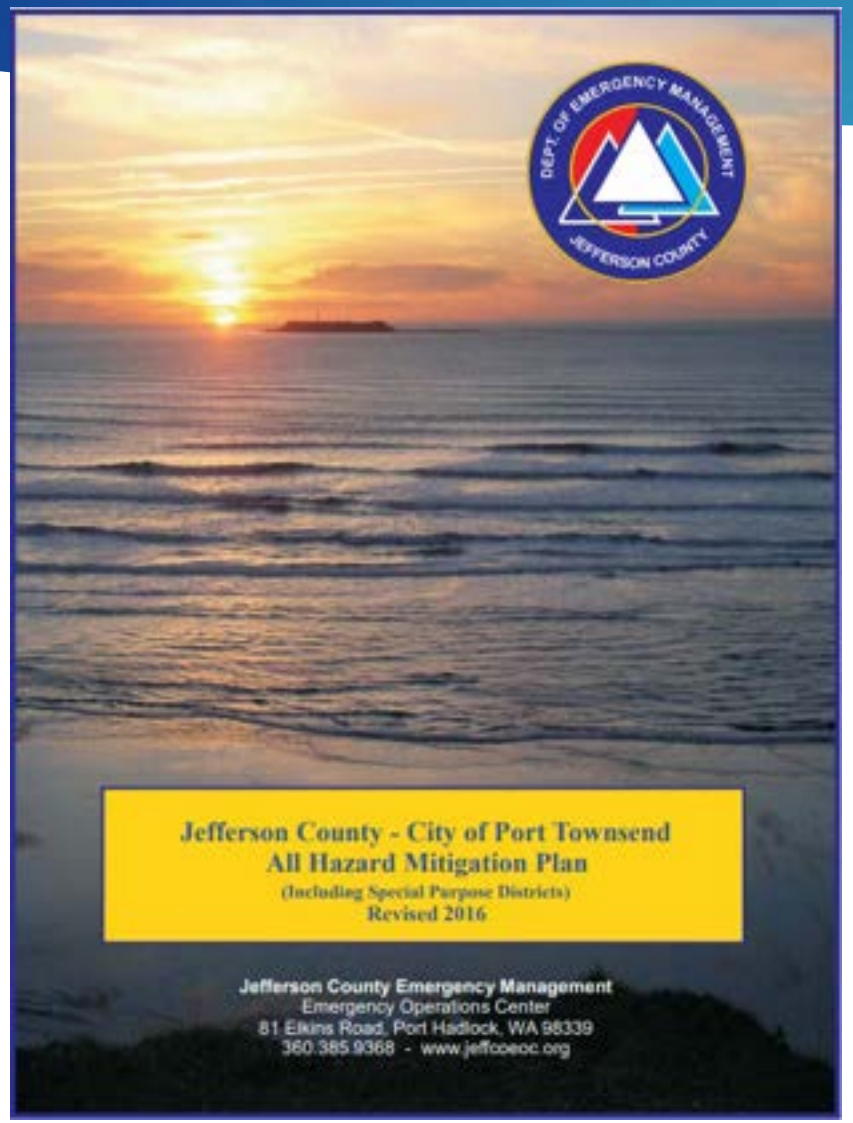
Housekeeping

- PLEASE “sign-in” by typing your name and organization in chat
- PLEASE “raise your hand” by typing your question into chat
- All participants will be muted by organizer

Agenda

- 10:00 - Welcome and Intro
- 10:10 - Mitigation Plan Summary and Refresher
- 10:20 - Survey Results - Mitigation Project Survey
- 10:50 - JPREP Feedback
- 11:20 - Plan Next Steps
- 11:30 - COVID Transition
- 12:00 - Adjourn

Previous Mitigation Plan



Available for viewing at bit.ly/jeffcohazmit

Plan Elements

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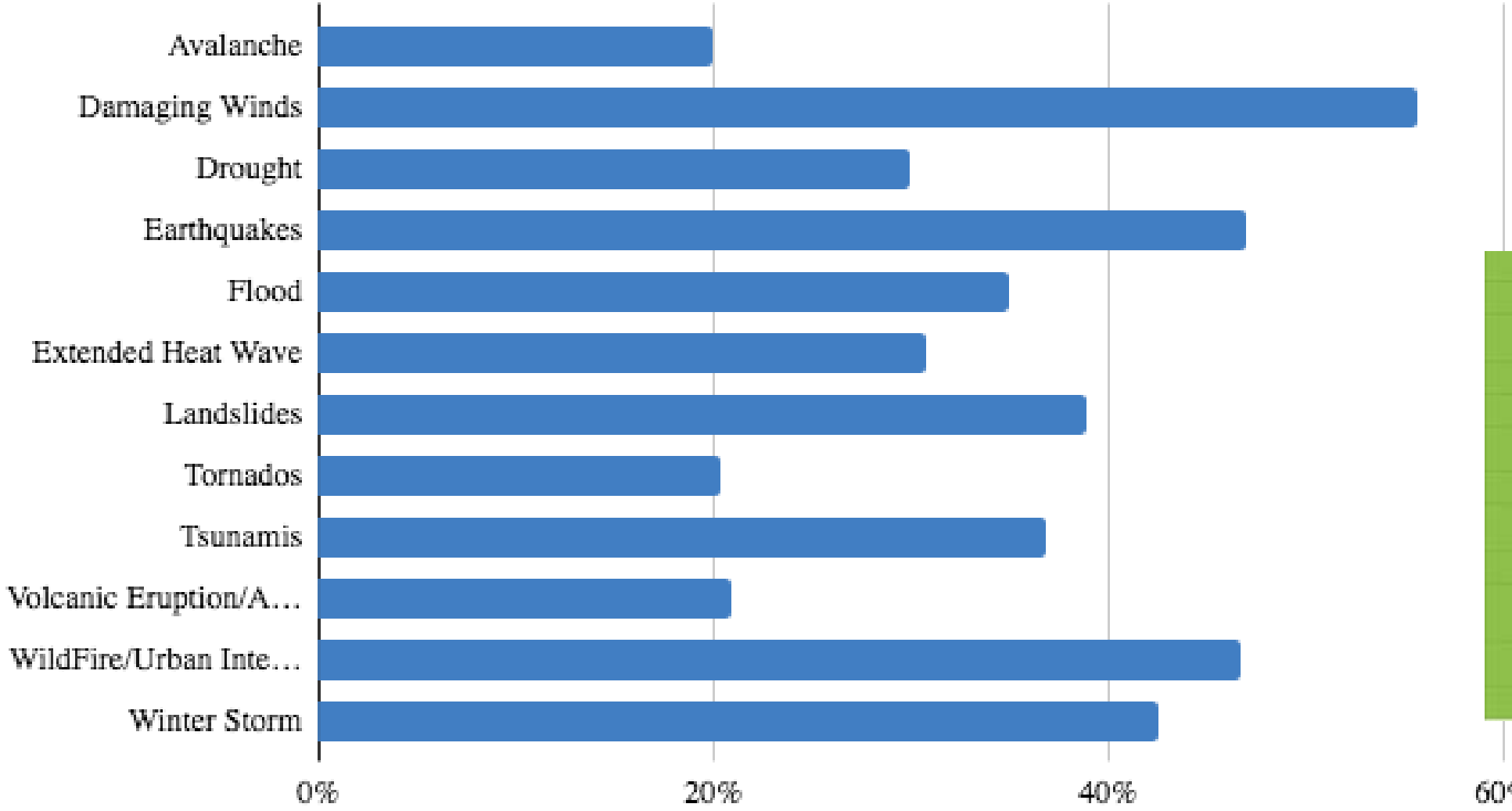
Plan Elements

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  - Public feedback and suggestions are ESSENTIAL to ensure a robust, viable plan
    - (Additionally, the planning process itself is valuable in the relationships the community builds)

HAZARD AND VULNERABILITY ASSESSMENT TOOL
NATURALLY OCCURRING EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of critical services*	*Level of Preplanning you have undertaken*	*Capabilities of local resources to respond to impacts*	*Capacity of whole community to respond to impacts*	*Relative threat**
SCORE	*1= Unkown but rare 2 = Unkown but anticipated 3 = One hundred years or less 4 = 25 years or less 5 = once per year or more*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 - 100%*
Avalanche	2	1	1	1	2	1.75	2.25	**20%**
Damaging Winds	5	1.5	1.75	1.5	1.75	1.5	2	**56%**
Drought	3	1	1	1	2	2	2	**30%**
Earthquakes	3.25	2.5	2.5	2.5	1.75	1.75	2	**47%**
Flood	3	1.25	1.75	1.5	2	2	2	**35%**
Extended Heat Wave	3	1.5	1	1	1.75	2	2	**31%**
Landslides	3.25	1.5	1.75	1.5	2	2	2	**39%**
Tornados	1.5	1.75	2	1.75	2.5	2	2.25	**20%**
Tsunamis	2.5	2.25	2.5	2.5	2	2	2	**37%**
Volcanic Eruption/Ashfall	1.75	1.5	1.5	1.5	2	2	2.25	**21%**
WildFire/Urban Interface	3.5	2	2.25	2	2	1.75	2	**47%**
Winter Storm	4.25	1.25	1.25	1.5	1.5	1.5	2	**43%**
AVERAGE SCORE	**3.00**	**1.58**	**1.69**	**1.60**	**1.94**	**1.85**	**2.06**	**36%**

Natural Hazards



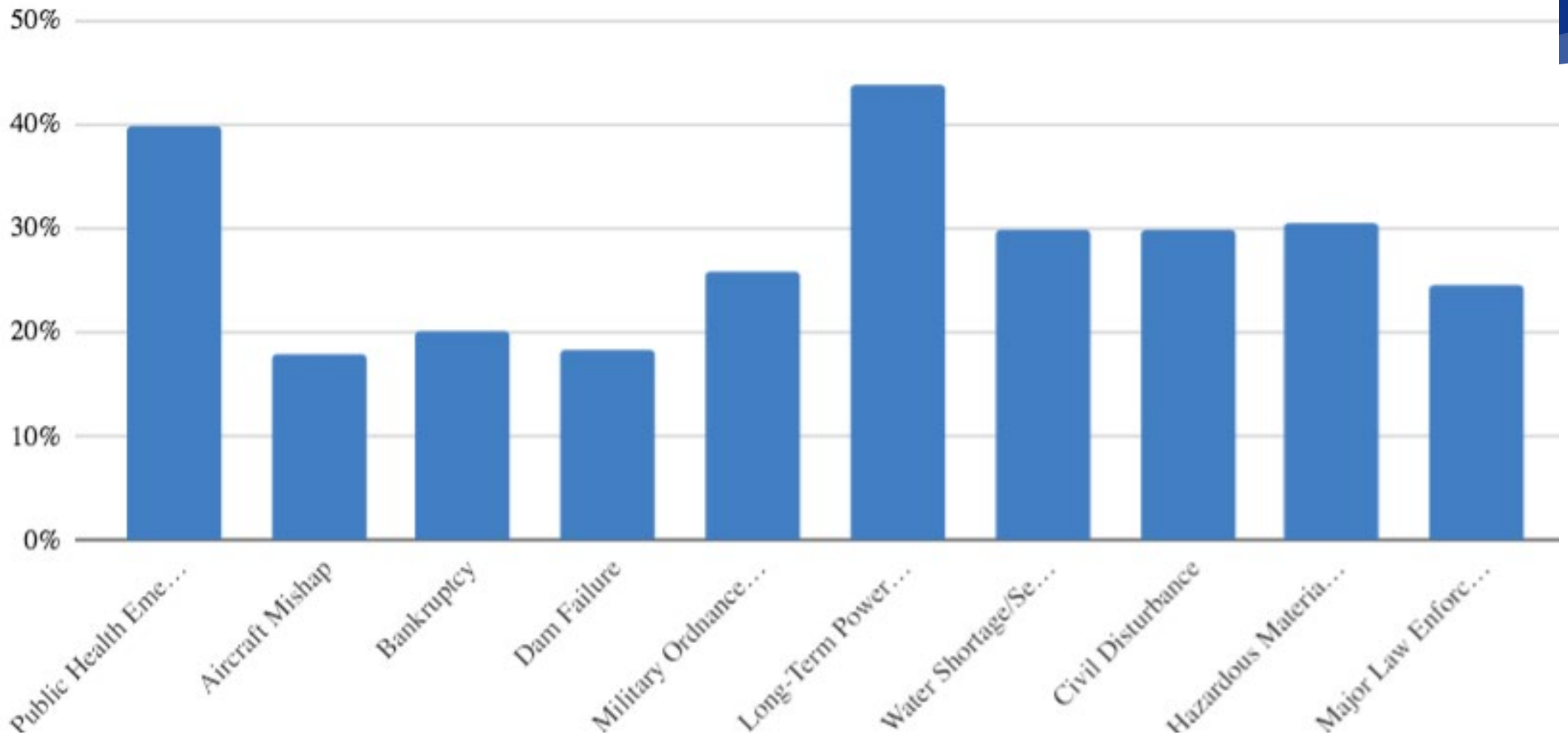
56%	Damaging Winds
47%	Earthquakes
47%	Wildfire/Urban Interface
43%	Winter Storm
39%	Landslides
37%	Tsunami
35%	Flood
31%	Extended Heat Wave
30%	Drought
21%	Volcanic Eruption/Ashfall
20%	Tornado
20%	Avalanche

HUMAN RELATED EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of critical services*	*Level of Preplanning you have undertaken*	*Capabilities of local resources to respond to impacts*	*Capacity of whole community to respond to impacts*	*Relative threat**
SCORE	*1= Unkown but rare 2 = Unkown but anticipated 3 = One hundred years or less 4 = 25 years or less 5 = once per year or more*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 - 100%*
Public Health Emergency	3.5	2	1	2	1.75	1.5	2	**40%**
Aircraft Mishap	1.75	1.25	1.25	0.75	2.25	1.5	2.25	**18%**
Bankruptcy	1.5	1.25	1.25	2.25	2.25	2.5	2.5	**20%**
Dam Failure	1.5	1.25	1.5	1.25	2.5	2	2.5	**18%**
Military Ordnance Incident	1.75	2.25	2.25	1.75	2.5	2	2.5	**26%**
Long-Term Power Outage	3.5	1.75	1.75	2	1.75	1.75	2.25	**44%**
Water Shortage/Sewage Failure	2.5	1.75	1.25	1.75	2	2	2	**30%**
Civil Disturbance	2.5	1.25	1.5	1.5	2	2	2.5	**30%**
Hazardous Materials Spill	2.5	1.5	1.5	1.5	2.25	1.75	2.5	**31%**
Major Law Enforcement Activity or Terrorism	2	1.5	1.5	1.75	2.25	1.75	2.25	**24%**
AVERAGE	**2.30**	**1.58**	**1.48**	**1.65**	**2.15**	**1.88**	**2.33**	**28%**

**Threat increases with percentage.*

Human Hazard



	Natural	Human
Probability	0.60	0.46
Severity	0.60	0.61
Hazard Specific Relative Risk:	0.36	0.28

Survey Overview

- The Community Feedback Survey is designed to give members of the community the opportunity to voice any concerns they have or mitigation activities they would like to see
- Following our mitigation planning process, we:
  - Learned about hazards in the community
  - Developed a risk profile
  - Now are asking the community to propose ways to reduce risk, any and all ideas considered.

Survey Overview

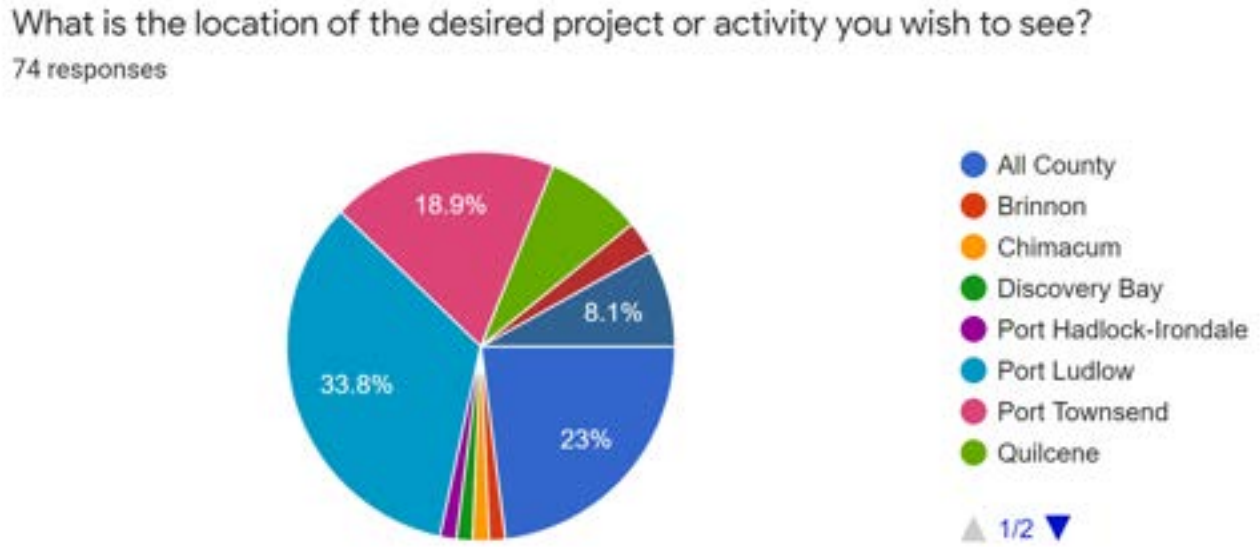
- The proposed ideas will be included in the final draft of the Hazard Mitigation Plan as part of the community feedback section.
  - Additionally, some Participating Jurisdictions may choose to include specific projects in their sections/action plan matrixes
- Ultimately, plan ideas/projects in the HMP are prime candidates for grant funding down the line - the project you submitted via the survey may become a reality due to your input!

Survey Overview

- There were 82 total responses answering the four following questions:
  - What is the location of the desired project or activity you wish to see?
  - Where in the county do you live (Optional)?
  - What Hazard is this aimed at (Multiple selection)?
  - What is the desired mitigation project or activity you would wish to see?

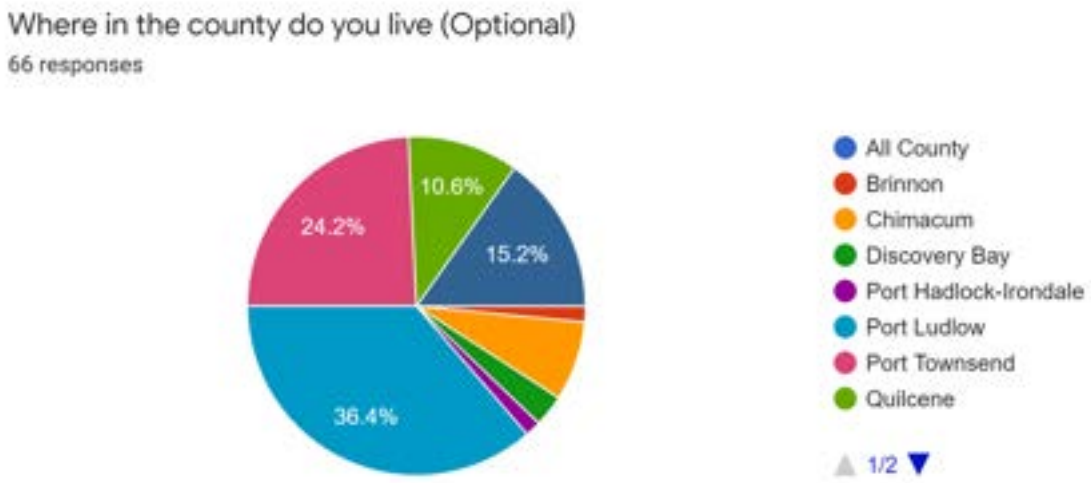
Project Location

- Projects in Port Ludlow were the most popular, beating our county-wide projects by 10%(25/74)
- One response for each of Port Hadlock, Chimacum, Brinnon, and Discovery Bay
- Projects that would encompass the entire county received 17/74 votes



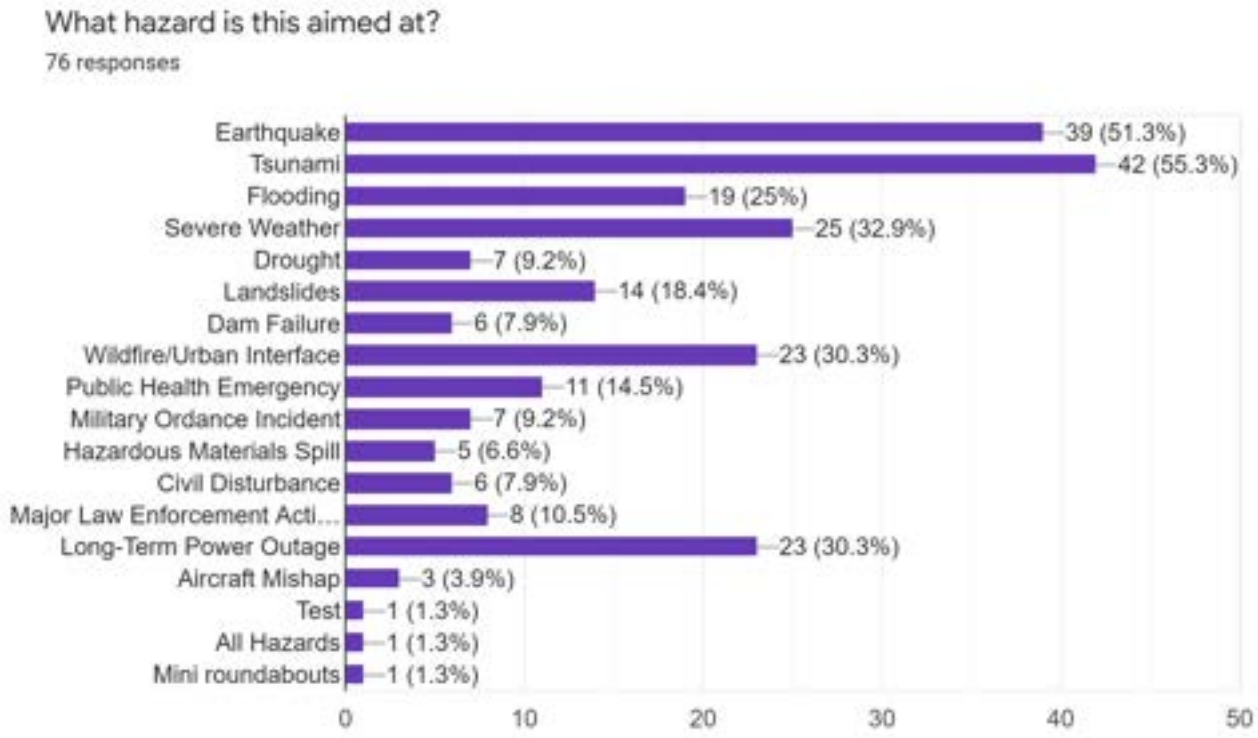
Where do you live?

- 24/66 respondents live in Port Ludlow
- 16/66 live in Port Townsend
- Only one person claimed to live in both Port Hadlock and Brinnon each.



What hazard is this aimed at?

- The top two hazards respondents aimed at are Tsunami and Earthquake
- In the Hazard Vulnerability Assessment Survey (HVA), respondents put Damaging Winds as the highest risk for the county followed by Wildfire and Earthquake
- Majority of concern comes from Tsunami, Earthquake, Severe Weather, Wildfires, and Power Outages.



- The projects…



Tsunami Sirens

- Of the 66 total responses, 20 were advocating for greater use of Tsunami Sirens within Jefferson County
- Many respondents requested additional tsunami siren tests
  - Tests are currently conducted first Monday of every month
  - Alternating between activation by State AWC and local DEM
  - Sirens are “silent tested” every day
- Sirens currently located in:
  - Boat Haven
  - Point Wilson
  - Point Hudson



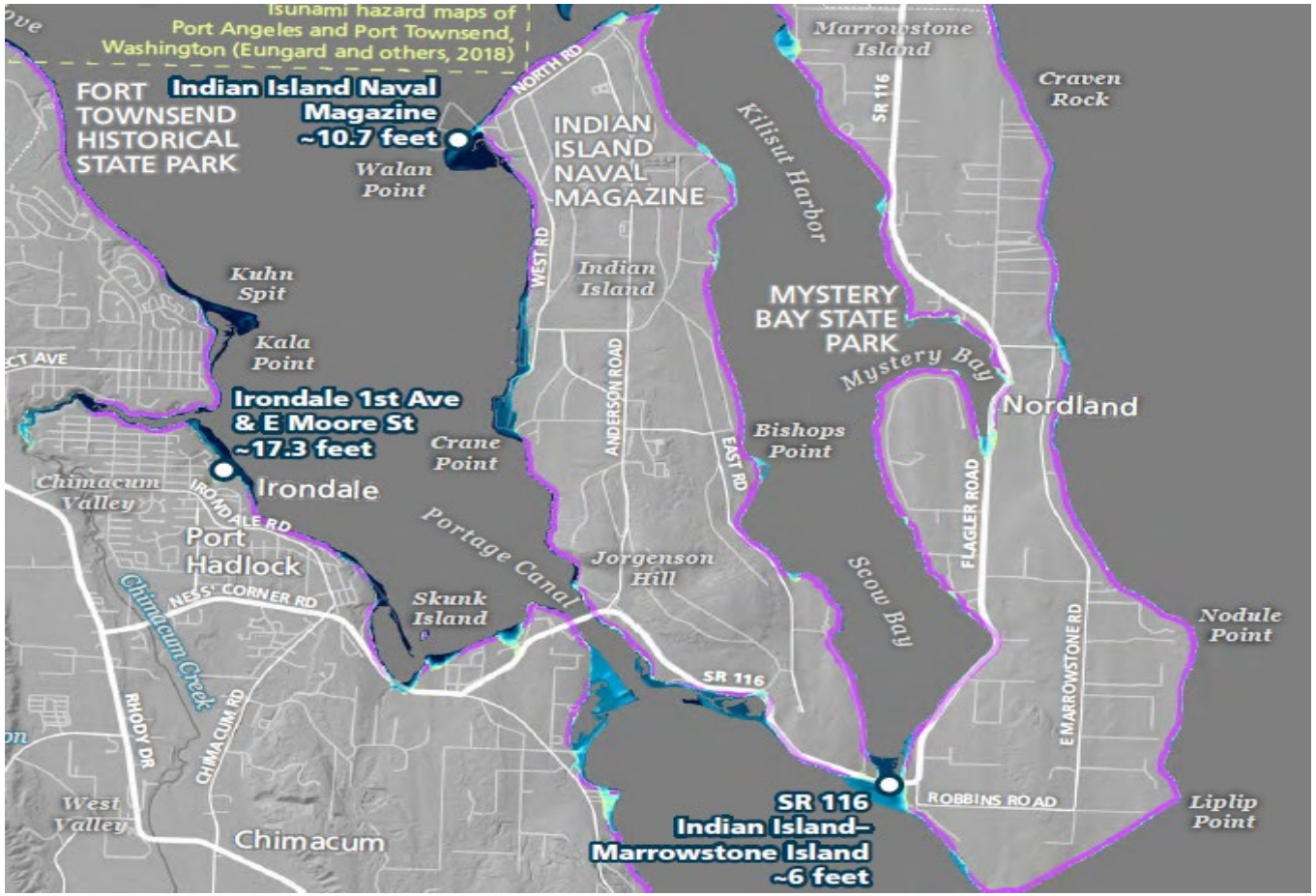
Tsunami Sirens

- Other responses requested additional tsunami siren placement, including:
  - Numerous requests for sirens in Port Ludlow
  - Discovery Bay
  - Kala Point
- Sirens currently located in:
  - Boat Haven
  - Point Wilson
  - Point Hudson



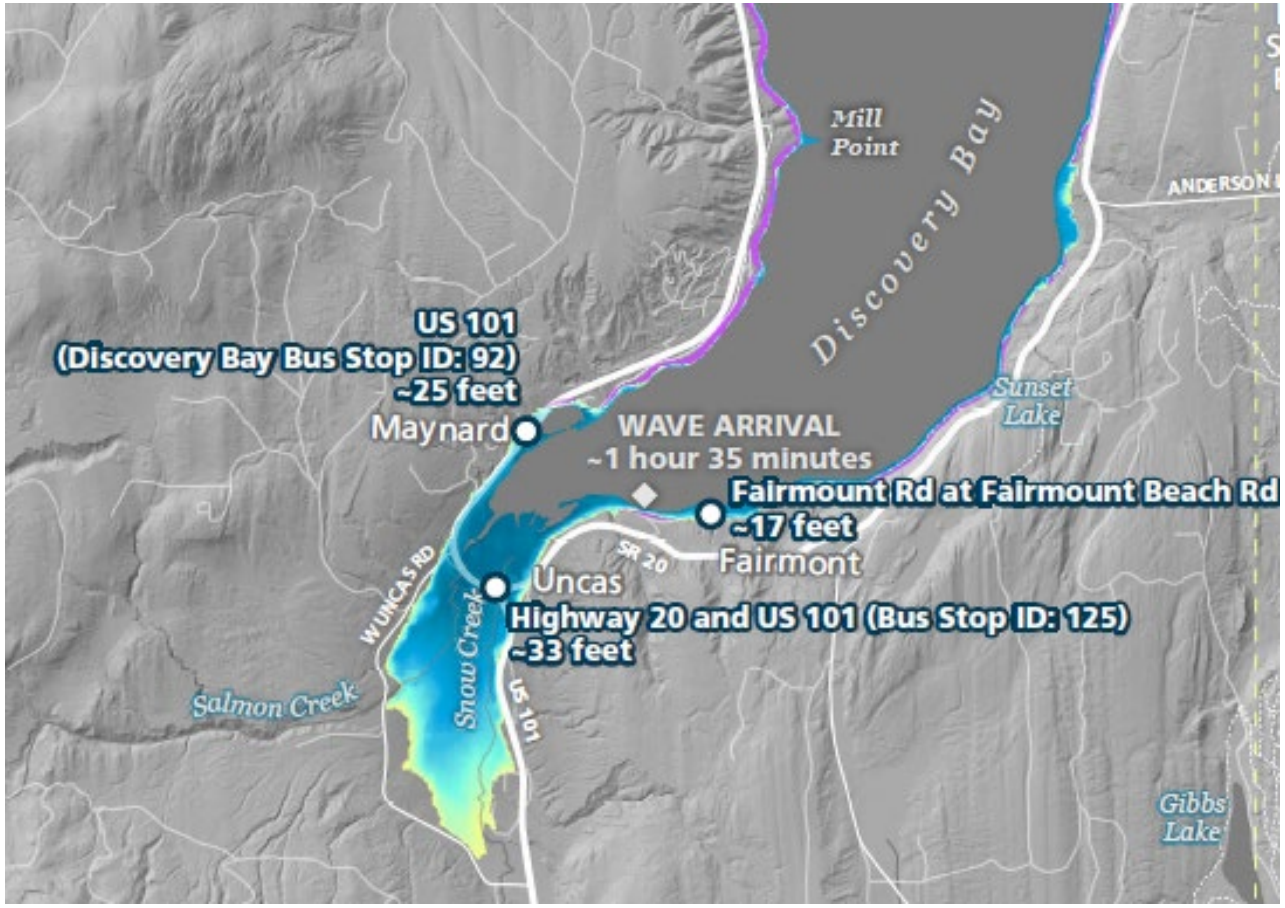
Port Townsend Bay Inundation

- Naval Magazine Indian Island at Walan Point ~10.7 Feet
- Irondale 1st Ave & E Moore ~17.3 feet
- Indian Island/Marrowstone connection ~6 feet



Discovery Bay Inundation

- US 101 Discovery Bay Bus Stop #92 ~25 feet
- Highway 20 and US 101 ~33 feet
- Fairmount Rd at Fairmount Beach Rd ~17 feet



Port Ludlow Bay Inundation

- Olele Point West ~6.9 Feet
- Port Ludlow Marina ~5.5 feet



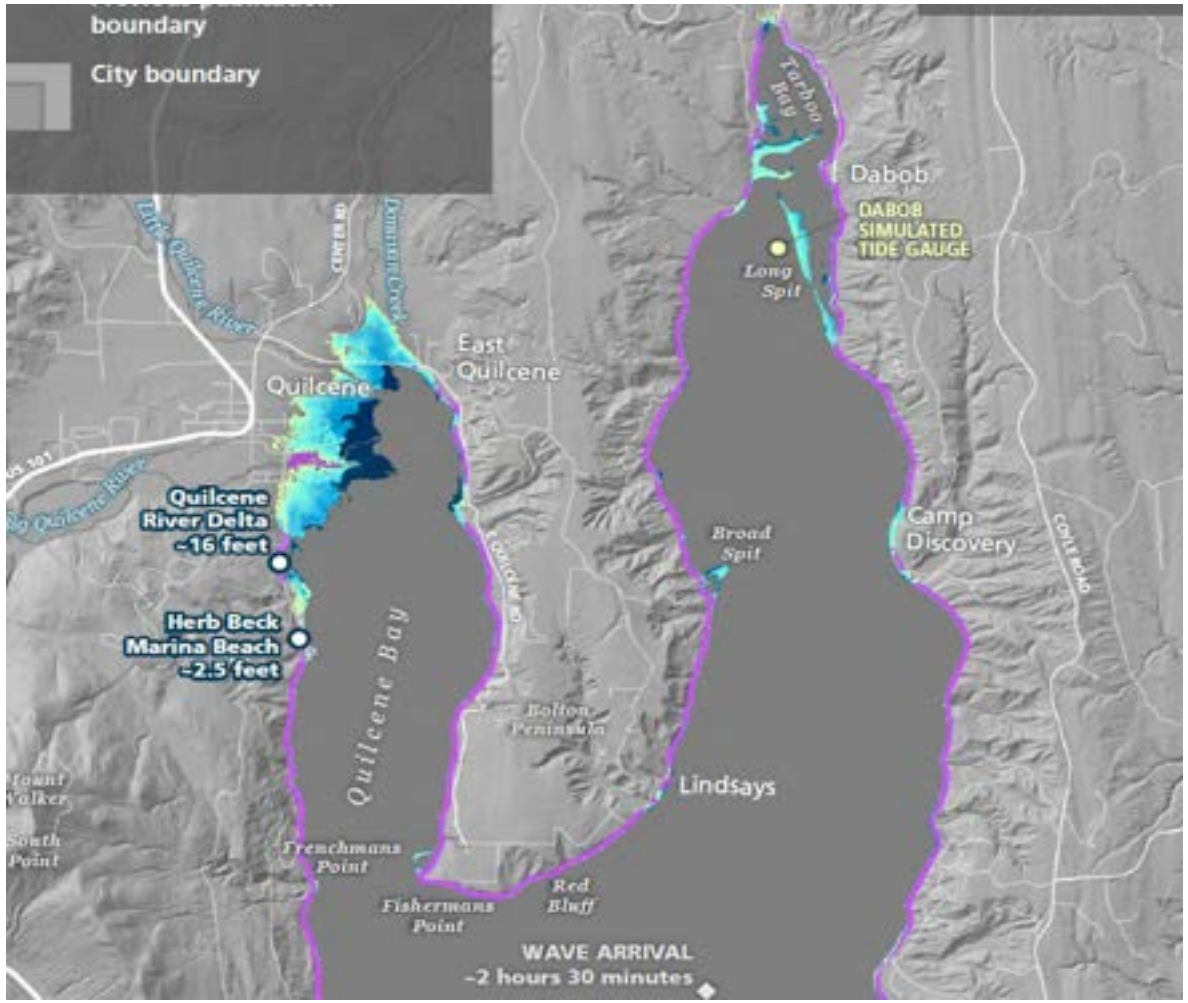
Shine Inundation

- Shine Tidelands State Park ~10 feet
- Shine-Gri-La ~10.5 feet



Quilcene/Dabob Inundation

- Quilcene River Delta ~16 feet
- Herb Beck Marina Beach ~2.5 feet



Animal Evacuation & Welfare

- Multiple responses regarding animal welfare pre and post disaster
- Evacuation plans for the many livestock, predominantly horses, specifically during wildfires
- Strong considerations for Marrowstone Island community
- Where will the livestock and other animals go as a central location? (Fairgrounds, Chimacum, HJ Carroll?)
- Improvements for the fairgrounds animal paddocks

Protection of Power Lines & Electrical Backup

- Burying power lines in order to mitigate the effects and disruption caused by severe weather
  - By burying power lines, it decreases the chance of the loss of electricity in months when it is generally colder
- Back-up power supply for Quilcene schools such as a generator capable of keeping operations going
- Investment and construction of more renewable energy sources such as hydro and wind power

Community Resilience

- Multiple requests for providing caches of emergency supplies such as food, water, fuel, and medical
- Continue promoting and educating the community of resiliency pre and post disaster

Community Resilience

- Building a community resiliency center for serving multiple needs.
  - Provides location for hot/cold weather sheltering, distribution of supplies, and as a central evacuation point
- Was listed in 2016 under City of PT profile, identifying Mountain View as location



Post-Disaster Sanitation & Hygiene

- Prior to Covid, Jefferson County has promoted the use of human-waste buckets for households via NPREP
- Additional training through NPREP on post-disaster sanitation and hygiene practices
- Additional collaboration with local non-profit PHLUSH
- Project Proposal includes:
  - Conduct awareness campaigns that engage the public in positive, effective, and empowering ways to address the overlapping threats of climate change, cyber terrorism, impaired infrastructure, and interruption of government services.
  - Convene a session for selected officials to reflect on water and sanitation disaster scenarios and their impact.
  - Assess - with partner agencies and the Board of Health - the feasibility of prototyping and pilot projects to develop ecological sanitation technologies that meet WE Stand or other code and are appropriate for local conditions.
  - Advocate at the State level for decentralized technologies for greywater reuse, rainwater harvesting, and dry toilet systems.

Non-Traditional Mitigation Measures

- One respondent, wanting to tackle the growing risk of Covid in animals, expresses desire in partnering with DFW to test the deer population of Port Townsend.
  - https://www.aphis.usda.gov/animal_health/one_health/downloads/qa-covid-white-tailed-deer-study.pdf
  - https://www.npr.org/sections/goatsandsoda/2021/11/10/1054224204/how-sars-cov-2-in-american-deer-could-alter-the-course-of-the-global-pandemic
  - Study in midwest/northeast found 40% of white tail deer had COVID-19
  - Animals can act as "reservoir" meaning COVID may never go away



Non-Traditional Mitigation Measures

- The complete removal of roundabouts within Port Townsend
  - cut down on potential traffic collisions
  - decrease frustration, improve the tourist experience and their chances of returning
- Recommended replacing with speed bumps instead



Non-Traditional Mitigation Measures

- Alternate evacuation routes cut through forest land that get around areas that are likely to become unavailable during an event (Earthquake/severe weather)
- Consistent Solar Battery power for every resident within Jefferson County

Miscellaneous Mitigation Proposals

- Caches of food, water, and fuel available for distribution post-disaster
- Additional retrofitting of City/County facilities (Courthouse, etc)
- Construction of additional affordable housing in Jefferson County
- Creation of web-based county volunteer management system
- Reduce building along cliffs and waterfront, slow down tree removal
- Careful planning and thorough studies on the vulnerability of Lower Port Townsend and the economic and social impact its devastation would bring, and educating the area on it

Miscellaneous Mitigation Proposals Continued

- Communication strategies for contacting the Hoh and other local Tribes
- Having a civil disturbance plan related to Covid mandates
- Expanding the Lords lake reservoir to increase amount of water it can hold
- Creation of a landslide hazard map for Jefferson County
- Several respondents wish to see more education and learning opportunities in regards to wildfires
- Upgrade communications within the county

Discussion

Which projects does JPREP feel are most valuable/needed? Which would you like to emphasize in the plan?

Discussion

Are there any projects you would like to suggest here? This is your last chance!

Discussion

Last but not least - anything else you want to see reflected in the mitigation plan? Emphasis regarding certain hazards, recent local disasters, the state of the community, etc.?

Last chance to guarantee any feedback in the plan!

Next Steps

- All participating jurisdictions have through March to finish updates
- DEM working to finalize hazard updates ASAP
- Will collate and send to State EMD for review at beginning of April
- We will convene one final meeting in early April for overview of any changes, last call of feedback final questions
- After EMD review, we'll make final changes and send to FEMA before end of April
- FEMA will have plan by beginning of May, will approve after all conditions are met

COVID-19

Pandemic definition:

an outbreak of a disease that occurs over a wide geographic area (such as multiple countries or continents) and typically affects a significant proportion of the population : a pandemic outbreak of a disease

an outbreak or product of sudden rapid spread, growth, or development

COVID-19

Endemic definition:

regularly found among particular people or in a certain area.

COVID-19

- Transition from pandemic response to endemic management
- Public Health will continue to conduct contact tracing, but only in high-risk environments like long-term care facilities
- Mass vaccination clinics demobilized
- Masking mandate, vaccination requirements ending
- After action review starting later this month
- PPE distribution ending sometime in near future
- FEMA reimbursement likely ending July 1, 2022
- Emergency declaration likely ending same time

COVID-19

- State requirement for proof of vaccine/testing at large events ended March 1
- Local vaccine requirement to dine indoors ending March 11
- State and local masking requirements ending March 12
- Masking still required in healthcare, other high-risk settings

COVID-19

- HOWEVER - masking is still recommended due to current levels
  - Dr. Berry recommends waiting until case rate <100 per 100k over two-week period
  - <50 per 100k over two-week periodi recommended for high-risk individuals
  - Currently at 525 from 2/10 to 2/23
  - Masking mandate removed simply because we are not at risk of overrunning hospitals, not because of general low risk

COVID-19

- High quality masking very important as many take masks off
  - Cloth masks - no protection to user, provides "source control" to protect others
  - Surgical - some protection to user, better source control
  - KN95/N95 - best protection all around, as long as fit is correct, remains comfortable
- Free KN95/N95 masks are grocery stores, food banks, libraries, etc. Info on Public Health website

COVID-19

- Continue to monitor case levels, ascertain risk.
- Other than masking, important factors include:
  - Distance
  - Air flow
    - Indoor/outdoor
    - HVAC
    - HEPA filtration
  - Concentration
  - Personal risk level
  - Contact risk levels

COVID-19

- Last questions: Any final thoughts, questions, needs as we transition from pandemic to endemic? Anything we need to reflect in the hazard mitigation plan?

COVID-19

- Next JPREP meeting: June 3, 2022 - will be sharing results of COVID after action.

Thank you!

January 14 Meeting ChatlogSign In

10:05:12 From Jacob Hausdorf DEM : Jacob Hausdorf DEM
10:05:23 From Elizabeth B : Elizabeth Bindschadler, NPREP
10:05:25 From Allan Kiesler : Allan Kiesler
10:05:29 From John Ebner DEM : John Ebner JCDEM
10:05:30 From Hazel : Z Thomas, Homeowner PL
10:05:32 From Mike Towner : Mike Towner - PLVC Board and EM Committee
10:05:33 From 19712 : Stephan Lovendahl Port Ludlow EPC team member
10:05:33 From Andy Stockton DEM/ARC : Andy Stockton ESF-6 DEM/ARC
10:05:34 From Melanie Johnson : Melanie Johnson, Case Manager, Discovery Behavioral Healthcare
10:05:37 From Ron Dawson : Ron Dawson
10:05:45 From Bill Hunt : Bill Hunt, CERT,
10:05:48 From Ron Dawson : PLFR
10:05:53 From Allen Israel : Allen Israel LMC EPC
10:05:56 From A/C Brian Tracer : Brian Tracer - Assistant Fire Chief - EJFR - ESF 4
10:05:56 From monicamickhager : Hi everyone, this is Monica MickHager, city council Port Townsend
10:05:57 From Cindy Jayne : Cindy Jayne, NPREP lead for Adelma Beach, and Climate Action Committee
10:06:12 From David's PC : David Aho
10:06:19 From KK : Keppie Keplinger
10:06:19 From Don Svetich : Donald Svetich, Quilcene School District and QFR
10:06:38 From Kathy Robertson : Kathy Robertson - Block Capt - Port Ludlow Cove 2
10:07:58 From Larry B : Larry Berger, IMT volunteer
10:25:40 From Mike Towner To Willie Bence(privately) : I need to drop for a work call. Thanks for putting this presentation together!

Jan. 11 HazMit Conf Call

Willie Bence, John Bethel, Jacob Hausdorf, Laura Guth. K. Keplinger

AGENDA:
Results of analysis will be discussed.
Do we want to emphasize anything in the meeting.
Next survey: asking submission for Haz Mit projects, plans, communications, infrastructure, etc.
John: Earthquake and Tsunami submissions
Progress reports

Results and trends (Assessments: Natural and Human hazards)
The highest risk is damaging winds, earthquakes, wildfires and winter storms.
Lowest: Avalanche and Tornadoes.

Willie: Should be open to saying that this is the community perception, but not necessarily reality
Trends: complete split in opinion in the community; 50% voting for drought as being some impact and 50% saying its moderate or catastrophic.

John: Natural hazards: ranking our concerns and the real risk that it's low, but we show earthquake and tsunamis and the actual risk to the community on those hazards could be death in the hundreds and property losses in the millions.
The risk we face here is perhaps higher. . .

Jacob: Re: earthquakes, they happen more often than every 75 years. What people are saying is that it's a moderate impact. It could be more catastrophic. They think of themselves as being prepared or somewhat prepared, and capacity as a community is somewhat. Most people aren't aware of the S. Whidbey fault and other faults.
Willie: Maybe we educate folks to change their perception. Maybe we put a project into the counties outreach list to better educate the community.

Human hazards, Long-term power outages, Pandemic, and Haz materials spill.
Power outage occurs every 100 years or less. Maybe we need to define the time period.
Most people think it's something that happens every 25 years. Critical services impact.
People are somewhat prepared or well prepared.

Willie: Jacob--Can you put the relative threat numbers on a bar graph, the risk category?
Power outages: seasonally related: winter makes it worse for heat, but summer outages can bring another set of issues.

John: Mention the hazards are being listed as isolated phenonium, but looking at the list the hazards could be consequences of another hazard. Incidents don't often occur singularly.

Willie: Make that point to the group on Friday.

Jacob: Re: preparedness category, people are somewhat prepared, or not. And the collective risk level is higher in the human risk category than natural hazards.

Looking at damaging winds: people think it happens once a year or more. Overall, some interesting splits on people's perception.
People are split on what damaging winds are.

Willie: Might have something to do with the vagueness of the question.

Jacob: Draft Survey--Feedback Survey:

Location of activity of project
Where do you live
What hazards are you aiming your remarks to
Desired mitigation project. . .(This will be a team project to go through these responses)
Willie: Will encourage people to give multiple ideas and feedback. We want as many pieces of feedback as possible to put in the plan.
Push the link out; make a flyer for vax clinic.

Re: Laura's questions:
People are asking about CERT training.
We should include Maritime Emergencies.
Anything else for Friday's meeting?

John: Earthquake and tsunami:
Read the 2016 sections. They are very wordy, should be condensed but the information was thorough and accurate. Suggest we adopt those points and carry them forward. Re: earthquakes, there continues to be research into movement along the North Olympic Fault zone, multiple post-glacial movement that would have an impact and it's being looked at. Also the shallow crustal fault that runs through the San Juan area.
WA State Schools report. (Get link from Bethel.)
Re: Tsunamis: development of the new maps. Summarized some of the findings from those maps. Looking at shallow crustal faults and looking at the possibility of those to impact our area.
This is all in draft form.

Willie: This will work. Will check with the State Haz Mit on form and refer to some of the 2016 parts.

John: A geologist with the state offered to look at it. Attempting to rewrite the Avalanche/landscape section.

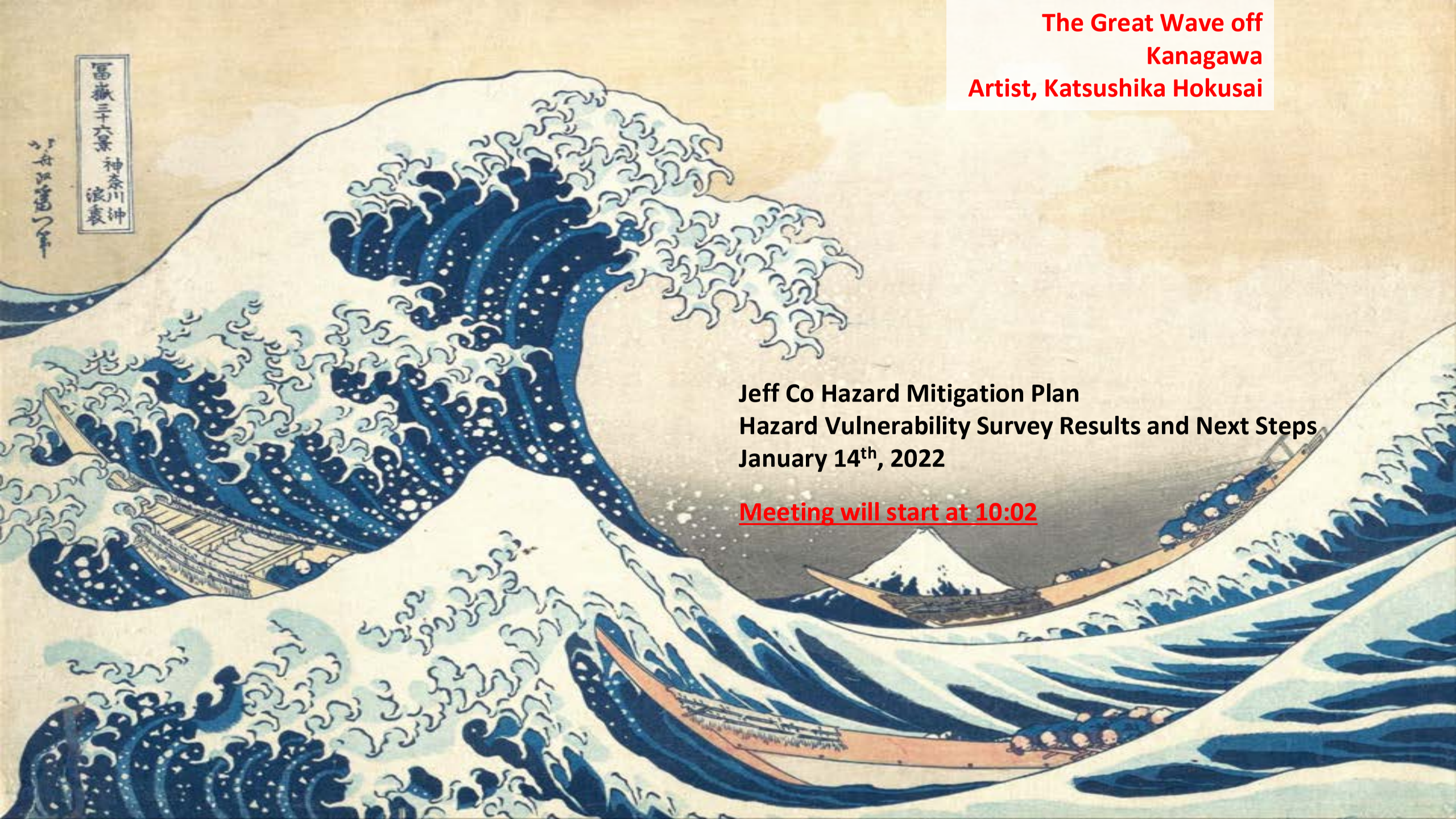
Willie: No deadline for Friday.
John: Will have a draft to you in the next few weeks.

Heard from MJ: she had nothing to add.

Laura: Has sent in the Aircraft Mishaps.

Laura: Was planning to shorten it a bit, but some of the research I did I felt was important to leave it alone.

Willie: See you all Friday, 10AM.



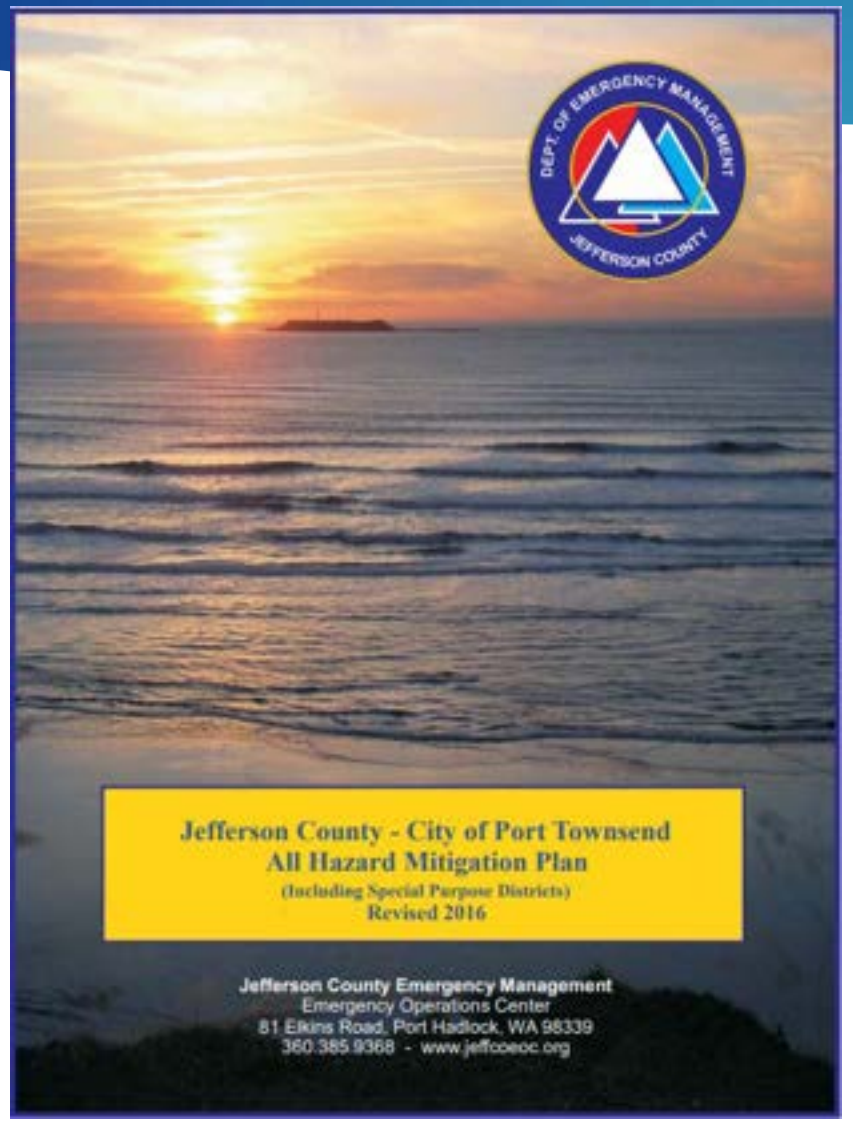
Jeff Co Hazard Mitigation Plan
Hazard Vulnerability Survey Results and Next Steps
January 14th, 2022

Meeting will start at 10:02

Housekeeping

- PLEASE “sign-in” by typing your name and organization in chat
- PLEASE “raise your hand” by typing your question into chat
- All participants will be muted by organizer

Previous Mitigation Plan



Available for viewing at bit.ly/jeffcohazmit

Plan Elements

- Step 1: Identify natural and man-made hazards presenting potential consequences to Jefferson County
  - Often called a "THIRA" (Threat and Hazard Identification and Readiness Assessment) or "HVA" (Hazard Vulnerability Assessment)
  - More than just a list of bad things that might happen, this represents a prioritization of hazards to plan and prepare for based on severity, frequency, scope, etc.

Plan Elements

- Step 2: Build a multi-jurisdictional community profile.
  - Includes information about Jefferson County, the City, and all participating and cooperating agencies assets and other information relevant to planning.
  - This includes things like:
    - core mission(s),
    - services,
    - service area,
    - population,
    - critical infrastructure,
    - staff,
    - assets owned and values,
    - previous disasters,
    - references to relevant plans and policies.

Plan Elements

- Step 3: Develop mitigation strategies.
  - Plan stakeholders create a five-year action plan matrix
  - Consists of strategies and projects designed to limit the impact of the hazards from Step 1, given the profile of Step 2
  - Public feedback and suggestions are ESSENTIAL to ensure a robust, viable plan
    - (Additionally, the planning process itself is valuable in the relationships the community builds)

Definition: HVA

- Hazard and Vulnerability Analysis:
  - In short, it's an assessment of risk:
  - Risk = Probability x Impact or (Magnitude - Mitigation/Response Capacity)
  - Risk is calculated for each identified hazard for comparison/context
- HVAs represent a snapshot analysis of an organization, agency, or jurisdiction's overall threat profile and the risks it faces

Definition: HVA

- Started by listing all potential hazards an organization, agency, or jurisdiction may face, whether they be:
  - Natural (earthquakes, tornadoes)
  - Technological (long-term power/internet outage)
  - Man-made (terror)
- In our HMP, this is the "Hazard Inventory" – we'll review this in a moment

Definition: HVA

- Then, identify the probability or likelihood of each on a rough scale:
  1. Unknown but rare
  2. Unknown but anticipated/eventual
  3. One hundred years or less
  4. 25 years or less
  5. Once per year or more

Definition: HVA

- From there, we evaluate their impacts to our entity with respect to:
  - Human impact – impact to loss of life or death
  - Physical losses – losses or damages to homes, property, infrastructure
  - Continuity impact – interruption of critical services i.e. government, food supply
- This is the "Magnitude" portion of the equation
- Rated on a 0 – 3 rating scale, with 0 being no impact, 3 being catastrophic.

Definition: HVA

- Rated on a 0 – 3 rating scale,
  - 0 being no impact,
  - 1 = some impact
  - 2 = moderate
  - 3 = catastrophic.

Definition: HVA

- Finally, evaluate your ability to mitigate and/or respond to each threat:
  - Preparedness: The level of preplanning and mitigation activities you have undertaken to protect yourself
  - Internal response: The capabilities of local first responders, Emergency Operations, local government, and other disaster responders to respond to impacts.
  - External response: The capacity of the whole community (NPREP, local non-profits, etc.) to respond to impacts

Definition: HVA

- Rated on a 0 – 3 rating scale
  - 0 being fully prepared
  - 1 = well prepared
  - 2 = somewhat prepared
  - 3 = not prepared

Final Product

- Risk = Probability x Impact or (Magnitude - Mitigation/Response Capacity)
- Risk = Prob/5 * (H+P+C+P+I+E)/18

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of services*	*Preplanning*	*Time, effectivness, resouces*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 - 100%*
Hurricane								0%
Tornado								0%
Severe Thunderstorm								0%
Snow Fall								0%
Blizzard								0%
Ice Storm								0%
Earthquake								0%
Tidal Wave								0%
Temperature Extremes								0%
Drought								0%
Flood, External								0%
Wild Fire								0%
Landslide								0%
Dam Inundation								
Volcano								0%
Epidemic								0%
AVERAGE SCORE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.00	0.00	0.00

Purpose

- Easy to read and summarize, snapshot of jurisdictional risk profile.
- Helps drive conversations about risk and capabilities.
- Can help drive emergency plan development, mitigation plan development, prioritization or training, planning, projects, etc.
- HVAs can be shared across jurisdictions to compare common challenges and needs
- As with many planning projects, the process itself is valuable.

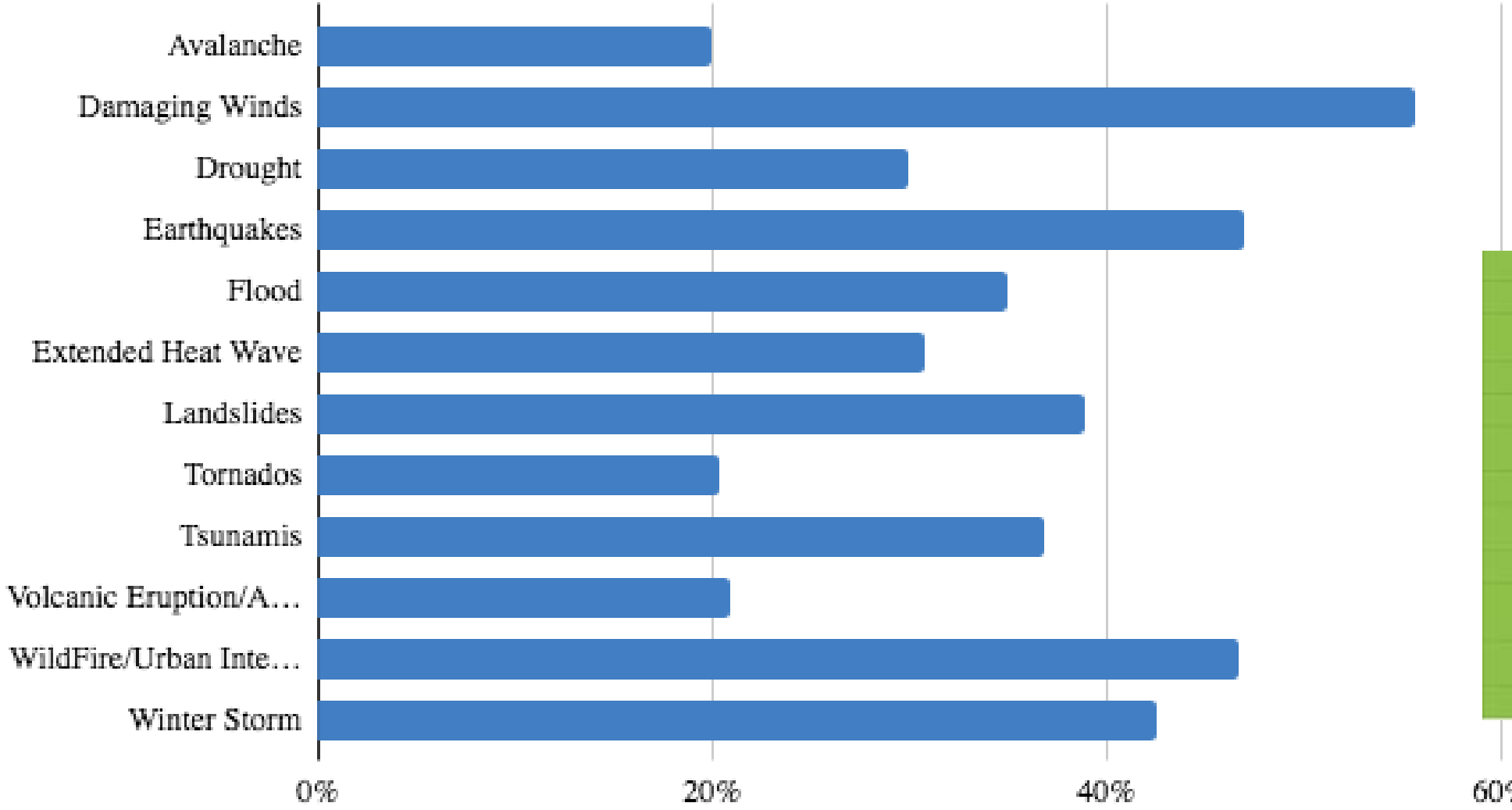
Survey Results

- Final tally of participants: 84
- Some qualitative feedback:
  - PERCEPTION
  - Difficult to gauge preparedness levels most of all
  - Tedious
  - More often

HAZARD AND VULNERABILITY ASSESSMENT TOOL
NATURALLY OCCURRING EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of critical services*	*Level of Preplanning you have undertaken*	*Capabilities of local resources to respond to impacts*	*Capacity of whole community to respond to impacts*	*Relative threat**
SCORE	*1= Unkown but rare 2 = Unkown but anticipated 3 = One hundred years or less 4 = 25 years or less 5 = once per year or more*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = No Impact 1 = Some Impact 2 = Moderate Impact 3 = Catastrophic Impact*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 = Fully Prepared 1 = Well Prepared 2 = Somewhat Prepared 3 = Not Prepared*	*0 - 100%*
Avalanche	2	1	1	1	2	1.75	2.25	**20%**
Damaging Winds	5	1.5	1.75	1.5	1.75	1.5	2	**56%**
Drought	3	1	1	1	2	2	2	**30%**
Earthquakes	3.25	2.5	2.5	2.5	1.75	1.75	2	**47%**
Flood	3	1.25	1.75	1.5	2	2	2	**35%**
Extended Heat Wave	3	1.5	1	1	1.75	2	2	**31%**
Landslides	3.25	1.5	1.75	1.5	2	2	2	**39%**
Tornados	1.5	1.75	2	1.75	2.5	2	2.25	**20%**
Tsunamis	2.5	2.25	2.5	2.5	2	2	2	**37%**
Volcanic Eruption/Ashfall	1.75	1.5	1.5	1.5	2	2	2.25	**21%**
WildFire/Urban Interface	3.5	2	2.25	2	2	1.75	2	**47%**
Winter Storm	4.25	1.25	1.25	1.5	1.5	1.5	2	**43%**
AVERAGE SCORE	**3.00**	**1.58**	**1.69**	**1.60**	**1.94**	**1.85**	**2.06**	**36%**

Natural Hazards



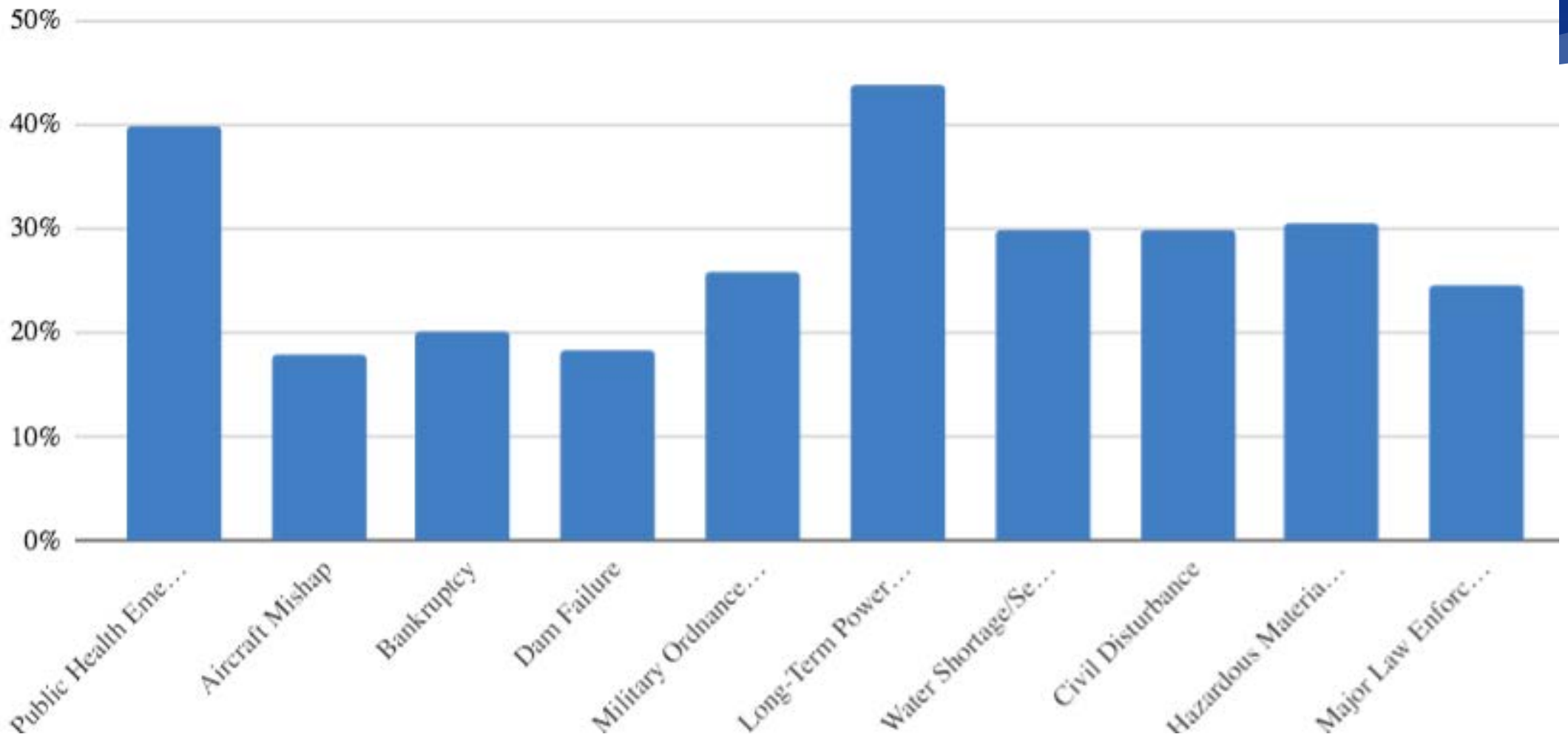
56%	Damaging Winds
47%	Earthquakes
47%	Wildfire/Urban Interface
43%	Winter Storm
39%	Landslides
37%	Tsunami
35%	Flood
31%	Extended Heat Wave
30%	Drought
21%	Volcanic Eruption/Ashfall
20%	Tornado
20%	Avalanche

HUMAN RELATED EVENTS

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of critical services*	*Level of Preplanning you have undertaken*	*Capabilities of local resources to respond to impacts*	*Capacity of whole community to respond to impacts*	*Relative threat**
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Public Health Emergency	3.5	2	1	2	1.75	1.5	2	**40%**
Aircraft Mishap	1.75	1.25	1.25	0.75	2.25	1.5	2.25	**18%**
Bankruptcy	1.5	1.25	1.25	2.25	2.25	2.5	2.5	**20%**
Dam Failure	1.5	1.25	1.5	1.25	2.5	2	2.5	**18%**
Military Ordnance Incident	1.75	2.25	2.25	1.75	2.5	2	2.5	**26%**
Long-Term Power Outage	3.5	1.75	1.75	2	1.75	1.75	2.25	**44%**
Water Shortage/Sewage Failure	2.5	1.75	1.25	1.75	2	2	2	**30%**
Civil Disturbance	2.5	1.25	1.5	1.5	2	2	2.5	**30%**
Hazardous Materials Spill	2.5	1.5	1.5	1.5	2.25	1.75	2.5	**31%**
Major Law Enforcement Activity or Terrorism	2	1.5	1.5	1.75	2.25	1.75	2.25	**24%**
AVERAGE	**2.30**	**1.58**	**1.48**	**1.65**	**2.15**	**1.88**	**2.33**	**28%**

**Threat increases with percentage.*

Human Hazard

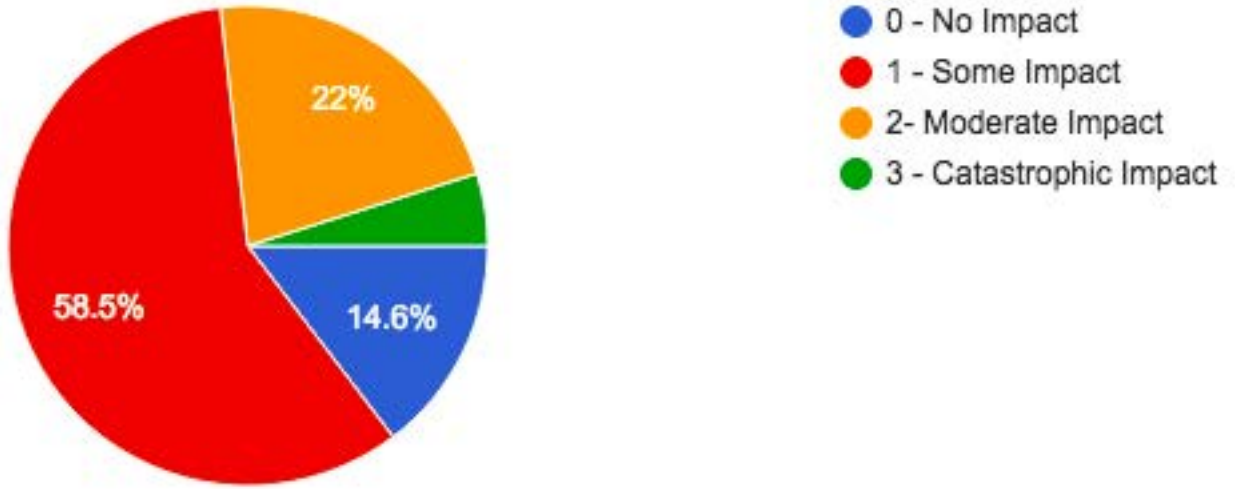


	Natural	Human
Probability	0.60	0.46
Severity	0.60	0.61
Hazard Specific Relative Risk:	0.36	0.28

Drought

Business Impact: Interruption of critical services such as government, food supply, etc?

82 responses

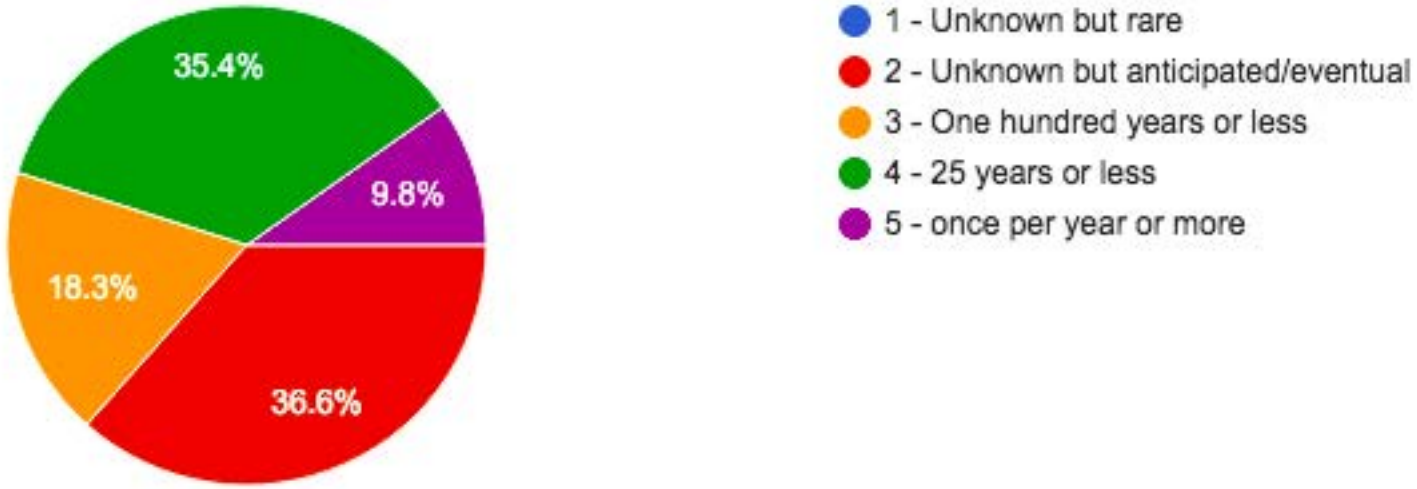


Earthquake

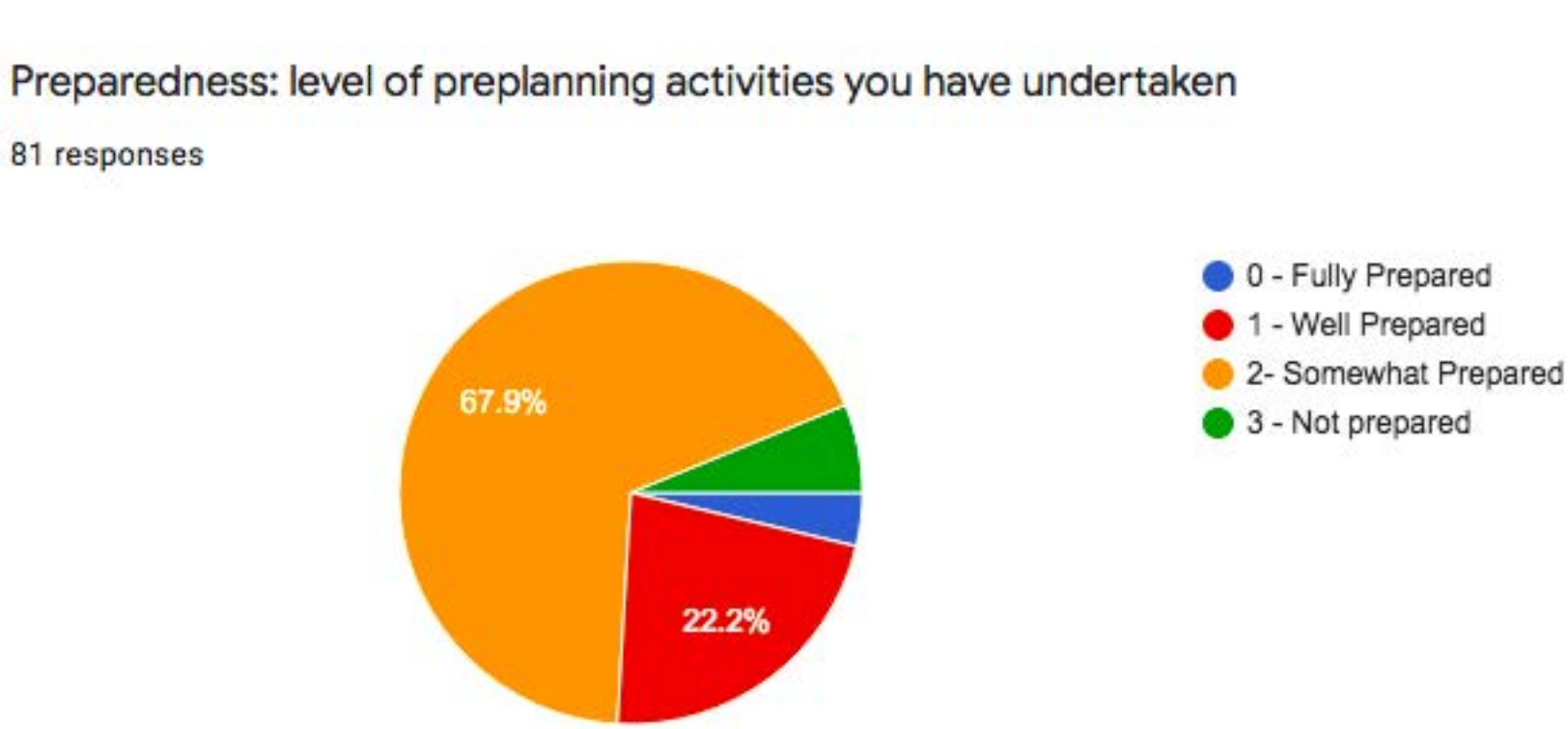
EARTHQUAKES

The likelihood this will occur on a scale of 1-5

82 responses



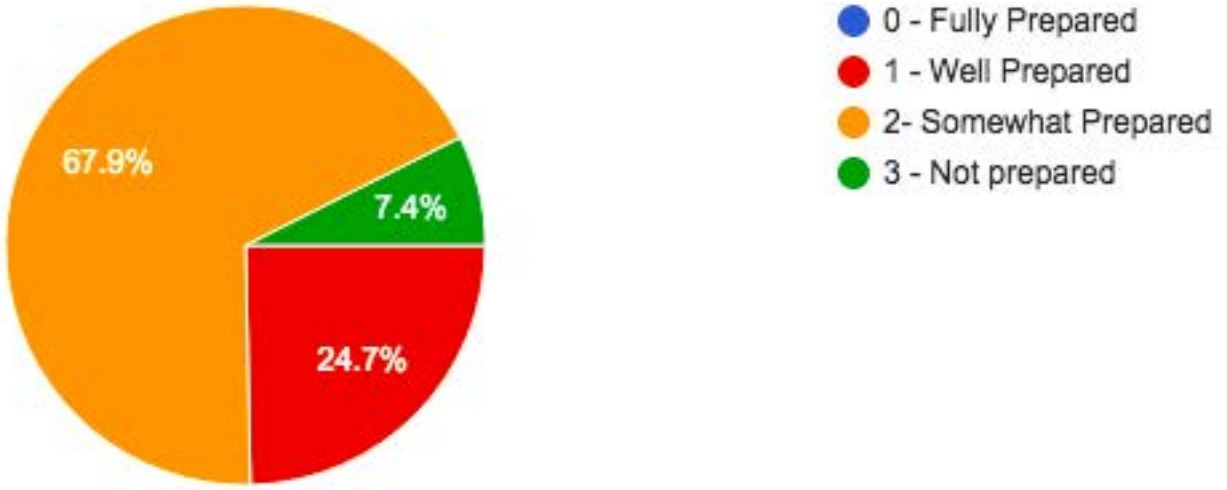
Earthquake


Preparedness: level of preplanning activities you have undertaken
81 responses
67.9%
22.2%
0 - Fully Prepared
1 - Well Prepared
2- Somewhat Prepared
3 - Not prepared

Earthquake

Internal Response: Capabilities of local first responders, local government, and others to respond to impacts

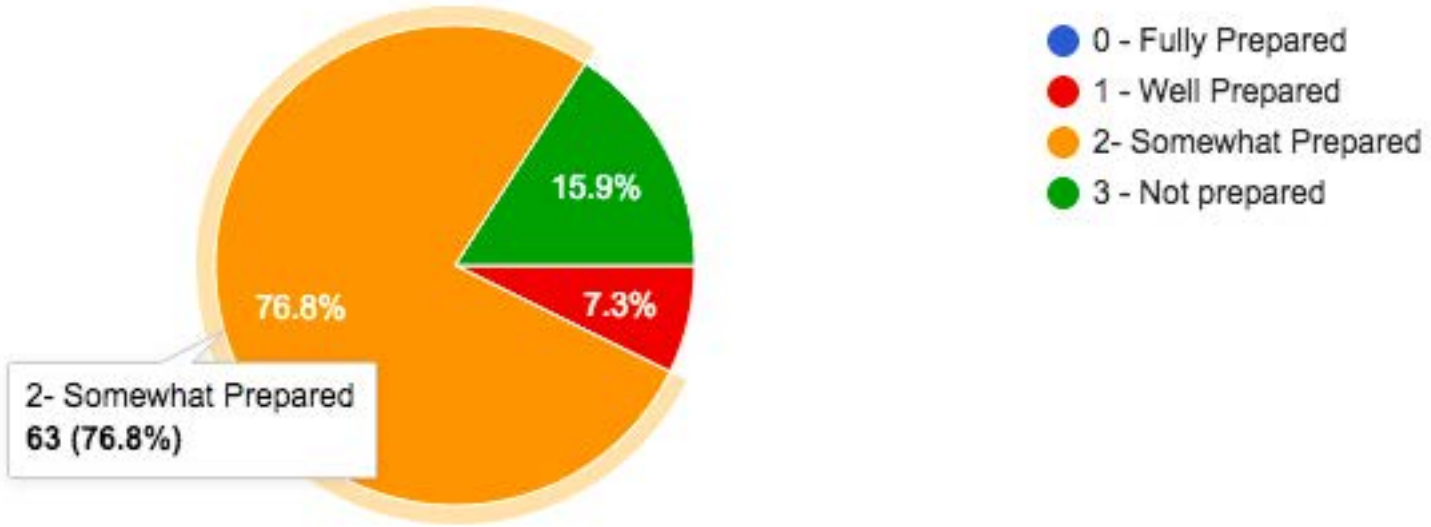
81 responses



Earthquake

External Response: Capacity of the whole community to respond to impacts

82 responses

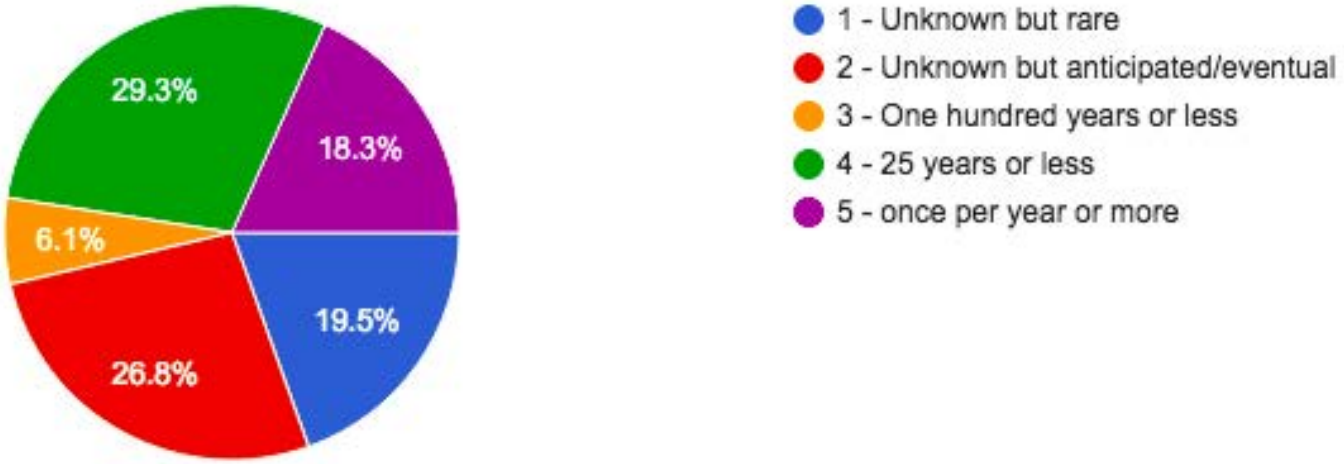


Heat Wave

EXTENDED HEAT WAVE

The likelihood this will occur on a scale of 1-5

82 responses

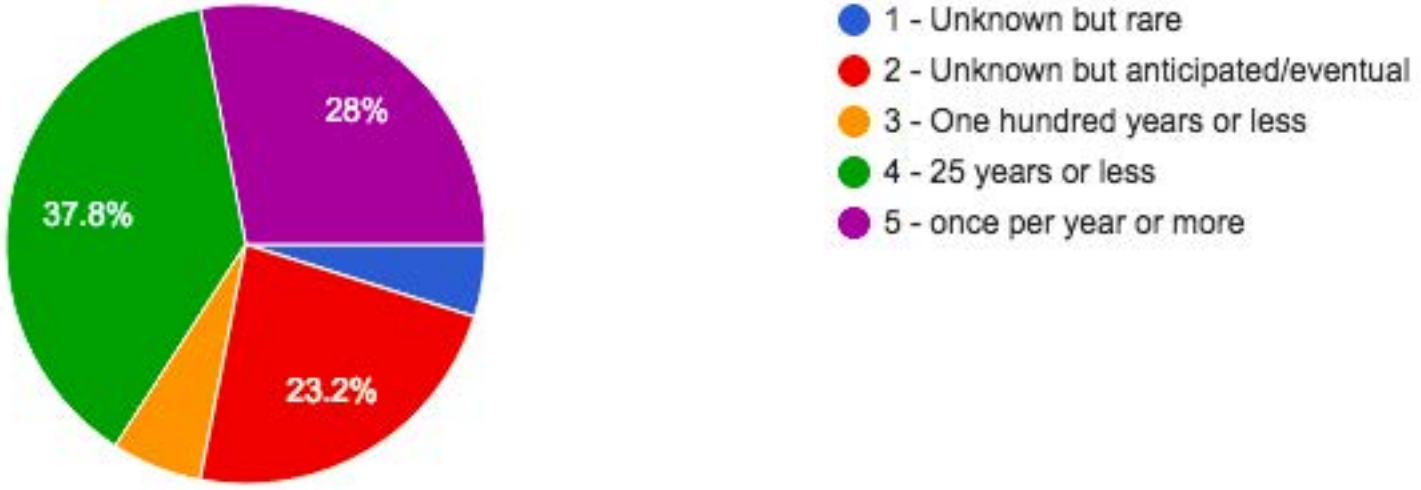


Pandemic

PUBLIC HEALTH EMERGENCY

The likelihood this will occur on a scale of 1-5

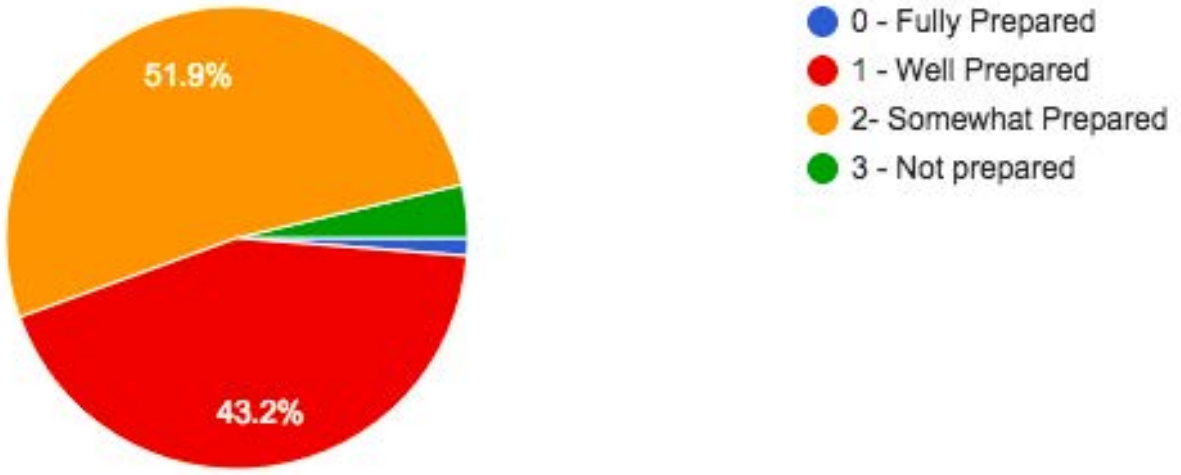
82 responses



Pandemic

Internal Response: Capabilities of local first responders, local government, and others to respond to impacts

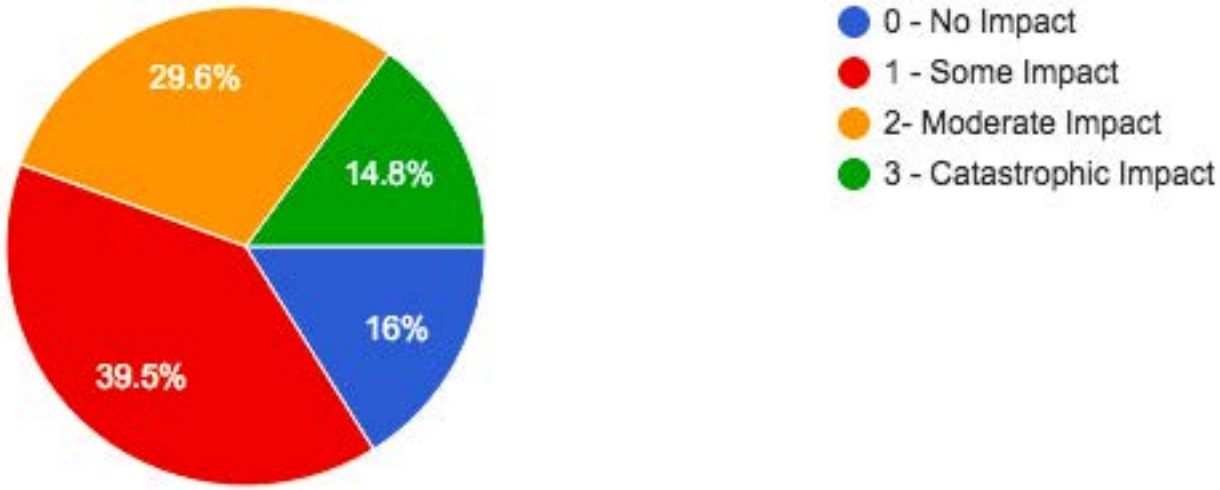
81 responses



Volcano

Human Impact: Possibility of Death or Injury?

81 responses

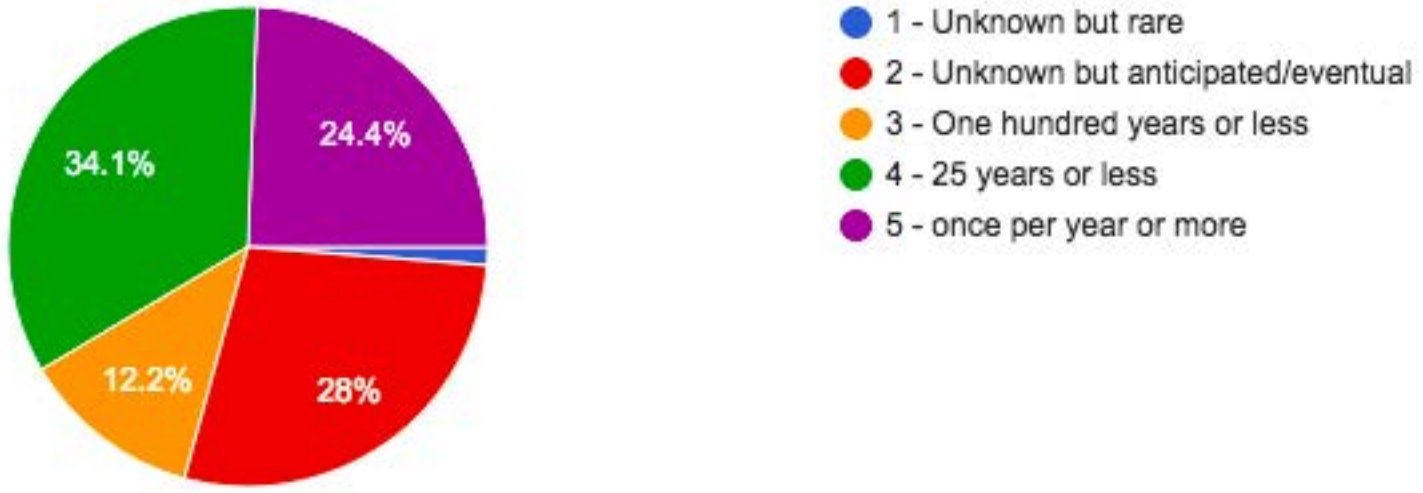


Fire

WILDFIRE/FOREST FIRE/URBAN INTERFACE

The likelihood this will occur on a scale of 1-5

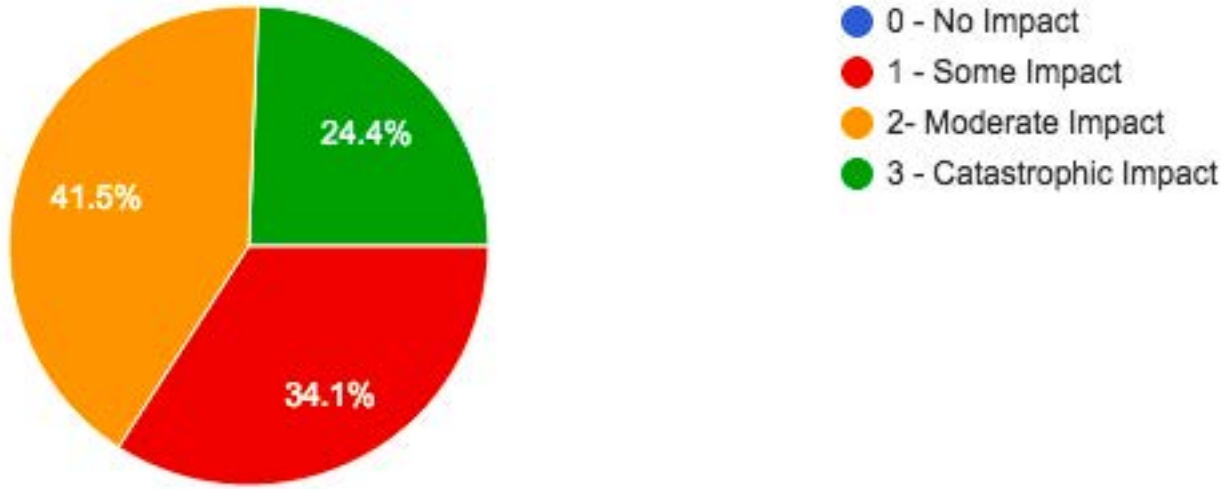
82 responses



Fire

Human Impact: Possibility of Death or Injury?

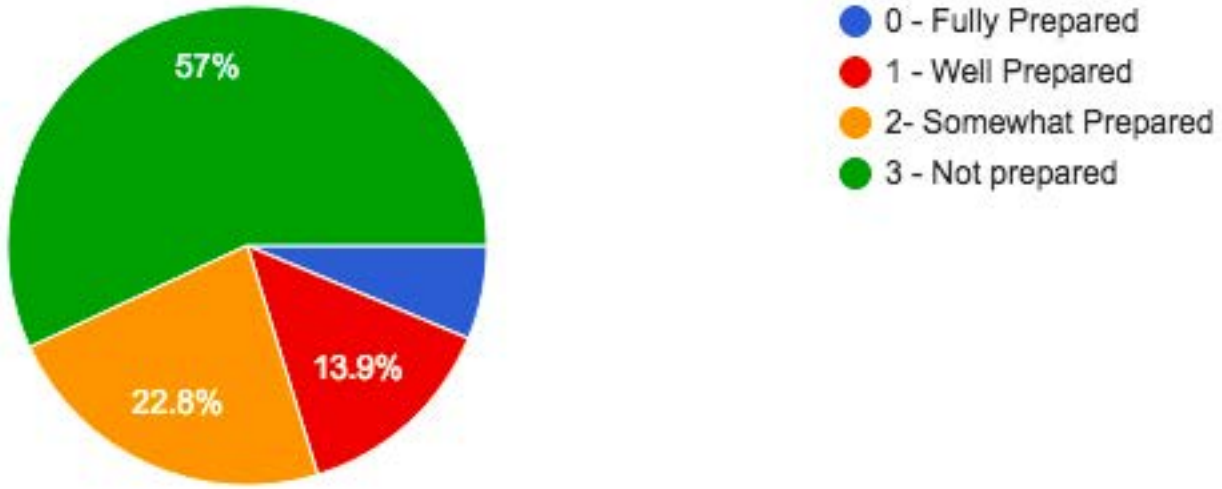
82 responses



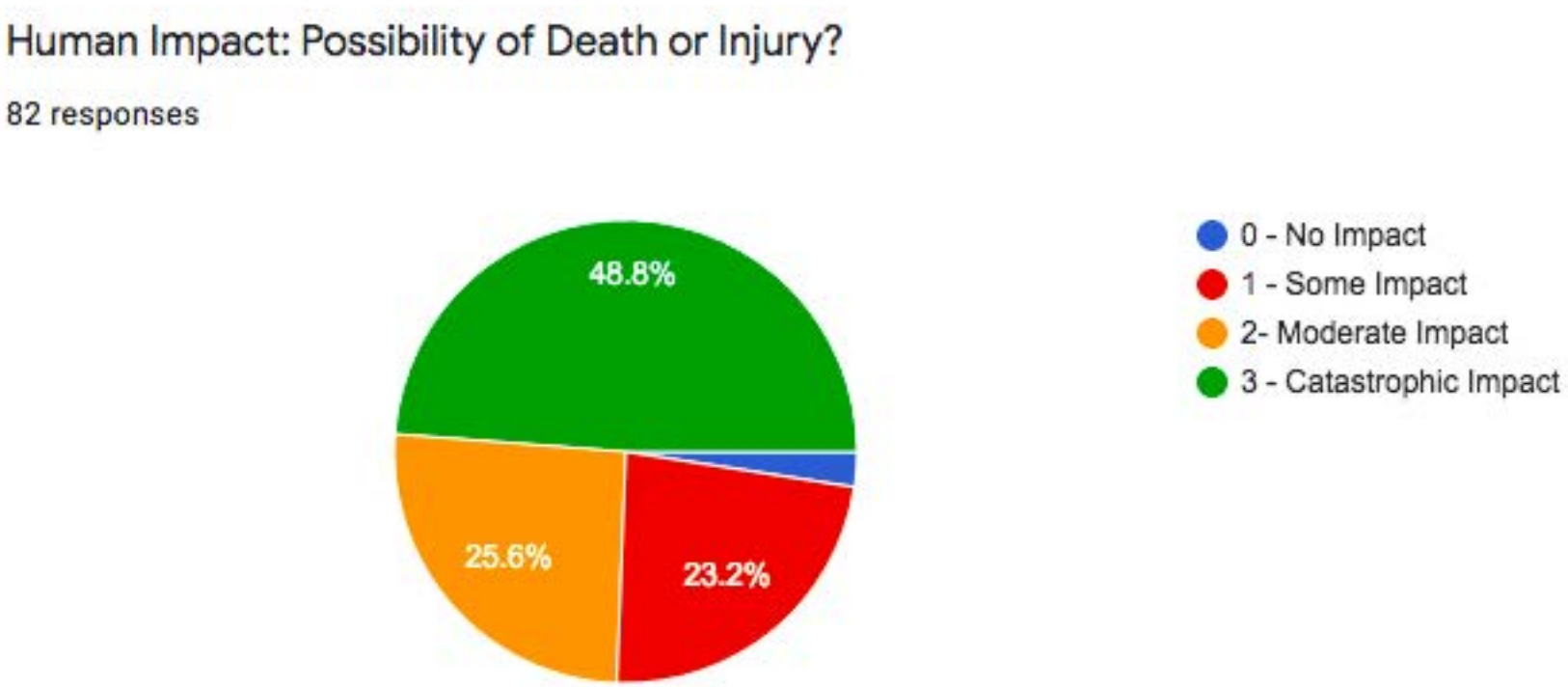
Aircraft Mishap

Preparedness: level of preplanning activities you have undertaken

79 responses



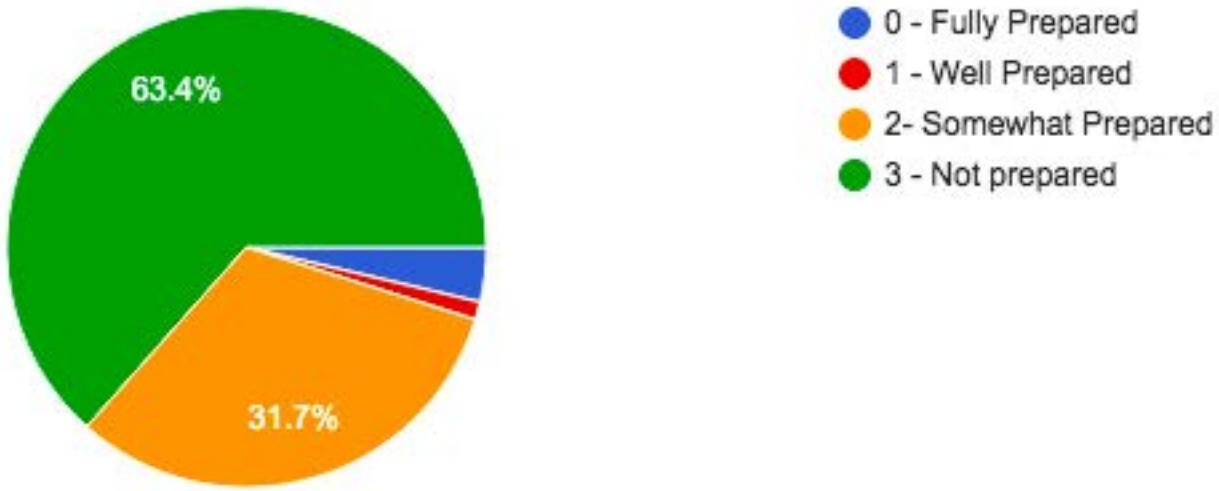
Military Ordnance



Military Ordnance

External Response: Capacity of the whole community to respond to impacts

82 responses



Other thoughts?

- Changes from last HMP

Next Survey

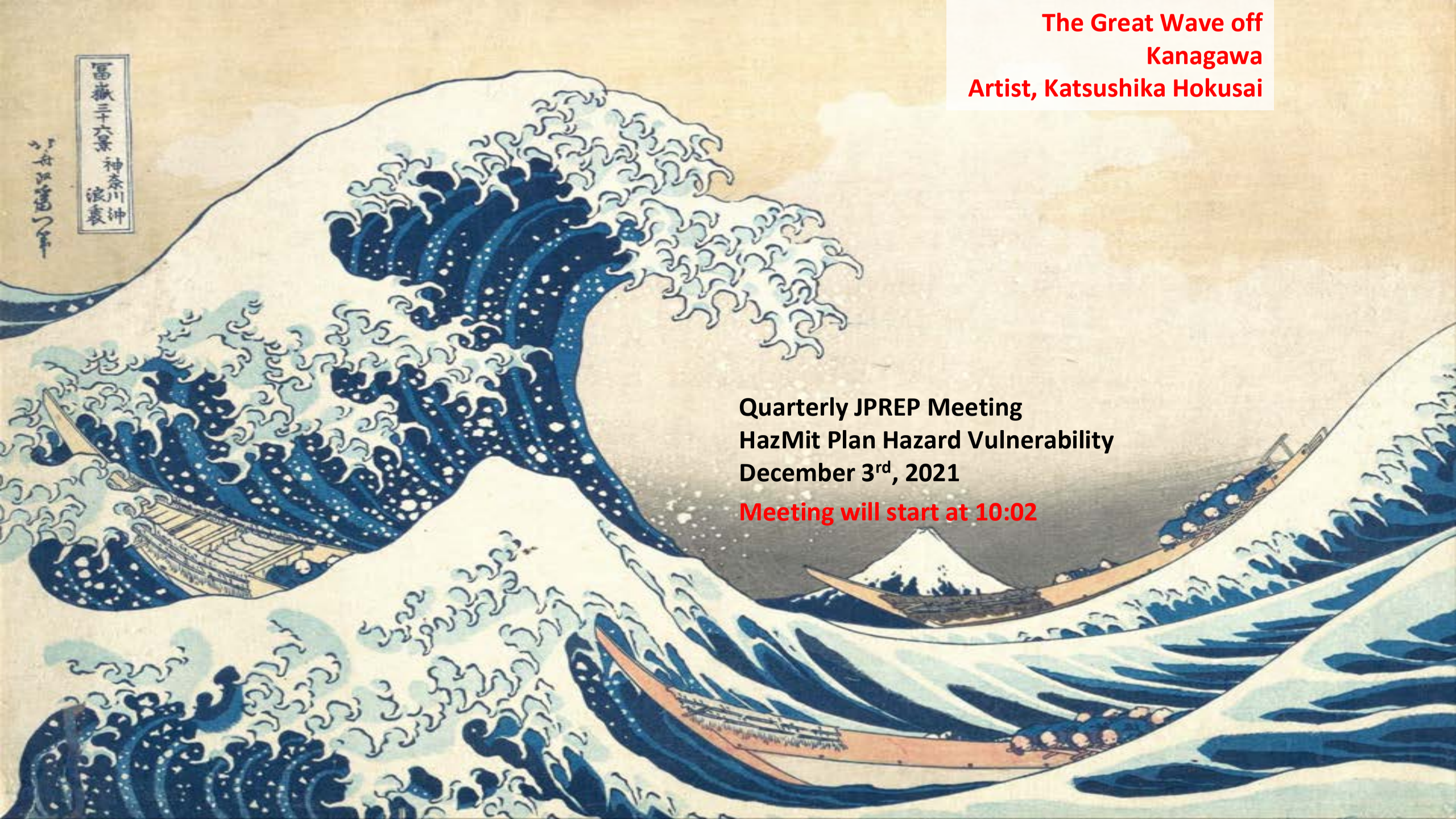
- Community's opportunity to suggest ideas for projects!
- Survey includes:
  - Location of project
  - Hazard mitigating against
  - Open ended answer describing projects or idea
- Projects submitted will be included in plan (subject to review by committee) and may be listed in general project section or under jurisdictional plans

Plan Update Timeline

- **January 14th** – HVA survey results presented; mitigation strategy survey opens
- **February 14th** – strategy survey closes
- **Februrary 28th** – all mitigation strategy action plans due.
- **March 4th** – regular JPREP meeting, final plan presentation, incorporate final feedback

Next Steps

- Survey will be sent out later today, along with video of presentation and slide deck.
- Share the survey! Community feedback plus perception is essential.
- Next meeting: Tentative February 21st to present project survey data



Quarterly JPREP Meeting
HazMit Plan Hazard Vulnerability
December 3rd, 2021
Meeting will start at 10:02

Agenda Reminder

- 10:00 - 10:10 Welcome and Introductions
- 10:10 – 10:20 Hazard Vulnerability Analysis Definition, Purpose, and Development
- 10:20 – 10:50 Hazard Inventory from 2016 HMP
- 10:50 – 11:00 Break
- 11:00 – 11:40 Hazard Inventory from 2016 HMP continued
- 11:40 – 11:55 Development of 2021 Analysis
- 11:55 – 12:00 Other announcements and "good of the order" reports
- 12:00 Adjourn

Housekeeping

- PLEASE “sign-in” by typing your name and organization in chat
- PLEASE “raise your hand” by typing your question into chat
- All participants will be muted by organizer

Plan Elements

- Step 1: Identify natural and man-made hazards presenting potential consequences to Jefferson County
  - Often called a "THIRA" (Threat and Hazard Identification and Readiness Assessment) or "HVA" (Hazard Vulnerability Assessment)
  - More than just a list of bad things that might happen, this represents a prioritization of hazards to plan and prepare for based on severity, frequency, scope, etc.

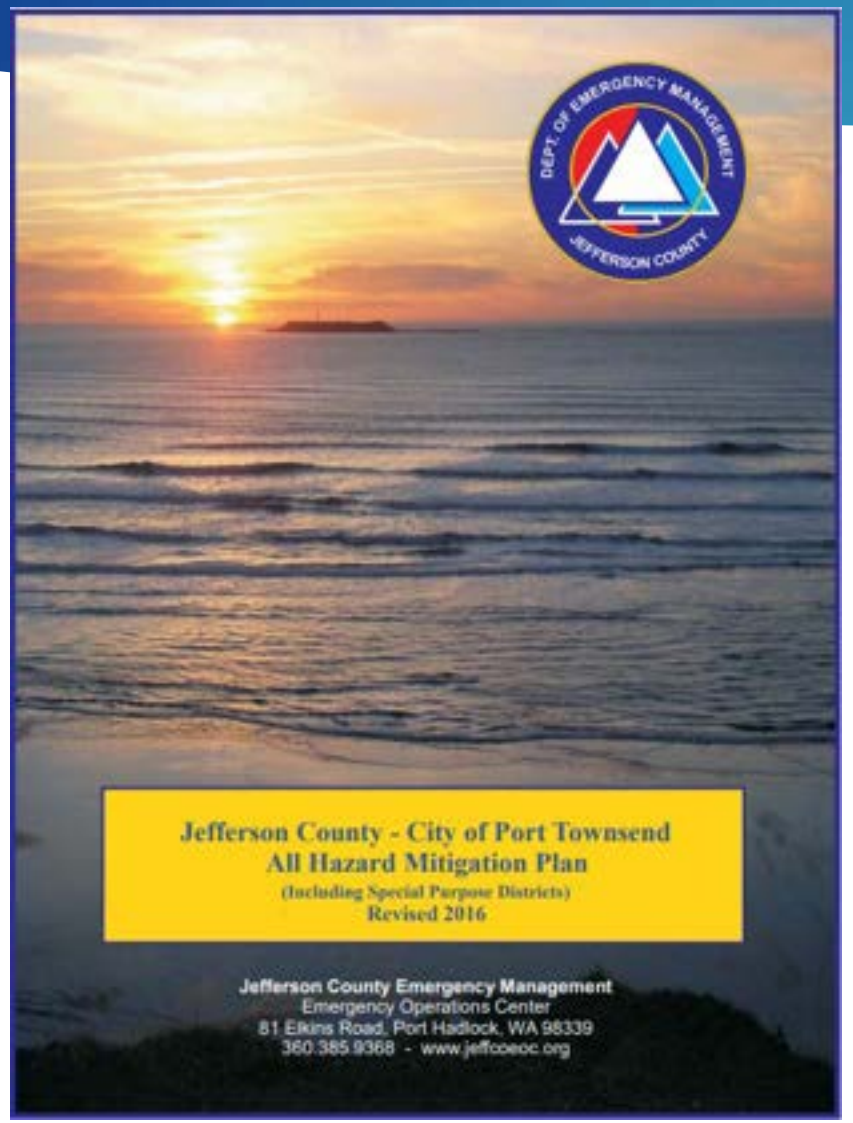
Plan Elements

- Step 2: Build a multi-jurisdictional community profile.
  - Includes information about Jefferson County, the City, and all participating and cooperating agencies assets and other information relevant to planning.
  - This includes things like:
    - core mission(s),
    - services,
    - service area,
    - population,
    - critical infrastructure,
    - staff,
    - assets owned and values,
    - previous disasters,
    - references to relevant plans and policies.

Plan Elements

- Step 3: Develop mitigation strategies.
  - Plan stakeholders create a five-year action plan matrix
  - Consists of strategies and projects designed to limit the impact of the hazards from Step 1, given the profile of Step 2
  - Public feedback and suggestions are ESSENTIAL to ensure a robust, viable plan
    - (Additionally, the planning process itself is valuable in the relationships the community builds)

Previous Mitigation Plan



Available for viewing at bit.ly/jeffcohazmit

Today's Exercise

- Build Hazard Vulnerability Analysis using HVA/THIRA model
  - Reviewing hazard inventory from 2016 plan
    - Goal: Understand Jefferson County's current threat profile
  - Put hazards into context by beginning development of HVA
    - HVA will be used as tool to launch discussions on mitigation strategies and capability targets

Plan Update Timeline

- **December 3rd**: Regular JPREP meeting, hazard inventory overview
  - Hazard Vulnerability Analysis survey opens
  - January 3rd: HVA survey closes

Plan Update Timeline

- **January 7th** – HVA survey results presented; mitigation strategy survey opens

- **February 14th** – strategy survey closes, all CA/PJ inputs due.
- **Februrary 28th** – all mitigation strategy action plans due.

- **March 4th** – regular JPREP meeting, final plan presentation, incorporate final feedback

Definition: HVA

- Hazard and Vulnerability Analysis:
  - In short, it's an assessment of risk:
  - Risk = Probability x Impact or (Magnitude - Mitigation/Response Capacity)
  - Risk is calculated for each identified hazard for comparison/context
- HVAs represent a snapshot analysis of an organization, agency, or jurisdiction's overall threat profile and the risks it faces

Definition: HVA

- Started by listing all potential hazards an organization, agency, or jurisdiction may face, whether they be:
  - Natural (earthquakes, tornadoes)
  - Technological (long-term power/internet outage)
  - Man-made (terror)
- In our HMP, this is the "Hazard Inventory" – we'll review this in a moment

Definition: HVA

- Then, identify the probability or likelihood of each on a rough scale:
  1. Unknown but rare
  2. Unknown but anticipated/eventual
  3. One hundred years or less
  4. 25 years or less
  5. Once per year or more

Definition: HVA

- From there, we evaluate their impacts to our entity with respect to:
  - Human impact – impact to loss of life or death
  - Physical losses – losses or damages to homes, property, infrastructure
  - Continuity impact – interruption of critical services i.e. government, food supply
- This is the "Magnitude" portion of the equation
- Rated on a 0 – 3 rating scale, with 0 being no impact, 3 being catastrophic.

Definition: HVA

- Rated on a 0 – 3 rating scale,
  - 0 being no impact,
  - 1 = some impact
  - 2 = moderate
  - 3 = catastrophic.

Definition: HVA

- Finally, evaluate your ability to mitigate and/or respond to each threat:
  - Preparedness: The level of preplanning and mitigation activities you have undertaken to protect yourself
  - Internal response: The capabilities of local first responders, Emergency Operations, local government, and other disaster responders to respond to impacts.
  - External response: The capacity of the whole community (NPREP, local non-profits, etc.) to respond to impacts

Definition: HVA

- Rated on a 0 – 3 rating scale
- 0 being fully prepared
- 1 = well prepared
- 2 = somewhat prepared
- 3 = not prepared

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of services*	*Preplanning*	*Time, effectivness, resouces*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 - 100%*
Hurricane								0%
Tornado								0%
Severe Thunderstorm								0%
Snow Fall								0%
Blizzard								0%
Ice Storm								0%
Earthquake								0%
Tidal Wave								0%
Temperature Extremes								0%
Drought								0%
Flood, External								0%
Wild Fire								0%
Landslide								0%
Dam Inundation								
Volcano								0%
Epidemic								0%
AVERAGE SCORE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.00	0.00	0.00

Final Product

- Risk = Probability x Impact or (Magnitude - Mitigation/Response Capacity)
- Risk = Prob/5 * (H+P+C+P+I+E)/18

Final Product

- We will be soliciting HVAs from:
  - Participating agencies to show organizational risk
  - Community members to demonstrate community-wide risk perception

2016 Version

2016 Natural Hazard Risk Rating by Jurisdiction

Jurisdiction	Natural Hazard Rating													
	Avalanche	Damaging Winds	Drought	Earthquake	Flood	Heat Wave	Land Movement	Public Health Emergency	Tornado	Tsunami	Volcanic Activity	Wildland Fire	Winter Storms	Total Score
Jefferson County	6	40	28	45	40	32	50	24	6	10	40	45	28	394
City of Port Townsend	3	65	22	45	20	20	24	18	8	36	7	16	65	349
Subtotal: Primary Jurisdictions	9	105	50	90	60	52	74	42	14	46	47	61	93	743
Jefferson County Fire District 1 (East Jefferson Fire & Rescue)	0	30	16	48	10	22	15	16	28	18	30	33	36	302
Jefferson County Fire District 2 (Quilcene Fire Department)	0	40	7	13	24	7	5	10	11	0	0	12	40	169
Jefferson County Fire District 3 (Port Ludlow Fire & Rescue)	0	60	18	64	24	11	12	14	9	39	42	48	60	401
Jefferson County Fire District 4 (Brinnon Fire Department)	3	50	14	11	30	18	32	10	7	8	4	70	36	293
Jefferson County Fire District 5 (Discovery Bay Volunteer Fire & Rescue)	0	6	0	2	0	0	0	0	0	0	0	3	4	15
JeffCom 9-1-1	0	44	5	32	30	5	8	16	0	18	0	30	30	218
Public Hospital District No. 2	0	18	14	48	9	14	10	9	0	42	5	18	16	203
Jefferson County Library District	5	18	1	14	5	1	5	5	0	4	11	8	7	84
Port of Port Townsend	0	20	0	8	7	0	4	1	0	15	0	1	20	76
Queets/Clearwater School District No. 20	0	44	1	33	0	0	0	8	0	0	10	33	20	149
Brinnon School District No. 45	0	7	0	10	24	0	5	0	0	24	0	4	8	82
Quilcene School District No. 48	0	18	5	75	8	8	0	7	0	16	10	48	8	203
Chimacum School District No. 49	0	45	0	52	30	0	0	16	0	39	27	3	40	252
Port Townsend School District No. 50	0	27	1	14	9	0	0	10	0	9	8	5	27	110
Quillayute Valley School District No. 402	5	16	5	20	8	0	35	0	0	5	16	27	16	153
Public Utility District No. 1 of Jefferson County (Electrical)	0	36	12	8	3	5	2	7	0	9	1	5	24	112
Public Utility District No. 1 of Jefferson County (Water & Sewer)	0	16	6	7	6	6	3	7	0	7	0	3	14	75
Subtotal: Special Districts	13	495	105	459	227	97	136	136	55	253	164	351	406	2897
Grand Totals:	**22**	**600**	**155**	**549**	**287**	**149**	**210**	**178**	**69**	**299**	**211**	**412**	**499**	**3640**

Source: Jefferson County Department of Emergency Management

Purpose

- Easy to read and summarize, snapshot of jurisdictional risk profile.
- Helps drive conversations about risk and capabilities.
- Can help drive emergency plan development, mitigation plan development, prioritization or training, planning, projects, etc.
- HVAs can be shared across jurisdictions to compare common challenges and needs
- As with many planning projects, the process itself is valuable.

Purpose

- Standalone HVAs are mandated at the organizational level in many fields, two examples being hospitals and institutions of higher education.
- Can be part of HazMit or CEMP plans to better communicate risk profile and drive planning
- A similar version, known as a THIRA, is mandated here in WA state

THIRA

- A THIRA – or Threat and Hazard Identification and Readiness Assessment – is completed every three years by the State of WA
- Is currently in it's update cycle by State EMD
- Similar to HVA, it contains three steps that serve to demonstrate a jurisdiction's threat and capabilities profile

THIRA

- Three part process that's more detailed:

1. Identify threats and hazards of concern
2. Give threats and hazards context
   - Standardized impact language (i.e. people requiring housing post EQ) plus community specific numbers
3. Establish capability targets
   - Also standardized language from FEMA to streamline their offering of training/exercise support

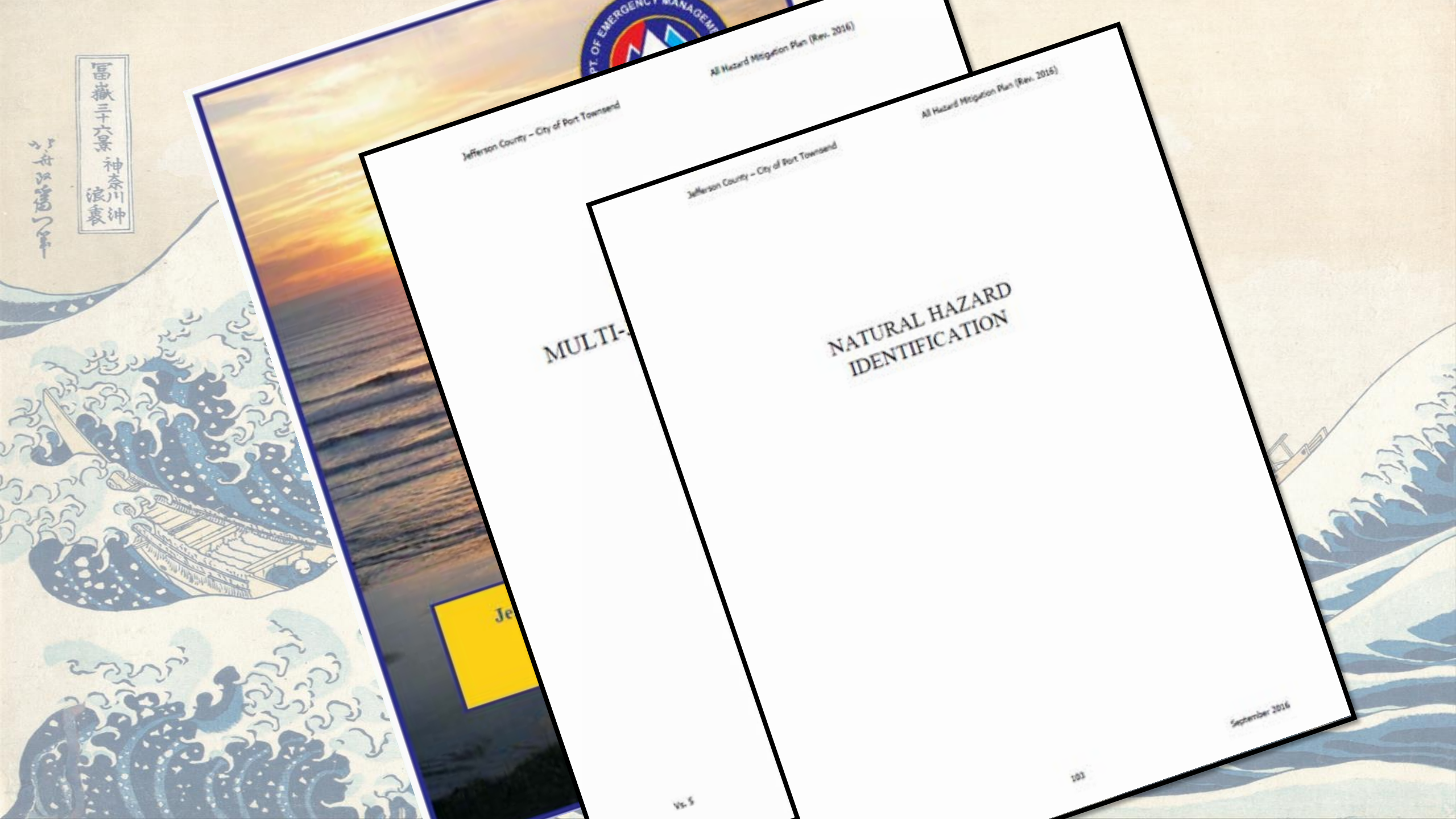
THIRA

- We'll use the hazard inventory to begin developing a THIRA as a bridge between our Hazard Mitigation Plan update (May '22) and our Comprehensive Emergency Management Plan update (April '23).



Break

- Questions?
- Up next: Hazard Inventory Review


Jefferson County – City of Port Townsend
All Hazard Mitigation Plan (Rev. 2016)
MULTI-
Jefferson County – City of Port Townsend
All Hazard Mitigation Plan (Rev. 2016)
NATURAL HAZARD
IDENTIFICATION
September 2016
103
Vs. 5

Inventory Review

- Keep in mind:
  - Prep for risk/impact analysis at end of review
  - What have we learned about these hazards in recent years?
  - What new hazards need to be added?
  - What hazards might interact with one another (i.e. cascading impacts)?

Climate Change

- For the 2016, FEMA made several changes, including:
  - Requiring all plans address climate change directly
  - Climate change factors in Cost/Benefit Analysis in mitigation grant opportunities
  - All hazards must contain review of impact climate change has on frequency/severity of hazard (i.e. climate change leads to increased drought, which increases wildfire risk).

Table CC-1 - Climate Change Predictions for the North Olympic Peninsula[15]

Climate Changes[1]	Observed Changes	Future Projections
Temperature Averages *(for Pacific Northwest)*	Warmed 1.3°F (1895-2011)	By 2050's – between 4.3°-5.8°F average increase in all seasons.
Temperature Extremes	Increase in nighttime heat events.	Slight increase in days over 90°F (+8 days) for the Pacific Northwest (PNW), with limited increase in days over 95°F on the Olympic Peninsula[2]. Longer frost-free season (+35 days) across PNW.
Precipitation Averages *(for Pacific Northwest)*	No significant change in amount; region wide decrease in snowpack and glaciers.	Little average annual change – with drier summers (-6% to -8% average decrease). Continued declining snowpack with a significant loss of snowpack in Olympics by 2080[3].
Precipitation Extremes	Ambiguous	More heavy rainfall events: 13% (±7%) increase in days with >1 inch of rain.
Future Sea Level Rise[4] *(probability that mean sea level will reach or exceed ____ feet at a given year)*	Neah Bay	50% chance of ≥ 0.3 feet (2050) and ≥ 1.3 feet (2100) 5% chance of ≥ 0.7 feet (2050) and ≥ 2.7 feet (2100)
	Clallam Bay/Sekiu	50% chance of ≥ 0.3 feet (2050) and ≥ 1.3 feet (2100) 5% chance of ≥ 0.7 feet (2050) and ≥ 2.7 feet (2100)
	Port Angeles	50% chance of ≥ 0.6 feet (2050) and ≥ 1.9 feet (2100) 5% chance of ≥ 0.9 feet (2050) and ≥ 3.3 feet (2100)
	Port Townsend	50% chance of ≥ 0.9 feet (2050) and ≥ 2.4 feet (2100) 5% chance of ≥ 1.2 feet (2050) and ≥ 3.9 feet (2100)
Future Annual Coastal Flood Elevation[5] *(probability that mean sea level will reach or exceed ____ feet in a given year)*	Neah Bay	50% chance of ≥ 3.5 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 4.4 feet (2050) and ≥ 6.2 feet (2100)
	Clallam Bay/Sekiu	50% chance of ≥ 3.5 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 4.4 feet (2050) and ≥ 6.2 feet (2100)
	Port Angeles	50% chance of ≥ 2.6 feet (2050) and ≥ 3.9 feet (2100) 5% chance of ≥ 3.5 feet (2050) and ≥ 5.5 feet (2100)
	Port Townsend	50% chance of ≥ 2.9 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 3.8 feet (2050) and ≥ 6.1 feet (2100)

- Natural Disasters

Damaging Winds



Damaging Winds

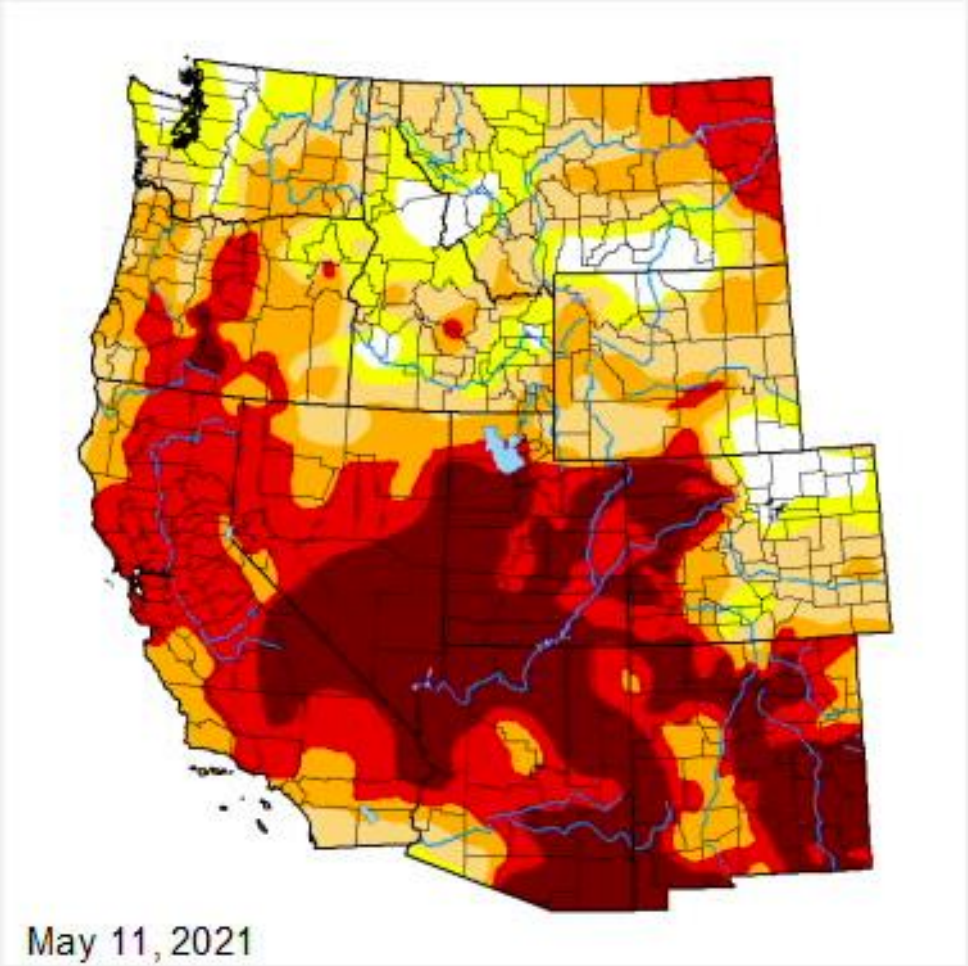
- National Weather Service defines high winds as sustained winds of 40 mph or gusts of 58 mph or greater, not caused by thunderstorms, expected to last for an hour or more.
- Yearly occurrence – most recent, Dec ‘20/Jan ‘21 which resulted in Stafford Declaration



Drought

- National Weather Service defines drought as a deficiency of moisture that result adverse impacts on people, animals, or vegetation over a sizeable area.
- Impacts on agriculture, increased fire danger, soil erosion, recreation impacts.
- The last significant occurrence in Jefferson County was in 2002 through 2003. Tw the driest summers on record—one of five driest winters in past 100 years. Port Townsend Paper Corporation curtailed some operations, and fishing was halted rivers on the Olympic Peninsula. In 2014 and 2015, drought conditions caused th City of Port Townsend to limit the watering of lawns, but conditions never reache the threshold at which the paper mill would have had to curtail operations.

Drought continues to worsen in the Pacific Northwest.

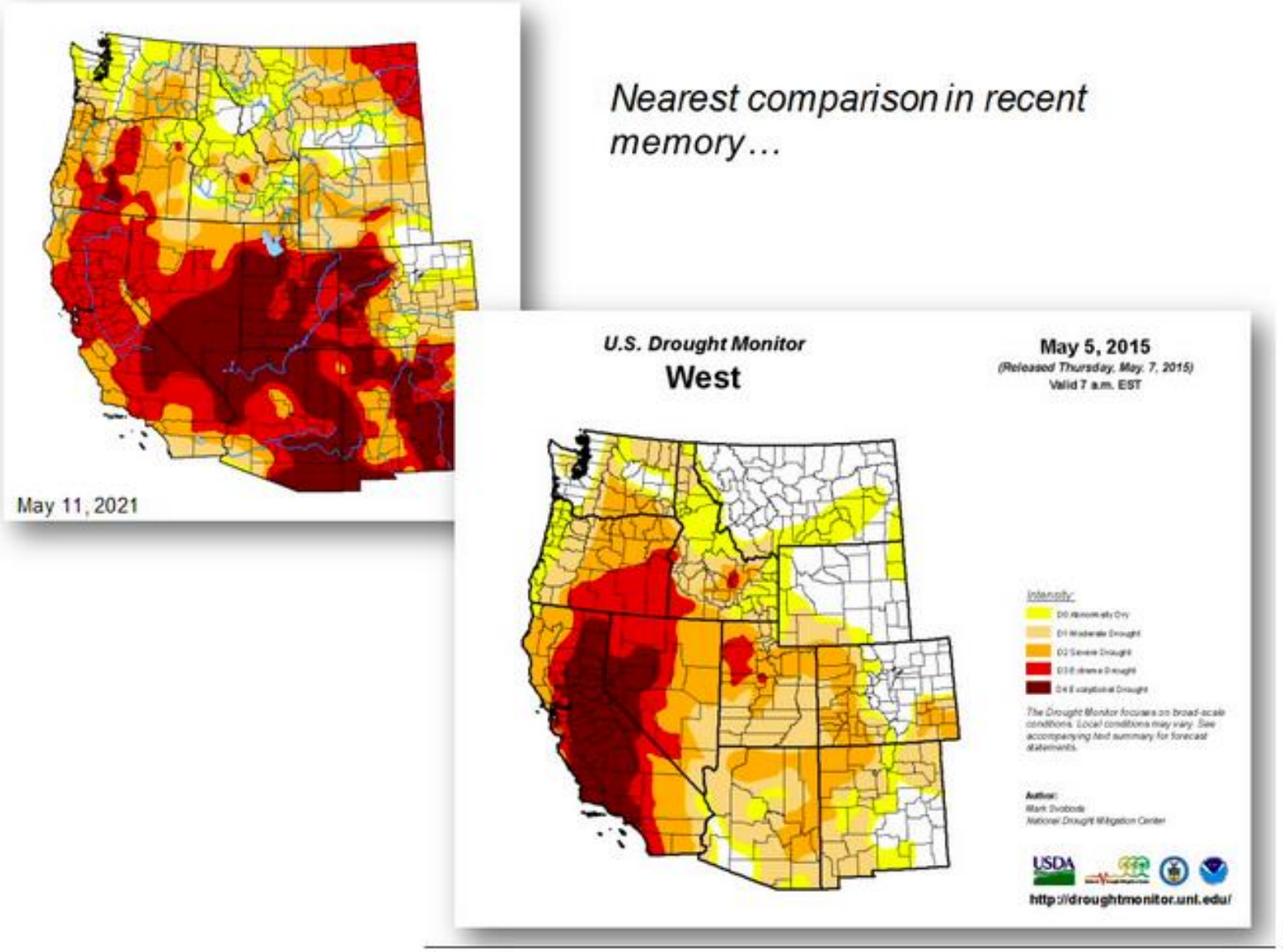


May 11, 2021

Key Points

- Statewide total March and April precipitation ranks as the driest on record for Idaho, 2nd driest for Oregon, 3rd driest for Montana, and 4th driest for Washington since 1895.
- There are also long-term precipitation deficits within the region. Specifically, the Lower Columbia Basin in Washington, southern Oregon east of the Cascade crest, and south central Idaho have 2-year precipitation totals that are only 50%–70% of normal.
- The official May-June-July forecast from the NOAA Climate Prediction Center shows higher chances of above-normal temperatures and below-normal precipitation for most of the region, which indicates that drought conditions are likely to get worse in the coming months.
- The Significant Wildland Fire Potential Outlook shows higher chances of wildfire potential east of the Cascade crest throughout Oregon and into southwest Washington by June and July.
- Impacts are being felt across the region with poor pasture and rangeland conditions, reduced irrigation, more spring season fires than previous years, poor crop conditions, and the need to haul water or move livestock out of drought-impacted areas.

Nearest comparison in recent memory…



Drought

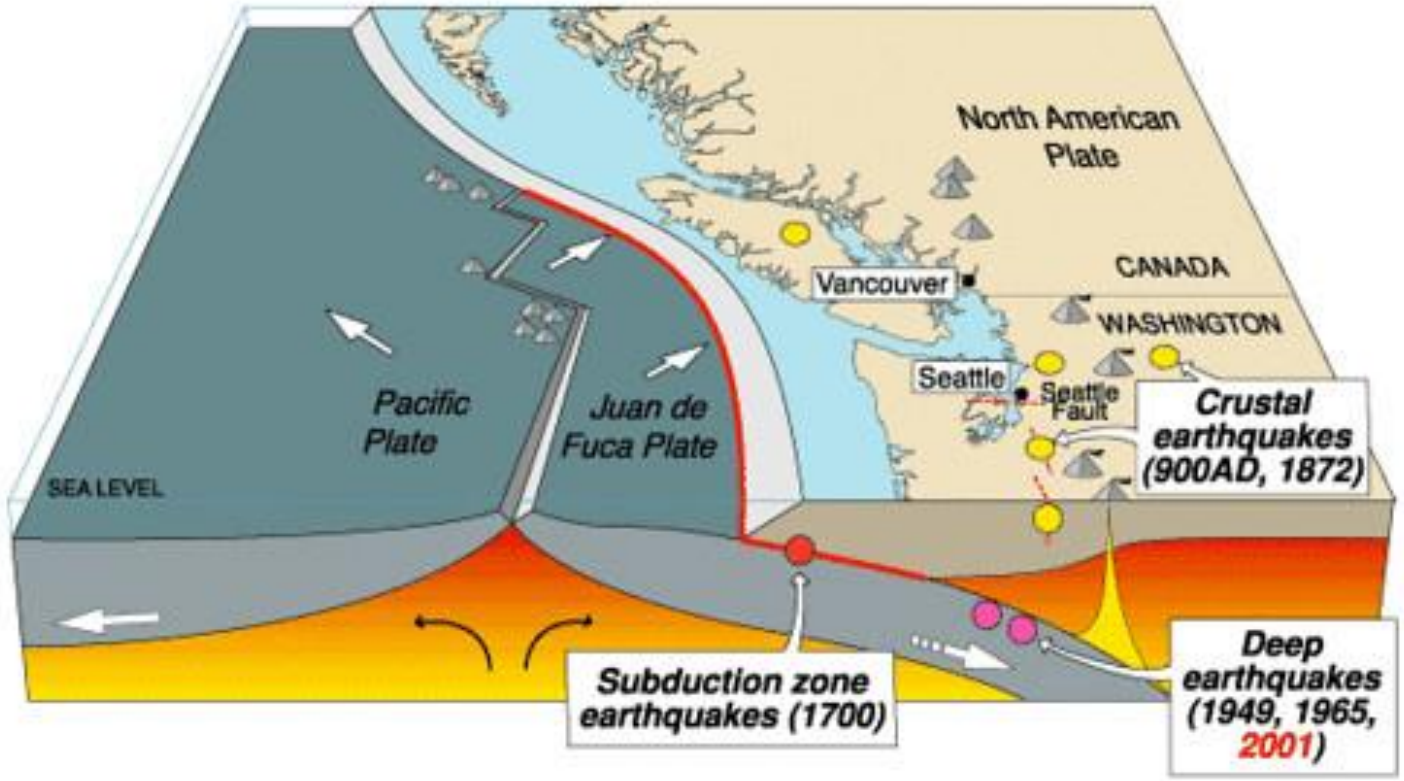


July 14, 2021 Ecology declares drought

Earthquakes

- An earthquake is ground shaking caused primarily by an abrupt shift along a fracture in the earth, called a fault.
- The principal ways that earthquakes cause damage are by:
  - strong ground shaking
  - landslides
  - liquefaction
  - subsidence
  - tsunamis (seismic ocean waves)
  - seiches (rhythmic movements of inland bodies of water)

Cascadia earthquake sources



Source	Affected area	Max. Size	Recurrence
Subduction Zone	W.WA, OR, CA	M 9	500-600 yr
Deep Juan de Fuca plate	W.WA, OR,	M 7+	30-50 yr
Crustal faults	WA, OR, CA	M 7+	Hundreds of yr?

Tohoku, 2011



Chile, 1960



Subduction Source



Alaska, 1964



Indonesia, 2004 (Boxing Day)

Deep San Juan Plate Source

1965



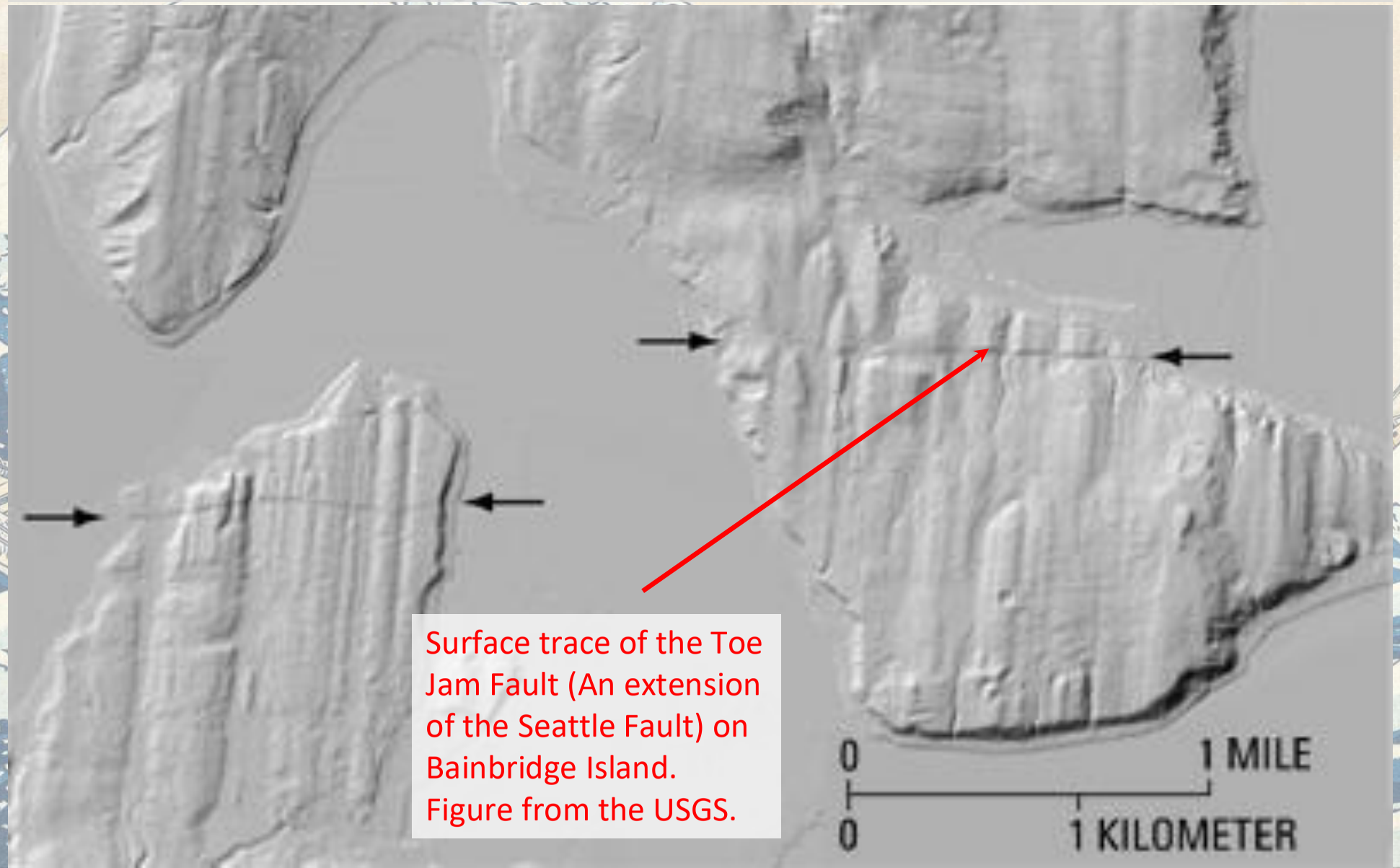
1949



2001



Shallow Crustal Source



Surface trace of the Toe Jam Fault (An extension of the Seattle Fault) on Bainbridge Island. Figure from the USGS.

Earthquakes

- Cascadia Subduction: Potential for M8 or greater; occurs every 300 to 500 years, with last being 1700.
- Juan de Fuca: Approximate "recurrence intervals" for intraplate earthquakes of various magnitude were estimated to be 35 years for magnitude 6.5 and 100 years for magnitude 7. Since 1870, there have been 7 earthquakes in the Puget Sound basin of magnitudes of 6.0 or larger. Generally, these earthquakes last between 20 – 60 seconds.
- North American: These earthquakes are primarily shallow with depths of 30 kilometers or less and generally have the magnitude of 5 to 5.5, however the largest recorded earthquake in Washington history was a 7.4 in 1872.
- Current estimates are at a 10% to 17% chance in the next 50 years.

Earthquakes

- South Whidbey Island: Research has shown that the SWI faults are active and have generated at least four large earthquakes in the last 16,000 years



Table EQ-4 – Hazus Earthquake Results for Selected Scenarios[33]

Community	Total Estimated Building Value	Total Number of Buildings	Number of Buildings in the Moderate – High Liquefaction Zone	Percent of Buildings in the Moderate-High Liquefaction Zone	Building Dollar Loss for a Southern Whidbey M7.4 Event	Loss Ratio (Dollar Losses/ Total Building Value) Southern Whidbey M7.4 Event	Building Dollar Loss for a Cascadia 9.0 Event	Loss Ratio (Dollar Losses/ Total Building Value) Cascadia 9.0 Event
Port Townsend	$646,052,977	4845	276	5.7%	$90,401,638	14%	$23,310,587	3.6%
Hoh Tribe	$3,119,782	35	6	17.1%	N/A**	N/A**	$341,835	11% (*)
Unincorporated	1,639,851,022	14356	1151	8.0%	$75,073,592	4.6%	$80,928,751	4.9%
Total	$2,289,023,782	19,236	1,433	7.5%	$165,475,259	7.4%	$104,581,170	4.7%

Tsunami

Hilo, 1946



Boxing Day 2004,





Alaska, 1964



Tohoku, 2011

Tsunamis

- Tsunamis are wave trains, or series of waves, generated in a body of water by an impulsive disturbance including earthquakes, subaqueous or terrestrial landslides impacting water bodies, or volcanoes.
- Distant source vs. Near Source
- Typical max wave height from near source (Cascadia) event stands around 23 feet
- Damaging distant source events in 2011 and 1964

Recent Tsunami Inundation Mapping for the Port Townsend Vicinity



Eungard, et al, (2018), Tsunami hazard maps of Port Angeles and Port Townsend,

Flood

- Flooding is the uncontrolled release of impounded water resulting that can affect life and property.
- River – heavy, prolonged rain and/or snowmelt causing rapidly rising river levels
- Tidal - high tides, strong winds, heavy swell, and low atmospheric pressure combine to produce flooding.
- Flash - Although possible, flash floods are not as common in Jefferson County as theyare in Eastern Washington. Flash floods are characterized by a very rapid quick rise of the water level in a small river, stream or dry wash.

Riverine Flooding



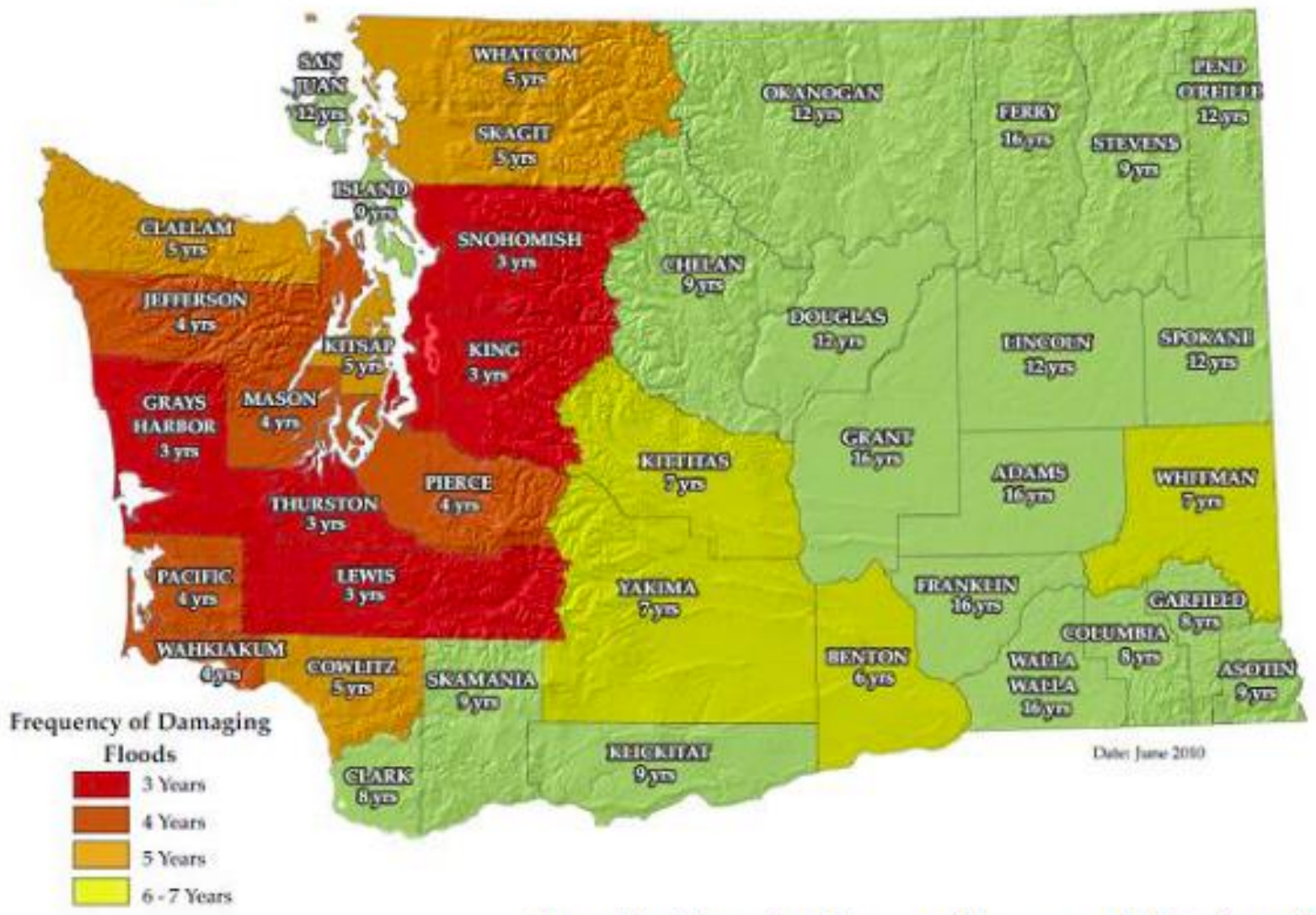
Brinnon Flooding – February 2015 Photo by Keppie Keplinger

Coastal Flooding



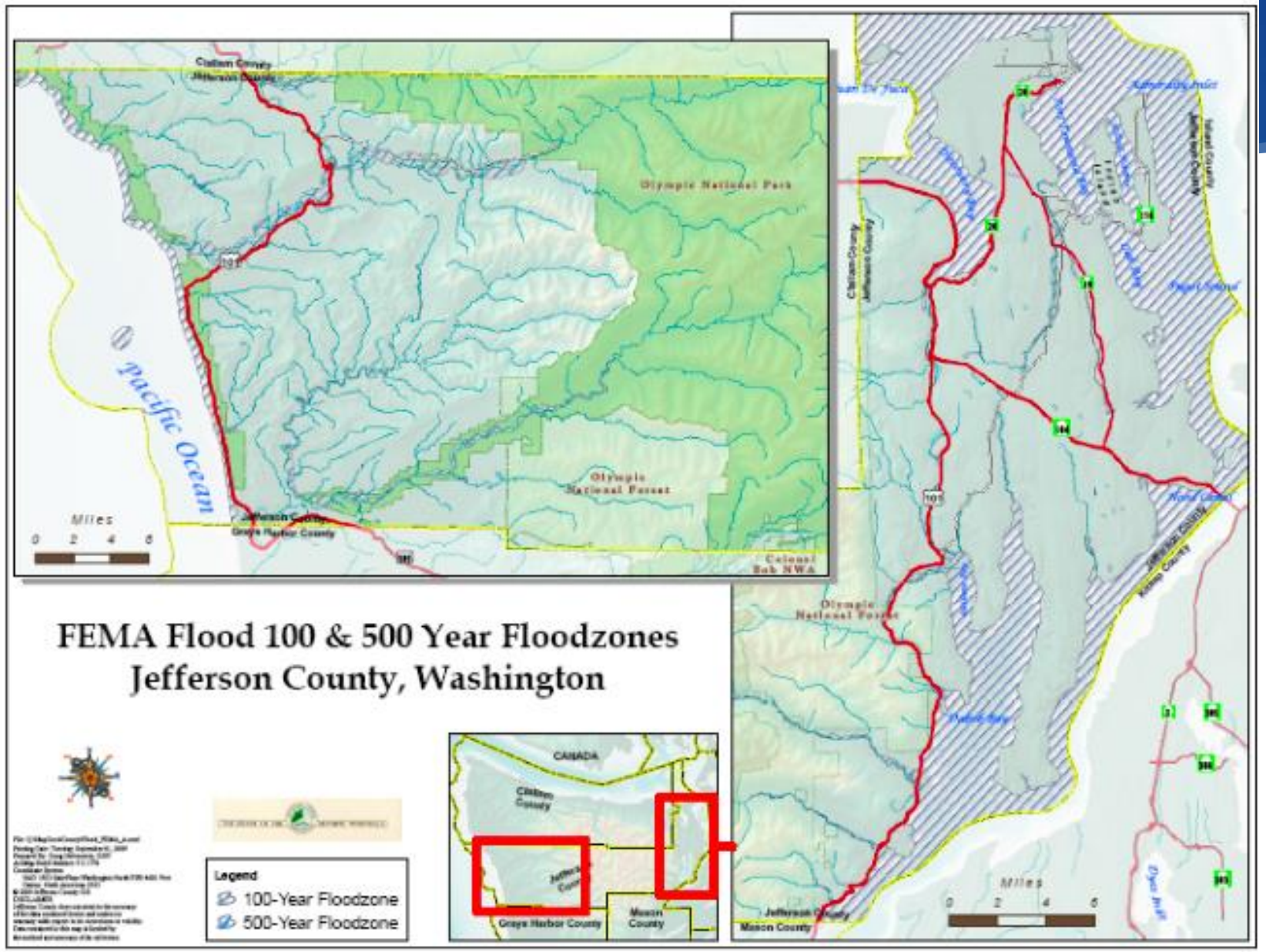
Coastal Flooding – near Anacortes

Figure FL-4 – Frequency of Major Flooding[15]



Source: Washington State Emergency Management Division Hazard Mitigation Plan

Figure FL-7: FEMA 100-year and 500-year Flood Zones in Jefferson County



Extended Heat Wave

- The National Weather Service defines a heat wave as a "prolonged excessive heat/humidity episode" in which its Heat Index (HI) is expected to exceed 105 degrees for at least two consecutive days.
- Severe heat waves have caused catastrophic crop failures, thousands of deaths from hyperthermia, and widespread power outages due to increased use of air conditioning.
- History of extreme heat events in surrounding counties, elsewhere in Washington.

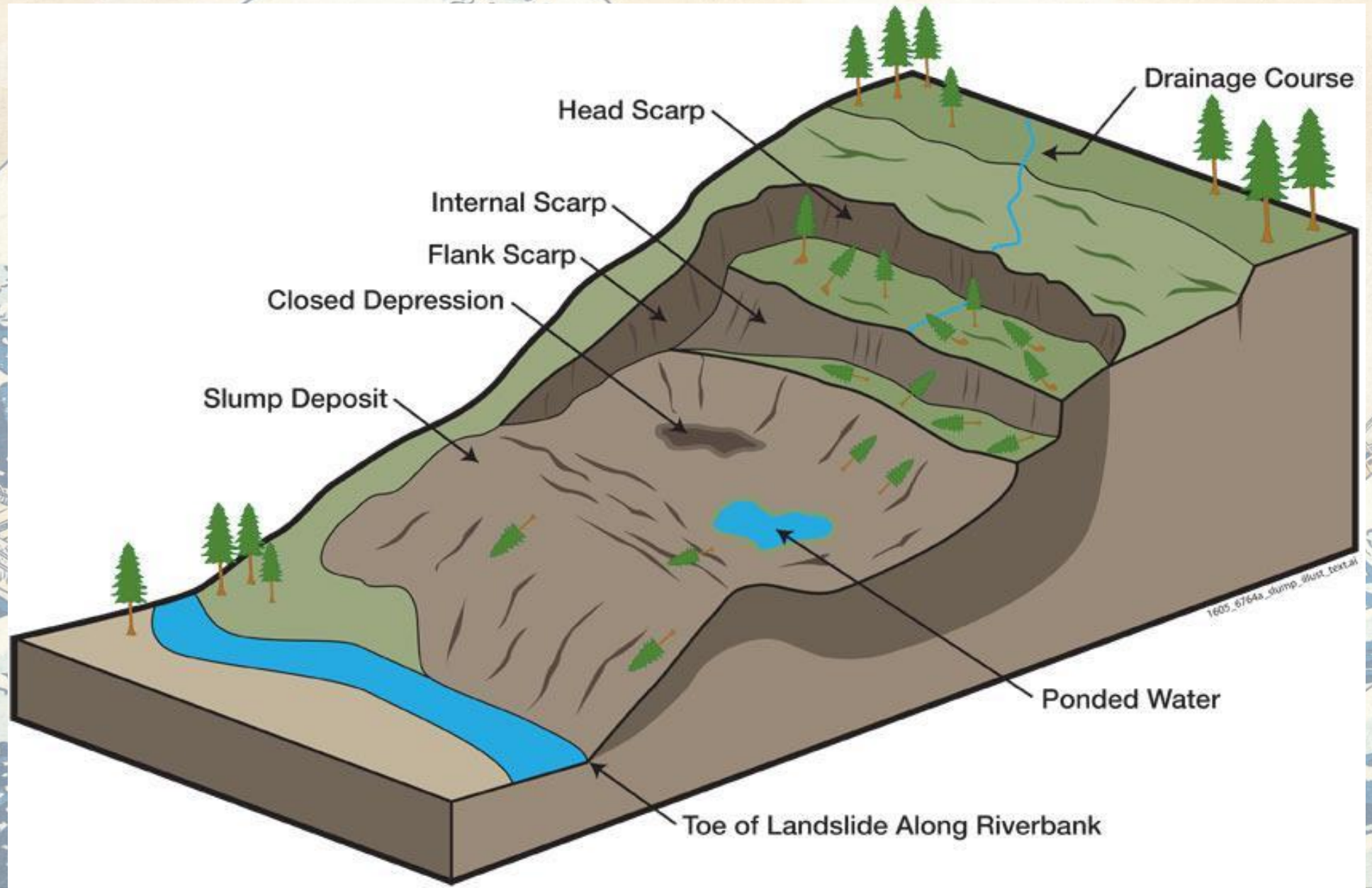
Landslides

- Landslide is the sliding movement of masses of loosened rock and soil down a hillside or slope. Landslide causes depend on rock type, precipitation, seismic shaking, land development and zoning practices, soil composition, moisture, and slope steepness.
- It can be fast moving, such as the March 2014 Oso Landslide in Snohomish county, Washington, or slow moving such as the inches per day landslide in Jackson, Wyoming in April 2014.
- Nearly yearly occurrence on Upper Hoh Rd on West Side – 3 emergency declarations in 3 years.
- Between 2010 and 2015, average of 600k per year to repair road damage due to landslides.

Shallow Landslides



Deep-Seated Landslides



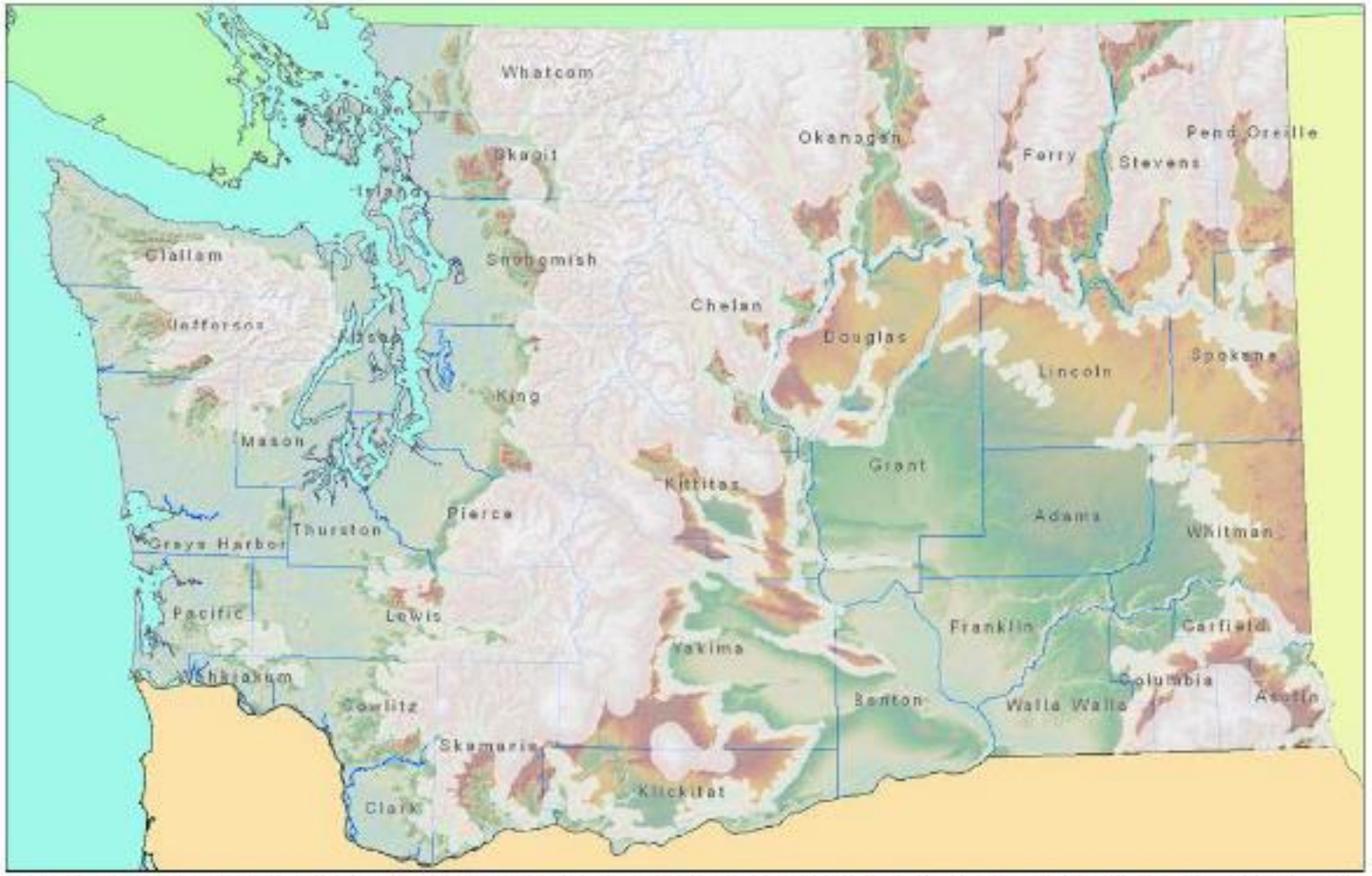


Avalanche

Avalanche

- An avalanche is a mass of sliding snow, ice, earth, and rock that grows and collects additional material as it descends.
- No recorded deaths, although have caused road damage. Increased visitors to wilderness increases likelihood of impact.

Figure AV-1: Washington State Avalanche Hazard Areas[5]



Washington State Avalanche Hazard Areas: White areas on the map indicate that those areas are at least 2,000 feet in elevation and most

Public Health Emergency

- Public Health Emergencies can be food or water contamination or medical emergencies such as diseases, epidemics, or a pandemic that have the potential to affect people and animals over a significant area.
- Includes blue green algae outbreaks at Anderson Lake, and in 2007, Jefferson County health authorities put out warnings to customers of a Port Townsend farm who purchased produce handled by an employee who had contracted Hepatitis-A.
- Nationally, Ebola, Zika, and of course, COVID-19

Infectious Disease

Plagues in History		
Plague of Justinian	541 - 542	30 - 50 M
Black Death	1347 - 1351	200M
New World Smallpox Outbreak	1520 -	56 M
Third Plague	1885	12M
Spanish Flu	1918 - 1919	40 - 50M
Asian Flu	1957 - 1958	1.1M
HIV/AID	1981 -	25 - 35M
Swine Flu	2009 - 2010	200,000
SARS	2002 - 2003	770
Ebola	2014 - 2016	11,000
COVID-19	2019-	5M

Tornadoes

- Tornadoes are characterized by funnel clouds of varying sizes that generate winds as fast as 500 miles per hour. They can affect an area of ¼ to ¾ of a mile and seldom more than 16 miles long.

Table TN-1. Recorded Tornado Events in Jefferson County Washington since 1950					
Date	*Location*	*Force*	*Death(s)*	*Injuries*	*Distance*
12/12/1969	Brinnon	F3	0	1	27
11/24/1970	Port Townsend	F2	0	0	27
04/09/1991	Brinnon	F0	0	0	13
06/11/2001	Brinnon	F0	0	0	19
06/05/2004	Port Townsend	F0	0	0	26
05/18/2005	Port Townsend	F1	0	0	25
01/18/2015	Brinnon	EF1	0	0	28

Tornado

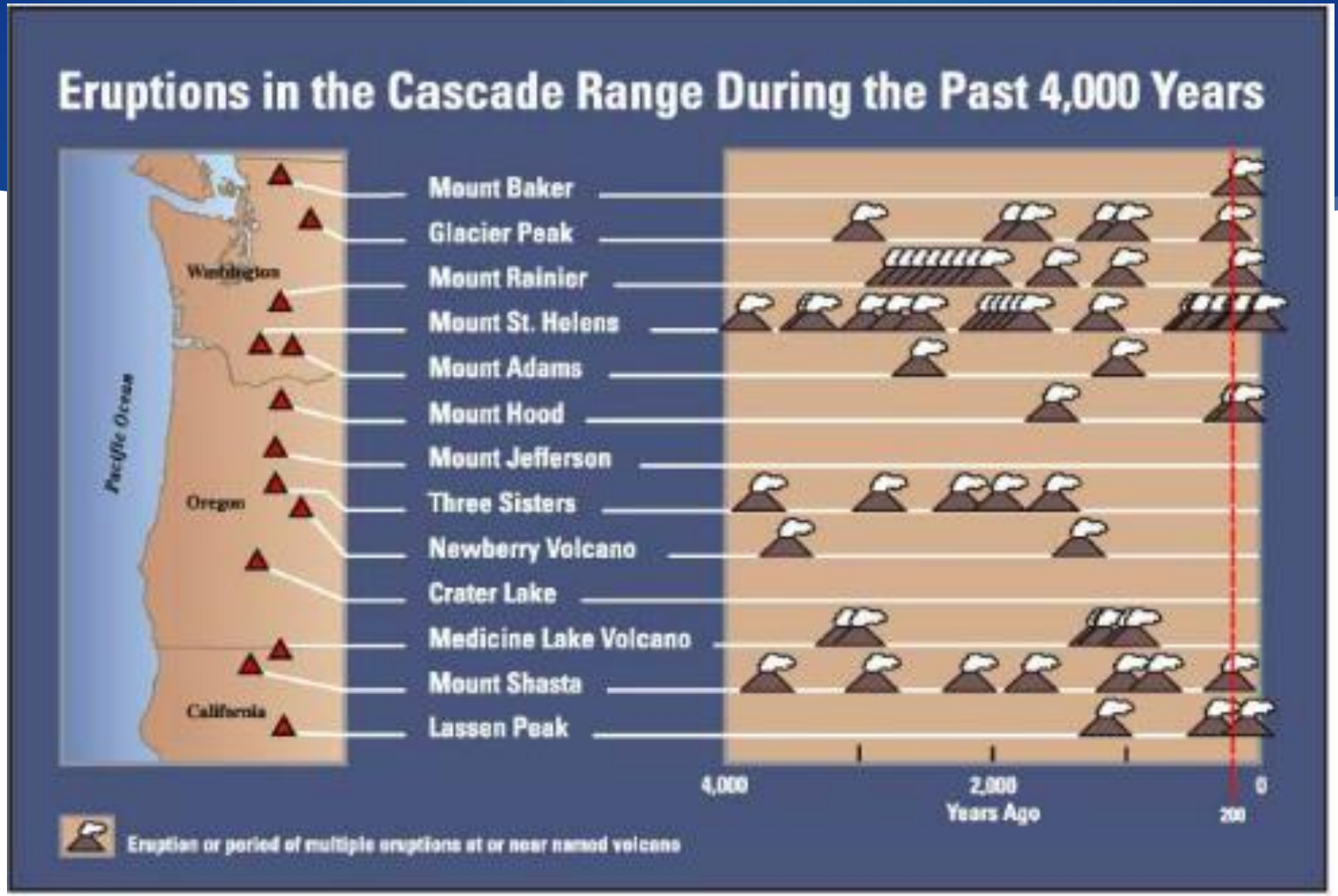


Port Orchard, 2018

Image Courtesy KING 5

Volcanic Eruption/Ash

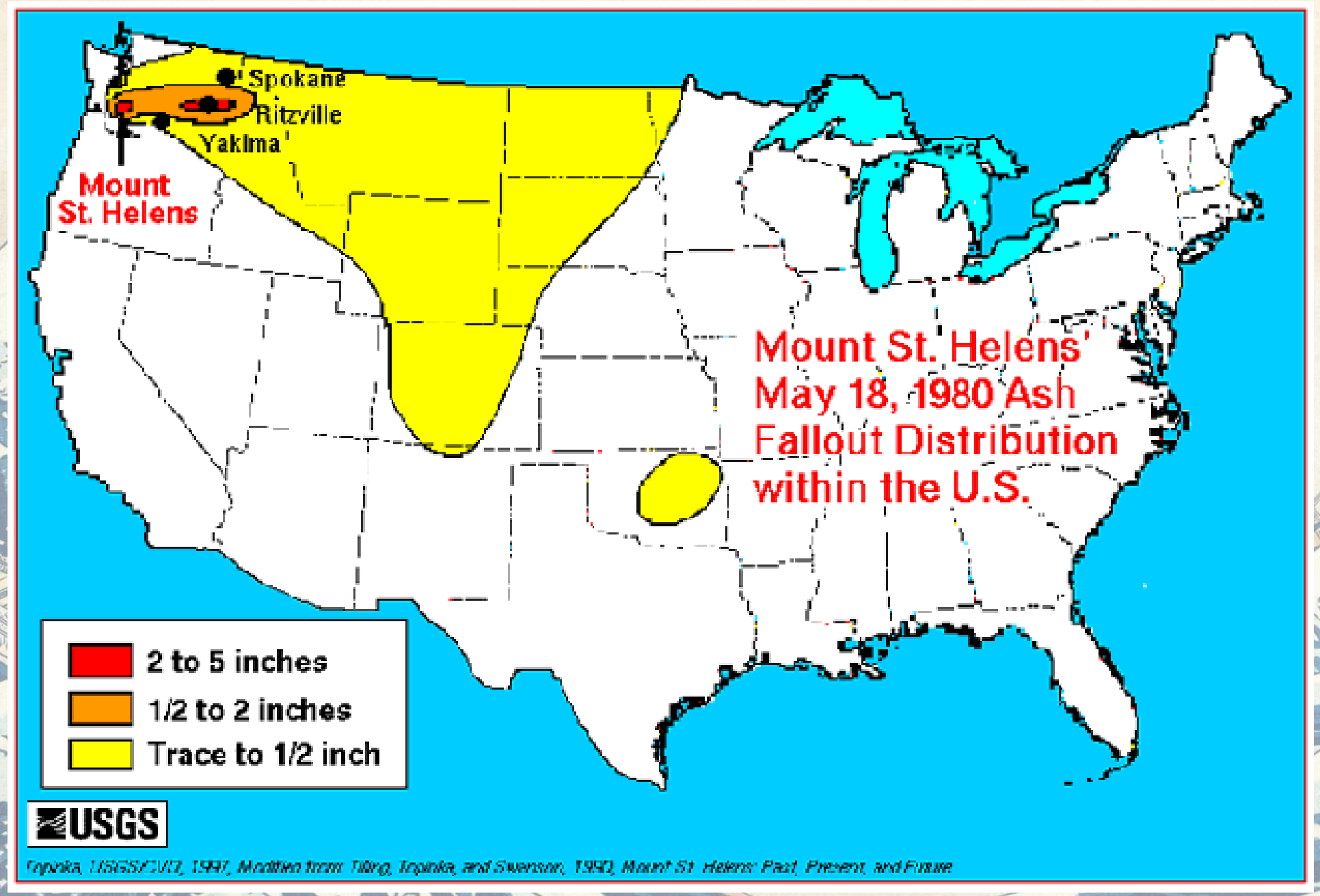
- A volcano is an opening in Earth's surface through which lava (molten rock), hot gases, and rock fragments erupt from the earth's interior. Such an opening forms when melted rock from deep within Earth (magma) blasts through the surface.
- There are no volcanoes in Jefferson County; however, the proximity to potentially active volcanoes in the Cascade Mountains to the east could impact the county. When Mt. St. Helens erupted on May 18, 1980, heavy ash from a west wind blanketed much of Eastern Washington. Subsequent eruptions on May 25 and June 12 similarly affected Western Washington, although to a lesser degree.


Eruptions in the Cascade Range During the Past 4,000 Years
Washington
Oregon
California
Pacific Ocean
Mount Baker
Glacier Peak
Mount Rainier
Mount St. Helens
Mount Adams
Mount Hood
Mount Jefferson
Three Sisters
Newberry Volcano
Crater Lake
Medicine Lake Volcano
Mount Shasta
Lassen Peak
4,000
2,000
0
Years Ago
200
Eruption or period of multiple eruptions at or near named volcano

Ash Fall



2010 eruption of Eyjafjallajökull, Iceland. Photo by Henrik Thorburn


Spokane
Ritzville
Yakima
Mount
St. Helens
Mount St. Helens'
May 18, 1980 Ash
Fallout Distribution
within the U.S.
2 to 5 inches
1/2 to 2 inches
Trace to 1/2 inch
USGS

Wildfire/Forest Fire/Urban Interface

- Forest and wildland fires are the uncontrolled destruction of forested and wild lands by fire caused by natural or human-made events. Forest and wildland fires occur primarily in undeveloped areas, although there are significant pockets of residences within Jefferson County woodlands.
- According to the National Fire Information Reporting System (NFIRS), Jefferson County averages 5 – 10 acres of wildland fires every year. The last major wildfire, the Chimney Peak fire, occurred in 1981.

Wildfire



Hayes Fire, ONP, August 26, 2016

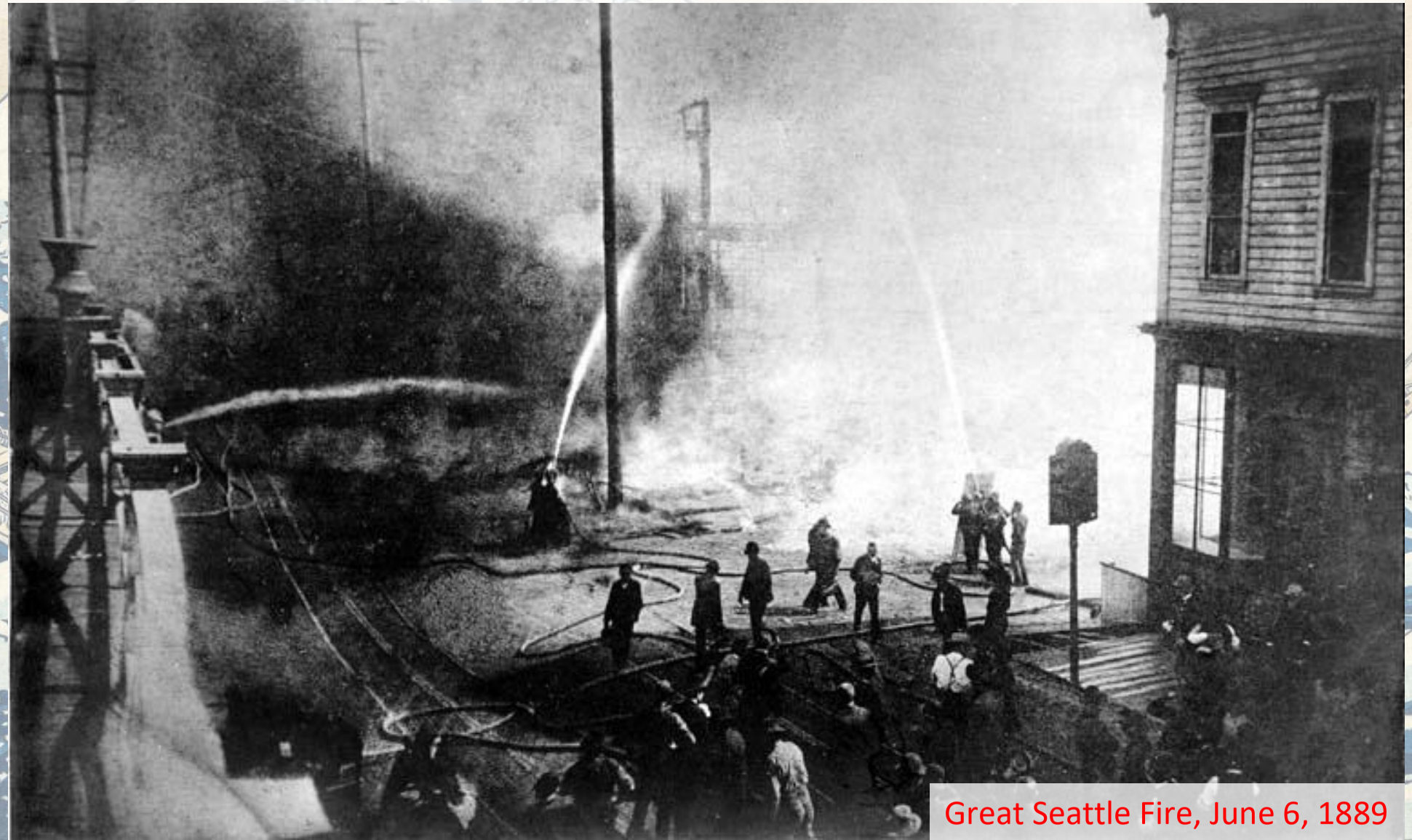
Photo from Peninsula Dailey News

Urban Interface Fire



Carlton Complex Fire, 2014

Major Fire Activity



Great Seattle Fire, June 6, 1889

Winter Storm

- The National Weather Service defines a winter storm as having significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation.
- Heavy snowfall is 4 inches or more in a 12-hour period, or 6 inches or more in a 24-hour period in non-mountainous areas;
- 12 inches or more in a 12-hour period or 18 inches or more in a 24-hour period in mountainous areas.
- Different than high winds, flooding, landslides – each hazard can impact Jefferson separately or together.
- Last snow storm requiring declaration was in 1955, although a declaration was requested in 2019 for February's "Snowmageddon" – it was denied.

Winter Storms



Water Street, 1955

Source: Port Townsend An Illustrated History…

- Man-made Disasters

Aircraft Mishap

- Large passenger aircraft originating from SeaTac Airport in Seattle, and military over flights originating from the region's numerous military bases add to the possibility of a mass-casualty event if they were to crash in Jefferson County or within the city of Port Townsend. Since these flights are at high altitudes and supersonic speeds, the probability is small that any given aircraft would have a simultaneous combination of problems, direction, and speed to cause it to drop into the few concentrated population areas of Jefferson County.
- There have been several mishaps with small, single-engine aircraft at Jefferson County Airport that have resulted in injuries to one or two individuals.

Aircraft Mishap



Wreckage of AF Plane Found

Seattle Post-Intelligencer

Kidnaped Child Safe; Sitter Held

No Sign Of Life At Scene

1975 C-141 Crash on Mt. Constance, Jefferson C. WA

Bankruptcy

- Possibility of bankruptcy of local governments; city, county or both.
- 2008 recession, potential recession due to COVID-19 pandemic
- Not unheard of – Jefferson County, AL in 2011; Detroit, MI in 2013
- Can occur post-disaster

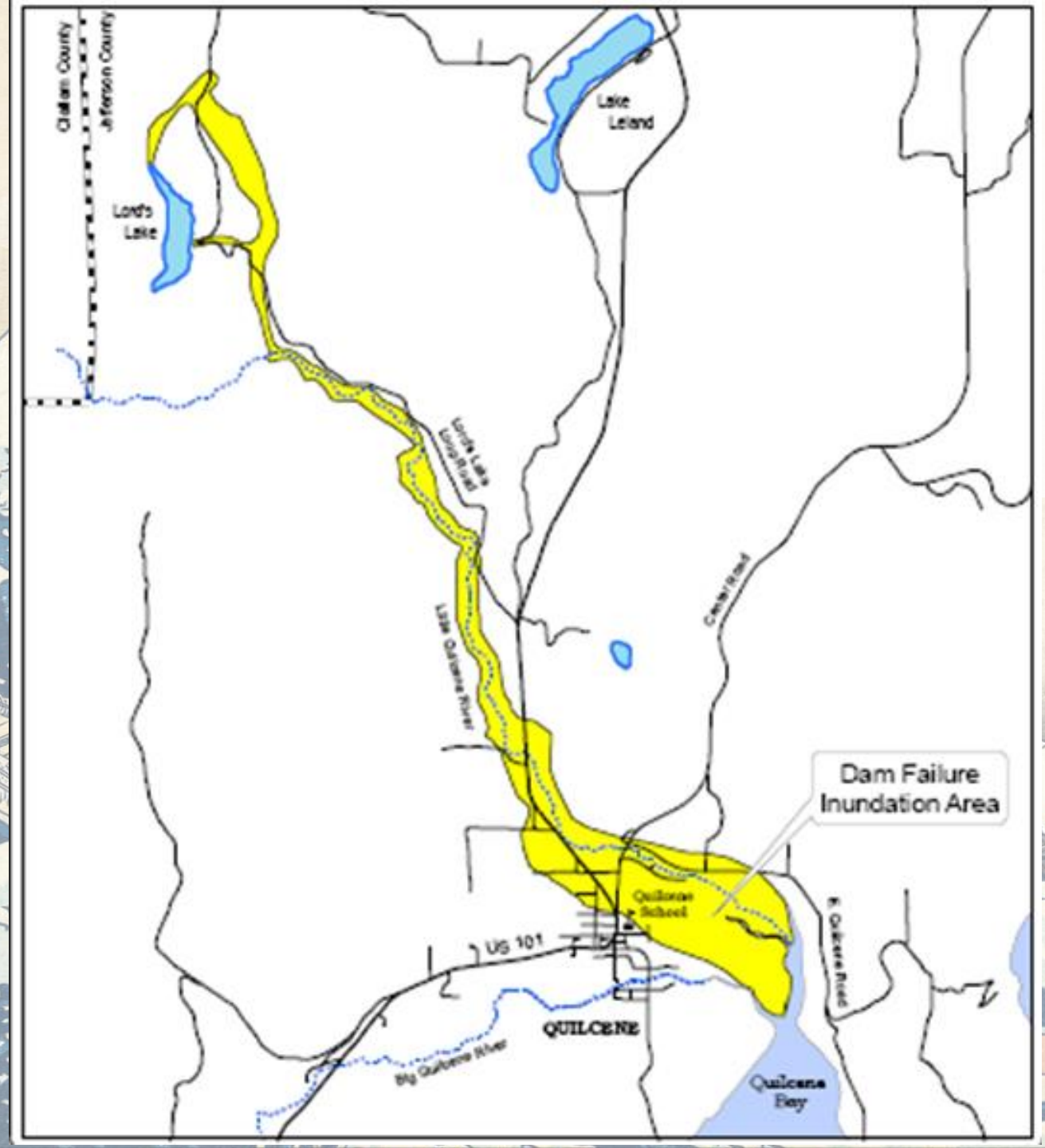
Dam Failure

- No history of dam failure in Jefferson County
- 5 dams:
  1. PT Paper ASB Pond
  2. Lord's Lake East
  3. Lord's Lake North
  4. Big Lake Outlet Structure
  5. Witter Dam
- Lord's Lake dams are only "High Risk" due to large downstream potential

Dam Failure



Inundation Map for a Lords Lake Dam Failure



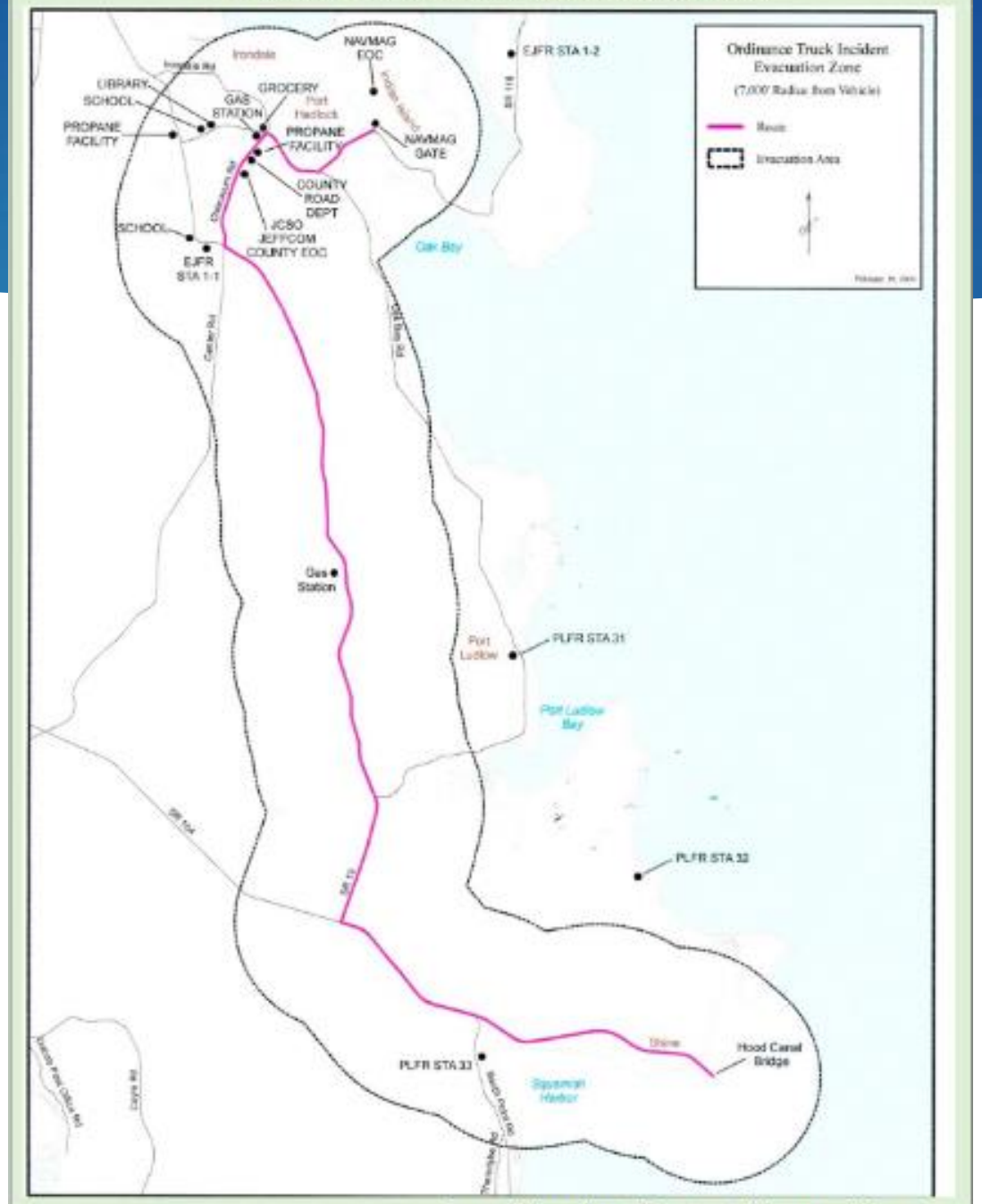
Military Ordinance Incident

- The largest munitions depot on the west coast, Naval Magazine Indian Island (NAVMAG), is located within the boundary of Jefferson County. Tens of thousands of tons of high explosives in the form of missiles, torpedoes, warheads, etc. are shipped in and out of the depot every year by ship and by truck. There is a possibility of an accident or incident detonating high explosives near a populated area.
- In 2008, a fully loaded semi-truck carrying 155mm munitions out of the base lost its brakes on a hill leading to the main gate of the navy base. A quick-thinking sentry raised the security bollards, which stopped the truck from entering onto the state highway fronting the base. There were no detonators with the munitions, so the threat of explosion was relatively low in this case.

Military Ordnance Incident



Figure OR-1. Ordnance Truck Incident Evacuation Zone[5]



Source: Jefferson County Department of Emergency Management

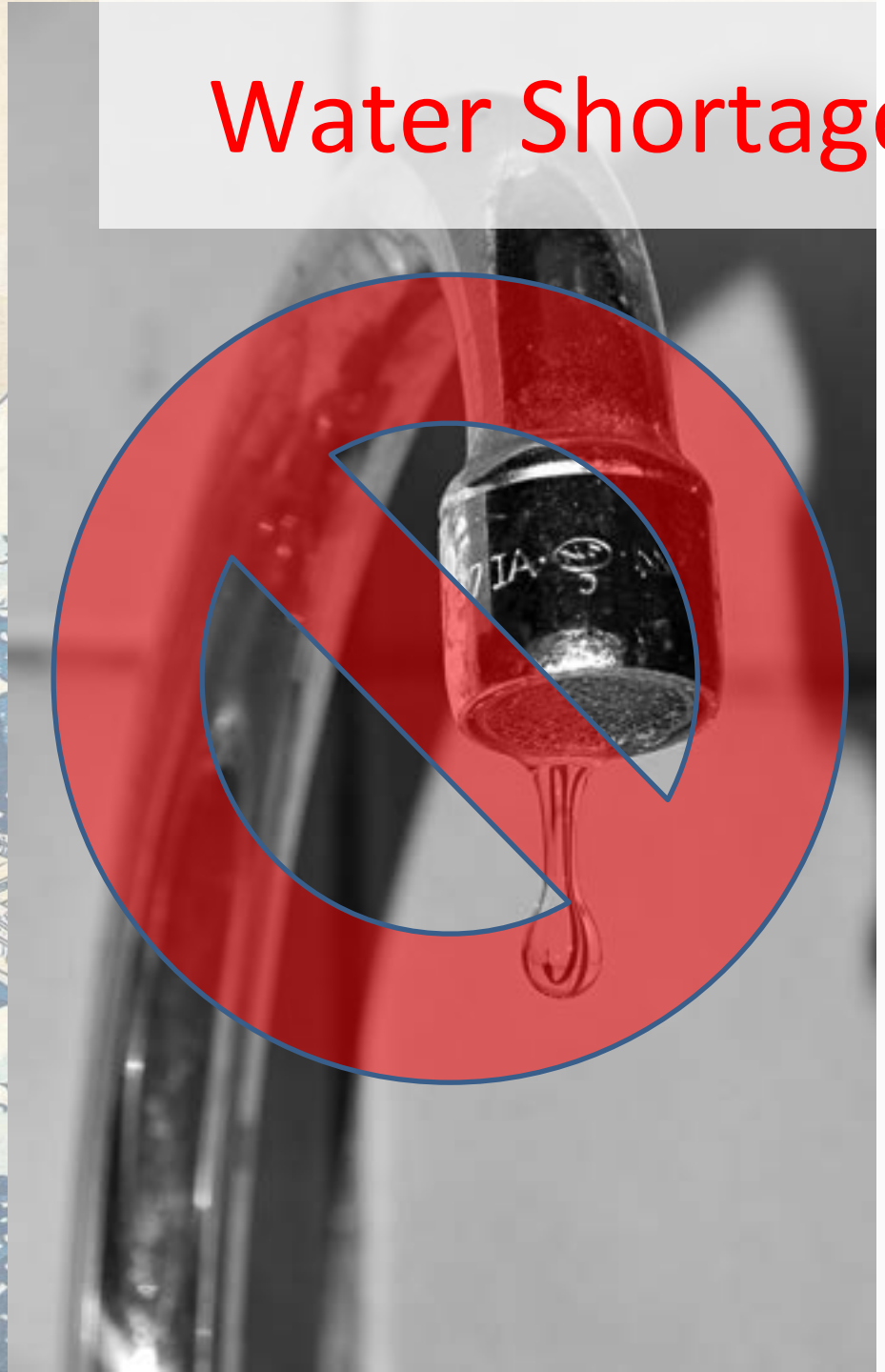
Long-term Power Outage

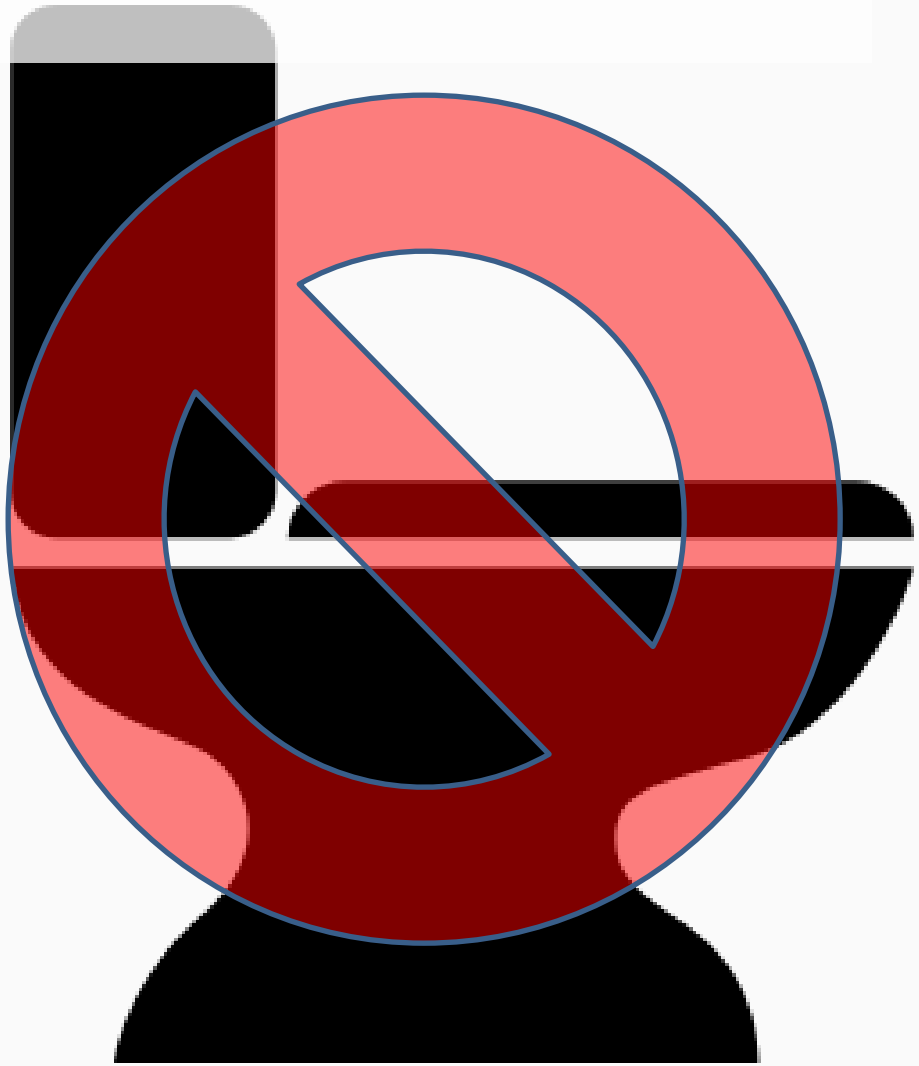
- Can occur as a result of winter storms, issues at Bonneville Feeder, or by acts of terrorism (physical attack to infrastructure, cyber attack)
- Outages occur multiple times a year due to storms. Whole county lost power for several hours after Bonneville line was compromised in 2019.
- Extended (>24 hours) outages can cause loss of life due to medical device failure and lack of heating/cooling; economic damage due to lost wages and food.

Water Shortage/Sewer Failure

- Water can be in short supply or become contaminated due to either intentional actions or to unintentional consequences of improper handling, system breakdowns, or through the introduction of bacteria from various means. It can also be chronically in short supply due to the effects of climate warming on municipal water supplies.
- On September 19, 2016, routine testing identified the possibility of a toxic substance in the City water supply. Subsequent testing showed the water to be safe. In the meantime, the EOC prepared a plan to distribute water to 10,000 residents daily. Water trucks and bladders were deemed not adequate. Estimated costs to deliver bottled water were $30,000 per day in both direct and indirect costs.

Water Shortage / Sewer Failure





Misc. Human-Caused Events

- Civil Disturbance – mass protests; previously seen sit-ins at NavMag; possibility during COVID, police reform protests
- Hazardous Materials Spill – 25 – 30 spills per year, mostly petroleum near ports. Paper Mill and transport in/out of NavMag represent biggest threats.
- Major Fire Activity – Large urban fires, may spread building to building. Modern fire codes, improved response limits probability, although older homes may contribute.
- Major Law Activity and/or Terrorism – Any incident that consume limited law resources i.e. pipe bomb scare in 2013 at Mountain View. Hard to predict.

HazMat



Civil Disturbance



Waco TX, April 19, 1993



US Capital, January 6, 2021

Terrorism



September 11, 2001



Oklahoma City bombing


Homeland Security
9ec4c12949a4f31474f299058ce2b22a
Cyber Terrorism
Infosec
Cyber Threats
Terrorism
Destruction
Sabotage
Cyber Defense
USCYBERCOM
iPredator
Espionage
Defacement
Disinformation
DoS Attack
Cyber Warfare
Worms
Viruses
Trojan
Cyber
Terrorism
www.ipredator.org

Misc. Human-Caused Events

- Marine oil spill – See HazMat. Occurs semi-frequently at small scale. Larger event could disrupt local economy.
- Maritime emergency - Puget Sound and the Admiralty Inlet are some of the highest trafficked sea lanes in the United States. The Port Townsend Bay has traffic from the ferry system, submarines, navy and coast guard warships, commercial fishing vessels, occasional cruise ships, and many pleasure craft. At times, the rough seas can threaten the ferries or small vessels.

Maritime Emergency



Ferry, Collision, Philippines, December 24, 2009,
Photo: Radio Free Europe

Marine Oil Spill





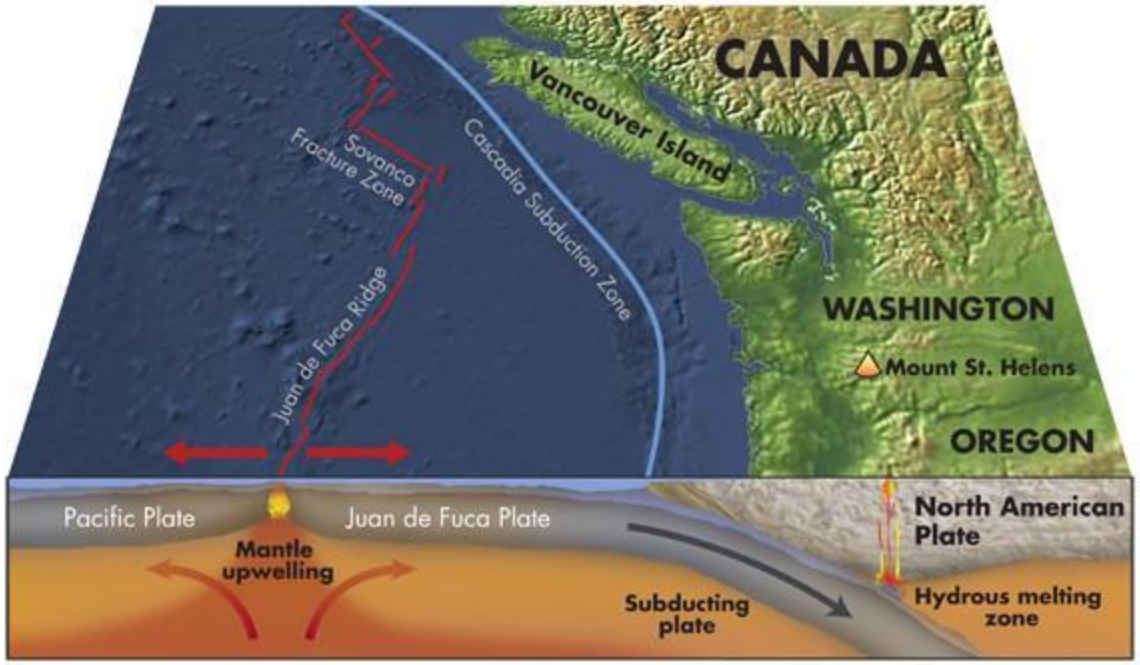
BREAK

Discussion

- What have we learned about these hazards in recent years?
- What new experiences/information/understanding do you want emphasized in the plan?
- What new hazards need to be added?
- Anything else you want to share?

Exercise

- Let's develop a quick HVA for Earthquakes



Discussion

- Probability:
  - Every 100+ years
  - 2 – unknown but anticipated/eventual

Discussion

- Human Impact:
  - Issues to consider:
    - Acuity and volume of injury/death community members
    - Displacement of individuals
    - Disruption of everyday life/comfort

Discussion

- Property Impact:
  - Issues to consider:
    - Cost to replace/repair
    - Cost to set up temporary replacements
    - Time to recover

Table EQ-4 – Hazus Earthquake Results for Selected Scenarios[33]

Community	Total Estimated Building Value	Total Number of Buildings	Number of Buildings in the Moderate – High Liquefaction Zone	Percent of Buildings in the Moderate-High Liquefaction Zone	Building Dollar Loss for a Southern Whidbey M7.4 Event	Loss Ratio (Dollar Losses/ Total Building Value) Southern Whidbey M7.4 Event	Building Dollar Loss for a Cascadia 9.0 Event	Loss Ratio (Dollar Losses/ Total Building Value) Cascadia 9.0 Event
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Total	$2,289,023,782	19,236	1,433	7.5%	$165,475,259	7.4%	$104,581,170	4.7%

Discussion

- Continuity Impact:
  - Issues to consider:
    - Business interruption
    - Employees unable to return to work
    - Interruption of delivery critical supplies
    - Interruption of critical services
    - Infrastructure damage

Discussion

- Preparedness:
  - Issues to consider:
    - Status of current plans
    - Frequency of drills/training
    - Mitigation activities

Discussion

- Internal response:
  - Issues to consider:
    - Supplies on hand
    - Staff availability
    - Availability of back-up systems
    - Previous disaster response track record

Discussion

- External response:
  - Issues to consider:
    - Agreements/coordination with surrounding communities
    - Coordination with state agencies
    - Proximity to external resources
    - Community resilience levels
    - Non-EOC/first responder capabilities (i.e. non-profit response)

Discussion

- Risk = Prob/5 * (H+P+B+P+I+E)/18
- Earthquake Risk = 2/5 * (3+3+3+2+2+2)/18= 2/5 * 15/18 = .33

Next Steps

- Survey will be sent out later today, along with video of presentation and slide deck.
- Share the survey! Community feedback plus perception is essential.
- Next meeting: January 7th, 2022 to share results

JPREP Meeting
December 11th, 2020

JEFFERSON COUNTY DEPARTMENT OF EMERGENCY MGMT.

Today's Agenda

- 10:00 - 10:10 Welcome and Housekeeping
- 10:10 – 10:50 Hazard Mitigation Plan Overview
  - What is a hazard mitigation plan?
  - Why develop a hazard mitigation plan?
  - Outline of 2016 Mitigation Plan
- 10:50 – 11:00 Break

Today's Agenda

- 11:00 – 11:55 Hazard Mitigation Plan 2022 Update Overview
  - Planning team organizational structure(s)
  - Roles and responsibilities
  - Plan update cycle tentative timeline
  - Call for volunteers and committee members
  - Next steps
- 11:50 – 11:55 Other announcements and "good of the order" reports
- 12:00 Adjourn

Housekeeping

- Due to the level of participation, ALL participants will be muted by organizer;
  - If you have a question, please type in the chat box.
  - I will give those on the phone an opportunity to ask question after each section.
- Yes, the presentation will be sent out after the meeting.
- If you have a question specific to your agency/jurisdiction/etc., please connect with me after the meeting instead of asking in front of the group.

Housekeeping

- PLEASE “sign-in” by typing your name and organization in chat

Mitigation Definition

- Mitigation:

the action of reducing the severity, seriousness, or painfulness of something.

Mitigation Definition

- Hazard Mitigation:

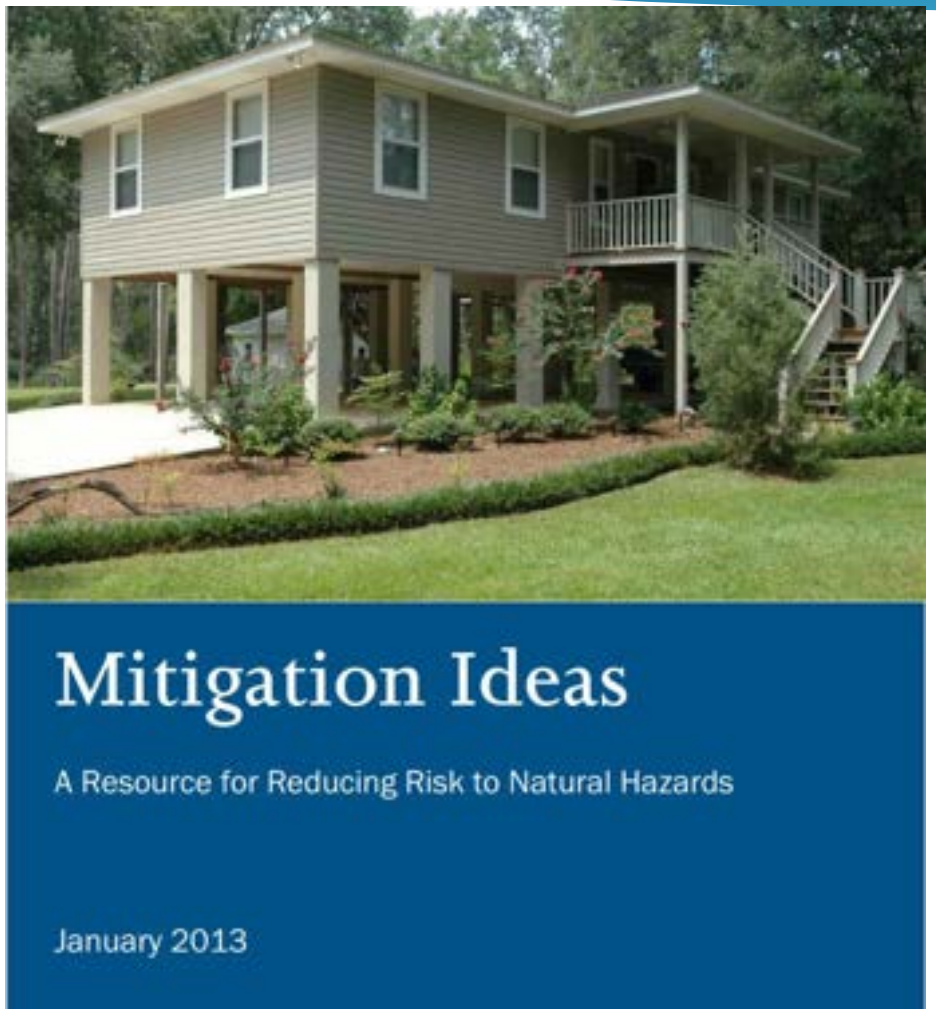
actions taken to help reduce or eliminate long-term risks caused by hazards or disasters

Emergency Management
Mitigation
Preparedness
Response
Recovery



Source: National Policy on Disaster Management[7]

Mitigation Examples



- Mitigation Ideas (https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdfema.gov)

Mitigation Examples Earthquakes

- Regulatory:
  - Adopt and enforce building codes that reduce risk and provide for stronger infrastructure
  - Ex: International Building Code (IBC) and International Residential Code (IRC).

Mitigation Examples Earthquakes

- Planning:
  - Developing an inventory of public and commercial buildings that may be particularly vulnerable to earthquake damage, including pre-1940s homes and homes with cripple wall foundations.
  - Collecting geologic information on seismic sources, soil conditions, and related potential hazards.
  - Using GIS to map hazard areas, at-risk structures, and associated hazards (e.g., liquefaction and landslides) to assess high-risk areas.

Mitigation Examples Earthquakes

- Protection:
  - Strengthening and retrofitting non-reinforced masonry buildings and non-ductile concrete facilities that are particularly vulnerable to ground shaking.
  - Retrofitting building veneers to prevent failure.
  - Installing window film to prevent injuries from shattered glass.

Mitigation Examples Earthquakes

- Education:
  - Working with insurance industry representatives to increase public awareness of the importance of earthquake insurance. Residential structural improvements can be factored into the process of obtaining insurance coverage or reduced deductibles.
  - Developing an outreach program about earthquake risk and mitigation activities in homes, schools, and businesses.
  - Educating on safety techniques to follow during and after an earthquake.

Hazard Mitigation Planning

- "Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters.
  - It begins with state, tribal and local governments identifying natural disaster risks and vulnerabilities that are common in their area.
  - After identifying these risks, they develop long-term strategies for protecting people and property from future events.
  - Mitigation plans are key to breaking the cycle of disaster damage, reconstruction, and repeated damage."
- FEMA then, mandates all communities must update plans on a five year cycle to be eligible for funding.

Plan Elements

- Step 1: Identify natural and man-made hazards presenting potential consequences to Jefferson County
  - Often called a "THIRA" (Threat and Hazard Identification and Readiness Assessment) or "HVA" (Hazard Vulnerability Assessment)
  - More than just a list of bad things that might happen, this represents a prioritization of hazards to plan and prepare for based on severity, frequency, scope, etc.

Plan Elements

- Step 2: Build a multi-jurisdictional community profile.
  - Includes information about Jefferson County, the City, and all participating and cooperating agencies assets and other information relevant to planning.
  - This includes things like:
    - core mission(s),
    - services,
    - service area,
    - population,
    - critical infrastructure,
    - staff,
    - assets owned and values,
    - previous disasters,
    - references to relevant plans and policies.

Plan Elements

- Step 3: Develop mitigation strategies.
  - Plan stakeholders create a five-year action plan matrix
  - Consists of strategies and projects designed to limit the impact of the hazards from Step 1, given the profile of Step 2
  - Public feedback and suggestions are ESSENTIAL to ensure a robust, viable plan
    - (Additionally, the planning process itself is valuable in the relationships the community builds)

Why a mitigation plan?

- Preventing loss of life and injury.
  - This is typically of paramount importance to most communities. The value of protecting buildings and infrastructure diminishes significantly if residents and property owners do not feel safe in their homes or places of business.

Why a mitigation plan?

- Reducing property damage to homes and businesses.
  - Minimizing physical damage to residential properties can help avoid expensive displacement costs, in addition to the cost of repairs. Any avoided damage to a business can help reduce loss of revenue and downtime for employees, in addition to the cost of repairs.

Why a mitigation plan?

- Reducing business interruption and revenue loss.
  - Businesses employ workers, provide for community needs and services, and generate revenue, allowing the community, both its members and government, to provide for itself. Reducing business interruption and revenue loss greatly aids in the speed and effectiveness of returning a community to self-sufficiency and vitality after a disaster.

Why a mitigation plan?

- Helping to lower emergency response and disaster recovery costs.
  - Emergency response costs can be lowered significantly when services such as fire safety, search and rescue, medical operations, disaster management, and other related services are needed less. Disaster recovery costs can also be lowered when prolonged activities such as long-term recovery planning, debris management, housing recovery, infrastructure recovery, natural resource recovery, and other related activities are needed less.

Why a mitigation plan?

- Protecting cultural and historical assets.
  - Seeking to preserve, protect, conserve, rehabilitate, recover, and restore cultural and historical resources can have a significant positive impact on a community's overall health.

Why a mitigation plan?

- Reducing environmental damage.
  - Environmental assets and natural resources are important to community identity and quality of life and support the economy through agriculture, tourism and recreation, and a variety of other ecosystem services, such as clean air and water. The natural environment also provides protective functions that reduce hazard impacts and increase resiliency.

Why a mitigation plan?

- Building a sense of place and peace of mind.
  - A safe, resilient community results in residents and business owners feeling more confident and secure about their assets and investments, and can lead to a stronger sense of place and, ultimately, peace of mind.

Why a mitigation plan?

“On average, a dollar spent by FEMA on hazard mitigation provides the nation about $4 in future benefits.”

Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities by the Multihazard Mitigation Council www.nibs.org/resource/resmgr/ MMC/hms_vol1.pdf

Why a mitigation plan?

"FEMA grants to mitigate the effects of floods, hurricanes, tornadoes, and earthquakes between 1993 and 2003 are expected to save more than 220 lives and prevent almost 4,700 injuries over approximately 50 years."

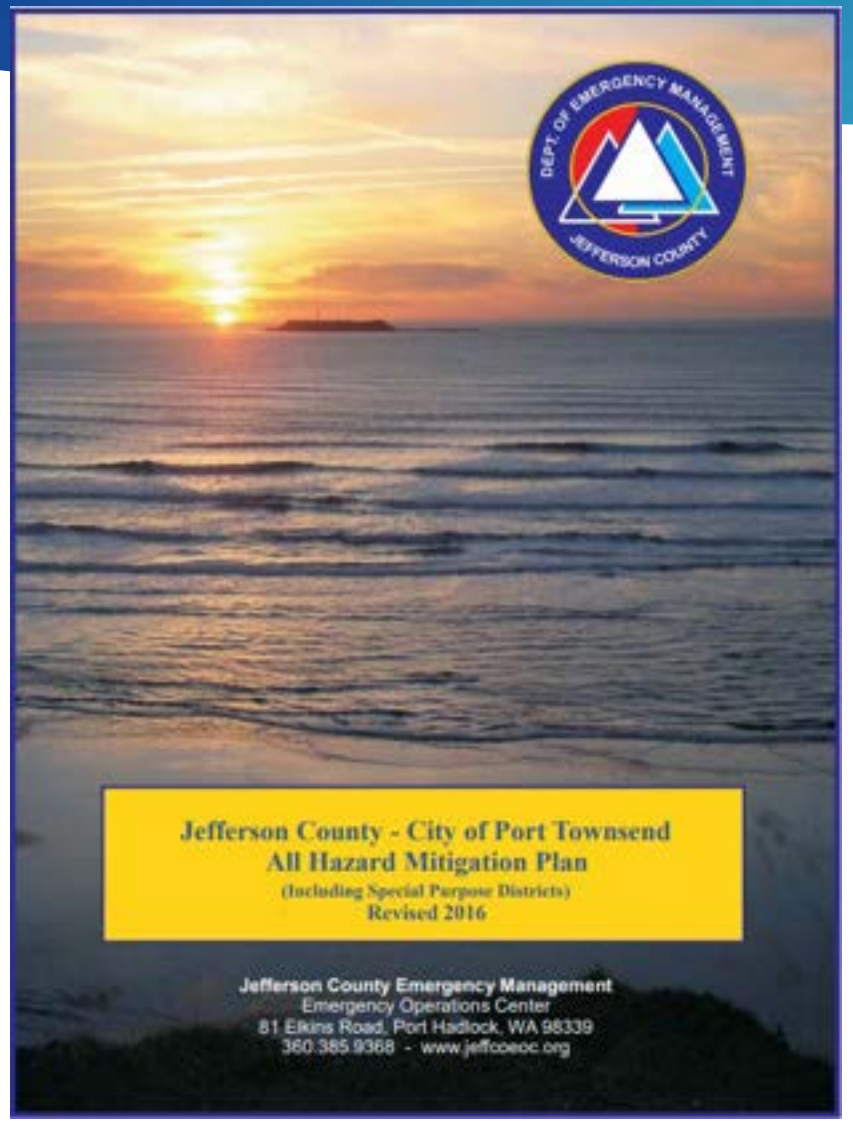
Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities by the Multihazard Mitigation Council www.nibs.org/resource/resmgr/ MMC/hms_vol1.pdf

Why a mitigation plan?

- A FEMA-approved hazard mitigation plan allows agencies to apply for pre- and post-disaster mitigation grant funding.



Previous Mitigation Plan



Available for viewing at bit.ly/jeffcohazmit

Participating Jurisdictions

- County
- City
- 5 Fire Districts
- JeffCom 9-1-1
- 2 Hospital Districts (PT and Forks)
- Port of PT
- County Library
- Port Ludlow Drainage District
- 6 School Districts
- Jefferson Transit
- Jeffco PUD (Electricity and Water)

Coordinating Entities

- Clallam County EOC
- Clallam County Fire 1 and 3 (West End and Sequim)
- Clallam County PUD
- Fort Worden
- Hoh Tribe
- KPTZ 91.9
- NPREP
- PT Paper
- Propane Providers
- Sequim School District 323
- USCG
- Naval Magazine – Indian Island
- WA State Dept of Ecology
- WA State Dept of Fish and Wildlife
- WA State Dept of Natural Resources
- WA State Dept of Transportation
- WA Mil Dept – Emergency Management Division
- Washington State Patrol

Stated Goals of Previous Plan

1. Protect Life and Property
2. Create Public Awareness
3. Natural Systems Protection
4. Improve Partnerships and Implementation
5. Increase Emergency Services Capacity

All mitigation activities tied to one or more stated goals.

Read more on pg. 14 of plan.

Quick Facts

- Over 200 individuals provided feedback or input
- 19 total jurisdictions or special districts contributed directly to the plan
- Updated all hazard-specific data and historical info; added Climate Change section
- Hazards include avalanche, wind, drought, EQ, flood, heat wave, landslide, public health emergency, tornado, tsunami, volcano, wildfire, winter storms.
- Man-made hazards include aircraft mishap, bankruptcy, civil disturbance, dam failure, hazmat, major fire activity, major law enforcement activity, oil spill, maritime emergency, military ordinance incident, power outage, terrorism, water shortage/sewer failure (extended)
- Participating agencies/jurisdiction identified over 400 projects to mitigate against the above hazards
- All told, our HazMit plan clocks in at 980 pages of light reading

FEMA Review

- FEMA commended the public feedback process used in 2016 and use of JPREP as an engagement outlet
- Some of the maps used were low-tech and hard to read; many public risk maps can be utilized to better display vulnerability data
- Our connection of codes and ordinances to mitigation strategies was noted as superb
- Need to better define mitigation project timeframes, integration with response plans
- Review of 2009 strategies was complete and in-depth
- Could have better describe how priorities changed from 2009 to 2016

BREAK

Summary from First Hour

- Hazard Mitigation reduces loss of life and property, improves response outcomes
- An approved HazMit plan makes us eligible for FEMA grant funding
- A plan is more than just a list of construction projects – it includes:
  - Vulnerability analysis
  - Community Profile
  - Projects, strategies, campaigns etc. to reduce harm from hazards based on the hazard analysis and community profile, with input from a wide array of stakeholders
- HazMit plans must be updated every five years to remain FEMA-compliant

HazMit Update Organization

- Hazard Mitigation Steering Committee
- JPREP -> Hazard Mitigation Planning Committee
- Participating Jurisdictions
- Coordinating Entities
- General Public

Hazard Mitigation Steering Committee

- Governing body that oversees plan development and keeps planning on track
- Establishes plan goals and objectives
- Ensures plan meets FEMA and other requirements
- Solicits and encourages participation in place by stakeholders
- Assist stakeholders in assembling information and data
- Organize and oversee public involvement
- Gather, assemble, synthesize, and review plan information and craft final plan document.

Hazard Mitigation Steering Committee

- Consists of 4 – 12 members
- For 2016, included:
  - DEM Director
  - DEM Deputy Director
  - Project Manager
  - City of PT PW Director
  - City of PT DSD Director
  - City of PT Police Chief

Hazard Mitigation Planning Committee

- JPREP, throughout the plan update cycle, will serve as the HMPC
- JPREP is typically attended by relevant stakeholder, jurisdictions, entities, and general public
- Will be used to solicit direct feedback, outlet for updates, and will act as "sounding board" for HMSC
- Opportunity for stakeholders to come together and discuss process and provide assistance to one another
- Contributes to hazard analysis and prioritization
- Reviews submitted mitigation strategies and assists with prioritization
- Outlet for direct community involvement and feedback in planning process

Participating Jurisdictions

- Full participants in plan, and must adopt final plan by governing body
- Provide full jurisdictional profile, including:
  - Staff, services, service area, and populations served
  - Assets, critical infrastructure, and values
  - Top-3 vulnerabilities (minimum)
  - At least one mitigation project or strategy per identified vulnerability
  - Codes, policies, or procedures relevant to plan
- Key participants in hazard vulnerability analysis at community level

Participating Jurisdictions

- County
- City
- 5 Fire Districts
- JeffCom 9-1-1
- 2 Hospital Districts (PT and Forks)
- Port of PT
- County Library
- Port Ludlow Drainage District
- 6 School Districts
- Jefferson Transit
- Jeffco PUD (Electricity and Water)

Coordinating Entities

- Are not full "Participating Jurisdictions" and do not need to formally adopt plan
- Provide input into plan and have short informational profile, including:
  - Org goals and responsibilities
  - Information on projects and other work
  - Opportunities to participate within community
  - Coordination issues
  - Other information the entity feels relevant
- Do not need to provide individual mitigation projects or strategies, but feedback welcome

Coordinating Entities

- Clallam County EOC
- Clallam County Fire 1 and 3 (West End and Sequim)
- Clallam County PUD
- Fort Worden
- Hoh Tribe
- KPTZ 91.9
- NPREP
- PT Paper
- Propane Providers
- Sequim School District 323
- USCG
- Naval Magazine – Indian Island
- WA State Dept of Ecology
- WA State Dept of Fish and Wildlife
- WA State Dept of Natural Resources
- WA State Dept of Transportation
- WA Mil Dept – Emergency Management Division
- Washington State Patrol

General Public

- Public participation and feedback is KEY
- Welcome at JPREP, but many can submit comments and review outside of formal group meetings
- All stakeholders are encouraged to raise awareness of plan, solicit feedback, and engage community
- A web portal will be developed to direct suggestions, comments, feedback, etc. to streamline process
- Goal is to build lasting relationships, recruit new volunteers and supporters, increase personal preparedness through awareness

Plan Update Timeline

- Today: Announcement plan update cycle has begun, first recruitment for Steering Committee
- December/Jan: Participating Jurisdictions/Coordinating Entities given initial notice
- January: First meeting of Steering Committee to begin to draft objectives; submit formal invitations to PJs and CEs to participate in plan; finalize draft update timeline
- February: Steering Committee finalizes draft plan objectives; review participation

Plan Update Timeline

- March: JPREP's first meeting as Hazard Mitigation Planning Committee; review objectives; provides feedback on 2016 hazard inventory and begins HVA process;
  - Steering Committee begins review of historical data, other complementary plans
- April: Steering Committee codifies objectives after incorporating feedback; directs PJs to update jurisdictional profile
- May: Steering Committee meets to review progress

Plan Update Timeline

- June: JPREP/HMPC meets to finalize HVA by developing risk assessment and matrix; PJs directed to begin to update mitigation projects; web portal opened for public feedback
- July: Steering Committee meets to assess progress; provide guidance to PJs on updates; review public feedback
- August: Steering Committee meets to assess progress

Plan Update Timeline

- September: JPREP/HMPC meets to review mitigation projects and strategy recommendations; submit final group feedback
- October: Steering Committee collates PJ and CE profiles and project lists, incorporating public feedback; provides rough draft to organizational leaders and elected officials for feedback and to ensure plan alignment with strategic plans and other workplans
- November: Steering Committee meets to incorporate final feedback; web portal closes, last call for public feedback at December meeting

Plan Update Timeline

- September: JPREP/HMPC meets to review mitigation projects and strategy recommendations; submit final group feedback
- October: Steering Committee collates PJ and CE profiles and project lists, incorporating public feedback; provides rough draft to organizational leaders and elected officials for feedback and to ensure plan alignment with strategic plans and other workplans
- November: Steering Committee meets to incorporate final feedback; web portal closes, last call for public feedback at December meeting

Plan Update Timeline

- December: Final meeting with JPREP as HMPC to review final plan contents; final plan submitted to PJs for review

- January/February '22: Final plan reviewed by EMD for last tweaks; all PJ's formally adopt Hazard Mitigation plan after

- March '22: Plan submitted to EMD for approval.
- April '22: Plan submitted to FEMA for final approval.
- May '22: Plan finalized!

Plan Update Timeline

- Ongoing: JPREP will review plan progress at least once per year over the next five years.
- Steering Committee, after plan approval, will reassess membership and will then look to meet no less than twice per year to solicit updates and provide information to JPREP

Call for Assistance

- Members of Steering Committee are needed:
  - Meetings at least once per month, around 2 hours
  - Additional workload will vary
- Looking for a total of 3 – 12
- Can be a member of general public, PJ, CE, etc.
- Looking for members to specialize in one of two areas:
  - Outreach and coordination – engaging with PJs and CEs to provide assistance, motivation, and support
  - Review and synthetization – pull together data and submitted feedback, help ensure plan is usable, readable document by layperson
- Commitment is for plan update cycle, but ongoing membership through plan lifecycle is preferred

Call for Assistance

- Subject Matter Experts needed to "adopt" sections of plan
- Write hazard-specific sections or assist in putting together community profile
- For example, a geologist who may wish to work on the earthquake section of the HVA, or a group like Local 20/20's climate change working group to assist with climate change section
- Any community member who feels they may be able to contribute, please reach out

Next Steps

- PPT shared with JPREP again after meeting
- DEM is pursuing grant funding to hire project manager to lead update process in concert with DEM Director.
- Participating Jurisdictions and Coordinating Entities will be notified over the next month or so
- Steering Committee recruitment through end of year, with first meeting to be scheduled mid-January; formal invites to follow
- Please let DEM Director Bence know if you are interested or available in participating at whatever level at your earliest convenience

Questions?

Quarterly JPREP Meeting
June 11th, 2021

JEFFERSON COUNTY DEPARTMENT OF EMERGENCY MGMT.

Agenda Reminder

- 10:00 - 10:10 Welcome and Introductions
- 10:10 – 10:30 Hazard Vulnerability Analysis Definition, Purpose, and Development
- 10:30 – 11:00 Hazard Inventory from 2016 HMP
- 11:00 – 11:10 Break
- 11:10 – 11:55 Discussion and Development of 2021 Analysis
- 11:55 – 12:00 Other announcements and "good of the order" reports
- 12:00 Adjourn

Update on Hazard Mitigation Planning Process

- Currently still awaiting approval on FEMA Hazard Mitigation Grant Program funding for HMP Project Coordinator/final decision on augmented timeline due to HMP.
- Once finalized, approved timeline will be sent to JPREP and partnering agencies

Today's Exercise

- Build Hazard Vulnerability Analysis using HVA/THIRA model
  - Reviewing hazard inventory from 2016 plan
    - Goal: Understand Jefferson County's current threat profile
  - Put hazards into context by beginning development of HVA
    - Goal: Begin brainstorming needed updates or priorities for 2022 plan.
    - HVA will be used as tool to launch discussions on mitigation strategies and capability targets

Definition: HVA

- Hazard and Vulnerability Analysis:
  - In short, it's an assessment of risk:
  - Risk = Probability x Impact or (Magnitude - Mitigation/Response Capacity)
  - Risk is calculated for each identified hazard for comparison/context
- HVAs represent a snapshot analysis of an organization, agency, or jurisdiction's overall threat profile and the risks it faces

Definition: HVA

- Started by listing all potential hazards an organization, agency, or jurisdiction may face, whether they be:
  - Natural (earthquakes, tornadoes)
  - Technological (long-term power/internet outage)
  - Man-made (terror)
- In our HMP, this is the "Hazard Inventory" – we'll review this in a moment

Definition: HVA

- Then, identify the probability or likelihood of each on a rough scale:
  1. Unknown but rare
  2. Unknown but anticipated/eventual
  3. One hundred years or less
  4. 25 years or less
  5. Once per year or more

Definition: HVA

- From there, we evaluate their impacts to our entity with respect to:
  - Human impact – possibility of loss of life or death
  - Physical losses – losses or damages to homes, property, infrastructure
  - Continuity impact – interruption of critical services i.e. government, food supply
- This is the "Magnitude" portion of the equation
- Rated on a 0 – 3 rating scale, with 0 being no impact, 3 being catastrophic.

Definition: HVA

- Rated on a 0 – 3 rating scale,
  - 0 being no impact,
  - 1 = some impact
  - 2 = moderate
  - 3 = catastrophic.

Definition: HVA

- Finally, evaluate your ability to mitigate and/or respond to each threat:
- Preparedness: The level of preplanning and mitigation activities you have undertaken to protect yourself
- Internal response: The capabilities of local first responders, Emergency Operations, local government, and other disaster responders to respond to impacts.
- External response: The capacity of the whole community (NPREP, local non-profits, etc.) to respond to impacts

Definition: HVA

- Rated on a 0 – 3 rating scale
- 0 being fully prepared
- 1 = well prepared
- 2 = somewhat prepared
- 3 = not prepared

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interuption of services*	*Preplanning*	*Time, effectivness, resouces*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 - 100%*
Hurricane								0%
Tornado								0%
Severe Thunderstorm								0%
Snow Fall								0%
Blizzard								0%
Ice Storm								0%
Earthquake								0%
Tidal Wave								0%
Temperature Extremes								0%
Drought								0%
Flood, External								0%
Wild Fire								0%
Landslide								0%
Dam Inundation								
Volcano								0%
Epidemic								0%
AVERAGE SCORE	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.00	0.00	0.00

Final Product

- Risk = Probability x Impact or (Magnitude - Mitigation/Response Capacity)
- Risk = Prob/5 * (H+P+C+P+I+E)/18

Final Product

- We will be soliciting HVAs from:
  - Participating agencies to show organizational risk
  - Community members to demonstrate community-wide risk perception

2016 Version

2016 Natural Hazard Risk Rating by Jurisdiction

Jurisdiction	Natural Hazard Rating													
	Avalanche	Damaging Winds	Drought	Earthquake	Flood	Heat Wave	Land Movement	Public Health Emergency	Tornado	Tsunami	Volcanic Activity	Wildland Fire	Winter Storms	Total Score
Jefferson County	6	40	28	45	40	32	50	24	6	10	40	45	28	394
City of Port Townsend	3	65	22	45	20	20	24	18	8	36	7	16	65	349
Subtotal: Primary Jurisdictions	9	105	50	90	60	52	74	42	14	46	47	61	93	743
Jefferson County Fire District 1 (East Jefferson Fire & Rescue)	0	30	16	48	10	22	15	16	28	18	30	33	36	302
Jefferson County Fire District 2 (Quilcene Fire Department)	0	40	7	13	24	7	5	10	11	0	0	12	40	169
Jefferson County Fire District 3 (Port Ludlow Fire & Rescue)	0	60	18	64	24	11	12	14	9	39	42	48	60	401
Jefferson County Fire District 4 (Brinnon Fire Department)	3	50	14	11	30	18	32	10	7	8	4	70	36	293
Jefferson County Fire District 5 (Discovery Bay Volunteer Fire & Rescue)	0	6	0	2	0	0	0	0	0	0	0	3	4	15
JeffCom 9-1-1	0	44	5	32	30	5	8	16	0	18	0	30	30	218
Public Hospital District No. 2	0	18	14	48	9	14	10	9	0	42	5	18	16	203
Jefferson County Library District	5	18	1	14	5	1	5	5	0	4	11	8	7	84
Port of Port Townsend	0	20	0	8	7	0	4	1	0	15	0	1	20	76
Queets/Clearwater School District No. 20	0	44	1	33	0	0	0	8	0	0	10	33	20	149
Brinnon School District No. 45	0	7	0	10	24	0	5	0	0	24	0	4	8	82
Quilcene School District No. 48	0	18	5	75	B	8	0	7	0	16	10	48	8	203
Chimacum School District No. 49	0	45	0	52	30	0	0	16	0	39	27	3	40	252
Port Townsend School District No. 50	0	27	1	14	9	0	0	10	0	9	8	5	27	110
Quillayute Valley School District No. 402	5	16	5	20	8	0	35	0	0	5	16	27	16	153
Public Utility District No. 1 of Jefferson County (Electrical)	0	36	12	8	3	5	2	7	0	9	1	5	24	112
Public Utility District No. 1 of Jefferson County (Water & Sewer)	0	16	6	7	6	6	3	7	0	7	0	3	14	75
Subtotal: Special Districts	13	495	105	459	227	97	136	136	55	253	164	351	406	2897
Grand Totals:	**22**	**600**	**155**	**549**	**287**	**149**	**210**	**178**	**69**	**299**	**211**	**412**	**499**	**3640**

Source: Jefferson County Department of Emergency Management

Purpose

- Easy to read and summarize, snapshot of jurisdictional risk profile.
- Helps drive conversations about risk and capabilities.
- Can help drive emergency plan development, mitigation plan development, prioritization or training, planning, projects, etc.
- HVAs can be shared across jurisdictions to compare common challenges and needs
- As with many planning projects, the process itself is valuable.

Purpose

- Standalone HVAs are mandated at the organizational level in many fields, two examples being hospitals and institutions of higher education.
- Can be part of HazMit or CEMP plans to better communicate risk profile and drive planning
- A similar version, known as a THIRA, is mandated here in WA state

THIRA

- A THIRA – or Threat and Hazard Identification and Readiness Assessment – is completed every three years by the State of WA
- Is currently in it's update cycle by State EMD
- Similar to HVA, it contains three steps that serve to demonstrate a jurisdiction's threat and capabilities profile

THIRA

- Three part process that's more detailed:

1. Identify threats and hazards of concern
2. Give threats and hazards context
   - Standardized impact language (i.e. people requiring housing post EQ) plus community specific numbers
3. Establish capability targets
   - Also standardized language from FEMA to streamline their offering of training/exercise support

THIRA

- We'll use the hazard inventory to begin developing a THIRA as a bridge between our Hazard Mitigation Plan update (May '22) and our Comprehensive Emergency Management Plan update (April '23).



Break

- Questions?
- Up next: Hazard Inventory Review

Inventory Review

- Keep in mind:
  - Prep for risk/impact analysis at end of review
  - What have we learned about these hazards in recent years?
  - What new hazards need to be added?
  - What hazards might interact with one another (i.e. cascading impacts)?

Climate Change

- For the 2016, FEMA made several changes, including:
  - Requiring all plans address climate change directly
  - Climate change factors in Cost/Benefit Analysis in mitigation grant opportunities
  - All hazards must contain review of impact climate change has on frequency/severity of hazard (i.e. climate change leads to increased drought, which increases wildfire risk).

Table CC-1 - Climate Change Predictions for the North Olympic Peninsula[15]

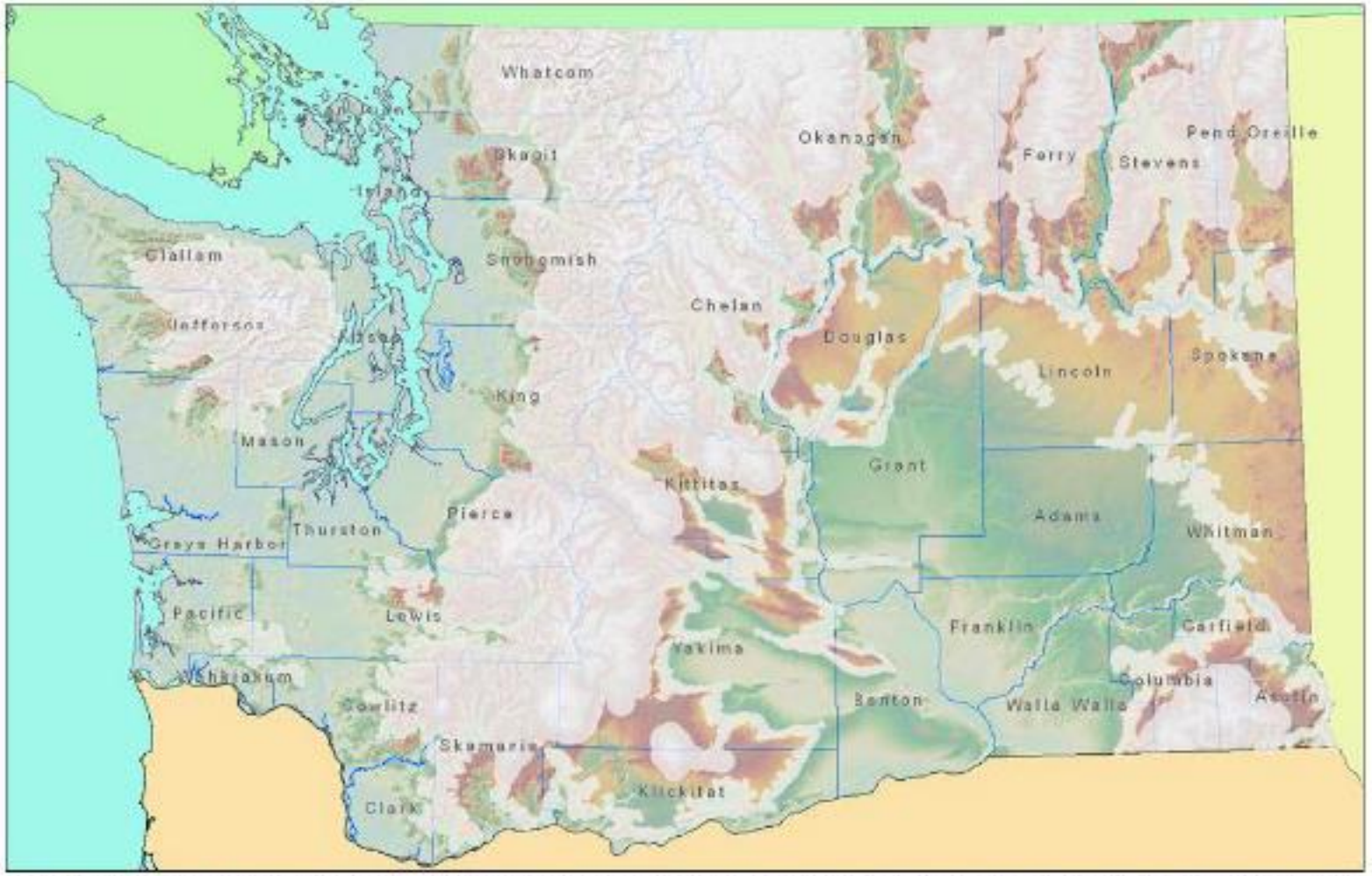
Climate Changes[1]	Observed Changes	Future Projections
Temperature Averages *(for Pacific Northwest)*	Warmed 1.3°F (1895-2011)	By 2050's – between 4.3°-5.8°F average increase in all seasons.
Temperature Extremes	Increase in nighttime heat events.	Slight increase in days over 90°F (+8 days) for the Pacific Northwest (PNW), with limited increase in days over 95°F on the Olympic Peninsula[2]. Longer frost-free season (+35 days) across PNW.
Precipitation Averages *(for Pacific Northwest)*	No significant change in amount; region wide decrease in snowpack and glaciers.	Little average annual change – with drier summers (-6% to -8% average decrease). Continued declining snowpack with a significant loss of snowpack in Olympics by 2080[3].
Precipitation Extremes	Ambiguous	More heavy rainfall events: 13% (±7%) increase in days with >1 inch of rain.
Future Sea Level Rise[4] *(probability that mean sea level will reach or exceed ____ feet at a given year)*	Neah Bay	50% chance of ≥ 0.3 feet (2050) and ≥ 1.3 feet (2100) 5% chance of ≥ 0.7 feet (2050) and ≥ 2.7 feet (2100)
	Clallam Bay/Sekiu	50% chance of ≥ 0.3 feet (2050) and ≥ 1.3 feet (2100) 5% chance of ≥ 0.7 feet (2050) and ≥ 2.7 feet (2100)
	Port Angeles	50% chance of ≥ 0.6 feet (2050) and ≥ 1.9 feet (2100) 5% chance of ≥ 0.9 feet (2050) and ≥ 3.3 feet (2100)
	Port Townsend	50% chance of ≥ 0.9 feet (2050) and ≥ 2.4 feet (2100) 5% chance of ≥ 1.2 feet (2050) and ≥ 3.9 feet (2100)
Future Annual Coastal Flood Elevation[5] *(probability that mean sea level will reach or exceed ____ feet in a given year)*	Neah Bay	50% chance of ≥ 3.5 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 4.4 feet (2050) and ≥ 6.2 feet (2100)
	Clallam Bay/Sekiu	50% chance of ≥ 3.5 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 4.4 feet (2050) and ≥ 6.2 feet (2100)
	Port Angeles	50% chance of ≥ 2.6 feet (2050) and ≥ 3.9 feet (2100) 5% chance of ≥ 3.5 feet (2050) and ≥ 5.5 feet (2100)
	Port Townsend	50% chance of ≥ 2.9 feet (2050) and ≥ 4.5 feet (2100) 5% chance of ≥ 3.8 feet (2050) and ≥ 6.1 feet (2100)

- Natural Disasters

Avalanche

- An avalanche is a mass of sliding snow, ice, earth, and rock that grows and collects additional material as it descends.
- No recorded deaths, although have caused road damage. Increased visitors to wilderness increases likelihood of impact.

Figure AV-1: Washington State Avalanche Hazard Areas[5]



Washington State Avalanche Hazard Areas: White areas on the map indicate that those areas are at least 2,000 feet in elevation and most

Damaging Winds

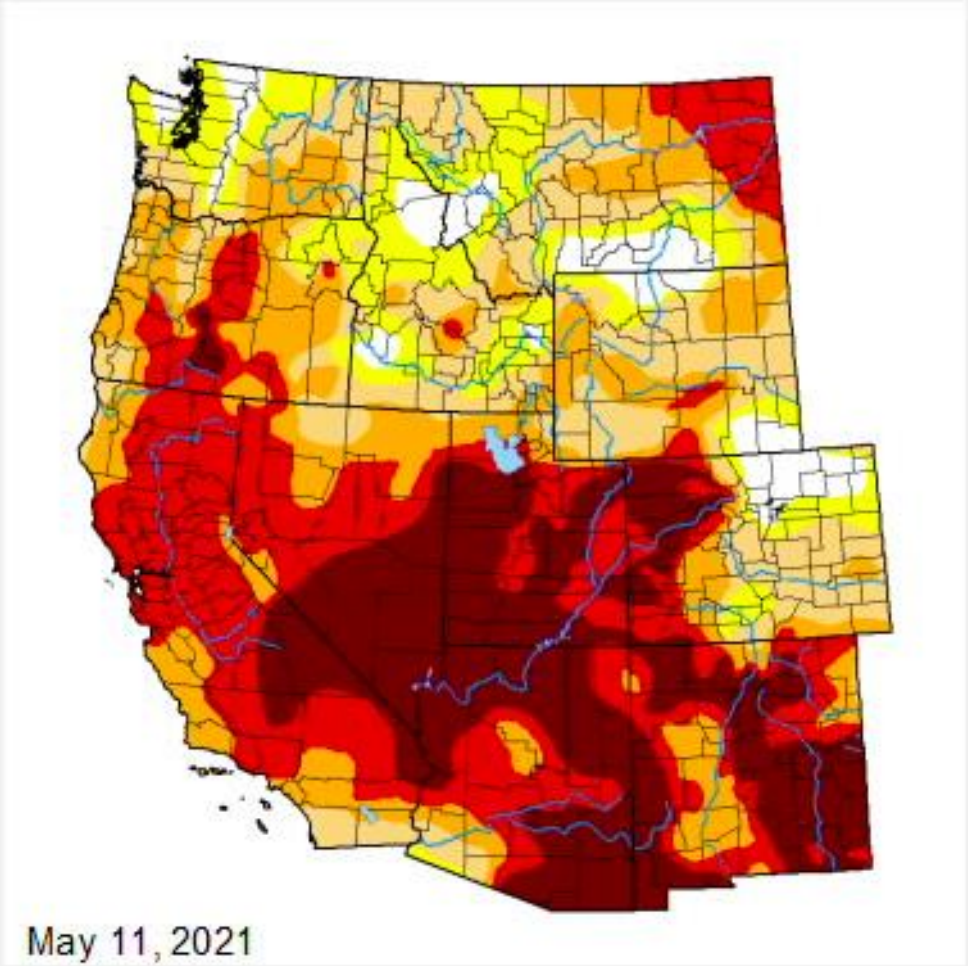
- National Weather Service defines high winds as sustained winds of 40 mph or gusts of 58 mph or greater, not caused by thunderstorms, expected to last for an hour or more.
- Yearly occurrence – most recent, Dec ‘20/Jan ‘21 which resulted in Stafford Declaration



Drought

- National Weather Service defines drought as a deficiency of moisture that result adverse impacts on people, animals, or vegetation over a sizeable area.
- Impacts on agriculture, increased fire danger, soil erosion, recreation impacts.
- The last significant occurrence in Jefferson County was in 2002 through 2003. Tw the driest summers on record—one of five driest winters in past 100 years. Port Townsend Paper Corporation curtailed some operations, and fishing was halted rivers on the Olympic Peninsula. In 2014 and 2015, drought conditions caused th City of Port Townsend to limit the watering of lawns, but conditions never reache the threshold at which the paper mill would have had to curtail operations.

Drought continues to worsen in the Pacific Northwest.

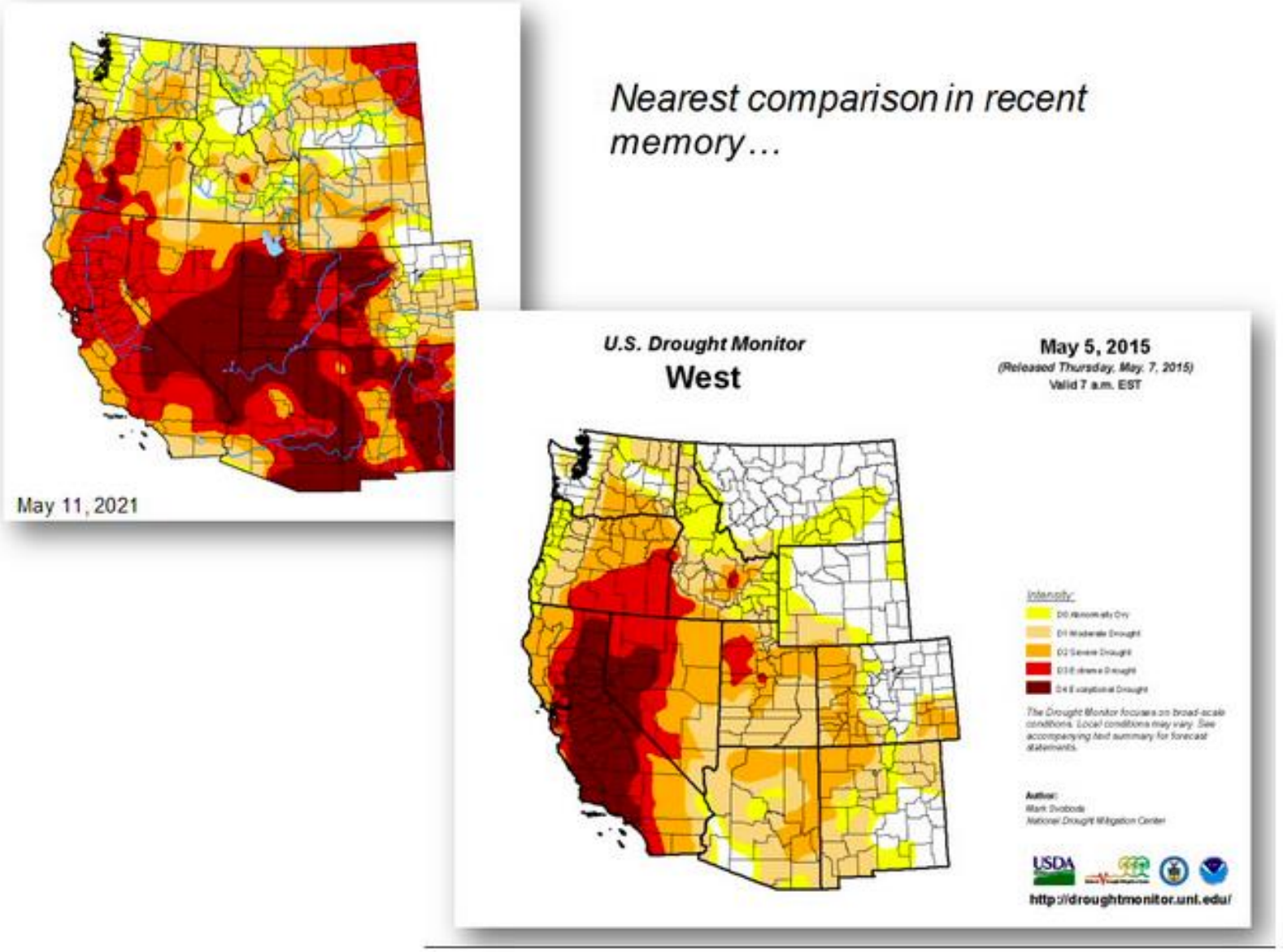


May 11, 2021

Key Points

- Statewide total March and April precipitation ranks as the driest on record for Idaho, 2nd driest for Oregon, 3rd driest for Montana, and 4th driest for Washington since 1895.
- There are also long-term precipitation deficits within the region. Specifically, the Lower Columbia Basin in Washington, southern Oregon east of the Cascade crest, and south central Idaho have 2-year precipitation totals that are only 50%–70% of normal.
- The official May-June-July forecast from the NOAA Climate Prediction Center shows higher chances of above-normal temperatures and below-normal precipitation for most of the region, which indicates that drought conditions are likely to get worse in the coming months.
- The Significant Wildland Fire Potential Outlook shows higher chances of wildfire potential east of the Cascade crest throughout Oregon and into southwest Washington by June and July.
- Impacts are being felt across the region with poor pasture and rangeland conditions, reduced irrigation, more spring season fires than previous years, poor crop conditions, and the need to haul water or move livestock out of drought-impacted areas.

Nearest comparison in recent memory…



Earthquakes

- An earthquake is ground shaking caused primarily by an abrupt shift along a fracture in the earth, called a fault.
- The principal ways that earthquakes cause damage are by:
  - strong ground shaking
  - landslides
  - liquefaction
  - subsidence
  - tsunamis (seismic ocean waves)
  - seiches (rhythmic movements of inland bodies of water)

Earthquakes

- Cascadia Subduction: Potential for M8 or greater; occurs every 300 to 500 years, with last being 1700.
- Juan de Fuca: Approximate "recurrence intervals" for intraplate earthquakes of various magnitude were estimated to be 35 years for magnitude 6.5 and 100 years for magnitude 7. Since 1870, there have been 7 earthquakes in the Puget Sound basin of magnitudes of 6.0 or larger. Generally, these earthquakes last between 20 – 60 seconds.
- North American: These earthquakes are primarily shallow with depths of 30 kilometers or less and generally have the magnitude of 5 to 5.5, however the largest recorded earthquake in Washington history was a 7.4 in 1872.
- Current estimates are at a 10% to 17% chance in the next 50 years.

Earthquakes

- South Whidbey Island: Research has shown that the SWI faults are active and have generated at least four large earthquakes in the last 16,000 years



Table EQ-4 – Hazus Earthquake Results for Selected Scenarios[33]

Community	Total Estimated Building Value	Total Number of Buildings	Number of Buildings in the Moderate – High Liquefaction Zone	Percent of Buildings in the Moderate-High Liquefaction Zone	Building Dollar Loss for a Southern Whidbey M7.4 Event	Loss Ratio (Dollar Losses/ Total Building Value) Southern Whidbey M7.4 Event	Building Dollar Loss for a Cascadia 9.0 Event	Loss Ratio (Dollar Losses/ Total Building Value) Cascadia 9.0 Event
Port Townsend	$646,052,977	4845	276	5.7%	$90,401,638	14%	$23,310,587	3.6%
Hoh Tribe	$3,119,782	35	6	17.1%	N/A**	N/A**	$341,835	11% (*)
Unincorporated	1,639,851,022	14356	1151	8.0%	$75,073,592	4.6%	$80,928,751	4.9%
Total	$2,289,023,782	19,236	1,433	7.5%	$165,475,259	7.4%	$104,581,170	4.7%

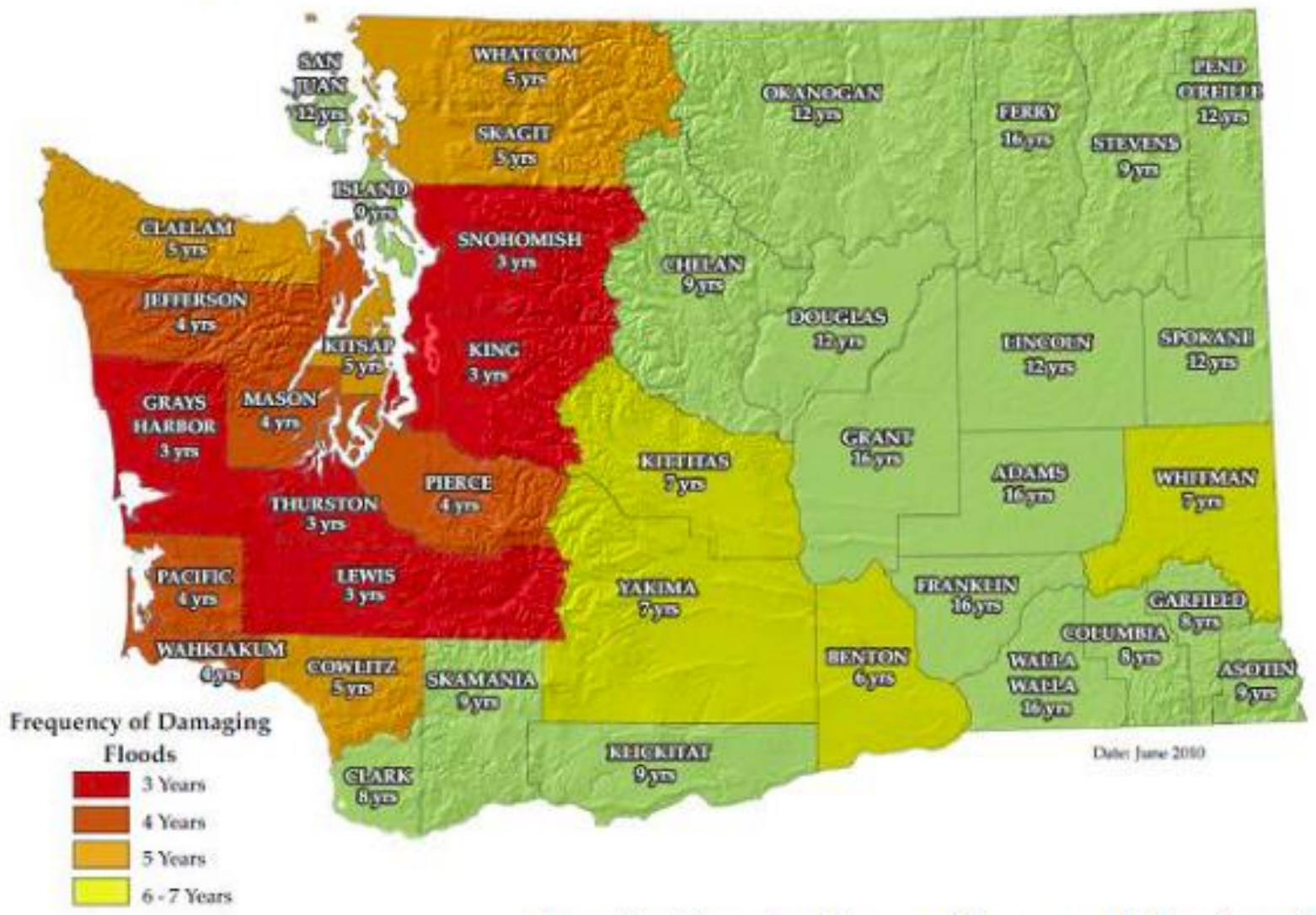
Flood

- Flooding is the uncontrolled release of impounded water resulting that can affect life and property.
- River – heavy, prolonged rain and/or snowmelt causing rapidly rising river levels
- Tidal - high tides, strong winds, heavy swell, and low atmospheric pressure combine to produce flooding.
- Flash - Although possible, flash floods are not as common in Jefferson County as theyare in Eastern Washington. Flash floods are characterized by a very rapid quick rise of the water level in a small river, stream or dry wash.



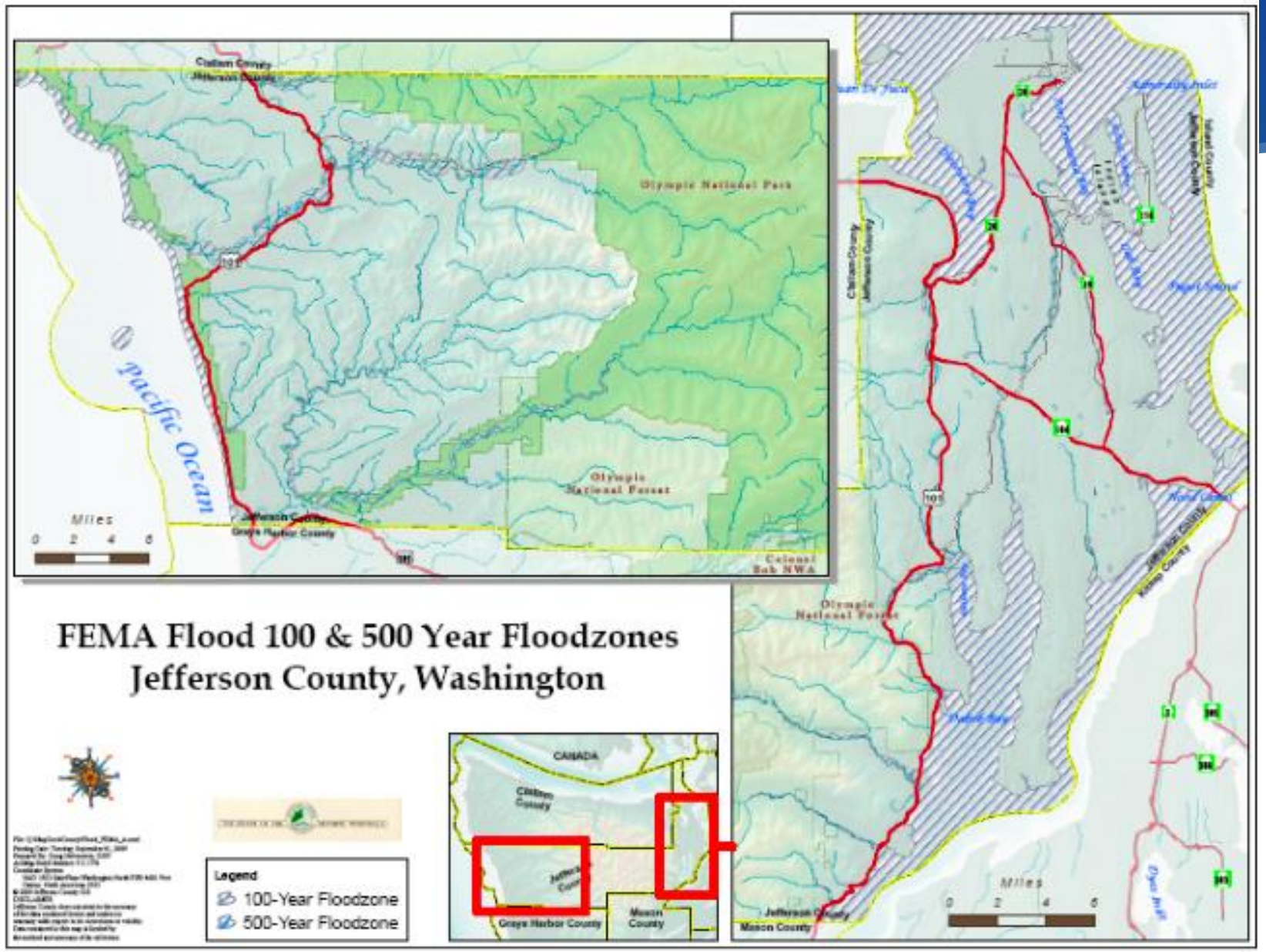
Brinnon Flooding – February 2015 *Photo by Keppie Keplinger*

Figure FL-4 – Frequency of Major Flooding[15]



Source: Washington State Emergency Management Division Hazard Mitigation Plan

Figure FL-7: FEMA 100-year and 500-year Flood Zones in Jefferson County



Extended Heat Wave

- The National Weather Service defines a heat wave as a "prolonged excessive heat/humidity episode" in which its Heat Index (HI) is expected to exceed 105 degrees for at least two consecutive days.
- Severe heat waves have caused catastrophic crop failures, thousands of deaths from hyperthermia, and widespread power outages due to increased use of air conditioning.
- History of extreme heat events in surrounding counties, elsewhere in Washington.

Landslides

- Landslide is the sliding movement of masses of loosened rock and soil down a hillside or slope. Landslide causes depend on rock type, precipitation, seismic shaking, land development and zoning practices, soil composition, moisture, and slope steepness.
- It can be fast moving, such as the March 2014 Oso Landslide in Snohomish county, Washington, or slow moving such as the inches per day landslide in Jackson, Wyoming in April 2014.
- Nearly yearly occurrence on Upper Hoh Rd on West Side – 3 emergency declarations in 3 years.
- Between 2010 and 2015, average of 600k per year to repair road damage due to landslides.

Public Health Emergency

- Public Health Emergencies can be food or water contamination or medical emergencies such as diseases, epidemics, or a pandemic that have the potential to affect people and animals over a significant area.
- Includes blue green algae outbreaks at Anderson Lake, and in 2007, Jefferson County health authorities put out warnings to customers of a Port Townsend farm who purchased produce handled by an employee who had contracted Hepatitis-A.
- Nationally, Ebola, Zika, and of course, COVID-19

Tornadoes

- Tornadoes are characterized by funnel clouds of varying sizes that generate winds as fast as 500 miles per hour. They can affect an area of ¼ to ¾ of a mile and seldom more than 16 miles long.

Table TN-1. Recorded Tornado Events in Jefferson County Washington since 1950

Date	*Location*	*Force*	*Death(s)*	*Injuries*	*Distance*
12/12/1969	Brinnon	F3	0	1	27
11/24/1970	Port Townsend	F2	0	0	27
04/09/1991	Brinnon	F0	0	0	13
06/11/2001	Brinnon	F0	0	0	19
06/05/2004	Port Townsend	F0	0	0	26
05/18/2005	Port Townsend	F1	0	0	25
01/18/2015	Brinnon	EF1	0	0	28

Tsunamis

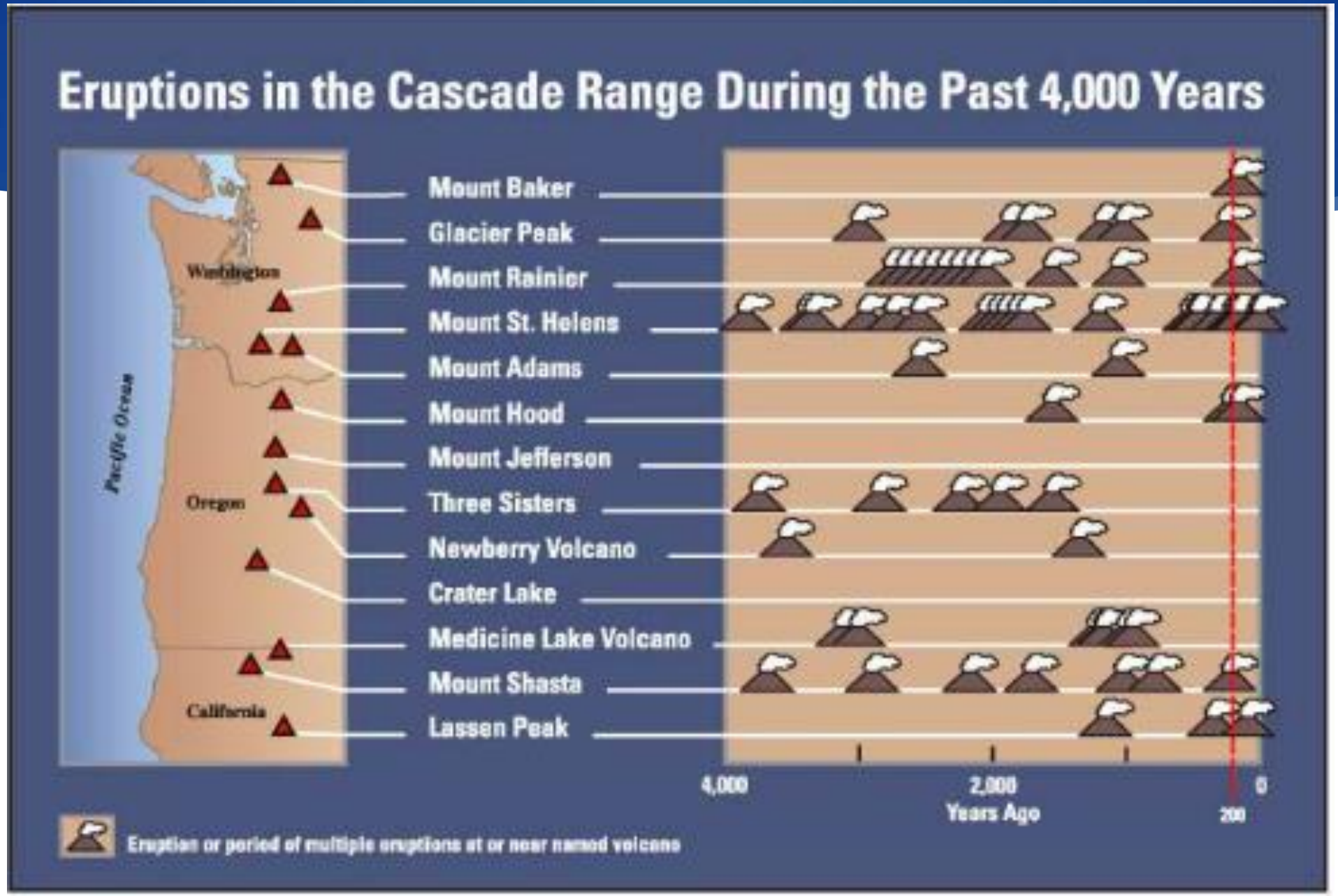
- Tsunamis are wave trains, or series of waves, generated in a body of water by an impulsive disturbance including earthquakes, subaqueous or terrestrial landslides impacting water bodies, or volcanoes.
- Distant source vs. Near Source
- Typical max wave height from near source (Cascadia) event stands around 23 feet
- Damaging distant source events in 2011 and 1964

Tsunamis

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- Distant source vs. Near Source
- Typical max wave height from near source (Cascadia) event stands around 23 feet
- Damaging distant source events in 2011 and 1964

Volcanic Eruption/Ash

- A volcano is an opening in Earth's surface through which lava (molten rock), hot gases, and rock fragments erupt from the earth's interior. Such an opening forms when melted rock from deep within Earth (magma) blasts through the surface.
- There are no volcanoes in Jefferson County; however, the proximity to potentially active volcanoes in the Cascade Mountains to the east could impact the county. When Mt. St. Helens erupted on May 18, 1980, heavy ash from a west wind blanketed much of Eastern Washington. Subsequent eruptions on May 25 and June 12 similarly affected Western Washington, although to a lesser degree.


Eruptions in the Cascade Range During the Past 4,000 Years
Washington
Oregon
California
Pacific Ocean
Mount Baker
Glacier Peak
Mount Rainier
Mount St. Helens
Mount Adams
Mount Hood
Mount Jefferson
Three Sisters
Newberry Volcano
Crater Lake
Medicine Lake Volcano
Mount Shasta
Lassen Peak
4,000
2,000
0
Years Ago
200
Eruption or period of multiple eruptions at or near named volcano

Wildfire/Forest Fire/Urban Interface

- Forest and wildland fires are the uncontrolled destruction of forested and wild lands by fire caused by natural or human-made events. Forest and wildland fires occur primarily in undeveloped areas, although there are significant pockets of residences within Jefferson County woodlands.
- According to the National Fire Information Reporting System (NFIRS), Jefferson County averages 5 – 10 acres of wildland fires every year. The last major wildfire, the Chimney Peak fire, occurred in 1981.



July Large Fire Outlook

Risk of large, costly fires requiring mobilization of extra resources is expected to remain above typical in July in central Oregon and central Washington, especially during windy conditions and as lightning increases.



August Large Fire

Elevated risk of large, costly fires requiring mobilization of extra resources is expected to expand to include southwest Oregon by August. Other areas may be added as well depending on how the summer shapes up.

Winter Storm

- The National Weather Service defines a winter storm as having significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation.
- Heavy snowfall is 4 inches or more in a 12-hour period, or 6 inches or more in a 24-hour period in non-mountainous areas;
- 12 inches or more in a 12-hour period or 18 inches or more in a 24-hour period in mountainous areas.
- Different than high winds, flooding, landslides – each hazard can impact Jefferson separately or together.
- Last snow storm requiring declaration was in 1955, although a declaration was requested in 2019 for February's "Snowmageddon" – it was denied.

Man-made Disasters

Aircraft Mishap

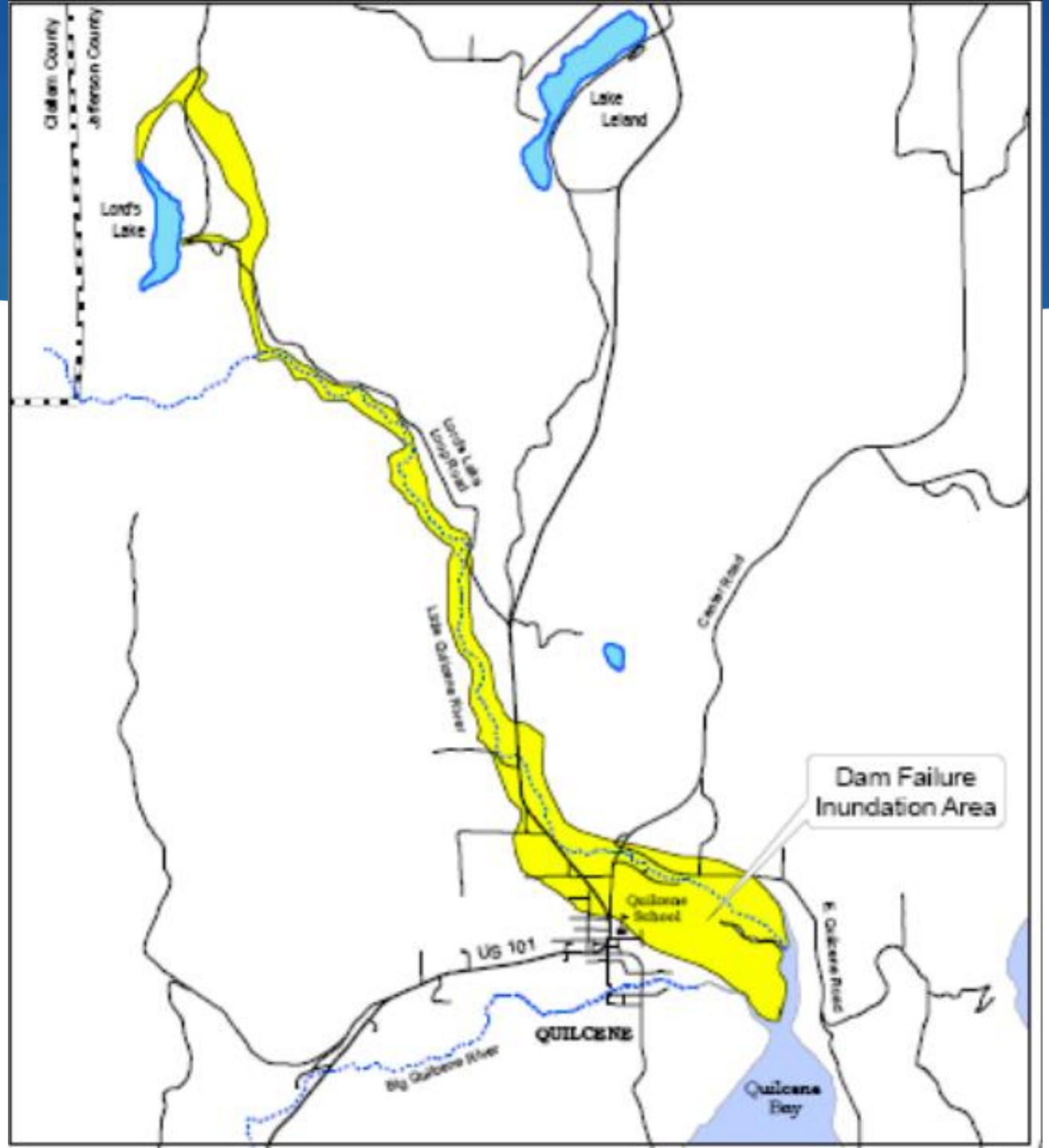
- Large passenger aircraft originating from SeaTac Airport in Seattle, and military over flights originating from the region's numerous military bases add to the possibility of a mass-casualty event if they were to crash in Jefferson County or within the city of Port Townsend. Since these flights are at high altitudes and supersonic speeds, the probability is small that any given aircraft would have a simultaneous combination of problems, direction, and speed to cause it to drop into the few concentrated population areas of Jefferson County.
- There have been several mishaps with small, single-engine aircraft at Jefferson County Airport that have resulted in injuries to one or two individuals.

Bankruptcy

- Possibility of bankruptcy of local governments; city, county or both.
- 2008 recession, potential recession due to COVID-19 pandemic
- Not unheard of – Jefferson County, AL in 2011; Detroit, MI in 2013
- Can occur post-disaster

Dam Failure

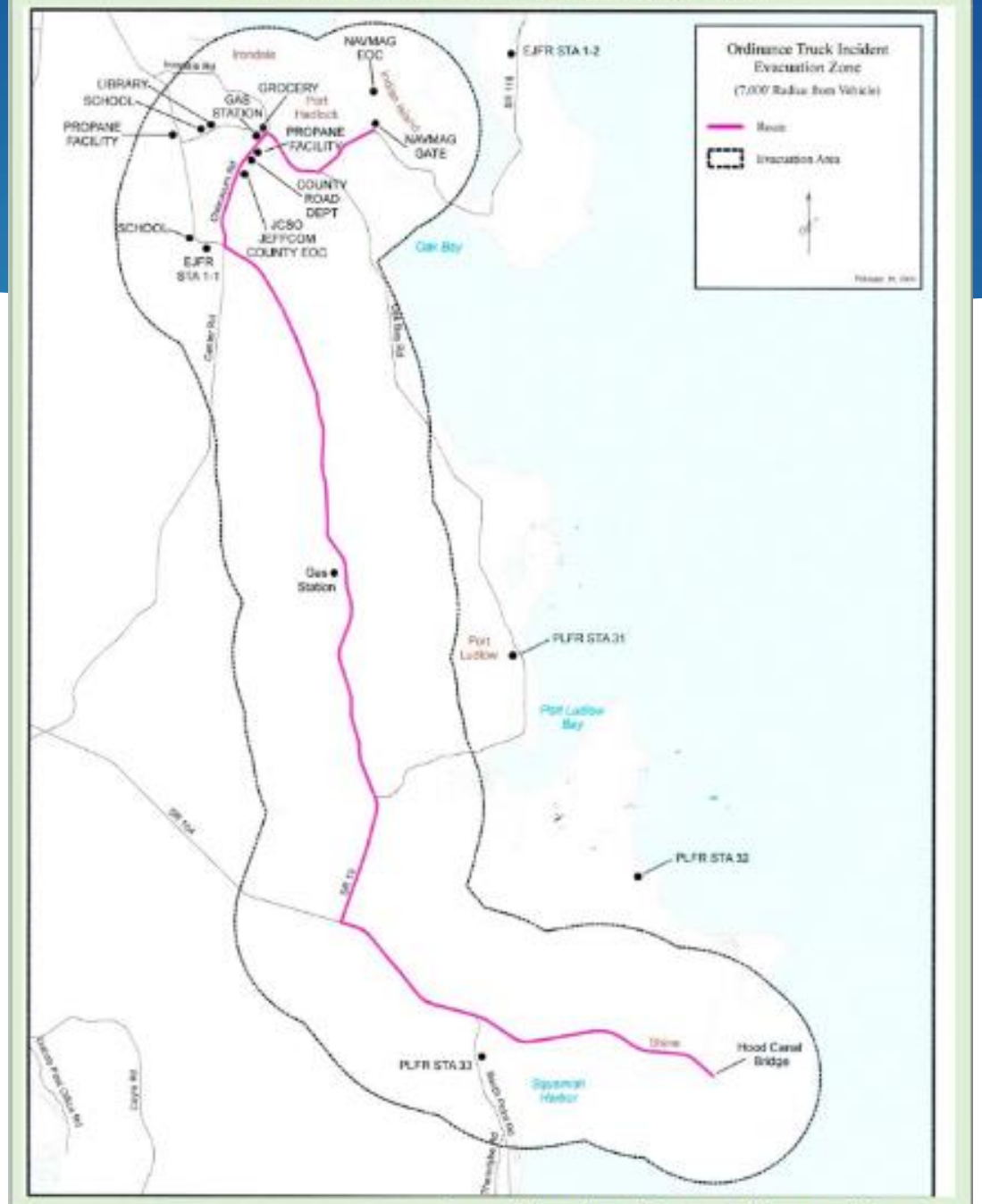
- No history of dam failure in Jefferson County
- 5 dams:
  1. PT Paper ASB Pond
  2. Lord's Lake East
  3. Lord's Lake North
  4. Big Lake Outlet Structure
  5. Witter Dam
- Lord's Lake dams are only "High Risk" due to large downstream potential


Clallam County
Jefferson County
Lake Leland
Lords Lake
Lords Lake Loop Road
Little Quilcene River
Center Road
Dam Failure Inundation Area
Quilcene School
US 101
QUILCENE
Big Quilcene River
S. Quilcene Road
Quilcene Bay

Military Ordinance Incident

- The largest munitions depot on the west coast, Naval Magazine Indian Island (NAVMAG), is located within the boundary of Jefferson County. Tens of thousands of tons of high explosives in the form of missiles, torpedoes, warheads, etc. are shipped in and out of the depot every year by ship and by truck. There is a possibility of an accident or incident detonating high explosives near a populated area.
- In 2008, a fully loaded semi-truck carrying 155mm munitions out of the base lost its brakes on a hill leading to the main gate of the navy base. A quick-thinking sentry raised the security bollards, which stopped the truck from entering onto the state highway fronting the base. There were no detonators with the munitions, so the threat of explosion was relatively low in this case.

Figure OR-1. Ordnance Truck Incident Evacuation Zone[5]



Source: Jefferson County Department of Emergency Management

Long-term Power Outage

- Can occur as a result of winter storms, issues at Bonneville Feeder, or by acts of terrorism (physical attack to infrastructure, cyber attack)
- Outages occur multiple times a year due to storms. Whole county lost power for several hours after Bonneville line was compromised in 2019.
- Extended (>24 hours) outages can cause loss of life due to medical device failure and lack of heating/cooling; economic damage due to lost wages and food.

Water Shortage/Sewer Failure

- Water can be in short supply or become contaminated due to either intentional actions or to unintentional consequences of improper handling, system breakdowns, or through the introduction of bacteria from various means. It can also be chronically in short supply due to the effects of climate warming on municipal water supplies.
- On September 19, 2016, routine testing identified the possibility of a toxic substance in the City water supply. Subsequent testing showed the water to be safe. In the meantime, the EOC prepared a plan to distribute water to 10,000 residents daily. Water trucks and bladders were deemed not adequate. Estimated costs to deliver bottled water were $30,000 per day in both direct and indirect costs.

Misc. Human-Caused Events

- Civil Disturbance – mass protests; previously seen sit-ins at NavMag; possibility during COVID, police reform protests
- Hazardous Materials Spill – 25 – 30 spills per year, mostly petroleum near ports. Paper Mill and transport in/out of NavMag represent biggest threats.
- Major Fire Activity – Large urban fires, may spread building to building. Modern fire codes, improved response limits probability, although older homes may contribute.
- Major Law Activity – Any incident that consume limited law resources i.e. pipe bomb scare in 2013 at Mountain View. Hard to predict.

Misc. Human-Caused Events

- Marine oil spill – See HazMat. Occurs semi-frequently at small scale. Larger event could disrupt local economy.
- Maritime emergency - Puget Sound and the Admiralty Inlet are some of the highest trafficked sea lanes in the United States. The Port Townsend Bay has traffic from the ferry system, submarines, navy and coast guard warships, commercial fishing vessels, occasional cruise ships, and many pleasure craft. At times, the rough seas can threaten the ferries or small vessels.

BREAK

Discussion

- What have we learned about these hazards in recent years?
- What new experiences/information/understanding do you want emphasized in the plan?

Discussion

- What new hazards need to be added?
- Any hazards that need to be broken into separate components? (i.e. power outage due to grid failure vs. power outage due to weather)

Discussion

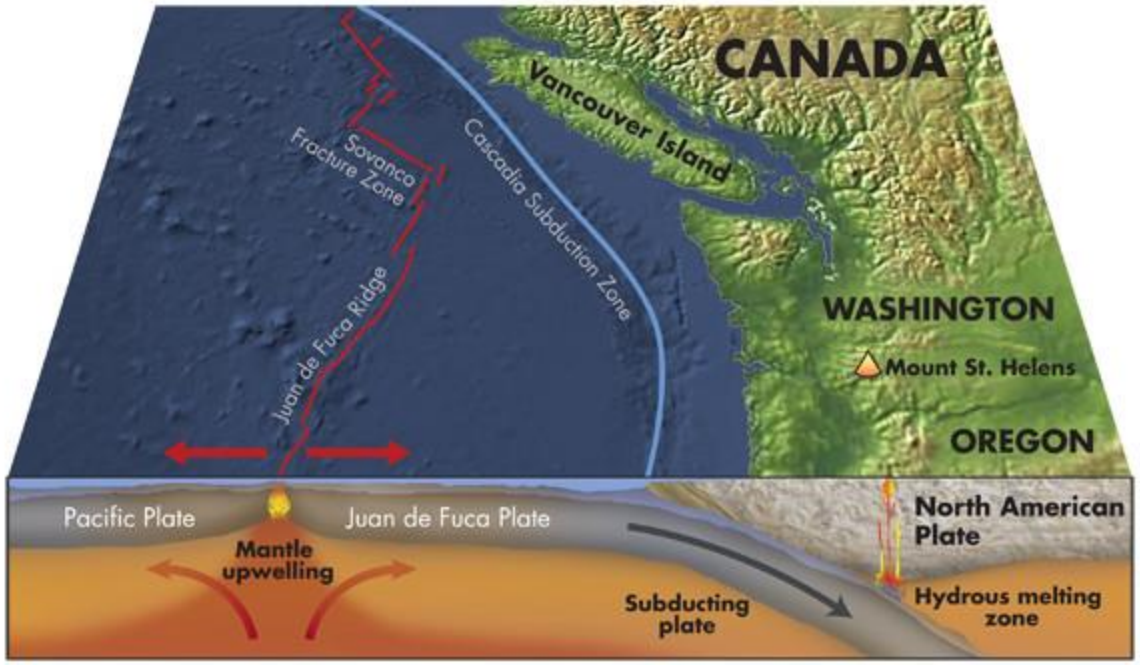
- Which “partner” hazards (i.e. earthquake + tsunami) need to be identified or emphasized?

Discussion

- Other thoughts, need for emphasis, other items of importance for the hazard inventory?

Exercise

- Let's develop a quick HVA for Earthquakes



Discussion

- Probability:
  - Every 100+ years
  - 0

Discussion

- Human Impact:
  - Issues to consider:
    - Acuity and volume of injury/death community members
    - Displacement of individuals
    - Disruption of everyday life/comfort

Discussion

- Property Impact:
  - Issues to consider:
    - Cost to replace/repair
    - Cost to set up temporary replacements
    - Time to recover

Table EQ-4 – Hazus Earthquake Results for Selected Scenarios[33]

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Total	$2,289,023,782	19,236	1,433	7.5%	$165,475,259	7.4%	$104,581,170	4.7%

Discussion

- Continuity Impact:
  - Issues to consider:
    - Business interruption
    - Employees unable to return to work
    - Interruption of delivery critical supplies
    - Interruption of critical services
    - Infrastructure damage

Discussion

- Preparedness:
  - Issues to consider:
    - Status of current plans
    - Frequency of drills/training
    - Mitigation activities

Discussion

- Internal response:
  - Issues to consider:
    - Supplies on hand
    - Staff availability
    - Availability of back-up systems
    - Previous disaster response track record

Discussion

- External response:
  - Issues to consider:
    - Agreements/coordination with surrounding communities
    - Coordination with state agencies
    - Proximity to external resources
    - Community resilience levels
    - Non-EOC/first responder capabilities (i.e. non-profit response)

Discussion

- Risk = Prob/5 * (H+P+C+P+I+E)/18
- Earthquake Risk =

Next Steps

- Once timeline is finalized, participation invites + instructions will be sent to participating entities, including org HVA.
- Around the same time, a community HVA survey will be distributed through JPREP – all are welcome to participate.
- Next JPREP: September 3rd, 202

March 8 Hazard Mitigation Conf. Call

https://global.gotomeeting.com/join/893587893

Hausdorf, Keplinger, Bethel, Guth,

The list of Coordinating agencies was divided up between the team members. See the list below:

Deadline to contact the assigned agencies is March 22.

Laura Guth:

Clallam County Emergency Operations Center
Clallam Fire Protection Dist. 1 (Clallam/Jefferson
Clallam Fire Protection Dist. No. 3 (Clallam/Jefferson)
Clallam County PUD (power line across Disco Bay)

Keplinger
Fort Worden Park
The Hoh Tribe
KPTZ
NPREP
Washington Military Dept. EMD
Port Townsend Paper
Sequim School Dist. 323

Hausdorf
Propane Providers
U.S. Coast Guard
U.S. Naval Magazine—Indian Island
Washington Dept. of Transportation
Washington State Patrol

Bethel
Washington Dept. of Ecology
Washington Dept. of Fish & Wildlife
Washington Dept. of Natural Resources

Nov. 9 Hazard Mitigation Plan Conf. Call Notes

Join Zoom Meeting
https://zoom.us/j/91445322241?pwd=MTh2OWR5SW5KYUdZZHRhOFQ3NCtHZz09

Meeting ID: 914 4532 2241

Agenda:

1. Catch-up on HazMit recruitment
2. Prep for announcement
3. Review '16 objectives, set '22 objectives

Willie Bence, Jacob Hausdorf, John Bethel, Laura Guth, Keppie Keplinger

Kick off meeting one week from today.

Hope to review our objectives for the 2022 version. Would like to present them at the IMT meeting tomorrow. Will send out the Haz Mit link; the plan goals are on page 14 and they are not necessarily goals for that plan specifically, but for a general plan. We can review with JPREP and IMT to get some ideas to make it a more usable document.

Has anyone found anyone to help with hazard identification?

Laura: Sent an email out to Lisa, but she is out of the area right now.

Jacob is working on the document. . .

Jacob: Just finished will send it out after this meeting.

The PR will have a call for help asking for researchers to adopt a hazard and hope we get folks coming forward. This will go to the IMT tomorrow and our kick off meeting one week from today, Nov. 16.

If you know someone who would be willing to help, pass the word along.

We will have a specific Haz Mit meeting on Nov. 19 at 10AM to review your plan. Will follow up with the Zoom information, too.

Dec. 3 is our follow-up meeting at JPREP and Hazard inventory part.

John and Willie will get together before Dec. 3 meeting.

John: Wed. and Thurs. are not good for Bethel.

After Dec. 3 we will send out the HIVA info to the public. The next month should be focused on recruitment and participation.

OBJECTIVES:

Looking for 3-7 goals and objectives. Look at Page 14. Don’t think we need to make any changes, but take a look.

Laura: Things like the poplar tree situation in PT should be a part of the plan. Out actions today should be tied into the plan.

Willie: Make this a usable document and have an eye on 2027 and move forward with some of the things we have in this plan.

John: Discuss how we think issues on global warming might affect hazards in the future.

Willie: Consider it a hazard on its own.

John: Would like to make this as actionable as possible, per what Laura has indicated.

Willie:

- Building on 2016
- Insure this is a usable document (trimming the fact)
- Items should be actionable
- Ask for collaboration
- Global warming and hazard impacts
- Eye on 2027

Jacob: Do you want Climate change to be its own separate hazard?

Willie: Yes, and integrate with other hazards.

John: It seems like including climate change as a separate hazard seems difficult. Thinking about discussing climate change earlier in the document like a prelude and then have a separate Pp with each hazard about how it could be affected in the future. Discuss it globally then as it is relevant to other hazards.

Laura: Is there a risk that FEMA will not accept it if we make many changes?

Willie: If we hit the key points, if we change the font or the amount we write, it won't harm us.

Jacob: In the guidebook, it states that every county is different.

Willie: Emphasis on all hazard planning and avoidance on tunnel vision especially as it concerns Cascadia. As we are coming out of COVID. . .we've talked so much about Cascadia and anything else was kind of a bonus. Think we need to acknowledge that all-hazard planning is still extremely important.

John: Been thinking about that and even as respect to earthquakes, in PT, the S. Whidbey fault may be a harder hit to PT.

Willie: Should we recognize there are things we don't know. . .something to add in the part about preparing for 2027?

Laura: Sounds like a summary statement to admit there's a lot we don't know.

Willie: Want to add something about social inequity and human cause disasters. Poverty and public planning have caused some headaches. There are some mitigation activities that don't fall under the Haz Mit label. . .good food bank programs, housing, access to healthcare, those kinds of things. When a person is struggling to pay rent, we need to

address the social aspect of disaster, but at the same time, we can't solve all the problems. . .perhaps put this as a part of the summary.

John: Add to that, there are social equity things we can do that would affect disaster planning, or social equity issues that leave some populations more vulnerable to disasters. . .we could emphasize that.

Willie: Won't make it an objective per se, but a part of the summary.

Read through the plan and see what we can say in fewer words.

Building on 2016 plans and create a readable document

Special interest on global warming and climate change

Encourage all hazard planning

Keep an eye toward the 2027 update.

Summary, we will talk about what we know and admit there are many things we don't know. Acknowledge social inequity and encourage all agencies in the county and state we can reduce vulnerabilities.

The Press Release will be finalized tomorrow.

Hope you can all be present for the kick off meeting.

Will task MJ with developing the HIVA survey. Will take with her later.

Any final thoughts?

IMT tomorrow and we will run through the priorities we've talked about.

DNR just scheduled a webinar to go over some new modeling and planning maps for the outer coast on Tuesday, Nov. 30, 1PM-2PM. This would be interesting for anyone who wants to take on the tsunami hazard.

Nov. 19 Hazard Mitigation Conference Call Notes

Willie Bence, Jacob Hausdorf, John Bethel, Laura Guth

Willie: Agenda:

Outreach progress
Volunteers or alternate ways to recruit more
Jacob will put together a tracking spreadsheet
Hazard ID team meeting next week (Tuesday) intended for volunteers. No many at all at the kick-off meeting.
Any updates?

Laura: Might not be able to make the meeting next week.

Willie: We are going to have to continue meeting through Zoom.

The kick-off meeting; we had about 10 people attending, many of the same people who attended last year's meeting. Chief Black, Matt Stewart, Local 20/20, Deb Stinson. Used the slide deck to keep people informed. KK: Work with Bonnie to get website up and running and develop a Haz Mit section on the webpage.

Have reached out to organizational leadership for primary contact info and explained that the update is in part up to them and informed them of the meeting schedule. Have heard back from about one-third so far and not many asking for help at this point in time. Coordinating entities will get the same email today.

Re: Haz ID: good meeting with Sidney Jayne from Local 20/20 and discussed a mini-Haz Mit plan for wildfires but we aren't going to be able to put it in this Haz Mit plan, perhaps next one. They will help us with the Climate Change section. Others I've reached out to, Tami Pokorny has offered her assistance. Also Dept. of Community Development and they will help with technical editing.

John: Does the City have its own review process or do the city and county share that process?

Willie: They have their own.

John: Would it make sense to invite someone from the City?

Willie: John Mauro has been cooperative and has offered up the Police Chief to help.

Does anyone have updates on volunteer recruitment?

Jacob: Have rec'd feedback from all entities I was assigned.

Willie: Laura, have you talked with Stu about aircraft mishaps?

Laura: I can do that and I'll talk with the Port. The fuel farm is underground. There is money coming to the airport to replace that underground fuel farm. It would be nice to get that documented to show FEMA.

Willie: Sounds like we might have a mitigation project completed going into this plan.

Laura: They've been working on that for the past year, not sure what has yet been accomplished.

Willie: Reached out to Eron Berg the head of Port of PT. Might just get you involved there when I hear back.

Laura: We need to work with them on other things as well.

Willie: Keep in the back of your minds issues that will need add'l work. The CEMP will be due in 2023.

Recruitment from a hazard analysis perspective, think we can tighten up communications there. We need to engage with those volunteers specifically. John, Jacob and KK, will concentrate on Avalanche, EQ + tsunami/seiche, Volcanic event, Damaging winds, Drought, Heat wave, Flood, Winter storms, Tornado and work with MJ on how we can recruit these folks. The word is going out and some are resistant, but we need their help. They might not be available for the meeting on the 23rd, but let's work to bring more on board. ID potential contributors to the hazard sections. There are different options and we need to push harder and be more creative on our website.

John: The four of us should have a meeting after the 23rd and talk about that.

Willie: Could include Deb Stinson or someone else from NPREP and maybe add them to the steering committee.

Jacob: I have the binder with notes with suggestions for updates.

John: Let's set up a time after this meeting.

Jacob: Also, I have the tracking list almost completed.

Willie: The next two meetings; Nov. 23 is advertised as a meeting for volunteers, subject-matter experts, then Dec. 3 where part of our JPREP meeting with an overview from the 23rd meeting. Re: Dec. 3: John is putting together a presentation about the hazards and Willie will explain what a hazard analysis is. We can get together before the meeting. Jacob has developed the hazard analysis survey. You have to rate each hazard and that will go out with a copy of the presentation. Rate them based on your concern. Please plan to attend the Nov. 23. I'll pick out a hazard and discuss it and will ask John how we would like to have the hazards displayed and researched. I'll provide research tools and will answer questions and talk to the group depending on their interest and concerns.

John: I can go through that outline quickly with a couple of minor tweaks to it.

Willie: Anything else?

John: Are you going to have a schedule of what submittal is going to look like and when things should be turned in?

Willie: Yes. For those of you who have reached out to people already, make sure they have scheduled to attend the meeting. This may not be the only meeting we will have. This meeting will be recorded and put on the website. Would like to talk about our next meeting. JPREP Dec. 3 and Hazard ID meeting on Nov. 23. Tuesdays work well for most. Will schedule Tuesdays at 11AM and will send a Zoom invite to everyone. Will invite Tami

Pokorny and DCD. Our priority needs to be recruiting folks and getting people interested and working on hazards. The Participating Jurisdictions have money as the hot dog on the end of the stick if they want money for projects. Will have the task tracker out to everyone so everyone can follow our progress.

John: Aside from the small groups of people involved, it would be nice to have a one-page list of those participating from what agencies and the hazards they are interested in.

Jacob: We have a list of those involved for the last plan. Just getting started to create a list for our current efforts.

Nov. 23 Hazard Mitigation Plan Team Meeting

Jacob Hausdorf, John Bethel, Keppie Keplinger

Avalanche Tentatively **Bethel**

EQ **Bethel**

tsunami/seiche **Bethel**

Volcanic event **Bethel**

Landslide **Bethel**

Damaging winds **Hausdorf**

Drought **Hausdorf**

Heat wave **Hausdorf**

Flood **KK**

Winter storms **KK**

Tornado **KK**

Maritime Emergency Hausdorf

Power Outage
Water sewage failure
Military Ordinance
Civil Disturbance

Who is willing to help from your agency
Indicate changes

NOTES FROM NOV. 29 MEETING Bethel, Hausdorf, KK

Take the Mitigation Action Plan tasks and check the status

Section 1 Planning Process:

Update points of contact

Multi-Jurisdictional Hazard ID

Include new Census data (Check Census website

Pat Garrett: Local financial status (County and City)

Maps: fewer maps

Avalanche: Eliminate

Climate Change: Mention at the beginning of the Hazard section. What it is, evidence for it, sea level rise, then mention climate change with each hazard as appropriate.

*****Add to Severe Weather: Tornado, Snow Storms, Ice Storms, Heat Wave, Damaging Winds

Drought: Needs to be revamped. Show goals to counter issues caused by droughts. Agricultural growth in the county has grown. (Dave Seabrook)

Earthquake: Update.

Flood: River flooding and coastal flooding

Landslides: Put Avalanche here.

Public Health Emergencies: Include COVID: Lessons Learned

Tsunami:

Winter Storms: Update. . .

*****Major LE Activity, Combine: LE; Civil Disturbance, Terrorism. . .Major Law Enforcement Activity; Domestic Terrorism

Dam Failure;

Haz Mat Incidents:

*****Major Fire Activity: Combine with Wildfire

Marine Oil Spill

Maritime Emergency;

Military Ordinance Incident

Energy Emergency

Port Townsend, WA, USA - Surging Seas: Risk Finder

https://riskfinder.climatecentral.org › place › port-towns...

Total home value at risk of yearly **coastal flooding** by 2050. Home vintage: Built any year *. Geographical breakdown: towns in **Jefferson County** …

Resilience Action Demonstration Project
https://wacoastalnetwork.com › resilience-action-demon...

The rural communities of **Washington's** Pacific **Coast** – comprising western Clallam and **Jefferson counties**, Pacific County, Grays Harbor County, and Wahkiakum ...

Washington Sea Grat - Washington Coastal Hazards ...
https://wacoastalnetwork.com › washington-sea-grat-wa...

Currently, a climate change assessment (including a sea level rise and **coastal flooding** vulnerability assessment) is in the works in Clallam/**Jefferson counties**, ...

Ted Buehner

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Local2020

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Nov. 30 Hazard Mitigation Conference Call Notes

Hausdorf, Bethel, Bence, MJ, kk

Jacob: Tracking sheet is about 90% filled out. Missing some names from various agencies.

Willie: Can you get that out to everyone by the end of the day?

Jacob: Yes, not sure it will be completely finished, however.

Willie: Recruitment?

Jacob: Reached out to my dad who was a ferry boat captain along with Terry Taylor

Willie: Met with the DCD and Tami Pokorny, will help with the Jefferson County part of the plan.

Environmental Dept. will help with Tim Manly and will help with the technical side of things and do some review for us.

John: You said you had contact with Larry Berger and Bill Hunt?

Willie: Larry is a long-time volunteer with DEM. He has a PhD in psychology. He doesn't have a specific hazard in mind, but is willing to take whatever we give him. Bill Hunt was the Emergency Prep person at JGH and was willing to help out however he can. He is willing to be assigned a section. John: If you want to reach out to those two and give them each a smaller section. Will put out a reminder for the JPREP meeting on Friday and ask for help. Any other outreach methods besides just calling folks?

John: I've reached out to a couple of people and one person in particular who was willing to help.

Willie: Where do we need to go to get some help on this?

John: We didn't really discuss that. . .nor did we talk about recruitment efforts. Aside from JPREP,. . .

Willie: Will connect with the team, maybe putting something in the paper and I'll send some ideas to the team and we'll go from there.

Jacob: Larry would be good for working on the Severe weather topics.

Willie: As we are looking for folks, start looking at some organizations like State DNR, Nat'l weather service and Larry can help with that. We are feeling some anxiety about working on this, just need to put some ideas on the road.

Jacob: I can reach out to Larry.

Willie: John and Jacob, you can work on that.

John: I can initiate that. Do we have a sense for what Bill can help on?

Willie: He might be able to help out with the pandemic, he's a healthcare worker, has a military background.

John: Regarding Avalanche, we were thinking about it yesterday. We were considering just mentioning it in the Landslide section rather than giving it its own section. What's your thought?

Willie: We are going to update, add any new occurrences, but moving it would seem to be more work. It doesn't make sense it doesn't make sense to streamline it. Putting in with landslides seems like it would be more work rather than just to accept it as it is.

John: I had hoped for the geologic hazards, I would do more work on those. When I suggested moving Avalanche to landslides it was on my plate.

Willie: I have shot down adding new sections, but if you are comfortable doing that, that's ok.

John: As we talked yesterday, we will look at the sections and that sounds like that's not possible.

Willie: Where we can delete, I'm ok with that.

John: Is there a way of sharing documents on GoToMeeting? Can we look at who is doing what?

Jacob: I have a list in front of me here. Power outage and water shortage have been dealt with. LE has been dealt with.

John: Do we need to coordinate with fire departments as a group?

Willie: I've talked with them a little bit and I'll see if we need to meet again.

John: It sounds like if we get this coordinated, we won't need to get someone specific to deal with the Fire part. I was going to take a shot at geologic hazards and then we have the other meteorological hazards, drought and heat wave; how about infectious disease? Public Health?

Willie: Hoping they will, but Bill Hunt would be a good back up for that. Drought, then have him do public health emergencies. I have the public health piece assigned to me, but we need the assignment tracker.

John: Are you putting together that tracker, Jacob?

Jacob: Yes, I've got a loose list here.

John: Need to identify those topics we don't have someone lined up for. That will help to find people for those sections.

Willie: Let's move on to the final portion, Friday's meeting. It's our regular JPREP meeting and we will merge JPREP into the Haz Mit Planning Committee. Will be sending out a meeting notice. Kk reach out to Adiel to put out a public meeting notice by Thursday. John can run out a brief explanation of the hazards and we will send out the survey which will be open for about a month. We will close the survey and include it in the completed plan. In Jan., we will seek out inform from the community about projects.

John: I'm in the process of putting together a slide presentation. I'm ok with this. Is the meeting going to be Zoom? What time is the meeting?

Willie: 10AM.

John: Let me give you a call later today. I may have a problem.

Willie: It is Zoom we will use. 10AM to Noon. We could start the meeting at 10 and have you go through earthquake and other hazards, then you can leave, and I'll take over from there with the other team members, each one could take a hazard. If we need to set up a time to chat, let me know.

John: I can finish the power point I've been working on and then others can use that to talk about the other hazards.

Willie: can you fix the password on the Dropbox so others can get into it? John can put the power point presentation in the Dropbox app.

HAZARD MITIGATION PLAN Meeting 10/29 notes

Topic: HMP Meeting
Time: Oct 29, 2021 11:00 AM Pacific Time (US and Canada)
Join Zoom Meeting
https://zoom.us/j/99208218746?pwd=T1ZHTzg1aGlLeE9vWnNBcmFHa25YZz09
Meeting ID: 992 0821 8746
Passcode: 125707
One tap mobile
+12532158782,,99208218746#,,,,*125707# US (Tacoma)
+13462487799,,99208218746#,,,,*125707# US (Houston)

HAZARD MITIGATION PLAN Meeting

1. **Discuss updated timeline**
2. **Jacob overview of needed changes (if available)**
3. **John overview of hazard outline**
4. **Review hazard needs**
5. **Decide on recruitment targets next week**

- Climate Change - Local 20/20 climate action committee
- Infectious Disease - Marti Haley, DEM/Public Health volunteer
- Wildfire/major fire activity/urban interface fires - East Jeff Fire and Rescue/other fire district
- Dam failure - City of Port Townsend
- Power Outage - PUD/Don McDaniel
- Water shortage/sewer failure - Public Works
- Aircraft Mishap - Laura Guth/DART
- Maritime emergency - Don Daniels
- HazMat incident - Lisa Niehaus
- Marine Oil Spill - Maritime Resource Committee
- Military Ordnance - Tim Callister, NavMag
- Civil disturbance, major law enforcement activity, terrorism - Sheriff/PTPD
- Cyberterrorism - JeffCo central services

The rest we'd like to recruit from NREP, Local 20/20, other voluntary orgs:

- Avalanche
- EQ + tsunami/seiche (multiple needed)
- Volcanic event
- Damaging winds
- Drought
- Heat wave
- Flood
- Winter storms
- Tornado

Then, we tentatively scheduled a meeting to discuss among hazard volunteers on 11-19.

Attending: Willie Bence, John Bethel, Laura Guth, Jacob Hausdorf, MJ, KK

Update process started, PR in the works. Would like it to go out prior to Nov. 16.
Want to focus on hazard inventory volunteers.
John's proposed reorganization: John's suggestion for rewriting the description for each hazard attached.

2016 plan, descriptions were good, but long and not well focused for Jefferson County.

Wants to focus on JeffCo.

Start with reviewing the 2016 description and then write a general description of the hazard then how that hazard would affect JeffCo and what and who it might affect. Tsunamis, for example would affect people near or living in shoreline situations.

Solar storms might affect infrastructure, electricity and internet.

Earthquake: is it a life-safety situation is it likely to threaten our supply chain, economic impact, length of time, days or months and then what's changed since 2016 update.

This would apply for all hazards listed in section 2.

Willie: We can talk about the hazards themselves but would it be easier to use this outline and this formatting or would it be better to use what's in the 2016 version and update it.

Has anyone looked at the 2016 version?

Laura: Has looked through most of it. . .it's pretty dense and not particularly functional. Likes the current outline.

Would include magnitude and effects. . .do we have the time to do this?

Jacob: Doing everything from scratch would be good if we had the full year, but we don't

John: Hoped these sections would be just a page or two, not a big drafting job and use 2016 version as an appendix. If we adopted this outline, it wouldn't be a huge writing outline. Don't know how long this would take compared to updating the original document.

Willie: John and I scheduled a meeting on Nov. 19 for the hazard analysis team to talk through the hazard inventory. Going from then to around mid-Feb to early March. Suggest we take a month to look at the old hazard analysis and then tweak it into this new simplified format. Then the second month would be conducting new research and then take another month to implement the changes to the new format, then we are done. Taking that one month might be doable, copying and pasting what's already in the 2016 version. Like John's version to make it more usable. Think this would be an important step. Could refer different sections back to the 2016 version for in-depth info.

Laura: Think we should add environmental impacts. Just want to make sure we are conforming to the FEMA guidelines.

Jacob: Likes the structure.

Willie: Jacob: Can you go over the FEMA requirements? Was only afraid starting with the new outline might create more work. But it's pretty easy. . .easier than redoing the 2016 version.

SEE PAGE ONE for list of hazards.

We have a meeting scheduled on 11-16 and will invite John; Local 20/20 has some money to help with the wildfire plan and Chief Black has something to offer for wildfires.

Marti Haley, PUD, SEE COMPLETE LIST ON PAGE 1

The rest, hoping to recruit from Local 20/20 and other volunteer groups. We will get someone from GIS and then a technical editor.

Would like to farm out some of the recruitment efforts. KK will write the press release; MJ and Laura please write a recruitment letter to send out, looking for folks to adopt hazards and adapt to the new outline.

Would like to task each person to reach out to others.

Jacob: Take each hazard component section and pull out to put in a file-sharing mode to show what specific components looked like in 2016 compared to John's outline.

John: Can you make the changes Laura asked about?

MJ: Is Domestic Terrorism included in Civil disturbance

Willie: Those are three separate sections I will ask LE to look at. Looting, rioting, serial killer, arsonists, multiple law-breaking happening at one time. Terrorism could be international or local.

John: Looking at the list on Page 1, might want to go back and look at the outline. . .

Jacob: Think the outline is easier for people to look at. Like the way it's broken down.

Willie: Showing John's breakdown. Only one I didn't include is Bankruptcy, not a traditional hazard. Will talk to people about adding that and if it's something they can take on.

Jacob: Having Avalanche and Dam failure in there at all, not sure that's necessary.

Willie: Re: Dam failure is one of the lesser hazards, but we have 6 in the county and some of the potential failure areas could be hazardous. We have two dams on the west side of Beaver Valley Road and are dams in the least form. Re: Avalanches, one could occur and impact people. They don't need to be removed, but shorten both to one page, front and back.

Jacob: In the FEMA guidelines it states any man-made or technological hazard does not have to be included.

Willie: Check on that, please.

John: Had the same thoughts about avalanches and dam failure, looking at the one for Lord's Lake, it could affect Quilcene

Laura: Since this is a FEMA doc, would it be useful to see if FEMA would be involved, we should include it if it is and maybe bankruptcy could be on that page, too.

Willie: Grant access might be available. We can't be sure what FEMA can or will not be involved in.

Notes will go out to everyone. Will make suggested add-ons to John's document, and provide a list of assignments.

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN: NEXT STEPS

Emergency Management seeking additional input from community members

PORT HADLOCK— The next step in the Department of Emergency Management's Hazard Mitigation Plan process is here! The results from the first survey recently completed by community members show how the community feels about our current hazards and capabilities and can be found on our webpage at www.jeffcoeoc.org.

The goal of developing and maintaining a plan is to reduce the loss of life and property by increasing the awareness of hazards, risks and vulnerabilities focusing on local resources and communicating priorities to the state and federal officials. A vital part of the planning process involves soliciting input from local agencies, businesses, civic and environmental groups, schools and the community-at-large to create a safer, more disaster-resilient community.

A follow-up survey is now available at https://bit.ly/jeffcohva where participants can suggest various mitigation projects to include such things as seismic retrofitting of unreinforced masonry buildings; drop, cover hold response to an earthquake or writing response plans such as a Community Wildfire Protection Plan. Responders have the option to submit more than one mitigation project they feel should be considered.

Hazard Mitigation Notes 11/9

1. 2022 HMP will build on the great work done in 2016 - no sense in reinventing the wheel.
2. The 2022 HMP will be a usable, functional document, one that can be taken off the shelf and used to quickly and easily find information. It will not be a massive, intimidating, whole record of every piece of data available, but rather a reference document designed and encouraged to be utilized and leveraged.
3. The plan will feature items that are concrete and actionable whenever possible - the document will not just be a quick reference, but a functional roadmap for our community.
4. The plan, and planning process, will be written and designed with collaboration and Whole Community in mind.
5. The plan will have a special emphasis on climate change, recognizing its existential threat as well as its cascading impacts with other natural and man-made hazards.
6. The 2022 will encourage All Hazard Planning whenever possible, encouraging flexibility in planning and mitigation activities that span multiple hazards. The plan will not create "tunnel vision" towards one hazard in particular and will promote resilience in the face of the potentially unpredictable.
7. The 2022 HMP will build towards the work required for the 2027 HMP and plans beyond.

We also agreed that in the summary statement, we want to recognize our unknowns/future uncertainty, as well as social inequities that lead to disaster vulnerability. I will work on that and run it by you all.

I'll have notes/dates/assignments out shortly, but wanted to get this in front of you all first. Thoughts? I miss anything? We'll run through it at the IMT meeting shortly.

SECTION VIII

Plan Review Crosswalk

FEMA Crosswalk