Pacific County
Hazard Mitigation Plan
May, 2016

PACIFIC COUNTY

PCEMA

EMERGENCY MANAGEMENT AGENCY

Encompassing the Following Jurisdictions and Stakeholders:

Pacific County

City of Ilwaco
City of Long Beach
City of Raymond
City of South Bend

Naselle/Grays River Valley School District
Ocean Beach School District
South Bend School District
Willapa Valley School District

Naselle Water Company
North Beach Water District
Surfside Homeowners' Association
Willapa Valley Water District

Ocean Beach Hospital
Willapa Harbor Hospital

Pacific County Fire Protection District #1
Pacific County Fire Protection District #2
Pacific County Fire Protection District #4
Pacific County Fire Protection District #5
Pacific County Fire Protection District #6

Pacific Transit

Port of Chinook
Port of Ilwaco
Port of Peninsula
Port of Willapa Harbor

Public Utility District #2

Prepared By:

BOLD planning

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Executive Summary

Plan Purpose

The original purpose of the Pacific County Hazard Mitigation Plan is to provide guidance to substantially and permanently reduce Pacific County and its communities' vulnerability to natural and technological hazards. The 2015 Pacific County Hazard Mitigation Plan revision is twofold in its purpose. This plan revision encompasses the continuation and updating of its original mission as well as the incorporation of new GIS technologies, improved risk assessment methodologies, and additional best practices.

The plan is intended to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the natural environment. This will be achieved by increasing public awareness and education, documenting resources for risk reduction and loss-prevention, and identifying and prioritizing activities and strategies guiding the community towards the development of a safer, more sustainable community.

Plan Organization

The Pacific County plan is developed and organized within the rules and regulations established under the 44 CFR 201.6. This plan contains sections detailing the planning process, Pacific County's communities and the planning area, a hazard vulnerability and risk assessment, capabilities assessment, and a mitigation strategy designed for the purpose of guiding Pacific County and its participating jurisdictions to become more disaster-resilient communities.

Plan Financing

The Pacific County Mitigation Plan has been financed by Pacific County and a FEMA Pre-Disaster Mitigation Program Grant administered through the State of Washington. The federal grant provided 75% of the total plan's cost while Pacific County matched the remaining 25% with local funding.

Plan Participation

The Pacific County Hazard Mitigation Plan was developed as the result of an ongoing collaborative effort between the full range of stakeholders in the planning area, local authorities, school districts, municipal jurisdictions, and the State of Washington.

Concerns, capabilities, interests and historical data were gathered through interviews with stakeholders from within the community, along with a number of electronic datasets, and ongoing planning committee work sessions. The public were granted opportunities to provide their input, influence, share knowledge, and be active participants in the plan's development. This was accomplished through a number of public outreach campaigns. Any comments, questions, and discussions resulting from these activities were given consideration in the development of this plan.

Each participating stakeholder was expected to attend work group meetings, submit required data, assist in the development of mitigation strategies and initiatives, participate in a public review process, and submit an approved adoption resolution.

The Pacific County Mitigation Planning Committee (MPC) was created during the development of Pacific County's last FEMA approved mitigation plan. Throughout the last five years, it guided, assisted, and implemented the mitigation strategies and maintenance requirements prescribed in the last plan. This committee and plan development was guided and assisted by consultants from BOLDplanning Inc. through the update process.

The Mitigation Planning Committee was comprised of representatives from the following jurisdictions and agencies:

1.) Pacific County
2.) City of Ilwaco
3.) City of Long Beach
4.) City of Raymond
5.) City of South Bend
6.) Naselle/Grays River School District
7.) Ocean Beach School District
8.) South Bend School District
9.) Willapa Valley School District
10.) Naselle Water Company
11.) North Beach Water District
12.) Willapa Valley Water District
13.) Surfside Homeowners' Association
14.) Ocean Beach Hospital
15.) Willapa Harbor Hospital
16.) Pacific County Fire Protection District #1
17.) Pacific County Fire Protection District #2
18.) Pacific County Fire Protection District #4
19.) Pacific County Fire Protection District #5
20.) Pacific County Fire Protection District #6
21.) Pacific Transit
22.) Port of Chinook
23.) Port of Ilwaco
24.) Port of Peninsula
25.) Port of Willapa Harbor
26.) Public Utility District #2

Hazards Identified

The state-wide analysis completed by the State of Washington's Emergency Management Division and criteria provided by FEMA identified nine natural and seven technological hazards for consideration. Through the planning process it was determined by historical record analysis, local concerns and interests, and forward thinking by the MPC that the community would best be served by addressing seven natural hazards, one technological hazard, and the removal of two previously included hazards.

The following hazards were found to be the most prevalent and dangerous to the planning area and its communities:

- Coastal Erosion
- Earthquakes
- Floods
- Hazardous Materials
- Landslides
- Severe Storms
- Tsunamis
- Winter Storms

Based on various state agencies' analysis, local input, historical analysis, and GIS analysis in this plan, the following natural hazards are no longer considered a significant or reasonable threat or risk to Pacific County and its participating stakeholders:

- Dam Failure
- Wildland Fires

Plan Goals & Objectives

This plan defines and establishes goals and objectives that are directly relevant to meeting the purpose of the plan. The following is a list of the three major goals and subsequent objectives identified and adopted by the participants of this plan. The specific adoption of these goals and subsequent objectives by individual participating agencies is also found in their respective sections.

1. **Protect Life, Property & the Environment**
    a) Ensure code compliance
    b) Protect electrical infrastructure, transportation, communications, and water
    c) Improve structural and environmental resiliency to disasters

2. **Increase Public Awareness**
    a) Educate the public
    b) Expand use of existing information channels
    c) Target high risk populations

3. **Encourage Partnership and Enhance Planning Activities**
    a) Increase partnerships in developing business resiliency
    b) Develop activities to support public education
    c) Increase engagement of private sector in planning efforts

The MPC established this set of goals and objectives as guidelines for this plan's participants. These goals and objectives have been cross-referenced with the planning area's capabilities and priorities to yield a set of strategies in the form of activities and projects for implementation over the next five year cycle. These activities include potential funding sources, lead departments and agencies, timelines, monitoring and evaluation indicators, and prioritization ranking.

Plan Implementation – Adoption

Pursuant to the authority of Government Code Section 36805, the Pacific County Board of County Commissioners has the legislative capacity to adopt policies, ordinances and amendments. Pursuant to their respective governing statutes and regulations, the governing bodies of participating agencies and jurisdictions have the authority to adopt the Pacific County Hazard Mitigation Plan. Dates that the plan was adopted by Pacific County and the respective participating jurisdictions are listed in Appendix H – Adoption Resolutions.

Plan Implementation – Monitoring, Evaluation, Update, and Revision

The Pacific County Mitigation Plan can be incorporated by reference into the respective comprehensive plans, development plans and other tools of Pacific County and the Cities of Ilwaco, Long Beach, Raymond and South Bend. It can also be used to provide information and to serve as a basis for zoning and other regulatory tools to

help guide the continued physical development of the Pacific County and the participating jurisdictions. The Pacific County Mitigation Plan shall be formally updated every five years. A detailed description of the processes is found in Section 3 of this plan.

Continued Public Involvement

The Pacific County Mitigation Planning Committee is dedicated to the continued involvement of the public during any periodic review and the 5 year update as required by FEMA. Pacific County has established strategies herein which will provide opportunity for continued public involvement. These strategies include a copy of the adopted plan to be placed at community locations, such as libraries, and on the Pacific County Emergency Management Agency website along with a phone number for the public to direct questions or comments regarding the plan to designated Emergency Management personnel.

Conclusion

Pacific County and its participating agencies are fully aware that this plan is a living document that will grow along with the jurisdiction through the MPC, and the efforts made by the community. Additionally, they will continue to make a concentrated effort to not only focus on the mitigation efforts within the county but will strive to be inclusive of their neighboring jurisdictions, stakeholders and community-based organizations.

Introduction to Mitigation

The Emergency Management Cycle & Mitigation
Understanding this cycle is the first step in effectively planning and operating in relation to all disaster related activities. The emergency management cycle is an open-ended and ongoing process. The four phases in the process are mitigation, preparedness, response, and recovery. Each phase of the cycle can last years or moments in length while different paths can exist simultaneously.

Mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and human-caused hazards.

It is carried out as any sustained action to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long-term reduction of hazard vulnerability. As is the goal of emergency management, the goal of mitigation is to save lives and reduce property damage.

The Disaster Mitigation Act of 2000 (DMA 2000)
In the past, federal legislation has provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 became law on October 30, 2000, and amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the "Stafford Act") (Public Law 93-288, as amended). Regulations for this activity can be found in Title 44 of the Code of Federal Regulations Part 206, Subpart M.

This legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. This act establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program.

Section 322 of the act specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for mitigation planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local and tribal mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities.

DMA 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. This enhanced planning network will better enable local and state governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects. To implement the new DMA 2000 requirements, FEMA prepared an interim final rule, published in the Federal Register on February 26, 2002, at 44 CFR Parts 201 and 206, which establishes planning and funding criteria for states and local communities.

On October 31, 2007, FEMA subsequently published an Interim Rule in the Federal Register, which ensures the Flood Mitigation Assistance (FMA) program planning requirements are consistent with the mitigation planning regulations as cited in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201 (44 CFR Part 201).

This interim rule established that local communities must comply with mitigation planning requirements to be eligible to apply for FEMA mitigation project grant funding, including FMA and FEMA's Severe Repetitive Loss Program. Meeting the requirements of the regulations cited above ensures participating jurisdictions in the planning area will be eligible to receive disaster assistance, including hazard mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended.

The Pacific County Emergency Management Agency (PCEMA) has the responsibility to coordinate all local activities relating to hazard evaluation and mitigation, and to prepare and submit to FEMA a local hazard mitigation plan, following the criteria established in 44 CFR 201.6 and Section 322 of the Disaster Mitigation Act of 2000 (Public Law 106-390).

Current & Past Mitigation Activities

Planning is the key to making mitigation a proactive process, and pre-disaster planning is an essential element in building an effective mitigation program. Mitigation plans emphasize actions taken before a disaster happens to reduce or prevent future damages. Preparing a plan to reduce the impact of a disaster before it occurs can provide a community with a number of benefits. The following are examples of what PCEMA does and supports on a daily basis to increase the resiliency of the planning area:

- Enact and enforce building codes, zoning ordinances, and other measures to enhance their legal capability in an effort to protect life and property.
- Make the public aware of hazards that present risks to people and property and measures they can take to reduce their risk and possible losses.
- Comply with federal and other regulations that are designed to reduce disaster costs as well as preserve and protect natural, historical, and cultural resources.

Because every community exists in a distinct natural, economic and social environment, the local hazard mitigation plan must reflect the unique needs, conditions and concerns of Pacific County and its communities, agencies and organizations. Mitigation plans are designed to correspond with community goals in order to provide a plan which best suits the overall needs of that community. The plan must consider the local geography, demography, community size, economy, land uses, current community goals, and the hazards by which it is defined. Pacific County's efforts must reflect the needs of the entire community, in order to safeguard all population groups within the community, all sectors, and take into consideration what vision the community has for the future.

Mitigation plans can cover numerous hazards. By conducting an assessment of community vulnerability and capability to deal with various hazards, communities can prioritize needs and develop potential solutions to current and potential problems. This evaluation provides a comprehensive strategy to contend with hazard preparation, response and recovery. Pacific County's plan must fit into the work being done currently by the community and fit into the culture of those who will undertake the strategies to make it successful.

By properly mitigating and increasing resiliency, communities save on response and recovery operations by not having to allocate emergency resources and rescues operations after a disaster. Additionally, properly mitigating decreases post disaster costs by reducing the cost and number of repairs to buildings and infrastructure.

Many disaster assistance agencies and programs, including FEMA, require pre-disaster mitigation plans as a condition for both mitigation funding and for disaster relief funding. Such plans must include a thorough evaluation of potential hazards and community readiness for potential disasters. Programs that require such a plan include the Hazard Mitigation Grant Program (HMGP), which is authorized by Section 404 of the Stafford Act and the Flood Mitigation Assistance Program (FMA) both of which are overseen by FEMA and managed by the state.

This plan reflects the requirements of the FEMA and Washington EMD regulations. It will also attempt to proactively support these initial and future mitigation planning efforts by looking beyond FEMA and Washington EMD funding, developing relationships with funding sources from private sector and other partnerships, and searching for alternative government resource support.

Section 1 – The Planning Process

Planning Process
- Plan Development
- Stakeholder Participation
- Community Involvement

Local Procedures & Resources

Planning Area

Hazard Risk Assessment

Mitigation Strategy

1.1 – Plan Introduction

In the fall of 2014, under the leadership of the PCEMA, a number of public agencies in the county agreed to commit to the development of a county-wide multi-hazard mitigation plan update (hereinafter referred to as the Pacific County Hazard Mitigation Plan (HMP)) and associated planning effort.

The Pacific County Government and PCEMA took the lead in beginning the process to update their HMP. Taking advantage of funding opportunities authorized by DMA2000, Pacific County developed and distributed a Request for Proposals (RFP) to update their County-wide Multi-Hazard Mitigation Plan in November of 2014. After a selection process, Pacific County entered into a contract with BOLDplanning Inc. to begin the mitigation plan update process.

In February of 2015, the PCEMA formally invited cities, special purpose districts, fire districts, schools, water districts and other public agencies in Pacific County to take part in the mitigation plan update process.

The Pacific County Hazard Mitigation Plan consists of nine government jurisdictions and seventeen stakeholder organizations; the county, four cities, four school districts, four water districts, two hospitals, the county's transit authority, five fire districts, four ports, and a public utility district. Each organization actively participated in the plan update process from its inception. Each organization provided at least one representative on the MPC.

MPC members attended meetings, solicited input from their communities, and ensured that any and all pertinent information was reflected in the plan update.

If a committee member was not able to attend a meeting, they were notified via telephone and email of the agenda. Any documentation presented at the meeting was supplied to the committee member for review. A detailed description of each participant's contributions by phase is provided in Section 1.2.2 – Participation while a complete list of the MPC is provided in Section 1.3 – Stakeholders.

1.2 – Plan Development

1.2.1 – Plan Drafting Stage

Pacific County's revision process began in September of 2014, when the PCEMA was awarded a PDM grant through the WA EMD. Pacific County was awarded the grant to begin the process of updating their previously approved hazard mitigation plan. Following the funding commitments, Pacific County hired BOLDplanning to facilitate the plan's development.

Seven planning events were held throughout the planning process. Plan development kicked-off off on 18 February 2015. Three meetings were held over the next few days, two open community meetings and one stakeholder meeting. The open community meetings were advertised for over two weeks in advance and were held in tandem with other PCEMA presentations, including a tsunami preparedness presentation given by the WA EMD. The stakeholder meeting was comprised of PCEMA, BOLDplanning, and a majority of the principle plan stakeholders. All participating jurisdictions actively participated in the planning process through soliciting input and participation in meetings. The final planning meetings were held on October 8th, 9th, and 10th of 2015. Planning events also included conference phone calls with municipal and agency officials who could not attend scheduled meetings.

Throughout the process the public was given opportunities to review HMP drafts, ask questions, and provide input on hazards. They were invited to provide feedback on mitigation project prioritization, hazard identification, and hazard ranking. Details and documentation of the public's participation can be found in Appendix C – Public Participation.

Planning Process Summary

1.) Each participating jurisdiction appointed a jurisdictional representative along with other stakeholders, PCEMA, and the BOLDplanning Mitigation Department.

2.) The PCEMA engaged BOLDplanning to provide staff support in facilitating the planning process and preparing the plan.

3.) Meetings were held with committee members to understand and agree on planning processes and steps required, including organizing resources, assessing hazards, developing a mitigation plan, implementing the plan and monitoring progress.

1.2.2 – Major Mitigation Planning Meetings

The Pacific County MPC held various public meetings to discuss the mitigation plan update process as well as gain public support and input for the plan. The following is a brief synopsis of those meetings. Proof of meetings, sign in sheets, and public notification documentation can be found in Appendix C – Public Participation.

Public Information Meeting
18 February 2015
A public announcement ran for two weeks the PCEMA Preparedness Post, the PCEMA website, and the PCEMA blog. The public was invited to voice any concerns, ask questions, and provide input. The meeting was on-site in Pacific County with Marilyn Nikolas from BOLDplanning available in person to answer any technical questions. Documentation for this meeting is located in Appendix C – Public Participation.

Public Information Meeting
19 February 2015
A public announcement ran for two weeks in the PCEMA Preparedness Post, local newspaper, the PCEMA website, and the PCEMA blog. The public was invited to voice any concerns, ask questions, and provide input. The meeting was on-site in Pacific County with Marilyn Nikolas and Anthony Gertz from BOLDplanning available in person to answer any technical questions. Documentation for this meeting is located in Appendix C – Public Participation.

Stakeholder Kick-Off Meeting
20 February 2015
Each stakeholder organization from the last plan was invited to attend the kick-off meeting. They were personally invited by the PCEMA. This meeting was closed to the public. It was held on-site by Marilyn Nikolas and Anthony Gertz from BOLDplanning at the Naselle Timberland Library. The meeting consisted of an introduction to the company, hazard mitigation, and an overview of the planning process. Participation and expectations were discussed and any questions or concerns were addressed. Documentation for this meeting is located in Appendix C – Public Participation.

Plan Development Update & Review Meeting
9 April 2015
Marilyn Nikolas, Project Coordinator from BOLDplanning, met with PCEMA and stakeholders on-site to review the 1st completed project milestone. They conducted project planning and strategic planning goals for the next phase of plan development.

Plan Draft Review Meeting
8 October 2015
The PCEMA held an Emergency Management Council meeting in which this plan's draft was showcased to the council. Marilyn Nikolas and Tony Gertz from BOLDplanning were available on-site to deliver a presentation of the plan draft, answer questions, and solicit input from the council.

Plan Draft Review Meeting
9 October 2015
The PCEMA and BOLDplanning held a plan draft review meeting with this plan's stakeholder. Marilyn Nikolas and Tony Gertz from BOLDplanning were available on-site to deliver a presentation of the plan draft, answer questions, and solicit input from the council. This meeting granted the plan's stakeholders the opportunity to review the plan draft prior to submission for review.

Pacific County Preparedness Fair
10 October 2015
PCEMA held a public preparedness fair with demonstrations and games designed to educate the community on how to prepare for and survive a disaster. This plan was showcased at the event, inviting the public to review, make suggestions, and comment on the plan. A representative from BOLDplanning was present on-site to help showcase the plan and answer any questions.

Hazard Mitigation Plan Adoption Signing
To Be Determined
The Pacific County Hazard Mitigation Plan adoption letters will be disseminated and signed by the participating jurisdictions. The signing of these resolutions codifies the adoption of the HMP by the participating stakeholders.

1.3 – Stakeholder Participation

The Pacific County MPC is made up of individuals working together for the development and ongoing maintenance of this plan. The participants are grouped into three categories.

Municipalities and School Districts
This group consists of appointed representatives from municipal governments and school districts within the planning area.

Other Stakeholders
This group consists of representatives from the local community, regulatory authorities, emergency services, commercial interests, and other relevant organizations.

The Public
FEMA requires this planning effort to be open to constant input from interested citizens in compliance with the Sunshine Laws. In Washington, public meetings must comply with the Washington Open Meetings Law, unless established by statutory exemption. Therefore, any individual citizens who wish to be involved in this effort to mitigate future disasters are encouraged to attend MPC meetings and to solicit relevant comments to be included in the draft sections of the written plan.

Members of the MPC took part in periodic planning meetings, public meetings and events and individual meetings with BOLDplanning and PCEMA staff. Their specific involvement included activities such as collection and development of planning information, providing input into the planning process, reviewing draft editions of the plan and providing written documentation demonstrating their commitment to mitigation and intent to adopt the final approved plan.

Each participating organization was expected to attend a majority of the regular committee meetings, submit required data as requested, participate in the development of general information for the plan as well as their own individual planning information, mitigation strategies and initiatives, participate in a public review process, and submit the plan for formal adoption through their respective governing body. Information was kept on attendance, input and providing requested documentation.

The following table details the MPC members who participated in the hazard mitigation planning process. This list contains all relevant local and state agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, and any appropriate neighboring communities.

Table 1 – MPC Members and Partners			
Name	**Organization**	**Position**	**Collaboration/Invitation**
Principal Plan Developers			
Tony Gertz	BOLDplanning	Mitigation Planner	Project Manager and mitigation specialist
Marilyn Nikolas	BOLDplanning	Project Coordinator	Organized planning schedule, meetings, and development process
Local Governments			
Stephanie Fritts	Pacific County EMA	Chief Deputy	Represented jurisdiction and provided input
Scott McDougall	Pacific County EMA	Deputy Director	Represented jurisdiction and provided input
Shelly Mittge	Pacific County Public Works	GIS Analyst	Provided additional support and input
Kathy Spoor	Pacific County	Administrative Officer	Provided additional support and input, participated in the plan review
Faith Taylor-Eldred	Pacific County	Community Development Director	Provided additional support and input, participated in the plan review
Mike Cassinelli	City of Ilwaco	Mayor	Represented jurisdiction and provided input
David Glasson	City of Long Beach	City Administrator	Represented jurisdiction and provided input
Jason Dunsmoor	City of Raymond	Mayor	Represented jurisdiction and provided input
Deniis Houk	City of South Bend	Dept. of Public Works	Represented jurisdiction and provided input
School Districts			
Lisa Nelson	Naselle/Grays River School District	Superintendent	Represented jurisdiction and provided input
Sandie Graff	Ocean Beach School District	Transportation Director	Represented jurisdiction and provided input
Jon Tienhaara	South Bend School District	Superintendent	Represented jurisdiction and provided input
Rob Friese	Willapa Valley School District	Superintendent	Represented jurisdiction and provided input
State Agencies			
Tim Walsh	WA DNR	Chief Hazards Geologist	Provided technical assistance for tsunami modeling
Brynne Walker	WA EMD	Hazard Mitigation Programs Manager	Provided WA EMD oversight and technical assistance
Academia, Neighboring Communities, and Other Organizations			
Jacob Brundage	Fire District #1	Fire Chief	Stakeholder representative
Dale Hughes	Fire District #2	Commissioner	Stakeholder representative
Carol J. Haven	Fire District #4	Administrative Staff	Stakeholder representative
Gene Kuest	Fire District #5	Commissioner	Stakeholder representative
Jake Lagergen	Fire District #6	Fire Chief	Stakeholder representative
Carol J. Haven	Naselle Water	Administrative Staff	Stakeholder representative
William Neal	North Beach Water	General Manager	Stakeholder representative
Charity L. Harris	Ocean Beach Hospital	Disaster Preparedness Coordinator	Stakeholder representative
Richard Evans	Pacific County Transit	Director	Stakeholder representative
Ashley Davis	Port of Chinook	Manager	Stakeholder representative
Guy Glenn	Port of Ilwaco	Manager	Stakeholder representative

Name	Organization	Position	Collaboration/Invitation
Mary DeLong	Port of Peninsula	Manager	Stakeholder representative
Rebecca Chaffee	Port of Willapa Harbor	Manager	Stakeholder representative
Doug Miller	Public Utility District #2	General Manager	Stakeholder representative
Laura Frazier	Surfside Homeowner's Association	Manager	Stakeholder representative
Gary Spoor	Willapa Harbor Hospital	Facilities Director	Stakeholder representative
Shawn Aust	Willapa Valley Water	Assistant Superintendent	Stakeholder representative

1.4 – Community Involvement

The Pacific County MPC provided the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process. The public was notified of open meetings via the PCEMA Preparedness Post, a local newspaper (The Daily Post), PCEMA's Facebook page, PCEMA's website, and PCEMA's preparedness blog.

Additionally, participating jurisdictions were notified of MPC meetings via e-mail and telephone. Emergency managers from neighboring counties were personally invited to attend the public draft review meeting.

At the first two public information meetings, BOLDplanning presented and outlined the mitigation plan update process to the public. During the first stakeholder meeting, BOLDplanning presented and outlined the mitigation plan update process and discussed stakeholder participation and expectations. Community profile and risk assessment questionnaires were handed out as the first step in the plan update's data collection process. In all three meetings, the public and other stakeholders were encouraged to ask questions and provide their input. During latter public review meetings, concerned citizens and other parties were invited to review the most current draft, provide any input of feedback, and ask any relevant questions of the Pacific County MPC and BOLDplanning.

Relevant federal, state, local, and tribal governments, private, non-profit, regional organizations, and agencies with the authority to regulate development were invited to provide input and technical expertise through the public notices. They were contacted directly when their expertise was deemed necessary to the success of the plan. The entities who volunteered to participate are listed below.

Table 2 – Partner Involvement by Entity

Entity Classification	Entity	Entity Input
Federal Agencies	NOAA	Provided weather data and historical records. Co-Authored tsunami modeling.
	NWS	Provided weather data and historical records.
	USGS	Provided historical seismic data and coastal erosions studies.
State Agencies	WA DNR	Provided seismic studies.
	WA EMD	Provided state oversight and technical assistance.
Local Governments	Participating Fire Districts	Plan principles.
	Participating Municipalities	Plan principles.
	Participating Public Utility District	Plan principle.
	Participating Water Districts	Plan principles.
	PCEMA	Coordinating agency and plan authority.
Private Organizations	BOLDplanning	Primary plan developers.
	Participating Hospitals	Plan principles.
	Participating Ports	Plan principles.
Academia	Participating School Districts	Plan principles.
	University of Washington, Seattle	Co-Authored tsunami model.

Section 2 – Local Procedures & Resources

Planning Process

Local Procedures & Resources

- Available Resources
- Continued Public involvement
- Plan Maintenance Process

Planning Area

Hazard Risk Assessment

Mitigation Strategy

2.1 – Available Resources

2.1.1 – Documentation Resources

The MPC conducted a comprehensive review of Pacific County and the participating jurisdictions to determine the availability of existing emergency management and preparedness information.

Pacific County Hazard Mitigation Plan
Pacific County is currently covered by a FEMA approved local hazard mitigation plan. The current plan has been reviewed and is incorporated throughout this plan per FEMA requirements.

National Assessment of Shoreline Change: Historical Shoreline Change Along the Pacific Northwest
This study, published in 2012, served as the primary reference source for this plan's assessment of coastal erosion. This is the most up to date and in depth study directly referencing the planning area. It provided specific average and mean shoreline change data for Pacific County and its at-risk areas.

Pacific County and City Municipal Codes
Each participating city's municipal codes contain provisions relevant to hazard mitigation and this document. More information on these can be found in Section 5 of this plan.

Project Safe Haven: Tsunami Vertical Evacuation on the Washington Coast
This study was produced under the National Tsunami Hazard Mitigation Program by a team from the University of Washington, College of Build Environments and the Washington Emergency Management Division collaborating with the City of Long Beach, PCEMA, and the Shoalwater Bay Tribe. This document provides mitigation strategies, addressing the tsunami threat and assesses 25 tsunami shelter locations throughout the planning area.

Tsunami Inundation Modeling of Ocean Shores and Long Beach, Washington due to a Cascadia Subduction Zone Earthquake
This study was conducted by NOAA's Center for Tsunami Research and the Joint Institute for the Study of Ocean and Atmosphere at the University of Washington, Seattle. The draft document, dated March 2014 (currently pending publication) offers updated tsunami modeling and insight into the planning area's tsunami vulnerability and risk.

2.1.2 – Fiscal Resources

The MPC conducted an assessment of their available funding options. The following is a list of federal, state, and local funding sources either available, or relevant to the Pacific County HMP.

Biennial Municipal Stormwater Grants of Regional or Statewide Significance
The State of Washington Department of Ecology offers a series of stormwater project grants for increasing stormwater management systems capacities.

Coordinated Prevention Grants (CPG)
CPG protects human health and the environment by reducing human exposure to toxins, reducing waste, ensuring management of solid and household hazardous waste, and promoting energy and resource conservation. CPG provides funding assistance to local governments for planning and implementing programs in their local solid and hazardous waste management plans.

Hazardous Materials Emergency Preparedness Grant (HMEP)
HMEP provides funding for planning and training activities focusing on HAZMAT related transportation safety.

Integrated Planning Grants
These grants provide funding to local governments to conduct assessments of brownfield properties and develop integrated project plans for their cleanup and adaptive reuse.

Flood Mitigation Assistance Program (FMA)
The FMA program is designed to aid in the buyout of repetitive loss and severe repetitive loss properties as well as assist in the funding of flood mitigation projects and activities.

Floodplain Management Grants
The State of Washington Department of Ecology administers a floodplain management grant program that supports planning, mapping, and projects to reduce loss of life and property from riverine flooding.

Hazard Mitigation Grant Program (HMGP)
The HMGP is managed by FEMA and administered by WA EMD. Pacific County does not have any HMGP funds available for mitigation planning.

Local Revenues & Budgets
Recognizing the importance of hazard mitigation planning, Pacific County and its participating jurisdictions have self-funded the 25% match required by the FEMA HMGP grant.

Pre Disaster Mitigation Grant Program (PDM)
PDM is managed by FEMA and is a nationally competitive grant program. The development of this plan has been funded by a PDM grant at a 75% match.

Public Participation Grants (PPG)
PPG provides funding to citizen groups and not-for-profit public interest organizations. PPG can be used for the investigation and cleanup of contaminated sites.

Shorelands and Environmental Assistance (SEA)
The Shoreline Management Act establishes a cooperative program between local and state governments for the management of fresh and saltwater shorelines.

2.1.3 – Technical Resources

The Pacific County MPC employed a variety of technical resources in its plan development. These technical resources were instrumental in completing an accurate vulnerability and risk assessment.

BOLDplanning
With over 11 years of experience in hazard mitigation planning, BOLDplanning's Mitigation Department was the principle plan writer.

ESRI ArcGIS v10
Each map developed for this plan, and the HAZUS models, were developed using ESRI's ArcGIS v10.

FEMA Digital Flood Insurance Rate Maps (DFIRM) – Map Data Center
FEMA's National Flood Hazard Layer (NFHL) data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.

National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC)
Weather data and historical events were primary provided by NOAA's NCDC.

Pacific County Department of Public Works
The Pacific County Department of Public Works provided shoreline change data for the North Cove area.

United States Geologic Survey (USGS)
The USGS provided GIS and technical information relating to the seismic risk of the planning area.

Washington Department of Natural Resources
The State of Washington's Department of Natural Resources provided tsunami models to the PCEMA and BOLDplanning of the planning area. These models were crucial in assessing the planning area's tsunami risk.

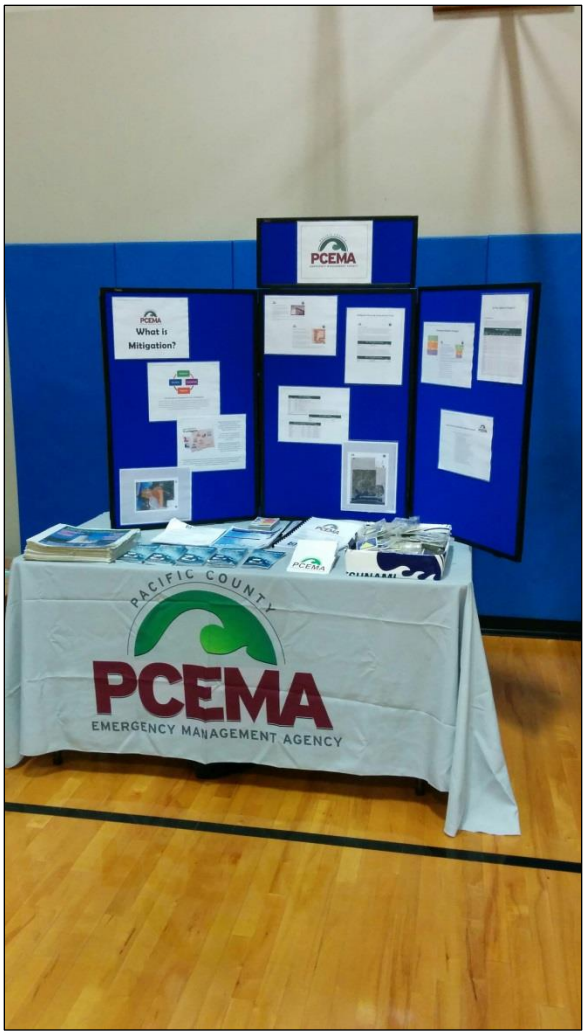
2.2 – Continued Public Involvement

Pacific County is dedicated to involving the public in the continual shaping of its hazard mitigation plan and development of its mitigation projects and activities.

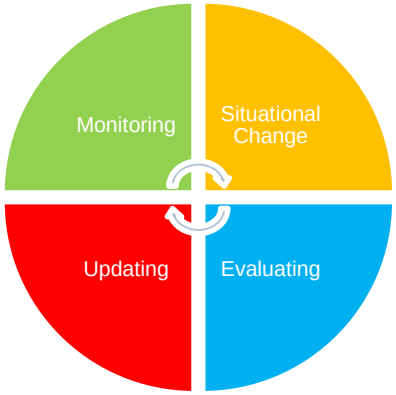
The Pacific County MPC will continue to keep the public informed about its hazard mitigation projects and activities through its EMA's website. Additionally, it will provide a "comments/suggestions" option for the public to submit their input through their website.

The public will also be invited to participate in annual MPC meetings to review and discuss the HMP events of the past year.

Copies of the Pacific County Hazard Mitigation Plan will be available on their website and distributed to each participating jurisdiction.



2.3 – Plan Maintenance Process

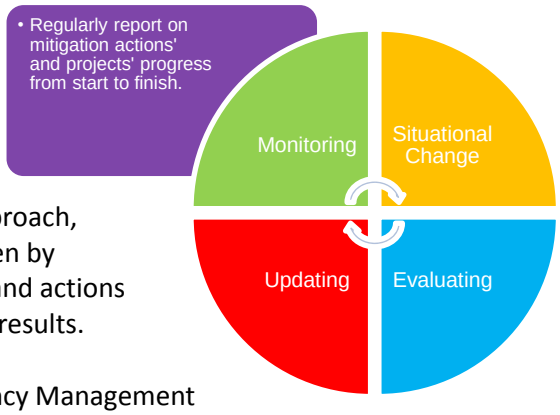


The Pacific County MPC has developed a method to ensure monitoring, evaluation, and updating of its HMP. Upon adoption of the Pacific County HMP, its Emergency Management Council will form a subcommittee on mitigation projects comprised of Pacific County's EMA Chief Deputy and jurisdictional representatives from the MPC. The chair of the subcommittee will be determined by a vote in the subcommittee. Additional members may be added based on necessity. The sub-committee will submit an annual report to the Emergency Management Council.

Please see the Pacific County HMP Quarterly Report form at the end of this section.

PCEMA may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the HMP due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

2.3.1 – Plan Monitoring



Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.

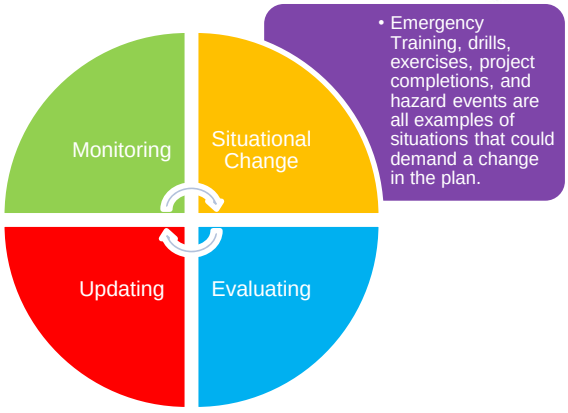
A monitoring report will be written and submitted to the Emergency Management Council annually and after the annual MPC meeting or when triggered by a situation change. The monitoring report will answer the following questions:

- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in Pacific County's capabilities which impact the HMP?
- Are there any changes in Pacific County's hazard risk?
- Has the mitigation action been initiated or its initiation planned?
- If applicable, has participation in a mitigation action's collaboration been regular?
- If any, what plan updates occurred, why they occurred, and what is their impact?

The plan maintenance process is cyclical and maintenance items can operate simultaneously within the process.

2.3.2 – Plan Evaluating

A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making.

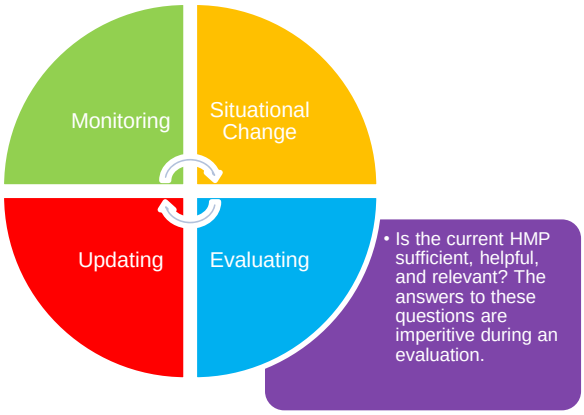


An evaluation report will be written and submitted to the Emergency Management Council when the situation dictates. The following situations are typical examples of when an evaluation will be necessary:

- Post hazard event
- Post training exercise
- Post tabletop or drill exercise
- Significant change or completion of a mitigation project
- Significant change or completion of a mitigation action

An evaluation report will ask the following questions in response to the previously listed events:

- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?
- Are current resources appropriate for implementing a mitigation project?
- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Are there coordination problems?

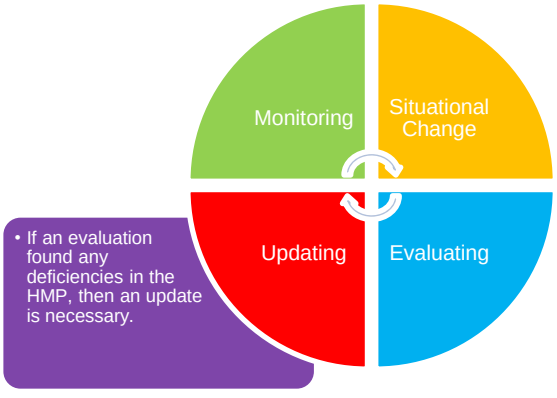


2.3.3 – Plan Updating

Typically, a HMP update is initiated upon the completion of a plan evaluation and even then, only when the evaluation determines an update is appropriate. Additionally, when new hazard data becomes available it will be added to the HMP. New data will be confirmed or denied at annual MPC meeting.

For whatever reason, a HMP update can be written anytime it is deemed necessary by the PCEMA.

Pacific County will begin their update process three years from this plan's adoption according to FEMA DMA2000 guidelines on local mitigation plan updates under the direction of the Chief Deputy of PCEMA.



Pacific County Local Emergency Planning Committee
Pacific County Hazard Mitigation Plan
Annual Report

Hazard Mitigation Plan Sub Committee Chair:
Meeting Date:_____
Plan Approval Date:
Plan Expiration Date:

Have there been any disasters or training events since the last report? If so, list them below:

Disaster Number/Training Event	Hazard Type(s)	Was the hazard expected or unforeseen?	Is a plan update required?
Example: DR-1000	*Volcanic Eruption*	*Unforeseen*	*Yes*
Example: Annual Training	*Flash Flooding*	*Expected*	*No*

Mitigation Projects:

Mitigation Project	Participating Jurisdictions	Proposed/Schedules/In Progress/Completed	Behind/Ahead/On-Schedule	Estimated Completion Date
Example: Tornado Safe Room	*Ilwaco*	*In Progress*	*On-Schedule*	*1/1/2016*

Miscellaneous Notes:

Section 3 – Community Profile

Planning Process

Local Prodedures & Resources

Planning Area

- Demographics
- Climate
- Topology

Hazard Risk Assessment

Mitigation Strategy

3.1 – Demographics

The U.S. Census Bureau estimates as of 2014, Pacific County has a total of 20,561 people residing within its boundaries, 6,632 of which reside in cities and towns. According to the most up to date, released Census Bureau projections, none of the participating jurisdictions have significant population growth (over 5%). Conversely, all of the participating jurisdictions except Long Beach have declining populations. Since none of the participating jurisdictions are experiencing significant growth, they also are not going to be experiencing an increase in hazard vulnerability due to demographic changes. Further, as it relates to demographics, the participating jurisdictions with declining populations are considered to have a decreased vulnerability to hazards.

The table below details the participating jurisdictions' demographic information. Jurisdictions with significant growth are highlighted in red while jurisdictions with significant declining growth are highlighted in orange.

Table 3 – Community Demographics

Jurisdiction	Size (Sq. Mi.)	Population			% Population Change		
		2000	2010	2014	2000 - 2010	2010 - 2014	2000 - 2014
Pacific County (Inclusive)	933.00	23,587	20,920	20,561	-11.31%	-1.72%	-12.83%
Pacific County (Exclusive)	923.86	16,572	14,073	13,929	-15.08%	-1.02%	-15.95%
Ilwaco	2.10	950	936	905	-1.47%	-3.31%	-4.74%
Long Beach	1.35	1,283	1,392	1,346	8.50%	-3.30%	4.91%
Raymond	4.06	2,975	2,882	2,787	-3.13%	-3.30%	-6.32%
South Bend	1.63	1,807	1,637	1,594	-9.41%	-2.63%	-11.79%
School District	**Students**		**Staff**		**Total**		
Naselle/Grays River SD	309		60		369		
Ocean Beach SD	1010		138		1148		
South Bend SD	635		90		725		
Willapa Valley SD	375		60		435		

**The data are from the U.S. Census Bureau.*

3.2 – Stakeholder Profiles

This section provides a general summary of this plan's participating jurisdictions, stakeholders, and their respective hazard history. It is designed to give a depiction of the social, economic, and geographic factors that later contribute to the hazard risk assessment and mitigation strategy.

3.2.1 – Pacific County

Pacific County was established in 1851 under the Oregon Territory. It boasts a robust tourism economy, 25% of the American oyster harvest, and an impressively low crime rate.

Pacific County contains beautiful, lush, and green mountainous coastline exemplifying the Pacific Northwest. It includes sandy beaches and rockwalls along its coast and the Columbia River to its south. Inland, it is primarily mountainous with numerous streams and rivers in its valleys where the majority of it population resides.

Pacific County, Washington receives an average of 83.72 inches of rain per year. The US yearly average is 38.67. Snowfall is typically 1.39 inches while the US average is 23.27 inches. The number of days with any measurable precipitation is 134.40.

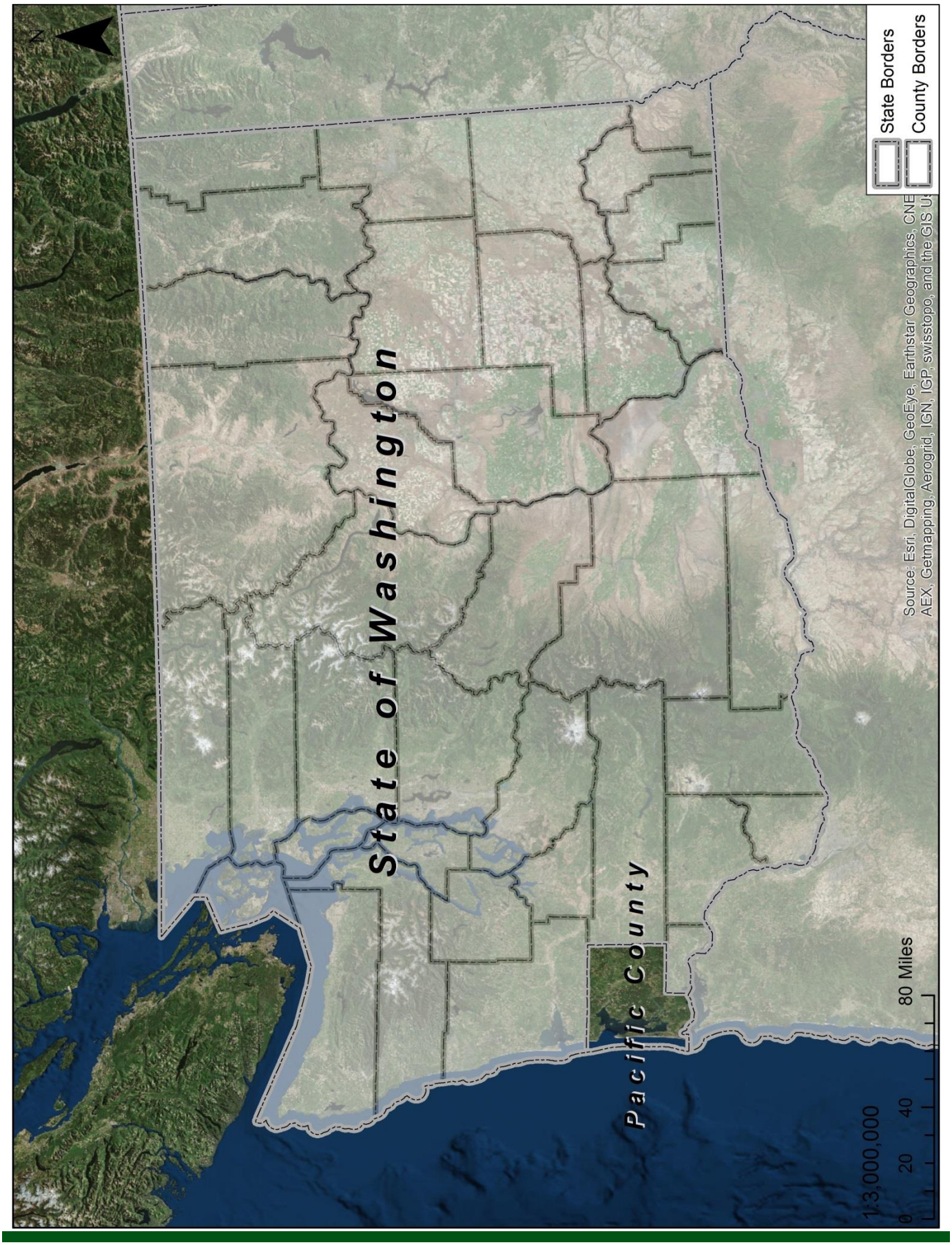
On average, there are 126 sunny days per year in Pacific County. The average summer high is 70.0 degrees and the average January low is 36.1. The comfort index, which is based on humidity during the hot months is a 33 out of 100, where a higher value represents more comfort. The US average comfort index is 68.

Table 4 – Historic Damage, Pacific County

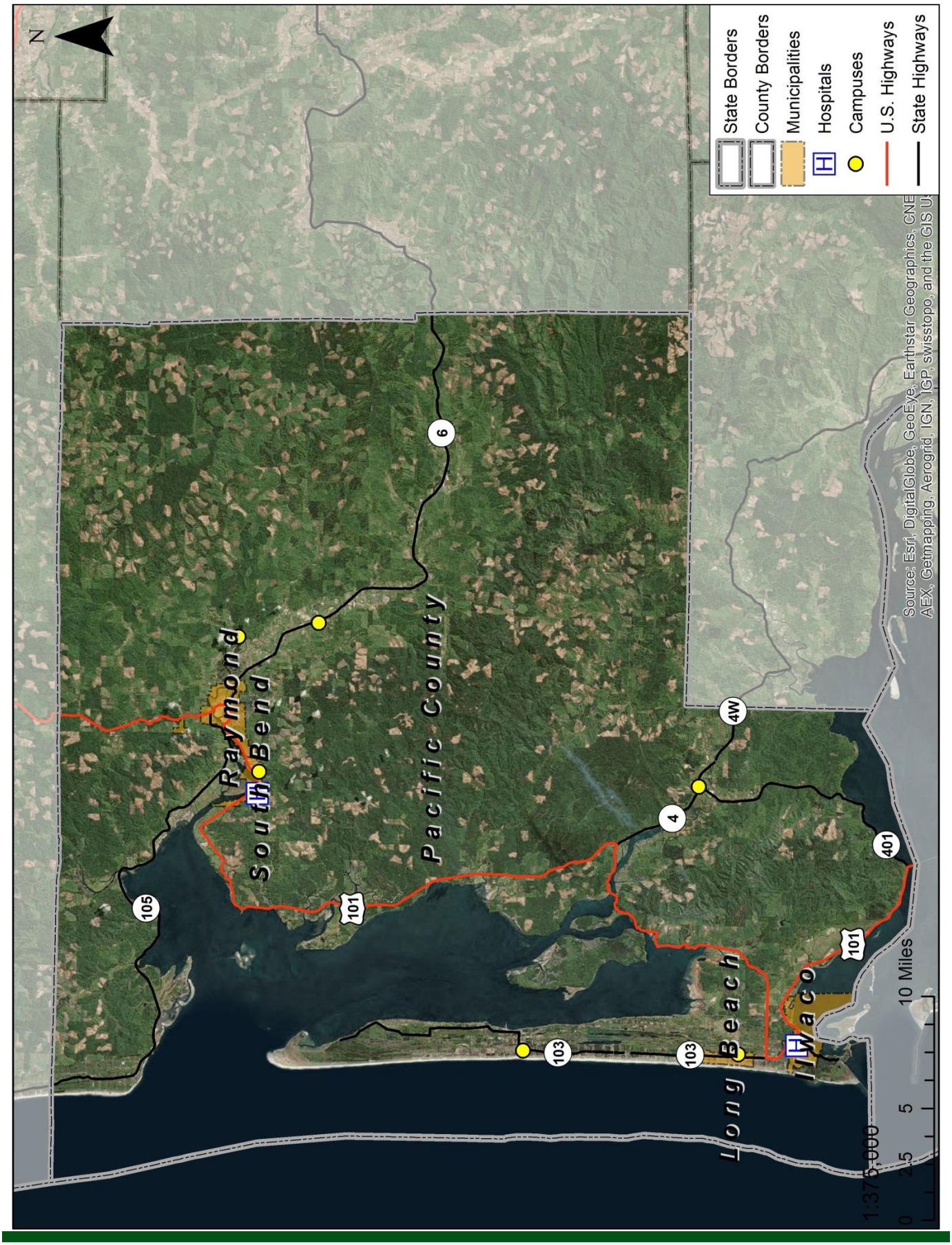
Date	Type	Damage
02/2001	Nisqually Earthquake	$2,321
02/2007	Winter Storms, Winds	$10,754
12/2007	Severe Storms, Flooding	$959,671
01/2009	Winter Storms, Flooding	$101,140
03/2009	Winter Storms, Record Snow	$44,973

Point of Contact:
Kathy Spoor, County Administrative Officer
PO Box 6
South Bend, WA 98596

Map 1 – State of Washington



Map 2 – Profile, Pacific County



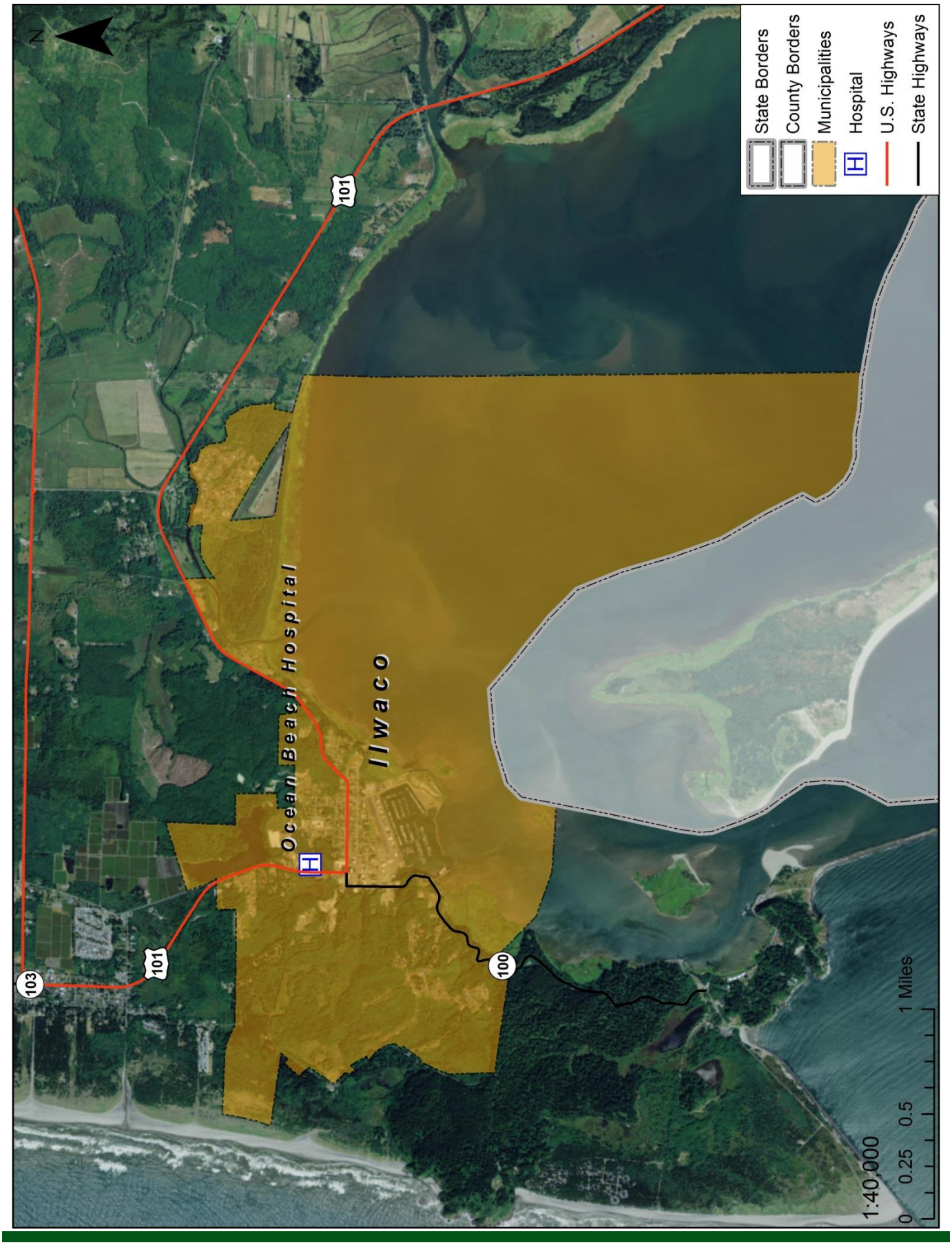
3.2.2 – City of Ilwaco

The City of Ilwaco was incorporated in the year 1890, one year after Washington received its statehood. It is located on the Columbia River and Pacific Ocean, at the last count, has nearly 1000 people within its 6 square mile area. The City is governed by a Mayor/ Council form of government, with 5 Council Members who are elected at large, and a Mayor. Water, sewer, and storm water services are provided by the city. Police services are shared with the City of Long Beach under an interlocal agreement. The Ilwaco Fire Department is a volunteer department with a part-time Fire Chief, Fire Administrator, and numerous volunteers. The City of Ilwaco also has the Port of Ilwaco within the city limits. The City of Ilwaco also holds the Ocean Beach Hospital and Medical Clinic, Ilwaco High School, and Ilwaco Middle School within city limits. Sanitation Services for the community are provided by Peninsula Sanitation which has its business office located at the Port of Ilwaco. Public transportation in Pacific County is provided by Pacific Transit and electrical power to the County is provided by PUD #2 of Pacific County.

The City of Ilwaco's public facilities have not had any significant damage from hazard events.

Point of Contact:
Michael Cassinelli, Mayor
Ilwaco City Hall
120 1st Avenue N
Ilwaco, WA 98624
(360) 642-3145

Map 3 – Profile, Ilwaco



3.2.3 – City of Long Beach

The City of Long Beach was established as a seashore resort by Henry Harrison Tinker in 1880. The city was incorporated in 1922 and serves 1,425 citizens in Pacific County, along with thousands of visitors each year. The city operates on a $4 million annual budget with 35 full and part-time employees providing an array of services including police, fire, parks, recreational and cultural services, land use management and development regulation, street maintenance and construction, water and wastewater services and storm drainage management. The city participates in a range of intergovernmental organizations in order to effectively carry out its responsibilities.

Of notable demographic characteristics of Long Beach, it is the third largest of the four incorporated cities in Pacific County. Although its population is declining, it has an emergent population of retirees; it has a greater proportion of older people than the rest of the state; it has a greater proportion of multi-family units compared to the rest of the county, and approximately one third of the housing units are second homes and vacation homes. The largest employers in Long Beach are government and the leisure and hospitality industries.

Table 5 – Historic Damage, City of Long Beach

Date	Type	Damage
05/2006	Winter Storms	$441,088
12/2007	Severe Storms and Flooding	$31,243

Point of Contact:
David Glasson
Long Beach City Hall
115 Bolstad Avenue
Long Beach, WA 98631
(360) 642-4421

Map 4 – Profile, Long Beach

3.2.4 – City of Raymond

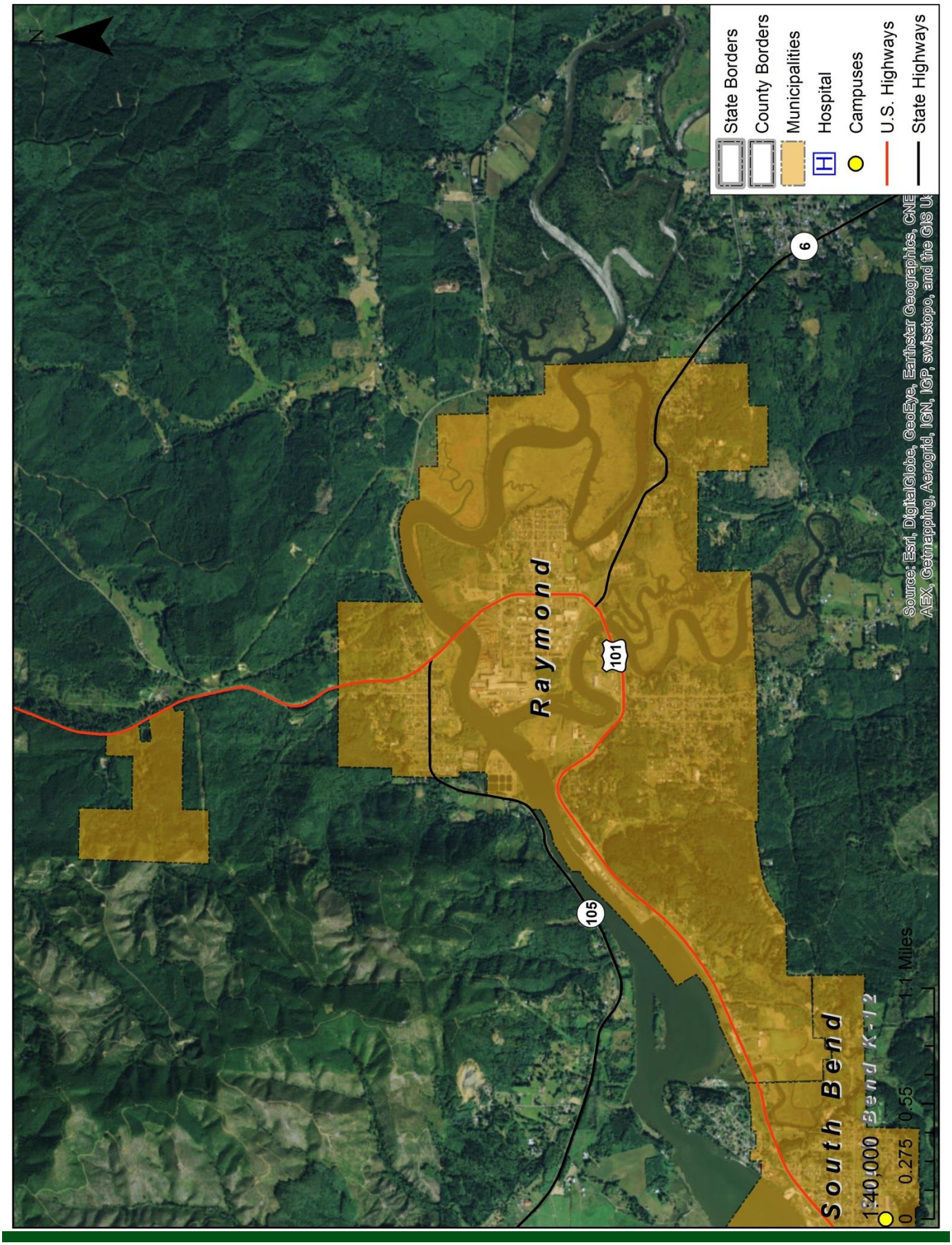
The City of Raymond was incorporated in August of 1907. It is located on the Willapa River and, at the last count, has 2,982 people within its 4.62 square mile area. The city is governed by a strong Mayor/ Council form of government, with 7 council members who are elected at large, and a Mayor. Water, garbage collection, and sewer services are provided by the city as well as police service. The Raymond Fire Department has an 11 member staff as well as numerous volunteers, and provides fire service to the city as well as ambulatory service to the northern half of Pacific County. Public transportation in Pacific County is provided by Pacific Transit and electrical power to the county is provided by PUD #2.

Table 6 – Historic Damage, City of Raymond

Date	Type	Damage
02/2001	Nisqually Earthquake	$44,785
05/2006	Winter Storms	$28,604
12/2007	Severe Storms and Flooding	$53,400

Point of Contact:
Jason Dunsmoor, Mayor
Raymond City Hall
230 2nd Street
Raymond, WA 98577
(360) 942-4100

Map 5 – Profile, Raymond



3.2.5 – City of South Bend

South Bend, as its name implies, is located on a bend (the left bank) of the Willapa River. The city got its start in 1869 as a sawmill town built over Willapa River marshlands. As the town grew and became an area trading center, it tried to make the area more hospitable to settlement by planking roads and building on pilings, then by filling in marshes with dredging spoils. Today much of the 2.012 square-mile city rests on unconsolidated fill material. The central downtown and industrial areas are elevated on fill to ten feet above sea level, 1.8 feet lower than the 100-year flood elevation. Areas of the city to the east are higher by nature, but still characterized by a high water table. The silt-like soils throughout the lowlands of the city often present developers with stability problems. These same soils may be prone to liquefaction in a seismic event. Southern portions of the city slope upward to approximately 300 feet. Steeper slopes occasionally experience isolated slide activity.

The city's historical development has focused on the left, or south, bank of the river. Most of the industrial and commercial land uses in the city are located in a crescent that follows the river and major transportation modes (rail and highway). Industrial growth is expected to continue on through 2017 in the northwest quadrant of the city. Residential areas are located primarily upland of the river.

Notable demographic characteristics of South Bend include that it is the second largest of the four incorporated cities in Pacific County; the population over the past 10 years has steadily decreased from 1,807 to 1,594; and it has a greater proportion of older people than the rest of the state; it has a greater proportion of multi-family units compared to the rest of the county, and approximately one third of the housing units are second homes and vacation homes.

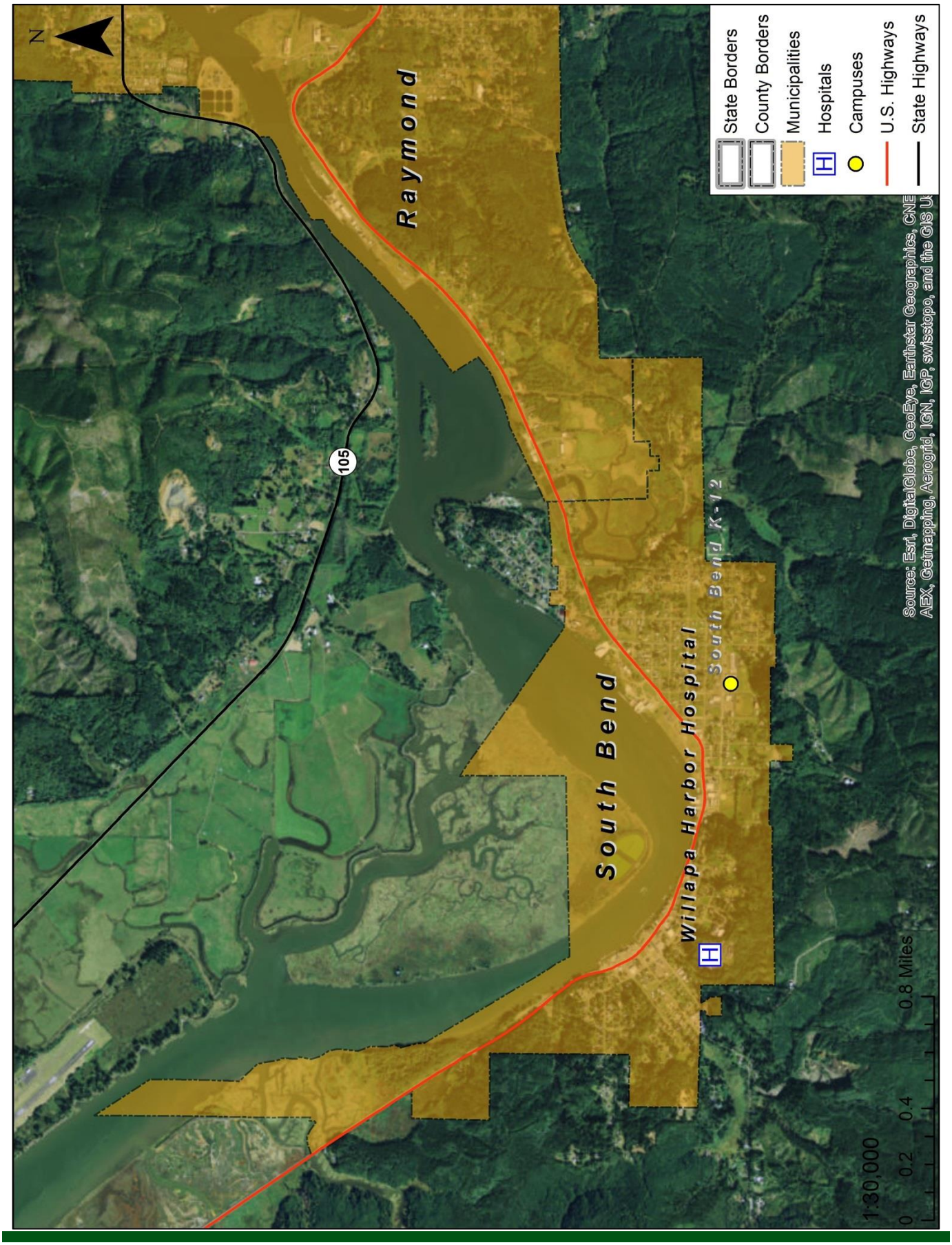
There are currently 780 housing units in the city, mostly single-family, and the housing stock tends to be older than for the state as a whole. Many of the residential units were built prior to the adoption of building codes for seismic and other hazard-resistant construction.

Table 7 – Historic Damage, City of South Bend

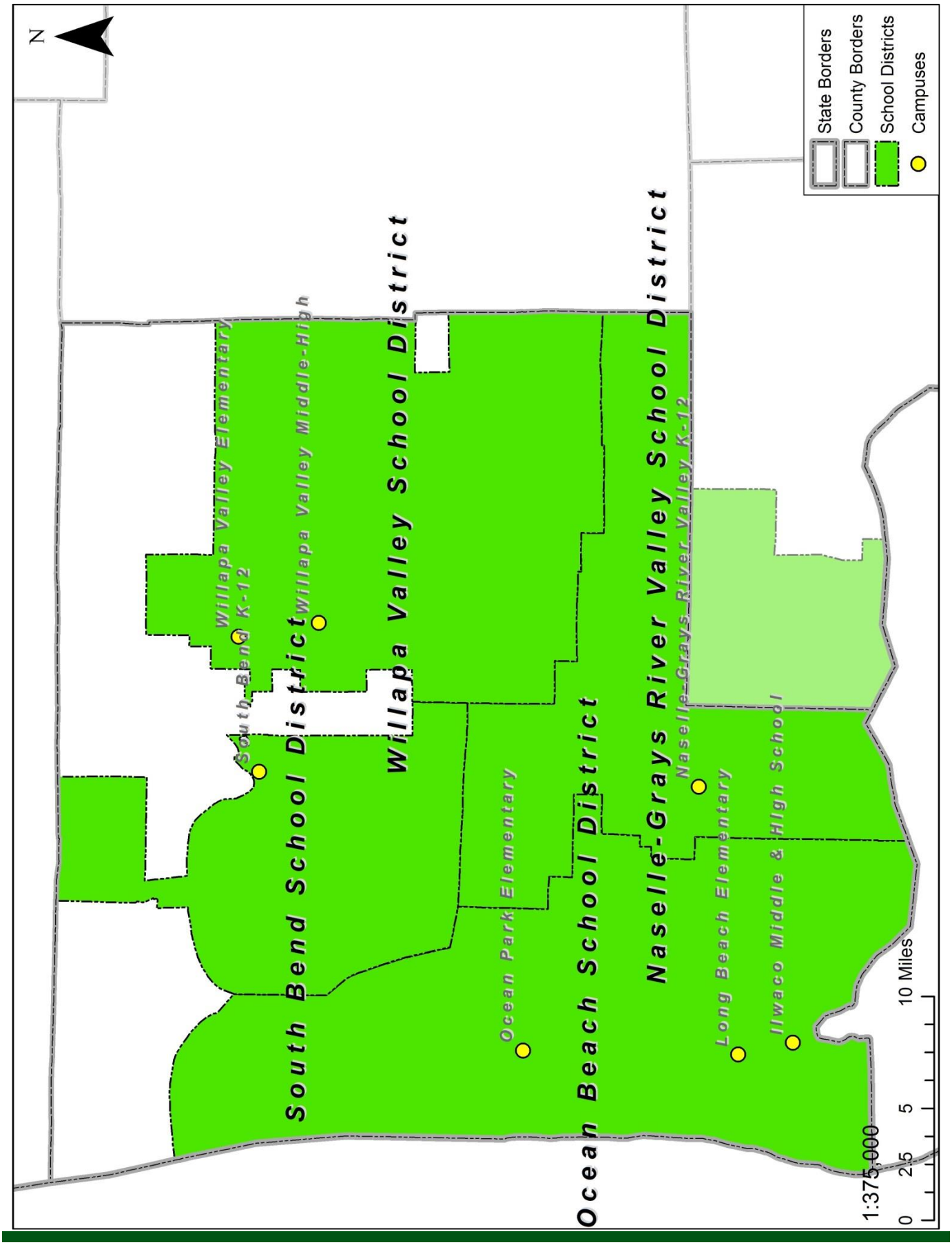
Date	Type	Damage
02/2001	Nisqually Earthquake	$11,626
05/2006	Winter Storms	$581,184
12/2006	Severe Storms and Flooding	$12,503
02/2007	Winter Storms	$171,338
12/2007	Severe Storms and Flooding	$246,063
01/2009	Winter Storms and Flooding	$127,241
03/2009	Winter Storms	$1,818

Point of Contact:
Julie Struck
South Bend City Hall
PO Drawer 9
South Bend WA 98586
(360) 875-5571

Map 6 – Profile, South Bend



Map 7 – Profile, School Districts



3.2.6 – Naselle/Grays River Valley School District

The Naselle-Grays River Valley School District has an enrollment of 309 students in K-12. Additionally, the school has 9 students enrolled in a full day Early Childhood Education Learning Program (ECEAP), in the public school every Tuesday and Thursday.

The Naselle School District encompasses a range of 36 miles from Nemah to Grays River, Washington. Ninety percent of the students are bused to school, while the remaining 10% drive themselves, or are driven by parents.

Naselle, Washington is located in the southwest corner of the state in Pacific County. Naselle is approximately 20 miles east of Long Beach, which is the western border of the state. It is 16 miles east of the mouth of the Columbia River and 15 miles upriver from Astoria, Oregon. Naselle is a rural community with a population of about 1000, and is located 100 miles from the nearest metropolitan area (Portland, Oregon). Small businesses provide services within the community such as a post office, grocery store, restaurant, gas stations, auto repair shop, beauty salon, video store, florist, and bank. The residents of Naselle will frequently travel to Astoria, Oregon, for most services. The community is served by the Naselle Water Company, Pacific County PUD #2, and Western Wahkiakum Phone Company.

Table 8 – Historic Damage, Naselle/Grays River Valley School District

Date	Type	Damage
12/2007	Severe Storms	$100,000

Point of Contact:
Lisa, Nelson, Superintendent
793 State Route 4
Naselle, WA 98638
(360) 484-7121 ext. 3

Map 8 – Profile, Naselle/Grays River Valley School District – K-12

3.2.7 – Ocean Beach School District

The Ocean Beach School District consists of a series of small interrelated communities situated along the Long Beach Peninsula just north of the mouth of the Columbia River. The district is comprised of five school buildings; two elementary (K-4), one middle school (5-8), one high school (9-12), and an early childhood center. The district has an overall enrollment of about 1010 students and employs 56 teachers and 82 support staff. The district currently has 23 buses with a replacement value of $1,520,546. The high school, stadium, and the middle school at Hilltop are designated shelters by the American Red Cross.

Electric service is provided by Pacific County PUD #2; water is provided by the Surfside Homeowners' Association, North Beach Water, City of Long Beach, and the City of Ilwaco. Ocean Park Elementary is on a septic system, with the City of Long Beach and City of Ilwaco providing sewer service for the facilities within their jurisdiction. Telephone service is provided by CenturyLink, fiber connections by NoahNet, Pacific PUD #2, and DT Micro. Pacific County Fire District #1, Long Beach Fire Department, and the Ilwaco Fire Deptartment provide fire protection while and law enforcement is covered by Pacific County Sheriff's Office and the Long Beach Police Department.

The district has not had any significant damage from hazard events.

Point of Contact:
Sandie Graff, Transportation Director
500 Washington Ave. South
Long Beach, WA 98631

Map 9 – Profile, Ocean Beach School District – Ilwaco Middle & High School

Map 10 – Profile, Ocean Beach School District – Long Beach Elementary

Map 11 – Profile, Ocean Beach School District – Ocean Park Elementary

3.2.8 – South Bend School District

The South Bend School District campus is comprised of three main school buildings: Chauncey Davis Elementary, South Bend Jr. Sr. High School, and the South Bend Early Learning Center. The District has an overall enrollment of 545 K-12 and 90 preschool students It employees 99 staff members.

South Bend, Washington is in the southwest corner of the state in Pacific County. It is located along the Willapa River and 2 ½ miles east of Willapa Bay. South Bend is a rural community with a population of approximately 1,800. Residents frequently travel approximately 35 miles to Aberdeen, Washington for services. The community is served by City of South Bend Water, Sewer, and Garbage; Pacific County PUD #2; and CenturyLink Phone Service. Law enforcement is provided by the South Bend Police Department and Pacific County Sheriff's Office. Fire protection is provided by the South Bend Fire Department and EMS is provided by the Raymond Fire Department Ambulance Service.

Table 9 – Historic Damage, South Bend School District

Date	Type	Damage
02/2001	Nisqually Earthquake	$501,909
02/2007	Winter Storms	$250,000
12/2007	Severe Storms	$700,000
01/2009	Winter Storms	$2,800
12/2009	Winter Storms	$18,000
01/2015	Flooding	$400,000

Point of Contact:
Jon Tienhaara, Superintendent
PO Box 437
South Bend, Wa 98586
(360) 875-6041

Map 12 – Profile, South Bend School District – South Bend K-12

3.2.9 – Willapa Valley School District

The Willapa Valley School District consists of several small communities situated along a 20 mile Valley East of the Willapa Harbor. The district is comprised of two separate campus areas with one 6-12 middle-high school building in Menlo, and one PK-5 elementary building in Old Willapa. The district also owns a non-occupied elementary building in Lebam. The district has an overall enrollment of about 375 students and employs 25 teachers and 35 support staff and administrators. The District has 15 buses and 5 motor pool vehicles with a current replacement value of $1,445,249.

Electric service is provided by Pacific County PUD #2; water is provided by the Willapa Valley Water District; each site has its own septic system; telephone service is provided by CenturyLink; fiber connection by Pacific County PUD #2; Pacific County Fire District #3, Menlo Fire Dept. and Lebam Fire Department provide fire protection; and law enforcement is covered by Pacific County Sheriff's Office.

The district has not had any significant damage from hazard events.

Point of Contact:
Rob Friese, Superintendent
PO Box 128
Menlo, WA
(360) 942-5855

Map 13 – Profile, Willapa Valley School District – Willapa Valley Middle-High

Map 14 – Profile, Willapa Valley School District – Willapa Elementary

3.2.10 – Naselle Water Company

Naselle Water Company supplies water to the small rural community of Naselle, the Naselle-Grays River School District and the DSHS Naselle Youth Facility. The district serves approximately 500 residences, the Naselle School District of approximately 312 students, and the Naselle Youth Camp which houses 95 inmates plus around 100 support staff and families that live on-site.

The Naselle community is supported mostly by the logging industry, fishing and state jobs. There is no other big industry in the area. The district has approximately 25 miles of water line, which are mostly over 40 years old. Many of the areas serviced are in floodplains and some are in slide areas that the county has been unable to correct. The district is economically challenged without an industry to draw from and help with improvements. During the last major storm (Dec. 2007), the 1920's office building was damaged and has now been deemed un-inhabitable.

The district's plant site is located above the Naselle Rock and Asphalt Company on Crusher Lane. The access to the main plant and intakes are narrow roads with several small bridge crossings over the two creeks. It is a heavily wooded area which was completely impassable due to downed trees after the last storm.

Table 10 – Historic Damage, Naselle Water Company

Date	Type	Damage
12/2007	Severe Storms	$1,972
01/2009	Landslides, Winter Storm	$52,223
03/2009	Winter Storm	$4,619

Point of Contact:
Carol J. Haven
3 Appelo Lane
Naselle, WA 98638
(360) 484-3815

3.2.11 – North Beach Water District

The North Beach Water District (NBWD) provides water for drinking and fire suppression to about 2,700 service connections serving a seasonal population that can be as large as 10,000 people in the summertime to the communities of Ocean Park, Nahcotta, and Klipsan Beach. NBWD has eight employees and an annual operating budget of $1.75 million.

The NBWD has an elected three-member Board of Commissioners and eight professional employees dedicated to supplying clean healthy water to the community.

Table 11 – Historic Damage, North Beach Water District

Date	Type	Damage
12/2007	Severe Storms	$25,305

Point of Contact:
William Neal, General Manager
25902 Vernon Avenue - Suite C, PMB 618
Ocean Park, WA 98640
(360) 665-4144

3.2.12 – Surfside Homeowners' Association

The Surfside Water Distribution System serves the Surfside Homeowners' Association, which consists of approximately 1800 homes, most of which are a second home or a vacation home. It is primarily a vacation destination development with an average of 550 residents year round. It is located in what is considered a wildland/urban interface area. It is a not for profit organization and is a Group A water System under Washington State Regulations. Revenues are generated on a cost per lot. The association was formed in 1969, but the current system is eight years old. It is one overall system, which means if there is a break, the entire system goes down.

Water comes from six (6) deep wells of over 200 ft. in depth. There are four (4) reservoirs with approximately 630,000 gallons of capacity. The association has one emergency generator and a 200 gallon fuel tank. However, only two wells can be run at one time currently on emergency power.

Severe storms and flooding are the most frequent risks due to back flow issues. Back flow protection on individual hookups is not required at this time, with the exception of a small number of existing commercial users within the Surfside boundary. There are occasional problems with the major drainage outfalls adjacent to the ocean, which can become blocked with sand in severe high tides or storms. These outfalls are in the tsunami hazard area and parts of the system could be at risk in the event of a grass or brush fire on the dunes, which border Surfside Estates along the entire western boundary. Earthquakes and severe winter storms may cause damage to the water distribution system, affecting the livelihood of the high density residential community.

The association has not had any significant damage from hazard events.

Point of Contact:
Laura Frazier
31402 H Street
Long Beach, WA 98640
(360) 665-4171

3.2.13 – Willapa Valley Water District

The Willapa Valley Water District is a public water system that provides water service to customers near the western end of the Willapa River Valley. The water system is publicly owned and is governed by an elected Board of Commissioners. The district is managed by a Superintendent who reports to the Board of Commissioners.

The district serves a service area of approximately 11 square miles and has over 44 miles of main and service lines. It serves a total of 735 service connections. The district has an estimated full-time residential population of 2,000, an estimated temporary and transient population of 12,000 during during the Pacific County Fair that is held in Menlo in August, and an estimated regular non-residential population of up to 200 people per month.

The Willapa Valley Water District was started as the Willapa Valley Water Company, which was incorporated on May 22, 1933. The corporation was organized as a private non-profit, and as such, ineligible to receive state aid, so the Willapa Valley Water District was formed on February 28, 1934.

The initial system consisted of a wood diversion dam on Stringer Creek approximately 9 miles east of Raymond and distribution system comprised mostly of wooden water mains. No treatment was provided beyond sedimentation. In 1966 the wooden pipe was replaced with either asbestos cement or PVC pipe. The original water treatment plant was constructed in 1968 and a new diversion dam and inlet structure was constructed in 1971. The district has three steel reservoirs; a 200,000-gallon tank constructed in 1968, a 300,000-gallon tank built in 1973, and a 330,000-gallon tank built in 1994.

The district owns and operates a surface water treatment plant (WTP) to treat water from Stringer Creek. The WTP was last upgraded in 2000-2001. The current treatment facility is capable of nominally processing 750 gallons per minute. The plant is designed for automated operation with monitoring and chemical feed equipment that allow the plant to adjust coagulant dose to changing water conditions. The plant also includes chlorine residual monitoring in the finished water line as well as pH and turbidity monitoring equipment.

The Willapa Valley Water District has an emergency intertie with the City of Raymond. The Willapa Valley Water District entered into an Interlocal Agreement for Waterline Intertie with the City of Raymond on June 7, 1977. It was agreed that the purpose of this would be to provide for a water line tie between the two entities, to extend a 6-inch water main from Harvard Street to Crossing Street, and to equally share, the cost of construction and all material, pipe, valves, reducer, meter, and bedding.

The district has not had any significant damage from hazard events.

Point of Contact:
Shawn Aust
4117 Willapa Road
Raymond, WA 98577
(360) 942-3357

3.2.14 – Ocean Beach Hospital

Ocean Beach Hospital is a critical access hospital with 25 licensed beds. There are two Operating Rooms and eight Emergency Rooms. There are also two clinics. One is located across from the hospital and one 30 miles away in Naselle. The hospital has 146 employees and a large provider staff. The largest population in the region is retired, although there is a large tourist season from spring till fall. The hospital has a governing board. Ocean Beach Hospital is a public hospital district. It is located on one of the major roads leading into the area and bordered by residential housing with two schools and two churches within a block. The hospital has air transport to outlying hospitals in the northwest. The facility is approximately 44,000 square feet in size. The clinic on-site is approximately 6,000 square feet. The clinic in Naselle is approximately 1,200 square feet. The hospital has two vehicles for travel, a 2005 pickup and 1992 van. It is on a peninsula next to the Pacific Ocean and the Columbia River.

The hospital is located in the very southwest corner of Washington State. The town of Ilwaco is a small fishing village with the port of Ilwaco, numerous small businesses within walking distance of the hospital. The United States Coast Guard has a station within 2 miles of town. The hospital is serviced by the Ilwaco water/sewer. Electric power is supplied by PUD. Telephone service is provided by Century Tel. This is a very peaceful part of Washington State. The area is affected by all of the different weather patterns coming off of the Pacific Ocean. Weather in this part of the world can change very quickly. It is a wonderful place to live and still affordable.

Table 12 – Historic Damage, Ocean Beach Hospital

Date	Type	Damage
12/2007	Severe Storms	$19,937

Point of Contact:
Charity Harris
174 N 1st Ave
Ilwaco, WA 98624
(360) 642-3181

Map 15 – Profile, Ocean Beach Hospital

3.2.15 – Willapa Harbor Hospital

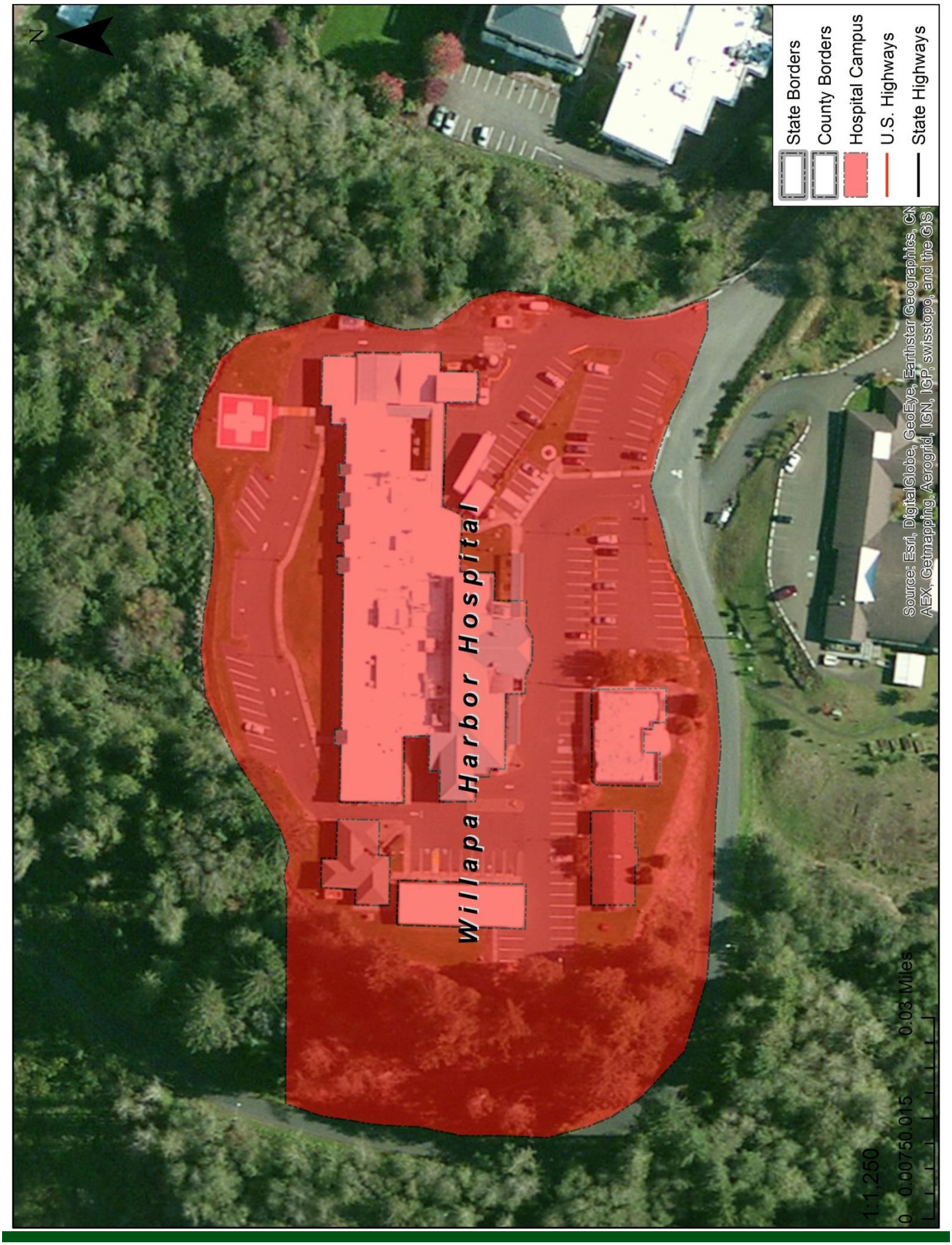
Willapa Harbor Hospital is a critical access hospital with 26 licensed beds. There is one operating room, five Emergency Rooms and two clinics. One clinic is located across from the hospital and one clinic is in the hospital. The hospital has 141 employees and four providers. The largest population in the region is retired. The hospital has a governing board made up of 5 commissioners. Willapa Harbor Hospital is a Public Hospital District. It is located off Highway 101 and bordered by residential housing and an assisted living facility. The hospital has air transport to outlying hospitals in the northwest. The facility is approximately 32,000 square feet in size. The clinic on site is approximately 1,000 square feet. The clinic across from the hospital is approximately 2,400 square feet. The hospital has two vehicles for travel, a 2007 pickup and 2006 van. The hospital is on a hill overlooking the Willapa River.

The hospital is in the town of South Bend, also known as the "Oyster Capital of the World," and located in North Pacific County on the Willapa River. We have three local school districts located in North Pacific County, and the community strongly supports our hospital and the local schools. The hospital is serviced by the City of South Bend water/sewer. Electric power is supplied by PUD. Telephone service is provided by Century Tel. This is a beautiful location in Washington State. Our area is affected by different weather patterns throughout the year coming off of the Pacific Ocean and the weather can change quickly. It is a beautiful, quiet place to live but still affordable.

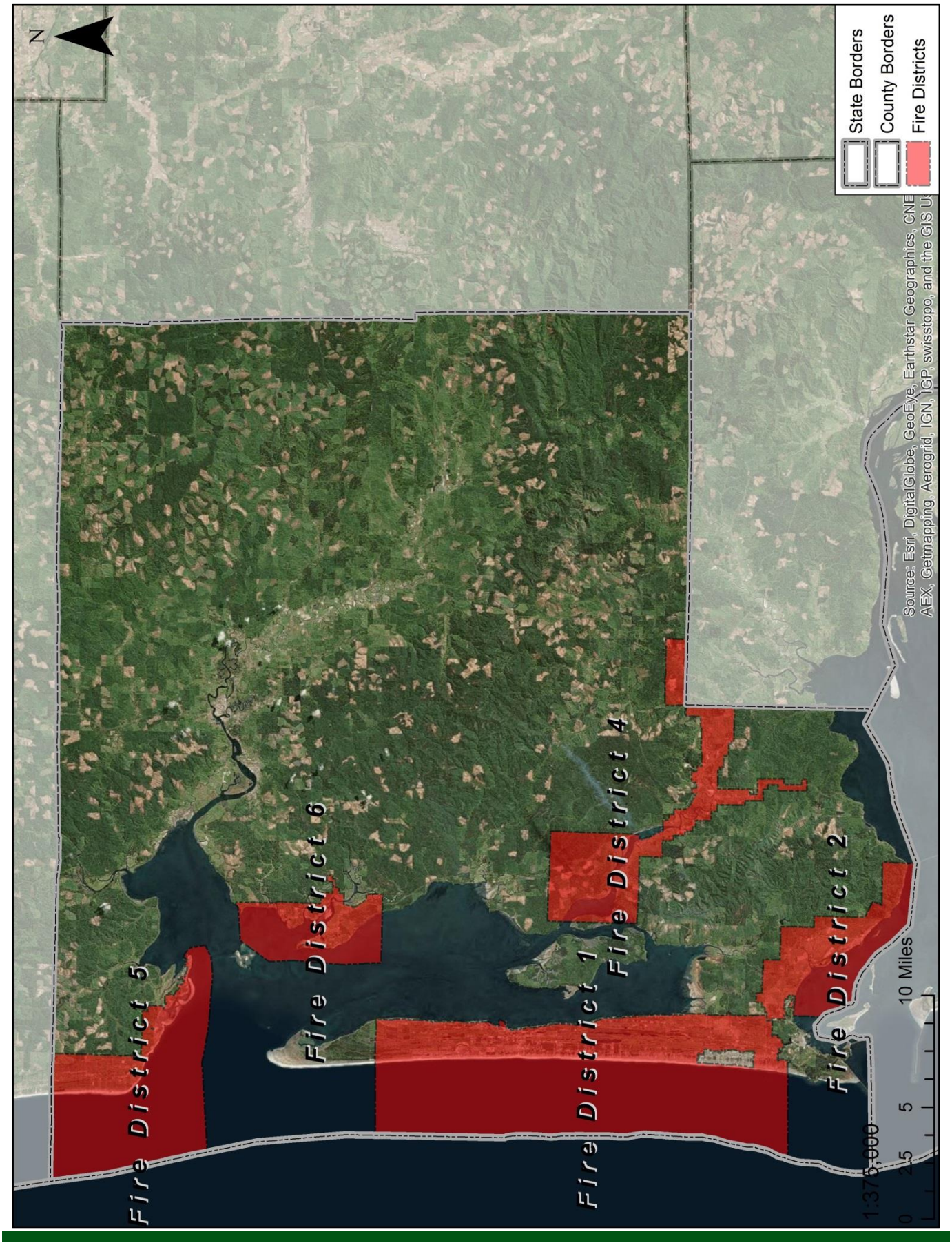
The hospital has not had any significant damage from hazard events.

Point of Contact:
Gary Spoor, Facilities Director
815 Alder Street
South Bend, WA 98586
(360) 875-5526

Map 16 – Profile, Willapa Harbor Hospital



Map 17 – Profile, Pacific County Fire Protection Districts



3.2.16 – Pacific County Fire Protection District #1

Pacific County Fire Protection District #1 covers approximately 28 square miles. It has 25 paid firefighters and 40 volunteer firefighters. It responds to 1,700 to 1,800 calls for service per year. The demographics of the area include primarily retirees, and the fire station provides an important social network for the community. Fire Station #1 is a main community hub, and meeting place and the main shelter and destination when a community emergency or disaster occurs. The district is prepared to provide shelter, water, oxygen, propane and other emergency items when needed. The district is dispatched by the Sheriffs communications, but due to the location and a lack of a redundant system, there can be communications problems. It can be spotty at times. It has a Memorandum of Understanding with the Washington State Department of Fish and Wildlife for fuel management. There is a very complex situation with land ownership making fuel management a challenge.

Table 13 – Historic Damage, Pacific County Fire District #1

Date	Type	Damage
12/2003	Severe Storms	$6,000
12/2007	Severe Storms	$11,707

Point of Contact:
Jacob Brundage
26110 Ridge Avenue
Ocean Park, WA 98640

3.2.17 – Pacific County Fire Protection District #2

Pacific County Fire District #2 serves approximately 600 people. District #2 responders will go outside the area when called for accidents, structure fires and backup for DNR on forest fires. District #2 also has a contract with Historic Fort Columbia for fire protection.

There is one station where the district houses the fire trucks and firefighting equipment located centrally in town. The station is 4800sf. The cost to replace the present inventory is about $1,130,600. The district is an all-volunteer department. The district is unincorporated. Our community is served by a water district and town has 35 fire hydrants.

The district has not had any significant damage from hazard events.

Point of Contact:
Dale Hughes, Fire Chief
746 Highway 101
Chinook, WA 98614

3.2.18 – Pacific County Fire Protection District #4

Pacific County Fire Protection District # 4 is located in Naselle, Washington in a community of approximately 1,000 people. The district provides fire coverage within a 30 mile radius along State Hwy 4, State Hwy 401, State Hwy 101 North and State Hwy 101 South. Within the community is the Naselle-Grays River School District with approximately 315 students and the Naselle Youth Camp Correctional Facility which houses approximately 125 inmates and approximately 50 personnel and their families.

The biggest concern is communication and the ability to reach out for our community's needs. There are several Rivers and Streams – Salmon Creek and the Naselle River which cause considerable flooding at times. Communication during the December 2007 was nil due to the lack of power, and phone lines and cell towers that were down. The district is in the process of establishing Ham radio communication at the district Station. Several members of the Department have become Ham Radio operators so that once the equipment is up and running they will be operational. Additional generators would be a huge asset to the department, as there are numerous elderly in the area who are dependent upon oxygen.

Table 14 – Historic Damage, Pacific County Fire District #4

Date	Type	Damage
12/2007	Severe Storms	$40,750
01/2009	Winter Storms	$4,000

Point of Contact:
Carol J. Haven
6 County Shed
Naselle, WA 98638
(360) 484 3498

3.2.19 – Pacific County Fire Protection District #5

Pacific County Fire Protection District #5 serves approximately 900 people in a ten square mile area. District 5 responders will go outside the area when called for accidents, fires, mutual aid and when Department of Natural Resources asks for backup for forest fires in other areas. The District also contracts with the Shoalwater Bay Tribe plus their Casino and the Port of Willapa Harbor for fire protection. There are three stations where the district houses fire trucks and excess fire equipment. The main station is located in North Cove, the second is in Tokeland and the third one is on Larkin road, also in the North Cove area.

PCFD #5 is a volunteer department with only the fire chief receiving some compensation. Total cost to replace the present inventory would be about $1,480,000. The district's service area is totally unincorporated. Law enforcement is provided by the Pacific Co. Sheriff's office. The majority of homes are served by their own wells and septic systems. The area resides on mostly sand and peat, which is a major concern for a major earthquake or tsunami due to probable liquefaction.

District goals are to educate the residents on what to do in a major weather emergency and where to go to get help or shelter, who to call and what services can be obtained. The district is planning on researching the possibility to relocate the North Cove station to higher, safer ground.

The district has not had any significant damage from hazard events.

Point of Contact:
Gene Kuest, Fire Chief
2753 Tokeland Road
Tokeland, WA 98590

3.2.20 – Pacific County Fire Protection District #6

Pacific County Fire Protection District #6 serves approximately 400 people in a ten square area. District 6 responders will go outside the area when called for accidents, fires, mutual aid and when Department of Natural Resources asks for backup for forest fires. The District also contracts with the city of Raymond for aid calls with three responders currently. There is one fire station where the District houses fire trucks and excess firefighting equipment. The station is located on Harrison Street.

PCFD #6 is a volunteer department with only the aid responders and commissioners receiving some compensation. Total cost to replace the present inventory would be about $1,500,000. The District's service area is totally unincorporated. Telephone service is provided by Centurylink and Pacific Co. PUD provides electric service. Law enforcement is provided by the Pacific Co. Sheriff's office. The majority of homes are served by Bay Center water which Pacific Co. PUD maintains and most have septic systems. The area resides on mostly sand and clay, which is a major concern for a major earthquake or tsunami due to probable liquefaction.

District goals are to educate the residents on what to do in a major weather emergency and where to go to get help or shelter, who to call and what services can be obtained.

The district has not had any significant damages from storms or other events in the past.

Point of Contact:
Gene Kuest, Fire Chief
2753 Tokeland Road
Tokeland, WA 98590

3.2.21 – Pacific Transit

The Pacific Transit began providing services in January 1980. Since its inception, the service has continually developed throughout Pacific County to include the expansion of regular routes and the establishment of Dial-a-Ride service, which provides transportation to ADA-Certified individuals. Dial-a-Ride service also includes transportation for individuals in the rural areas of Pacific County who are not on regular bus routes. Pacific Transit also provides intercity service to Aberdeen, WA in Grays Harbor County and to Astoria, OR. The Pacific Transit System has 24 employees, including drivers, maintenance personnel and management. It derives its funding from a Public Transportation Benefit Area (PTBA) with additional funding coming from sales tax in Pacific County and from federal and state grants.

The biggest threat is a major tsunami. There is not much that could be done structurally, so planning is being done for moving personnel and equipment to safe areas if there is a threat to Transit System operations from any hazard. There are plans in place and priorities are set if there is a tsunami warning. Plans are being developed for a no notice event. It is a very reliable system that has provided over 35 years of uninterrupted transportation services to the citizens of Pacific County. To date Pacific Transit has traveled over 11 million miles and provided over 5 million passenger trips.

Table 15 – Historic Damage, Pacific Transit

Date	Type	Damage
12/2007	Severe Storms	$60,000

Point of Contact:
Richard Evans
216 North 2nd Street
Raymond, WA 98577
(360) 875-9418

3.2.22 – Port of Chinook

On February 5, 1951, the Pacific County Board of Commissioners passed a resolution establishing the Port of Chinook. The port, located just upriver on the Columbia from Ilwaco, was formed to serve commercial and recreational fishing boats. The Port operates a 250 slip marina, boat hoist, a boat ramp, and has approximately 5 leased properties, which include a cannery, bait shop, and coffee shop. Water is provided by the Chinook Water District. Electrical service is provided by Pacific County PUD#2, and phone service provided by Centurylink.

The port has not had any significant damages from storms or other events in the past.

Point of Contact:
John Demase
743 Water Street
Chinook, WA 98614
(360) 777-8797

Map 18 – Profile, Ports

3.2.23 – Port of Ilwaco

The Port of Ilwaco was formed by a vote of the people in 1928. It is governed by three elected Commissioners who serve six-year terms. It is one of four public ports located in Pacific County, WA. The Port District includes Ilwaco, Seaview, Naselle and a strip along the east side of the Long Beach Peninsula. The Port operates an 800 slip fishing marina, a self-service boat yard, a 40-ton boat haul-out, a smaller boat hoist, a boat ramp and has approximately 25 leased properties which are home to restaurants, galleries, fishing charters, gift shops, marine supply, a sanitation company, a bank, a community college campus, a cannery and a large fish processor. The Port of Ilwaco boatyard services commercial vessels and pleasure craft up to 50 tons. The Port also operates a general aviation airport.

Water, sewer, public works and fire protection are provided by the City of Ilwaco. Electrical service is provided by Pacific County PUD #2 and phone service is provided by CenturyLink. Internet service is provided by Charter. Police protection is provided by the City of Long Beach, under contract with the City of Ilwaco and the Port District is served by the Ocean Beach and Naselle/Grays River School Districts.

Table 16 – Historic Damage, Port of Ilwaco

Date	Type	Damage
12/2007	Severe Storms	$111,353

Point of Contact:
Guy Glenn Jr., Manager
PO Box 307
Ilwaco, WA 98624
(360) 642-3143

3.2.24 – Port of Peninsula

The Port of Peninsula was formed in 1928. It is governed by three elected Commissioners who serve six-year terms. It is one of four public ports located in Pacific County, Washington. The Port District includes Long Beach, Ocean Park, Klipsan Beach, Surfside, and other areas of unincorporated Pacific County. The Port operates an 80 slip commercial and recreational marina, an 8 ton boat haul-out, product hoists, a fuel dock, a pump out station, a boat ramp, an Interpretive Center, and has upland and tideland leases.

Water is provided by North Beach Water. Electrical and Internet service is provided by Pacific County PUD No. 2 and phone service is provided by CenturyLink. Police protection is provided by Pacific County and the Port District is served by the Ocean Beach School District and Ocean Beach Hospital.

The port has not had any significant damages from storms or other events in the past.

Point of Contact:
Mary DeLong, Manager
3311 275th Street
Ocean Park, WA 98640
(360) 665-4547

3.2.25 – Port of Willapa Harbor

The Port of Willapa Harbor was formed by the vote of the people of North Pacific County on May 31, 1928. The construction of the Port Dock between the cities of Raymond and South Bend soon followed with the dedication ceremony on October 8, 1930 (which also marked the official opening of the Raymond-Aberdeen highway). The primary function of the Port was to provide docking facilities and service for shipping logs and lumber in Raymond, and to support commercial fishing and oystering in Tokeland and Bay Center. In the intervening years the Port has expanded to include the Willapa Harbor Airport, the Dick Taylor Industrial Park and the Stan Hatfield South Fork Industrial Park. The Port currently has 31 industrial and commercial tenants, and provides moorage to 85 boats.

The Raymond Port Dock is located on the Willapa River on US 101. Port facilities at this location include an historic 25,000 square foot, 'high' dock, which services an array of commercial vessels. In addition there are 600 feet of floating docks which are available for moorage. The port dock area has nine industrial buildings which are leased to commercial/industrial tenants. The Port also has an industrial wastewater treatment plant. The Port facilities on the south bank of the Willapa River occupy 27 acres.

The Port acquired a 30 acre former sawmill site and is currently working on a mixed-use redevelopment of the property located within the Stan Hatfield South Fork Industrial Park. The triangular shaped park is located just north of US 101 in Raymond and is accessed from Wilson Street. This location is also bounded to the east by the South Fork and to the northwest by the Willapa Rivers. The Port leases a dry kiln and planer facilities to a local sawmill. The former mill machine shop has been completely renovated and now accommodates a recreational marijuana producer, a beauty boutique, and a saw shop.

The Dick Taylor Industrial Park is located on a 30-acre parcel fronting US 101 in Raymond. Approximately 10 acres has have developed for light industrial use. The park is also connected to the industrial wastewater pretreatment plant located at the main Port dock via a pumping station and force main. There are currently four industrial buildings and a retail store on the site. The port also owns the former Dennis Company warehouse located directly across SR 101 from the industrial park.

The Tokeland marina is located in the unincorporated community of Tokeland at the north of Willapa Bay. Tokeland is primarily a residential community with a population of 417. Tokeland is also the site of the Shoalwater Bay Indian Reservation, which is home to approximately 70 tribal members. The tribe owns and operates a small casino and health clinic. The Tokeland marina offers both recreational and commercial moorage. The Port facilities are on 40 acres and include two seafood servicing buildings, a light industrial building leased to Ambrosia Technologies, a public fishing pier, a high dock, and RV Park and boat ramp. A fish processing plant is located blocks away from the main Port dock. Port dock facilities provide local fishing and aquaculture industries access between land and water.

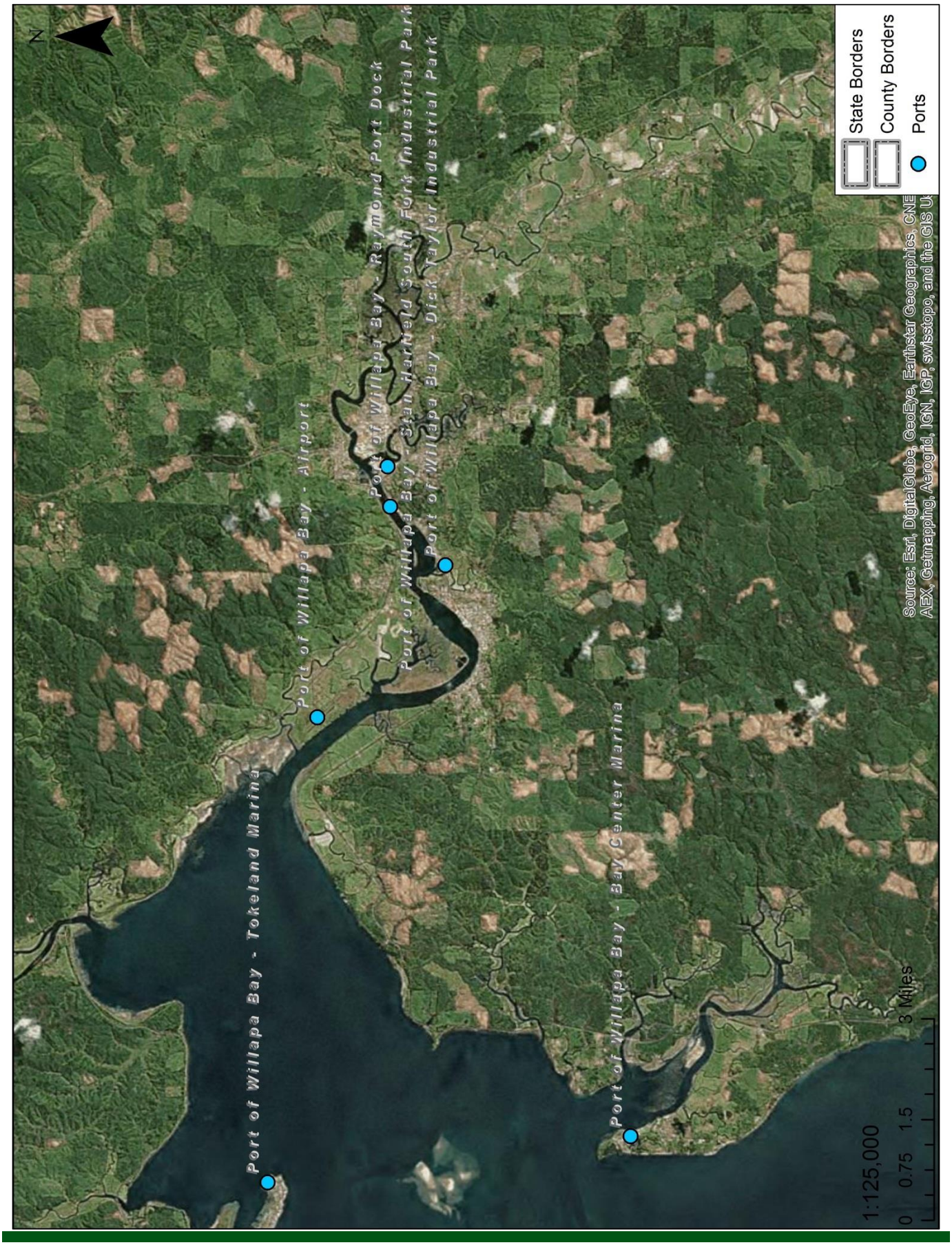
Bay Center is an unincorporated community located approximately 16 miles south of South Bend. Bounded by the Palix River and Willapa Bay, Bay Center is the geometric center of Willapa Bay and home to several commercial oyster-growing operations. In this community, commercial fishing and aquaculture dominates the marina. The Port facilities accommodate a thriving shell fish and crabbing industry. The current population of Bay Center is 317. A growing residential community will present a number of opportunities for the Port and the community in the coming years. The Port owns no upland property in Bay Center.

The airport was built in 1946 and is located on SR105 five miles west of Raymond. It features an asphalt paved, 3000'-long, 52'-wide general aviation service runway on an East-West orientation with rotating beacon and radio-activated runway lights. Privately owned hanger space is available, along with tie-downs for five aircraft, self-service fuel, and a pilot ready room with phone and rest room.

Table 17 – Historic Damage, Port of Willapa Harbor		
Date	**Type**	**Damage**
05/2006	Winter Storms	$291,569
12/2007	Severe Storms	$704,000
01/2009	Winter Storms	$912,062

Point of Contact:
Rebecca Chaffee, Manager
1725 Ocean Avenue
Raymond, WA 98577
(360) 942-3422

Map 19 – Profile, Port of Willapa Harbor



3.2.26 – Public Utility District #2

The District is a municipal corporation incorporated in 1940 to serve the citizens of Pacific County, Washington. A three-member board of locally elected commissioners, independent of county government, governs the District. The District manages and operates an Electric Distribution System and three Water Distribution Systems. Public Utility District #2 of Pacific County provides reliable electric service to the District's 17,100 customers. The District also provides water service to another 301 customers in the communities of Bay Center, Lebam and Wilson Point.

A General Manager, appointed by the Board, administers the District's day to day operations. The District employs 58 employees and operates on a $27.6 million annual electrical operating budget. The District offers programs to help customers use energy more efficiently and to support policies that promote resource conservation.

Wholesale power is supplied to the District through purchased power contracts with the Bonneville Power Administration (BPA). Weather and economic conditions are the primary influences on electricity sales. Generally, extreme temperatures increase sales to residential customers who use electricity for cooling and heating, and moderate temperatures decrease sales. 2014 retail electricity sales decreased by less than 1% over 2013 which was essentially the same as in 2012. 2010-2012 retail electricity sales when compared to the previous respective year showed decreases that ranged from 3.63%-4.16%. Customer growth has been minimal over the past five years with 73 total accounts added to the Districts base of 17,027 at the end of 2009.

The District provides electrical service to most but not all of Pacific County. Currently, the District does not provide service to the unincorporated areas of Tokeland, North Cove and Grayland, in the northwest corner of the County. The Grays Harbor County PUD provides electrical service to these areas. The District has planned for years to re-acquire these areas and during 2014, continued progress was made toward this goal with work scheduled for completion in 2016. The District is a wholesale provider of Fiber Optic Services with 93 customers using excess fiber through retail service providers.

Table 18 – Historic Damage, Public Utility District #2

Date	Type	Damage
11/2009	Severe Storms	$262,222
12/2010	Severe Storms	$12,500
01/2012	Severe Storms	$10,000
01/2015	Flooding	$60,000
	Total =	**$344,722**

Point of Contact:
Doug Miller, General Manager
405 Duryea Street
Raymond, WA 98577
(360) 942-2411

3.3 – Land Use & Development Trends

Pacific County saw rapid growth between 1900 and 1910 and steadily grew from there until around 2000. Since 2000 the county as a whole has started to see a decline in population of 12.83%. Long Beach has grown at a total rate of 8.50% since 2000, but has decreased by 3.30% since the development of the last plan in 2010. It is the exception within the planning area.

The Pacific County Planning Department and the Washington Office of Financial Management have verified that growth is sluggish, but due to a slight upswing in the housing market there are signs of speculative growth in future markets.

The slowly declining population of Pacific County has the benefit of not increasing or creating new hazard vulnerabilities and risks. Presuming these development trends continue, or growth stabilizes, Pacific County and its participating jurisdictions will be able to focus on tackling current vulnerabilities and risks by evaluating the value of increasing and enforcing zoning, building codes, NFIP and other flood standards. A hazard specific analysis, as it pertains to land use and development trends, is covered under each hazard in Section 4 – Hazard Risk Assessment.

For hazards that affect the entire planning area, increased population growth increases a jurisdiction's overall vulnerability, while decreased population growth decreases it. It is difficult to quantify the exact change in vulnerability in either direction, but can be depicted as generally directly proportional to the population change itself. For more information on hazards effects the entire planning area, see Section 4 – Hazard Risk Assessment.

For hazards which have easily measured extents, changes in vulnerability are more difficult to calculate. Over the past 5 years, dramatic improvements in available geographic data and improvements in risk assessment methodology make this plan update's risk assessment far superior to the previous plan. However, the downside of utilizing improved methodologies and data is that they are incapable of being directly compared to the previous plan's methods and data. For instance, the previous plan does not geographically and accurately depict the locations of the Wildland Urban Interface (WUI) or the WUI intermix. Without knowing where they existed in 2010, the current improved methodology does not allow for a comparison of vulnerability.

A hazard specific analysis, as it pertains to land use and development trends, is covered under each hazard in Section 4 – Hazard Risk Assessment.

Section 4 – Hazard Risk Assessment

Planning Process

Local Procedures & Resources

Planning Area

Hazard Risk Assessment

- Identify Hazards
- Profiling Hazards
- Hazards
- Land Use & Development Trends
- Hazard Risk Summary
- Excluded Hazards

Mitigation Strategy

The goal of mitigation is to reduce the future impacts of hazards, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist recovery. To be implemented correctly and efficiently, mitigation decision-making needs to be based on an accurate risk assessment.

This section builds the foundation for an ongoing review and analysis of the hazards and vulnerabilities facing the planning area. Data used in Pacific County's previous HMP has been updated and the analysis has been expanded to include more improved methodologies. Additionally, local knowledge and expertise was incorporated into the risk assessment.

The profiling of Pacific County hazards and risks will provide the foundation for a long-term, sustainable planning process and will serve the county and participating agencies at this time considering the county's disaster experience, currently available financial resources and potential sources of funding in the future. Community involvement played, and will continue to play, an important part in the hazard vulnerability process, especially in pursuing the analysis of structural vulnerabilities, land use and economic development. Another factor in this analysis was the consensus drawn from the participants during the planning process.

A history of declared disasters helps capture an overview of the hazards facing Pacific County and its participating jurisdictions. Since 1953, Pacific County and its participating jurisdictions have suffered from 15 declared disasters. A list of the declared disasters occurring in Pacific County and its participating jurisdictions since 1954 is presented in the table below. Smaller disasters are more frequent and are not reflected in the table.

Table 19 – Disaster Declarations

Designation	Date	Incident Type
DR-1825	12/12/2008	Winter Storm
DR-1817	1/6/2009	Flooding, Landslides, Mudslides, Winter Storms
DR-1734	12/1/2007	Flooding, Landslides, Mudslides, Severe Storms
DR-1682	12/14/2006	Landslides, Mudslides, Winter Storms
DR-1641	1/27/2006	Flooding, Landslides, Mudslides, Severe Storms, Tidal Surge
EM-3227	8/29/2005	Hurricane Katrina Evacuation**
DR-1361	2/28/2001	Earthquake
DR-1172	3/18/1997	Flooding, Landslides, Mudslides, Severe Storms
DR-1159	12/26/1996	Flooding, Winter Storms
DR-1079	11/7/1995	High Winds, Flooding, Severe Storms
DR-883	11/9/1990	Flooding, Severe Storms
DR-623	5/21/1980	Volcanic Eruption**
DR-545	12/10/1977	Flooding, Mudslides, Severe Storms
DR-322	2/1/1972	Flooding, Severe Storms
DR-185	12/29/1964	Flooding

**The data are from FEMA.*

***These disasters did not impact or damage the life or property within the county, but are declared due to overwhelming response and recovery operations.*

4.1 – Identifying Hazards

The first step in developing a hazard assessment is identifying the hazards with reasonable potential to strike Pacific County or its participating jurisdictions. Identification allows appropriate and well planned action to mitigate the extent and impact of a hazard event as well as facilitating emergency response and recovery operations. Not all disaster contingencies can be planned for, however, by using an all-hazards approach to planning. The mitigation process yields increased preparedness for unforeseen hazard events.

The table below lists the hazards profiled in the State of Washington Hazard Mitigation Plan and Pacific County's previously approved HMP. Based on the research described above, seven of these hazards pose a risk to at least one of the participating jurisdictions. These are: coastal erosion, earthquakes, floods, landslides, severe storms, and tsunamis.

Details for each hazard and their potential impact on Pacific County are located in Section 4.3. The following tables compare the identified and profiled hazards as they relate to their previous plan and to the state's plan. Any hazards which affect the State of Washington or were profiled in the previous plan, but do not affect any of Pacific County's jurisdictions are listed as 'excluded.' An analysis of why a hazard has been excluded can be found in Section 4.6 – Excluded Hazards.

Table 20 – State of Washington & Prior Plan Identified Hazards

Hazards in State or Previous HMP	Previous Inclusions	Status	Justification
Avalanches	State	Excluded	Planning area not at risk
Coastal Erosion	None	Included	Growing risk
Dam Failure	Local & State	Excluded	No at risk dams
Droughts	State	Excluded	Planning area not at risk
Earthquakes	Local & State	Included	USGS risk assessments
Floods	Local & State	Included	Prior hazard history
Hazardous Materials	Local	Included	Prior hazard history
Landslides	Local & State	Included	State risk assessments
Severe Storms	Local & State	Included	Prior hazard history
Tsunami	Local & State	Included	State risk assessments
Volcano	State	Excluded	Planning area not at risk
Wildfire	Local & State	Excluded	Planning area not at risk
Winter Storms	Local	Included	Prior hazard History

4.2 – Methodology

4.3.1 – Description **-** Describes the hazards that can affect the planning area.

4.3.2 – Location & Extent **-** Contains information on location; the geographic areas in the planning area that are affected by the hazard, and extent; the strength or magnitude of the hazard, for each hazard.

4.3.3 – Previous Occurrences **-** Contains a history of previous hazard events for each of the identified hazards.

Methodology: Most of the historical hazard data used in the risk assessment originates from NOAA. In most instances the hazard affects a large geographic area and thus the hazard data is reported at the county level. *This is the best available data for these hazards*. The calculations for Previous Occurrences and the Probability of Future Events is based on county level data.

4.3.3A – Probability of Future Events **-** Contains the likelihood of the hazard occurring. If quantitative calculations are performed, a discrete numerical probability is given that corresponds to the table below. In the event the nature of the hazard (dam failure for instance) does not allow such a calculation or there is not enough information to make a calculation, a qualitative probability will be given. This assessment is based from local knowledge and expertise.

Table 21 – Probability Categories

Category	Range (Per Year)
Rare	Less than 1%
Occasional	1% - 25%
Likely	25% - 50%
Highly Likely	50% - 100%

4.3.4 – Vulnerability & Impact **-** Describes the potential impacts of the hazard for each participating jurisdiction and provides an overall summary of each jurisdiction's vulnerability to the hazard through structures, systems, populations, and community assets that are susceptible to damage and loss from the hazard.

4.3.4A – Infrastructure & Critical Facilities **-** When appropriate, this section details the infrastructure and facilities pertinent to the hazard.

4.3.4B – Land Use & Development Trends **-** Provides a general description of land use and development trends within the community.

4.3.4C – Unique, or Varied Risk **-** Assesses each jurisdiction's risk where it varies from the risks facing the entire planning area.

4.3.4D – Repetitive Loss Structures **-** Describes the types of facilities and estimates the number of repetitive loss properties exposed to the hazard.

County and Municipal Governments
Pacific County and the participating municipal governments are assessed on a geographic basis. Their vulnerabilities are assessed according to their structures, populations, and systems.

School Districts
The participating school districts are assessed by campus on a geographic basis. Their vulnerabilities are assessed according to their structures and populations.

Water Companies and Water Districts
The participating water companies and water districts are assessed on a geographic basis. Their structural vulnerability is assessed according to which local government their property is located within. As an integral system to the planning area, their vulnerability is also assessed as a system.

Ocean Beach Hospital & Willapa Harbor Hospital
The Ocean Beach Hospital is assessed on a geographic basis. It is considered a critical facility and its vulnerability is assessed under infrastructure and critical facilities.

Fire Districts
The participating fire districts are assessed on a geographic basis. Their structural vulnerability is assessed as infrastructure and critical facilities. As an integral system to the planning area, their vulnerability is also assessed as a system.

Ports
The participating ports are assessed on a geographic basis. Their structural vulnerability is assessed according to which local government their property is located within. As an integral system to the planning area, their vulnerability is also assessed as a system.

Public Utility District #2
Public Utility District #2 is assessed on a geographic basis. Their structural vulnerability is assessed according to which local government their property is located within. As an integral system to the planning area, their vulnerability is also assessed as a system.

4.3CE – Coastal Erosion

4.3.1 – Description

Coastal Erosion is a chronic problem along almost every shoreline in the United States. On average, American shorelines lose anywhere from 10 to 30 feet of coast per year. It is estimated that by 2100 over 3,000 square miles of land will be lost. The economic and negative environmental externalities are incalculable.

Coastal erosion is defined as the removal of coastal sediment and rock by a number of complex environmental factors. Typically this occurs over a period of decades to centuries and is as much a function of natural occurrence as it is human interference.

Natural Factors

Chemical Corrosion: A high pH level ocean or sea will slowly wear away at costal rocks and sediment further compounding other natural factors.

High Speed Winds: High speed winds will cause abrasive forces against sediment and rock slowly weathering them away.

Major Natural Disasters: Hurricanes, coastal floods, tsunamis, and severe inland flooding which drains out to sea can remove significant amounts of beach and coastal sediment in a short period of time.

Sediment Accumulation: River deltas transport sediment out to sea over time increasing or recharging nearby beaches and coasts' supply of sediment. This rate of recharge is known as progradation.

Shoreline Vegetation: Certain types of vegetation reduce the ability of water and air to erode rock and sediment.

Wave & Tidal Currents: Weathering caused by water will slowly reduce a coastline's sand and sediment by force of abrasion.

Human Factors

Dams: The construction of dams upstream of river deltas significantly hinders the river's natural ability to transport sand and sediment to nearby beaches and coasts thereby reducing its progradation rate.

Jetties: The construction of jetties for tourism, maritime navigation, or local erosion control alters the tidal and current patterns of an area, increasing the vulnerability of erosion farther down the shoreline.

Motorized Maritime Vessels: The use of motorized maritime vessels produce a wake creating increased wave activity.

Reduction in Shoreline Vegetation: Development of shorelines can reduce the amount and density of its vegetation, increasing its vulnerability to water and air.

4.3.2 – Location & Extent

For hundreds of years, the Columbia River's delta has fed sand and sediment to coasts of Pacific County negating any significant erosion. Since settlement, multiple jetties have been built along the Columbia River for the purposes of maintaining a navigable waterway. These jetties significantly disrupt the tidal and wave systems around the river's delta and increase the erosive capacity on the planning area. Additionally, the Columbia River has a significant number of dams restricting sediment flow to the river's delta and hindering the progradation rate of Pacific County's coast.

Pacific County lies on the north bank of the Columbia River and to the east of the Pacific Ocean. The county's western coastline is comprised of sediment and sandy beaches, notably the Long Beach Peninsula and the North Cove area (Washaway Beach), across the Willapa Bay from the Long Beach Peninsula, and around Bay Center within Willapa Bay. The North Cove area (Washaway Beach) and Bay Center experience constant yearly erosion of its coast. The Long Beach Peninsula experiences long term progradation, but varies highly from year to year with some years seeing shoreline growth and others experiencing a significant decrease in its shoreline.

Since 1926, the average rate of shoreline change on the Long Beach Peninsula has been measured at positive 2.7 meters per year with a range of negative 18.7 meters per year to positive 23.2 meters per year. The North Cove area (Washaway Beach) has been eroding at an average rate of negative 1.9 meters per year with a highly variable rate of between negative 28.6 to a positive 6.6 meters per year. The Bay Center erosion area of Willapa Bay is slowly eroding, but is not measured by the USGS or the State of Washington

Please see the maps on the following pages for a geographic depiction of the identified erosion areas.

Data Deficiency: *The Pacific County Department of Public Works has been collecting shoreline change GIS data since 1999, but no local or state agency has been collecting this type of data for the Long Beach Peninsula or the Bay Center erosion areas.*

4.3.3 – Previous Occurrences

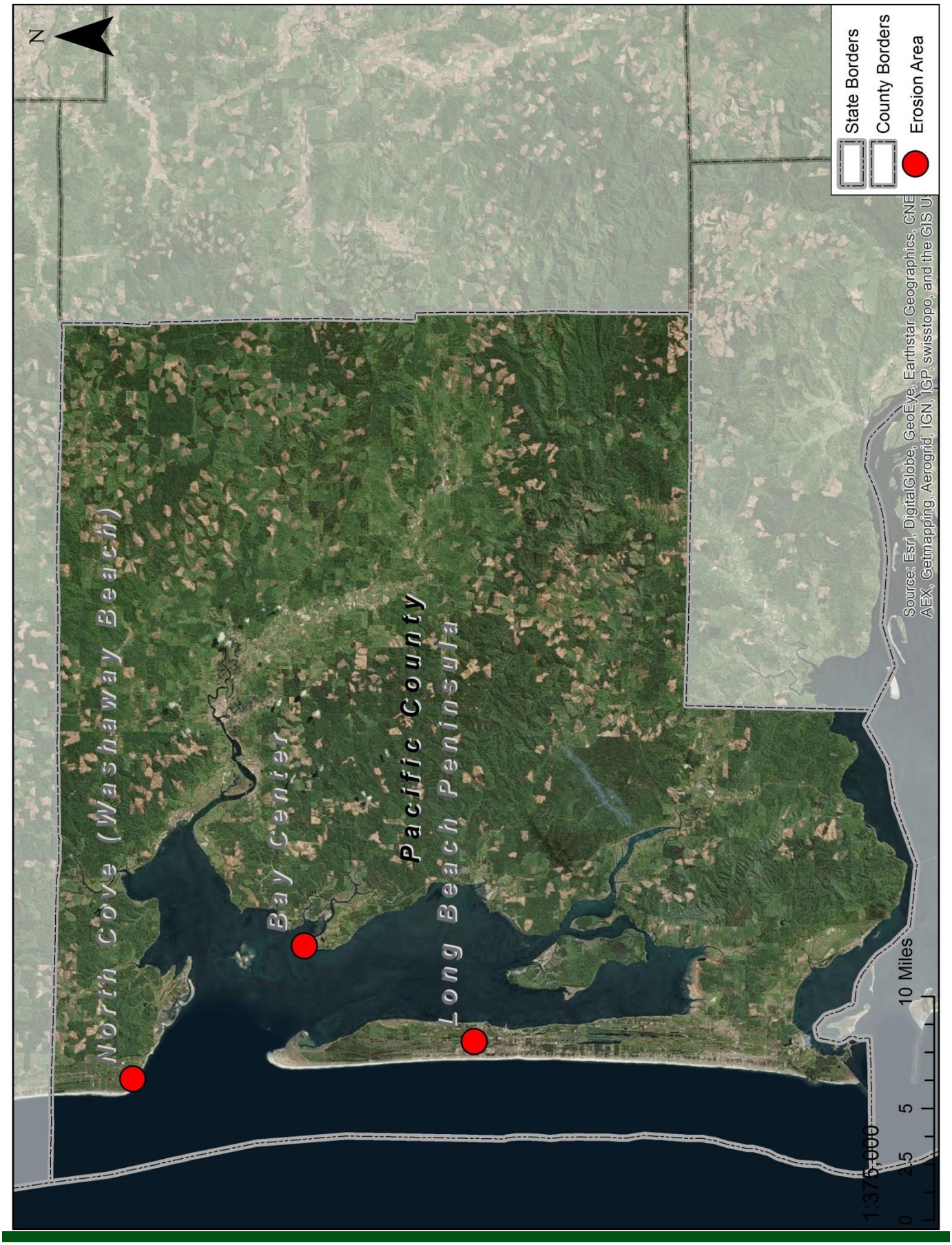
The rate of coastal erosion has, overall increased, significantly as more jetties have been built in the Columbia River and more dams were constructed upstream.

Shoreline measurement began in 1926 in Pacific County. The Long Beach Peninsula's shoreline has been increasing over the long-term with periods of erosion scattered throughout the years while the North Cover Area has been decreasing over long-term. The Bay Center area's shoreline has been steadily decreasing, but at a very slow rate.

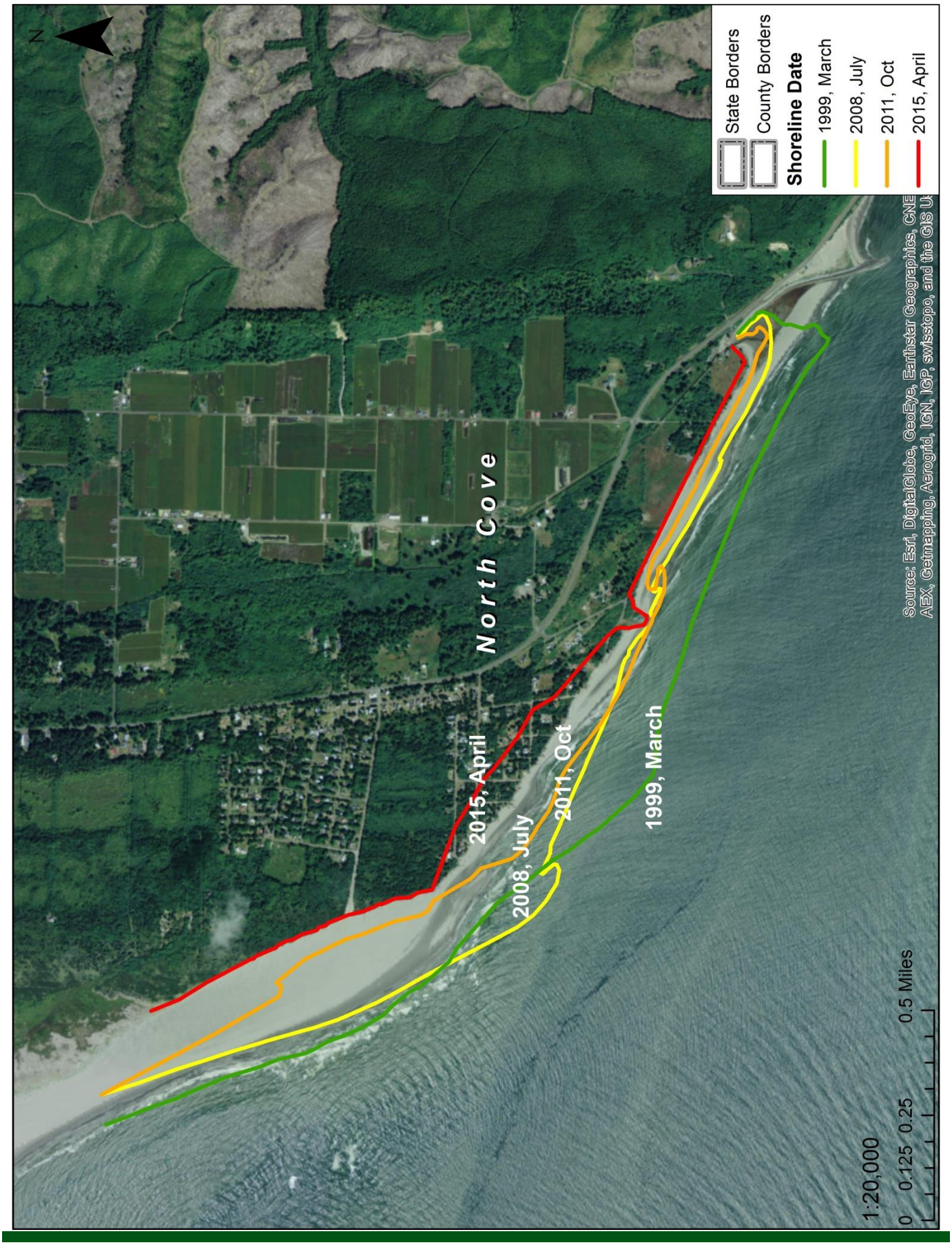
4.3.3A – Probability of Future Events

Pacific County and its coastal areas will continue to be affected by erosion and is labeled as "highly likely."

Map 20 – Identified Coastal Erosion Areas



Map 21 – Coastal Erosion, North Cove Area (Washaway Beach)



4.3.4 – Assessing Vulnerability & Impacts

Coastal Erosion Impacts

The USGS has measured the long-term erosion rate of the Long Beach Peninsula at a positive 2.7 meters per year. Although its beach area is steadily growing, it does experience erosion during certain years. The Bay Center area is eroding, but the exact degradation numbers are unknown. The North Cove area (Washaway Beach) has experienced the worst coastal erosion in the area at a rate of negative 1.9 meters per year. Shoreline loss has been recorded up to 30 meters per year in the North Cove area (Washaway Beach).

Vulnerability of Facilities

Pacific County and its jurisdiction's structural vulnerability to coastal erosion is based strictly on location. The three identified areas are located near the North Cove area (encompassing the unincorporated towns of North Cove, Dexter, and Tokeland that exist within the county), and the Long Beach Peninsula (encompassing the City of Long Beach and the unincorporated towns of Ocean Park and Seaview that exist within the county), and the unincorporated Town of Bay Center.

Houses and other structures within these identified areas are at risk for being completely lost to the Pacific Ocean. When erosion has eroded the shoreline to the structure, it will be swept away and considered a total loss.

Historically, 161 structures have been lost to coastal erosion in the North Cove Area (Washaway Beach), 0 structures have been lost on the Long Beach Peninsula. Zero structures have been lost around Bay Center, but a few have been relocated under state programs to prevent them from being lost to coastal erosion.

Vulnerability of Population

Due to the slow working nature of erosion, it is not reasonable that the planning area's populations would be vulnerable to death or injury from coastal erosion.

Historically, there are no recorded incidents of death or injury from coastal erosion in Pacific County or any of its participating jurisdictions.

Vulnerability of Systems

Pacific County's shorelines are some of its most precious resources drawing tourists and permanent residents alike. If its shoreline continues to erode at its current rate, Pacific County could be left with a significantly decreased population and decreased tourism. This lapse in commercial income and public taxes will have a significant effect on its economy and ability to maintain a hazard resilient community.

Fire Districts

The participating fire districts are currently not vulnerable to coastal erosion with the exception of one of FD #5's stations near the North Cove area. The station is years away from being affected and thus its

capabilities should not be affected until then, but awareness of this risk is necessary as eventually it will need to be relocated.

Ports
The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor are currently not at risk to coastal erosion.

Public Utility District
Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to delivery electricity to the planning area. PUD #2 is not at a significant or measured risk to coastal erosion. Indeed, small portions of its grid would be washed away along with structures at risk, but this is not representative of the total grid. It does not have primary electrical transportation lines or stations within the identified at risk zones.

Transportation & Pacific Transit
At present time, major roadways and Pacific Transit's bus routes are not at risk from coastal erosion. If the problem remains unabated, it is possible that major roadway infrastructure along the North Cove area (Washaway Beach) will be labeled at risk, but this eventually will not occur for decades.

Water Companies and Districts
The participating water companies and districts are not significantly vulnerable to coastal erosion. Although part of their infrastructure may erode along with a shoreline containing development, their facilities and the vast majority of their infrastructure are outside the identified coastal erosion zones.

4.3.4A – Infrastructure & Critical Facilities
Fire District #5 has a station near the North Cove area that will eventually be required to relocate. It is not in immediate danger, but awareness must be maintained so it can eventually be moved. Depicted in Map2 in Section 3, State Route 105 runs along the coast and just north of North Cove. If State Route 105 becomes unusable or fully transected by coastal erosion, the only means of providing transit dependent services to that portion of the county will be via 65-75 mile detour into the adjacent county. Additionally, if erosion around Bay Center increases, it will likely threaten a number of municipal water, sewage, and electrical utility lines in the area, as well as, any number of municipal roads.

4.3.4B – Land Use & Development Trends
Pacific County and it participating jurisdictions have declining growth as detailed in Section 3.1.1 – Land Use & Development Trends. In the context of coastal erosion, a declining population will not increase a jurisdiction's hazard vulnerability in of itself. The City of Long Beach is growing, but not at a rate high enough to claim that its development is increasing its vulnerability and risk.

4.3.4C – Unique & Varied Risk
The planning area only has the three identified areas vulnerable and at risk to coastal erosion, the Long Beach Peninsula, the North Cove area, and around Bay Center. These areas are within the county at large and the City of Long Beach. Currently, no other areas are experiencing heightened or worsening erosion than would be expected.

4.3EQ – Earthquakes

4.3.1 – Description

An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves. In the most general sense, the word earthquake is used to describe any event that generates seismic waves. Earthquakes are typically caused by the rupturing of geological faults. Occasionally, they are also caused by other events such as volcanic activity, landslides, mine blasts, tsunamis, and nuclear tests. Tsunamis are covered later in this risk assessment under Section 4.3TS. An earthquake's point of initial rupture is called its focus or hypocenter. The epicenter is the point at ground level directly above the hypocenter.

At the Earth's surface, earthquakes manifest themselves by shaking and sometimes displacement of the ground. When the epicenter of a large earthquake is located offshore, the seabed may be displaced sufficiently to cause a tsunami. Earthquakes can also trigger landslides, and occasionally volcanic activity. The shallower an earthquake, the more damage to structures it causes, all else being equal.

Oceanic earthquakes have the ability to cause damage to property and threaten life in much the same as an earthquake with an epicenter below a continent. As previously mentioned, an oceanic earthquake has the potential to create a tsunami, compounding the negative effects and emergency operations after an event.

An earthquake's effect can be compounded by the soil type underlying a community's buildings and infrastructure. If the soil is not composed of bedrock and consists of clays, silts, and other types of sand, the pressure generated by an earthquake can force brittle soil and water up towards the surface. These upward forced materials will then destabilize buildings and infrastructure, causing damage anywhere from cracks in roadways to the full displacement and destruction of a building. Smaller upward forced materials can destabilize slopes and building foundations further compounding the potential damage to a community.

4.3.2 – Location & Extent

The State of Washington and Pacific County lie east of the Cascadia subduction zone where the North American Plate collides with a number of smaller plates, the Juan De Fuca plate being the largest.

Earthquakes from the Cascadia subduction zone can strike suddenly and without warning, occur at any time of the year, and at any time of the day. There is not definitive way of predicting an earthquake. The duration of shaking can last anywhere from a second to a period of minutes.

There are numerous characteristics measured when observing earthquake activity, however: its force, depth, peak ground acceleration, and the distance to the epicenter are the most influential factors in determining damage. Two scales are used when referring to earthquake activity; estimating the total force of the earthquake, the Richter Scale, and the observed damage from an earthquake, the Modified Mercalli Intensity Scale. Please see the figures on the following pages for both scales and their estimated matching equivalent index.

Earthquakes of magnitude 5.0 or greater are considered potentially threatening to Pacific County and its jurisdictions, as this is the point at which structures can become unusable due to structural and foundation damage. Any earthquake felt at this magnitude or greater would likely be cause for cessation of operations until sight inspections can take place.

The entire planning area is at risk from the Cascadia subduction zone. Map 22 depicts the USGS's potential peak ground acceleration values in the event of a catastrophic earthquake. The northern portion of the planning area is in a USGS designated 20-25% peak ground acceleration value while most of the planning area is designated as likely to experience 15-20% peak ground acceleration. These values translate, via the tables on the following page, to a Richter Scale around 5.5 and a Mercalli Scale value of VII: General Alarm, Walls and Plaster Crack.

THE CASCADIA SUBDUCTION ZONE IN CROSS-SECTION:

New crust forms at spreading ridges between the Pacific Plate and the Juan de Fuca, Gorda, and Explorer plates. As these three plates are pushed east-ward, they are forced to subduct beneath the North American Plate. Strain builds up where they have become stuck (locked) and will be released one day in a great earthquake.

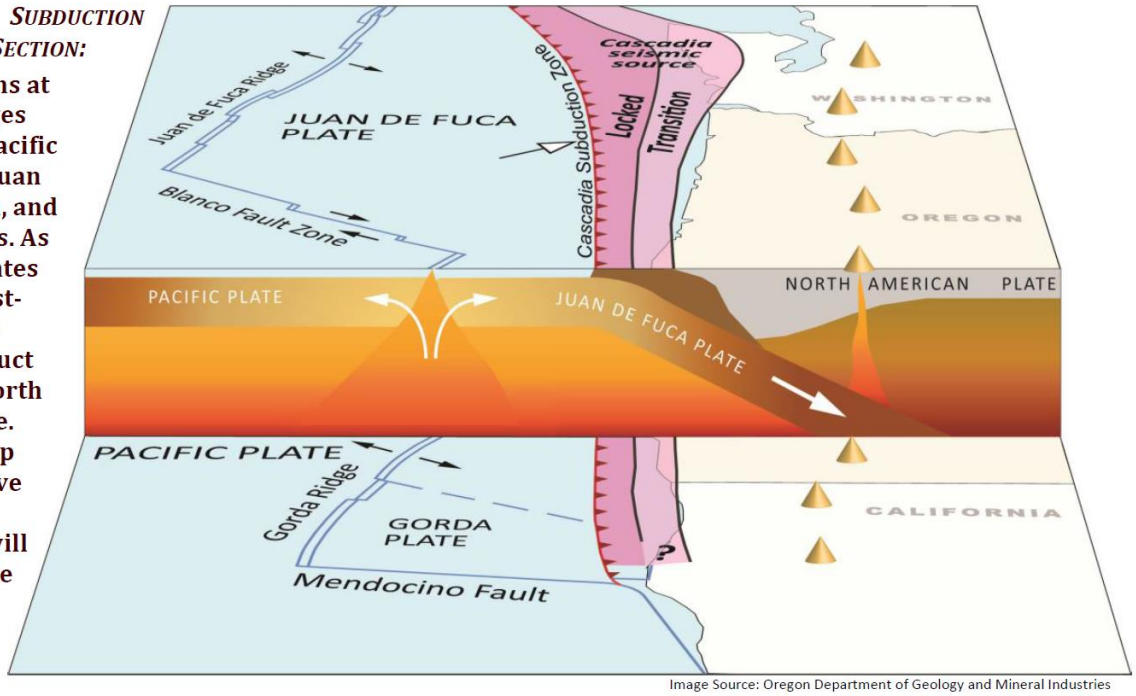


Image Source: Oregon Department of Geology and Mineral Industries

Table 22 – Modified Mercalli Scale Vs. Richter Scale

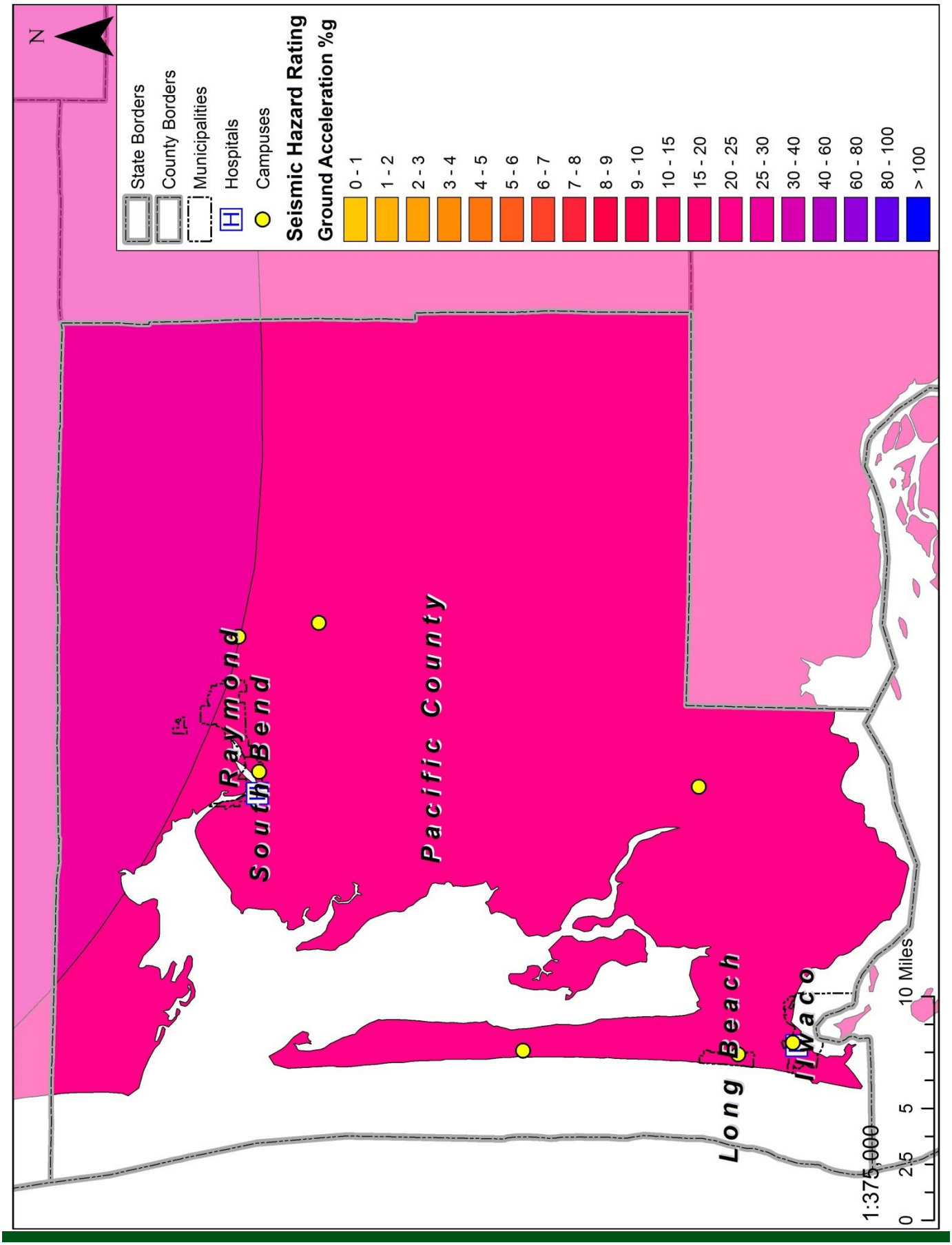
Category	Effects	Richter Scale (approximate)
I. Instrumental	Not felt	1-2
II. Just perceptible	Felt by only a few people, especially on upper floors of tall buildings	3
III. Slight	Felt by people lying down, seated on a hard surface, or in the upper stories of tall buildings	3.5
IV. Perceptible	Felt indoors by many, by few outside; dishes and windows rattle	4
V. Rather strong	Generally felt by everyone; sleeping people may be awakened	4.5
VI. Strong	Trees sway, chandeliers swing, bells ring, some damage from falling objects	5
VII. Very strong	General alarm; walls and plaster crack	5.5
VIII. Destructive	Felt in moving vehicles; chimneys collapse; poorly constructed buildings seriously damaged	6
IX. Ruinous	Some houses collapse; pipes break	6.5
X. Disastrous	Obvious ground cracks; railroad tracks bent; some landslides on steep hillsides	7
XI. Very disastrous	Few buildings survive; bridges damaged or destroyed; all services interrupted (electrical, water, sewage, railroad); severe landslides	7.5
XII. Catastrophic	Total destruction; objects thrown into the air; river courses and topography altered	8

Table 23 – % Peak Ground Acceleration Vs. Mercalli & Richter Scales

Mercalli Scale Intensity	Richter Scale (Approximate)	Minimum %g	Maximum %g
I	1 - 2	0.00%	0.17%
II - III	3 - 3.5	0.17%	1.40%
IV	4	1.40%	3.90%
V	4.5	3.90%	9.20%
VI	5	9.20%	18.00%
VII	5.5	18.00%	34.00%
VIII	6	34.00%	65.00%
IX	6.5	65.00%	124.00%
X +	7 +	124.00%	-

**The table is from the USGS.*

Map 22 – Seismic Hazard Ratings, Pacific County



4.3.3 – Previous Occurrences

Pacific County and its participating jurisdictions have experienced two minor earthquakes with epicenters inside their borders. These were a magnitude 3.1 and a magnitude 3.3 earthquake in September of 1981 and March of 2012 respectively. Map 23 on the following page depicts earthquakes recorded and documented by the USGS within a 200 mile buffer of Pacific County.

These earthquakes were not cause for alarm. They were felt, but did not incur any damage or loss of life. Additionally, there is no record in the past century of loss of life or significant property damage from an earthquake in Pacific County. More threatening earthquakes are likely to have epicenters far away from Pacific County, but be of such a high magnitude that they affect the planning area.

Nisqually Earthquake – 28 February 2001

Commonly referred to as the "Ash Wednesday Quake," the Nisqually Earthquake occurred on February 28, 2001. It measured 6.8 on the Richter Scale with its epicenter under Anderson Island just northeast of Olympia, Washington. This is a distance of roughly 65 miles from the center of Pacific County. Its effects were felt halfway into central Oregon and as far north as Vancouver and were reported to last a total of 45 seconds.

Although around 400 people were injured in Olympia and the total property damage and economic loss has been reported at $2,000,000, Pacific County was lucky enough to feel minor shaking and not sustain any injury or damage.

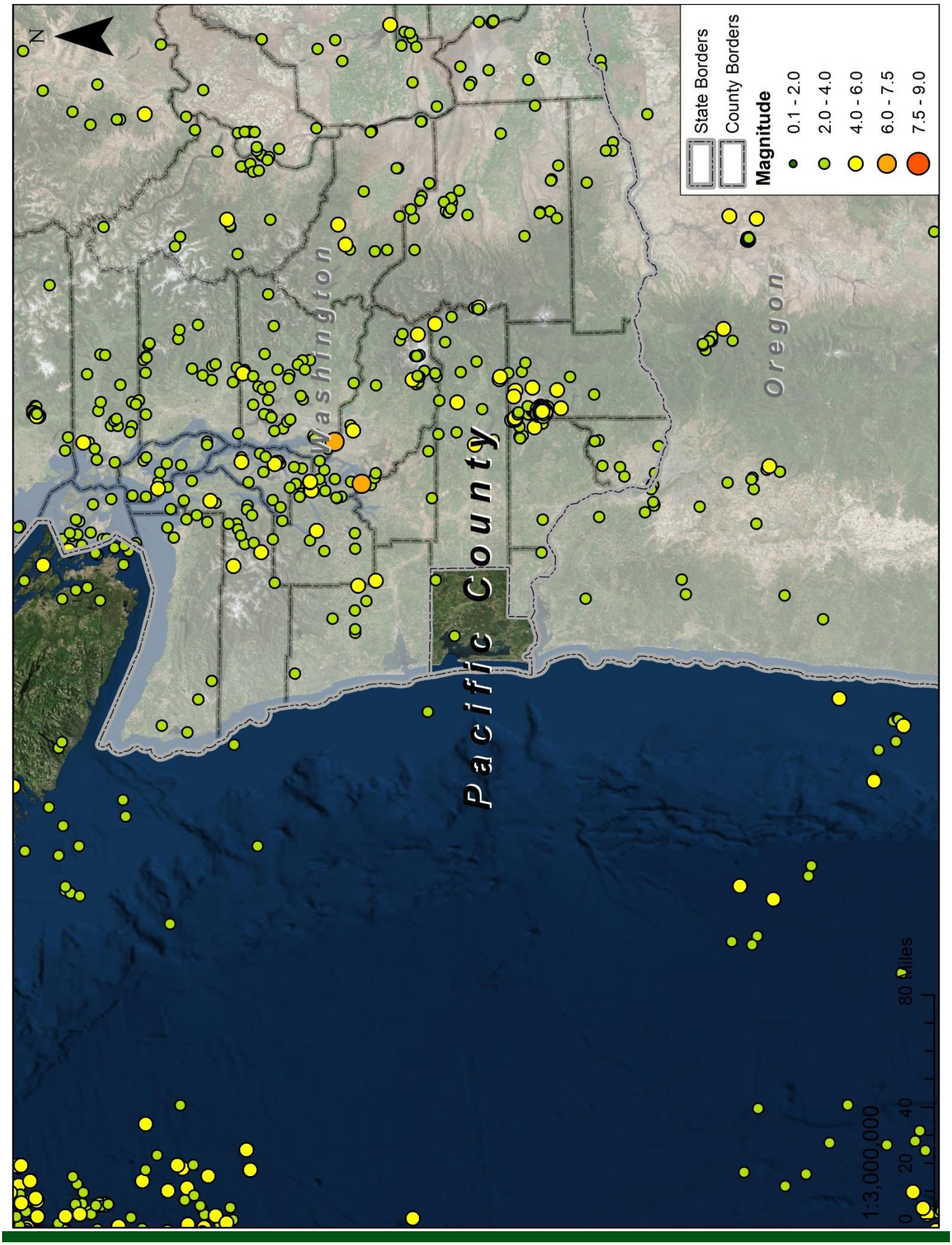
Map 24 depicts the USGS's official "shakemap" of the incident. From this map, one can see the recorded peak ground acceleration experienced by Pacific County and its participating jurisdictions was between 9.2 and 18, under the USGS's predicted potential peak ground acceleration 15-25.

There have been other large earthquakes in the State of Washington, such as the Seattle-Tacoma 6.5 magnitude earthquake in 1965, and an Olympia 7.1 magnitude earthquake originating around the same location as the Nisqually earthquake. However, the results and impacts where similar to those of the Nisqually earthquake.

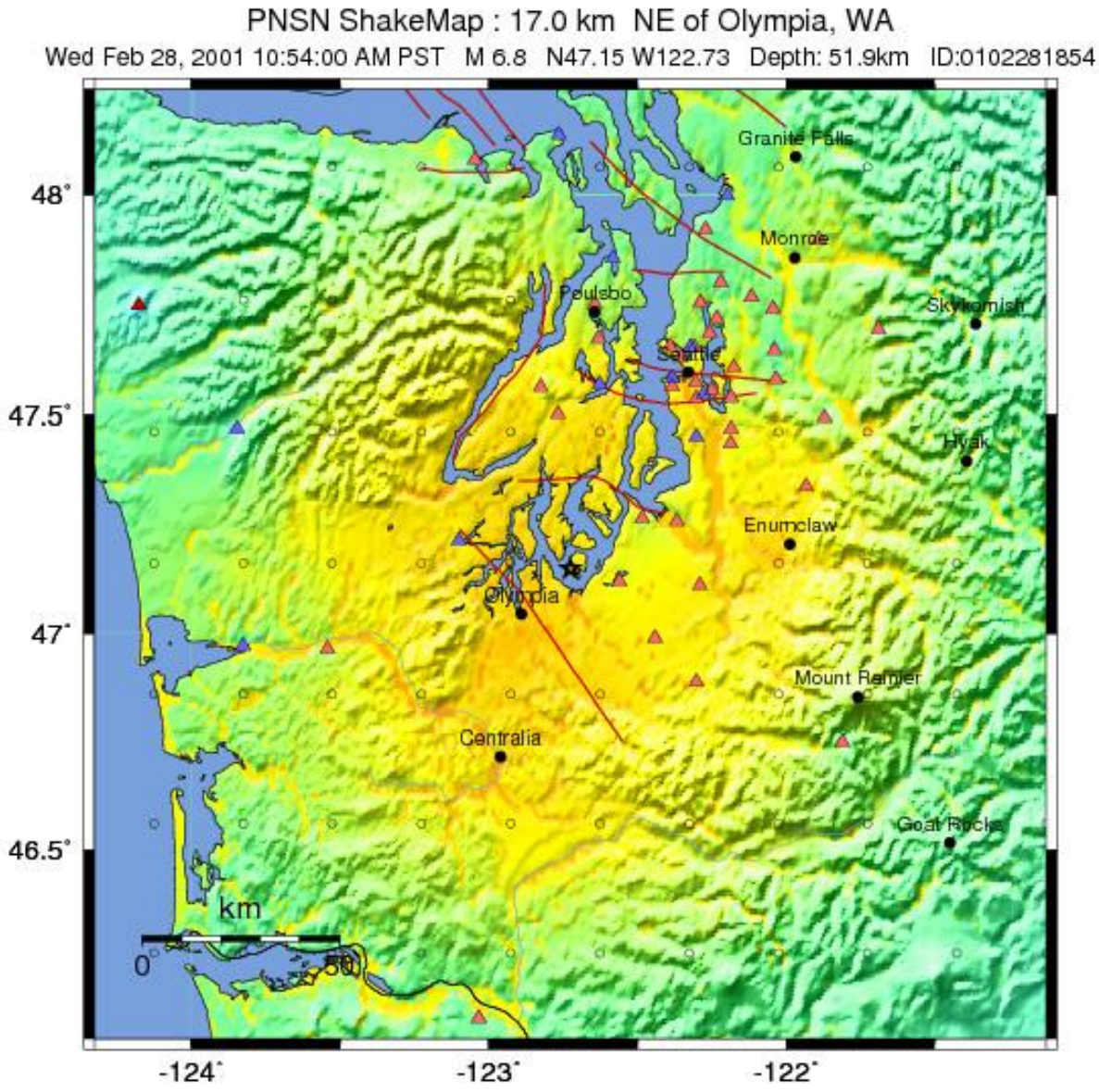
4.3.3A – Probability of Future Events

Although minor earthquake activity occurs on a daily basis in the State of Washington, damaging earthquakes are infrequent. The estimated probability of occurrence for an earthquake similar to the magnitude 6.5 Seattle-Tacoma event that occurred in 1965 is approximately once every 35 years. The probability of occurrence of an earthquake similar to the magnitude 7.1 Olympia earthquake that occurred in 1949 is once every 110 years. Since 1970 there have been four earthquakes in Western Washington of greater than 4.0 Magnitude.
The approximate occurrence rate for a magnitude 9 earthquake in the Cascadia Subduction Zone is once every 350 to 500 years. Considering the recurrence interval and history of earthquakes felt in Pacific County, the probability of occurrence of a damaging earthquake is "rare."

Map 23 – Historical Earthquakes, 200 Mile Radius



Map 24 – USGS Shakemap, Nesqually Earthquake



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+

4.3.4 – Assessing Vulnerability & Impacts

Earthquake Impacts

An earthquake with an epicenter near Seattle-Tacoma or Olympia will likely impact Pacific County and its participating jurisdictions as it has in the past, very minimally. However, a catastrophic quake from the Cascadia Subduction Zone could have extremely adverse impacts.

A high magnitude earthquake in the Cascadia Subduction Zone would likely create a tsunami. This is covered in 4.3TS – Tsunami. The Cascadia Region Earthquake Workgroup published a comprehensive assessment labeled: Cascadia Subduction Zone Earthquakes: A Magnitude 9.0 Earthquake Scenario, updated in 2013. The assessment asserts the Cascadia Subduction Zone will rupture in a series of earthquakes between 8.0 and 8.5 on the Richter Scale over a period of years. Further, the study asserts the series of earthquakes will be similar in character to that of the 2009, 9.0 magnitude earthquake that occurred off the eastern coast of Japan. Fortunately, it claims the devastation to the Pacific Northwest will not be as great as it was in Japan. Their economic impact is estimated at roughly $49,000,000 in the State of Washington, out of a total $70,000,000 compared to $309,000,000 from Japan.

Vulnerability of Facilities

Pacific County and its jurisdictions' structural vulnerability to earthquakes vary based on the construction quality, construction material, soil and foundation, and earthquake resilience of each structure. The State of Washington has been incredibly pro-active in updating, increasing, and enforcing its seismic resilient building codes. However, a high magnitude earthquake will still damage or destroy structures.

The planning area's most vulnerable structures are those which are older, have not been subject to new and improved building codes, are built over unstable soil, and those susceptible to secondary hazards such as landslides or tsunamis. The vast majority of the planning area's inhabited areas are over lands that are susceptible to liquefaction. Map 25 at the end of this section depicts the soil locations where the planning area is most susceptible to liquefaction.

Historically, the planning area has sustained $60,141 in property damage from the Nisqually earthquake, but has no other recorded damage from earthquakes.

Data Deficiency

Structural resistance to earthquakes is a significant factor in determining earthquake vulnerability. It is likely there are structural differences in Pacific County and its jurisdictions' buildings which change their vulnerability ratings. A catalog of seismic resiliency for old and pre-building code established buildings does not exist. Specific information on earthquake structural resistance is unavailable for Pacific County and its jurisdictions' structures.

Vulnerability of Population

Pacific County and the vulnerability of its jurisdictions' population to earthquakes is largely dependent on its vulnerability to facilities. An earthquake will shake objects off a wall or shake off parts of a structure which has the potential to hurt the population. Additionally, there is the risk of a facility partially or fully collapsing which would injure or kill the inhabitants. The population total of Pacific County and its jurisdictions is 20,561. Any number of these residents are vulnerable in relation to the structures in which they live, work, and visit.

Historically, there are no recorded incidents of death or injury from earthquakes in Pacific County nor any of its participating jurisdictions.

Vulnerability of Systems

If an earthquake damages any part of Pacific County or its jurisdictions, it is highly likely the entire planning area will be similarly damaged due to the geographic scale of earthquakes. A high magnitude event would likely cripple the planning area, destroying buildings and infrastructure, starting fires, incurring widespread loss of power and basic services, and hampering local emergency management and response services from coordinating or providing the necessary assistance.

If a high magnitude earthquake originates from the Cascadia Subduction Zone it is likely the entire region will be dramatically affected and emergency services from local, regional, state, and the federal government will be spread thin among the region. A high magnitude earthquake will not only yield these direct and immediate effects, but will likely hurt Pacific County and its jurisdictions' economy and scar its population for years.

Fire Districts

The fire districts' services are an integral part to the planning areas emergency operations before, during, and after an event. The participating fire districts are vulnerable to earthquakes. An earthquake that damages the fire districts' capabilities will have dramatic negative effects on the planning area's ability to respond to and recover from the earthquake.

Ports

The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor are significantly vulnerable to earthquakes. Although the resiliency of its structures are not known as previously declared in a data deficiency, any destruction of critical equipment, docks, or mooring facilities could shut down the port for weeks to months. Additionally, depending on what was damaged or destroyed, debris could fall into the water making the facility unnavigable. The communities of Pacific County rely on these ports for commercial and economic stability and prosperity making them of extreme value in terms of mitigation and recovery.

Public Utility District #2

Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to deliver electricity to the planning area. PUD #2's infrastructure is at significant risk to strong earthquakes. Power lines and delivery substations above ground can be damaged in the same way as any above ground structure. Power lines that are buried can become dislodged, disjoined, or broken due to shifts in the earth and soil. This poses a serious problem for response and recovery operations following a sizable earthquake.

Transportation & Pacific Transit

The roadways and bus routes of Pacific County are highly vulnerable to earthquakes. The complexity and multitude of valleys in which its roadways are constructed make it especially vulnerable to closures from landslides caused by earthquakes. This is covered in more detail in Section 4.3LS - Landslides. Additionally, movement from the earth can displace roadways, making any quick and easy repairs impossible. Damaged structures or other falling debris can block these roadways, further delaying any return to normal service of a roadway. Long term closures and restrictions from an earthquake have the potential to damage the local economy, hamper commerce, and limit the delivery of basic services.

Water Companies and Districts

The participating water companies and districts are significantly vulnerable to earthquakes. Some portions of the planning area use clay pipes to deliver water, which would be completely destroyed in significant earthquake, leaving hundreds to thousands without running water for months if not years. Additionally, water storage tanks, pump stations, and water supply ponds could be destroyed outright destroyed, or fractured, rendering them inoperable.

4.3.4A – Infrastructure & Critical Facilities

In large part, Pacific County and its participating jurisdictions' critical facilities face the same risk to earthquakes as does their parent jurisdiction. The Ocean Beach Hospital, the Willapa Harbor Hospital, and the participating fire district's structures are in a 15-20% peak ground acceleration area and its liquefaction susceptibility is ranked as "moderate to high." For more detail on this risk please see 'Vulnerability of Facilities.' A list of infrastructure and critical facilities can be found in Appendix D.

Of specific concern for the county are the Pacific County Courthouse, due to its age and standards when it was constructed, and their public safety buildings in terms of their necessity to provide services in the event of a disaster. Given the mountainous topology throughout the county, all bridges are of prime concern as the collapse or loss of usability of any of them could severely hamper public services, commerce, and immediate response capabilities.

Ilwaco's city hall and maintenance shop are older buildings and therefore considered at risk to a significant earthquake. Ilwaco also hosts the Columbia Pacific Heritage Museum, which is considered a cultural landmark for the area. Their water treatment plan, a 500,000 gallon water tank, and a 500,000 gallon reservoir are critical to the daily operations of the city, their loss or damage to, would take a significant amount of time to rebuild or repair.

Long Beach's fire station and 1,000,000 gallon water tank are also in seismic and liquefaction zones that put them at extreme risk. Raymond is also in a high liquefaction zone placing their fire station, police station, and all three water tanks in zones where a significant earthquake would render them unusable. South Bend is slightly better off with four water pipes and the City Pier in liquefaction zones.

4.3.4B – Land Use & Development Trends

Pacific County and it participating jurisdictions have declining growth as detailed in Section 3.1.1 – Land Use & Development Trends. None of the participating jurisdictions have seen significant growth and thus there is no increase in their risk to earthquakes caused by new land use measures or development. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within or outside of the designated seismic zones.

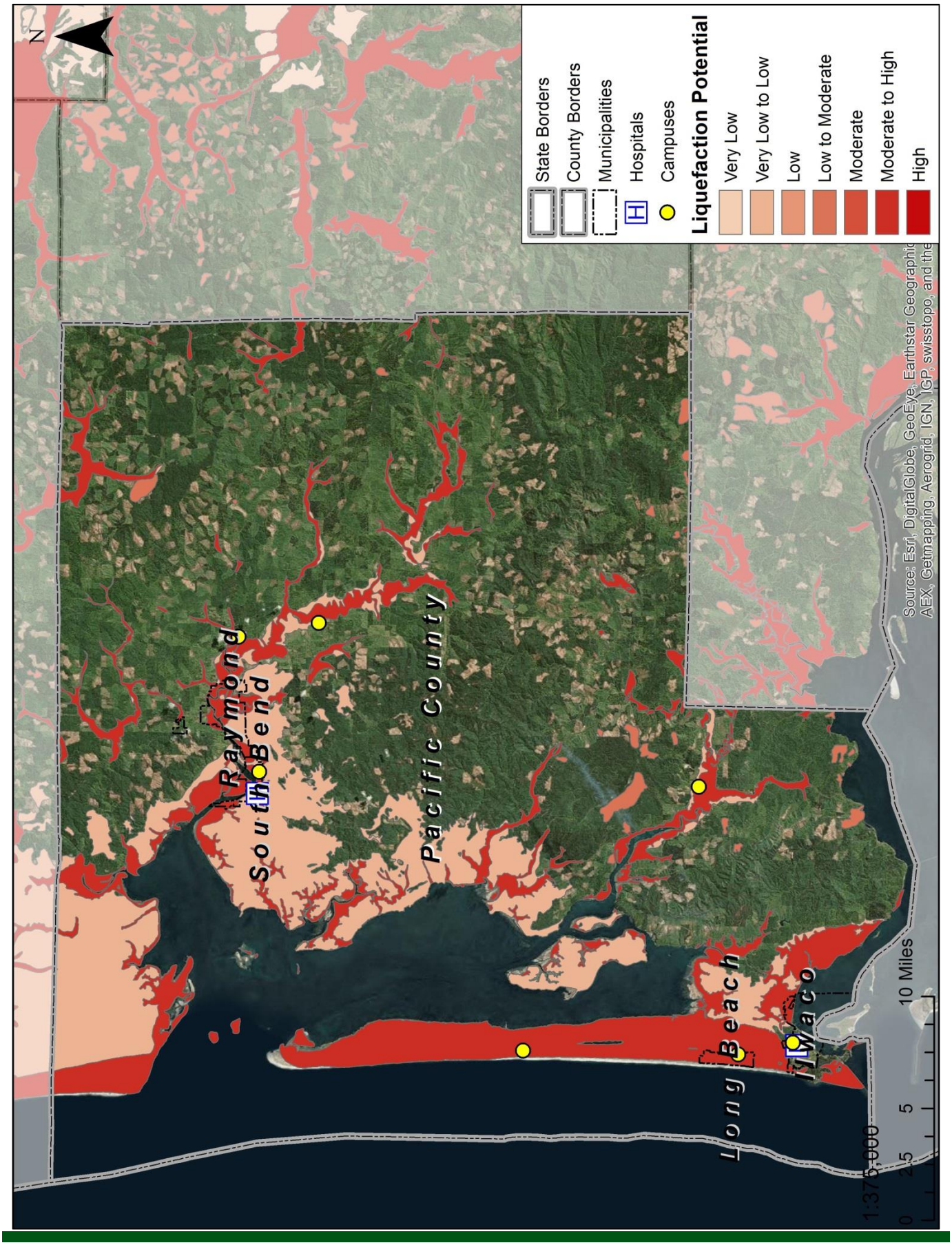
4.3.4C – Unique & Varied Risk

Based on the models and seismic analysis in this section, Pacific County and its participating jurisdictions largely exist in 15-20% peak ground acceleration areas with 20-25% in the northern portion of the county. Every participating jurisdiction is susceptible to liquefaction potential as previously described and summarized in the table below.

Table 24 – Unique & Varied Risk, Earthquakes

Stakeholder	Liquefaction	Peak Ground Acceleration
Pacific County	"Very Low to Low" & "Moderate to High" Zones	15 - 20% and 20 - 25%
Ilwaco	"Very Low to Low" & "Moderate to High" Zones	15 – 20%
Long Beach	"Very Low to Low" & "Moderate to High" Zones	15 – 20%
Raymond	"Very Low to Low" & "Moderate to High" Zones	15 - 20% and 20 - 25%
South Bend	"Very Low to Low" & "Moderate to High" Zones	15 – 20%
Naselle/Grays River SD	"Very Low to Low" Zone	15 – 20%
Ocean Beach SD	“Moderate to High" Zone	15 – 20%
South Bend SD	"Moderate to High" Zone	15 – 20%
Willapa Valley SD	"Moderate to High" Zone	15 – 20%
Naselle Water Company	"Moderate to High" Zone	15 – 20%
North Beach WD	"Moderate to High" Zone	15 – 20%
Surfside Homeowners’ Association	"Moderate to High" Zone	15 – 20%
Willapa Valley WD	"Moderate to High" Zone	15 – 20%
Ocean Beach Hospital	"Moderate to High" Zone	15 – 20%
Willapa Harbor Hospital	"Very Low to Low" & "Moderate to High" Zones	15 – 20%
Fire District #1	"Moderate to High" Zone	15 – 20%
Fire District #2	"Moderate to High" Zone	15 – 20%
Fire District #4	"Moderate to High" Zone	15 – 20%
Fire District #5	"Moderate to High" Zone	15 – 20%
Fire District #6	"Very Low to Low" & "Moderate to High" Zones	15 – 20%
Pacific Transit	"Moderate to High" Zone	15 – 20%
Port of Chinook	"Moderate to High" Zone	15 – 20%
Port of Ilwaco	"Moderate to High" Zone	15 – 20%
Port of Peninsula	"Moderate to High" Zone	15 – 20%
Port of Willapa Harbor	"Very Low to Low" Zone	15 – 20%
PUD #2	"Very Low to Low" & "Moderate to High" Zones	15 – 20%

Map 25 – Liquefaction Potential, Pacific County



4.3F – Flooding

4.3.1 – Description

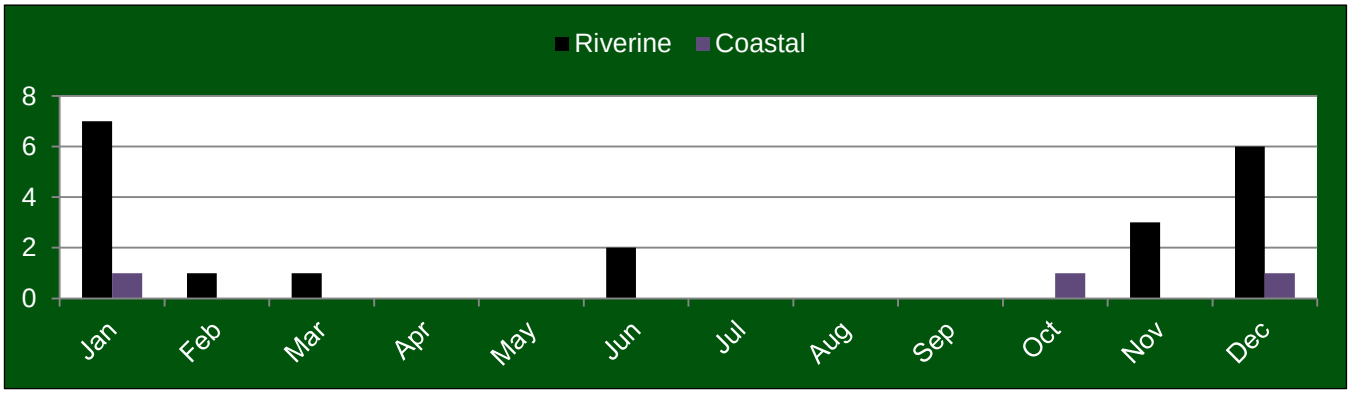
Photo courtesy of the Willapa Harbor Herald

According to the Federal Emergency Management Agency, flooding accounts for about 40% of the Presidential declared disasters in the United States. Approximately 33% of the federally declared emergencies or disasters in Washington State since 1956 have involved flooding.

Flooding is the most prevalent and costly disaster in the United States. Flooding occurs when water, due to dam failures, rain, coastal swells, or melting snows, exceeds the absorptive capacity of the soil and the flow capacity of rivers, streams or coastal areas. At this point, the water concentration hyper extends the capacity of the floodway and the water enters the floodplain. Floods are most common in seasons of rain and thunderstorms. Floods can be associated with other natural phenomenon such as rainstorms, thunderstorms, hurricanes, coastal swells, earthquakes, tsunamis and rapidly melting snow.

The rivers and valleys of Pacific County are short and the rivers flow quickly. Intense rainfall, and accompanying thunderstorms result in water flowing rapidly from higher elevations into valleys, collecting in and sometimes overtopping the low lying streams. Various types of floods can happen quickly in the form of a flash flood. Riverine floods also happen quickly, accumulating and dissipating in a period of 24 hours. Flooding can occur anytime throughout the year, but is typically associated with the winter season. The chart below illustrates season differences between coastal and riverine flood impacts per month.

Chart 1 – Coastal & Riverine Floods by Month, Pacific County (1996 – 2015)



**The data are from the NOAA NCDC Storm Event Database.*

4.3.2 – Location & Extent

A variety of factors affect the severity of coastal, flash, and riverine flooding within the planning area. These include topography, weather characteristics, development, and geology. Intense flooding will create havoc in any jurisdictions affected. The predicative magnitude of coastal, flash, and riverine floods varies greatly.

Coastal Flooding

Coastal floodplains have been identified by FEMA all along the western part of the county that lies on the Pacific Ocean. Pacific County regularly experiences coastal swelling, which occasionally is classified as a coastal flood. Historically recorded coastal storms in the planning area have reached between 2 and 5 feet above the tide. This level of sea rise has and will cause the closure of major roads and highways along Long Beach, Raymond, and the western portions of Pacific County.

Flash Flooding

Flash flooding is unpredictable and can occur anywhere throughout the entire planning area. Pacific County and its participating jurisdictions do not have any centralized or identified re-occurring locations that are more likely to experience flash flooding than other areas, based on previous events and historical documentation.

Historically, Pacific County and its participating jurisdictions have not been significantly impacted by flash flooding. Please see Section 4.3.3 for more information on the lack of historical impacts. However, flash flooding is unpredictable and could still pose a risk to Pacific County.

Riverine Flooding

Riverine flooding throughout the county varies and is identified via FEMA's FIRM maps and designated flood zone classifications detailed below. The greatest amount of riverine flooding the county and its participating jurisdictions has seen is around 26.65 feet. The primary sources of riverine flooding are from the Willapa and Naselle Rivers. The Willapa has set the record of 26.65 feet while the Naselle River has a historical maximum 23.04 feet.

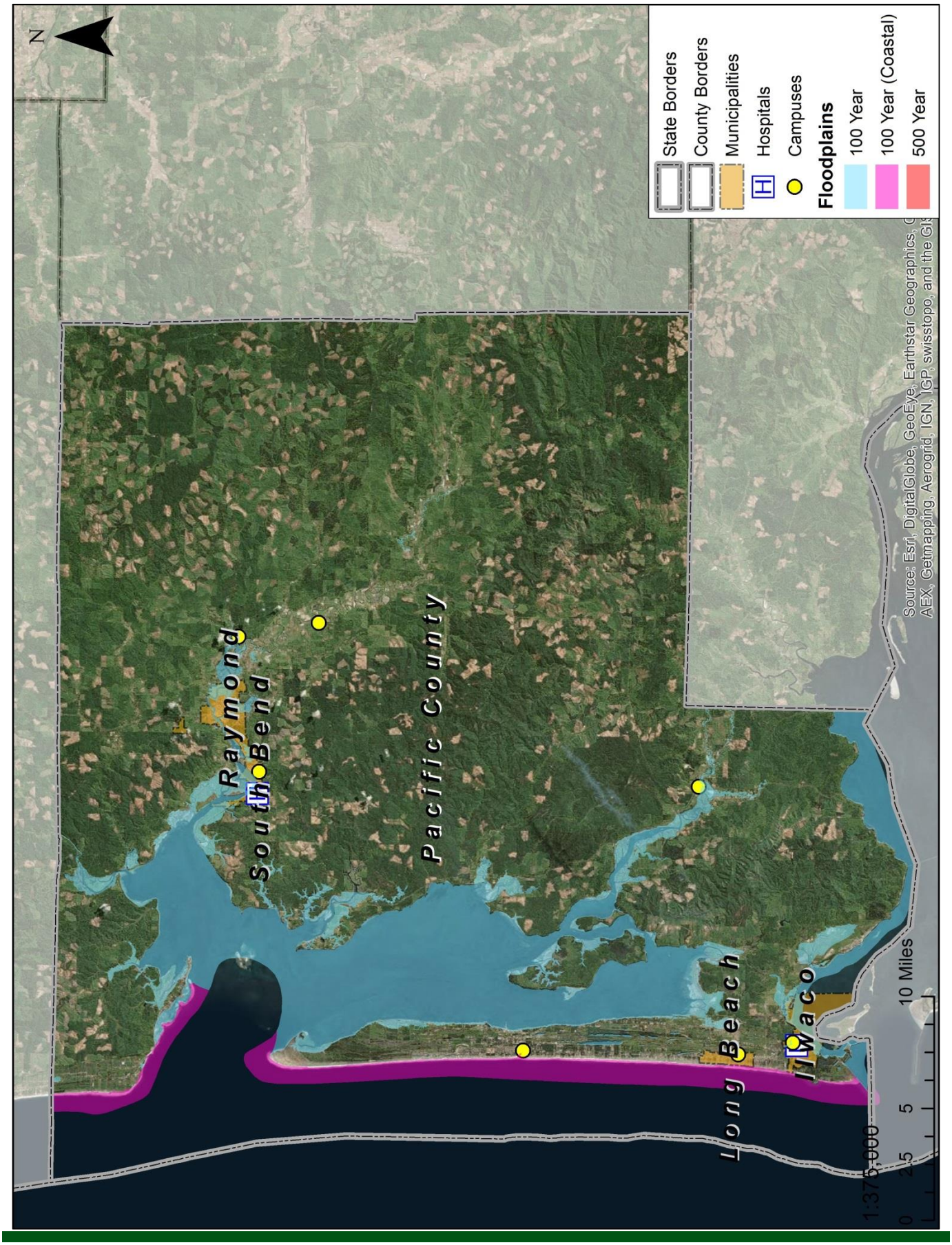
The county at large, Ilwaco, Raymond, South Bend, and all three participating ports have 100 year floodplains within its borders while the county, Long Beach, the North Beach WD, and the Surfside Homeowners' Association are exposed to 100 year coastal flooding. FEMA's FIRM maps have been provided to identify special flood hazard areas. These are depicted in the maps on the following pages.

Table 25 – Flood Zone Classifications

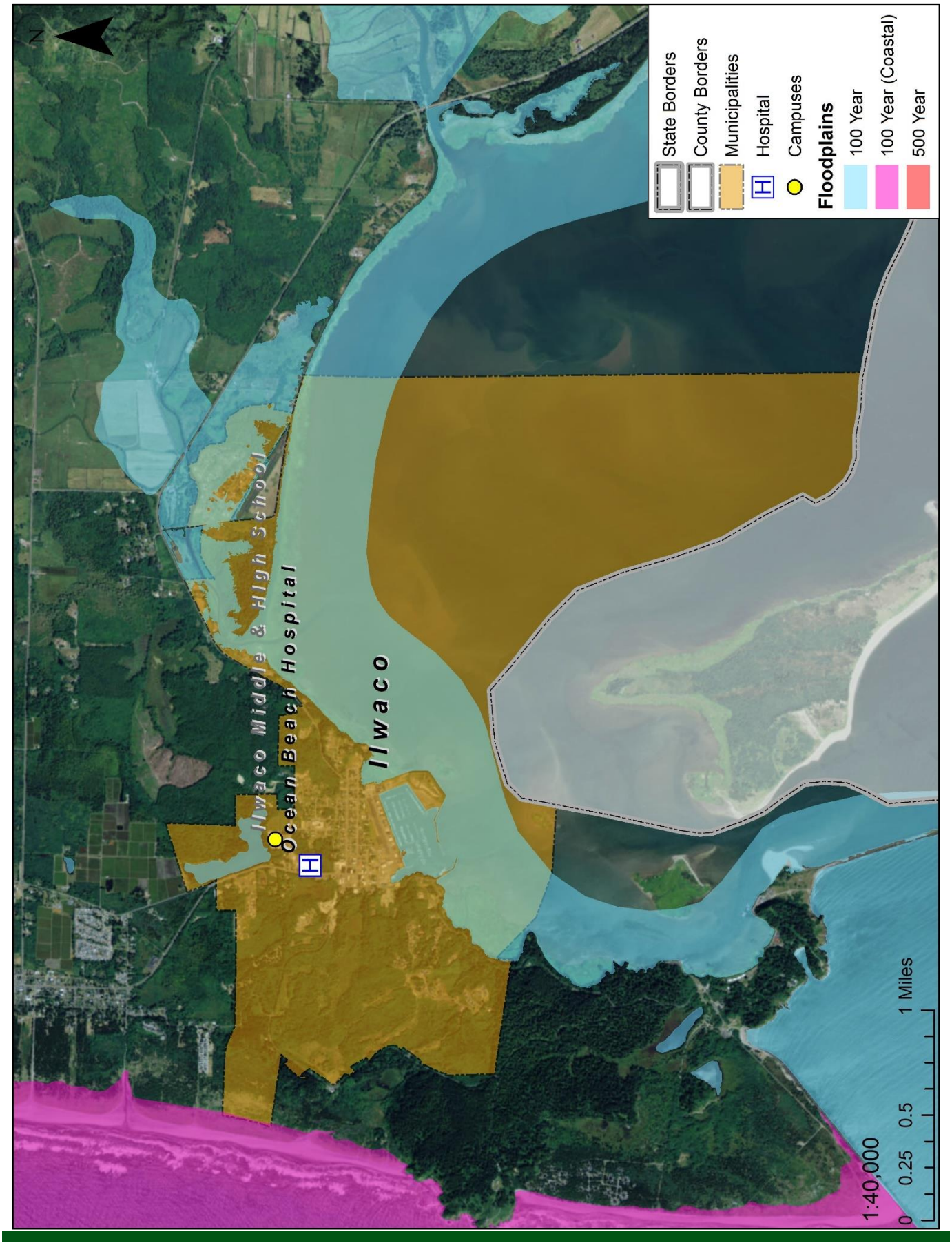
Zone Class	Description
A	An area inundated by 1% annual chance flooding, for which no base flood elevations have been determined. (100 Year Floodplain)
AE	An area inundated by 1% annual chance flooding, for which BFEs have been determined. (100 Year Floodplain)
B	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage.

**For the following FEMA NFHL maps the A and AE zones have been combined as they are both considered 100 year floodplains.*

Map 26 – Floodplains, Pacific County

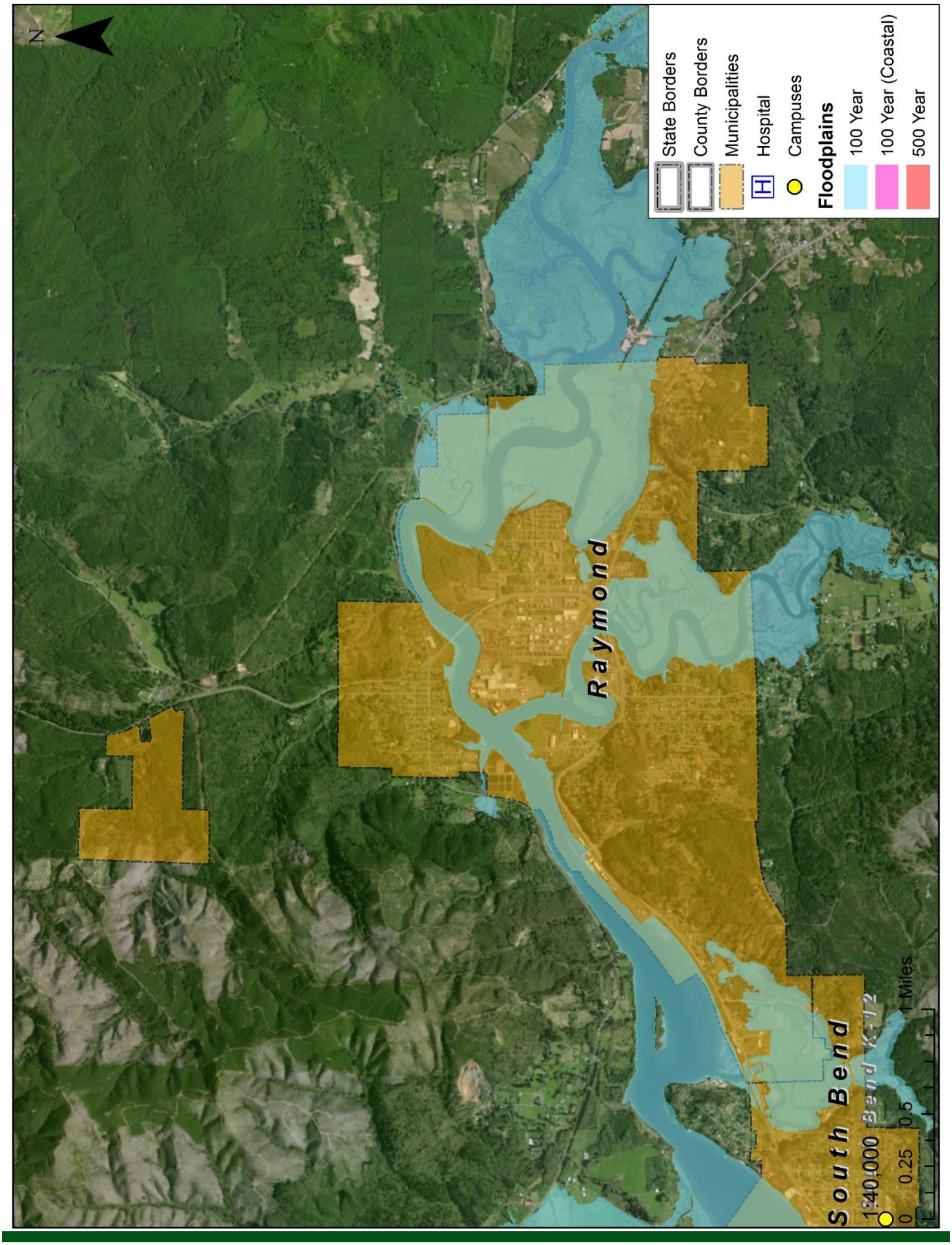


Map 27 – Floodplains, Ilwaco

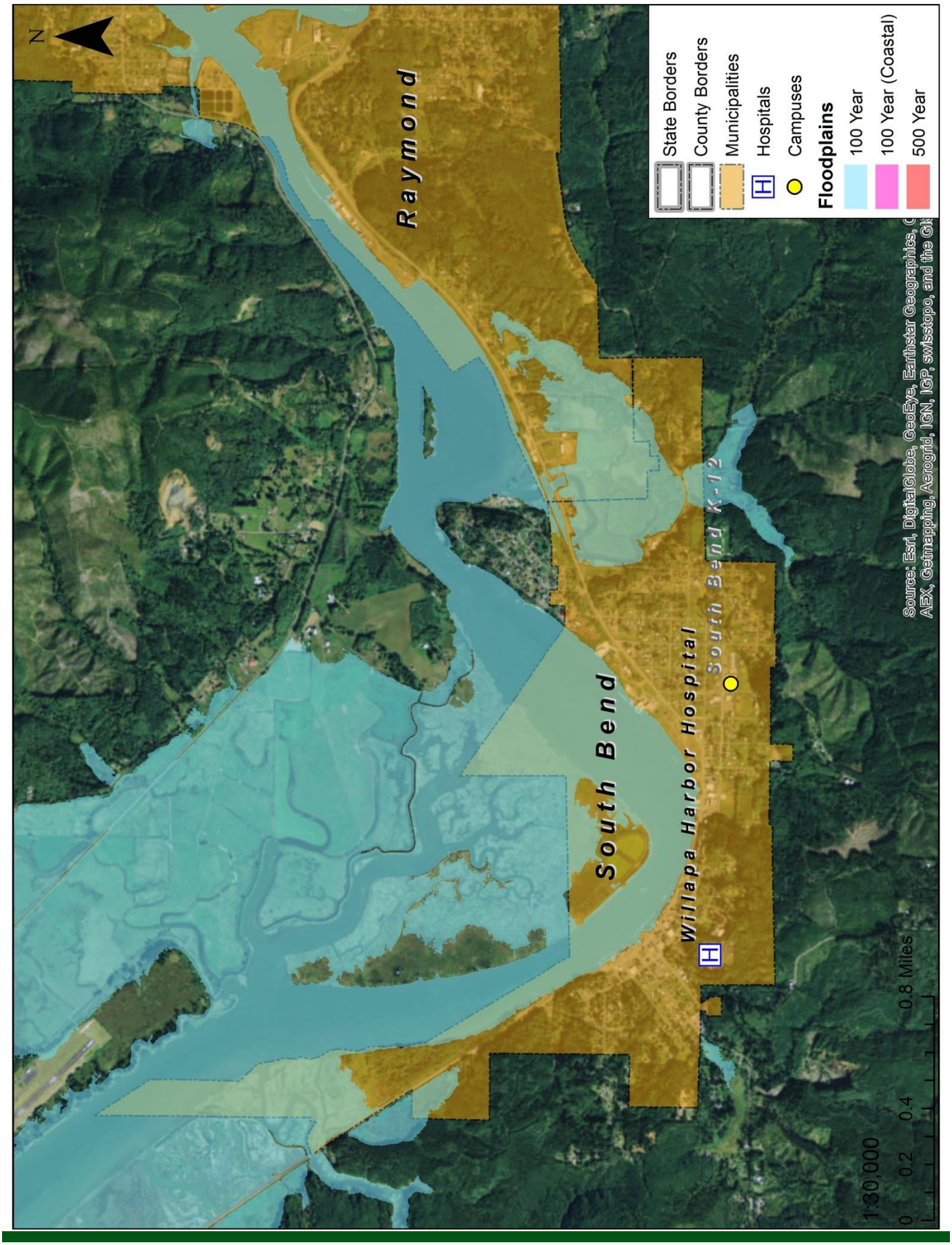


Map 28 – Floodplains, Long Beach

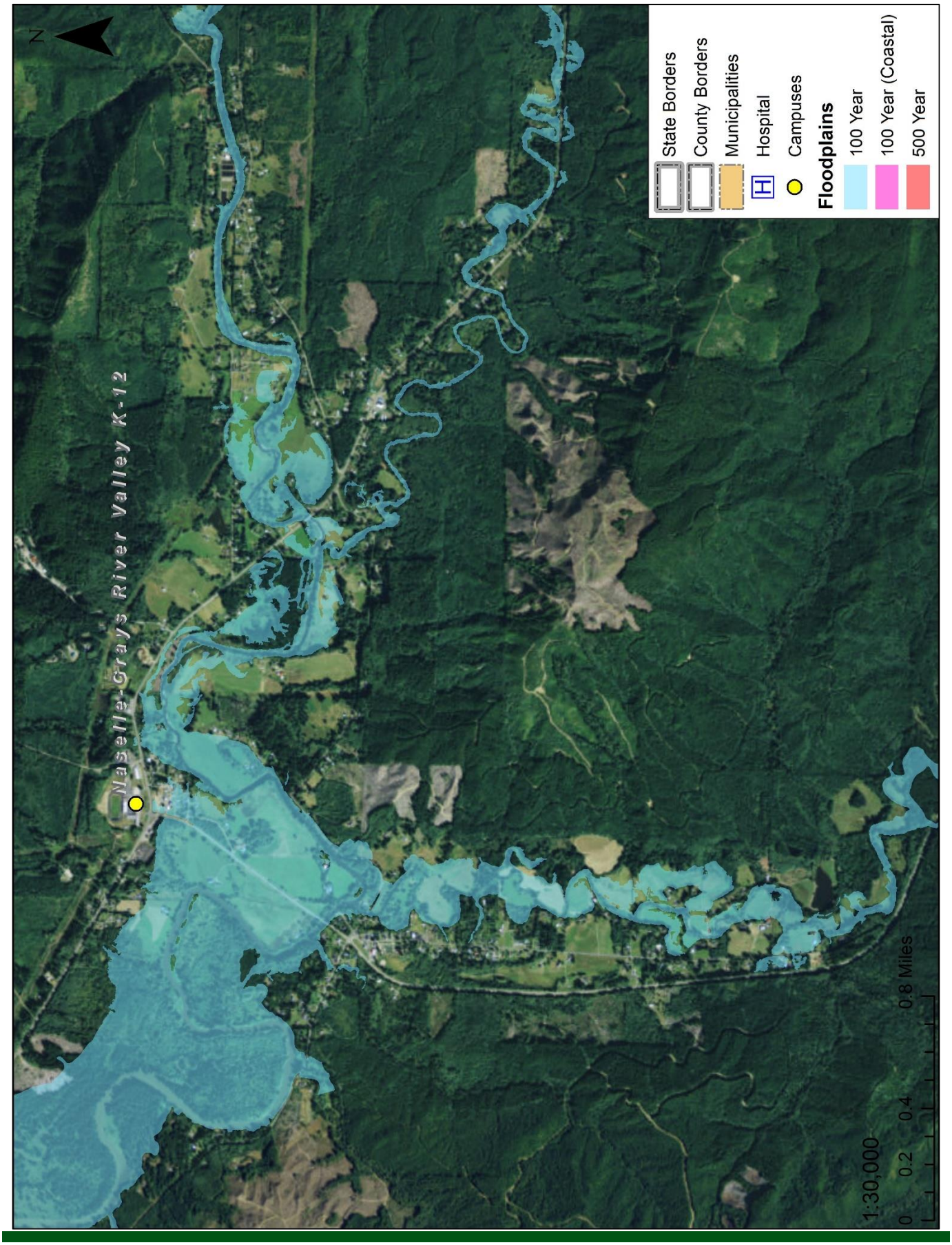
Map 29 – Floodplains, Raymond



Map 30 – Floodplains, South Bend



Map 31 – Floodplains, Willapa Valley SD, Willapa Valley K-12



4.3.3 – Previous Occurrences

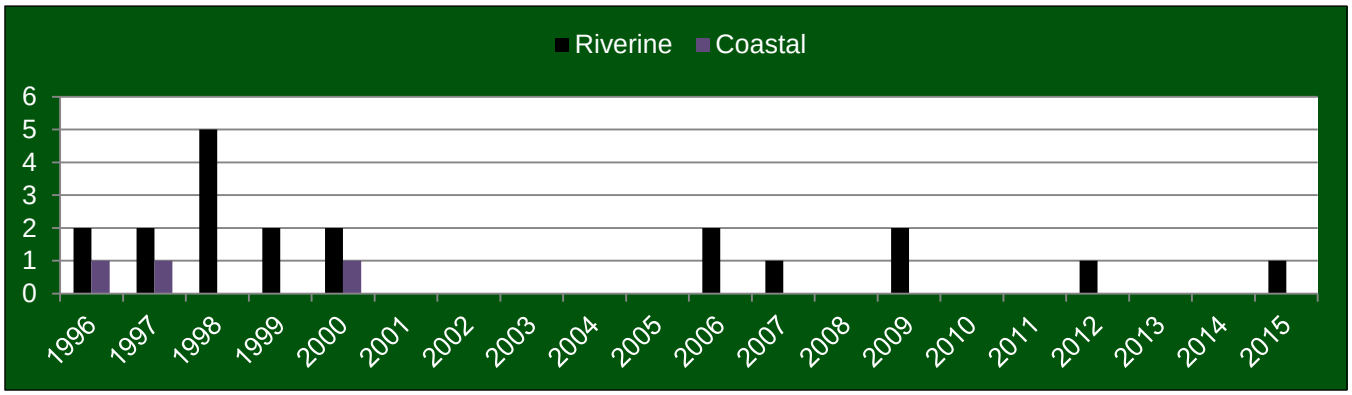
Since 1996, NOAA has recorded 20 riverine flood impacts in Pacific County and its participating jurisdictions. Pacific County and its participating jurisdictions have recorded 0 fatalities and 0 injuries relating to riverine flooding. These events have cost Pacific County and its participating jurisdictions $10,511,000 in property damage.

Since 2006, NOAA has recorded 3 coastal flood impacts in NWS region including the lands of Pacific County and its participating jurisdictions. Pacific County and its participating jurisdictions have recorded 0 fatalities and 0 injuries relating to coastal flooding. These events have cost the NWS region including the lands of Pacific County and its participating jurisdictions $5,150,000 in property damage.

NOAA and the NWS have not recorded any significant, damaging, or life threatening flash floods within Pacific County or its participating jurisdictions.

Please see the chart below for coastal and riverine flooding events per year.

Chart 2 – Coastal & Riverine Floods per Year, Pacific County (1996 – 2015)



**The data are from the NOAA NCDC Storm Event Database.*

4.3.3A – Probability of Future Events

The definition of each flood zone's classification is used for the purpose of calculating the yearly probability of a riverine flood. Jurisdictions with property in a 100 year floodplain can expect a 1% annual chance of flooding within the designated areas. Jurisdictions with property in a 500 year floodplain can expect a 0.2% annual chance of flooding within the designated areas. Therefore, the likelihood of a coastal and riverine flood occurring in exposed jurisdictions is "occasional."

Table 26 – Probability, Coastal & Riverine Floods

Jurisdiction	Floodplain Exposure		
	100 Year (1% Annual)	100 Year (1% Annual, Coastal)	500 Year (0.2% Annual)
Pacific County	X	X	-
Ilwaco	X	-	-
Long Beach	-	X	-
Raymond	X	-	-
South Bend	X	-	-
Naselle/Grays River SD	-	-	-
Ocean Beach SD	-	-	-
South Bend SD	X**	-	-
Willapa Valley SD	-	-	-
Naselle Water Company	-	-	-
North Beach WD	-	X	-
Surfside Homeowners' Association	-	X	-
Willapa Valley WD	-	-	-
Ocean Beach Hospital	-	-	-
Willapa Harbor Hospital	-	-	-
Fire District #1	-	-	-
Fire District #2	-	-	-
Fire District #4	-	-	-
Fire District #5	-	-	-
Fire District #6	-	-	-
Pacific Transit	-	-	-
Port of Chinook	X	-	-
Port of Ilwaco	X	-	-
Port of Peninsula	X	-	-
Port of Willapa Harbor	X	-	-
PUD #2	-	-	-

**The data are from FEMA's NFHL.*

***FEMA's NFHL does not identify the South Bend SD as existing within an established floodplain however, the South Bend SD has been effected by significantly damaging riverine flooding.*

Pacific County and its participating jurisdictions have not experienced significant flash flooding events, but are still considered at risk from this hazard. The likelihood of this occurring is considered "rare."

4.3.4 – Assessing Vulnerability & Impacts

Flood Impacts

Based on Map 26, and the future probability in Section 4.3.3.A, Pacific County, Raymond, and South Bend can expect .01 riverine floods per year and Long Beach can expect .01 costal floods per year. The probability of flash flooding is equal through each participating jurisdiction.

The following table is provided as a best available estimate of what a typical coastal and riverine flood in the region may cause in terms of damage, injuries, and death.

Table 27 – Historical Impacts, Floods

Hazard	Coastal Floods	Riverine Floods
Count of Events	3	20
Impacts Per Year	0.33	1.00
Average Magnitude	-	-
Magnitude Range	-	-
Average Cost	$1,716,667 **	$525,550
Magnitude of Cost	$0 - 5,000,000**	$0 - 10,000,000
Total Recorded Cost	$5,150,000 **	$10,511,000
Average Fatalities	0	0
Total Fatalities	0	0
Average Injuries	0	0
Total Injuries	0	0

**The data are from the NCDC Storm Events Database.*

***The recorded property damage is based on NWS regions and includes costs incurred outside the planning area of this HMP.*

Vulnerability of Facilities

Flooding can cause minimal or complete damage to any of these types of facilities, taking them offline for days to years depending on the resources available after an event. Pacific County and its participating jurisdictions have in the past incurred damage from flooding, but have ensured these properties were not rebuilt within floodplains. As seen in the previous set of floodplain maps, neither Ilwaco, Raymond, South Bend, or the county have any remaining structures built in identified special flood hazard areas.

The average riverine flood event in Pacific County and its participating jurisdictions costs $525,000, while the existing range of a single incident can range from $0 to $10,000,000. Since there are no prior recorded flash floods, there are not any calculated historical impacts. The average coastal flood event in the region, and therefore possibly Pacific County and its participating jurisdictions, costs $1,716,667, while the existing range of a single incident can range from $0 to $5,000,000.

Vulnerability of Population

If evacuation is not heeded, or flood waters rise quickly enough, Pacific County and it participating jurisdictions' population can drown or become trapped on roadways or in valleys. Depending on the conditions, this will expose them to elements and deprive them of basic needs and services.

Long term care facilities housing vulnerable populations can take longer to evacuate. Additionally, the potential presence of mold after a flood requires extra care to be taken before their population can re-inhabit a facility.

Pacific County and its participating jurisdictions do not have any recorded fatalities or injuries from coastal, riverine, or flash flood events.

Vulnerability of Systems

Critical facilities and infrastructure can be rendered unusable or permanently destroyed, having a significant impact on a jurisdiction's ability to conduct its day-to-day or current flood event operations. Significant damage to residential and or commercial structures can irrevocably damage a community and its economy, creating refugees and economic hardship. If a chemical facility is significantly impacted, it is possible the chemicals stored at the facilities can wash away with the flood waters and have detrimental effects on the local environment.

Fire Districts

The fire districts' services are an integral part of the planning area's emergency operations before, during, and after an event. The participating fire districts are vulnerable to flash flooding only. The random nature of flash flooding is unlikely to damage an entire fire district in a way that would significantly reduce its overall capabilities.

Ports

The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor are significantly vulnerable to riverine flooding. In the event flood waters rise, the ports' docks, machinery, heavy equipment, and vessels could be significantly damaged. The communities of Pacific County rely on these ports for commercial and economic stability and prosperity making them of extreme value in terms of mitigation and recovery.

Public Utility District

Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to delivery electricity to the planning area. PUD #2's energy grid is at minimal direct risk to flooding.

Transportation & Pacific Transit

The roadways and bus routes of Pacific County are highly vulnerable to riverine flooding. The complexity and multitude of valleys in which its roadways are constructed make it especially vulnerable to closures from flooding. Any major roadway closures can cut off communities from basic services. Additionally, long term closures from flooding have the potential to damage the local economy and hamper commerce for years.

Water Companies and Districts

The participating water companies and districts are slightly vulnerable to coastal, flash, and riverine flooding. Excess rain has the potential to cause an overflow of storage ponds causing contamination of their current stock. However, their main facilities are not vulnerable due to their location.

4.3.4A – Critical Facilities & Infrastructure

Neither the Ocean Beach Hospital nor the Willapa Harbor Hospital, are located in identified special flood hazard areas. However, Raymond's fire and police stations and the Pacific County Annex building are within identified riverine floodplains. The South Bend School District campus in the past had an incident that was partially flash flooding and partially drainage related (no exact cause has been determined). It remains a location that will be watched for further flood related incidents. Major and minor roadways throughout the planning area are

routinely flooded and remain major concerns for the delivery of public and emergency services, including; US Highway 101, State Route 6 and 401, Willapa Road, Heckard Road, Camp One Road, Monohon Landing Road, Robertson Road, Lebam Road, Parpala Road, and South Valley Road. A list of infrastructure and critical facilities can be found in Appendix D.

4.3.4B – Land Use & Development Trends

Pacific County and it participating jurisdictions have declining growth, as detailed in Section 3.1.1 – Land Use & Development Trends. None of the participating jurisdictions have seen significant growth and thus there is no increase in their risk to flooding caused by new land use measures or development. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within or outside of the designated floodplains.

4.3.4C – Unique & Varied Risk

Due to the nature of flash flooding, each jurisdiction in the planning area has an equal risk to a flash flood impact. The variable risks to coastal and riverine flooding are detailed in the table below.

Table 28 – Unique & Varied Risk, Coastal & Riverine Floods

Jurisdiction	Risk Characteristics
Pacific County	Parts of the jurisdiction are located in 100 year riverine and 100 year coastal floodplains.
Ilwaco	Parts of the jurisdiction are located in 100 year riverine floodplains.
Long Beach	Parts of the jurisdiction are located in 100 year riverine and 100 year coastal floodplains.
Raymond	Parts of the jurisdiction are located in 100 year riverine floodplains.
South Bend	Parts of the jurisdiction are located in 100 year riverine floodplains.
Naselle/Grays River SD	No risk to coastal or riverine flooding.
Ocean Beach SD	No risk to coastal or riverine flooding.
South Bend SD	No risk to coastal or riverine flooding.
Willapa Valley SD	No risk to coastal or riverine flooding.
Naselle Water Company	No risk to coastal or riverine flooding.
North Beach WD	Parts of the association are located in 100 year coastal floodplains.
Surfside Homeowners' Association	Parts of the association are located in 100 year coastal floodplains.
Willapa Valley WD	No risk to coastal or riverine flooding.
Ocean Beach Hospital	No risk to coastal or riverine flooding.
Willapa Harbor Hospital	No risk to coastal or riverine flooding.
Fire District #1	No risk to coastal or riverine flooding.
Fire District #2	No risk to coastal or riverine flooding.
Fire District #4	No risk to coastal or riverine flooding.
Fire District #5	No risk to coastal or riverine flooding.
Fire District #6	No risk to coastal or riverine flooding.
Pacific Transit	No risk to coastal or riverine flooding.
Port of Chinook	Parts of the jurisdiction are located in 100 year riverine floodplains.
Port of Ilwaco	Parts of the jurisdiction are located in 100 year riverine floodplains.
Port of Peninsula	Parts of the jurisdiction are located in 100 year riverine floodplains.
Port of Willapa Harbor	Parts of the jurisdiction are located in 100 year riverine floodplains.
PUD #2	No risk to coastal or riverine flooding.

4.3.4E – Repetitive Loss Structures

The planning area currently does not have any repetitive loss or severe repetitive loss properties.

4.3HZMT – Hazardous Materials

4.3.1 – Description

Hazardous materials are any substances that pose a risk to health, life, or property when released or improperly handled. Generally, the term refers to materials with hazardous chemical or physical properties, though sometimes biological agents can fall under this category. The hazardous properties can be combustible, flammable, toxic, poisonous, corrosive/severely acidic, reactive, radioactive, or noxious. Though EPA, WA DOT, and OSHA categorize these in different ways, a basic distinction among hazardous substances is their persistence in the environment and respective levels of health risk that these pose. A release of a hazardous material can be caused by a spill, leak, explosion, pipeline break, transportation accident, or human action. If the material has escaped its container into the outside environment, a potentially hazardous situation exists.

Hazardous materials are so widely used, transported, and stored, often in large quantities so a spill or other event could happen nearly anywhere in the state. Because of the ubiquity of hazardous materials, risk mitigation requires cooperation among state agencies, the EPA, OSHA, WA DOT, and many private and public corporations.

4.3.2 – Classification

By EPA classification, hazardous substances are generally materials that "if released into the environment, tend to persist for long periods and pose long-term health hazards for living organisms. Hazardous materials present acute health hazards that, when released, are immediately dangerous to the lives of humans and animals and cause serious damage to the environment." The major categories of chemical/material hazards are classified according to their predominant effects−corrosive, flammable, toxic, irritant, or explosive being the essential classes. These properties may overlap, and commonly do with chemicals used in industry, agriculture, and energy. While over 500,000 substances are considered HAZMATs, a few thousand products account for common hazards. Many of the costlier hazardous substance incidents in the United States are petrochemical in makeup, but event reports indicate that substantive numbers of accidents involving all major chemical classes occur regularly. Deadly explosions at chemical plants occur with some regularity in Tennessee. When facilities have hazardous materials in quantities at or above the threshold planning quantity, they must submit "Tier II" information to appropriate federal and state agencies to facilitate emergency planning."

The basic types of hazardous materials may be categorized according to more than 6 different systems; but the categories of U.S. Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11002) will be used here.

Extremely Hazardous Substances
These materials have acutely toxic chemical or physical properties and may cause irreversible damage or death to people, or harm the environment if released or used outside their intended use. Common examples include ammonia, chlorine gas, sulfuric acid, formaldehyde, hydrocyanic acid, nitrogen dioxide, phenol, phosphorus trichloride, and polyvinyl acetate. Radioactive materials are extremely hazardous.

Hazardous Substances
These are any materials posing a threat to human health and/or the environment, or any substance designated by the EPA to be reported if a designated quantity of the substance is spilled into waterways,

aquifers, or water supplies; or is otherwise released into the environment. Many common fuels and most petrochemicals fall under this list.

Additionally, some materials require registration if present in chemical facilities above the threshold quantity. These *hazardous chemicals* require a Material Safety Data Sheet under the Occupational Safety and Health Administration Hazard Communication Standard. These chemicals might cause fires and explosions or adverse health effects such as cancer, burns, or dermatitis, but they are not necessarily dangerous or volatile in all quantities. *Toxic chemicals* cause disease with long term exposure or chronic illness above a certain threshold exposure. This includes carcinogenicity.

Hazardous materials incidents can occur at the factories, laboratories, refineries, and storage facilities where such chemicals are present. But incidents can also happen during transportation, loading and unloading, and pipeline transport. Contributing or causal factors include human error; natural hazards such as earthquakes, tornadoes, floods, and lightning strikes; automobile and railroad accidents; power outages; electrical fires; computer malfunctions or server breakdowns. The scope of damage to persons, property, and economy is vast, though impact can often be contained with quick response by trained teams. The quantity, chemical, and physical properties of the material involved in an incident determine the scope of threat, but weather during and after the incident, location, proximity to human and wildlife populations, to rivers and lakes, and to major ecological vulnerabilities must be considered in assessing the scope of the threat posed.

Hazardous materials may also be released as a secondary result of a natural disaster like a flood or an earthquake. Buildings or vehicles can release their hazardous material contents when they are structurally compromised or involved in traffic accidents. Pipelines can be exposed or ruptured from collapsed embankments, road washouts, bridge collapses, and fractures in roadways.

Prevention and mitigation of a hazardous materials incident comprises analysis with different measures of the threats that exist in specific categories per region or locality. These sometimes overlap, but must be considered separately when possible to determine the best allocation of resources and response strategies should a HAZMAT event occur. The basic planning categories of hazard, vulnerability, and risk apply to hazardous materials preparation. In this context, the hazard category includes the nature of the chemicals present and the locations where an incident is likely; the vulnerability describes what damage might occur, the range of the impact, and what types of incidents are possible in a given community or region; and the risk analysis assesses the probability of damage or injury that would occur in the community if a hazardous material were released, and the actual damage or injury that might occur in light of the vulnerability analysis.

4.3.3 – Local & Regional Resources

WA EMD, WA Ecology, and the WA State Patrol share coordination and responsibility for local response and training. However, first responders, hospitals, and the CDC maintain supplies, strategic stockpiles and assets that are in many cases deployed during a HAZMAT event. These agencies' input in mitigation planning are not only germane but essential to effective strategies that utilize all available resources.

Pre-emergency / Notification

Once a HAZMAT incident is suspected, state, municipal and regional authorities are notified, as well as any necessary supporting agencies. Pre-emergency, the state may allocate a first response responsibility to a dedicated team or set up several such teams. If a spill, accident, or fire occurs, the firefighters or other first responders will alert the HAZMAT Emergency Response Teams. If a suspected incident occurs (someone smells gas or reports strange substances in a street, a building, etc.), a preliminary HAZMAT emergency response team evacuates the site and conducts an inspection.

Notification via local responders, the 911 call operator, or other mediums should be directed to WA EMD, which then can decide to activate the Emergency Response Team; then notification goes to the National Response Center, OSHA, WA Ecology, WA State Police, WA DOT or the CDC, if indicated. Typically, after the initial 911 call, local first responders (fire or police), will arrive on the scene and evaluate the incident.

Emergency Response Teams

Emergency Response Teams are assembled for each region of the state by population. Each team requires an on-site commander who should be chosen in coordination with WA EMD and relevant state agency officials. Typically this person is an official with experience of environmental and chemical dangers. The commander should activate an emergency response plan, gather the team, designate the initial perimeter for entrance, evacuation, and the like. If the team is of the first responders, they should also decide the evacuation range. If the fire department personnel are first responders, the emergency response teams must coordinate with them. The commander of the response team is responsible for the placement of the staging area for equipment, personnel, and medical resources, if needed. He or she should also assign the remaining staff and determine the relationship of the team to other responders.

The team should also include members with a minimum of 160 hours of specialized training per EPA guidelines. Technicians familiar with decontamination and cleanup should be included in all team planning, drills, and notification schemes.

When a Regional Hazardous Materials ERT arrives on the scene, their job is to provide technical resources to the incident commander, whether this person is a local, federal, or the state-appointed HAZMAT team commander. The local first responder retains incident command in small, containable situations. If the incident is large enough to require a unified command, the team leader becomes a part of that structure. The regional teams are responsible for mitigating and containing the incident. Once the situation is stable, the Department of Environmental Quality is responsible for working with the responsible party to assure that cleanup of the incident is completed appropriately. A full team may not respond in every instance. The system provides for a tiered response ranging from technical advice over the phone to on-site reconnaissance, then to a full team response. Specialized considerations should include stress management, supplemental air purification systems and other respiratory support, and sufficient personnel to allow for three daily shifts in the case of large incidents.

4.3.4 – Locations

Communities where hazardous materials are fabricated, processed, and stored (as well as those designated for hazardous waste storage or disposal) have higher risk, as do localities near or on transportation corridors that carry these materials at elevated risk. Areas with known methamphetamine labs or a disproportionately high (for the state) number of drug raids in the past should be considered at significant risk. Both the DEA and ATF maintain comprehensive records (now accessible for public review) of the homes and locations of known and closed methamphetamine labs either flagged for mitigation, demolition or other remediation strategies.

For highly developed areas or priority environmental resources located near a high risk facility, mitigation strategies must be regularly reviewed. These include facilities with permitted air releases, hazardous waste sites, radioactive materials storage or disposals, facilities permitted to release toxic materials, and facilities permitted to discharge chemicals into surface waters. For transportation corridors, both localities along highways and major systems are at elevated risk.

The EPA recommends surveillance, assessment, and registration of the following classes of location:

- Chemical plants
- Refineries
- Industrial facilities
- Petroleum and LPG tank farms
- Storage facilities/warehouses
- Trucking terminals
- Drinking water plants
- Wastewater treatment plants
- Refrigeration plants
- Select retailers (e.g., agricultural, swimming pools suppliers, home supply stores)
- Railroad yards
- Hospital, educational, and government facilities
- Waste disposal and treatment facilities
- Waterfront facilities, particularly commercial marine terminals
- Vessels stored in ports along the Mississippi and Cumberland Rivers
- Airports
- Nuclear facilities
- Major transportation corridors and transfer points
- Suspected and known methamphetamine lab sites

4.3.5 – Impact & Consequence

Health and Safety of Persons in the Affected Area at the Time of the Incident (Injury/Death)
HAZMAT incidents vary widely in their effects on exposure. Most of the common chemicals can quickly cause death or permanent injury in high concentrations with relatively little exposure time, but some toxins cause injury only with repeated exposures, or are carcinogenic. Emphysema or other chronic lung diseases can result from toxic gas inhalation. Caustics, acids, and some other compounds cause immediate burns. Clothing, vehicles, and personal effects can be contaminated by most hazardous materials, often regardless of their chemical state (gas or liquid). Even properly-contained limited impact HAZMAT incidents can swiftly harm those in the affected area before first responders arrive, and leave chemical residues that persist for months or years. A few injuries and deaths occurring at a large chemical plant or oil refinery fire can lead to many casualties from smoke exposure or residential area contamination if the incident is inadequately contained. Winds, flooding, ground elevation, and accessible terrain might increase exposure. Fires and explosions may cause structural damage. Nuclear power plant incidents put anyone nearby at elevated risk of radiation poisoning or long-term contamination.

Obviously health and safety of people present at a HAZMAT incident will vary by more than the chemical type: proximity to other volatile or flammable substances, warning time and evacuation protocols, the duration and location of the accident (relative to population centers and to their food and water supplies), and the presence or absence of secondary incidents such as fires and explosions. Transportation-related HAZMAT events can lead to fatalities and injuries caused by the combination of the chemical effects with automobile and road damage, and possible pile-ups. Rail car incidents can occur anywhere; but if an event happens while a train passes through a populated area, mortality and morbidity risk increases significantly. The risk of a rail incident injuring significant numbers of people, based on historical incidence tables, is lower than that of a fixed-location HAZMAT event.

Health and Safety of Personnel Responding to the Incident
All HAZMAT incidents potentially endanger personnel responding to the scene. If unprepared or encountering a large-scale disaster, personnel risk death and serious injury from the hazardous materials themselves or from secondary events like chemical fires. Immediate safety risks may come from toxic chemicals, burns, heat or smoke-related injuries, skin, visual, or respiratory injuries, among other common problems caused by chemical exposure. Without proper physical protection, respiratory support, and decontamination, the risk is high. Additionally, exposure to carcinogens may endanger personnel over time by increasing their risk of developing certain cancers.

First responders face many of the same hazards as persons in the area at the time of the accident. This is especially problematic before an incident's chemical has been identified.

4.3LS – Landslides

4.3.1 – Description

Landslides are the downward and outward movement of slopes. Landslides include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on and over steepened slopes is the primary reason for a landslide, landslides are often prompted by the occurrence of other disasters. Other contributing factors include the following: erosion; steep slopes; rain and snow; and earthquakes.

Slope material often becomes saturated with water and may develop a debris or mudflow. If the ground is saturated, the water weakens the soil and rock by reducing cohesion and friction between particles. Cohesion (which is the tendency of soil particles to "stick" to each other) and friction affect the strength of the material in the slope and contribute to a slope's ability to resist-down slope movement. Saturation also increases the weight of the slope materials and, like the addition of material on the upper portion of a slope, increases the gravitational force on the slope. Undercutting of a slope reduces the slope's resistance to the force of gravity by removing much-needed support at the base of the slope. Alternating cycles of freeze and thaw can result in a slow, virtually imperceptible loosening of rock, thereby weakening the rock and making it susceptible to slope failure. The resulting slurry of rock and mud can pick up trees, houses, and cars, and block bridges and tributaries, causing flooding along its path. Additionally, removal of vegetation can leave a slope much more susceptible to superficial landslides because of the loss of the stabilizing root systems.

4.3.2 – Location & Extent

Landslides have the potential to destroy structures and infrastructure or block transportation in mountainous valleys. Although the overall risk is limited, its potential varies throughout Pacific County, with sporadic risk zones identified by the State of Washington's Department of Natural Resources. Additionally, landslides have been reported along highway 101 in the southern portion of the county, but this area is not marked by the State of Washington's Department of Natural Resources. None of the participating jurisdictions in the plan are at risk with the exception of the county at large. The identified risk zones are not a danger to Pacific County's densely populated areas. Please see the maps on the following pages for the State of Washington's identified risk zones and the location of highway 101 as it runs through the county.

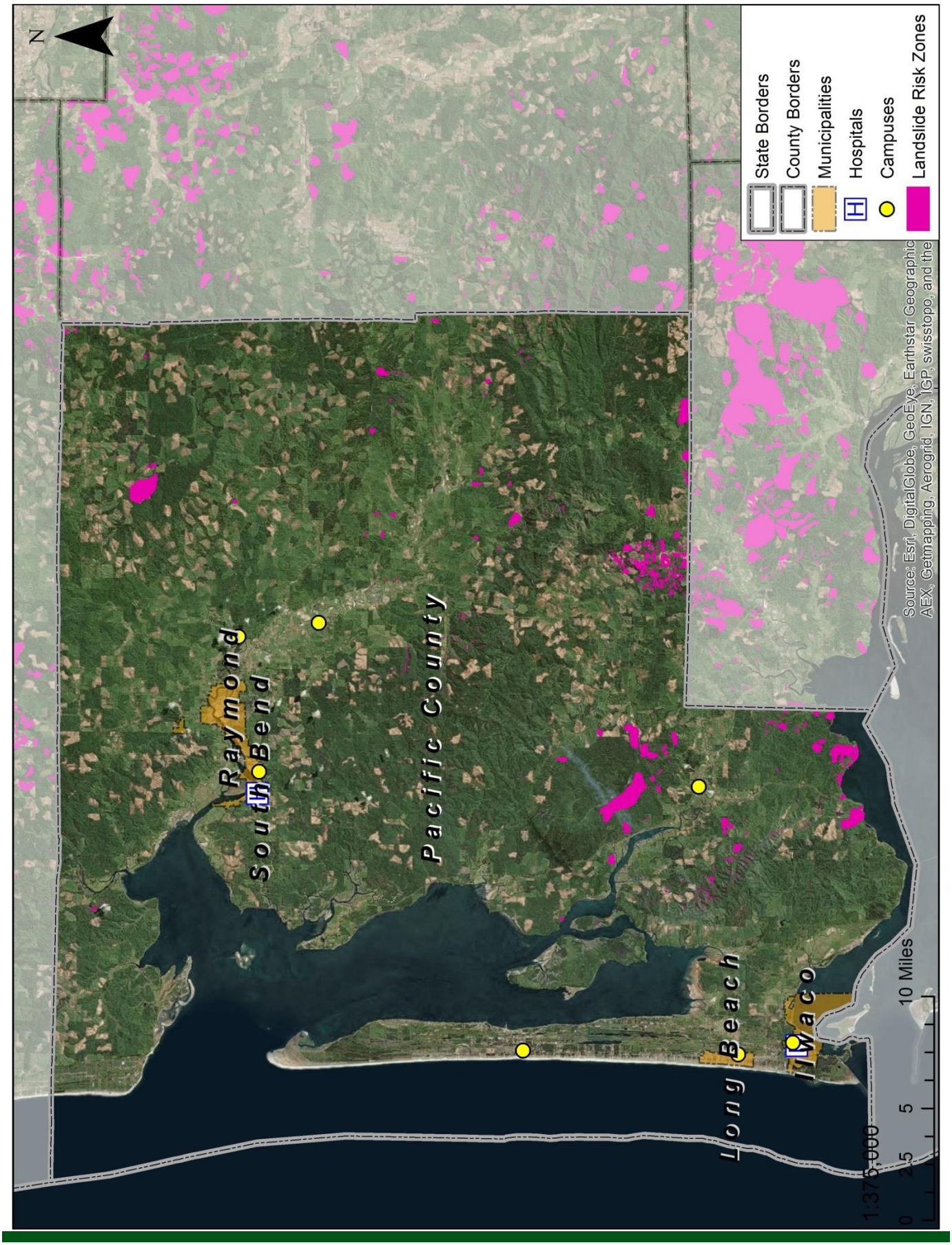
4.3.3 – Previous Occurrences

Landslides can occur without the presence of another hazard event, but often occur as a secondary hazard. Incidents of heavy rain, melting snow, earthquakes, and land subsidence are their primary cause. Hence, their future occurrences are highly dependent on the likelihood of the mentioned hazards. Pacific County does not have a history of significant or threatening landslides, yet is has experienced minor landslides that have blocked roadways and damaged smaller sections or roadways.

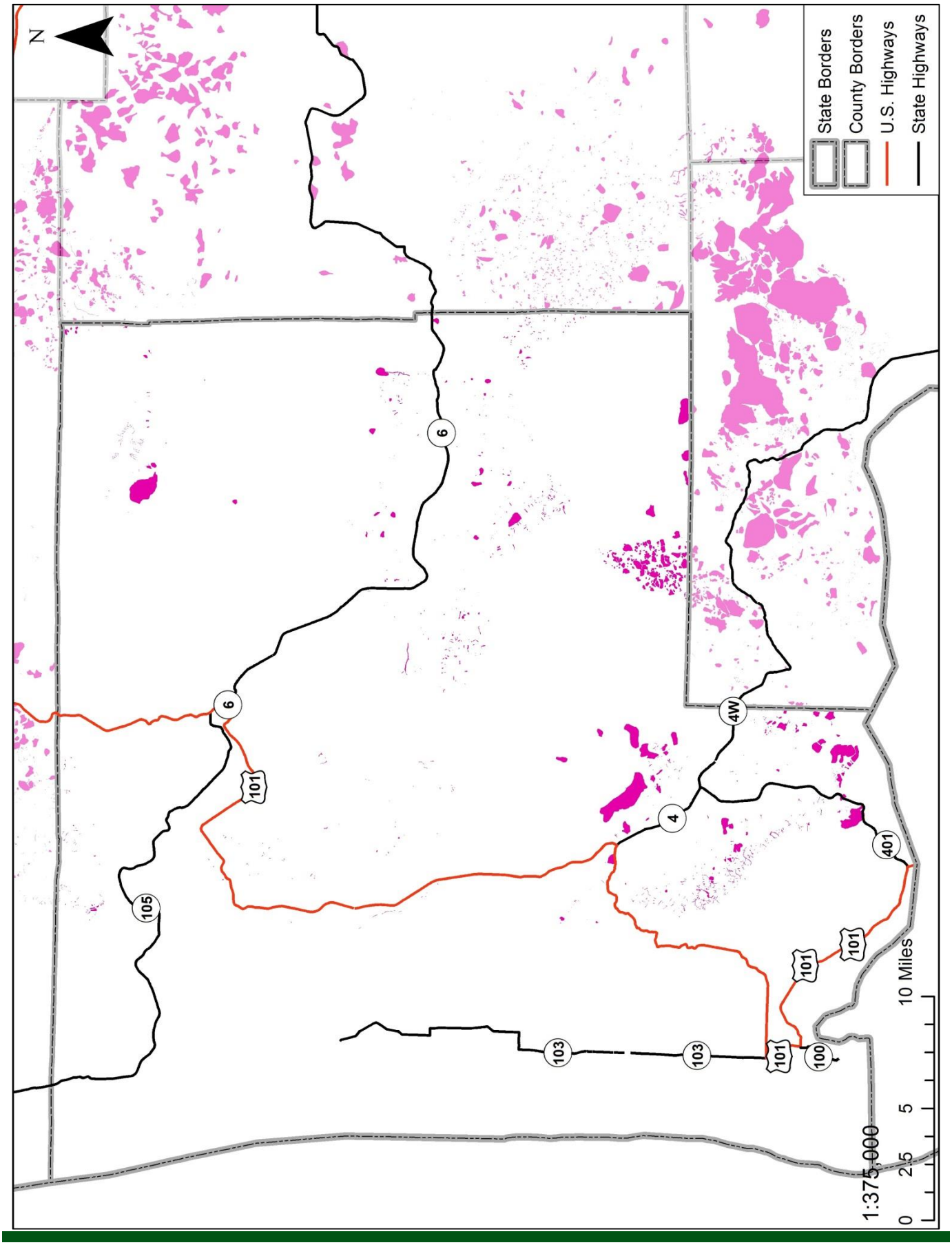
4.3.3A – Probability of Future Events

Pacific County and its participating jurisdictions do not have any documented cases of significantly damaging landslides. It has experienced minor landslides bordering on what would be considered a "nuisance hazard." Given the identified hazard areas, there is still a future risk of a significantly damaging and life threatening landslide, and thus its probability of future occurrence is classified as "rare."

Map 32 – Landslide Risk Zones, Pacific County



Map 33 – Landslide Risk Zones & Roadways, Pacific County



4.3.4 – Assessing Vulnerability & Impacts

Landslide Impacts
Pacific County and its participating jurisdictions do not have a history of significantly damaging landslides and thus it is not possible to calculate a value for expected future events beyond the State of Washington's Department of Natural Resources identification of risk zones. This makes a prediction of any accuracy impossible for significantly damaging landslides. However, given the occurrences (although rare) of roadway blocking landslides, Pacific County can be sure that in the future more roadways will be blocked by landslides with the potential to slightly damage or disturb commuter traffic through the county. The map at the end of this section cross-references the identified risk zones with Pacific County's major transportation infrastructure.

Vulnerability of Facilities
Landslides can have minimal or devastating impacts on facilities. The degree of vulnerability depends on the specifics of the landslide itself. Pacific County and its participating jurisdictions do not have any developed areas or structures located next to the identified risk zones.

Vulnerability of Population
Landslides pose a minimal risk to Pacific County and its participating jurisdictions' population. None of its municipalities are located along the identified hazard risk zones. That being said, it is possible for a landslide to impact traveling motorists on its roadways. Depending on the topography and circumstances of the landslide, this could simply immobilize a vehicle, cover it in debris, or cause serious to mortal bodily harm to the vehicles' inhabitants.

Pacific County and its participating jurisdictions do not have any recorded deaths or injuries from landslide events.

Vulnerability of Systems
Pacific County and its participating jurisdictions' systems are minimally vulnerable to landslides. A landslide has the potential to temporarily block a major highway or transportation network for weeks at a time. Additionally, if the landslide occurs in tandem with another hazard, such a severe storm event, the blocking of a major route will have compounded effects on response and recovery operations. Emergency personnel may have to use far, out of the way routes, delaying necessary aid to Pacific County and its participating jurisdictions.

Fire Districts
The participating fire districts are not vulnerable to landslides.

Ports
The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor are not vulnerable to landslides.

Public Utility District
Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to delivery electricity to the planning area. PUD

#2's energy grid is at extremely minimal direct risk to landslides. Since landslides are largely isolated in their geographic scope, the only likely scenario is a landslide temporarily damaging or destroying one to a few electrical poles.

Transportation & Pacific Transit

Part of Pacific County's transportation network is vulnerable to landslides. Map 33, previously depicted in this section, overlays major roadways in the planning area with the identified risk zones. State Highways 4 and 401 run alongside some of the identified risk zones. Additionally (although risk zones are alongside not marked) Highway 101 has experienced landslides and is therefore vulnerable. Landslides are rare in the area, but it is possible that a series of landslides could occur at both major roadways and, cutting off Washington's access to the south western portion of the county. Access to Oregon would remain open, but if the landslides are a result of a major earthquake, response and recovery operations could be significantly deterred.

Water Companies and Districts

The participating water companies and districts are not vulnerable to landslides.

4.3.4A – Infrastructure & Critical Facilities

None of Pacific County's major critical facilities are at risk from landslides. A list of infrastructure and critical facilities can be found in Appendix D. However, as noted above, landslides pose a significant risk to the transportation infrastructure of the planning area. PCEMA is primarily concerned with landslides blocking and damaging US Highway 100 and 101 along with State Routes 105, 6, 4, and 401. A number of smaller county roads, including but not limited to Parpala Road, Bighill Road, and Upper Naselle Road, are also potential at risk infrastructure.

4.3.4B – Land Use & Development Trends

Pacific County and it participating jurisdictions have declining growth as detailed in Section 3.1.1 – Land Use & Development Trends. None of the participating jurisdictions have seen significant growth and thus there is no increase in their risk for landslides caused by new land use measures or development. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within or outside of the designated landslide areas.

4.3.4C – Unique & Varied Risk

None of the participating jurisdictions are at risk for landslides with the exception of the county at large.

4.3SS – Severe Storms

4.3.1 – Description

Severe storms comprise the hazardous and damaging weather effects often found in violent storm fronts. They can occur together or separately; they are common and usually not hazardous, but on occasion they can pose a threat to life and property. This plan defines Severe Storms as a combination of the following severe weather effects as defined by NOAA and the NWS:

Hail: Showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.

High Winds: Sustained wind speeds of 40 miles per hour or greater lasting for 1 hour or longer, or winds of 58 miles per hour or greater for any duration (often referred to as straight line winds to differentiate from rotating or tornado-associated wind).

Extreme Winds: A classification for winds which exceed 115 miles per hour not associated with tornadoes or hurricanes.

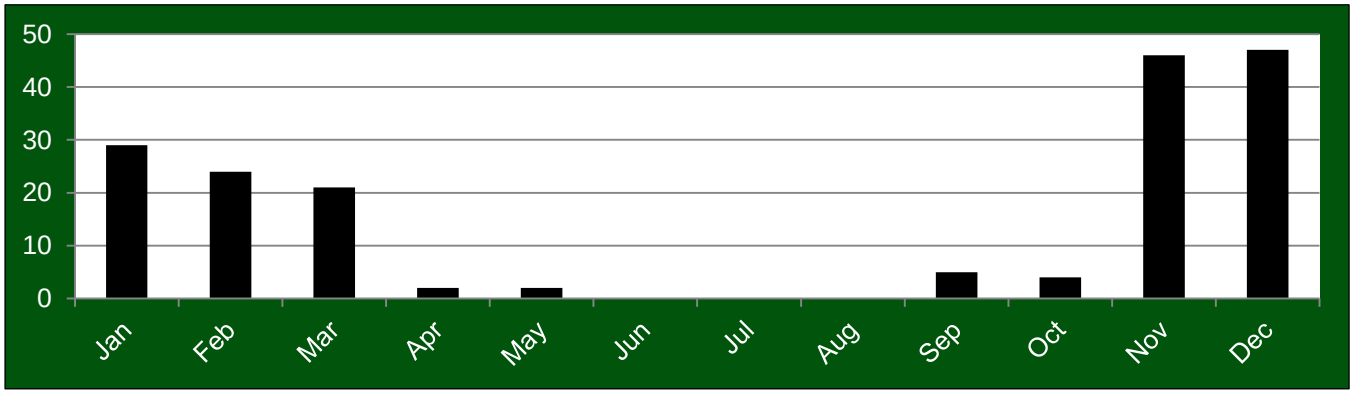
Lightning: A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground, or between the ground and a cloud.

Thunderstorm Winds: The same classification as high or strong winds, but accompanying a thunderstorm. They are also referred to as a straight line winds to differentiate from rotating or tornado-associated wind.

For consistency with the NWS and NOAA, extreme, high and strong winds are shown as separate from thunderstorm winds when raw, collected data is displayed. However, for their impacts and probability, they are combined and referred to simply as “wind” events.

Severe Storms have been so consistent throughout modern history that much of the vulnerability is mitigated. However, this section is not concerned with everyday wind, lightning in the sky, or mild precipitation. This section is concerned with storms when they behave such that they pose a threat to property and life.

Chart 3 – Severe Storms by Month, Pacific County (1996 – 2014)



**The data are from the NOAA NCDC Storm Event Database.*

4.3.2 – Location & Extent

Photo courtesy of Kevin Miller Photography

Severe storms occur throughout the year in Pacific County and its participating jurisdictions. Thunderstorms, high, and strong winds can affect any size area from a county, region, or isolated pockets of a city or a neighborhood. In contrast, lightning will strike a single point. It is not often that multiple strikes will hit and damage persons and property in one severe storm event. Hail will occur in small pockets of an accompanying storm. Pacific County and its participating jurisdictions have a history of damaging winds accompanying storms, but have not seen significant hail or lightning impacts.

Storms, severe or not, are often predicted within a day or multiple days in advance. The severity of a storm is not as easily predicted, and when it is, the window of notification is up to few hours to under an hour. When a storm is imminent, it is unknown whether or not hail, lightning, or damaging winds will occur until after an incident has been reported.

Strong, high, and thunderstorm winds are classified as winds which occur between 40 and 70 miles per hour (lasting for 1 hour or greater) or of 58 miles per hour (for any duration). The Beaufort Scale (shown on below), displays the ranges of wind speed and correlates them with their typical effects. At a level 7 and 8, citizens should remain indoors, and anywhere above a level 8 will cause damage to structures. Damage to any amount of structures can cause serious disruption to Pacific County and its participating jurisdictions. The scope of damage can range from one residential house up to widespread destruction of homes and reinforced buildings throughout the county.

Typically severe storms in Pacific County have wind speed between 40 and 50 miles per hour, but often during severe storms, winds are recorded at 63 mph north of Long Beach up the peninsula, 74 mph in Long Beach, 62 mph in South Bend, and 75 mph in Ilwaco. There are even historical records of brief gusts reaching up to 140-150 mph.

Beaufort Scale

Beaufort number	Wind Speed (mph)	Seaman's term		Effects on Land
0	Under 1	Calm		Calm; smoke rises vertically.
1	1-3	Light Air		Smoke drift indicates wind direction; vanes do not move.
2	4-7	Light Breeze		Wind felt on face; leaves rustle; vanes begin to move.
3	8-12	Gentle Breeze		Leaves, small twigs in constant motion; light flags extended.
4	13-18	Moderate Breeze		Dust, leaves and loose paper raised up; small branches move.
5	19-24	Fresh Breeze		Small trees begin to sway.
6	25-31	Strong Breeze		Large branches of trees in motion; whistling heard in wires.
7	32-38	Moderate Gale		Whole trees in motion; resistance felt in walking against the wind.
8	39-46	Fresh Gale		Twigs and small branches broken off trees.
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.
11	64-72	Storm		Very rarely experienced on land; usually with widespread damage.
12	73 or higher	Hurricane Force		Violence and destruction.

4.3.3 – Previous Occurrences

Pacific County and its participating jurisdictions have recorded 0 fatalities and 0 injuries due to severe storms.

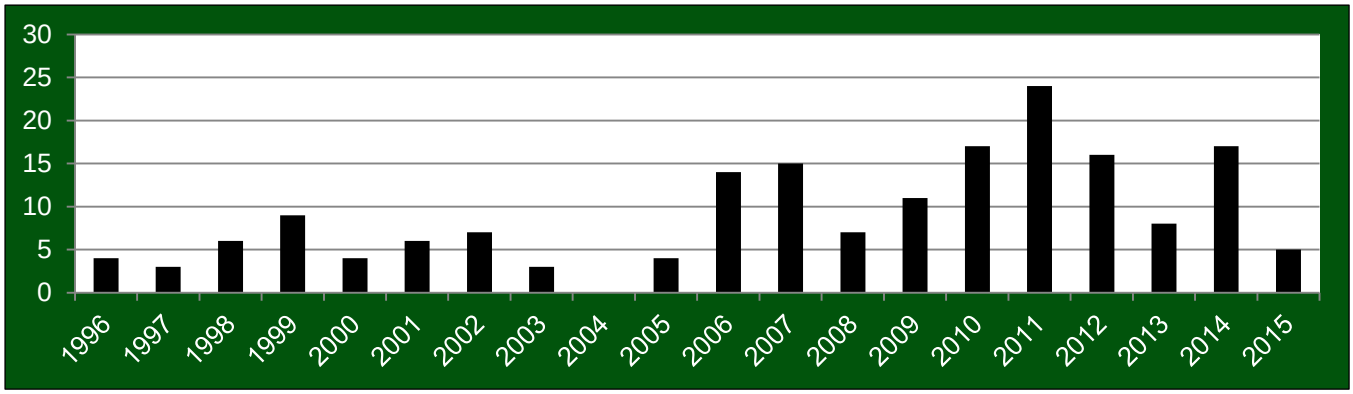
Since 1996, NOAA has recorded 180 severe storm wind events in Pacific County and its participating jurisdictions. These events have caused $10,466,500 in recorded property damage.

There are no recorded incidents of hail or lightning causing property damage, injury, or fatalities in the planning area.

For a complete list of NOAA recorded severe storm events, please reference Appendix E.

Photo courtesy of the Willapa Harbor Herald

Chart 4 – Severe Storms, Pacific County (1996 – 2014)



**The data are from the NOAA NCDC Storm Event Database.*

4.3.3A – Probability of Future Events

Pacific County and its participating jurisdictions can each expect a severe storm event with a 921.05% chance per year, or 9.2105 events per year. The qualitative chance of a severe storm impacting the planning area is "highly likely."

Table 29 – Probability, Severe Storms	
Event Year	**Event Count**
1996	4
1997	3
1998	6
1999	9
2000	4
2001	6
2002	7
2003	3
2004	0
2005	4
2006	14
2007	15
2008	7
2009	11
2010	17
2011	24
2012	16
2013	8
2014	17
Total Recorded Events =	175
Total Years =	19
Yearly Probability =	**921.05%**

**The data are from the NCDC Storm Events Database.*

4.3.4 – Assessing Vulnerability & Impacts

Wind Impacts

Pacific County and its participating jurisdictions have recorded 175 wind events since 1996 through 2014. The range of magnitude for these events was between 35 miles per hour and 77 miles per hour with an average of 55.10 miles per hour. Based on the Beaufort Scale on page 122 and future probability in Table 29, Pacific County and its participating jurisdictions can expect 9.47 wind events per year, ranging from Beaufort Scale 7 – "Fresh Gale" to Beaufort Scale 12 – "Hurricane Force."

Photo courtesy of Kevin Miller Photography

Table 30 – Historical Impacts, Severe Storms	
Count of Events	175
Impacts Per Year	9.21
Average Magnitude (Miles Per Hour)	55.10
Magnitude Range (Miles Per Hour)	35 - 77
Average Cost	$58,147
Magnitude of Cost	$0 - 10,140,000
Total Recorded Cost	$10,466,500
Average Fatalities	0
Total Fatalities	0
Average Injuries	0
Total Injuries	0

**The data are from the NCDC Storm Events Database.*

Vulnerability of Facilities

Structural vulnerability to severe storms is the same throughout Pacific County and its participating jurisdictions. Hail can be costly by damaging rooftops, outdoor equipment, and windows. Lightning can strike anything with the potential to significantly damage electrical infrastructure or ignite a fire. Wind events create flying debris which can damage infrastructure and buildings. Strong enough wind can cause structure damage to older, less well-constructed buildings even toppling or leveling them.

The average wind event in Pacific County and its participating jurisdictions costs $58,147, while the existing range of a single incident has been from $0 to $10,140,000.

Vulnerability of Population

Pacific County and its participating jurisdictions' vulnerability to severe storms is the same throughout the planning area. In the absence of proper shelter, hail can cause serious injury to an unprotected person. As long as Pacific County and its participating jurisdictions' citizens stay indoors and away from windows, they will be protected against hail injury and death. Similarly, they can avoid being struck by lightning by staying indoors. Although lightning may strike a structure sheltering people, it is extremely unlikely that the strike itself will directly injure or kill a sheltered person. As long as a structure is able to maintain its integrity during high speed winds, it will protect people from wind injury or death. However, old or poorly constructed facilities are not good shelter as previously mentioned flying debris can break windows or cause structural damage. Either of these instances have the potential to seriously injure or kill anyone taking shelter in older, less well-constructed building. The most likely scenario in the planning area is that a tree or other large debris is blown over onto a vehicle, house, or directly on an unsheltered person.

Historically, there have been 0 fatalities and 0 injuries recorded from severe storms in the planning area.

Photo courtesy of Kevin Miller Photography

Vulnerability of Systems
Pacific County and its participating jurisdictions' assets and systems' vulnerability to severe storms is the same throughout the planning area.

Hail damage is typically superficial and does not hamper a community's assets, systems, or activities. Lightning strikes can destroy or damage a community asset, but since their strikes are typically isolated and rarely hit anything, it is unlikely to significantly impact a larger system. Wind events can destroy and damage multiple structures and points of infrastructure. They have the potential to significantly impact a community's power and communications grid compounding the effects of other hazards.

Fire Districts
The fire districts' services are an integral part of the planning areas emergency operations before, during, and after an event. The participating fire districts are vulnerable to severe storms. A severe storm is unlikely to damage an entire fire district in a way that would significantly reduce its overall capabilities.

Ports
The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor have limited vulnerability to severe storms. High blowing winds are likely to temporarily shut down operations, but without any facility damage, they are unlikely to have any lasting effects. In the event structural damage is incurred, commerce will slow down, but it is unlikely that the port would close for a period of days or weeks. Historically, severe storms have not had a significant impact on these ports.

Public Utility District
Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to delivery electricity to the planning area. PUD #2's infrastructure is at risk from the high winds that accompany a severe storm. These winds can knock down electrical poles and wires directly or cause trees and other debris to knock them down denying power to Pacific County and its participating jurisdictions' residents.

Transportation & Pacific Transit
The roadways and bus routes of Pacific County are not significantly or directly vulnerable to severe storms. Although high winds accompanying a severe storm will present an immediate danger to traveling motorists, they do not have the power to inhibit the infrastructure's functionality in the long term. They have, however, had an impact in the medium-term. The only scenario in which the transportation infrastructure is hindered is in the event of a tree or other vegetation debris blocking a roadway. Historically, this type of event has caused road closure for 3 days.

Water Companies and Districts
The participating water companies and districts are vulnerable to severe storms. High winds have the potential to damage their main facilities, office buildings, pump stations, and contaminate storage ponds with debris.

4.3.4A – Critical Facilities & Infrastructure

All infrastructure and critical facilities are equally at risk, including the Ocean Beach Hospital and Willapa Harbor Hospital, since severe storms indiscriminately affect the entire planning area. A complete list of infrastructure and critical facilities can be found in Appendix D.

4.3.4B – Land Use & Development Trends

Pacific County and it participating jurisdictions have declining growth, as detailed in Section 3.1.1 – Land Use & Development Trends. None of the participating jurisdictions have seen significant growth, and thus there is no increase in their risk to severe storms caused by new land use measures or development. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within or outside the planning area.

4.3.4C – Unique & Varied Risk

Severe storms have the ability to affect a portion of or the entire planning area, but historically they have affected the coastal areas of Long Beach, Ilwaco, Tokeland, North Cove, and the western coast of the county greater than the inland areas.

4.3TS – Tsunamis

4.3.1 – Description

Tsunami is a Japanese word for a sea wave of local or distant origin that results from large-scale seafloor displacements usually associated with large earthquakes. This displacement of earth moves columns of water above the rupture point and the result is a series of waves that travel outwards in all directions from the place where the uplift occurred.

Tsunami waves have extremely long wavelengths containing a greater volume of water than damaging waves from a coastal storm. In this way, they behave less like a wave and more like an autonomous influx of water. Tsunamis can travel great distances across the entirety of the Pacific Ocean at speeds of 500 miles per hour. In the deep ocean, they can pass underneath ships without hinting of their existence. Once they approach shallower depths the excessive volume of water begins to elevate and the tsunami slows down.

A tsunami can move inland for just feet or miles, depending on the strength of the tsunami and the land's topography. A tsunami can take up to an hour to reach its peak while moving inland and can also be accompanied by smaller tsunami, waves which begin to build up once they move inland. If a tsunami hits at high tide, it will move farther inland and elevate higher, as the converse is also true for low tide. Additionally, if the originating earthquake causes a greater drop in land elevation than is modeled, a tsunami could have more devastating effects that were previously discussed or modeled.

4.3.2 – Location & Extent

A high magnitude earthquake originating in the Cascadia Subduction Zone will produce a tsunami. Additionally, there is the possibility that an earthquake near Alaska (or even Japan) will form a tsunami that impacts the planning area. A tsunami created near Alaska or Japan would give hours of warning time for evacuation and preparation while a tsunami created by the Cascadia Subduction Zone could give anywhere between 20 and 30 minutes and as long as 4 hours. Subsequent event-related tsunamis can continue to arrive for hours. The Cascadia Region Earthquake Group predicts that a Cascadia event could produce a tsunami as high as 30 to 40 feet, while a study conducted at the University of Washington predicts the first wave will have a height of 22 feet.

The State of Washington's Department of Natural Resources has modeled two likely tsunami scenarios which are depicted in the maps on the following pages. These depict a scenario modeled in 2007, Scenario 1A, and a new study from 2015 labeled L1. The newer study uses updated topographical data and digital elevation maps accurate to 1/3 arc seconds. As expected, the areas closest to the coast and those near the mouths of rivers are highly exposed, while the jurisdictions inland are not exposed.

> ***NOTE:*** *The 2015 study has yet to be peer reviewed and approved for distribution. Being the case, it is referenced and demonstrated here, but the vulnerability assessment has been conducted using the approved study from 2007.*

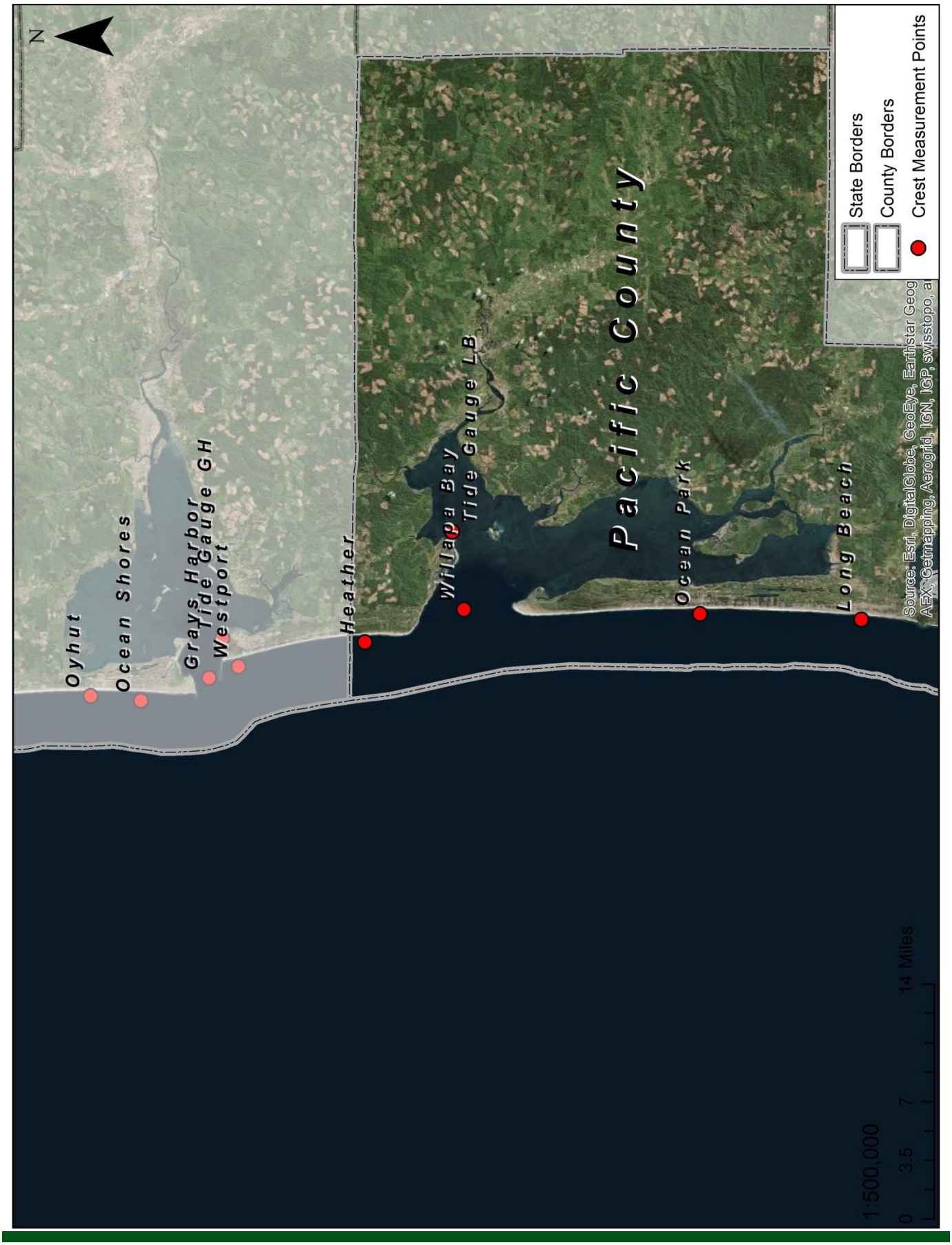
Additionally, these models estimate the peak crest height of each tsunami at certain points along the coast. The peak crest points are shown in a map on the following page. Please see the table below for the estimated tsunami crest height at each location.

Table 31 - Tsunami Crest Height

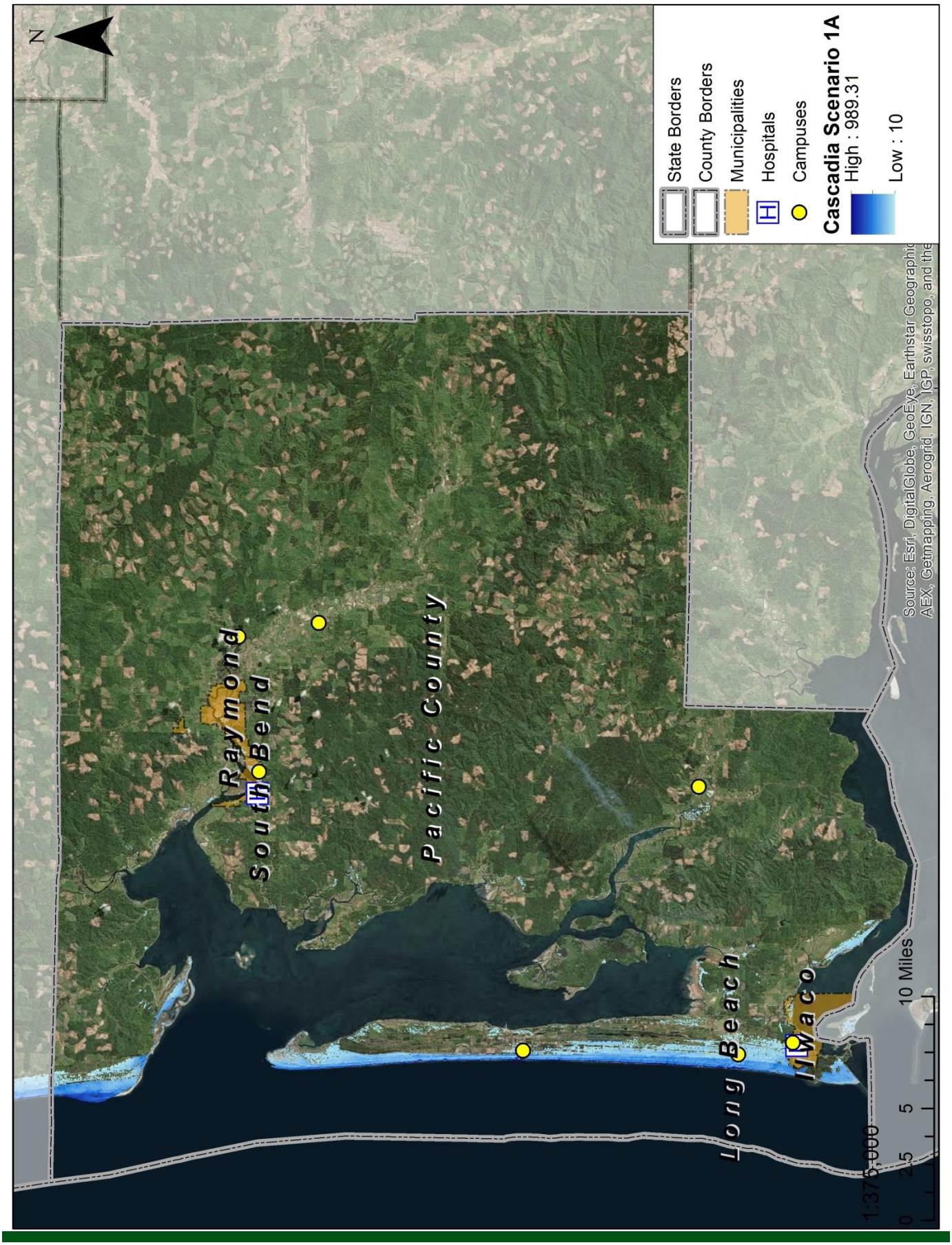
Location	Longitude	Latitude	Depth L1 (Feet)	Depth 1A (Feet)
Oyhut	235.82	47.017122	31.17	28.22
Ocean Shores	235.815	46.973594	36.09	33.46
Grays Harbor	235.844908	46.915	53.15	50.52
Westport	235.86	46.889775	34.45	31.82
Tide Gauge GH	235.895233	46.904205	16.40	13.12
Heather	235.893	46.780955	29.20	26.90
Willapa Bay	235.935547	46.695602	43.64	41.01
Ocean Park	235.934	46.491719	30.84	29.53
Long Beach	235.93	46.352283	31.50	30.51
Tide Gauge LB	236.033432	46.70676	21.98	18.04

**The data are from the State of Washington's Department of Natural Resources.*

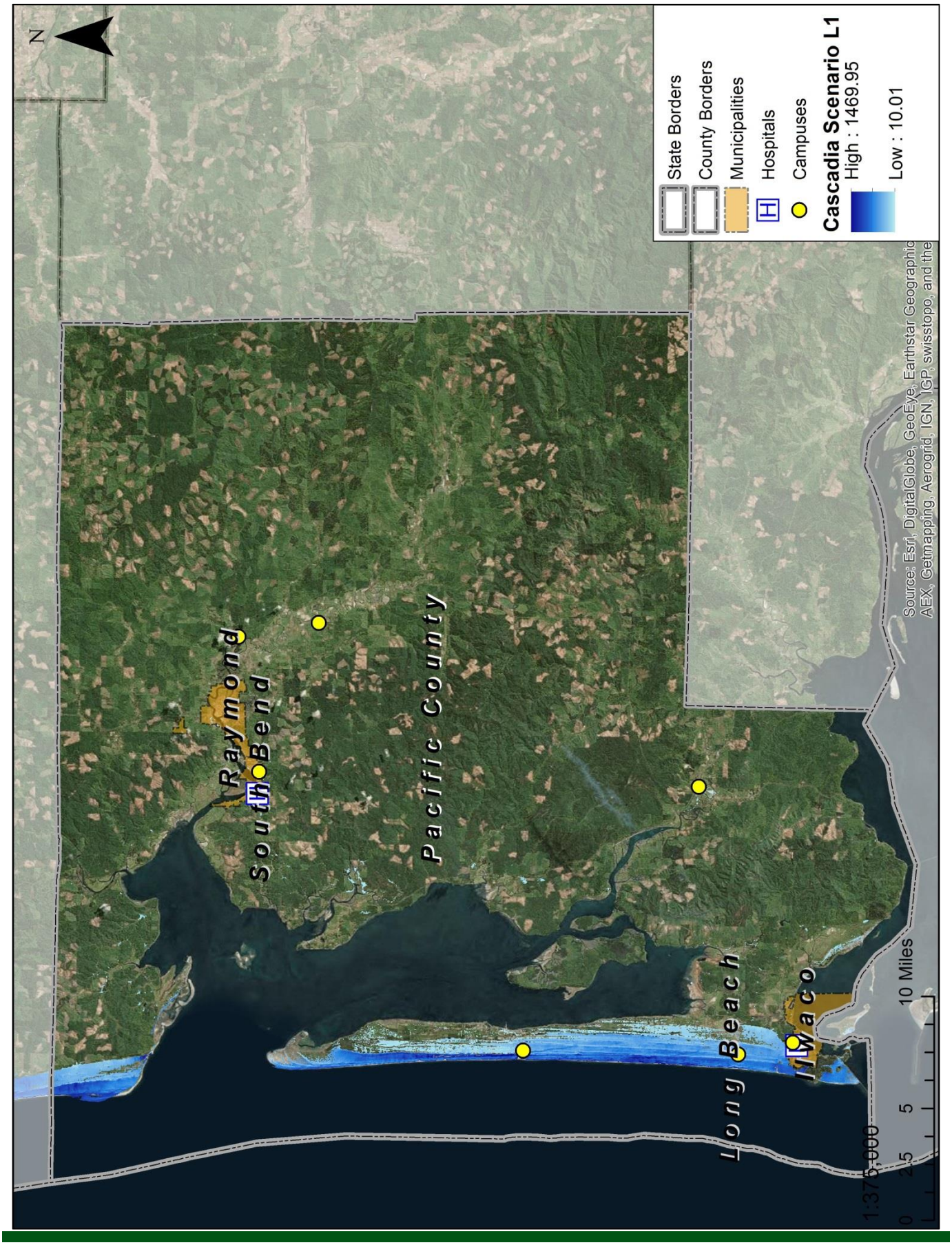
Map 34 – Tsunami Crest Height Measurement Locations



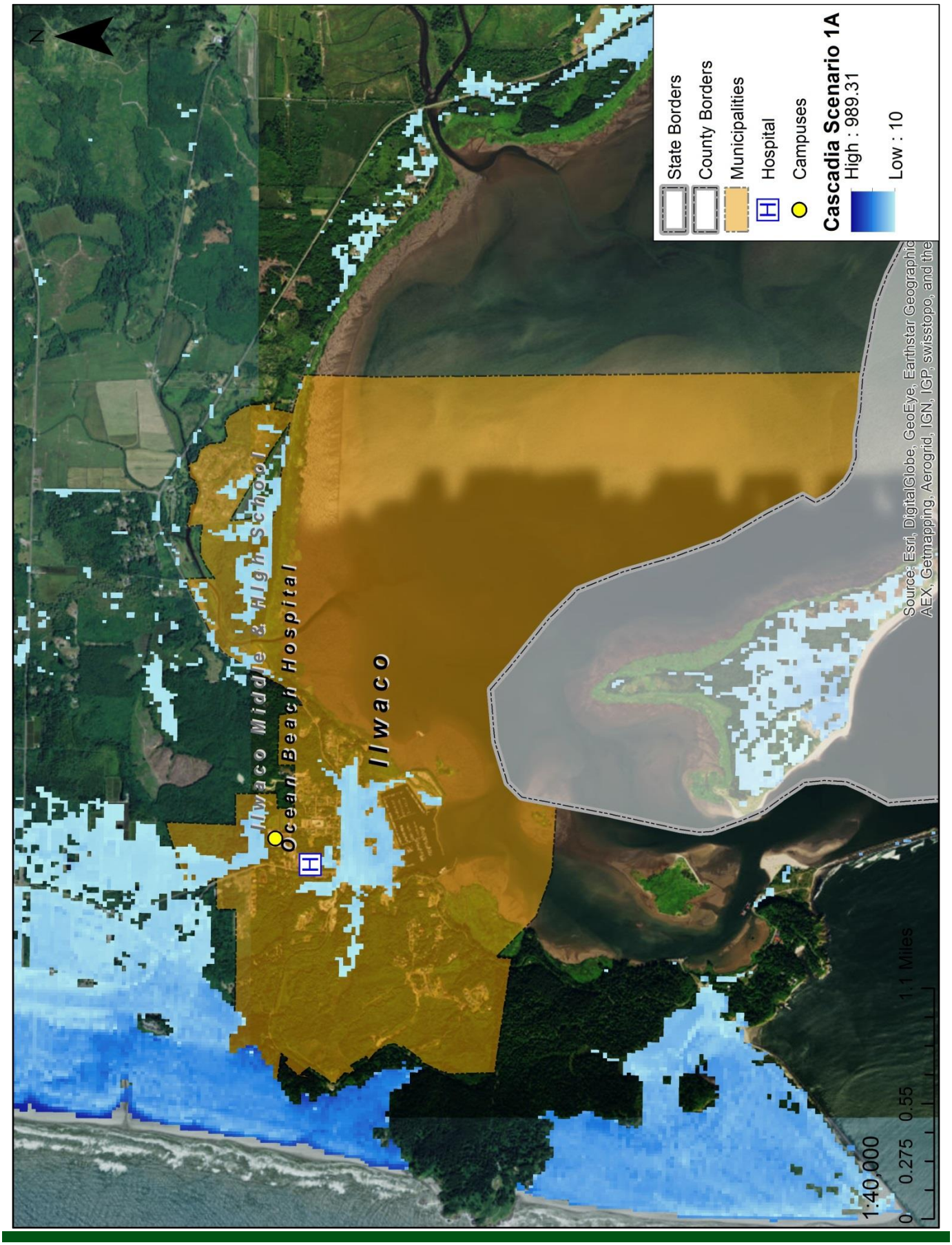
Map 35 – Tsunami Model 1A, Pacific County



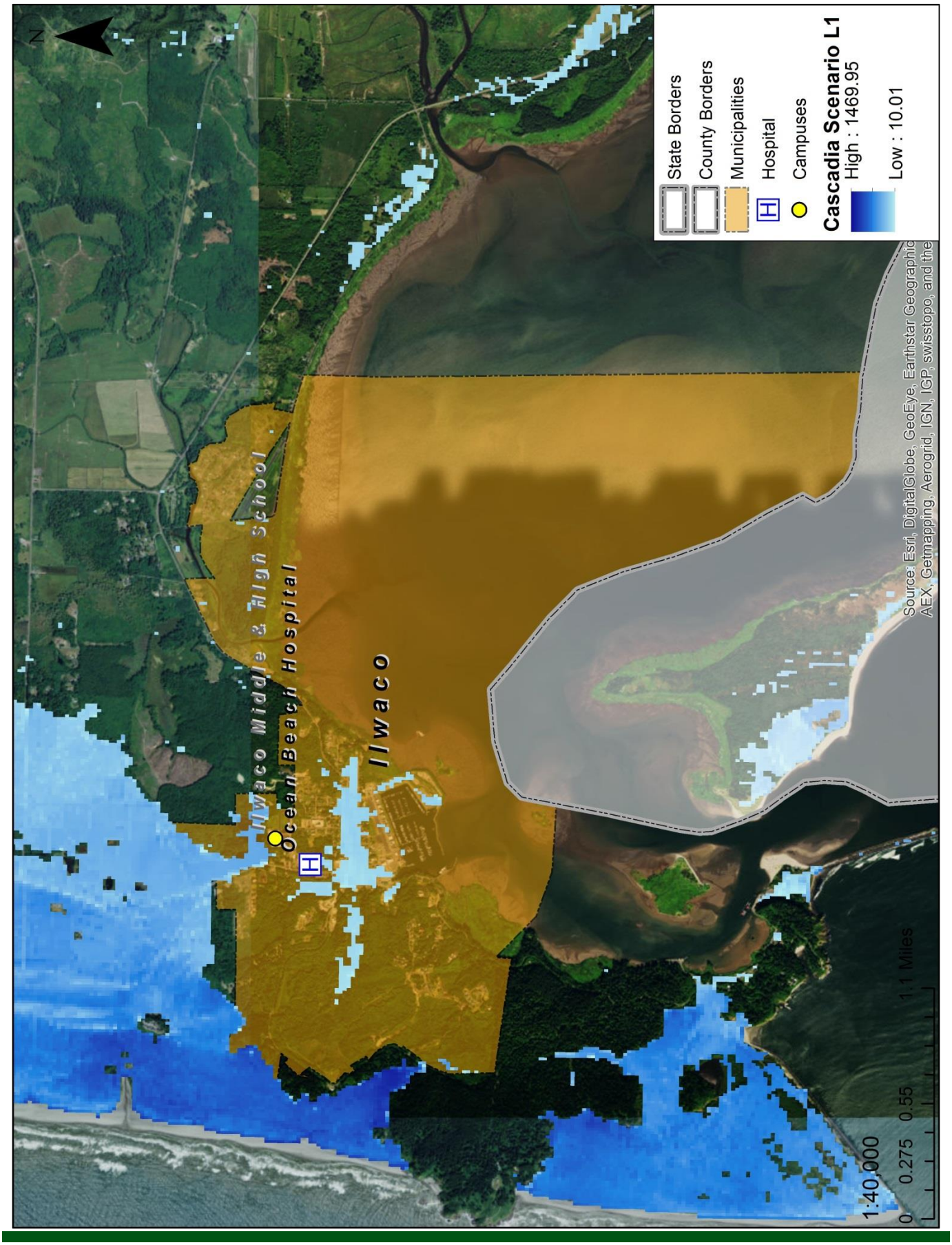
Map 36 – Tsunami Model L1, Pacific County



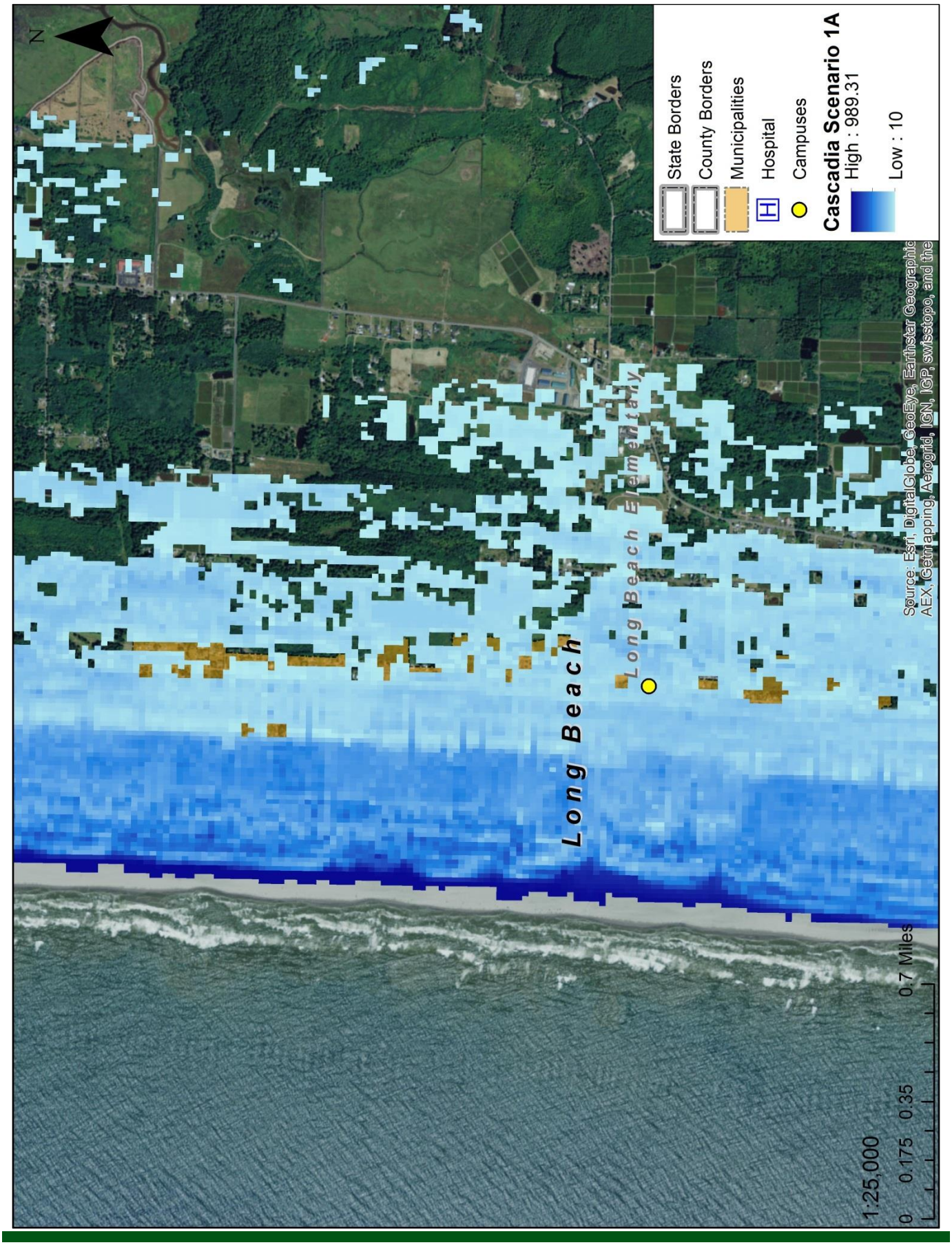
Map 37 – Tsunami Model 1A, Ilwaco



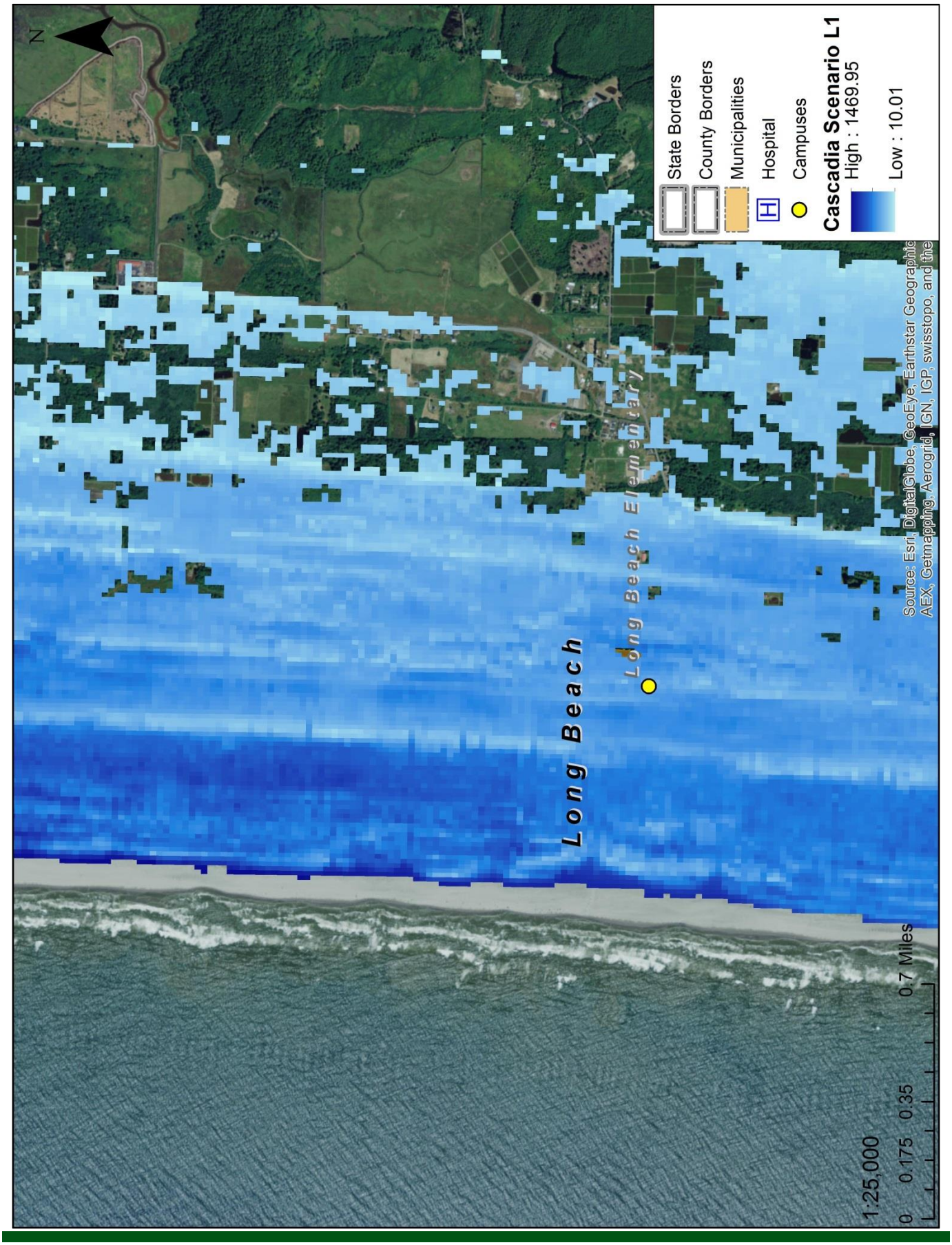
Map 38 – Tsunami Model L1, Ilwaco



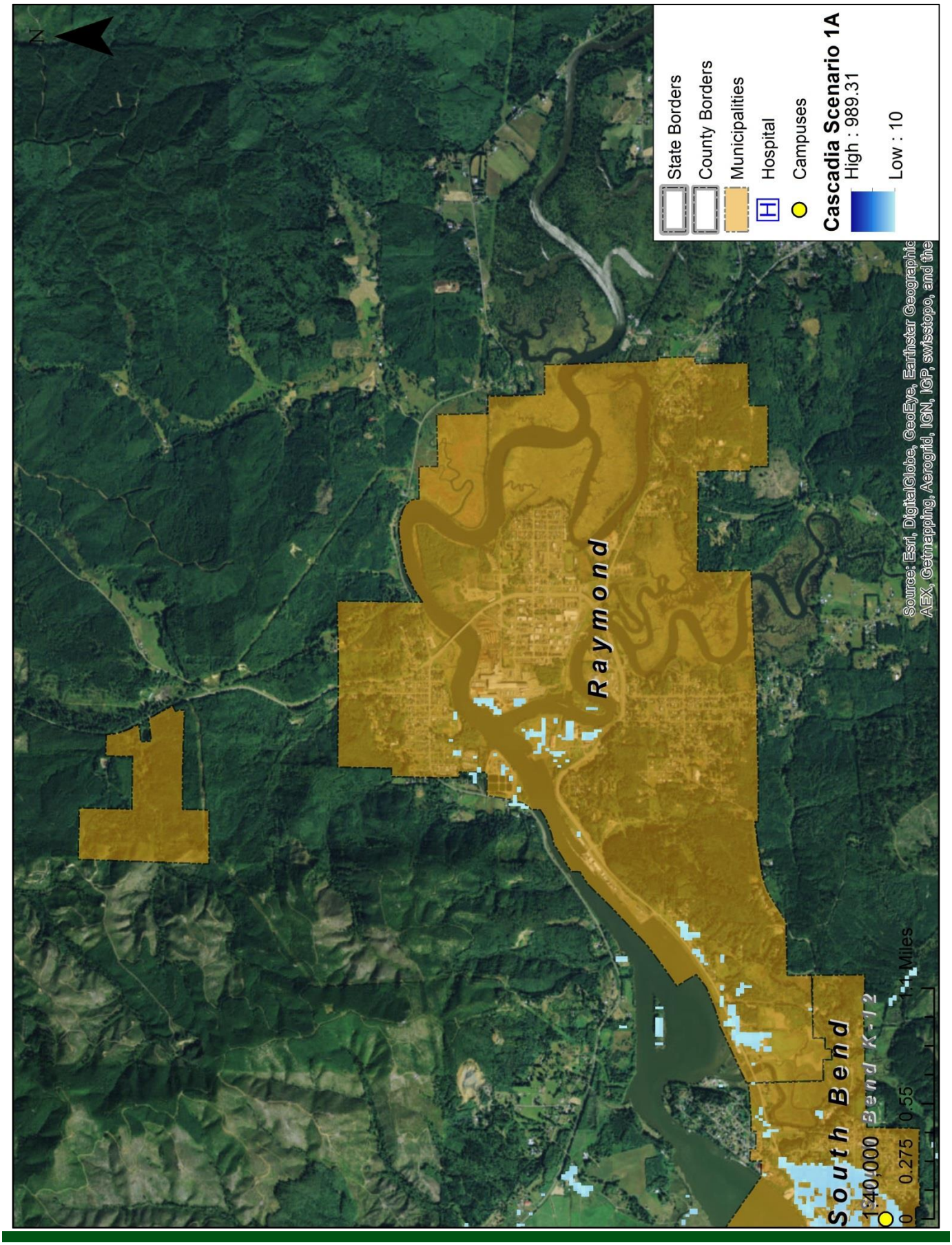
Map 39 – Tsunami Model 1A, Long Beach



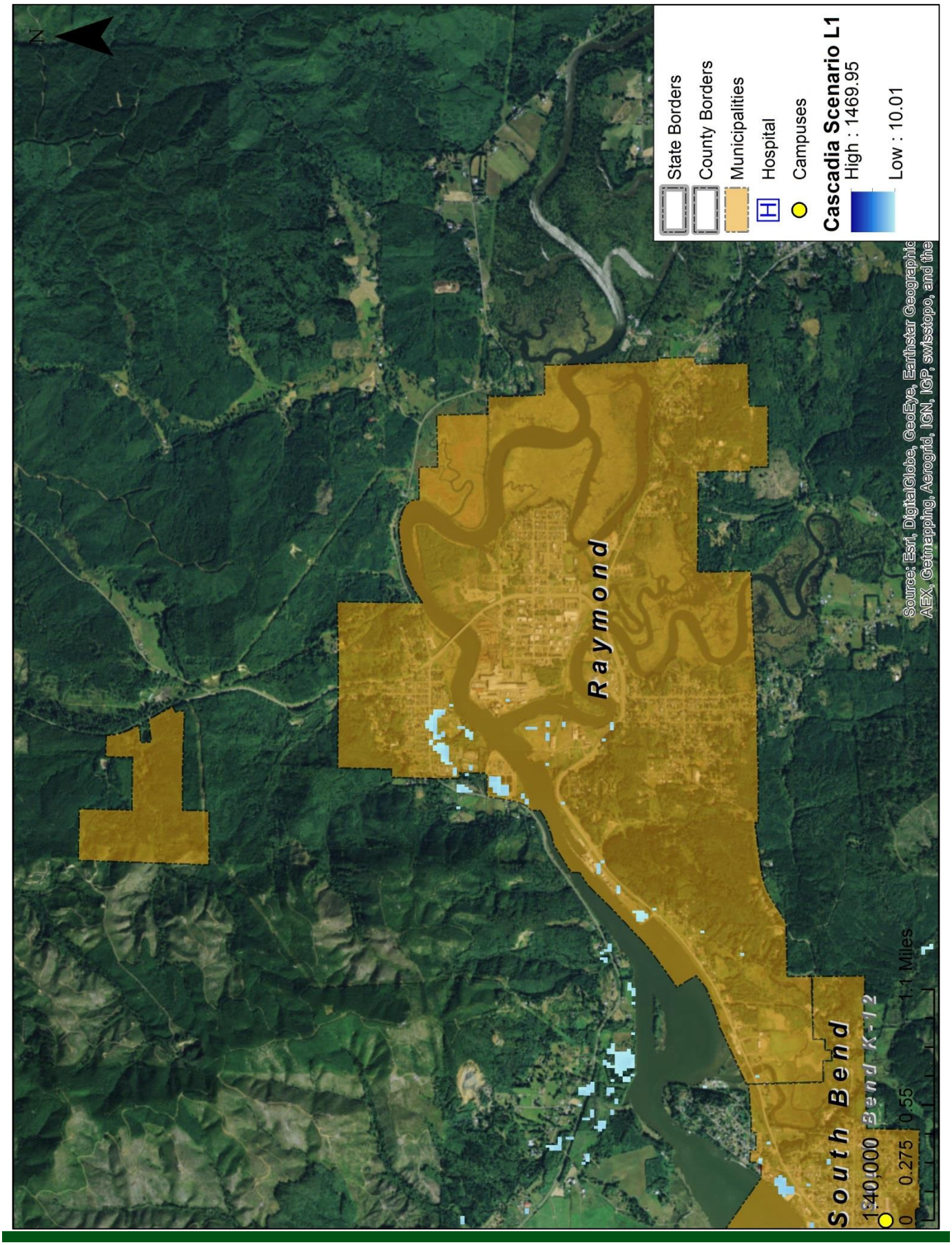
Map 40 – Tsunami Model L1, Long Beach



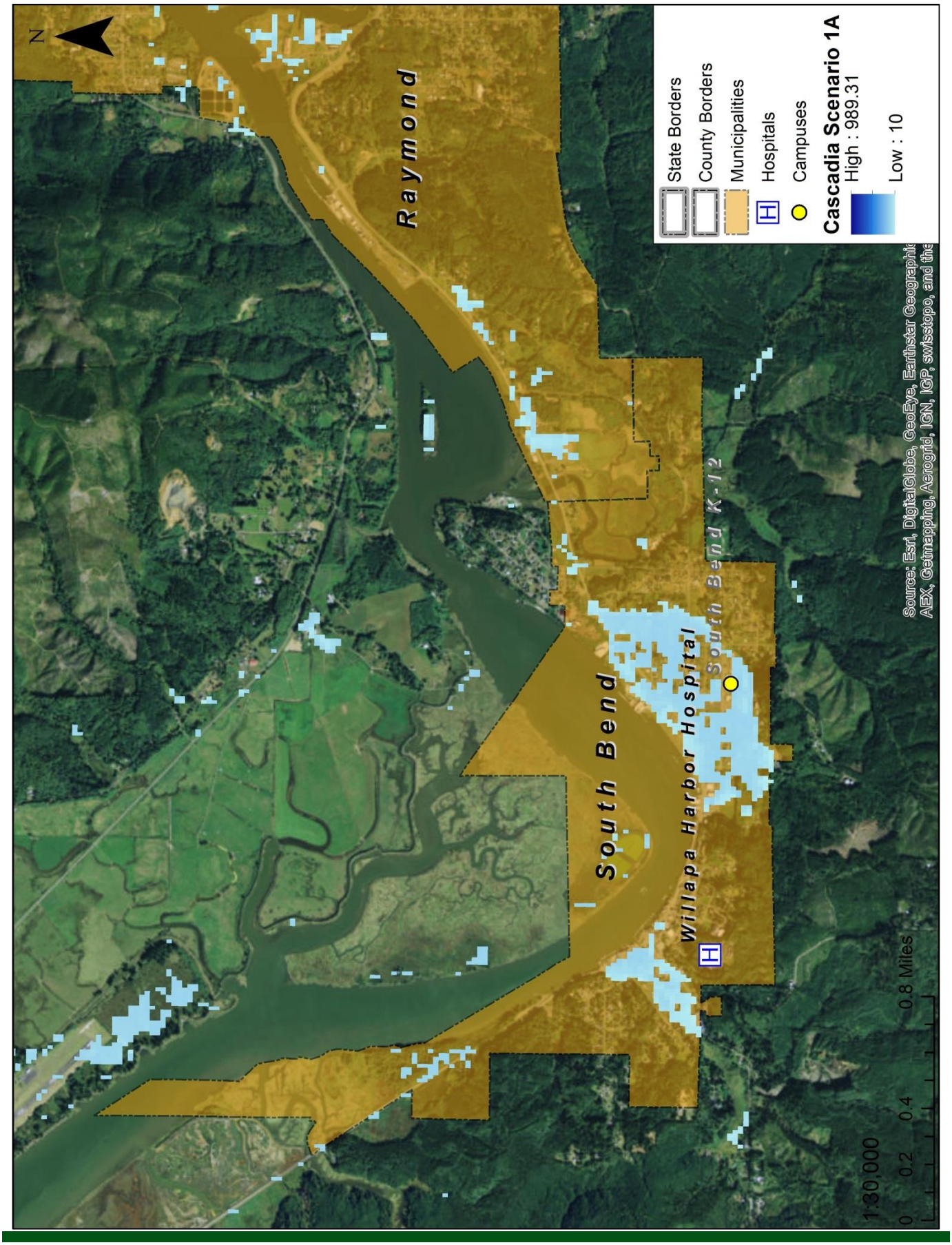
Map 41 – Tsunami Model 1A, Raymond



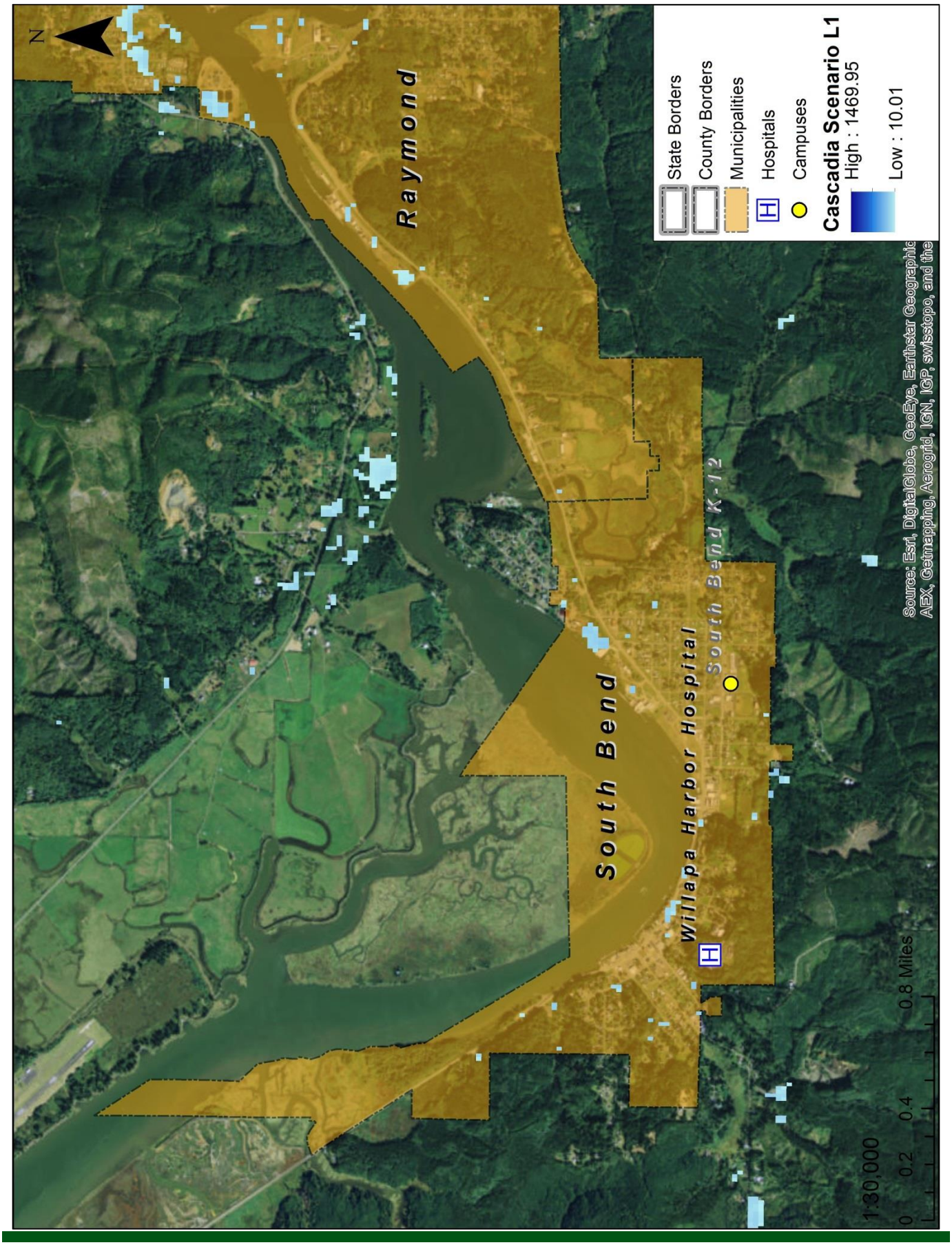
Map 42 – Tsunami Model L1, Raymond



Map 43 – Tsunami Model 1A, South Bend



Map 44 – Tsunami Model L1, South Bend

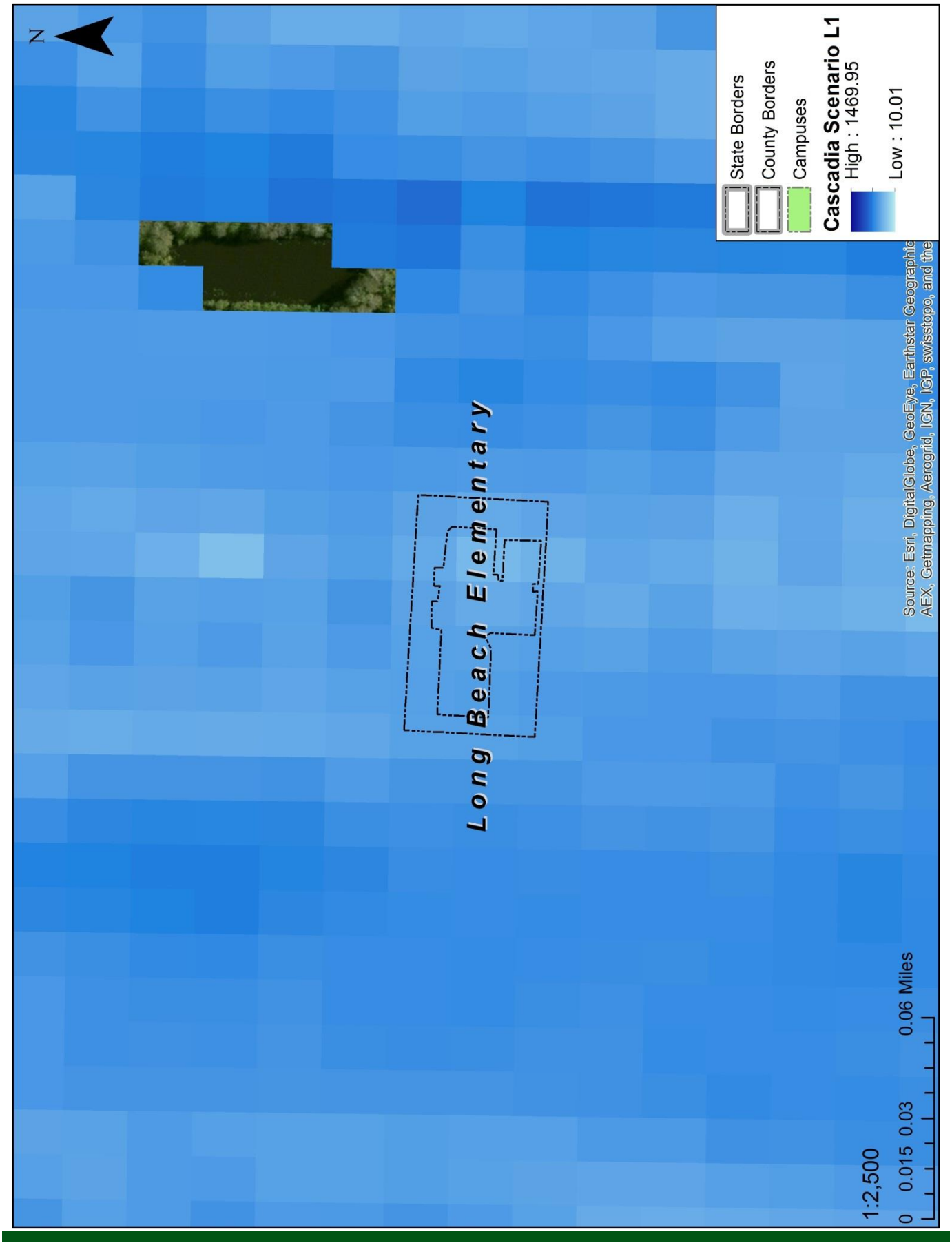


Map 45 – Tsunami Model 1A, Ocean Beach SD, Ilwaco Middle & High School

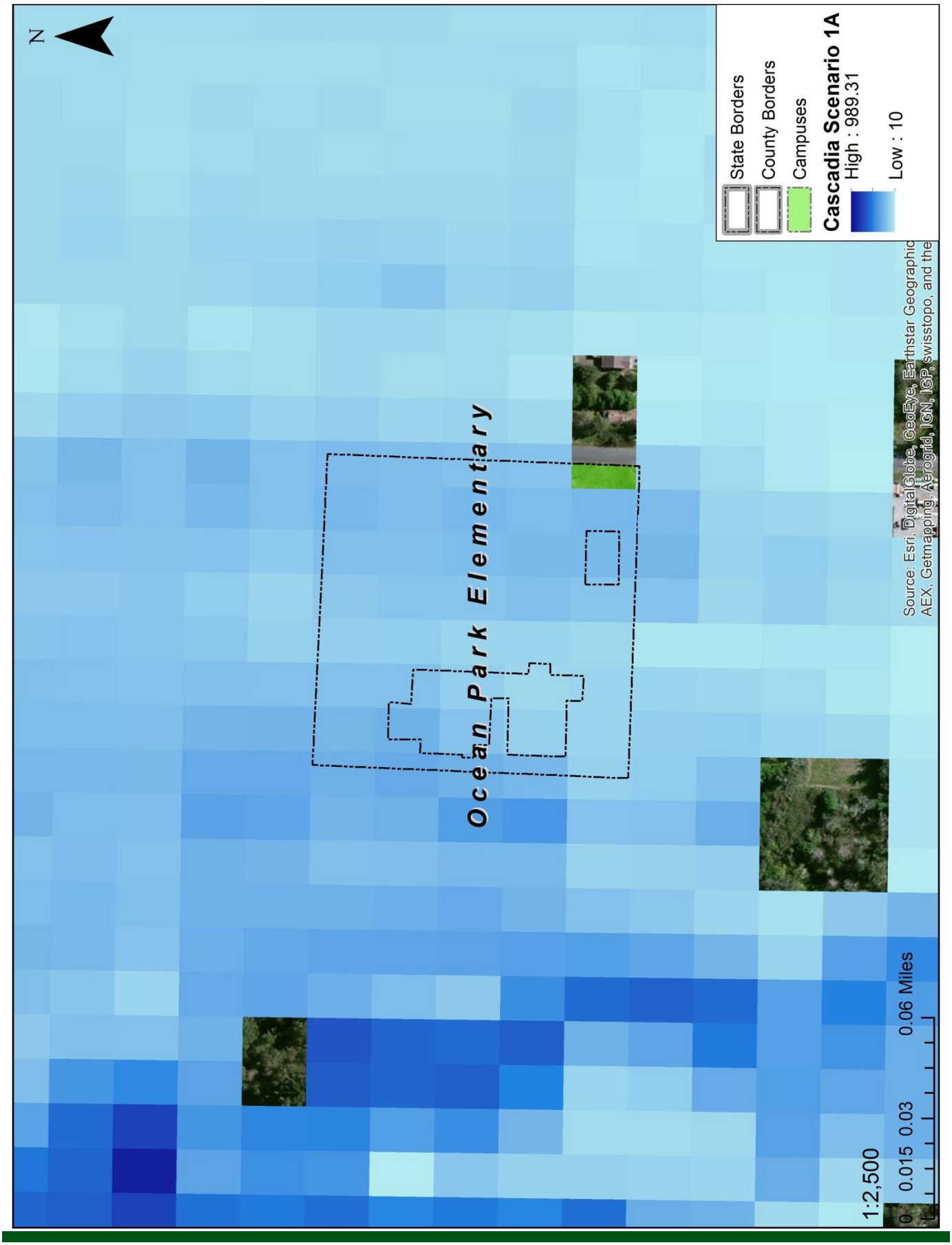
Map 46 – Tsunami Model L1, Ocean Beach SD, Ilwaco Middle & High School

Map 47 – Tsunami Model 1A, Ocean Beach SD, Long Beach Elementary

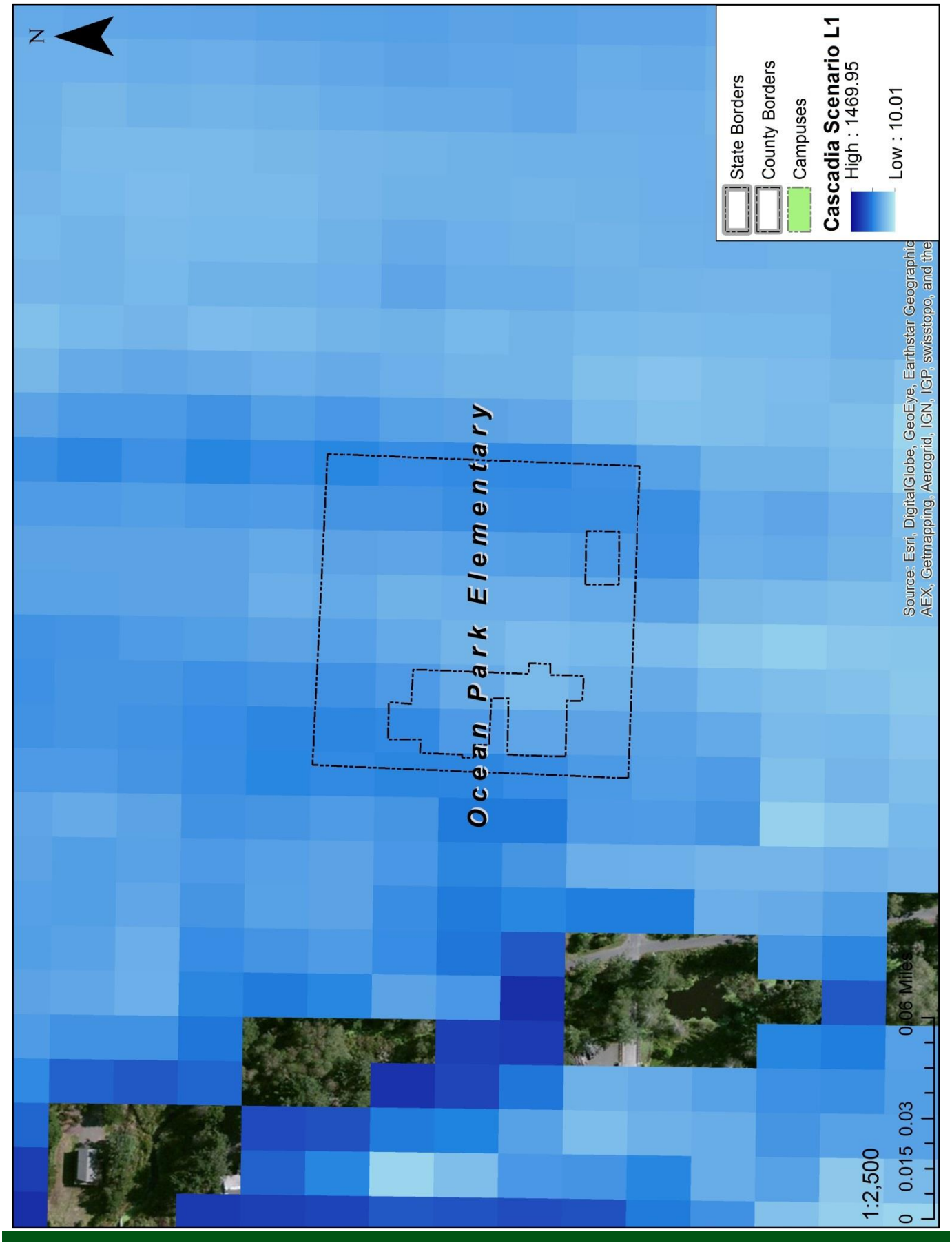
Map 48 – Tsunami Model L1, Ocean Beach SD, Long Beach Elementary



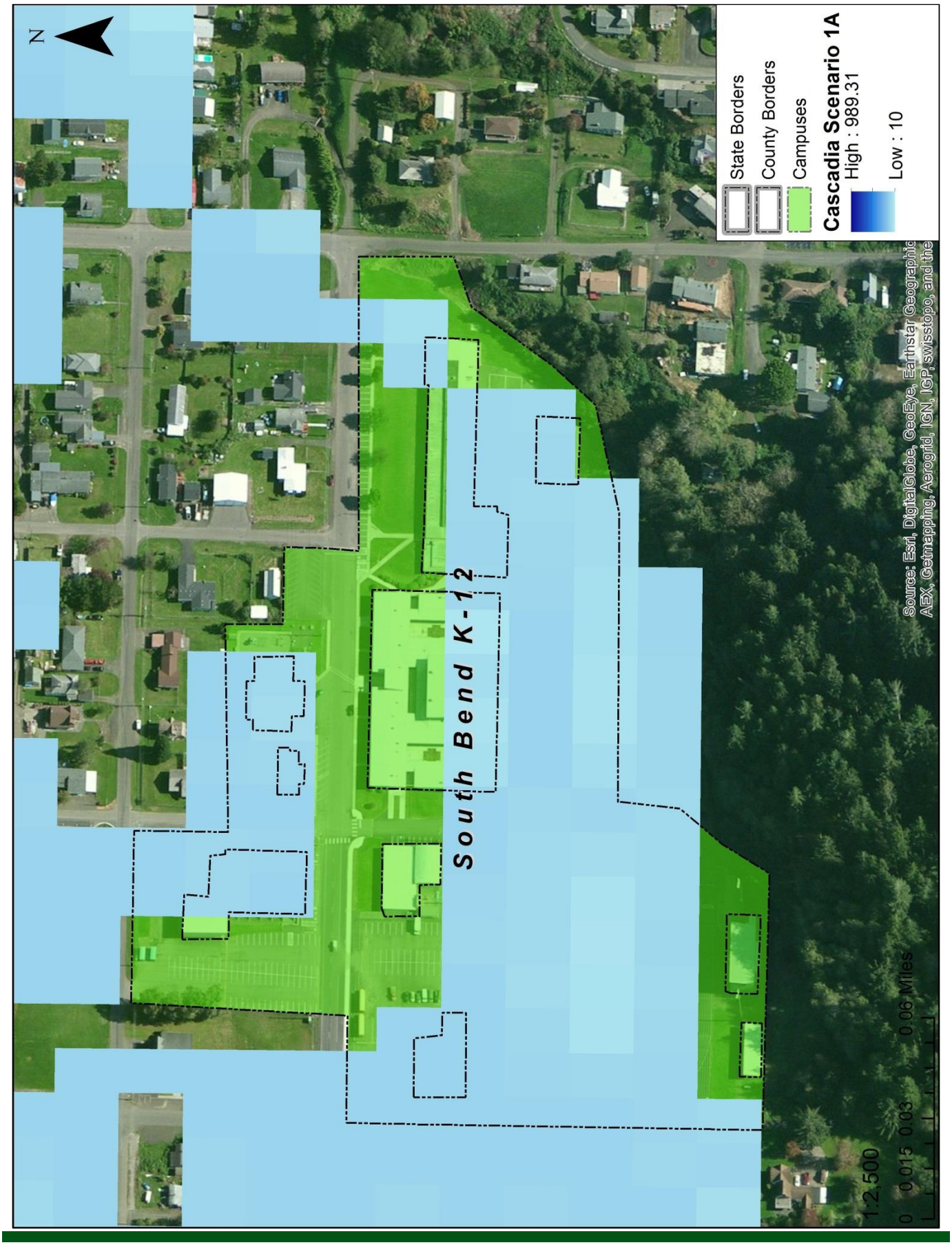
Map 49 – Tsunami Model 1A, Ocean Beach SD, Ocean Park Elementary



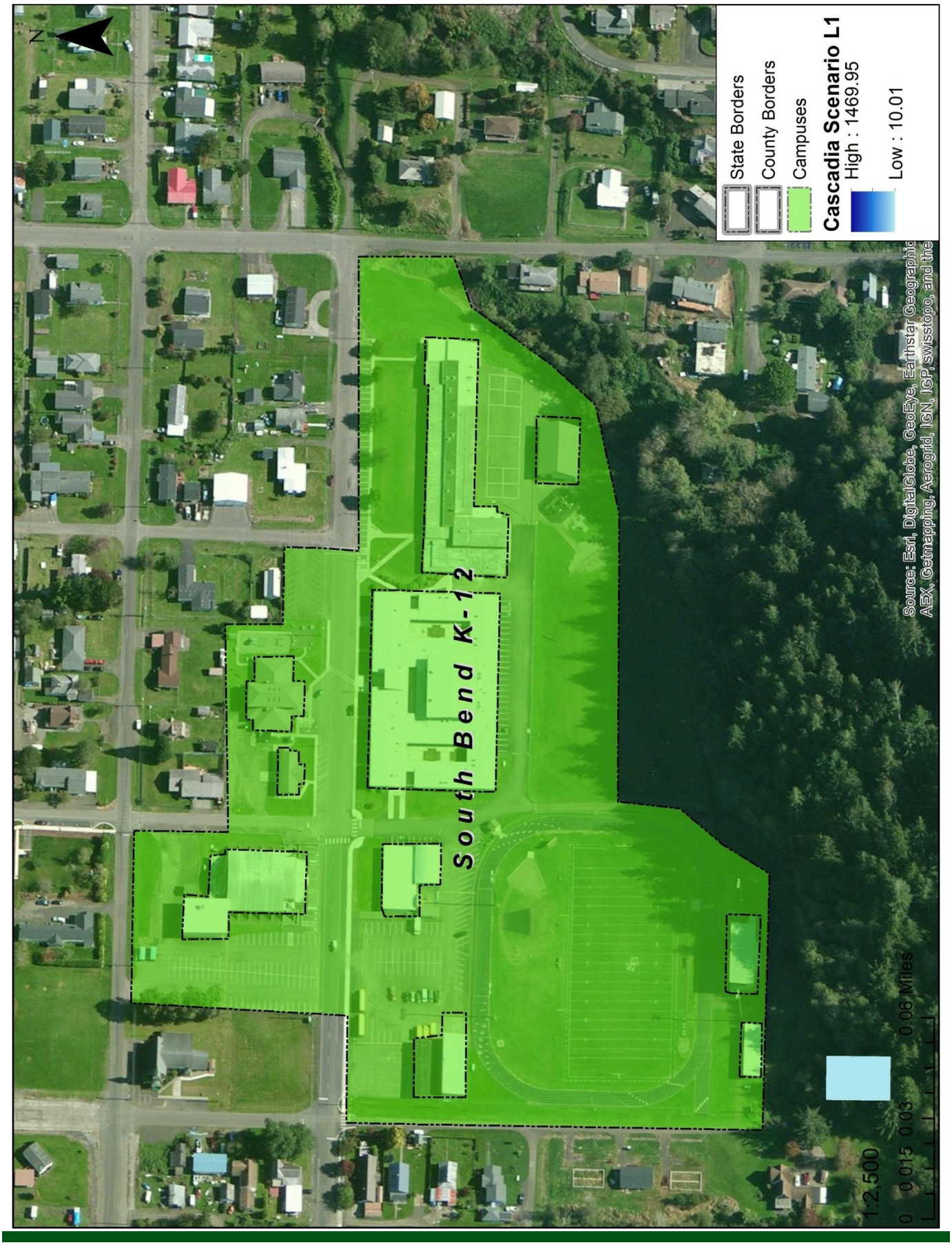
Map 50 – Tsunami Model L1, Ocean Beach SD, Ocean Park Elementary



Map 51 – Tsunami Model 1A, South Bend SD, South Bend K-12



Map 52 – Tsunami Model L1, South Bend SD, South Bend K-12



4.3.3 – Previous Occurrences

The Cascasdia Subduction Zone is believed to have had a catastrophic, high magnitude earthquake around 1700 AD. As the area did not have modern developments at the time, its historic impacts are unknown, although it is known that the tsunami reached inland to the Willapa Bay area. In terms of tsunamis created by earthquakes across the Pacific Ocean, over 500 have been created since 1900, but none have had significant impacts on Pacific County or its participating jurisdictions.

4.3.3A – Probability of Future Events

Seismologists believe an event like this, necessary to create a tsunami, has a return interval of 300 to 500 years. Therefore, a catastrophic tsunami originating from the Cascadia Subduction Zone has between a .33% and .2% of occurring in any given year. This roughly translates to a tsunami affecting the planning area's coast about once every 450 years.

Tsunamis originating from faults across the Pacific Ocean are more likely to occur, but are incredibly more difficult to predict quantitatively. Tsunamis cause by earthquakes in the Cascadia Subduction Zone and across the Pacific Ocean are both categorized as "rare" events.

4.3.4 – Assessing Vulnerability & Impact

Tsunami Impacts

Pacific County has not experienced a tsunami, but there is strong evidence to suggest that it will, in time, experience a tsunami originating from a Cascadia Subduction Zone earthquake. In the event of such an earthquake and resulting tsunami, the impacts will be devastating to the coastal and river inland areas. A serious devastating tsunami can create a peak wave height of 43.63 feet at the entrance to Willapa Bay, 31.50 feet at Ocean Park, and 30.84 feet at long beach. Pacific County and its participating jurisdictions can expect this to occur between .33% and .2% per year.

Vulnerability of Facilities

Structural vulnerability to tsunamis will vary based on their location, that being how far inland they are, what is their elevation, their cardinal orientation, and foundation strength. A strong enough flowing tsunami could completely wash away a structure, damage or rip apart portions of the structure, or cause flooding and significant damage to a structure's interior and making it unsafe to inhabit until costly cleanup operations are finished. Additionally, debris, including flowing vehicles, can become caught by structures and sustain damage.

Pacific County and its participating jurisdictions have not had any property damage from tsunamis.

Vulnerability of Population

Populations living and working within the identified inundation zones are vulnerable to injury and death by a tsunami. Tsunamis move with incredible force, washing away buildings and vehicles without issue. It will have no problem forcefully carrying the weight of an individual. The water is likely to be filled with debris that can injure or hurt an individual as well as cause bodily harm by trapping them and forcing them against structures.

It is estimated that coastal communities of Pacific County will have a total of 30 minutes to evacuate or reach a safe elevation; however, since this is after an earthquake and five minutes should be subtracted from that number to take into account shock and reorientation following the initiating earthquake. Additionally, evacuation planning should take into account that roadways will likely be damaged or blocked by landslides, damaged infrastructure and buildings, or trees and power lines.

Pacific County and its participating jurisdictions do not have any recorded deaths or injuries from tsunamis.

Vulnerability of Systems

Systems that are exposed to the identified inundation areas are extremely vulnerable. It is likely that a major tsunami will severely impair or destroy most of what is in its path. This will also be true for any systems in its path or any systems that rely on infrastructure or facilities.

> ***Fire Districts***
>
> The fire districts' services are an integral part of the planning area's emergency operations before, during, and after an event. Fire District #4 is not vulnerable to tsunamis. Fire Districts #1, #2, and #5 are significantly vulnerable to tsunamis. A tsunami is likely to do significant damage to these fire districts and all but eliminate their ability to respond to and assist in the recovery from a tsunami.
>
> ***Ports***
>
> The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor are all within the identified inundation areas. A tsunami has the potential to completely destroy these ports. If a tsunami does not destroy these ports' facilities, it will likely damage their docking and mooring capabilities along with much of their equipment. A tsunami will give under 30 minutes of warning, which is not enough time to evacuate

any expensive equipment. This will render the ports non-operational for weeks, months, and even years to come.

Public Utility District #2

Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to deliver electricity to the planning area. In the event of a Cascadia Subduction Zone earthquake and resulting tsunami, it is estimated that any and all electrical grid infrastructure in the inundation areas should be assumed inoperable for weeks to months.

Transportation & Pacific Transit

Roadways in the identified inundation areas are very vulnerable to tsunamis. It is safe to assume that they would already be damaged from the preceding earthquake, and when the tsunami hits, it will likely wash away much of the remaining infrastructure, creating hazardously damaging debris in the tsunami's flow. In the event of a Cascadia Subduction Zone earthquake and resulting tsunami, it is estimated that any and all roadways in the inundation areas should be assumed to be impassable by standard vehicles.

4.3.4A – Critical Facilities & Infrastructure

Infrastructure and critical facilities located in the identified inundation zones are significantly vulnerable to tsunamis, including the Ocean Beach Hospital and the Willapa Harbor Hospital. A complete list of infrastructure and critical facilities can be found in Appendix D.

4.3.4B – Land Use & Development Trends

Pacific County and it participating jurisdictions have declining growth as detailed in Section 3.1.1 – Land Use & Development Trends. None of the participating jurisdictions have seen significant growth, and thus there is no overall net increase in their risk to tsunamis caused by land use or development. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within or outside of the planning area.

4.3.4C – Unique & Varied Risk

A tsunami will not impact the entire planning area; instead, it has roughly discrete identified risk areas. The table below outlines the differences in predicted risk in the planning area.

Table 32 – Unique & Varied Risk, Tsunamis

Jurisdiction	Tsunami Inundation Risk
Pacific County	Identified coastal areas
Ilwaco	Large portions of developed areas
Long Beach	Near complete inundation and impact
Raymond	Minor impact in identified areas
South Bend	Major impact in identified area
Naselle/Grays River SD	No Risk to Tsunamis
Ocean Beach SD	Complete inundation
South Bend SD	Major impact in identified area
Willapa Valley SD	No Risk to Tsunamis
Naselle Water Company	No Risk to Tsunamis
North Beach WD	Near complete inundation and impact
Surfside Homeowners' Association	Near complete inundation and impact
Willapa Valley WD	No Risk to Tsunamis
Ocean Beach Hospital	Minor impact in identified areas
Willapa Harbor Hospital	No Risk to Tsunamis
Fire District #1	Near complete inundation and impact
Fire District #2	Minor impact in identified areas
Fire District #4	No Risk to Tsunamis
Fire District #5	Minor impact in identified areas
Fire District #6	No Risk to Tsunamis
Pacific Transit	Minor impact in identified areas
Port of Chinook	Complete inundation
Port of Ilwaco	Complete inundation
Port of Peninsula	Minor impact in identified areas
Port of Willapa Harbor	Complete inundation
PUD #2	Minor impact in identified areas

4.3WS – Winter Storms

4.3.1 – Description

A winter storm encompasses multiple effects caused by winter weather. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Winter storms can be increasingly hazardous in areas and regions that only see winter storms intermittently.

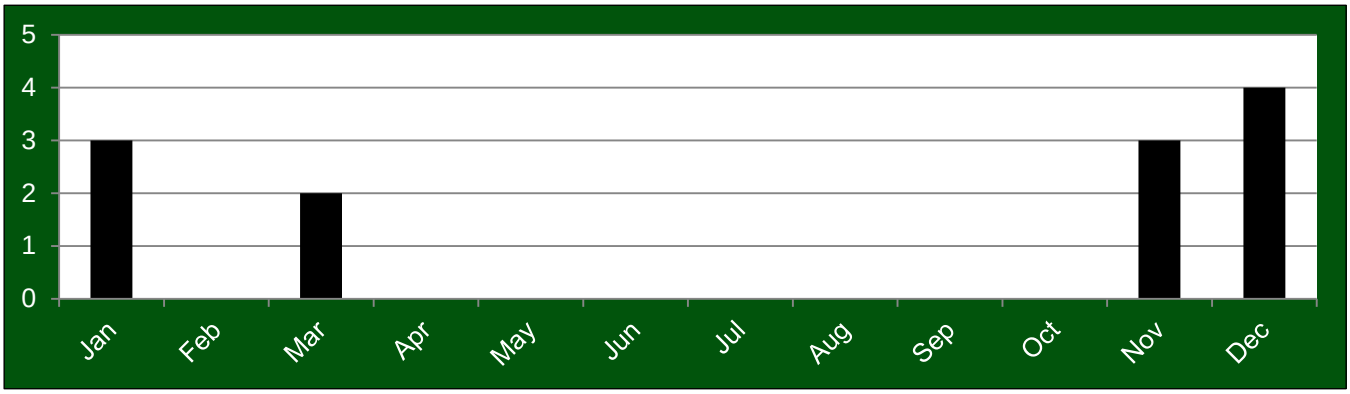
This plan defines winter storms as a combination of the following winter weather effects as defined by NOAA and the NWS:

Ice Storm: An ice storm occurs when freezing rain accumulates on surfaces creating hazardous travel conditions and excess weight on surfaces not designed or capable of bearing the weight. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater.

Heavy Snow: This generally means snowfall accumulating to a depth of 4" or more in 12 hours or less; or snowfall accumulating to 6" or more in 24 hours or less. In forecasts, snowfall amounts are expressed as a range of values, e.g., "8 to 12 inches." However, in heavy snow situations where there is considerable uncertainty concerning the range of values, more appropriate phrases are used, such as "...up to 12 inches..." or alternatively "...8 inches or more."

Winter Storm: Hazardous winter weather in the form of heavy snow, freezing rain, or heavy sleet. It may also include extremely low temperatures and increased wind.

Chart 5 – Winter Storms by Month, Pacific County (2001 – 2014)



**The data are from the NOAA NCDC Storm Event Database.*

4.3.2 – Location & Extent

Winter storms typically form with warning and are often anticipated. Like other large storm fronts, the severity of a storm is not as easily predicted, and when it is, the window of notification is up to few hours to under an hour. Although meteorologists estimate the amount of snowfall a winter storm will drop, it is not known exactly how many feet of snow will fall, whether or not it will form an ice storm, or how powerful the winds will be until the storm is already affecting a community.

Winter storms can range from moderate snow over a few hours to blizzard conditions with high winds, freezing rain or sleet, heavy snowfall with blinding wind-driven snow and extremely cold temperatures that last several days.

Winter storms in Pacific County and its participating jurisdictions often affect areas higher in altitude or in valleys located below these areas. When winter storms move through the planning area, snow accumulates high in the mountains with lesser amounts accumulating in Raymond, South Bend, and the peninsula area of Ocean Park, north of Long Beach.

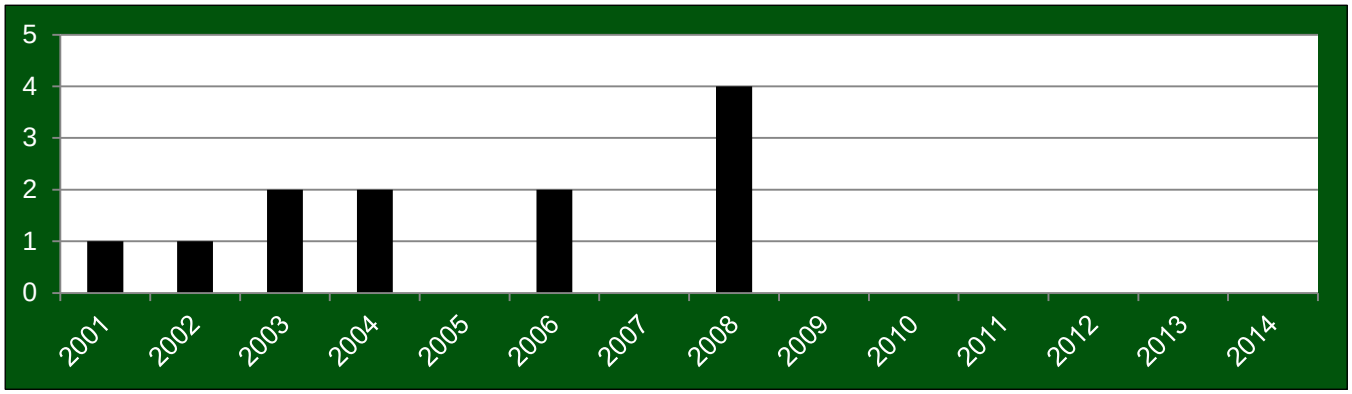
Historically, Raymond and South Bend have seen between 5 to 10 inches of accumulated snow and Ocean Park has seen 4 inches. Winter storms have also knocked out power to 500 residents in the planning area. Measurements are not as accurate high up in the hills, but observers note the Willapa Hills typically see 2 to 4 feet of accumulation.

4.3.3 – Previous Occurrences

Since 2001, NOAA has recorded 12 winter storms in Pacific County and its participating jurisdictions. Pacific County and its participating jurisdictions have recorded $859,000 in property damage, no fatalities, and no injuries from winter storms.

For a complete list of NOAA recorded winter storm events, please reference Appendix E.

Chart 6 – Winter Storms per Year, Pacific County (2001 – 2014)



**The data are from the NOAA NCDC Storm Event Database.*

4.3.3A – Probability of Future Events

Pacific County and its participating jurisdictions can expect a winter storm with an 85.71% probability per year, or 0.8571 events per year. Therefore, the likelihood of a winter storm occurring in the planning area is "highly likely."

Table 33 – Probability, Winter Storms	
Event Year	**Event Count**
2001	1
2002	1
2003	2
2004	2
2005	0
2006	2
2007	0
2008	4
2009	0
2010	0
2011	0
2012	0
2013	0
2014	0
Total Recorded Events =	12
Total Years =	14
Yearly Probability =	**85.71%**

**The data are from the NCDC Storm Events Database.*

4.3.4 – Assessing Vulnerability & Impact

Winter Storm Impacts

Pacific County and its participating jurisdictions have recorded 12 winter storm events since 2001, of which the range of magnitude can be any combination of winter storms, but will always be considered severe. Based on the future probability in Table 33, Pacific County and its participating jurisdictions can expect 0.8571 winter storm events per year which could impact in the form of heavy accumulated snow, accumulated ice, extreme and prolonged cold temperatures, or any combination of the three.

Table 34 – Historical Impacts, Winter Storms

Count of Events	12
Impacts Per Year	0.08
Average Magnitude (Enhance Fujita Scale)	-
Magnitude Range (Enhance Fujita Scale)	-
Average Cost	$71,583.33
Magnitude of Cost	$0 - 691,000
Total Recorded Cost	$859,000
Average Fatalities	0
Total Fatalities	0
Average Injuries	0
Total Injuries	0

**The data are from the NOAA NCDC Storm Event Database.*

Vulnerability of Facilities

Structural vulnerability to winter storms is the same throughout Pacific County and its participating jurisdictions. Heavy snow accumulation can cause roofing to collapse on old or poorly constructed facilities. Ice storms will coat a facility's exterior, but is unlikely to cause anything more than superficial damage. Prolonged, extremely cold temperatures can cause significant damage to poorly insulated or heated facilities. The cold temperatures can cause a facility's water pipes and plumbing systems to freeze. As the water in these systems turns to ice it expands and eventually will cause pipes to burst.

The average winter storm in Pacific County and its participating jurisdictions costs $71,583, while the existing range of a single incident has been from $0 to $691,000.

Vulnerability of Population

Pacific County and its participating jurisdictions' population are equally vulnerable throughout the planning area. Pacific County and its participating jurisdictions' citizens are at risk from prolonged, cold temperatures if they fail to be sheltered in an adequately heated structure or are unable to reach shelter. Some structures are dependent on electricity for their heating, making them vulnerable if a winter storm causes power outages. Additionally, if a winter storm restricts travel, people may become immobile on roadways and be at the mercy of their vehicle's gas supply. Exposure from winter storms in any of these cases can lead to frostbite and hypothermia. Both of these conditions, if untreated, can lead to death.

Historically, there have been 0 recorded fatalities or injuries relating to winter storms across region wide fronts in Pacific County and its participating jurisdictions.

Vulnerability of Systems

Pacific County and its participating jurisdictions' assets and systems' vulnerability to winter storms is the same throughout the planning area. Winter storms create havoc on roads impacting travel from decreased speeds and traffic jams to an ice storm or blowing snow drifts, making any travel impossible or extremely dangerous. Additionally, ice storms and snow accumulation can directly bring down power lines or bring down vegetation onto power lines. From these scenarios, Pacific County and its participating jurisdictions can suffer power outages; making it difficult to heat structures and exposing its citizens to prolonged cold temperatures.

Fire Districts

The fire districts' services are an integral part of the planning area's emergency operations before, during, and after an event. The participating fire districts are only slightly vulnerable to winter storms. A winter storm is unlikely to damage an entire fire district in a way that would significantly reduce its overall capabilities.

Ports

The ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor have limited vulnerability to winter storms. A winter storm has the potential to temporarily slow or shut down commercial operations. If a storm knocks out power, operations could be delayed further. Historically, none of these events have been of significant impact to the ports.

Public Utility District #2

Public Utility District #2 serves the entire planning area. PUD #2 does not generate any power of its own, but provides and maintains the energy grid necessary to deliver electricity to the planning area. As previously mentioned, a winter storm had knocked out power to 500 of the planning area's residents. PUD #2 is vulnerable to future winter storms, but unless they impact at a larger scale, PUD #2 is not considered highly vulnerable.

Transportation & Pacific Transit

The roadways and bus routes of Pacific County are temporarily vulnerable to winter storms. A winter storm can temporarily restrict roadway transportation between the planning area's communities, hindering response and recovery operations. Additionally, closed roadways can leave motorists trapped and exposed to the elements.

Water Companies and Districts

The participating water companies and districts are vulnerable to winter storms. Excessively long periods of cold weather can cause pipes to burst or freeze. Additionally, they can cause damage to pump stations and other equipment necessary to providing services.

4.3.4A – Critical Facilities & Infrastructure

All infrastructure and critical facilities are at risk, since winter storms can indiscriminately affect the entire planning area. However, Raymond and the Ocean Beach area (the county north of Long Beach), are at a greater historical risk. A list of infrastructure and critical facilities can be found in Appendix D.

4.3.4B – Land Use & Development Trends

Pacific County and its participating jurisdictions have declining growth as detailed in Section 3.1.1 – Land Use & Development Trends. None of the participating jurisdictions have seen significant growth, and thus there is no increase in their risk to winter storms caused by new land use measures or development. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within or outside of the planning area.

4.3.4C – Unique & Varied Risk

Winter storms have the ability to affect a portion of or the entire planning area, but historically they have affected the coastal areas (Long Beach, Ilwaco, Raymond, South Bend and western Pacific County) much greater than the rest of the planning area as the higher density of population are located along the coast.

4.4 – Excluded Hazards

Avalanches
Avalanches do not occur within the planning area. The Washington State Enhanced Hazard Mitigation Plan does not include Pacific County within an identified avalanche hazard area.

Dam Failure
Pacific County's prior HMP profiled the planning area's dams. The prior HMP and the USACE verify that there are no dams of reasonable risk within the planning area.

Droughts
Due to the extremely wet and humid climatic conditions that exist year round in Pacific County, the planning area does not suffer from droughts.

Volcanoes
The Washington State Enhanced Hazard Mitigation Plan includes sophisticated analyses of Washington's volcanoes. Theses analyses do not include Pacific County within the identified hazard risk areas.

Wildfires
An assessment by PCEMA and supporting relevant stakeholders has determined the risk of wildfires occurring within the planning area is extremely low. Although heavily vegetated, Pacific County's climate is extremely wet and damp throughout the year. This climatic condition makes it nearly impossible for fires to start naturally and makes it even more difficult for them spread.

4.5 – Land Use and Development Trends

A summary assessment for land use, development trends, and growth as they apply to changes in a jurisdiction's vulnerability and risk, can be broken down into two categories. The first being hazards such as winter storms or tornadoes, which indiscriminately affect the entire planning area. The second being hazards which have identified hazard areas, such as riverine floods.

For the first category, an increase in growth and development will increase a jurisdiction's vulnerability and risk. For the second category, an increase in growth and development will only increase a jurisdiction's vulnerability and risk if the growth and development exists in the identified hazard areas.

The list below further details how growth and development affects vulnerability and risk. The table below lists these effects for Pacific County and its participating jurisdictions.

Area-Wide Hazards:
Area-wide hazards indiscriminately impact the entire planning. Since it is beyond scientific measurement as to where where an area-wide hazard such as a winter storm will impact, and likely it will impact everywhere, it is reasonable to assume that any significant growth and development will increase vulnerability and risk. Additionally, a hazard such as a tornado will impact a specific path, but we are unable to predict where exactly it will begin. Thus, having any increase in growth or development increases the chance that a tornado will strike a developed segment of a jurisdiction.

For this plan, this is relevant for earthquakes, flash flooding, hazardous materials, severe storms, and winter storms.

Hazards with Identified Hazard Areas:
If a jurisdiction grows or develops into an established coastal or riverine floodplain, landslide hazard area, that jurisdiction's vulnerability and risk increase by an amount equal to the development or growth that now exists in that identified hazard area.

For this plan, this is relevant for coastal erosion, coastal flooding, landslides, riverine flooding and tsunamis.

The following table summarizes how recent land use and development trends affect each municipality's vulnerability and risk to each hazard.

Table 35 – Land Use & Development Trends, Hazard Summary

Jurisdiction	Direction	Hazard						
		Coastal Erosion	Earthquakes	Flash Floods	Landslides	Riverine Floods	Severe Storms	Tsunami
Pacific County	N/A	Decrease	Decrease	Decrease	Decrease	Decrease	Decrease	Decrease
Ilwaco	N/A	Decrease	Decrease	Decrease	N/A	Decrease	Decrease	Decrease
Long Beach	N/A	No Change	No Change	No Change	N/A	No Change	No Change	No Change
Raymond	N/A	Decrease	Decrease	Decrease	N/A	Decrease	Decrease	Decrease
South Bend	N/A	Decrease	Decrease	Decrease	N/A	Decrease	Decrease	Decrease

4.6 – Risk Summary

The table below outlines each participating jurisdiction's general risk to this plan's profiled hazards. The rankings are based on a composite evaluation of this plan's risk assessment, namely, a hazard's probability of occurring in the future, the vulnerability of a jurisdiction to a particular hazard, and the intensity of past hazard impacts. The final rankings are based on a joint evaluation between the participating stakeholders of this plan.

Table 36 – Hazard Risk Summary

Jurisdiction or Stakeholder	Hazard									
	Coastal Erosion	Coastal Flood	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms
Pacific County	High	Medium	Medium	Low	Low	Low	Medium	High	High	Low
Ilwaco	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	High	Low
Long Beach	Low	Medium	Medium	Low	Low	No Risk	Low	High	High	Low
Raymond	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	Medium	Low
South Bend	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	Medium	Low
Naselle/Grays River SD	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
Ocean Beach SD	Low	No Risk	Medium	Low	Low	No Risk	No Risk	High	High	Low
South Bend SD	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	High	Low
Willapa Valley SD	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
Naselle Water Company	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
North Beach WD	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	High	Low
Surfside Homeowners' Association	Low	Medium	Medium	Low	Low	No Risk	Medium	High	High	Low
Willapa Valley WD	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
Ocean Beach Hospital	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	Medium	Low
Willapa Harbor Hospital	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
Fire District #1	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	High	Low
Fire District #2	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	Medium	Low
Fire District #4	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
Fire District #5	High	No Risk	Medium	Low	Low	No Risk	No Risk	High	Medium	Low
Fire District #6	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	No Risk	Low
Pacific Transit	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	Medium	Low
Port of Chinook	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	High	Low
Port of Ilwaco	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	High	Low
Port of Peninsula	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	Low	Low
Port of Willapa Harbor	No Risk	No Risk	Medium	Low	Low	No Risk	Medium	High	High	Low
PUD #2	No Risk	No Risk	Medium	Low	Low	No Risk	No Risk	High	Medium	Low

**These risk ratings are an aggregate assessment of the participating jurisdictions and do not represent specific identified hazard area within a chosen jurisdiction.*

Section 5 – Mitigation Strategy

Planning Process

Local Procedures & Resources

Planning Area

Hazard Risk Assessment

Mitigation Strategy

- Capabilities
- Floodplain Programs
- Goals
- Projects
- Evaluations & Prioritizations
- Planning Integration

5.1 – Mitigation Capabilities

Each type of stakeholder provides a set of capabilities, in some cases broad and in some cases narrow, by which they can increase the planning area's resiliency.

County and Municipal Governments
The broadest form of mitigation capabilities come from the county and city governments. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

School Districts
The participating school districts have broad authority over their campuses and although budgets may be tight, they are more far reaching than some of the smaller organizations. Additionally, the necessity to protect the planning area's children grants them greater influence and political capital to institute change.

Water Districts
The participating water company and water districts do not have far reaching authority or resources that extend beyond their property. However, their services are critical to the planning area. They will primarily use their resources to protect their property and ensure the continuity of their services in the face hazard events.

> ***Surfside Homeowners' Association***
> In addition to its status as a water district, the Surfside Homeowners' Association can institute regulatory changes. Additionally, as a citizen-homeowner group, the association has the capability of yielding political influence in favor of mitigation activities and projects.

Ocean Beach Hospital & Willapa Harbor Hospital
The participating hospitals do not have authority beyond their property. However, the hospitals are integral to the community in day-to-day operations, as well as during and after an event. Their capabilities will primarily be used to protect their property and ensure the maintenance of their operations.

Fire Districts
The participating fire districts in this plan have personnel resources and capabilities that can be used in the planning and implementation of mitigation activities and projects. When collaborating with other stakeholders and municipal governments, these personnel resources can also provide subject matter expertise. Additionally, their services to the community are necessary and must be protected by mitigation measures.

Ports
The ports do not have reaching authority beyond their property. The participating ports are integral to the planning area's economy. Additionally, their maritime capacity can be used post disaster for the delivery of emergency and relief supplies, whether or not the incident is local or regional. Therefore, the ports must use their internal resources to protect infrastructure.

Public Utility District #2

Like the participating water company and water districts, Public Utility District #2 does not have far reaching authority or resources that extend beyond their property. However, their services are critical to the planning area. They will primarily use their resources to protect their property and ensure the continuity of their services in the face hazard events.

Institutional Capability

Pacific County as a whole community that is capable of implementing the strategies identified herein. In addition, they are capable of promoting the mitigation process and educating the public about the hazards prevalent to their area, as well as mitigation process necessary to mitigate those hazards.

In an emergency, the county and cities' response is an extraordinary extension of responsibility and action, coupled with normal day-to-day activity. Normal governmental duties will be maintained, with emergency operations carried out by those agencies assigned specific emergency functions under the Pacific County Comprehensive Emergency Management Plan.

> ***StormReady and TsunamiReady Communities***
>
> The NWS StormReady program helps communities with the communication and safety skills needed to save lives and property. StormReady communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education, and awareness. This label is granted to communities that meet a measured level of weather preparedness and staffing capabilities. Pacific County, Raymond, and South Bend are StormReady communities while Ilwaco and Long Beach are TsunamiReady communities.

Political Capability

During the process of the development of this plan, opposition to mitigation measures was not evident in Pacific County or in the participating stakeholders. In fact, the county has taken a proactive approach to mitigation through its flood management ordinances and land use planning**.** The primary limiting factor is funding, which is made more difficult by the current situation in the local, state, and national economy.

The county, cities, and their partnerships with the participating agencies are well-organized and responsive to community needs. Leadership is informed and remains up-to-date on the hazards that threaten the area. Citizens who did participate in the public meetings and presentations showed an interest in doing things to promote a safer county. Therefore, the county and cities (the governing board, staff, and citizen population) appear willing to promote the economic efficiency and social utility of the mitigation measures contained in this plan, if appropriate funding can be identified.

Technical Capability

The participating stakeholders have the basic technology needed to mitigate and respond to natural disasters. They are equipped with telephone and fax lines and a functional Emergency Operations Center in case of disaster. Many key persons are equipped with cellular phones, which can act as a backup to land lines in case service is lost. The County is connected to the Internet, which is a valuable source of information on approaching hazards and mitigation measures. The County sponsors a website (http://www.co.pacific.wa.us) where there is a

link to the Pacific County Emergency Management Agency. The County Public Works Department provides GIS mapping for the County and can provide GIS capabilities.

Fiscal Capability

Pacific County, its cities, and stakeholders in this mitigation plan are not unique in the issues felt by small governments to retain the staff and resources necessary to accomplish the strategies necessary to mitigate the hazards in their area. However, they are aware of potential diverse funding sources available to communities for, assisting in the fiscal needs required to implement local hazard mitigation plans, including both government and private programs.

While federal and state programs carry out the bulk of disaster relief programs that provide funds for mitigation, local governments are able to search for alternative funding sources to supplement the local hazard mitigation budget. The participants in the mitigation planning process are aware that before effective mitigation strategies can be applied, stable funding sources and effective incentives must be established on a per project basis to encourage participation by the private and public sectors.

5.1.1 – Authorities

General Authority

Washington State law provides the legal authority for local governments to implement regulatory measures. The basis for much of this authority is the local government power designed to protect public health, safety and welfare. This authority enables local government to enact and enforce ordinances, and to define and abate nuisances. Hazard mitigation is a form of protecting public health, safety, and welfare, and falls under the general regulatory powers of local government. This also extends to building codes and inspections, land use, acquisition, and floodway regulation.

Building Codes and Inspections

Building codes and inspections provide local governments with the means to maintain County structures that are resilient to natural hazards. Pacific County has adopted the Uniform Construction and Fire Codes in 2001. These codes prescribe minimum standards for building construction, which ensures that new buildings and structures are built to standards that are seismically sound, fire resistant and developed within flood-proofing measures. These codes also require appropriate hazard code updating and compliance when certain thresholds are met for remodel and renovation of existing buildings. These codes also authorize local governments to carry out building inspections to ensure local structures adhere to the minimum state building standards.

Pacific County officials have the primary role of enforcement of the Uniform Building Code structural regulations. Fire Departments also take part in the inspection process for fire and general public safety inspections. They enforce the appropriate codes both at the plan approval stage and the site inspection stage. Pacific County is committed to the high standards of building provided through the respective codes, and requires that the same codes and the same enforcement procedures apply during routine permitting procedures as well as following a disaster.

Land Use Planning

Through land use regulatory powers granted by the state, local governments can control the location, density, type and timing of land use and development in the community. Provisions of the land use plans are implemented through regulatory tools that include zoning and subdivision ordinances, and taxation. The Pacific County Mitigation Plan will support appropriate land use planning.

Shoreline Master Program (SMP)

The Shoreline Master Program is a State of Washington sponsored set of land use policies and regulations designed to manage shoreline development. This program protects natural resources for future generations, provides for public access to water and shores, and plans for water-dependent uses. Pacific County's SMP was written and adopted in 1999. It is currently under review for modification and revision.

Zoning

Within its land use planning authority, a local government is authorized to divide the planning area into zones. For each type of zone (as defined in a written code and by zoning maps) the local government may classify, designate, regulate, and restrict the use of buildings (land and structures) to permit the most compatible use of land within the county consistent with the needs of residential, commercial and industrial developments, and the promotion of the public health, safety, welfare and general prosperity of the County and its residents.

Taxation

Taxation can be a powerful mitigation tool by providing local governments with a way to guide development. Tax abatements may be used to encourage landowners and developers to integrate mitigation measures into the process of building new developments and retrofitting existing properties in the floodplain. These tools can be especially effective in encouraging the mitigation of existing structures.

Floodplain Ordinances

Floodplain management is the operation of a community program of measures for reducing flood damage. These measures take a variety of forms; and generally include zoning, subdivision, or building requirements, and special-purpose floodplain ordinances. Pacific County passed a Flood Damage Prevention Ordinance in July of 2008. The purpose of this ordinance is to promote public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas. The Flood Damage Prevention Ordinance is successful at regulating the floodway and minimizing the losses due to flood conditions, and is tied to other building and development codes used by Pacific County.

The Director of the Pacific County Department of Community Development is the administrator of the floodway provisions, and has the authority to implement and enforce the provisions by granting or denying development permits that encroach upon lands designated as flood hazard areas.

5.1.2 – Regulations

The following regulations are current plans, codes, ordinances, and resolutions relevant to hazard mitigation and the participating jurisdictions and stakeholders.

Pacific County

In Pacific County's county code Sections 15 and 16 have a series of codes managing and restricting development in established and identified floodplains, coastal flood zones, geologic hazard areas and adopted building codes. It has been updated since the development of Pacific County's last HMP, but has not been formally adopted. Please reference the full code at: http://www.co.pacific.wa.us/pdf%20files/pacificcofullcode0413.pdf

15.04 BUILDING CODES

The purpose of this chapter is to provide minimum standards to safeguard the health, safety and public welfare by regulating and controlling the design, construction, quality of materials, use, occupancy, location, placement, repair and maintenance of all buildings, structures, mobile homes, and manufactured homes within Pacific County and of certain equipment specifically regulated herein. This chapter also seeks to protect the public welfare from hazards of fire and explosion arising from the

storage, handling, and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the use or occupancy of buildings or premises. Enactment and enforcement of this chapter is intended to only protect the general public welfare and not specific persons or property. Nothing in this chapter nor the uniform codes adopted by reference herein shall be construed to impose and legal duty, directly or indirectly, upon Pacific County or its officials and employees to protect individual persons or property in individual circumstances. [Ord. 151 1(B), 2001]

15.08 FLOOD DAMAGE PREVENTION

The Legislature of the State of Washington has delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. [Ord. 167 1(A), 2012]

A. The flood hazard areas of Pacific County are subject to periodic inundation which could potentially result in loss of life and property, health, and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

B. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated, or otherwise protects from flood damage also contribute to the flood loss. [Ord. 167 1(B), 2012]

15.08.300 Coastal High Hazard Areas (V Zones)

Coastal high hazard areas, which are designated as Zones VI – 30, VE and/or V on the community's FIRM, are special flood hazard area as established in PCC 15.08.070. These areas have special flood hazards associated with high velocity waters from surges and, therefore, in addition to meeting all other applicable provisions in this chapter, the following provisions shall also apply:

16.60 GEOLOGICALLY HAZARDOUS AREAS

The purpose of this chapter is to minimize hazards to the public from development activities on or adjacent to areas of geological hazard. Geologically hazardous areas include the following: erosion hazard areas, landslides hazard areas, seismic hazard areas, and mine hazard areas. [Ord. 147 10(A), 1997]

City of Ilwaco

The City of Long Ilwaco's municipal code, Title 14 and 15 have a series of codes managing and restricting development in established and identified floodplains, management of its shorelines, and adopted building codes. It has not been updated since the development of Pacific County's last HMP. Please reference the full municipal code for more details at: www.codepublishing.com/WA/ilwaco/

14.14 Washington State Building Ordinances Adopted

The model codes listed below, as approved and adopted by the State Building Code Council (SBCC), together with any amendments or additions, are adopted by this reference. These codes apply to all new construction, remodeling or repairs. Copies of the codes are on file in the offices of the city clerk-treasurer and the building inspector.

A. Uniform Building Code (UBC) and Standards;
B. Uniform Plumbing Code (UPC) and Standards;
C. Uniform Mechanical Code (UMC) and Standards;

D. Uniform Swimming Pool, Spa and Hot Tub Code;
E. Uniform Code for the Abatement of Dangerous Buildings;
F. Washington State Barrier Fee Regulations;
G. Washington State Energy Code;
H. Washington State Ventilation and Indoor Air Quality Code;
I. Washington State Historic Building Code;
J. Uniform Building Code Appendix Chapter 15 (Reroofing);
K. Uniform Building Code Appendix Chapter 33 (Excavation and Grading);
L. Uniform Building Code Appendix Chapter 34, Division 1 (Life Safety Requirements For Existing Buildings Other Than High-Rise Buildings). (Ord. 832 § 1 (part), 2014; Ord. 627 (part), 1999. Formerly 15.84.010)

15.14 Shoreline Master Plan

A. The Pacific County Shoreline Master Plan, as it is now written or will later be amended, is adopted by reference by the city and is available for review at Ilwaco City Hall.

B. The Shoreline Master Plan outlines the policies and regulations that apply to all uses and activities that may occur along Ilwaco's shorelines and establishes procedures for obtaining development permits in shoreline areas. (Ord. 627 (part), 1999)

15.16 Development in Flood Areas

A. Purpose. It is the purpose of this chapter 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 to:

1. Protect human life and health.
2. Maximize benefit from expenditure of public money.
3. Minimize the need for rescue and relief efforts associated with flooding.
4. Avoid or minimize prolonged business interruptions.
5. Avoid or minimize damage to public facilities and infrastructure located in areas of special flood hazard.
6. Help maintain a stable tax base by providing for sound use and development of areas of special flood hazard so as to avoid or minimize future flood damage.
7. Ensure potential buyers are notified that property is in an area of special flood hazard.
8. Ensure those who occupy areas of special flood hazard assume responsibility for their actions.

B. Methods of Reducing Flood Losses. In order to accomplish its purposes, this chapter includes methods and provisions for:

1. Restricting or prohibiting uses that are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities.
2. Requiring that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction.
3. Controlling the alteration of natural floodplains, stream channels and natural protective barriers, which help accommodate or channel floodwaters.
4. Controlling filling, grading, dredging and other development, which may increase flood damage.
5. Preventing or regulating construction of flood barriers that could divert floodwaters from their natural course or may increase flood hazards in other areas. (Ord. 794 § 2 (part), 2012)

City of Long Beach

The City of Long Beach's municipal code, Title 10 Chapters 2 and 4, have a series of codes managing and restricting development in established and identified floodplains, coastal floodplains, management of its shorelines, and adopted building codes. It has not been updated since the development of Pacific County's last HMP. Please reference the full municipal code for more details at: www.sterlingcodifiers.com/codebook/index.php?book_id=501

10-2-1: BUILDING CODES ADOPTED

The model codes listed below, as approved and adopted by the state building code council except as noted, together with any amendments or additions, are hereby adopted by this reference. These codes must apply to all new construction, remodeling, or repairs. Copies of the codes are on file for inspection in the office of the building department of the city.

A. International building code 2009;
B. International mechanical code 2009;
C. International residential code 2009;
1. For multi-family residential structures of five (5) or more dwelling units, automatic fire sprinkling systems are required;
D. Uniform housing code 1997;
E. International plumbing code 2009;
F. Uniform swimming pool, spa, and hot tub code 2006;
G. Uniform code for the abatement of dangerous buildings 1997;
H. International property maintenance code 2009, adopted by the city independently of the Washington state building code council;
I. Washington state barrier fee regulations;
J. Washington state electrical code;
K. Washington state energy code 2009;
L. Washington state historic building code; and
M. Washington state ventilation and indoor air quality code. (Ord. 889, 4-13-2013)

10-4-1: AUTHORIZATION, PURPOSE AND OBJECTIVES

A. Statutory Authorization: The legislature of the state of Washington has delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

B. Findings Of Fact:

1. The flood hazard areas of Long Beach are subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all which have the potential to adversely affect the public health, safety, and general welfare.

2. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazard which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated, or otherwise protected from flood damage also contribute to the flood loss.

C. Statement Of Purpose: It is the purpose of this chapter 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 to:

10-4-12: COASTAL HIGH HAZARD AREAS

Located within areas of special flood hazard established in section 10-4-4 of this chapter are coastal high hazard areas, designated as zones V1-30, VE and/or V. These areas have special flood hazards associated with high velocity waters from surges and, therefore, in addition to meeting all provisions in this chapter, the following provisions shall also apply:

City of Raymond – Raymond Municipal Code

The City of Raymond's municipal code, Title 15, has a series of codes managing and restricting development in established and identified floodplains as well as adopted building codes. It has not been updated since the

development of Pacific County's last HMP. Please reference the full municipal code for more details at: www.codepublishing.com/WA/raymond/

15.16 – Development in Flood Areas

The legislature of the state has in Chapter 36.70 RCW delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety and general welfare of its citizenry. Therefore, the city council of the city does ordain as set out in this chapter. (Ord. 1638 § 5, 2001; Ord. 1446, 1987. Formerly 16.20.010.)

15.16.020 Findings of Fact.

A. The flood hazard areas of the city are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

B. These flood losses are impacted by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated or otherwise protected from flood damage also contribute to the flood loss. (Ord. 1638 § 5, 2001; Ord. 1446, 1987. Formerly 16.20.020.)

15.84 - Building and Construction (Building Codes)

There is adopted and by this reference made a part of this chapter as though fully set forth herein, at length, those certain codes, known as the:

A. International Building Code, 2003 Edition, as amended by Chapter 51-50 WAC, including the Appendix Chapters B, F and J.
B. International Residential Code, 2003 Edition, as amended by Chapter 51-51 WAC, including Appendix Chapters H, J and K.
C. Uniform Plumbing Code, 2003 Edition, as amended by Chapters 51-56 and 51-57 WAC; provided, that any provisions of such code affecting fuel gas piping are not adopted.
D. International Mechanical Code, 2003 Edition, as amended by Chapter 51-52 WAC.
E. International Fuel Gas Code, 2003 Edition, except that the standards for liquefied petroleum gas installations shall be NFPA 58 (Storage and Handling of Liquefied Petroleum Gases) and ANSI Z223/NFPA 54 (National Fuel Gas Code).
F. International Code Council Performance Code for Buildings and Facilities, 2003 Edition, published by the International Code Council.
G. International Property Maintenance Code, 2003 Edition, published by the International Code Council.
H. International Existing Building Code, 2003 Edition, published by the International Code Council.
I. Washington State Historic Building Code, Chapter 51-19 WAC.
J. Washington State Energy Code, Chapter 51-11 WAC.
K. Washington State Ventilation and Indoor Air Quality Code, Chapter 51-13 WAC.

These codes are adopted as the building code and standards of the city of Raymond; provided, that those sections of the International Building Code set forth in RMC 15.84.012, and those sections of the International Residential Code set forth in RMC15.84.014 are amended to read as set forth in said sections. (Ord. 1691 § 1, 2005; Ord. 1593, 1998)

City of South Bend - South Bend Municipal Code

The City of South Bend's municipal code, Titles 14, 15, and 16 have a series of codes managing and restricting development in established and identified floodplains, allowing the management and restriction of shoreline development, and declaring the adoption of the state's codes. It has not been updated since the development of Pacific County's last HMP. Please reference the full municipal code for more details at: www.codepublishing.com/WA/southbend/

14.10 – Flood Damage Prevention

The Legislature of the State of Washington has delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. (Ord. 1167 § 1.1, 1991).

14.10.020 Findings

A. The flood hazard areas of South Bend are subject to periodic inundation which results in loss of life and property, health, and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

B. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities, and, when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated, or otherwise protected from damage also contribute to the flood loss. (Ord. 1167 § 1.2, 1991).

15.84 – Buildings and Construction – Washington State Building Ordinances Adopted

The model codes listed below, as approved and adopted by the State Building Code Council (SBCC), together with any amendments or additions, are hereby adopted by this reference. These codes apply to all new construction, remodeling, or repairs. Copies of the codes are on file in the offices of the city clerk-treasurer and the building inspector. (See the full municipal code for a list of the specific adopted codes)

16.50 – Shoreline Management Combining District (SM)

The purpose of this district is to manage and protect the shorelines of the state in a manner which promotes the welfare of the people of South Bend and of the state generally and which also carries out the intent, policy and specific sections of the Shoreline Management Act of 1971 (Chapter 90.58 RCW) and of the state regulations promulgated under said act and, after adoption, of the South Bend master program for the management and protection of the shorelines. (Ord. 932 § 22.01, 1974).

5.2 – National Flood Insurance Program & Community Rating System Participation

All six of the participating municipal governments participate in the NFIP. The table below contains a list of each community and their NFIP Status. School districts are not municipal entities and thus do not classify as possible participants of the NFIP program. None of the participating municipalities participate in the CRS program.

The Pacific County Planning Department oversees all NFIP related activities within the county. They employ a NFIP Coordinator/floodplain administrator to ensure base flood elevation certificates are completed for new construction in the planning area. This helps ensure any development in a floodplain is accompanied by a Flood Hazard Development Certificate. In order to acquire a development certificate, a licensed surveyor must assess the land and the applicant must undergo an application and review process. The NFIP Coordinator/floodplain administrator also works to further develop protective measures that exceed NFIP compliance.

Table 37 – NFIP Participating Communities

FEMA Community Status Book Report, Washington – Communities Participating in the National Flood Program (8/1/2015)

Jurisdiction	CID	Initial FHBM Identified	Initial Firm Identified	Current Effective Map Date	Sanction Date
Pacific County	530126	10/25/74	01/05/78	05/18/15	01/05/78
Ilwaco	530127	05/24/74	02/01/79	05/18/15	02/01/79
Long Beach	530128	05/24/74	08/01/79	05/18/15	08/01/79
Raymond	530129	05/31/74	07/16/79	05/18/15	07/16/79
South Bend	530130	06/28/74	11/15/79	05/18/15	11/15/79

**The data are from FEMA.*

5.3 – Mitigation Goals & Objectives

Goals for Pacific County and its participating jurisdictions were established based upon results from the local and state risk assessments, Pacific County Mitigation Planning Committee meetings, and input from non-planning team local jurisdiction and state officials. These goals represent Pacific County and its participating jurisdictions' long-term vision for the continued reduction of hazard risks and the enhancement of mitigation capabilities.

Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all hazards approach.

Goal 2: Pursue additional complete and accurate data in support of mitigation planning, disaster preparedness, disaster response, and disaster recovery operations.

Goal 3: Integrate the hazard mitigation plan's findings into the planning and decision making processes for all current and future emergency management and preparedness related activities.

Goal 4: Minimize the risk to property from coastal erosion.

Goal 5: Minimize the risk to life and property from earthquakes.

Goal 6: Minimize the risk to life and property from floods.

Goal 7: Minimize the risk to life from hazardous materials.

Goal 8: Minimize the risk to life and property from landslides.

Goal 9: Minimize the risk to life and property from severe storms.

Goal 10: Minimize the risk to life and property from tsunamis.

Goal 11: Minimize the risk to life and property from winter storms.

5.4 – Mitigation Activities & Projects

The Pacific County MPC identified a comprehensive range of 23 possible and unique mitigation projects and 2 actions. The selected set carefully takes an all-hazards approach to mitigation while simultaneously addressing each of the individual eight profiled hazards.

The projects and actions were selected based upon their potential to reduce the risk to life and property with an emphasis on new and existing infrastructure, ease of implementation, community and agency support, consistency with local jurisdictions' plans and capabilities, available funding, vulnerability, and total risk. For further information on evaluation criteria, please see Section 5.5. The full list of mitigation projects, their descriptions, and prioritization per jurisdiction and stakeholder can be found in Appendix G.

For the status of mitigation projects since the development of Pacific County's previous hazard mitigation plan, please see Section 5.4.2.

The table on the following page summarizes the hazards addressed by each mitigation project and activity, and the corresponding participating jurisdictions suggested to undertake the project or activity.

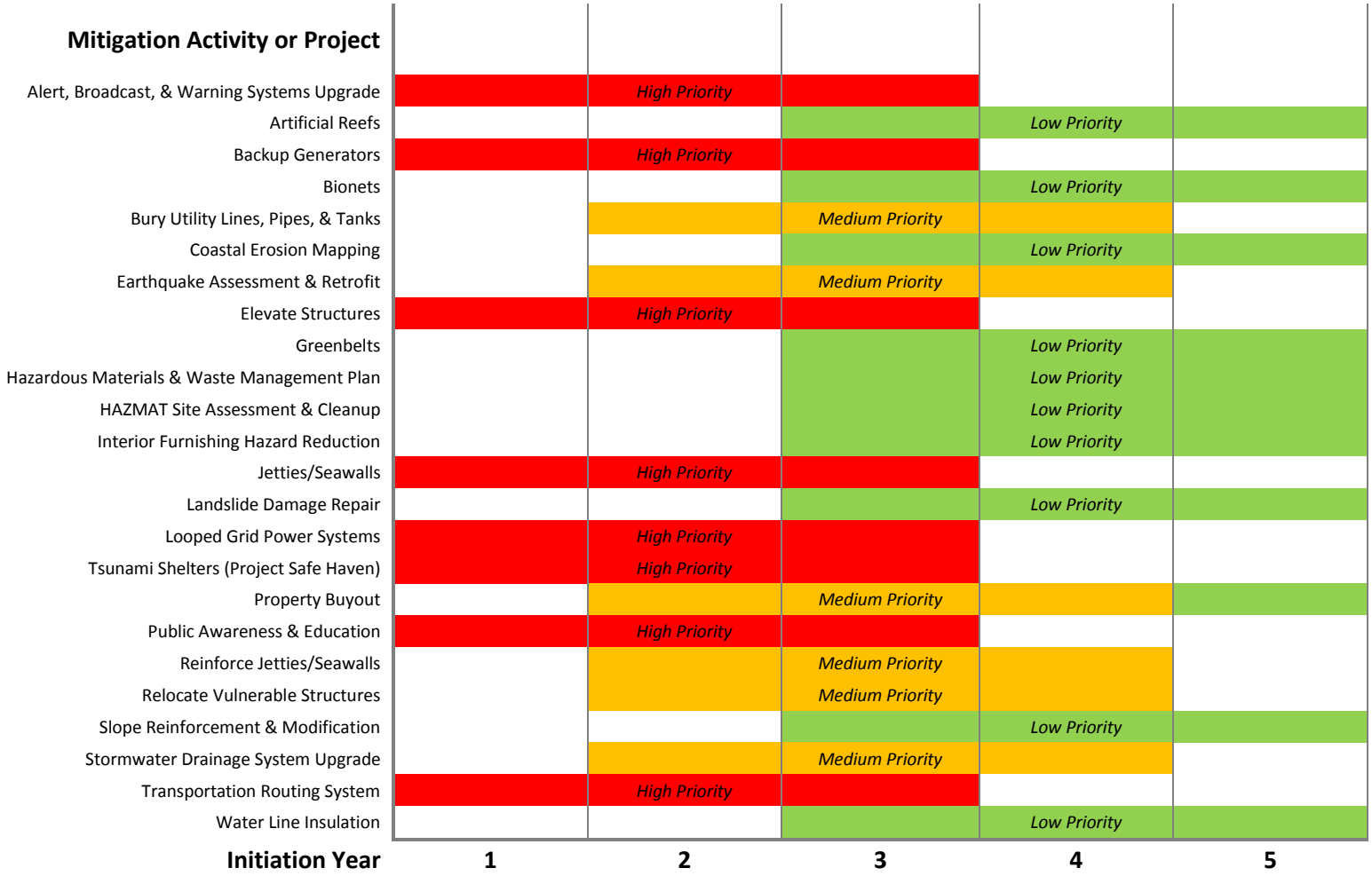
NOTE: Some projects and actions mitigate risk and vulnerability to multiple hazards. Some of these projects and actions list participating jurisdictions that are only at risk from one or a few of the mitigated hazards. For instance, the project: "Transportation Routing Notification Systems" mitigates against multiple hazards, including coastal flooding. All participating jurisdictions are interested in this project, but some will not be using it to mitigate coastal flooding. Instead they will be using the project to mitigate against floods, severe storms, and winter storms.

Table 38 – Mitigation Activities & Projects Summary		
Mitigation Project or Activity	**Hazards Addressed**	**Jurisdictions and Stakeholders**
Alert, Broadcast, & Warning Systems Upgrade	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, All SDs, Surfside Homeowners' Association, Both Hospitals, All FDs, Pacific Transit, All Ports, PUD #2
Artificial Reefs	Coastal Erosion	Pacific County, Long Beach, Surfside Homeowners' Association
Backup Generators	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms	All jurisdictions and stakeholders
Bionets	Landslides	Pacific County, Pacific Transit
Bury Utility Lines, Pipes, & Tanks	Severe Storms, Winter Storms	All jurisdictions and stakeholders
Coastal Erosion Mapping	Coastal Erosion	Pacific County, Long Beach, Surfside Homeowners' Association
Earthquake Assessment & Retrofit	Earthquakes	All jurisdictions and stakeholders
Elevate Structures	Floods (Coastal, Riverine),Tsunamis	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, Ocean Beach SD, South Bend SD, Surfside Homeowners' Association, All Ports
Greenbelts	Coastal Erosion	Pacific County, Long Beach, Surfside Homeowners' Association
Hazardous Materials and Waste Management Plan	Hazardous Materials	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, All FDs, Pacific Transit
HAZMAT Site Assessment & Cleanup	Hazardous Materials	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, All FDs
Insulation & Energy Efficiency Upgrade	Winter Storms	All jurisdictions and stakeholders
Interior Furnishing Hazard Reduction	Earthquakes	All jurisdictions and stakeholders
Jetties/Seawalls	Coastal Erosion, Floods (Coastal, Riverine)	Pacific County, Long Beach, Surfside Homeowners' Association, All Ports
Landslide Damage Repair	Landslides	Pacific County, Pacific Transit
Looped Grid Power Systems	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, Surfside Homeowners' Association, PUD #2
Tsunami Shelters (Project Safe Haven)	Floods (Coastal),Tsunamis	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, Ocean Beach SD, South Bend SD, Surfside Homeowners' Association, Port of Ilwaco, Port of Peninsula
Property Buyout	Coastal Erosion, Floods (Coastal, Riverine)	Pacific County, Ilwaco, Long Beach, Raymond, South Bend
Public Awareness & Education	Coastal Erosion, Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms	All jurisdictions and stakeholders

Mitigation Project or Activity	Hazards Addressed	Jurisdictions and Stakeholders
Reinforce Jetties/Seawalls	Coastal Erosion, Floods (Coastal, Riverine)	Pacific County, Pacific Transit, All Ports
Relocate Vulnerable Structures	Coastal Erosion, Floods (Coastal)	Pacific County, Long Beach, Surfside Homeowners' Association, Fire District #5
Slope Reinforcement & Modification	Landslides	Pacific County, Pacific Transit
Stormwater Drainage System Upgrade	Floods (Coastal, Flash, Riverine)	Pacific County, Ilwaco, Long Beach, Raymond, South Bend
Transportation Routing System	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms	Pacific County, Ilwaco, Long Beach, Raymond, South Bend, Pacific Transit
Water Line Insulation	Winter Storms	All jurisdictions and stakeholders

5.4.1 – Mitigation Activities and Projects Timeline

The graph below is a suggested timeline for Pacific County and its participating stakeholders' implementation of their mitigation projects and activities. The graph's suggestions are based on implementing higher priority projects and activities earlier than lower priority projects and activities. If a project or activity's priority varies for any participating jurisdictions, the jurisdiction is listed below the project name and in italics. This timeline will vary from participating jurisdictions as their individual priorities change. Please see Section 5.5.2 and Appendix G for per jurisdiction mitigation project prioritization.



5.4.2 – Mitigation Activities and Projects Updates

The following details the mitigation projects and actions suggested in their previous FEMA approved hazard mitigation plan. In the event an activity was not implemented, the cause or reason is included in the status column. Some previously listed mitigation activities are no longer considered mitigation and are tagged with "Not Mitigation."

Table 39 – Mitigation Project Updates

Project	Jurisdiction	Lead Department	Status	Emphasis
Bury Above Ground Power Lines	Naselle/Grays River SD, South Bend SD	SD Administration	Not Completed	New & Existing
Bury Propane Tanks	Naselle/Grays River SD, South Bend SD	SD Administration	Not Completed	New & Existing
Chipseal Connection (Brooklyn to State Route 101)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Clear Trees and Debris	Naselle Water Company	Company Staff	Completed	Existing
Conduct Flood Alleviation Work	South Bend SD	SD Administration	Not Completed	Existing
Conduct Structural Analysis of Water Tanks	South Bend	Municipal Staff	Completed	New & Existing
Construct a Looped Grid Power System	South Bend	Municipal Staff	Not Completed	New & Existing
Develop a Continuity of Operations Plan	South Bend SD	SD Administration	Not Completed	New & Existing
Develop more Fuel Storage	North Beach Water District	District Staff	Not Completed	New & Existing
Educate the Public on All Hazards Mitigation	Pacific County, FD 4, FD 5, Long Beach, North Beach Water District, Ocean Beach Hospital, Pacific County Transit, Port of Ilwaco, Port of Willapa Harbor, Raymond, South Bend	PCEMA	Completed	New & Existing
Elevate and Protect Highway 101	South Bend	Municipal Staff	Completed	New & Existing
Elevate Water Pump Station	South Bend	Municipal Staff	Completed	New & Existing
Encourage the Purchasing of Flood Insurance	Long Beach, Raymond	PCEMA	Not Completed	Existing
Enforce NFIP Policies and Regulations	Pacific County, Long Beach, Raymond, South Bend	PCEMA	Completed	Existing
Gather and Improve GIS Capabilities	Pacific County	PCEMA	Not Completed	New & Existing
Improve District Alert and Warning System	Pacific County Transit	Transit Staff	Not Completed	New & Existing
Improve Site Drainage	Port of Willapa Harbor	Port Staff	Not Completed	New & Existing
Improve Tsunami Evacuation Route (67th to 86th)	Pacific County	Pacific County Public Works	Not Completed	Existing
Install Automated Control for Monroe Pump Station	South Bend	Municipal Staff	Completed	New & Existing
Install Backup Generators	FD 4, FD 5, Long Beach, Naselle/Grays River SD, Naselle Water District, Ocean Beach SD, South Bend, South Bend SD	Municipal Staff	Not Completed	New & Existing
Install Pump Station (Monroe and US 101)	South Bend	Municipal Staff	Completed	New & Existing
Install Security Fence Around Water Reservoir	South Bend	Municipal Staff	Completed	New & Existing
Install Seismic Non-Structural Improvements to Public Buildings	Pacific County, FD 5, Long Beach, Pacific County Transit, Ocean Beach Hospital, Raymond, South Bend	PCEMA, Municipal Public Works	Completed	New & Existing
Install Tidegate Pipe (Camp One Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Install Tidegate Pipe (Monohon Landing Road)	Pacific County	Pacific County Public Works	Not Completed	New

Project	Jurisdiction	Lead Department	Status	Emphasis
Install Tidegate Pipe (Willapa Road)	Pacific County	Pacific County Public Works	Not Completed	Existing
Install Tsunami Sirens	Pacific County, FD 5, Raymond, South Bend	PCEMA, Municipal Staff	Completed	New & Existing
Landslide Repair (Parpala Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Landslide Repair (Smith Creek Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Landslide Repair (Upper Naselle Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Maintain Plans to Relocate Fire and Police Equipment	Raymond	Municipal Staff	Not Completed	New & Existing
Maintain Taylor Park and Airport Levee and Tidegate Systems	Port of Willapa Harbor	Port Staff	Not Completed	New & Existing
Place Sand, Riprap, and Vegetation on Shoreline	Port of Willapa Harbor	Port Staff	Not Completed	New & Existing
Protect Water Transmission and Distribution Line	South Bend	Municipal Staff	Completed	New & Existing
Raise Music, Shop, and Stadium to Meet Current Earthquake Code	Naselle/Grays River SD	SD Administration	Not Completed	Existing
Raise Stadium to Meet Current Earthquake Code	Ocean Beach SD	SD Administration	Not Completed	Existing
Rebuild City Hall and Fire Station	South Bend	Municipal Staff	Completed	New
Reinforce Seawall (Chinook Park Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Reinforce Seawall (Springtown Road)	Pacific County	Pacific County Public Works	Not Completed	New
Reinforce Seawall (Tokeland Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Relocate Office out of Hazard Area	Naselle Water Company	Company Staff	Not Completed	Existing
Repair Pier and Bulkhead	Port of Willapa Harbor	Port Staff	Not Completed	Existing
Replace and Upgrade Floats	Port of Ilwaco, Port of Willapa Harbor	Port Staff	Not Completed	New & Existing
Replace Sewer Line	South Bend	Municipal Staff	Completed	New & Existing
Replace Water Storage Reservoir	South Bend	Municipal Staff	Completed	New & Existing
Replace Wood Pilings with Steel Pilings	Port of Ilwaco	Port Staff	Not Completed	Existing
Retrofit Facilities and Water Tanks	North Beach Water District	District Staff	Not Completed	New & Existing
Retrofit the Roof on South Fork Mill Shipping Shed	Port of Willapa Harbor	Port Staff	Completed	Existing
Riprap Reinforce (Tide Center Road)	Pacific County	Pacific County Public Works	Not Completed	New & Existing
Strengthen Jetty	Port of Ilwaco	Port Staff	Not Completed	New & Existing
Structural Seismic Retrofit	South Bend SD	SD Administration	Not Completed	Existing
Support County-Wide Measures to Protect Power and Communications	Pacific County, Long Beach, Ocean Beach Hospital, Raymond, South Bend	PCEMA, Municipal Public Works	Completed	New & Existing
Upgrade Communications System	FD 4. FD 5. Pacific County Transit, South Bend SD	Fire Administration, Transit Staff, SD Administration	Completed	New & Existing
Upgrade Roofing to be more Wind Resilient	Naselle/Grays River SD	SD Administration	Not Completed	Existing
Upgrade SF Dry Kilns and Boiler System	Port of Willapa Harbor	Port Staff	Completed	New & Existing
Upgrade Tokeland Floats	Port of Willapa Harbor	Port Staff	Not Completed	Existing
Work with FEMA to Update FIRM	Pacific County, Long Beach, Raymond, South Bend	PCEMA, Municipal Public Works	Completed	New & Existing

5.5 – Evaluations

Pacific County and its participating jurisdictions' mitigation priorities have not changed since the development of its last plan. Their primary hazards risks, and thus priorities, remain flooding, severe storms, and tsunamis with the addition of coastal erosion.

A composite evaluation matrix was used to prioritize Pacific County and its participating jurisdictions' mitigation projects and activities. The evaluation was conducted for each mitigation project and activity for each jurisdiction. The composite evaluation matrix is comprised of the three factors detailed below.

The first factor is the STAPLE+E evaluation which is best for measuring feasibility and ease of implementation. The tables in Section 5.5.1 provide the STAPLE+E evaluation criteria and the evaluation itself.

The second factor is the effectiveness of the mitigation project. How well does it mitigate the impact of a particular hazard? This is determined by its ability to protect citizens, property, and systems. For instance, installing wires to pin down trees and other objects will reduce their ability to become uprooted or take flight during hazards of high wind, but are not as effective at reducing impacts from tornadoes or strong winds as are properly constructed and reinforced buildings. This factor is rated as: Low = 0.5, Medium = 1, and High = 1.5.

The third factor is a hazard risk based evaluation. It draws on the hazard risk summary found in Section 4.4 of this plan. Each risk rating is assigned a value based on the assessment (None = 0, Low = 5, Medium = 10, and High = 15). A summary of these results are displayed in Section 5.5.2 while the full, per jurisdiction per hazard tables are located in Appendix G.

$$(HRT) = (HR_1 + HR_2 + HR_n)$$

The total evaluation score is based on the hazard risk total multiplied by the effectiveness factor and added to the STAPLE+E score.

> ***Hazard Risk Total (HRT):*** The sum of values (low through high) of each hazard the project is designed to mitigate.
> ***Mitigation Project Effectiveness (MPE):*** A multiplier based on the project's effectiveness to mitigate against a chosen hazard.
> ***STAPLE+E Evaluation:*** A raw score comprised of positive and negative feasibility.

$$(Priority) = (STAPLE+E) + (MPE * HRT)$$

Upon completing the evaluations, a composite score is calculated and prioritized based on the total score (Low = 0 – 25, Medium = 26 – 50, High = > 50).

5.5.1 – STAPLE+E

Table 40 – STAPLE+E Criteria	
Evaluation Category	**Sources of Information**
Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and are compatible with the communities social and cultural values.
Technical	Mitigation actions are technically most effective if they provide long term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process, and if there is public support for the action.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective (as determined by a cost benefit review) and possible to fund.
Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Table 41 – STAPLE+E Rankings

X = N/A - Even Impact	+ = Positive Influence											- = Negative Influence											
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental					
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Laws	Total Impact
Alert, Broadcast, & Warning Systems Upgrade	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Artificial Reefs	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Backup Generators	+	+	+	-	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	13
Bionets	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Bury Utility Lines, Pipes, & Tanks	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Coastal Erosion Mapping	+	+	+	-	+	-	-	-	+	+	+	+	+	+	+	-	+	-	X	X	X	+	+	14
Earthquake Assessment & Retrofit	+	+	+	+	+	+	-	-	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	13
Elevate Structures	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	12
Greenbelts	+	+	+	-	+	+	-	-	X	X	X	+	+	+	-	-	+	-	X	X	X	+	+	15
Hazardous Materials & Waste Management Plan	+	+	+	-	+	-	-	+	X	X	X	+	+	+	+	+	+	+	X	X	X	+	+	14
HAZMAT Site Assessment & Cleanup	+	+	+	+	+	-	-	-	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	12
Interior Furnishing Hazard Reduction	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Jetties/Seawalls	+	-	+	+	-	+	-	+	X	X	X	+	+	-	+	-	+	-	X	X	X	+	+	11
Landslide Damage Repair	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Looped Grid Power Systems	+	+	+	+	+	-	-	-	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	12
Tsunami Shelters (Project Safe Haven)	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Property Buyout	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Public Awareness & Education	+	+	+	+	+	-	-	-	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	12
Reinforce Jetties/Seawalls	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	+	X	X	+	+	15
Relocate Vulnerable Structures	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Slope Reinforcement & Modification	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14

X = N/A - Even Impact	+ = Positive Influence											- = Negative Influence												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental					Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Laws	
Stormwater Drainage System Upgrade	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14
Transportation Routing System	+	+	+	+	+	-	-	-	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	12
Water Line Insulation	+	+	+	+	+	+	-	+	X	X	X	+	+	+	+	-	+	-	X	X	X	+	+	14

5.5.2 – Mitigation Activity & Project Prioritization Summary

For the full prioritization matrices, please see Appendix G – Mitigation Project Prioritization.

Table 42 – Mitigation Prioritization Summary, Part 1

Mitigation Activity or Project	Stakeholder												
	Pacific County	Ilwaco	Long Beach	Raymond	South Bend	Naselle/Grays River SD	Ocean Beach SD	South Bend SD	Willapa Valley SD	Naselle Water Company	North Beach WD	Willapa Valley WD	Surfside Homeowners' Association
Alert, Broadcast, & Warning Systems Upgrade	High	High	High	High	High	Medium	High	High	Medium	N/A	N/A	N/A	N/A
Artificial Reefs	Low	N/A	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Low
Backup Generators	High	High	High	High	High	Medium	High	High	Medium	Medium	High	Medium	High
Bionets	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bury Utility Lines, Pipes, & Tanks	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Coastal Erosion Mapping	Low	N/A	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Low
Earthquake Assessment & Retrofit	Medium	Medium	Medium	Low	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Elevate Structures	High	High	High	Medium	Medium	N/A	Medium	Medium	Low	N/A	Medium	N/A	High
Greenbelts	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Hazardous Materials and Waste Management Plan	Low	Low	Low	Low	Low	N/A	N/A	N/A	N/A	N/A	Low	N/A	N/A
HAZMAT Site Assessment & Cleanup	Low	Low	Low	Low	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Insulation & Energy Efficiency Upgrade	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	N/A	Low	Low
Interior Furnishing Hazard Reduction	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Jetties/Seawalls	High	Medium	Medium	Medium	Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High
Landslide Damage Repair	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Looped Grid Power Systems	High	High	High	High	High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tsunami Shelters (Project Safe Haven)	High	Medium	High	Medium	Medium	N/A	Medium	Medium	N/A	N/A	Medium	N/A	High
Property Buyout	Medium	Low	Low	Low	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Awareness & Education	High	High	High	High	High	Medium	High	High	Medium	Medium	High	Medium	High
Reinforce Jetties/Seawalls	Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Relocate Vulnerable Structures	Medium	N/A	Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Medium
Slope Reinforcement & Modification	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stormwater Drainage System Upgrade	Medium	Medium	Medium	Medium	Low	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation Routing System	High	High	High	High	High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Line Insulation	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Table 43 – Mitigation Prioritization Summary, Part 2

Mitigation Activity or Project	Stakeholder												
	Ocean Beach Hospital	Willapa Harbor Hospital	Fire District #1	Fire District #2	Fire District #4	Fire District #5	Fire District #6	Pacific Transit	Port of Chinook	Port of Ilwaco	Port of Peninsula	Port of Willapa Harbor	PUD #2
Alert, Broadcast, & Warning Systems Upgrade	High	Medium	High	High	High	High	High	N/A	High	High	High	High	N/A
Artificial Reefs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backup Generators	High	Medium	High	High	High	High	High	High	High	High	High	High	High
Bionets	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bury Utility Lines, Pipes, & Tanks	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Coastal Erosion Mapping	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Earthquake Assessment & Retrofit	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Elevate Structures	Medium	N/A	Medium	Medium	N/A	Medium	N/A	Medium	High	High	Medium	High	Medium
Greenbelts	Low	Low	N/A	N/A	N/A	Low	N/A	Low	Low	Low	N/A	Low	Low
Hazardous Materials and Waste Management Plan	N/A	N/A	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	N/A	Low
HAZMAT Site Assessment & Cleanup	N/A	N/A	Low	Low	Low	Low	Low	N/A	N/A	N/A	N/A	N/A	Low
Insulation & Energy Efficiency Upgrade	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Interior Furnishing Hazard Reduction	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Jetties/Seawalls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Medium	Medium	Medium	Medium	N/A
Landslide Damage Repair	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Looped Grid Power Systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High
Tsunami Shelters (Project Safe Haven)	Medium	N/A	Medium	Medium	N/A	Medium	N/A	Medium	Medium	Medium	Low	Medium	Medium
Property Buyout	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public Awareness & Education	High	Medium	High	High	Medium	High	Medium	High	High	High	High	High	High
Reinforce Jetties/Seawalls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Low	Low	Low	Low	N/A
Relocate Vulnerable Structures	N/A	N/A	N/A	N/A	N/A	Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slope Reinforcement & Modification	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stormwater Drainage System Upgrade	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation Routing System	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High	N/A	N/A	N/A	N/A	N/A
Water Line Insulation	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

5.6 – Planning Integration

Mitigation doesn't end at plan approval. Plan approval is only the beginning. The successful implantation of any number mitigation activities and projects requires the coordination and collaboration of a number of local agency, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

This plan is not only useful for implementing mitigation activities and projects, but is also critical in making development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development into identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

Democratic Governments and Boards

These organizations rely on agenda proposals, deliberation and discussion, and voting to solidify their decision-making. This type of decision-making makes up the majority of Pacific County's participating jurisdictions and stakeholders.

This plan should be integrated into agenda proposal's designs and cross-referenced during deliberation and discussion of the proposed activity. By using this plan's risk assessment, development and capital improvement projects can be appropriately implemented taking into consideration a community's resiliency.

The following jurisdictions and stakeholders use this process:

- *Pacific County (County Commissioners)*
- *City of Ilwaco (City Council)*
- *City of Long Beach (City Council)*
- *City of Raymond (City Council)*
- *City of South Bend (City Council)*
- *Naselle/Grays River Valley School District (School Board)*
- *Ocean Beach School District (School Board)*
- *South Bend School District (School Board)*
- *Willapa Valley School District (School Board)*
- *North Beach Water District (Board of Commissioners)*
- *Willapa Valley Water District (Board of Commissioners)*
- *Surfside Homeowners' Association (Homeowners Board)*
- *Ocean Beach Hospital (Board of Commissioners)*
- *Willapa Harbor Hospital (Board of Commissioners)*
- *Pacific Transit (Board of Commissioners)*
- *Port of Chinook (Port Commissioners)*
- *Port of Ilwaco (Port Commissioners)*
- *Port of Peninsula (Port Commissioners)*
- *Port of Willapa Harbor (Port Commissioners)*
- *Public Utility District #2 (Board of Commissioners)*

Special Tax Districts

Five of Pacific County's fire districts (1, 2, 4, 5, and 6) are stakeholder participants of this plan. These are considered special tax districts which are their own organizational entity, yet they must collaborate and work closely with local government to maintain operational functionality. During times of district expansion, building code enforcement and inspections, and other emergency management-related activities and projects; these fire districts should use this plan's risk assessment and mitigation strategies as a planning reference document. By incorporating this document's findings, the fire districts can better collaborate with local government and make better hazard-informed decisions as they relate to their operations.

Privately Held Companies

The Naselle Water Company (formerly the Naselle Water District) is a privately held organization that provides water utility services. It must work closely with municipal governments and obey zoning ordinances and other laws that regulate its services. It does not have to directly abide by other democratic decisions to implement activities, but just as special tax districts do, it must work closely with local organizations to guide its development and improvements.

When collaborating with local governments and designing agendas, the Naselle Water Company should use this plan's risk assessment and mitigation strategy as a starting point for mitigation considerations or other directly related activities and projects.

Appendix A – Reference Documents

Cascadia Subduction Zone Earthquakes: A Magnitude 9.0 Earthquake Scenario
Cascadia Region Earthquake Workgroup/FEMA/NEHRP, 2013

FEDERAL METEOROLOGICAL HANDBOOK No. 1, Surface Weather Observations and Reports
U.S. Department of Commerce / NOAA, 2005

Guidelines and Specifications for Flood Hazard Mapping Partners
FEMA, 2002

Local Mitigation Plan Review Guide
FEMA, 2011

Local Mitigation Planning Handbook
FEMA, 2013

Mitigation Ideas A Resource for Reducing Risk to Natural Hazards
FEMA, 2013

Multi-hazard Loss Estimation Methodology – Flood Model – Hazus-MH – User Manual
FEMA, 2012

Multi-hazard Loss Estimation Methodology – Flood Model – Hazus-MH – Technical Manual
FEMA, 2012

MULTI-HAZARD MITIGATION PLANNING GUIDANCE UNDER THE DISASTER MITIGATION ACT OF 2000
FEMA, 2008

National Assessment of Shoreline Change: Historical Shoreline Change Along the Pacific Northwest Coast
USGS, 2012-1007

Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 386-2)
FEMA, 2001

Winter Storms The Deceptive Killers: A Preparedness Guide
U.S. Department of Commerce / FEMA / NOAA / NWS / American Red Cross, 2008

Appendix B – Data Sources

Quantitative Data Sources

FEMA
NOAA
NCDC
U.S. Census Bureau
USGS

Geographic Data Sources

BOLDplanning Inc.
ESRI
FEMA
HAZUS (2.2)
FEMA NFHL
NOAA
NWS Storm Prediction Center
Pacific County Public Works Department
U.S. Census Bureau
USGS
Washington State Department of Natural Resources – Geologic Hazards Group

Appendix C – Public Participation

PCEMA to Hold Hazard Mitigation Plan Meetings in Conjunction with Tsunami Forums

South Bend, Washington – The Pacific County Emergency Management Agency has been awarded a federal mitigation planning grant, applied for with the intent of updating the Pacific County Hazard Mitigation Plan, first published in 2010.

BOLDplanning, a consulting firm contracted to guide the process, will lead public meetings to kick off the update of Pacific County's Hazard Mitigation Plan. BOLDplanning manages the hazard mitigation planning process by providing on-site process facilitation, stakeholder outreach, data collection and analysis, plan writing, and strategy development. The mitigation plan addresses Pacific County's natural hazards, vulnerabilities and complies with state and federal regulations. The meetings will be held on February 18th in Long Beach at the South County Administration Building, Meeting Room A, located at 7013 Sandridge Road at 2:00 p.m. The second meeting will be held at 2:00 p.m. on February 19th, at the Willapa Harbor Chamber of Commerce Community Center, 916 W. First Street in South Bend.

These meetings are planned with public input in mind and will be held in conjunction with Tsunami Information Forums designed for the business community. Following these kick-off meetings, meetings will be held with stakeholders from the previous Pacific County Hazard Mitigation Plan, as well as new stakeholders identified to partner with the county for plan development and implementation. Any questions may be directed to Chief Deputy Stephanie Fritts, sfritts@co.pacific.wa.us or (360) 642/875-9340.

Posted by Scott McDougall at 11:53 AM No comments:

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Local Jurisdictions Invited to Participate in HMP Funding Opportunities

PCEMA is beginning the update process for the Pacific County Hazard Mitigation Plan (HMP) and seeks input from other local agencies and jurisdictions. The purpose of the HMP is to provide guidance for actions to permanently reduce local vulnerabilities to natural and technological hazards.

Additionally, the HMP provides Pacific County and participating agencies and jurisdictions with a Mitigation Plan that meets state and federal requirements for mitigation and disaster relief funding.

Interested agencies and jurisdictions are invited to join the Mitigation Planning Committee (MPC). MPC members will assist in the development of mitigation strategies and can work to develop their own strategies based on their jurisdiction's specific risks and priorities.

During the last update in 2010, the following agencies and jurisdictions participated: Pacific County, the cities of Raymond, South Bend, and Long Beach, the Ocean Beach, Naselle-Grays River, and South Bend school districts, the ports of Ilwaco and Willapa Harbor, Pacific County Fire Districts #1, #4, and #5, the North Beach, Naselle, and Willapa Valley water districts, the PUD #2, Pacific Transit, Ocean Beach Hospital, and the Surfside Homeowners Association.

After the last update, several participating agencies received state and federal funding for hazard mitigation projects. In Long Beach, planned construction of a vertical evacuation berm has been partially funded by an HMP grant.

To get involved, please contact Scott McDougall, PCEMA Deputy Director, at (360) 642/875-9338 or by email at smcdougall@co.pacific.wa.us.

PCEMA Staffer Sent to Assist in Grays Harbor

On January 23rd the Homeland Security Region 3 Incident Management Team was called to Grays Harbor County to assist with recovery efforts in the wake of the January 5th storm and flood. The cities of Aberdeen and Hoquiam were heavily impacted.

Events that create a demand for management services beyond what a local jurisdiction can provide are fairly uncommon, but when those events arise the Incident Management Team is ready to help if they are requested. In Aberdeen the team consolidated information, coordinated volunteers and donations, and helped to direct crews and supplies to areas where they were most needed.

As a new member of the team, PCEMA Deputy Director Scott McDougall worked with firefighters, police officers, dispatchers, and other emergency managers from Lewis, Thurston, Mason, and Grays Harbor Counties. "It was an intense learning experience for me, one that will improve my skills managing events at the local level as well," McDougall said. According to McDougall, the Incident Management Team "is really an extension of an old concept, the idea of neighbors helping neighbors."

Upcoming Forums for HMP Input & Tsunami Awareness for Business

PCEMA has been awarded a federal mitigation planning grant to update the Pacific County Hazard Mitigation Plan (HMP). BOLDplanning, a consulting firm contracted to guide the process, will lead public meetings to kick off the update. The mitigation plan addresses Pacific County's natural hazards, vulnerabilities and complies with state and federal regulations.

The first meeting will be held on February 18th in Long Beach at the South County Administration Building, Meeting Room A, located at 7013 Sandridge Road at 2:00 p.m. The second meeting will be held at 2:00 p.m. on February 19th, at the Willapa Harbor Chamber of Commerce Community Center, 916 W. First Street in South Bend.

These meetings are planned with public input in mind and will be held in conjunction with Tsunami Information Forums designed for the business community. Following these kick-off meetings, meetings will be held with stakeholders from the previous Pacific County Hazard Mitigation Plan, as well as new stakeholders identified to partner with the county for plan development and implementation.

Bulletin Boards Display Emergency Information

Before, during, and after an emergency, residents can access PCEMA press releases at several fire stations and other public locations across the county. Amateur radio volunteers have enabled these sites with "packet radio" capabilities, which means that the site can send or receive digital data (such as text) via radio. Radio is often the last line of communication in a major event such as the historic storm that hit Pacific County in 2007.

Emergency information is posted at the South Pacific County Administration Facility in Long Beach, which is one of many bulletin board sites across the county.

PCEMA press releases can be sent from either the South Bend or Long Beach Emergency Operations Center (EOC) directly to emergency response stations across the county. Personnel at the stations are able to print the press releases and post them for the public.

PCEMA press releases can be accessed at the following locations: the Ilwaco, Chinook, South Bend, and Raymond fire stations, the Pacific County Courthouse, the South Pacific County Administration Facility, the Surfside Homeowners Association Office, and the Peninsula Senior Center.

6

Community Sign-In Sheet	02/18/15; South County Admin Facility	
Name	Phone	E-mail
Courtney Hagain	on file	on file
Sandie Graff	360 642-2104	Sandie.graff@oceanbeachschools.org
John Williams	360 665-6598	john.williams@email.und.edu
Amy Becke	503 741 1357	amybecke@gmail.com
Gaby Glenn	360-642-3143	gglenne@portofilwaco.org
Nicolas Arcos	8083909222	nicolas.arcos@noaa.gov
GEORGE CRAWFORD	360 875 2420	gc.MACTA@HOTMAIL.COM
Jerry Brunner	360-855-7857	jerry.brunner@oceanbeachschools.org
Scott McDougall	360-875-9338	Smcdougall@co.pacific.wa.us
Stephanie Fritts	360-875-9340	Sfritts@co.pacific.wa.us

Community Sign-In Sheet 02/19/15; Chamber		
Name	Phone	E-mail
Courtney Hagelin	on file	on file
Will Hamlin	on file	on file
Alex Kienker	875-8321	home.barphart@gmail.com
Anthony J. Gertz	(612)598-4429	tony@boldplanning.com
Scott McDougall	(360) 875-9338	SMcDougall@co.pacific-wa.us
Paul Philpot	360.875.9330	director@pacificedc.org
Stephanie Jin	360-875-9340	sjinn@co.pacific.wa.us

HMP Stakeholder Sign In Sheet 02/20/15 Naselle Timberland Library		
Name	Phone	E-mail/Agency
Sandie Griffe	360 642-210X	on file
Jon Tienhaara	360-875-6041	jtienhaa@southbendschools.org
Gary Wilson	360-875-6041	gwilson@southbendschools.org.
Randy Tienhaara	360-484-7124	rtienhaa@naselleschools.org
Rich Evans	360 642 9418	director@pcwillapabay.org
Stephanie Frettes	360 875 9340	sfrettes@co.pacific.wa.us
LISA NELSON	360 484-7121	lnelson@naselleschools.org
CAROL HAMEN	360-703-1533	berthaseen@hotmail.com
DENNIS Hauk	360-875-5571	DENNIS.HAUK@SOUTHBEND-WA.GOV
Anthony Gentz	612-598-4429	tony@coldphoenix.com
Marilyn Nikolas	503-333-4911	marilyn.nikolas@gmail.com
Scott McDougall	360 875 9338	SMcdougall@co.pacific.wa.us

Pacific County Emergency Management Council Meeting
April 9, 2015 – 9:00 AM to 10:30 AM
Pacific County Annex, Commissioners' Meeting Room
1216 W Robert Bush Drive, South Bend

	Name	Organization
1.	Andrea Unger	Ecy
2.	MARY ATHERTON	PACIFIC COUNTY CERT
3.	Marilyn Nikolas	Boldplanning
4.	Bob Clive	ARES/RACES
5.	JOHN BURKE	RED CROSS
6.	WILLIE BENCE	RED CROSS
7.	SCOTT JOHNSON	PACIFIC CO. SHERIFF
8.	MIKE CASSINELLI	CITY OF ILWACO
9.	Julie Stuch	City of So. Bend
10.	Stephanie Fehlis	PCEMA
11.	Scott McDougall	PCEMA
12.	Steve Rogers	Pacific County
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PACIFIC COUNTY SHERIFF'S OFFICE
Sheriff Scott L. Johnson
300 Memorial Drive, P.O. Box 27, South Bend, WA 98586 | Phone 360.875.9395 | Fax 360.875.9393

October 1, 2015

Name
Entity
Address
City, State, Zip

Dear *Name*,

The Pacific County Emergency Management Agency is currently in the process of updating its hazard mitigation plan. Participation in hazard mitigation planning is a requirement of the Federal Emergency Management Agency (FEMA) in order to be considered as a stakeholder in a hazard mitigation plan. FEMA provides grant opportunities to offset hazard mitigation activities at 75% of their total cost that are offered to plan stakeholders. Washington's local jurisdictions are eligible for this funding only with a FEMA approved, hazard mitigation plan. Without an approved plan, local governments will not be eligible for many FEMA grant programs.

Pacific County has contracted BOLDplanning to assist in updating the hazard mitigation plan and facilitate local coordination. BOLDplanning has developed multiple local and state hazard mitigation plans in multiple states and FEMA regions.

Your entity was extended an invitation to participate in this process in February, and that invitation was extended again in March. To date we have received no indication that your entity wishes to participate in the plan. The Pacific County Emergency Management Agency is now reaching out in one final effort to ensure that all potential stakeholders have an opportunity to be a part of the plan.

If your entity would like to participate in the planning process, please contact Chief Deputy Stephanie Fritts, (360)875-9340 or sfritts@co.pacific.wa.us or Deputy Director Scott McDougall, (360)875-9338 or smcdougall@co.pacific.wa.us.

In order to participate in the plan the Pacific County Emergency Management must have all of your information no later than 4:00 p.m. October 9, 2015. We have enclosed the necessary forms to be completed for your participation in the plan.

Thank you for your consideration,

Scott McDougall, Deputy Director
Pacific County Emergency Management Agency

Posted September 22, 2015 - 8:33am

Pacific County Emergency Management to host Preparedness Fair

The Daily World

The Pacific County Emergency Management Agency will host a Preparedness Fair on Saturday, Oct. 10, from 11 a.m. to 3 p.m. in the Ocean Park Elementary School Gym.

Exhibits, demonstrations and games designed to educate the community on how to prepare for, and survive, a disaster will be present at the event.

The Pacific County Emergency Management Agency will also be hosting a public meeting to share and discuss the draft update of the Pacific County Hazard Mitigation Plan. The meeting will be an opportunity to see, and comment on, the proposed updates to the plan and will take place at 1 p.m. at the Ocean Park Elementary School Library.

Contact Pacific County Emergency management Agency Deputy Director Scott McDougall by email at smcdougall@co.pacific.wa.us or calling (360) 642-9338 or (360) 875-9338.

〈 Hoquiam School District... Zillyette sentenced, will... 〉

Rules for posting comments

Pacific County Emergency Management Agency Council
~~May 27th, 2015~~ October 8, 2015 **– 11:00 AM to 12:00 Noon**
Pacific County Annex – BoCC Meeting Room
1216 W. Robert Bush Drive, South Bend

	Name	Organization
1.	Stephanie Frith	PCEMA
2.	Jessica Rowlett	PCEMA
3.	Scott McDougall	PCEMA
4.	Marilyn Nikolas	Bold
5.	Julie Stucke	City of SB
6.	Frank Wolfe	Pac Co
7.	Howard Auble	RACES
8.	John Burke	Red Cross
9.	Anthony Gertz	BoA Planning
10.	Barbara Hannah	bj hannah BZ
11.	Paul Dolan	paul @ broaderhorizons.org
12.	MARY ATHERTON	CERT
13.	MIKE CASSINELLI	CITY OF ILWACO
14.	Steve Rogers	PC
15.	LISA Ayers	PC
16.	Jason Hansmar	City Raymond
17.	SCOTT JOHNSON	SHERIFF
18.		
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DATE 10.9.15

NAME HMP Stakeholders.

OUTGOING CALLS

TIME	NAME	MESSAGE	CALL COMPLETED
	Stephanie Fritts	PCEMA	
	Gerry Wilson	SB	
	Jim Tenhaara	SB	
	Sandy Tenhaara	Raschke SB	
	Doug Miller	PUD #2	
	Gene Kuest	PCFD#5	
	Wes Brown	Willapa Valley Water District	
	Robert DeWitt	Ocean Beach Hospital	
	Craig Jung	BoDplanning Inc.	
	Marilyn Nikolas	Bold Planning	

PRINTED IN USA

Pacific County Emergency Management Mitigation Planning
October 10, 2015 Preparedness Fair Presention

	Name	Email
1.	Anthony Gertz	tony@boldplanning.com
2.	Stephanie Fritts	sfritts@co.pacific.wa.us
3.	Jim Sayce	jimsayce@centurytel.net
4.	Debra Barrett	debbie.barrett@msn.com
5.	R Barrett	Richard.barrett@startmail.com
6.	Carnita Wall	~~carnita12ola~~
7.	Phil Wall	
8.	Jackie Sheldon	Saxsmiles@gmail.com
9.	Kristen Mathison	Kristenmathison@yahoo.com
10.	Jim & Della Wilson	della_WILSON2000@yahoo.com
11.	Kelsey Hopstad	kelsey.hopstad@gmail.com
12.	Scott McDougal	smcdougal@co.pacific.wa.us
13.	Michelle Jennings	tekkprincess@aol.com
14.	Debby Moggio	debbymoggio@yahoo.com
15.	Frank Wolls	- on file -
16.	Natasha Crater	natashacrater@gmail.com
17.	Morris Benson	morrisbenson@comcast.net
18.	SCOTT JOHNSON	SJOHNSON@CO.PACIFIC.WA.US
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Appendix D – Facilities & Infrastructure

Table 44 – Facilities, Pacific County	
Structure/Equipment	**Value**
Annex (1216 W. Robert Bush Dr., South Bend, WA)	$2,293,800
Bridge Borovec No. 963005	$900,000
Bridge Bullard No. 961902	$2,700,000
Bridge Cady No. 698003	$1,250,000
Bridge Camp One No. 961901	$4,000,000
Bridge County Line No. 964001	$2,000,000
Bridge Elk Creek No. 961001	$750,000
Bridge Fall River No. 964002	$1,600,000
Bridge Firdale No. 698004	$850,000
Bridge Gamage No. 942901	$1,500,000
Bridge Heckard No. 695501	$500,000
Bridge Mill Creek No. 698005	$700,000
Bridge Mill Creek No. 698006	$500,000
Bridge Mill Creek No. 698001	$900,000
Bridge Moose No. 698002	$1,500,000
Bridge Niawiakum No. 419401	$750,000
Bridge Raimie Ck No. 964004	$1,500,000
Bridge Smith Creek No. 604401	$1,500,000
Bridge Willapa No. 961003	$2,500,000
Bridge Woodard No. 961002	$2,300,000
Bridge Bay Center No. 412701	$3,000,000
Bridge North River No 964003	$1,000,000
Bridge Soule No. 604402	$1,400,000
Bruceport Park (7803 State Route 101, South Bend, WA)	$196,627
Bush Pioneer Park (1 Park St. E., Bay Center, WA)	$723,257
Camp Moorehead Park (27600 Sandridge Rd., Nahcotta, WA)	$778,584
Chinook Park (14 Chinook Park Rd., Chinook, WA)	$54,472
County Services Building (318 N. 2d St., Long Beach, WA)	$1,189,400
Courthouse (300 Memorial Dr., South Bend, WA)	$16,926,200
DCD South County Operations Center (318 2nd St., Long Beach, WA)	$227,400
Generator Building (300 Memorial Dr., South Bend, WA)	$84,055
LBMF Equipment & HHW Facility (318 N. 2nd St., Long Beach, WA)	$357,000
LBMF Fuel Storage & Generator Building (318 N. 2nd St., Long Beach, WA)	$62,829
LBMF Public Services Building	$1,189,400
Long Beach Maintenance Facility (318 N. 2nd St., Long Beach, WA)	$17,145
Naselle Maintenance Facility (6 Co Shop Rd, Naselle, WA)	$5,755
NMF Storage & Equipment Shed	$34,278
North Cove Shop (3752 Larkin Rd., Grayland, WA)	$68,647
Public Safety Building (300 Memorial Dr., South Bend, WA)	$8,443,800
Raymond Repair Shop (108 2d St., Raymond, WA)	$1,431,700
Road Oil Tank (318 N. 2d St., Long Beach, WA)	$72,255
Senior Services Center (319 Duryea St., Raymond, WA)	$855,000

Structure/Equipment	Value
Senior Services Center - Pace Bulding (244 1st St., Raymond, WA)	$546,882
South County Administration Facility (7013 Sandridge Road, Long Beach, WA)	$5,356,000
Telecom - Church Road Site	$87,603
Telcom - Holy Cross Facility (491 Hammond LN, Raymond, WA)	$457,805
Telcom - Ilwaco Facility	$71,700
Telcom - KO Mountain Facility (10 Forks Cr. LN, Naselle, WA)	$725,350
Telcom - Long Beach Facility (318 N. 2d St., Long Beach, WA)	$284,979
Telcom - Megler Hill Facility (80 Houchten LN, Chinook, WA)	$754,500
Telcom - Naselle Ridge Facility (611 Radar Ridge LN, Naselle, WA)	$118,126
Telcom - North Cove Facility	$206,828
Telcom - PUD Raymond Facility	$74,218
Telcom - Raymond Facility (108 2d St., Raymond, WA)	$54,550
Vegetation Management Facility (410 Quincy St., South Bend, WA)	$73,978
Total =	**$77,424,123**

Table 45 – Facilities, Ilwaco

Structure/Equipment	Value
Auto Shop	$795,766
Black Lake Fishing Pier	$0
Black Lake Intertie	$88,200
Baker Bay Lift Station #1	$70,000
Baker Bay Lift Station #2	$70,000
Black Lake Old Shop Shelter	$65,719
Black Lake Park Restrooms	$28,573
Black Lake Picnic Shelter	$24,000
City Hall/Shop	$608,333
City Park Restrooms/Shelter	$130,000
Community Building	$3,906,610
Fire Museum	$51,500
Fire Station	$2,940,070
Heritage Museum	$2,625,000
Maintenance Shop	$719,422
Steed House	$167,775
WTP Lab Bldg., Filter Bay	$7,056,362
WTP Ind Crk., 159,000 Gal	$321,490
Reservoir (Steel) 480,000 Gal	$763,848
MSW Water Pump House	$100,000
Spring St Pump Station	$117,800
Sprint St Pump Station –AB	$10,150
Lakeview WTP Pump Station	$88,000
Stringtown WTP Booster	$123,776
WWTP 1,010,000 Gal	$6,329,016
Sahalee Lift Station	$70,000
Lift Station – Cape D	$70,000
Lift Station – Seaview	$70,000

Structure/Equipment	Value
Water Tank 500,000 Gal	$795,675
Reservoir (Conc.) 159,000 gal	$417,150
Reservoir 500,000 gal	$803,400
Total =	**$29,427,635**

Table 46 – Facilities, Long Beach

Structure/Equipment	Value
1 Million Gallon Tank	$1,061,208
A Class Aerator Tank	$116,036
City Hall	$649,460
Concrete Reservoir Water Tank	$541,217
Electric Pumphouse - Maddix Creek	$2,903
Fire Station	$811,824
Fire Station Annex	$205,000
Frame Office Lab-Storage	$98,501
Generator Bldg. Wwtp	$74,284
Main Impoundment Pumphouse	$17,428
Main Lift Sewer Pump	$57,910
Micro Filtration Water Plan	$4,500,000
Police Station & Restroom	$162,365
Pump Station-Storm Water	$54,121
Pump Station-Storm Water	$48,709
Pump Station-Water Pressure	$48,709
Restroom	$108,243
Sewer Lift Station #1	$17,428
Sewer Lift Station #2	$17,428
Sewer Lift Station #3	$17,428
Sewer Lift Station #4	$17,428
Sewer Lift Station #5	$21,648
Stormwater Pump Station	$133,138
Warehouse & Garage	$303,080
Total =	**$9,085,496**

Table 47 – Facilities, Raymond

Structure/Equipment	Value
Aeration Basins #1 and #2	$1,980,000
Aerobic Digesters #1 and #2	$855,000
Boat Ramp	$441,037
City Hall	$492,093
Control Building	$919,000
Engineers Office	$118,417
Equipment Building	$2,858,000
Equipment Shed	$135,956
Equipment Shed, Park Office	$228,182

Structure/Equipment	Value
Equipment Storage Building	$116,100
Fire/Police Building	$1,729,708
Generator Building	$23,586
Headwork Structure	$168,000
Headworks Blower and Electrical Building	$510,000
Leachate/Vactor Dump/Storm Pump	$272,000
Library	$1,333,223
Light Standards (379)	$1,193,951
Museum (Seaport Addition)	$1,376,335
Museum	$1,443,259
Park Shed	$22,763
Pier/Dock Downtown Waterfront	$325,706
Piers/Floating Dock	$125,272
Pipe Building	$56,214
Polymer Storage Building	$45,900
Public Works Office	$659,972
Public Works Shop	$181,982
Restrooms	$103,339
Restrooms, Willapa Landing	$417,496
Secondary Clarifiers #1 and #2	$1,980,000
Shop Building	$192,150
Solids Handling Building	$2,081,000
Storage Building	$88,612
Storage Building	$140,758
Storage Shed	$57,425
Swimming Pool	$650,000
Theatre, Community Center	$1,115,929
Visitor Info Center	$161,663
UV Effluent Flowmeter	$430,000
Water Tank 3,000,000 gal	$1,252,717
WPT 1,500,000 gal w/pump station	$8,618,585
WTP 2,000,000 GAL	$3,681,621
Total =	**$38,582,951**

Table 48 – Facilities, South Bend

Structure/Equipment	Value
101 Restrooms	$47,000
8” Raw Water Pipe	$200,000
8” Raw Water Pipe (Light Creek to SR 105)	$123,000
8” Raw Water Pipe (Martin Creek to SR 105)	$56,000
8” Raw Water Pipe SR 105 to Plant	$40,200
Boat Launch & Docks	$190,571
Central Avenue Tunnel 84”	$2,500,000
City Garage	$375,000
City Hall	$787,500

Structure/Equipment	Value
City Pier	$681,345
East End Fire hall	$400,425
Library	$503,546
Light Creek Dam	$4,000,000
Main Reservoir	$1,000,000
Main Reservoir	$1,500,000
Martin Creek Dam	$4,000,000
Park Bldg	$110,000
Park Residence	$36,000
Pump St. # 1	$262,500
Pump St. # 2	$262,500
Pump St. # 3	$1,000,000
Pump St. # 4	$262,500
Rixon Rd Tank	$200,000
Rixon Rd Tank	$300,000
Robert Bush Park Statue	$105,000
Sewer Treatment Plant	$80,300
Storage Garage	$300,000
Water Treatment Plant	$6,000,000
West End Fire hall	$1,147,534
Total =	**$26,470,921**

Table 49 – Facilities, Naselle/Grays River School District

Structure/Equipment	Value
Bus and Maintenance	$311,798
Elementary/MS/High School	$8,882,049
Music/Shop Building	$975,408
Total =	**$10,169,255**

Table 50 – Facilities, Ocean Beach SD

Structure/Equipment	Value
Ilwaco HS	$14,149,788
Ilwaco HS Gym/Locker Rooms	$1,909,160
Ilwaco HS Stadium	$4,104,299
Ilwaco MS (Hilltop)	$8,665,551
Kaino Gym	$534,880
Long Beach Elementary	$7,653,972
OBSD Administrative Office	$775,322
OBSD Maintenance	$249,340
OBSD Transportation	$391,441
Ocean Beach Early Childhood Center	$699,415
Ocean Park Elementary	$6,529,563
Total =	**$45,662,691**

Table 51 – Facilities, South Bend School District	
Structure/Equipment	**Value**
Early Learning Center	$1,513,599
District Administrative Building	$360,961
Main Elementary	$433,600
Modular Building	$125,200
South Bend Elementary	$7,613,418
Play Shed	$481,521
High School (Office, Science, Library, Classrooms, Gym)	$10,786,074
High School Gym and Music Building	$3,864,380
Shops and Small Engines	$1,612,709
Bus Garage and Maintenance Building	$1,191,622
Grandstand	$758,322
Football Locker Room	$446,309
Concession Stand	$163,200
Total =	**$293,509,915**

Table 52 – Facilities, Willapa Valley School District	
Structure/Equipment	**Value**
Lebam Elementary	$200,000
Lebam Gym	$304,552
Menlo Middle/High School	$13,088,700
Menlo Stadium	$845,895
Menlo Transportation	$697,000
Willapa Elementary	$3,278,405
Willapa Gym	$1,067,900
Willapa Modular	$230,000
Total =	**$0**

Table 53 – Facilities, Naselle Water Company	
Structure/Equipment	**Value**
Office	$170,000
Storage Tank #1	$67,000
Storage Tank #2	$284,000
Water Treatment Plan	$4,525,000
Total =	**$5,046,000**

Table 54 – Facilities, North Beach Water District	
Structure/Equipment	**Value**
Booster Station (2320 272nd St.)	$750,000
Booster Station (25600 Z St.)	$950,000
Generator (2108 272nd St.)	$50,000

Structure/Equipment	Value
Office & Facilities Building	$1,080,000
North Wellfield Reservoir #1	$200,000
North Wellfield Reservoir #2	$200,000
North Wellfield Reservoir #3	$200,000
North Wellfield Treatment Plan	$700,000
North Wellfield Well #1	$95,000
North Wellfield Well #3	$95,000
North Wellfield Well #4	$95,000
North Wellfield Well #5	$95,000
North Wellfield Well #6	$95,000
North Wellfield Well #7	$95,000
North Wellfield Well #8	$95,000
Shop (2108 272nd St.)	$280,000
South Wellfield Reservoir #1	$275,000
Water Pipes	$36,000,000
Wiegardt Well #1	$95,000
Wiegardt Well #2	$95,000
Wiegardt Well #3	$95,000
Total =	**$41,635,000**

Table 55 – Facilities, Surfside Homeowners' Association

Structure/Equipment	Value
1996 Ford Service Truck	$26,000
1996 Freightliner Dump Truck	$26,000
2004 Chevy Truck	$37,000
2009 Compact Excavator	$120,000
Bridgeside Pump House	$44,150
Cabana 15, 16 and 17	$53,000
Case Backhoe	$52,000
Compactor Building	$72,000
Cummins Generator	$85,000
Deep Wells Control Generator	$98,000
Dry Box Building	$45,000
Fire Hydrants 38 ea	$182,000
J-I Wells Building	$45,200
Manifold Building	$150,000
North Tidegate System	$95,000
Oceanside Pump House	$141,150
Oysterville Pump House	$39,900
Pedestrian Bridges 6 ea	$700,000
Portable Generator	$1,500
Shallow Wells 3 ea	$75,000
South Tidegate System	$95,000
Surfside Business Office	$365,000
System Infrastructure	$10,000,000

Structure/Equipment	Value
Treatment/Filter Bldg	$246,600
Warehouse Building	$255,000
Water Office Building	$557,100
Water Reservoirs (4 each)	$1,120,000
Total =	**$14,726,600**

Table 56 – Facilities, Willapa Valley Water District

Structure/Equipment	Value
Booster Pump Station #1	$35,000
Booster Pump Station #2	$35,000
Booster Pump Station #3	$35,000
Diversion Dam	$50,971
Office	$204,728
Reservoir 200,000 Gallons	$445,994
Reservoir 300,000 Gallons	$573,420
Reservoir 320,000 Gallons	$573,420
Storage Shed	$38,227
Water Treatment Plant	$1,550,000
Total =	**$3,541,760**

Table 57 – Facilities, Ocean Beach Hospital

Structure/Equipment	Value
OBH Rural Medical Clinic/Ilwaco	$1,599,465
OBH Rural Medical Clinic/Naselle	$22,220
Ocean Beach Hospital	$48,468,108
Total =	**$50,089,793**

Table 58 – Facilities, Willapa Harbor Hospital

Structure/Equipment	Value
Administration Building	$400,000
Business Office	$400,000
Pacific Family Health Center	$400,000
Willapa Family Medicine	$400,000
Willapa Harbor Hospital	$23,000,000
Total =	**$24,600,000**

Table 59 – Facilities, Fire Protection District #1	
Structure/Equipment	**Value**
Fire Station Ocean Park #1	$4,000,000
Fire Station Ocean Park #2	$325,000
Fire Station Ocean Park #3	$350,000
Fire Station Ocean Park #4	$225,000
Fire Station Ocean Park #5	$400,000
Fire Station Seaview #1	$1,350,000
Fire Station Seaview #2	$225,000
Fire Station Seaview #3	$1,000,000
Fire Station Long Beach #1	$400,000
Fire Station Long Beach #2	$400,000
Total =	**$8,675,000**

Table 60 – Facilities, Fire Protection District #2	
Structure/Equipment	**Value**
2010 Generator 16KW	$26,564
Cascade Unit	$5,711
Chain Saw and Hand Tools	$5,983
EMS Equipment	$5,983
Fire Hall	$201,295
Freightliner Pumper – Pierce	$245,452
Generator #2221	$2,392
Generator #2222	$2,991
Hoses 1200 Feet	$17,945
Hoses 2400 Feet	$29,909
Mobile Equipment	$11,963
MSA Air Packs and Bottles	$29,909
Pierce Contender	$336,828
SCBA – 12 Units	$34,263
Rescue Vehicle – Ford	$87,326
Turn Out Gear – 25 Sets	$85,656
Total =	**$1,130,170**

Table 61 – Facilities, Fire Protection District #4	
Structure/Equipment	**Value**
Main Fire Hall	$278,712
Vehicle Building w/ Apartment	$1,262,668
Salmon Creek Building	$35,581
Total =	**$1,576,961**

Table 62 – Facilities, Fire Protection District #5	
Structure/Equipment	**Value**
1964 GMC Truck	$400,000
1991 Pumper Truck	$400,000
1993 Pumper Truck	$400,000
Larkin Building	$57,790
Main fire station	$309,196
Tokeland Building	$128,248
Total =	**$1,695,234**

Table 63 – Facilities, Fire Protection District #6	
Structure/Equipment	**Value**
1964 Pumper Truck	$21,000
1972 Pumper Truck	$155,000
1975 Pumper Truck	$260,000
1991 Pumper Truck	$262,000
Main Fire Station	$350,000
Total =	**$1,048,000**

Table 64 – Facilities, Pacific Transit	
Structure/Equipment	**Value**
Administration Building	$528,000
Maintenance Building - Seaview	$1,818,000
Maintenance Building - Raymond	$399,000
Office Building - Raymond	$255,000
1x - 29 Foot Bus	$150,000
9x - 30 Foot Bus	$3,040,000
6x – DAR Van	$420,000
1x - Pick-Up Truck	$30,000
1x - Administrative Car	$25,000
Total =	**$6,665,000**

Table 65 – Facilities, Port of Chinook	
Structure/Equipment	**Value**
Backhoe	$100,000
Boat Hoist	$60,000
Dredge	$120,000
Flatbed Truck	$5,500
Floats	$2,500,000
Fuel Shed	$35,000
Pilings	$1,000,000

Structure/Equipment	Value
Port Office	$225,000
Public Restrooms	$150,000
Work Boat	$20,500
Work Shop	$30,000
Total =	**$4,246,000**

Table 66 – Facilities, Port of Ilwaco

Structure/Equipment	Value
Boatyard Building	$700,000
Dredge	$425,000
Excavator	$120,000
Floats	$8,500,000
Metal Building	$150,000
Pavilion	$350,000
Other Wheeled	$150, 000
Pilings	$2,000,000
Port Office	$425,000
Shop	$1,125,000
Travelift	$125,000
Total =	**$13,945,125**

Table 67 – Facilities, Port of Peninsula

Structure/Equipment	Value
Dock Office	$55,000
Floats and Pilings	$4,421,705
Forklift	$10,000
Fuel Tank	$135,000
Ice Plant	$300,000
Interpretive Center	$100,000
Public Restroom and Shower	$52,000
Service Pier and Fuel Dock	$4,000,000
Shop-Office	$116,285
Wiegardt Wharfage Dock	$1,103,000
Total =	**$10,292,990**

Table 68 – Facilities, Port of Willapa Harbor	
Structure/Equipment	**Value**
Airport Fuel Station (2000 gallons)	$41,283
Airport Pilot Ready Room	$32,827
Airport Residence & Garage	$205,163
Airport Runway, Taxiway, lights, etc.	$1,000,000
Building #1 & #1A	$837,157
Building #15	$2,450,806
Building #2	$1,803,486
Building #3	$650,000
Building #4	$507,368
Building #5 & #5A	$362,406
Building #6	$521,864
Building #7 (Port Shop)	$740,866
Building #7A (Covered Shed)	$413,100
Bulkhead/Seawall	$500,000
Docks/Berths	$1,595,712
Double Hangar Building	$207,997
Float A""	$113,979
Float B" & Float "C""	$302,045
Float B" & Float "D" Tie-up Floats"	$273,551
Floats/Moorage Slips	$638,285
Fosse Building	$130,500
Hangar Building #2	$64,310
Kadyk Building	$152,961
Machine Shop	$1,481,733
Pier for Building #2 & #4	$6,838,766
Port Office	$97,066
Public Fishing Pier	$113,979
Pump House	$63,291
Rotta Building	$443,947
Sewage Treatment Tanks & Lines	$365,927
South Fork Dock	$740,866
South Fork Mill Cooling Shed	$1,087,200
South Fork Mill Dry Kilns	$2,355,600
South Fork Mill Office	$403,034
South Fork Mill Planer Shed	$1,050,960
South Fork Mill Shipping Shed	$2,718,000
Taylor Park Bldg. #1	$1,829,970
Taylor Park Bldg. #2	$1,731,903
Taylor Park Bldg. #3	$207,999
Taylor Park Bldg. #4 (Dennis Bldg)	$1,087,217
Wastewater Office/Lab	$46,500
Wastewater Treatment Plant	$400,000
Total	**$36,609,624**

Table 69 – Facilities, PUD #2	
Structure/Equipment	**Value**
Fiber Cabinet & Electronics - Bay Center/Palix Rd	$39,500
Fiber Cabinet & Electronics - Chinook North	$75,000
Fiber Cabinet & Electronics - Chinook South	$92,000
Fiber Cabinet & Electronics - Down Town Ilwaco	$30,000
Fiber Cabinet & Electronics - Down Town Long Beach	$220,000
Fiber Cabinet & Electronics - Down Town Long Beach 2	$110,000
Fiber Cabinet & Electronics - Down Town Ocean Park	$51,000
Fiber Cabinet & Electronics - Garden Tracts	$93,000
Fiber Cabinet & Electronics - Henkle	$148,000
Fiber Cabinet & Electronics - Island	$97,000
Fiber Cabinet & Electronics - Lebam	$75,000
Fiber Cabinet & Electronics - Menlo	$95,000
Fiber Cabinet & Electronics - Naselle East	$83,000
Fiber Cabinet & Electronics - Naselle South	$99,000
Fiber Cabinet & Electronics - Ocean Park 187	$51,000
Fiber Cabinet & Electronics - Ocean Park 205	$45,000
Fiber Cabinet & Electronics - Ocean Park 227	$45,000
Fiber Cabinet & Electronics - Ocean Park 245	$45,000
Fiber Cabinet & Electronics - Ocean Park Substation	$54,000
Fiber Cabinet & Electronics - Old Willapa	$17,500
Fiber Cabinet & Electronics - Riverview	$105,000
Fiber Cabinet & Electronics - SB Central	$57,000
Fiber Cabinet & Electronics - SB East	$100,000
Fiber Cabinet & Electronics - SB Library	$63,000
Fiber Cabinet & Electronics - SB Waterfront	$102,000
Fiber Distribution System	$8,148,000
Tower Site with Radio Equipment - Aberdeen	$65,000
Tower Site with Radio Equipment - Cosi	$142,250
Tower Site with Radio Equipment - Holy Cross	$194,000
Tower Site with Radio Equipment - Ilwaco	$2,500
Tower Site with Radio Equipment - KO Peak	$131,000
Tower Site with Radio Equipment - Long Beach	$63,500
Tower Site with Radio Equipment - Meglar	$125,000
Tower Site with Radio Equipment - Naselle	$90,500
Tower Site with Radio Equipment - North Cove	$7,200
Tower Site with Radio Equipment - Raymond	$133,809
Tower Site with Radio Equipment - Tokeland	$11,500
Updated Distribution Facilities	$59,000,000
Updated Transmission Facilities	$4,800,000
Wilson Point Water Company	$250,000
Total =	**$75,156,259**

Appendix E – Historical Hazard Records

Table 70 – Coastal Flood Records, Pacific County, Washington

3 Coastal Flood Event(s) were reported in Pacific County, Washington between 01/29/2006 and 12/31/2014

Mag: Magnitude (No Indices) Dth: Deaths Inj: Injuries
PrD: Property Damage (US Dollars) CrD: Crop Damage (US Dollars)

Location	Date	Mag	Dth	Inj	PrD	CrD
W. Pacific (Zone)	1/29/2006	-	0	0	$0	$0
South Coast (Zone)	12/3/2007	-	0	0	$5,000,000	$0
South Coast (Zone)	10/24/2010	-	0	0	$150,000	$0
		Totals:	**0**	**0**	**$5,150,000**	**$0**

**The data are from the NOAA NCDC Storm Events Database.*

Table 71 – Riverine Flood Records, Pacific County, Washington

20 Riverine Flood Event(s) were reported in Pacific County, Washington between 12/26/1996 and 01/05/2014

Mag: Magnitude (No Indices) Dth: Deaths Inj: Injuries
PrD: Property Damage (US Dollars) CrD: Crop Damage (US Dollars)

Location	Date	Mag	Dth	Inj	PrD	CrD
South Coast (Zone)	12/26/1996	-	0	0	$0.00	$0
Southwest Interior (Zone)	12/26/1996	-	0	0	$0.00	$0
Southwest Interior (Zone)	1/1/1997	-	0	0	$0.00	$0
South Coast (Zone)	1/1/1997	-	0	0	$0.00	$0
W Pacific (Zone)	11/25/1998	-	0	0	$0.00	$0
Southwest Interior (Zone)	11/26/1998	-	0	0	$0.00	$0
W Pacific (Zone)	12/2/1998	-	0	0	$0.00	$0
W Pacific (Zone)	12/27/1998	-	0	0	$0.00	$0
E Pacific/W Lewis/Wahkiakum (Zone)	12/27/1998	-	0	0	$500,000.00	$0
W Pacific (Zone)	2/16/1999	-	0	0	$10,000.00	$0
W Pacific (Zone)	3/2/1999	-	0	0	$1,000.00	$0
South Coast (Zone)	6/11/2000	-	0	0	$0.00	$0
Southwest Interior (Zone)	6/11/2000	-	0	0	$0.00	$0
Willapa	1/10/2006	-	0	0	$0.00	$0
Willapa	1/29/2006	-	0	0	$0.00	$0
Willapa	12/3/2007	-	0	0	$10,000,000.00	$0
Naselle	1/7/2009	-	0	0	$0.00	$0
Willapa	1/7/2009	-	0	0	$0.00	$0
Raymond	11/19/2012	-	0	0	$0.00	$0
Naselle	1/5/2015	-	0	0	$0.00	$0
		Totals:	**0**	**0**	**$10,511,000**	**$0**

**The data are from the NOAA NCDC Storm Events Database.*

Table 72 – Severe Storm Records, Pacific County, Washington

180 Severe Storm Event(s) were reported in Pacific County, Washington between 11/30/1996 and 02/07/2015

Mag: Magnitude (Knots/Hour) Dth: Deaths Inj: Injuries
PrD: Property Damage (US Dollars) CrD: Crop Damage (US Dollars)

Location	Date	Mag	Dth	Inj	PrD	CrD
South Coast (Zone)	11/30/1996	40	0	0	$0.00	$0.00
South Coast (Zone)	12/4/1996	45	0	0	$0.00	$0.00
South Coast (Zone)	12/29/1996	45	0	0	$0.00	$0.00
South Coast (Zone)	12/30/1996	35	0	0	$0.00	$0.00
South Coast (Zone)	1/1/1997	35	0	0	$0.00	$0.00
South Coast (Zone)	1/18/1997	37	0	0	$0.00	$0.00
W Pacific (Zone)	3/30/1997	-	0	0	$10,000.00	$0.00
W Pacific (Zone)	12/1/1998	45	0	0	$0.00	$0.00
W Pacific (Zone)	12/5/1998	55	0	0	$0.00	$0.00
W Pacific (Zone)	12/7/1998	38	0	0	$0.00	$0.00
W Pacific (Zone)	12/12/1998	37	0	0	$0.00	$0.00
W Pacific (Zone)	12/25/1998	45	0	0	$0.00	$0.00
W Pacific (Zone)	12/27/1998	45	0	0	$0.00	$0.00
W Pacific (Zone)	1/15/1999	40	0	0	$0.00	$0.00
W Pacific (Zone)	1/17/1999	35	0	0	$0.00	$0.00
W Pacific (Zone)	1/28/1999	48	0	0	$0.00	$0.00
W Pacific (Zone)	2/1/1999	35	0	0	$0.00	$0.00
W Pacific (Zone)	2/5/1999	43	0	0	$0.00	$0.00
W Pacific (Zone)	2/18/1999	39	0	0	$0.00	$0.00
W Pacific (Zone)	2/23/1999	56	0	0	$0.00	$0.00
W Pacific (Zone)	3/2/1999	76	0	0	$1,500.00	$0.00
E Pacific/W Lewis/Wahkiakum (Zone)	3/2/1999	61	0	0	$0.00	$0.00
South Coast (Zone)	1/16/2000	95	0	0	$0.00	$0.00
E Pacific/W Lewis/Wahkiakum (Zone)	1/16/2000	66	0	0	$0.00	$0.00
South Coast (Zone)	12/13/2000	57	0	0	$0.00	$0.00
Southwest Interior (Zone)	12/14/2000	77	0	0	$0.00	$0.00
W Pacific (Zone)	2/1/2001	35	0	0	$0.00	$0.00
W Pacific (Zone)	11/27/2001	52	0	0	$0.00	$0.00
W Pacific (Zone)	11/30/2001	64	0	0	$0.00	$0.00
W Pacific (Zone)	12/1/2001	64	0	0	$0.00	$0.00
W Pacific (Zone)	12/12/2001	48	0	0	$0.00	$0.00
W Pacific (Zone)	12/15/2001	70	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2002	52	0	0	$0.00	$0.00
W Pacific (Zone)	11/15/2002	46	0	0	$0.00	$0.00
W Pacific (Zone)	12/13/2002	52	0	0	$0.00	$0.00
W Pacific (Zone)	12/15/2002	52	0	0	$0.00	$0.00
W Pacific (Zone)	12/24/2002	53	0	0	$0.00	$0.00
South Coast (Zone)	12/26/2002	57	0	0	$0.00	$0.00
Southwest Interior (Zone)	12/26/2002	57	0	0	$0.00	$0.00
W Pacific (Zone)	1/1/2003	61	0	0	$0.00	$0.00
W Pacific (Zone)	11/16/2003	50	0	0	$0.00	$0.00
South Coast (Zone)	12/15/2003	60	0	0	$0.00	$0.00
W Pacific (Zone)	3/19/2005	60	0	0	$0.00	$0.00
W Pacific (Zone)	11/3/2005	53	0	0	$0.00	$0.00
W Pacific (Zone)	11/5/2005	55	0	0	$0.00	$0.00
South Coast (Zone)	12/24/2005	59	0	0	$0.00	$0.00
W Pacific (Zone)	1/1/2006	51	0	0	$0.00	$0.00
South Coast (Zone)	2/3/2006	63	0	0	$100,000.00	$0.00

Location	Date	Mag	Dth	Inj	PrD	CrD
South Coast (Zone)	3/7/2006	51	0	0	$75,000.00	$0.00
South Coast (Zone)	11/10/2006	50	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/10/2006	52	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/12/2006	55	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2006	52	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2006	58	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2006	50	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/12/2006	74	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/19/2006	57	0	0	$0.00	$0.00
South Coast (Zone)	12/14/2006	68	0	0	$0.00	$0.00
South Coast (Zone)	12/14/2006	52	0	0	$0.00	$0.00
Southwest Interior (Zone)	12/14/2006	66	0	0	$0.00	$0.00
Southwest Interior (Zone)	10/18/2007	61	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2007	60	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2007	67	0	0	$0.00	$0.00
South Coast (Zone)	11/12/2007	61	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/12/2007	60	0	0	$0.00	$0.00
South Coast (Zone)	12/2/2007	54	0	0	$0.00	$0.00
South Coast (Zone)	12/2/2007	55	0	0	$0.00	$0.00
South Coast (Zone)	12/3/2007	52	0	0	$0.00	$0.00
South Coast (Zone)	12/3/2007	63	0	0	$0.00	$0.00
South Coast (Zone)	12/3/2007	90	0	0	$10,140,000.00	$0.00
South Coast (Zone)	12/3/2007	58	0	0	$0.00	$0.00
South Coast (Zone)	12/3/2007	89	0	0	$0.00	$0.00
South Coast (Zone)	12/3/2007	65	0	0	$0.00	$0.00
Southwest Interior (Zone)	12/3/2007	68	0	0	$140,000.00	$0.00
Southwest Interior (Zone)	12/19/2007	60	0	0	$0.00	$0.00
South Coast (Zone)	1/3/2008	42	0	0	$0.00	$0.00
Southwest Interior (Zone)	1/4/2008	55	0	0	$0.00	$0.00
South Coast (Zone)	1/4/2008	56	0	0	$0.00	$0.00
South Coast (Zone)	1/29/2008	56	0	0	$0.00	$0.00
South Coast (Zone)	2/6/2008	59	0	0	$0.00	$0.00
South Coast (Zone)	12/12/2008	61	0	0	$0.00	$0.00
South Coast (Zone)	12/26/2008	54	0	0	$0.00	$0.00
South Coast (Zone)	1/4/2009	36	0	0	$0.00	$0.00
South Coast (Zone)	1/7/2009	40	0	0	$0.00	$0.00
South Coast (Zone)	3/15/2009	35	0	0	$0.00	$0.00
South Coast (Zone)	5/4/2009	62	0	0	$0.00	$0.00
South Coast (Zone)	11/5/2009	35	0	0	$0.00	$0.00
South Coast (Zone)	11/9/2009	55	0	0	$0.00	$0.00
South Coast (Zone)	11/16/2009	56	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/16/2009	61	0	0	$0.00	$0.00
South Coast (Zone)	11/18/2009	59	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/22/2009	72	0	0	$0.00	$0.00
South Coast (Zone)	11/22/2009	59	0	0	$0.00	$0.00
South Coast (Zone)	1/11/2010	39	0	0	$0.00	$0.00
South Coast (Zone)	1/15/2010	62	0	0	$0.00	$0.00
South Coast (Zone)	1/17/2010	63	0	0	$0.00	$0.00
South Coast (Zone)	2/11/2010	50	0	0	$0.00	$0.00
South Coast (Zone)	3/12/2010	56	0	0	$0.00	$0.00
South Coast (Zone)	3/28/2010	67	0	0	$0.00	$0.00
South Coast (Zone)	4/2/2010	64	0	0	$0.00	$0.00
Southwest Interior (Zone)	4/2/2010	63	0	0	$0.00	$0.00
South Coast (Zone)	5/19/2010	62	0	0	$0.00	$0.00
South Coast (Zone)	10/23/2010	59	0	0	$0.00	$0.00
South Coast (Zone)	11/1/2010	51	0	0	$0.00	$0.00

Location	Date	Mag	Dth	Inj	PrD	CrD
South Coast (Zone)	1/15/2010	62	0	0	$0.00	$0.00
South Coast (Zone)	1/17/2010	63	0	0	$0.00	$0.00
South Coast (Zone)	2/11/2010	50	0	0	$0.00	$0.00
South Coast (Zone)	3/12/2010	56	0	0	$0.00	$0.00
South Coast (Zone)	3/28/2010	67	0	0	$0.00	$0.00
South Coast (Zone)	4/2/2010	64	0	0	$0.00	$0.00
Southwest Interior (Zone)	4/2/2010	63	0	0	$0.00	$0.00
South Coast (Zone)	5/19/2010	62	0	0	$0.00	$0.00
South Coast (Zone)	10/23/2010	59	0	0	$0.00	$0.00
South Coast (Zone)	11/1/2010	51	0	0	$0.00	$0.00
South Coast (Zone)	11/17/2010	39	0	0	$0.00	$0.00
South Coast (Zone)	11/22/2010	53	0	0	$0.00	$0.00
South Coast (Zone)	11/30/2010	56	0	0	$0.00	$0.00
South Coast (Zone)	12/11/2010	37	0	0	$0.00	$0.00
Long Beach	12/13/2010	55	0	0	$0.00	$0.00
South Coast (Zone)	12/17/2010	41	0	0	$0.00	$0.00
South Coast (Zone)	1/12/2011	50	0	0	$0.00	$0.00
South Coast (Zone)	1/14/2011	39	0	0	$0.00	$0.00
South Coast (Zone)	2/12/2011	53	0	0	$0.00	$0.00
Southwest Interior (Zone)	2/12/2011	55	0	0	$0.00	$0.00
South Coast (Zone)	2/14/2011	55	0	0	$0.00	$0.00
Southwest Interior (Zone)	2/14/2011	52	0	0	$0.00	$0.00
South Coast (Zone)	2/27/2011	54	0	0	$0.00	$0.00
South Coast (Zone)	3/2/2011	63	0	0	$0.00	$0.00
South Coast (Zone)	3/9/2011	59	0	0	$0.00	$0.00
South Coast (Zone)	3/10/2011	45	0	0	$0.00	$0.00
South Coast (Zone)	3/13/2011	62	0	0	$0.00	$0.00
South Coast (Zone)	3/15/2011	44	0	0	$0.00	$0.00
South Coast (Zone)	9/26/2011	56	0	0	$0.00	$0.00
South Coast (Zone)	11/16/2011	36	0	0	$0.00	$0.00
South Coast (Zone)	11/21/2011	53	0	0	$0.00	$0.00
South Coast (Zone)	11/21/2011	57	0	0	$0.00	$0.00
South Coast (Zone)	11/22/2011	65	0	0	$0.00	$0.00
South Coast (Zone)	11/24/2011	59	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/24/2011	67	0	0	$0.00	$0.00
South Coast (Zone)	11/27/2011	35	0	0	$0.00	$0.00
South Coast (Zone)	12/25/2011	59	0	0	$0.00	$0.00
South Coast (Zone)	12/27/2011	50	0	0	$0.00	$0.00
Southwest Interior (Zone)	12/27/2011	66	0	0	$0.00	$0.00
South Coast (Zone)	12/28/2011	37	0	0	$0.00	$0.00
South Coast (Zone)	1/2/2012	68	0	0	$0.00	$0.00
South Coast (Zone)	1/4/2012	55	0	0	$0.00	$0.00
South Coast (Zone)	1/20/2012	58	0	0	$0.00	$0.00
Southwest Interior (Zone)	1/20/2012	56	0	0	$0.00	$0.00
South Coast (Zone)	1/22/2012	60	0	0	$0.00	$0.00
South Coast (Zone)	3/11/2012	65	0	0	$0.00	$0.00
South Coast (Zone)	3/14/2012	38	0	0	$0.00	$0.00
South Coast (Zone)	3/15/2012	63	0	0	$0.00	$0.00
South Coast (Zone)	3/28/2012	70	0	0	$0.00	$0.00
South Coast (Zone)	11/11/2012	37	0	0	$0.00	$0.00
South Coast (Zone)	11/18/2012	69	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/19/2012	67	0	0	$0.00	$0.00
South Coast (Zone)	12/4/2012	60	0	0	$0.00	$0.00
South Coast (Zone)	12/16/2012	73	0	0	$0.00	$0.00
Southwest Interior (Zone)	12/16/2012	64	0	0	$0.00	$0.00
South Coast (Zone)	12/19/2012	58	0	0	$0.00	$0.00

Location	Date	Mag	Dth	Inj	PrD	CrD
South Coast (Zone)	3/19/2013	54	0	0	$0.00	$0.00
Southwest Interior (Zone)	9/28/2013	78	0	0	$0.00	$0.00
South Coast (Zone)	9/28/2013	53	0	0	$0.00	$0.00
Southwest Interior (Zone)	9/29/2013	70	0	0	$0.00	$0.00
South Coast (Zone)	9/29/2013	51	0	0	$0.00	$0.00
South Coast (Zone)	11/2/2013	39	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/2/2013	59	0	0	$0.00	$0.00
South Coast (Zone)	11/18/2013	50	0	0	$0.00	$0.00
South Coast (Zone)	1/10/2014	69	0	0	$0.00	$0.00
Southwest Interior (Zone)	1/11/2014	36	0	0	$0.00	$0.00
South Coast (Zone)	2/11/2014	57	0	0	$0.00	$0.00
Southwest Interior (Zone)	2/12/2014	56	0	0	$0.00	$0.00
Southwest Interior (Zone)	2/15/2014	75	0	0	$0.00	$0.00
South Coast (Zone)	2/15/2014	61	0	0	$0.00	$0.00
South Coast (Zone)	2/16/2014	62	0	0	$0.00	$0.00
Southwest Interior (Zone)	2/16/2014	79	0	0	$0.00	$0.00
South Coast (Zone)	2/18/2014	35	0	0	$0.00	$0.00
Southwest Interior (Zone)	2/18/2014	51	0	0	$0.00	$0.00
South Coast (Zone)	3/5/2014	63	0	0	$0.00	$0.00
Southwest Interior (Zone)	3/6/2014	54	0	0	$0.00	$0.00
South Coast (Zone)	3/8/2014	55	0	0	$0.00	$0.00
South Coast (Zone)	10/25/2014	65	0	0	$0.00	$0.00
Southwest Interior (Zone)	10/25/2014	50	0	0	$0.00	$0.00
Southwest Interior (Zone)	11/21/2014	50	0	0	$0.00	$0.00
South Coast (Zone)	11/21/2014	37	0	0	$0.00	$0.00
South Coast (Zone)	1/17/2015	38	0	0	$0.00	$0.00
Southwest Interior (Zone)	1/18/2015	56	0	0	$0.00	$0.00
South Coast (Zone)	2/5/2015	54	0	0	$0.00	$0.00
South Coast (Zone)	2/5/2015	56	0	0	$0.00	$0.00
South Coast (Zone)	2/7/2015	56	0	0	$0.00	$0.00
		Totals:	**0**	**0**	**$10,466,500**	**$0.00**

**The data are from the NOAA NCDC Storm Events Database.*

Table 73 – Winter Storm Records, Pacific County, Washington

12 Winter Storm Event(s) were reported in Pacific County, Washington between 11/13/2001 and 12/31/2014

Mag: Magnitude (No Indices) Dth: Deaths Inj: Injuries
PrD: Property Damage (US Dollars) CrD: Crop Damage (US Dollars)

Location	Date	Mag	Dth	Inj	PrD	CrD
South Coast (Zone)	11/13/2001	-	0	0	$0	$0
W Pacific (Zone)	1/6/2002	-	0	0	$0	$0
W Pacific (Zone)	11/17/2003	-	0	0	$0	$0
E Pacific/W Lewis/Wahkiakum (Zone)	11/17/2003	-	0	0	$0	$0
Southwest Interior (Zone)	1/6/2004	-	0	0	$0	$0
South Coast (Zone)	1/6/2004	-	0	0	$0	$0
Southwest Interior (Zone)	3/8/2006	-	0	0	$0	$0
South Coast (Zone)	3/8/2006	-	0	0	$0	$0
Southwest Interior (Zone)	12/12/2008	-	0	0	$0	$0
Southwest Interior (Zone)	12/20/2008	-	0	0	$691,000	$0
South Coast (Zone)	12/20/2008	-	0	0	$168,000	$0
Southwest Interior (Zone)	12/24/2008	-	0	0	$0	$0
		Totals:	**0**	**0**	**$859,000**	**$0**

**The data are from the NOAA NCDC Storm Events Database.*

Appendix F – Mitigation Projects

#1 – Alert, Broadcast, & Warning Systems Upgrade			
Description	The jurisdictions will continue to improve their alert, broadcast, and warning systems to give information and instructions in the face of an impending hazard impact to prevent injury and property damage. These systems will allow citizens to better protect themselves in the event of an impending or potentially impending hazard. Additionally, hazard or weather specific information can be delivered to assist in achieving the previously stated goal.		
Hazard/s Addressed	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms		
Status	On-going & Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$50,000 - $200,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	High (PCEMA)	Ocean Beach Hospital	High
Ilwaco	High (PCEMA)	Willapa Harbor Hospital	Medium
Long Beach	High (PCEMA)	Fire District #1	High
Raymond	High (PCEMA)	Fire District #2	High
South Bend	High (PCEMA)	Fire District #4	High
Naselle/Grays River SD	Medium	Fire District #5	High
Ocean Beach SD	High	Fire District #6	High
South Bend SD	High	Pacific Transit	N/A
Willapa Valley SD	Medium	Port of Chinook	High
Naselle Water Company	N/A	Port of Ilwaco	High
North Beach Water District	N/A	Port of Peninsula	High
Surfside Homeowners' Assn.	N/A	Port of Willapa Harbor	High
Willapa Valley Water District	N/A	Public Utility District #2	N/A

#2 – Artificial Reefs			
Description	Artificial reeds constructed in strategic locations will curtail coastal erosion by decreasing the amount of tidal and wave forces on a shoreline.		
Hazard/s Addressed	Coastal Erosion		
Status	On-going & Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets, SEA	**Cost Estimate**	$50,000 - $250,000
Lead Department/s	PCEMA, Municipal Governments	**Effectiveness**	Low
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	Low (Public Works)	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Surfside Homeowners' Assn.	Low	Port of Willapa Harbor	N/A
Willapa Valley Water District	N/A	Public Utility District #2	N/A

#3 – Backup Generators			
Description	Backup generators provide critical facilities with electricity in the event a community's electrical transmission grid is either damaged by earthquakes, severe storms, tornadoes, or winter storms, or overloaded by excessive use during an extreme heat or a winter storm.		
Hazard/s Addressed	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms		
Status	On-going & Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$25,000 - $50,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	High (Public Works)	Ocean Beach Hospital	High
Ilwaco	High (Public Works)	Willapa Harbor Hospital	Medium
Long Beach	High (Public Works)	Fire District #1	High
Raymond	High (Public Works)	Fire District #2	High
South Bend	High (Public Works)	Fire District #4	High
Naselle/Grays River SD	Medium	Fire District #5	High
Ocean Beach SD	High	Fire District #6	High
South Bend SD	High	Pacific Transit	High
Willapa Valley SD	Medium	Port of Chinook	High
Naselle Water Company	Medium	Port of Ilwaco	High
North Beach Water District	High	Port of Peninsula	High
Willapa Valley Water District	Medium	Port of Willapa Harbor	High
Surfside Homeowners' Assn.	High	Public Utility District #2	High

#4 – Bionets			
Description	Bionets installed in strategic locations will prevent the erosion of slopes subject to surface wash. The containment reinforcement of the exposed ground reduces the impact of heavy rain and mud.		
Hazard/s Addressed	Landslides		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$10,000 - $25,000
Lead Department/s	PCEMA, Municipal Governments	**Effectiveness**	High
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	N/A	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#5 – Bury Utility Lines, Pipes, & Tanks			
Description	Transferring existing utilities lines, pipes, and chemical storage tanks from above ground to below ground will significantly reduce the amount of property damage incurred from wind, ice, and snow related events.		
Hazard/s Addressed	Severe Storms, Winter Storms		
Status	On-going & Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$10,000 - $50,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Medium (Public Works)	Ocean Beach Hospital	Medium
Ilwaco	Medium (Public Works)	Willapa Harbor Hospital	Medium
Long Beach	Medium (Public Works)	Fire District #1	Medium
Raymond	Medium (Public Works)	Fire District #2	Medium
South Bend	Medium (Public Works)	Fire District #4	Medium
Naselle/Grays River SD	Medium	Fire District #5	Medium
Ocean Beach SD	Medium	Fire District #6	Medium
South Bend SD	Medium	Pacific Transit	Medium
Willapa Valley SD	Medium	Port of Chinook	Medium
Naselle Water Company	Medium	Port of Ilwaco	Medium
North Beach Water District	Medium	Port of Peninsula	Medium
Willapa Valley Water District	Medium	Port of Willapa Harbor	Medium
Surfside Homeowners' Assn.	Medium	Public Utility District #2	Medium

#6 – Coastal Erosion Mapping			
Description	The shoreline changes in the Long Beach Peninsula and the Bay Center area Willapa Bay must be mapped to accurately assess the full extent of their coastal erosion.		
Hazard/s Addressed	Coastal Erosion		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	Local Budgets	**Cost Estimate**	$5,000 - $10,000
Lead Department/s	Municipal Public Works	**Effectiveness**	Low
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	Low (Public Works)	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	Low	Public Utility District #2	N/A

#7 – Earthquake Assessment & Retrofit			
Description	An earthquake vulnerability assessment will detail a jurisdiction's high risk facilities, infrastructure, and make retrofit recommendations. Using the assessment, a jurisdiction can retrofit their facilities and infrastructure there by reducing their structural vulnerabilities to seismic events.		
Hazard/s Addressed	Earthquakes		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$25,000 - $250,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	High
Jurisdictional Priority (Lead Department)			
Pacific County	Medium (Public Works)	Ocean Beach Hospital	Medium
Ilwaco	Medium (Public Works)	Willapa Harbor Hospital	Medium
Long Beach	Medium (Public Works)	Fire District #1	Medium
Raymond	Medium (Public Works)	Fire District #2	Medium
South Bend	Medium (Public Works)	Fire District #4	Medium
Naselle/Grays River SD	Medium	Fire District #5	Medium
Ocean Beach SD	Medium	Fire District #6	Medium
South Bend SD	Medium	Pacific Transit	Medium
Willapa Valley SD	Medium	Port of Chinook	Medium
Naselle Water Company	Medium	Port of Ilwaco	Medium
North Beach Water District	Medium	Port of Peninsula	Medium
Willapa Valley Water District	Medium	Port of Willapa Harbor	Medium
Surfside Homeowners' Assn.	Medium	Public Utility District #2	Medium

#8 – Elevate Structures			
Description	Structures located within identified flood and tsunami zones can be elevated above base flood elevation or predicted tsunami inundation levels.		
Hazard/s Addressed	Floods (Coastal, Riverine), Tsunamis		
Status	Proposed	**Infrastructure Emphasis**	New
Funding Source/s	Floodplain Management Grants, HMGP, PDM, Local Budgets, Stormwater Grants	**Cost Estimate**	$50,000 - $100,000
Lead Department/s	PCEMA, Municipal Governments, Port Authorities, School Boards	**Effectiveness**	High
Jurisdictional Priority (Lead Department)			
Pacific County	High (Public Works)	Ocean Beach Hospital	Medium
Ilwaco	High (Public Works)	Willapa Harbor Hospital	N/A
Long Beach	High (Public Works)	Fire District #1	Medium
Raymond	Medium (Public Works)	Fire District #2	Medium
South Bend	Medium (Public Works)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	Medium
Ocean Beach SD	Medium	Fire District #6	N/A
South Bend SD	Medium	Pacific Transit	Medium
Willapa Valley SD	N/A	Port of Chinook	High
Naselle Water Company	N/A	Port of Ilwaco	High
North Beach Water District	Medium	Port of Peninsula	Medium
Willapa Valley Water District	N/A	Port of Willapa Harbor	High
Surfside Homeowners' Assn.	High	Public Utility District #2	N/A

#9 – Greenbelts			
Description	Strips or layers of native vegetation along shorelines act as a buffer between development and water. They help reduce acidic chemicals in the water reducing erosion as well as providing a stable root structure that also serves to slow down erosive forces.		
Hazard/s Addressed	Coastal Erosion		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets, SEA	**Cost Estimate**	$25,000 - $75,000
Lead Department/s	PCEMA, Municipal Governments	**Effectiveness**	Low
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	Low (Public Works)	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	Low	Public Utility District #2	N/A

#10 – Hazardous Materials and Waste Management Plan			
Description	Developing hazardous materials and waste management plan catalogs and documents hazardous materials locations, response procedures, and cleanup activities.		
Hazard/s Addressed	Hazardous Materials		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	CPG, HMEP, Local Budgets	**Cost Estimate**	$10,000 - $30,000
Lead Department/s	PCEMA, Fire Districts	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Low (PCEMA-Fire Districts)	Ocean Beach Hospital	N/A
Ilwaco	Low (PCEMA-Fire Districts)	Willapa Harbor Hospital	N/A
Long Beach	Low (PCEMA-Fire Districts)	Fire District #1	Low
Raymond	Low (PCEMA-Fire Districts)	Fire District #2	Low
South Bend	Low (PCEMA-Fire Districts)	Fire District #4	Low
Naselle/Grays River SD	N/A	Fire District #5	Low
Ocean Beach SD	N/A	Fire District #6	Low
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#11 – HAZMAT Site Assessment & Cleanup			
Description	Hazardous materials site assessment allows for the prioritization of these locations leading to the eventual cleanup of brownfield locations and other hazardous sites.		
Hazard/s Addressed	Hazardous Materials		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	CPG, HMEP, Local Budgets, PPG	**Cost Estimate**	$25,000 - $100,000
Lead Department/s	PCEMA, Fire Districts	**Effectiveness**	High
Jurisdictional Priority (Lead Department)			
Pacific County	Low (PCEMA-Fire Districts)	Ocean Beach Hospital	N/A
Ilwaco	Low (PCEMA-Fire Districts)	Willapa Harbor Hospital	N/A
Long Beach	Low (PCEMA-Fire Districts)	Fire District #1	Low
Raymond	Low (PCEMA-Fire Districts)	Fire District #2	Low
South Bend	Low (PCEMA-Fire Districts)	Fire District #4	Low
Naselle/Grays River SD	N/A	Fire District #5	Low
Ocean Beach SD	N/A	Fire District #6	Low
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#12 – Insulation & Energy Efficiency Upgrade			
Description	Upgrading a facility's windows, windows frames, roofing, and insulation will allow it to better maintain a desired warm or cool temperature during prolonged extreme heat or winter storms. Additionally, it decreases the energy load necessary to do so, decreasing the burden on the local energy grid.		
Hazard/s Addressed	Winter Storms		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$10,000 - $50,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	Low
Ilwaco	Low (Public Works)	Willapa Harbor Hospital	Low
Long Beach	Low (Public Works)	Fire District #1	Low
Raymond	Low (Public Works)	Fire District #2	Low
South Bend	Low (Public Works)	Fire District #4	Low
Naselle/Grays River SD	Medium	Fire District #5	Low
Ocean Beach SD	Low	Fire District #6	Low
South Bend SD	Low	Pacific Transit	Low
Willapa Valley SD	Low	Port of Chinook	Low
Naselle Water Company	Low	Port of Ilwaco	Low
North Beach Water District	Low	Port of Peninsula	Low
Willapa Valley Water District	Low	Port of Willapa Harbor	Low
Surfside Homeowners' Assn.	Low	Public Utility District #2	Low

#13 – Interior Furnishing Hazard Reduction			
Description	Fastening, removing, or modifying interior furnishing prevent them from shaking, becoming unstable, or falling loose into people and other objects during seismic events.		
Hazard/s Addressed	Earthquakes		
Status	On-Going & Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$25,000 - $100,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	Low
Ilwaco	Low (Public Works)	Willapa Harbor Hospital	Low
Long Beach	Low (Public Works)	Fire District #1	Low
Raymond	Low (Public Works)	Fire District #2	Low
South Bend	Low (Public Works)	Fire District #4	Low
Naselle/Grays River SD	Low	Fire District #5	Low
Ocean Beach SD	Low	Fire District #6	Low
South Bend SD	Low	Pacific Transit	Low
Willapa Valley SD	Low	Port of Chinook	Low
Naselle Water Company	Low	Port of Ilwaco	Low
North Beach Water District	Low	Port of Peninsula	Low
Willapa Valley Water District	Low	Port of Willapa Harbor	Low
Surfside Homeowners' Assn.	Low	Public Utility District #2	Low

#14 – Jetties/Seawalls			
Description	The carefully planned construction of jetties and seawalls can drastically reduce the local effects of coastal erosion and prevent coastal and riverine flooding. Special care and planning must be considered as to not increase the effects of coastal erosion on a larger scale.		
Hazard/s Addressed	Coastal Erosion, Floods (Coastal, Riverine)		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets, SEA	**Cost Estimate**	$100,000 - $300,000
Lead Department/s	PCEMA, Municipal Governments, Port Authorities	**Effectiveness**	High
Jurisdictional Priority (Lead Department)			
Pacific County	High (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	Medium (Public Works)	Willapa Harbor Hospital	N/A
Long Beach	Medium (Public Works)	Fire District #1	N/A
Raymond	Medium (Public Works)	Fire District #2	N/A
South Bend	Medium (Public Works)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	Medium
Naselle Water Company	N/A	Port of Ilwaco	Medium
North Beach Water District	N/A	Port of Peninsula	Medium
Willapa Valley Water District	N/A	Port of Willapa Harbor	Medium
Surfside Homeowners' Assn.	High	Public Utility District #2	N/A

#15 – Landslide Damage Repair

Description	The planning area has a number of locations that have been damaged by past landslides that require external funding for expedited repair. These locations are important the economic and transportation systems of the planning area. Identified Project Locations: • Parpala Road • Upper Naselle Road • Smith Creek Road,		
Hazard/s Addressed	Landslides		
Status	On-going & Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	FMA	**Cost Estimate**	$200,000
Lead Department/s	PCEMA, Municipal Governments, Transit Authority	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	N/A	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#16 – Looped Grid Power Systems

Description	Linear power grids have single points of failure that are vulnerable to a number of hazards. Looped power grids operate in parallel and are thus significantly more resistant to damage allowing the utilities to maintain power after an event.		
Hazard/s Addressed	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$10,000 - $100,000
Lead Department/s	Utility District	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	High (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	High (Public Works)	Willapa Harbor Hospital	N/A
Long Beach	High (Public Works)	Fire District #1	N/A
Raymond	High (Public Works)	Fire District #2	N/A
South Bend	High (Public Works)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	High

#17 – Tsunami Shelters (Project Safe Haven)

Description	These elevated structures are engineered to specifically to force a tsunami waves around the structure keeping those on or within the structure safe from its devastating forces. Built in strategic locations with an appropriate warning system in place can protect hundreds to thousands of citizens in the planning area. Identified Project Locations: • 25 Potential Shelter Sites, Referenced in: Project Safe Haven		
Hazard/s Addressed	Floods (Coastal), Tsunamis		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$25,000 - $75,000
Lead Department/s	PCEMA, Municipal Governments, Port Authorities	**Effectiveness**	High

Jurisdictional Priority (Lead Department)			
Pacific County	High (PCEMA)	Ocean Beach Hospital	Medium
Ilwaco	Medium (PCEMA)	Willapa Harbor Hospital	N/A
Long Beach	High (PCEMA)	Fire District #1	Medium
Raymond	Medium (PCEMA)	Fire District #2	Medium
South Bend	Medium (PCEMA)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	Medium
Ocean Beach SD	Medium	Fire District #6	N/A
South Bend SD	Medium	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	Medium
Naselle Water Company	N/A	Port of Ilwaco	Medium
North Beach Water District	High	Port of Peninsula	Low
Willapa Valley Water District	N/A	Port of Willapa Harbor	Medium
Surfside Homeowners' Assn.	High	Public Utility District #2	N/A

#18 – Property Buyout

Description	Properties at immediate risk to being washed away by the Pacific Ocean or repeated flood damage can be purchased to relocate at-risk citizens and prevent the fallout of losing an occupied home. Identified Project Areas • North Cove Area (Washaway Beach) • Residential Cluster (302 Peter St., Raymond, WA 98577)		
Hazard/s Addressed	Coastal Erosion, Coastal Flooding, Riverine Flooding		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$25,000 - $500,000
Lead Department/s	PCEMA, Municipal Governments	**Effectiveness**	Low

Jurisdictional Priority (Lead Department)			
Pacific County	Medium (PCEMA)	Ocean Beach Hospital	N/A
Ilwaco	Low (Administrative Office)	Willapa Harbor Hospital	N/A
Long Beach	Low (Administrative Office)	Fire District #1	N/A
Raymond	Low (Administrative Office)	Fire District #2	N/A
South Bend	Low (Administrative Office)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#19 – Public Awareness & Education			
Description	A campaign will inform and educate the public on hazard risks, allowing them to better protect their property through preparation and their lives through appropriate evacuation and survival procedures.		
Hazard/s Addressed	Coastal Erosion, Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$25,000 - $50,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	High (PCEMA)	Ocean Beach Hospital	High
Ilwaco	High (PCEMA)	Willapa Harbor Hospital	Medium
Long Beach	High (PCEMA)	Fire District #1	High
Raymond	High (PCEMA)	Fire District #2	High
South Bend	High (PCEMA)	Fire District #4	High
Naselle/Grays River SD	High	Fire District #5	High
Ocean Beach SD	High	Fire District #6	High
South Bend SD	High	Pacific Transit	High
Willapa Valley SD	High	Port of Chinook	High
Naselle Water Company	High	Port of Ilwaco	High
North Beach Water District	High	Port of Peninsula	High
Willapa Valley Water District	High	Port of Willapa Harbor	High
Surfside Homeowners' Assn.	High	Public Utility District #2	High

#20 – Reinforce Jetties/Seawalls			
Description	Over time, jetties and seawalls will degrade from coastal erosion forces and fracture from movements in the Earth's surface. Rebuilding, fixing, and reinforcing these structures will ensure their functionality. Identified Project Locations: • Chinook Park Road • Stringtown Road • Tokeland Road		
Hazard/s Addressed	Coastal Erosion, Floods (Coastal, Riverine)		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets, SEA	**Cost Estimate**	$5,000 - $50,000
Lead Department/s	PCEMA, Municipal Governments, Port Authorities, Transit Authority	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Medium (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	N/A	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	Low
Naselle Water Company	N/A	Port of Ilwaco	Low
North Beach Water District	N/A	Port of Peninsula	Low
Willapa Valley Water District	N/A	Port of Willapa Harbor	Low
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#21 – Relocate Vulnerable Structures			
Description	Some structures may be able to be relocated from identified coastal erosion or coastal flood zones. Removing them from identified hazard area will eliminate their risk.		
Hazard/s Addressed	Coastal Erosion, Floods (Coastal)		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets, SEA	**Cost Estimate**	$5,000 - $50,000
Lead Department/s	PCEMA, Municipal Governments	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Medium (PCEMA)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	Medium (Administrative Office)	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	Medium
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	Medium	Public Utility District #2	N/A

#22 – Slope Reinforcement & Modification			
Description	Identified hazard areas considered to be high risk will be the subject of slop modification measures. These measures will vary depending on location specifics, but could include slop modification, earth removal, or retaining wall installation.		
Hazard/s Addressed	Landslides		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$5,000 - $50,000
Lead Department/s	PCEMA, Transit Authority	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	N/A	Willapa Harbor Hospital	N/A
Long Beach	N/A	Fire District #1	N/A
Raymond	N/A	Fire District #2	N/A
South Bend	N/A	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#23 – Stormwater Drainage System Upgrade			
Description	Significant flood damage in developed communities can be prevented by upgrading their storm water drainage system. This mitigation measure will allow flood waters to drain quicker and prevent excess accumulation.		
Hazard/s Addressed	Floods (Coastal, Flash, Riverine)		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets, Stormwater Grants	**Cost Estimate**	$5,000 - $50,000
Lead Department/s	PCEMA, Municipal Governments	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	Medium (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	Medium (Public Works)	Willapa Harbor Hospital	N/A
Long Beach	Medium (Public Works)	Fire District #1	N/A
Raymond	Medium (Public Works)	Fire District #2	N/A
South Bend	Medium (Public Works)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	N/A
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#24 – Transportation Routing System			
Description	Installing a transportation routing system will allow a community to effectively mitigate the effects of multiple hazards on its travelling population. Using smart grid and intelligent transit control systems, a jurisdiction can effectively route its transportation systems according to situational need whether it is to avoid severe weather, flooding, landslides, or any number of hazards. By having a better control of its transportation network, and thus the location of its citizens, a community detour its citizens from entering into a dangerous area.		
Hazard/s Addressed	Earthquakes, Floods (Coastal, Flash, Riverine), Hazardous Materials, Landslides, Severe Storms, Tsunamis, Winter Storms		
Status	Proposed	**Infrastructure Emphasis**	New & Existing
Funding Source/s	HMGP, PDM, Local Budgets,	**Cost Estimate**	$50,000 - $100,000
Lead Department/s	PCEMA, Municipal Governments, Transit Authority	**Effectiveness**	Medium
Jurisdictional Priority (Lead Department)			
Pacific County	High (Public Works)	Ocean Beach Hospital	N/A
Ilwaco	High (Public Works)	Willapa Harbor Hospital	N/A
Long Beach	High (Public Works)	Fire District #1	N/A
Raymond	High (Public Works)	Fire District #2	N/A
South Bend	High (Public Works)	Fire District #4	N/A
Naselle/Grays River SD	N/A	Fire District #5	N/A
Ocean Beach SD	N/A	Fire District #6	N/A
South Bend SD	N/A	Pacific Transit	High
Willapa Valley SD	N/A	Port of Chinook	N/A
Naselle Water Company	N/A	Port of Ilwaco	N/A
North Beach Water District	N/A	Port of Peninsula	N/A
Willapa Valley Water District	N/A	Port of Willapa Harbor	N/A
Surfside Homeowners' Assn.	N/A	Public Utility District #2	N/A

#25 – Water Line Insulation			
Description	Insulating a facility's water pipes helps prevent them from freezing and bursting due to sudden and prolonged low temperatures during winter storms.		
Hazard/s Addressed	Winter Storms		
Status	Proposed	**Infrastructure Emphasis**	Existing
Funding Source/s	HMGP, PDM, Local Budgets	**Cost Estimate**	$5,000 - $50,000
Lead Department/s	PCEMA, Fire Districts, Municipal Governments, Port Authorities, School Boards, Transit Authority, Utility Boards	**Effectiveness**	Low
Jurisdictional Priority (Lead Department)			
Pacific County	Low (Public Works)	Ocean Beach Hospital	Low
Ilwaco	Low (Public Works)	Willapa Harbor Hospital	Low
Long Beach	Low (Public Works)	Fire District #1	Low
Raymond	Low (Public Works)	Fire District #2	Low
South Bend	Low (Public Works)	Fire District #4	Low
Naselle/Grays River SD	Low	Fire District #5	Low
Ocean Beach SD	Low	Fire District #6	Low
South Bend SD	Low	Pacific Transit	Low
Willapa Valley SD	Low	Port of Chinook	Low
Naselle Water Company	Low	Port of Ilwaco	Low
North Beach Water District	Low	Port of Peninsula	Low
Willapa Valley Water District	Low	Port of Willapa Harbor	Low
Surfside Homeowners' Assn.	Low	Public Utility District #2	Low

Appendix G – Mitigation Project Prioritization Tables

Table 74 – Activity & Project Prioritization – Pacific County														
Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	10	10	5	5	5	10	15	15	5	94	High
Artificial Reefs	14	0.5	15	-	-	-	-	-	-	-	-	-	21.5	Low
Backup Generators	13	1	-	10	10	5	5	5	10	15	15	5	93	High
Bionets	14	1.5	-	-	-	-	-	5	-	-	-	-	21.5	Low
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	15	-	-	-	-	-	-	-	-	-	21.5	Low
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	10	-	-	-	-	10	-	15	-	65.5	High
Greenbelts	12	0.5	15	-	-	-	-	-	-	-	-	-	19.5	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	15	10	-	-	-	-	10	-	-	-	63.5	High
Landslide Damage Repair	14	1	-	-	-	-	-	5	-	-	-	-	19	Low
Looped Grid Power Systems	12	1	-	10	10	5	5	5	10	15	15	5	92	High
Tsunami Shelters (Project Safe Haven)	14	1.5	-	10	-	-	-	-	-	-	15	-	51.5	High
Property Buyout	14	0.5	15	10	-	-	-	-	10	-	-	-	31.5	Medium
Public Awareness & Education	12	1	15	10	10	5	5	5	10	15	15	5	107	High
Reinforce Jetties/Seawalls	15	1	15	10	-	-	-	-	10	-	-	-	50	Medium
Relocate Vulnerable Structures	14	1	15	10	-	-	-	-	-	-	-	-	39	Medium
Slope Reinforcement & Modification	14	1	-	-	-	-	-	5	-	-	-	-	19	Low
Stormwater Drainage System Upgrade	14	1	-	10	-	5	-	-	10	-	-	-	39	Medium
Transportation Routing System	12	1	-	10	10	5	5	5	10	15	15	5	92	High
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 75 – Activity & Project Prioritization – Ilwaco

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	10	15	15	5	79	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	10	15	15	5	78	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	15	-	50.5	High
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	10	15	15	5	77	High
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	-	-	-	-	-	10	-	-	-	19	Low
Public Awareness & Education	12	1	X	X	10	5	5	X	10	15	15	5	77	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	29	Medium
Transportation Routing System	12	1	-	X	10	5	5	X	10	15	15	5	77	High
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 76 – Activity & Project Prioritization – Long Beach

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	10	10	5	5	X	5	15	15	5	84	High
Artificial Reefs	14	0.5	5	-	-	-	-	-	-	-	-	-	16.5	Low
Backup Generators	13	1	-	10	10	5	5	X	5	15	15	5	83	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	5	-	-	-	-	-	-	-	-	-	16.5	Low
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	10	-	-	-	-	5	-	15	-	58	High
Greenbelts	12	0.5	5	-	-	-	-	-	-	-	-	-	16.5	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	5	10	-	-	-	-	5	-	-	-	41	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	10	10	5	5	X	5	15	15	5	82	High
Tsunami Shelters (Project Safe Haven)	14	1.5	-	10	-	-	-	-	-	-	15	-	51.5	High
Property Buyout	14	15	5	10	-	-	-	-	5	-	-	-	24	Low
Public Awareness & Education	12	1	5	10	10	5	5	X	5	15	15	5	87	High
Reinforce Jetties/Seawalls	15	1	5	10	-	-	-	-	5	-	-	-	35	N/A
Relocate Vulnerable Structures	14	1	5	10	-	-	-	-	-	-	-	-	29	Medium
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	10	-	5	-	-	5	-	-	-	34	Medium
Transportation Routing System	12	1	-	10	10	5	5	X	5	15	15	5	82	High
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 77 – Activity & Project Prioritization – Raymond

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	10	15	10	5	74	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	10	15	10	5	73	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Low
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	10	-	43	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	10	15	10	5	72	High
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	10	-	-	-	19	Low
Public Awareness & Education	12	1	X	X	10	5	5	X	10	15	10	5	72	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	29	Medium
Transportation Routing System	12	1	-	X	10	5	5	X	10	15	10	5	72	High
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 78 – Activity & Project Prioritization – South Bend

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	10	15	10	5	64	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	10	15	10	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	10	-	28	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	10	15	10	5	62	High
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	10	-	-	-	19	Low
Public Awareness & Education	12	1	X	X	10	5	5	X	10	15	10	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	10	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	19	Low
Transportation Routing System	12	1	-	X	10	5	5	X	10	15	10	5	62	High
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 79 – Activity & Project Prioritization – Naselle/Grays River School District

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	X	5	49	Medium
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	X	5	48	Medium
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	N/A
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Medium*
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	X	5	47	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

**The Naselle/Grays River School District has requested an increase in priority.*

Table 80 – Activity & Project Prioritization – Ocean Beach School District

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	15	5	64	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	15	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	15	-	35.5	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	15	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 81 – Activity & Project Prioritization – South Bend School District

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	15	5	64	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	15	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	15	-	35.5	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	15	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 82 – Activity & Project Prioritization – Willapa School District

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	X	5	49	Medium
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	X	5	48	Medium
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	Low
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	X	5	47	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 83 – Activity & Project Prioritization – Naselle Water Company

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	X	5	49	N/A
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	X	5	48	Medium
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	N/A
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	X	5	47	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 84 – Activity & Project Prioritization – North Beach Water District

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	15	5	64	N/A
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	15	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	15	-	35.5	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	-	12	N/A
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	15	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 85 – Activity & Project Prioritization – Surfside Homeowners' Association

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	10	10	5	X	X	10	15	15	5	84	N/A
Artificial Reefs	14	0.5	5	-	-	-	-	-	-	-	-	-	16.5	Low
Backup Generators	13	1	-	10	10	5	X	X	10	15	15	5	83	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	5	-	-	-	-	-	-	-	-	-	16.5	Low
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	10	-	-	-	-	10	-	15	-	65.5	High
Greenbelts	12	0.5	5	-	-	-	-	-	-	-	-	-	14.5	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	5	10	-	-	-	-	10	-	-	-	63.5	High
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	10	10	5	X	X	X	15	15	5	72	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	10	-	-	-	-	-	-	15	-	51.5	High
Property Buyout	14	0.5	5	10	-	-	-	-	10	-	-	-	31.5	N/A
Public Awareness & Education	12	1	5	10	10	5	X	X	10	15	15	5	87	High
Reinforce Jetties/Seawalls	15	1	5	10	-	-	-	-	10	-	-	-	40	N/A
Relocate Vulnerable Structures	14	1	5	10	-	-	-	-	-	-	-	-	29	Medium
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	10	-	5	-	-	10	-	-	-	39	N/A
Transportation Routing System	12	1	-	10	10	5	X	X	10	15	15	5	82	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 86 – Activity & Project Prioritization – Willapa Valley Water District

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	X	5	49	N/A
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	X	5	48	Medium
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	N/A
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	X	5	47	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 87 – Activity & Project Prioritization – Ocean Beach Hospital

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	10	5	59	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	10	5	58	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	10	-	28	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	10	5	57	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	10	5	57	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	10	5	57	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 88 – Mitigation Project Prioritization – Willapa Harbor Hospital

Mitigation Project or Activity	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	X	5	49	Medium
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	X	5	48	Medium
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	N/A
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	X	5	47	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	X	5	47	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 89 – Activity & Project Prioritization – Fire District #1

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	X	15	15	5	69	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	X	15	15	5	68	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	15	-	35.5	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	N/A
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	X	15	15	5	67	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	5	X	X	15	15	5	67	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	5	X	X	15	15	5	67	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 90 – Activity & Project Prioritization – Fire District #2

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	X	15	10	5	64	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	X	15	10	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	10	-	28	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	N/A
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	X	15	10	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	5	X	X	15	10	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	5	X	X	15	10	5	62	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 91 – Activity & Project Prioritization – Fire District #4

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	X	15	X	5	54	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	X	15	X	5	53	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	N/A
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	N/A
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	X	15	X	5	52	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	5	X	X	15	X	5	52	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	5	X	X	15	X	5	52	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 92 – Activity & Project Prioritization – Fire District #5

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	X	15	10	5	64	High
Artificial Reefs	14	0.5	15	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	X	15	10	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	15	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	10	-	28	Medium
Greenbelts	12	0.5	15	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	15	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	X	15	10	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	15	X	-	-	-	-	X	-	-	-	14	Low
Public Awareness & Education	12	1	15	X	10	5	5	X	X	15	10	5	77	High
Reinforce Jetties/Seawalls	15	1	15	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	15	X	-	-	-	-	-	-	-	-	29	Medium
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	5	X	X	15	10	5	62	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 93 – Activity & Project Prioritization – Fire District #6

Mitigation Project or Activity	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	X	15	X	5	54	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	X	15	X	5	53	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	X	-	13	N/A
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	N/A
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	X	15	X	5	52	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	X	-	14	N/A
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	5	X	X	15	X	5	52	Medium
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	5	X	X	15	X	5	52	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 94 – Activity & Project Prioritization – Pacific Transit

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	5	X	X	15	10	5	64	N/A
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	5	X	X	15	10	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	10	-	28	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	5	-	-	-	-	-	20	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	5	-	-	-	-	-	21.5	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	5	X	X	15	10	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	5	X	X	15	10	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	10	5	57	High
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 95 – Activity & Project Prioritization – Port of Chinook

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	10	15	15	5	74	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	10	15	15	5	73	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	15	-	50.5	High
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	15	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	10	-	-	-	19	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	10	15	15	5	72	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	10	-	-	-	25	Low
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	29	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	10	15	15	5	72	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 96 – Activity & Project Prioritization – Port of Ilwaco

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	10	15	15	5	74	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	10	15	15	5	73	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	15	-	50.5	High
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	10	15	15	5	72	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	10	-	-	-	19	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	10	15	15	5	72	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	10	-	-	-	25	Low
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	29	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	10	15	15	5	72	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 97 – Mitigation Project Prioritization – Port of Peninsula

Mitigation Project or Activity	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	10	15	5	5	64	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	10	15	5	5	63	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	5	-	35.5	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	10	15	5	5	62	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	5	-	21.5	Low
Property Buyout	14	0.5	X	X	-	-	-	-	10	-	-	-	19	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	10	15	5	5	62	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	10	-	-	-	25	Low
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	29	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	10	15	5	5	62	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 98 – Activity & Project Prioritization – Port of Willapa Harbor

Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	10	15	15	5	74	High
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	10	15	15	5	73	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	10	-	15	-	50.5	High
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	N/A
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	N/A
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	10	-	-	-	26	Medium
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	10	15	15	5	72	N/A
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	15	-	36.5	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	10	-	-	-	19	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	10	15	15	5	72	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	10	-	-	-	25	Low
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	10	-	-	-	29	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	10	15	15	5	72	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Table 99 – Activity & Project Prioritization – Public Utility District #2														
Mitigation Activity or Project	STAPLE+E	Effectiveness Multiplier	Hazard Risk Value										Total	Priority
			Coastal Erosion	Coastal Floods	Earthquakes	Flash Floods	Hazardous Materials	Landslides	Riverine Floods	Severe Storms	Tsunamis	Winter Storms		
Alert, Broadcast, & Warning Systems Upgrade	14	1	-	X	10	5	X	X	X	15	10	5	59	N/A
Artificial Reefs	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Backup Generators	13	1	-	X	10	5	X	X	X	15	10	5	58	High
Bionets	14	1.5	-	-	-	-	-	X	-	-	-	-	14	N/A
Bury Utility Lines, Pipes, & Tanks	14	1	-	-	-	-	-	-	-	15	-	5	34	Medium
Coastal Erosion Mapping	14	0.5	X	-	-	-	-	-	-	-	-	-	14	N/A
Earthquake Assessment & Retrofit	14	1.5	-	-	10	-	-	-	-	-	-	-	29	Medium
Elevate Structures	13	1.5	-	X	-	-	-	-	X	-	10	-	28	Medium
Greenbelts	12	0.5	X	-	-	-	-	-	-	-	-	-	12	Low
Hazardous Materials and Waste Management Plan	15	1	-	-	-	-	X	-	-	-	-	-	15	Low
HAZMAT Site Assessment & Cleanup	14	1.5	-	-	-	-	X	-	-	-	-	-	14	Low
Insulation & Energy Efficiency Upgrade	12	1	-	-	-	-	-	-	-	-	-	5	17	Low
Interior Furnishing Hazard Reduction	14	1	-	-	10	-	-	-	-	-	-	-	24	Low
Jetties/Seawalls	11	1.5	X	X	-	-	-	-	X	-	-	-	11	N/A
Landslide Damage Repair	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Looped Grid Power Systems	12	1	-	X	10	5	X	X	X	15	10	5	57	High
Tsunami Shelters (Project Safe Haven)	14	1.5	-	X	-	-	-	-	-	-	10	-	29	Medium
Property Buyout	14	0.5	X	X	-	-	-	-	X	-	-	-	14	N/A
Public Awareness & Education	12	1	X	X	10	5	X	X	X	15	10	5	57	High
Reinforce Jetties/Seawalls	15	1	X	X	-	-	-	-	X	-	-	-	15	N/A
Relocate Vulnerable Structures	14	1	X	X	-	-	-	-	-	-	-	-	14	N/A
Slope Reinforcement & Modification	14	1	-	-	-	-	-	X	-	-	-	-	14	N/A
Stormwater Drainage System Upgrade	14	1	-	X	-	5	-	-	X	-	-	-	19	N/A
Transportation Routing System	12	1	-	X	10	5	X	X	X	15	10	5	57	N/A
Water Line Insulation	14	0.5	-	-	-	-	-	-	-	-	-	5	16.5	Low

Appendix H – Adoption Resolutions

BEFORE THE BOARD OF COUNTY COMMISSIONERS
PACIFIC COUNTY, WASHINGTON

RESOLUTION NO. 2016-012

IN THE MATTER OF ADOPTING THE FINALIZED PACIFIC COUNTY HAZARD MITIGATION PLAN; PROVIDING AN EFFECTIVE DATE; AND FOR OTHER PURPOSES

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

THEREFORE, BE IT HEREBY RESOLVED by the Board of Commissioners of Pacific County; that

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

PASSED by the following vote this 12th day of April, 2016 by the Board of Pacific County Commissioners meeting in regular session at South Bend, Washington, then signed by its membership and attested to by its Clerk in authorization of such passage:

3 YEA; Ø NAY; Ø ABSTAIN; and Ø ABSENT.

BOARD OF COUNTY COMMISSIONERS
PACIFIC COUNTY, WASHINGTON

Frank Wolfe, Chair

Lisa Ayers, Commissioner

Steve Rogers, Commissioner

ATTEST

Marie Guernsey
Clerk of the Board

CITY OF ILWACO
RESOLUTION NO. 2016-03

A RESOLUTION OF THE CITY OF ILWACO, WASHINGTON, ADOPTING THE FINALIZED PACIFIC COUNTY HAZARD MITIGATION PLAN; PROVIDING AN EFFECTIVE DATE; AND FOR OTHER PURPOSES.

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF ILWACO, WASHINGTON, DOES RESOLVE AS FOLLOWS:

Section 1.
The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; and agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2.
The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; and will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3.
The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

Section 4.
Effective Date. This resolution, being an exercise of power specifically delegated to the city legislative body, is not subject to referendum and shall take effect five (5) days after passage by the City Council.

PASSED BY THE CITY COUNCIL OF THE CITY OF ILWACO, AND SIGNED IN AUTHENTIFICATION OF ITS PASSAGE THIS 11TH DAY OF APRIL, 2016.

Mike Cassinelli, Mayor

ATTEST:

Holly Beller, City Clerk

VOTE	Jensen	Karnofski	Marshall	Chambreau	Forner	Cassinelli
Ayes	X		X	X		
Nays						
Abstentions						
Absent		X			X	

EFFECTIVE: April 16, 2016

Resolution 2016-03
Page 2 of 2

RESOLUTION NO. 2016-05

Resolution of the City Council of the City of Long Beach; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the City Council of the City of Long Beach

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

Passed this 4th day of April, 2016.

AYES_____ NAYS_____ ABSENT_____ ABSTAIN_____

MAYOR

ATTEST:

City Clerk

RESOLUTION NO. 1240

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RAYMOND, WASHINGTON, ADOPTING THE FINALIZED PACIFIC COUNTY HAZARD MITIGATION PLAN, PROVIDING AN EFFECTIVE DATE, AND FOR OTHER PURPOSES.

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the City Council of the City of Raymond

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

RESOLVED THIS 4th **DAY OF APRIL, 2016.**

ATTEST:

Hester Gilleland, Clerk-Treasurer

Jason Dunsmoor, Mayor

RESOLUTION #2016-03

RESOLUTION BY THE CITY COUNCIL OF THE CITY OF SOUTH BEND ADOPTING THE FINALIZED PACIFIC COUNTY HAZARD MITIGATION PLAN

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

NOW THEREFORE BE IT RESOLVED THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; and agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

Upon motion made for the adoption of this resolution, the following vote was cast by the City Council of the City of South Bend, April 11, 2016:

Ayes - 4 **Noes - Ø** **Absent - 1**

Lisa R. Olsen, Councilor — Lisa Olsen

Clarence Williams, Councilor — Bunny Williams

Patricia Neve, Councilor — Patricia Neve

_____, Councilor — Karla Webber

Bob Hall, Councilor — Bob Hall

Julie K. Struck, Mayor/Agent — Julie K. Struck (Non-Voting)

Certification

I, Dee Roberts, duly appointed and Clerk/Treasurer of the City of South Bend, do hereby certify that the above is a true and correct copy of a resolution passed and approved by the Council of the City of South Bend on the 11th of April 2016.

Dee Roberts
Clerk/Treasurer

NASELLE-GRAYS RIVER VALLEY

School District No. 155

Superintendent
Lisa Nelson

Administrative Assistant
Rhiana Jacot

Board of Directors:
Chuck Hendrickson, Chairman
Bud Strange
Nick Nikkila
Lonnie Eaton
Amy Hunt

RESOLUTION NO. 2016-04-19

At a meeting of the School Board of the Naselle-Grays River Valley School District, held on April 19, 2016.

Resolution of the School Board of the Naselle/Grays River School District; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the School Board of the Naselle/Grays River School District

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Buddy Strange
The motion to adopt was seconded by Nick Nikkila

And upon being put to a successful vote; the School Board of the Naselle/Grays River School District's signatories:

793 SR 4
Naselle, WA. 98638-9508
(360) 484-7121
(360) 484-3191 Fax

OCEAN BEACH SCHOOL DISTRICT NO. 101

RESOLUTION NO. 07-2015-2016

A RESOLUTION OF THE BOARD OF DIRECTORS OF OCEAN BEACH SCHOOL DISTRICT NO 101, PACIFIC COUNTY, WASHINGTON, ADOPTING THE FINALIZED PACIIC COUNTY HAZARD MITIGATION PLAN; PROVIDING AND EFFECT DATE; AND FOR OTHER PURPOSES:

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE OCEAN BEACH SCHOOL DISTRICT NO 101, PACIFIC COUNTY, WASHINGTON, as follows:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the School Board of the Ocean Beach School District
THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

ADOPTED by the Board of Directors of the Ocean Beach School District No. 101 at an open public meeting on April 25, 2016.

OCEAN BEACH SCHOOL DISTRICT NO. 101
Pacific County, Washington

President

Director

Vice-President

Director

Director

ATTEST:

Secretary to the Board of Directors

RESOLUTION NO. 4-2016

At a meeting of the School Board of the South Bend School District, held **April 14th, 2016.**

Resolution of the School Board of the South Bend School District; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the School Board of the South Bend School District

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Dave Fasthorn
The motion to adopt was seconded by Andrew Seaman

And upon being put to a successful vote; the School Board of the South Bend School District's signatories:

WILLAPA VALLEY SCHOOL DISTRICT NO. 160
PO BOX 128
MENLO, WA 98561

RESOLUTION 016-03

HAZARD MITIGATION PLAN ADOPTION

At a meeting of the School Board of the Willapa Valley School District, held **APRIL 25, 2016**

Resolution of the School Board of the Willapa Valley School District; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the School Board of the Willapa Valley School District

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Josh Christen

The motion to adopt was seconded by Eric Clements

And upon being put to a successful vote; the School Board of the Willapa Valley School District's signatories:

ATTEST

Rob Friese
Secretary to the Board

Director

Director

WILLAPA VALLEY SCHOOL DISTRICT NO. 160
BOARD OF DIRECTORS

Tom Walker, Chairperson

Director

Director

RESOLUTION #2016 -01

At a meeting of the Board of Trustees of Naselle Water Company held on April 13, 2016 at the Naselle Water Company Office, #3 Appelo Lane, Naselle, Washington

Resolution of the Board of Trustees of Naselle Water Company; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effecting date, and for other purposes.

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Trustees of Naselle Water Company

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPOC.

The resolution was offered for adoption by Dan Chadwick, Trustee

The motion to adopt was seconded by Dennis Andring, V Pres & Sec.

And upon being put to a successful vote; Board of Trustees, Naselle Water Company signatories:

Date 4/13/16 Signature _____

President, Jim Stackhouse

Date 4/13/16 Signature _____

Vice Pres. /Treas. Dennis Andring

Date 4/13/16 Signature _____

Trustee, Dan Chadwick

Date 4-13-16 Signature _____

Trustee, Dan Bohren

Date 4-13-2016 Signature _____

Trustee, Neil Hollo

RECEIVED
2016 APR 17 08 53
SCOTT L. JOHNSON
PACIFIC CO. SHERIFF
SOUTH BEND, WA

NORTH BEACH WATER DISTRICT
PACIFIC COUNTY, WASHINGTON

RESOLUTION 14-2016

A RESOLUTION OF THE NORTH BEACH WATER DISTRICT OF PACIFIC COUNTY, WASHINGTON, ADOPTING THE PACIFIC COUNTY HAZARD MITIGATION PLAN FEBRUARY, 2016.

WHEREAS, North Beach Water District (District), as one of the Participating Jurisdictions of Pacific County (Jurisdictions), worked to develop a strategy known as the Pacific County Hazard Mitigation Plan February, 2016 (Plan) to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant to 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt and approve a hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the Jurisdictions have participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Plan by the District's Board of Commissioners (Board) by this Resolution; and

WHEREAS, nothing in the plan obligates the District to undertake any of the recommended activities and/or project:

NOW, THEREFORE, THE NORTH BEACH WATER DISTRICT BOARD OF COMMISSIONERS, DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The Plan, attached hereto and incorporated herein as exhibit A, is hereby approved and adopted.

Section 2. Authorize the General Manager to purse funding opportunities and, with Board approval, implement proposals designated therein; and will upon receipt of such funding or other resources, seek to implement the actions contained in the Plan.

Section 3. Continue to cooperate and participate in the hazard mitigation planning process including reporting

requirements by FEMA, the Washington State Department of Emergency Management Division, and the MPC.

ADOPTED BY THE NORTH BEACH WATER DISTRICT BOARD OF COMMISSIONERS, PACIFIC COUNTY, WASHINGTON THIS 21st DAY OF APRIL, 2016

Brian Sheldon, Commissioner
Position #1

Gwen Brake, Commissioner
Position #2

Glenn Ripley, Commissioner
Position #3

SURFSIDE HOMEOWNERS ASSOCIATION
PACIFIC COUNTY, WASHINGTON
RESOLUTION NO. 2016-04-01

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE SURFSIDE HOMEOWNERS ASSOCIATION, PACIFIC COUNTY, WASHINGTON, ADOPTING THE PACIFIC COUNTY HAZARD MITIGATION PLAN (SEE HARD COPY IN SURFSIDE'S BUSINESS OFFICE); PROVIDING AN EFFECTIVE DATE; AND FOR OTHER PURPOSES:

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the Participating Jurisdictions of Pacific County (PJPC) have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the PJPC participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution; now therefore

BE IT RESOLVED, by the Board of Trustees of Surfside Homeowners Association as follows:

Section 1: Does hereby approve and adopt the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: Does hereby authorize Surfside Homeowners Association's Business Manager to pursue funding opportunities and with approval of the Board of Trustees, implement proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Resolution 2016-04-01 – Hazard Mitigation Plan Approval

Section 3: Does hereby agree to continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

ADOPTED by the Board of Trustees of the Surfside Homeowners Association, Pacific County, Washington, at its regular meeting held on the 16th day of April, 2016.

James A. Flood, Jr., President

George Miller, Secretary

Motion By: Kirby Smith Second By: James Clancy

Yea: 8 Nay: 0 Abstain:

RESOLUTION NO. 171

At a meeting of the Board of Commissioners of the Willapa Valley Water District, held 4/5/2016

Resolution of the Board of Commissioners of the Willapa Valley Water District; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Commissioners of the Willapa Valley Water District

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Donald Porter
The motion to adopt was seconded by Sherman Pollard

And upon being put to a successful vote; Board of Commissioners of the Willapa Valley Water District's signatories:

Sherman Pollard

Donald Porter

RECEIVED
2016 APR 14 09 31
SCOTT L. JOHNSON
PACIFIC CO. SHERIFF
SOUTH BEND, WA

RESOLUTION NO. 2016-04

At a meeting of the Board of Directors of the Ocean Beach Hospital, held April 26, 2016

Resolution of the Board of Directors of the Ocean Beach Hospital; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Directors of the Ocean Beach Hospital

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption
by Steven Lighart

The motion to adopt was seconded
by Ariel Smith

And upon being put to a successful vote; the Board of Directors of the Ocean Beach Hospital's signatories:

Nancy Gorshe
Commissioner and Chairperson

Suzanne Staples
Commissioner and Secretary

Steven Linhart
Commissioner

Madeline Moore
Commissioner

Ariel Smith
Commissioner

PACIFIC COUNTY PUBLIC HOSPITAL DISTRICT 2
WILLAPA HARBOR HOSPITAL
RESOLUTION NO. 2016-2

A RESOLUTION of the Pacific County Public Hospital District 2, Pacific County, Washington Board of Commissioners, adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area;

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution

NOW THEREFORE BE IT RESOLVED:

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirely with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated. (Click the link to see the plan: https://www.dropbox.com/s/kjq14iovud99lm5/Pacific%20County%20Hazard%20Mitigation%20Plan.pdf?dl=0)

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designed therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA. The Washington Military Department Emergency Management Division and the MPC

ADOPTED AND APPROVED AS OF THIS DAY OF April 12, 2016

Chairman

Secretary

Commissioner

Commissioner – Vice Chair

Commissioner

Attest: Administrator

Pacific County Fire District No. 1
RESOLUTION 2016-02

HAZARD MITIGATION PLAN ADOPTION

At a meeting of the Board of Commissioners of Pacific County Fire Protection District #1, held April 19th, 2016.

Resolution of the Board of Commissioners of Pacific County Fire Protection District #1; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Commissioners of Pacific County Fire Protection District #1

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

ADOPTED at a regular meeting of the Board of Commissioners of Pacific County Fire District #1 on April 19, 2016, the following Commissioners being present and voting.

Gregory D. McLeod, Commissioner

Fred H. Hill, Commissioner

Thomas L. Downer, Commissioner

Attest: Jamie Meling, District Secretary

RECEIVED
2016 APR 17 08 53
SCOTT L. JOHNSON
PACIFIC CO. SHERIFF
SOUTH BEND, WA

RESOLUTION NO. 2016-1

At a meeting of the Board of Commissioners of Pacific County Fire Protection District #2, held 4-13-16

Resolution of the Board of Commissioners of Pacific County Fire Protection District #2; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Commissioners of Pacific County Fire Protection District #2

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Dale Hughes
The motion to adopt was seconded by Jack Fauver

And upon being put to a successful vote; Board of Commissioners of Pacific County Fire Protection District #2's signatories:

Dale Hughes
Leslie Cox
Jack Fauver

RESOLUTION #2016 -01

At a meeting of the Board of Commissioners of Pacific County Fire Protection District #4 held on April 18, 2016 at the Naselle Fire Hall, Naselle, Washington

Resolution of the Board of Commissioners of Pacific County Fire Protection District #4; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effecting date, and for other purposes.

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Commissioners of the Pacific County Fire Protection District # 4

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPOC.

The resolution was offered for adoption by Cliff Kilponen

The motion to adopt was seconded by Bud Strange

And upon being put to a successful vote; Board of Commissioners of Pacific Co Fire Protection District #4's signatories

---

Pacific County Fire Protection District Four

Date 4-18-16 Signature Cliff Kilponen

Chairman, Cliff Kilponen

Date 4-18-16 Signature Bud Strange

Commissioner, Bud Strange

Date 4-18-16 Signature Bryan Pentilla

Commissioner, Bryan Pentilla

Date 4-18-16 Signature Doug Sandell

Fire Chief, Doug Sandell

RECEIVED
2016 APR 22 08 30
SCOTT L. JOHNSON
PACIFIC CO. SHERIFF
SOUTH BEND, WA

Pacific County Fire District No. 5

P.O. Box 602, Tokeland, Washington 98590
Phone 360-267-3970

April 5, 2016
Resolution 16-01

Subject: Hazard Mitigation Plan

BE IT RESOLVED by the Board of Fire Commissioners of Pacific County Fire Protection District #5 we shall adopt the Pacific County Hazard Mitigation Plan.
WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt and approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of the resolution.

Therefore, be it resolved by the Board of Commissioners of Pacific County Fire District #5.

THAT

Section 1: the participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

Resolution 16-01 page 2 of 2

The resolution was offered for adoption by Gene Kuest, Commissioner.

The motion to adopt was seconded by Sam Schlegel, Commissioner.

And upon being put to a successful vote; Board of Commissioners of Pacific County Fire District #5 signatures.

DATED this 5th day of April 2016

Pat Gogan, Commissioner

Gene Kuest, Commissioner

Sam Schlegel, Commissioner

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2016 APR 19 07 42
SCOTT L. JOHNSON
PACIFIC CO. SHERIFF
SOUTH BEND, WA

RESOLUTION NO. 2016-4-26-1

At a meeting of the Board of Commissioners of Pacific County Fire Protection District #6, held 4/26/16

Resolution of the Board of Commissioners of Pacific County Fire Protection District #6; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Commissioners of Pacific County Fire Protection District #6

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Glenn Killingbeck
The motion to adopt was seconded by Jessica Lorton

And upon being put to a successful vote; Board of Commissioners of Pacific County Fire Protection District #6's signatories:

Victoria Killingbeck
Glenn A. Killingbeck

RECEIVED
2016 APR 27 13 : 15
SCOTT L. JOHNSON
PACIFIC CO. SHERIFF
SOUTH BEND, WA

RESOLUTION NO. 16-03

At a meeting of the Board of Directors of Pacific Transit, held April 14, 2016

Resolution of the Board of Directors of Pacific Transit; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Directors of Pacific Transit

THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption by Comm. Frank Wolfe
The motion to adopt was seconded by Comm. Lisa Ayers

And upon being put to a successful vote; Board of Directors of Pacific Transit's signatories:

RESOLUTION NO. 16-004

A RESOLUTION of the Port of Chinook, a municipal corporation, located in Chinook, Washington, adopting the finalized Pacific County Hazard Mitigation Plan; providing and effective date; and for other purposes.

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

NOW, THEREFORE,

BE IT RESOLVED, by the Board of Commissioners of the Port of Chinook, Washington, exercising their authority that:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; and agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; and will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

ADOPTED by the Board of Commissioners of the Port of Chinook and duly authenticated in open session by the signatures of the Commissioners voting in favor thereof.

DATED this 8th day of April, 2016.

By: _____
Chairman Gary Kobes

By: _____
Commissioner Kathy Colvin

By: _____
Commissioner Jerry Cox

ATTEST:

_____
Tricia Needham, Auditor

Resolution No. 16-004
Page **2** of **2**

RESOLUTION NO. 16-862

A RESOLUTION of the Port of Ilwaco, a municipal corporation, located in Ilwaco, Washington, adopting the finalized Pacific County Hazard Mitigation Plan; providing and effective date; and for other purposes.

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

NOW, THEREFORE,

BE IT RESOLVED, by the Board of Commissioners of the Port of Ilwaco, Washington, exercising their authority that:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; and agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; and will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

ADOPTED by the Board of Commissioners of the Port of Ilwaco and duly authenticated in open session by the signatures of the Commissioners voting in favor thereof.

DATED this 4th day of April, 2016.

By: _____
Chairman Dave Nichols

By: ABSENT
Commissioner Robert Hamilton

By: _____
Commissioner Al (Butch) Smith

ATTEST:

_____
Tricia Needham, Auditor

RESOLUTION NO. __16-412_____

At a meeting of the Board of Commissioners of the Port of Peninsula, held **April 11, 2016**

Resolution of the Board of Commissioners of the Port of Peninsula; Adopting the finalized Pacific County Hazard Mitigation Plan; Providing and effective date; and for other purposes:

WHEREAS, The participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

Therefore, be it resolved by the Board of Commissioners of the Port of Peninsula
THAT:
Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.
Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.
Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

The resolution was offered for adoption
by Commissioner Phil Martin
The motion to adopt was seconded
by Commissioner Chris Anderson

And upon being put to a successful vote; Board of Commissioners of the Port of Peninsula's signatories:

Cynthia Bade
Commissioner Cynthia Bade

Commissioner Christopher Anderson

Commissioner Phillip Martin

RESOLUTION #876-16

A Resolution of the Port of Willapa Harbor, Washington
A Municipal Corporation of the State of Washington,
Adopting the
"Pacific County Hazard Mitigation Plan, dated February 20, 2016".

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the Pacific County Hazard Mitigation Plan by the passing of this resolution.

NOW, THEREFORE, BE IT RESOLVED by the Port Commission of the Port of Willapa Harbor that:

Section 1: The Port of Willapa Harbor hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC, and agree to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The Port of Willapa H arbor authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein, and will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the hazard mitigation plan.

Section 3: The Port of Willapa Harbor will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

ADOPTED by the Port Commission of the Port of Willapa Harbor and approved by the Commission thereof in open session held this 11th day of April, 2016.

PORT OF WILLAPA HARBOR

Harold M. Jambor
Commissioner

Commissioner

ATTEST:

Dawn E. King
Port Auditor

Commissioner

RESOLUTION NO. 1372

A Resolution Adopting an Updated Pacific County Hazard Mitigation Plan

WHEREAS, the participating jurisdictions of Pacific County have worked together to develop a strategy known as the Pacific County Hazard Mitigation Plan to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant to 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, Public Utility District No. 2 of Pacific County has been involved as a participating stakeholder in the update to the hazard mitigation plan through participation on the Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the updated Pacific County Hazard Mitigation Plan by the passing of this resolution.

NOW THEREFORE BE IT HEREBY RESOLVED by the Board of Commissioners of Public Utility District No. 2 of Pacific County that:

Section 1: The participating stakeholder hereby approves and adopts the Hazard Mitigation Plan in its entirety with projects as adopted by the MPC; and agrees to be governed by the Hazard Mitigation Plan attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; and will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the Hazard Mitigation Plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the Washington Military Department Emergency Management Division and the MPC.

BE IT FURTHER RESOLVED that this Resolution supersedes Resolution No. 1299, concerning the Pacific County Hazard Mitigation Plan.

APPROVED AND ADOPTED by the Board of Commissioners of Public Utility District No. 2 of Pacific County, Washington this 19th day of April, 2016.

President

ATTEST:

Vice-President

Secretary

Appendix I – Federal Approval Letter

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

FEMA

May 26, 2016

Honorable Frank Wolfe
Chair, Pacific County Commissioners
1216 W. Robert Bush Drive
South Bend, WA 98586

Dear Chair Wolfe:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the ***Pacific County Hazard Mitigation Plan*** as a multi-jurisdictional local plan as outlined in Title 44 Code of Federal Regulation (CFR), Part 201. This approval provides the below jurisdictions eligibility to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's, Hazard Mitigation Assistance (HMA) grants projects through May 25, 2021, through your state.

COUNTY / CITIES / TOWNS		
Pacific County	City of Ilwaco	City of Long Beach
City of Raymond	City of South Bend	
SPECIAL DISTRICTS		
Naselle-Grays River Valley School District No. 155	Ocean Beach School District No. 101	South Bend School District
Willapa Valley School District No. 160	Public Utility District No. 2	North Beach Water District
Willapa Valley Water District	Ocean Beach Hospital	Pacific County Public Hospital District 2: Willapa Harbor Hospital
Pacific County Fire Protection District #1	Pacific County Fire Protection District #2	Pacific County Fire Protection District #4
Pacific County Fire Protection District #5	Pacific County Fire Protection District #6	Pacific Transit
Port of Chinook	Port of Ilwaco	Port of Peninsula
Port of Willapa Harbor		

FEMA individually evaluates all application requests for funding according to the specific eligibility requirements of the applicable program. Though a specific mitigation activity or project identified in the plan may meet the eligibility requirements, it may not automatically receive approval for FEMA funding under any of the aforementioned programs. Approved mitigation plans may be eligible for points under the National Flood Insurance Program's Community Rating System (CRS). For additional information regarding the CRS, please visit: www.fema.gov/national-flood-insurance-program-community-rating-system or through your local floodplain manager.

www.fema.gov

Additionally, this letter acknowledges that the following organizations, while not local governments, participated in, and adopted the plan. These organizations may be eligible to apply for the Hazard Mitigation Grant Program as private non-profits.

OTHER PLAN PARTICIPANTS	
Surfside Homeowners Association	Naselle Water Company

Over the next five years, we encourage your communities to follow the plan's schedule for monitoring and updating the plan, and to develop further mitigation actions. To continue eligibility, jurisdictions must review, revise as appropriate, and resubmit the plan within five years of the original approval date.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact Morgan Mak, Mitigation and Recovery Strategist with Washington Emergency Management Division, at (253) 512-7000, who coordinates and administers these efforts for local entities.

Sincerely,

Mark Carey, Director
Mitigation Division

Cc: Morgan Mak, Washington Emergency Management Division

Enclosure

BH:vl