



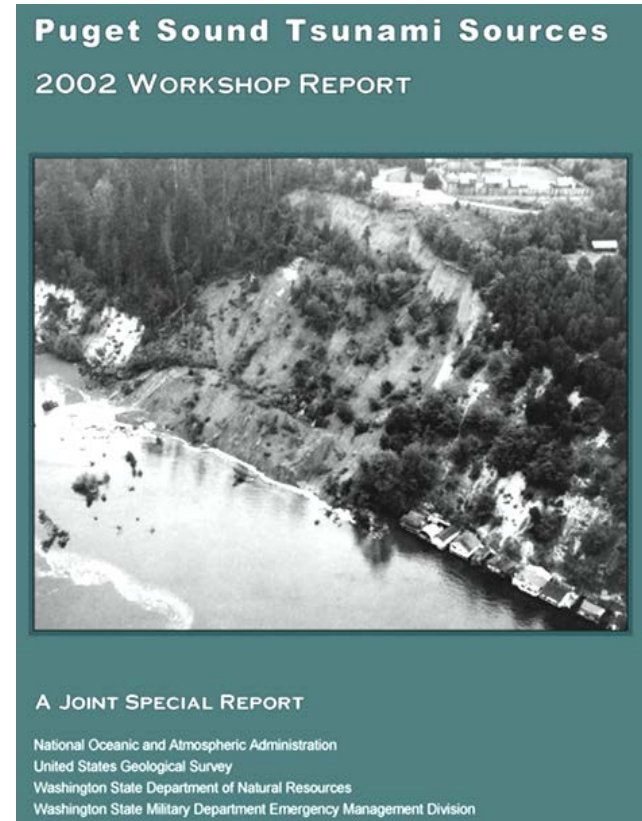
NTHMP 5-Year Review Washington State

“One Message – One Voice”

George Crawford
Washington Emergency Management Division
May 15, 2007

Washington State Role

- ❖ Washington has been impacted by tsunamis throughout history by
 - Earthquakes
 - Delta Failures
 - Landslides
- ❖ National Tsunami Hazard Mitigation Program provides a partnership that provides 1) Hazard Assessment, 2) Warning Guidance and 3) Mitigation
- ❖ The State serves as conduit between federal partners and at-risk tsunami communities





Washington State Annual NTHMP Budget

FUNDING	2002	2003	2004	2005	2006	TOTAL
NTHMP	135.7	338.7	356.0	309.0	753.8	1893.2
STATE	211.3	221.4	238.2	287.6	1703.5	2940.1
TOTAL	347.0	560.1	594.2	599.6	2457.3	4833.3

NOTE: Fed \$ for Multi-state Project

1. 2002 - \$60,000
2. 2003 - \$130,000
3. 2004 - \$35,000
4. 2005 - \$35,000
5. 2006 - \$35,000

Washington State

Goal: Complete tsunami inundation maps for 75% of coastal communities

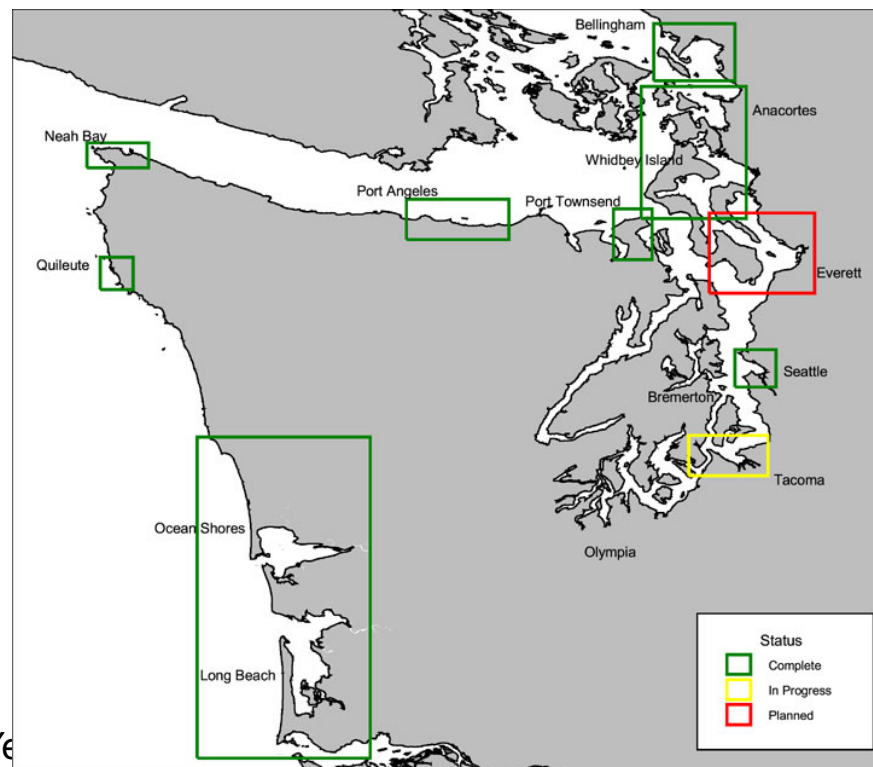
Modeling Effort	Communities Covered	At-risk Residents	Evacuation Maps	% Communities Complete
8	33	85213	23	80%

❖ Impact

- Provides critical planning information to meet the intent of the Growth Management Act
- Critical to the development of evacuation maps and education materials

❖ Challenge

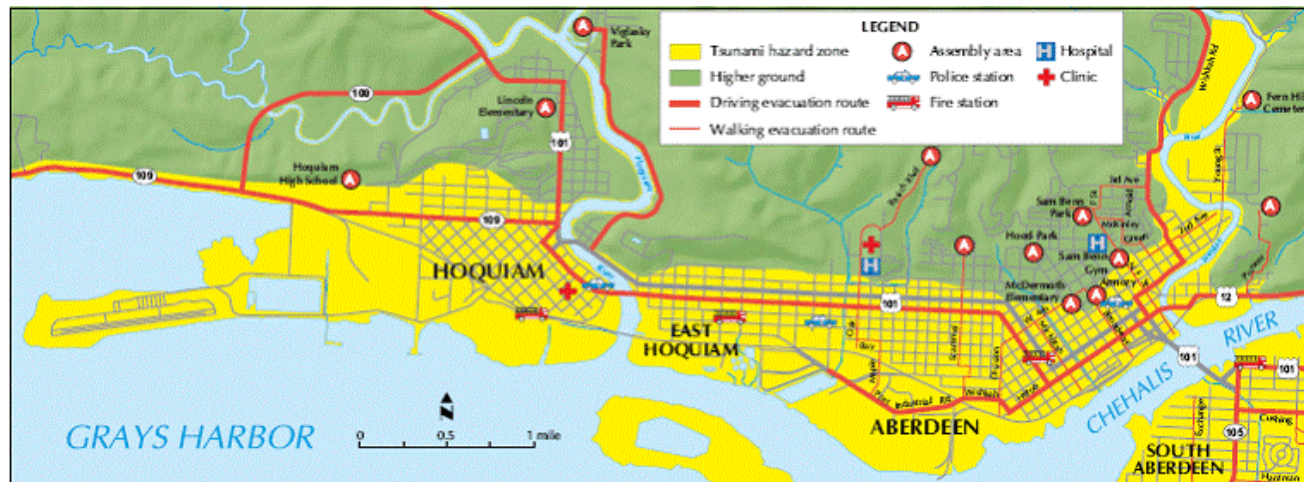
- Providing data under Public Law to assess current State Tsunami Evacuation Policy



Washington State

NTHMP Goal: Produce evacuation maps that are consistent from state to state for mapped communities

- ❖ All Evacuation Maps are consistent with NTHMP agreed requirements
- ❖ Impact
 - Provides a seamless approach within the state to evacuation route design and important disaster management information



Washington State

State Goal: Develop Evacuation Maps for each at-risk jurisdiction versus County wide evacuation map

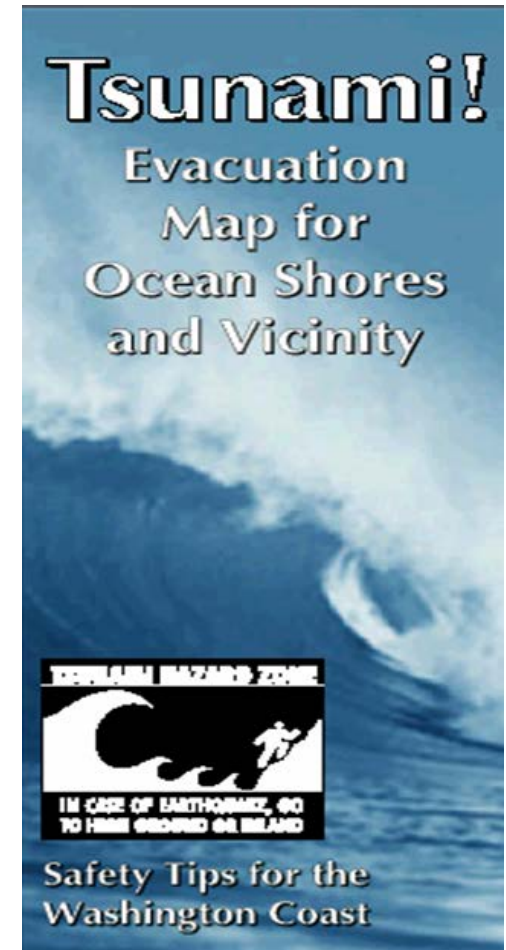
23 Evacuation maps have been completed during the review period

❖ Impact

- Focuses on communities – Increase ability for community planning and response
- Increase community buy-in and enhance education and preparedness efforts

❖ Challenges

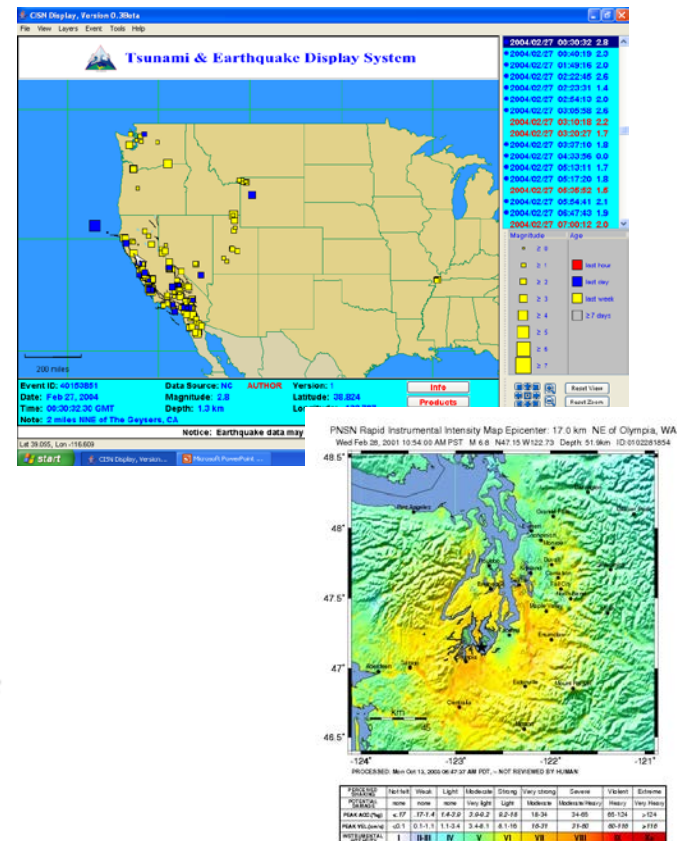
- Maintaining products current
- Funding



Washington State

NTHMP/State Goal: Disseminate automated, reviewed earthquake and tsunami notifications as rapidly as is scientifically and technologically possible

- ❖ Integrating the California Integrated Seismic System into coastal communities
- ❖ USGS/EMD/University of Washington Project trained 20 tribes/communities and provided software and hardware
 - Provides real-time graphic of earthquake location, magnitude, and ShakeMap
 - Provides Tsunami Bulletins (if applicable)
- ❖ Impact: Enhance capabilities to rapidly assess situation
- ❖ Challenge: Training personnel on correct use of CISN and maintaining proficiency



Rapid Response Leads to Faster Recovery

Washington State

Governor's Priority: *Ensure all levels of government come together in a unified response*

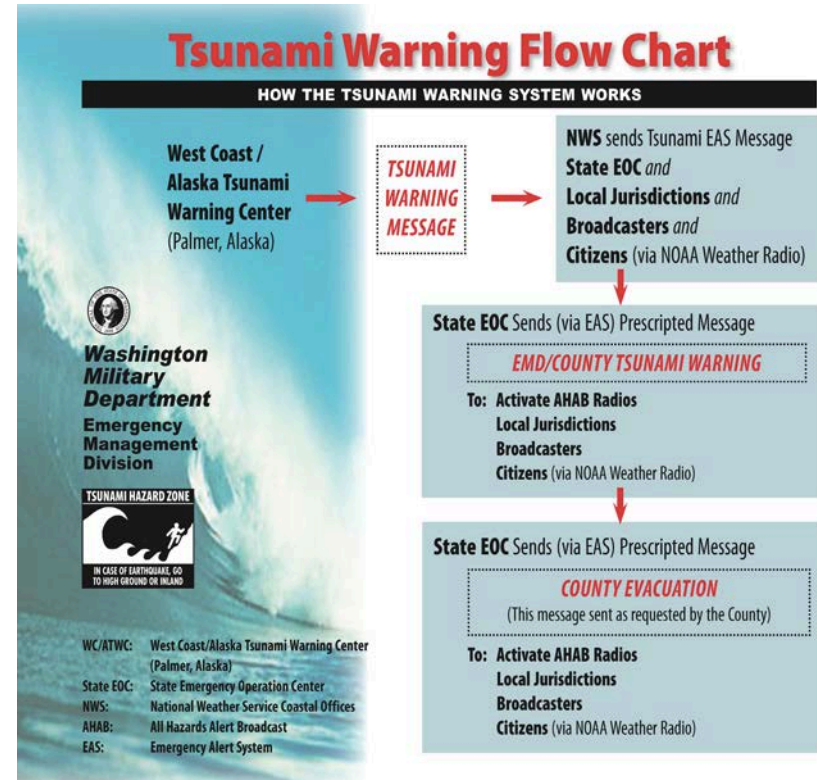
Coastal Communities evacuate off a Tsunami Warning Message that is sent by State

❖ *Impact*

➤ *One message – one voice*

❖ *Challenge*

➤ *Accuracy when calling tsunami warnings*



Lesson Learned Jun 2005 Tsunami Warning

Washington State

State Goal: Media must be part of the tsunami warning process

Trained and provided guidebooks to all Seattle and 95% of coastal broadcasters

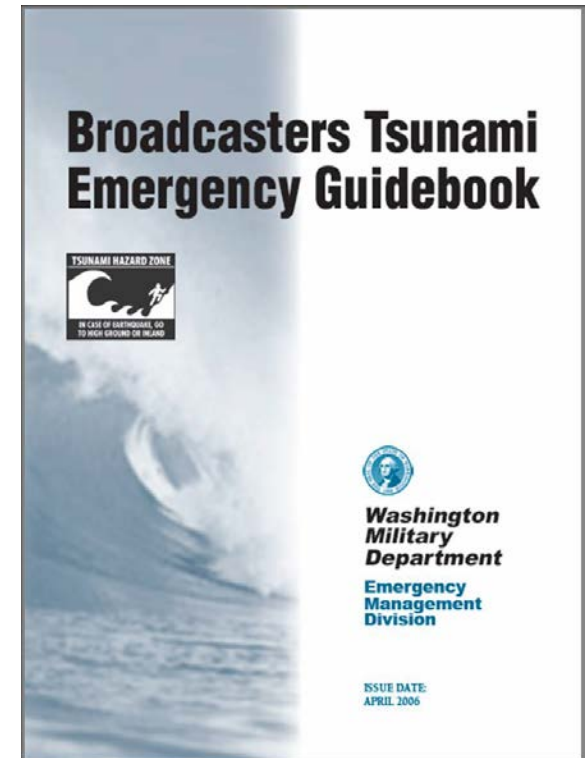
❖ Impact

- Provides broadcasters with state and federal process and gives them evacuation maps, list of local experts and two DVD's that can be used
- Product given to other states, Thailand using as template, and product showcased in "*Tsunami Teacher*"

❖ Challenge

- Keeping it current

Lesson Learned June 2005 Tsunami Warning





Washington State

NTHMP Goal: Install evacuation notification systems in 50% of coastal communities in each state

Governor's Priority: Meet or exceed federal funding for dissemination systems

- ❖ All at-risk tsunami communities have notification systems to disseminate and receive a tsunami message
 - NOAA Weather Radios (NWR) in ALL public/tribal facilities and many businesses in the hazard zone
 - Reverse E911 System installed in several Counties (Covers all at-risk communities)
 - 43 All-Hazard Alert Broadcasting (AHAB) Radios will be operational in at-risk tsunami communities by Jun 30, 07
- ❖ Impact
 - Communities are able to receive the message and take appropriate actions to getting the warning to the people
 - Citizens/businesses can receive the evacuation message – NWR Month provides reduce cost for NWRs
- ❖ Challenges
 - Reliability of systems, training and system utilization, funding requirements for repeater sites, and adding/upgrading systems to current technology

Washington State

State Goal: Outdoor Warning Dissemination to at-risk tsunami communities

- ❖ All-Hazard Alert Broadcasting (AHAB) Radio
 - Tone/voice outdoor system
 - All hazard system
- ❖ Impact
 - Provides verbal warning consistent with NWR
 - Change the way we do outdoor dissemination
 - System used nationally and internationally
- ❖ Challenges
 - Funding
 - Maintenance



**Prototype installed in
Ocean Shores
July 2, 2003**

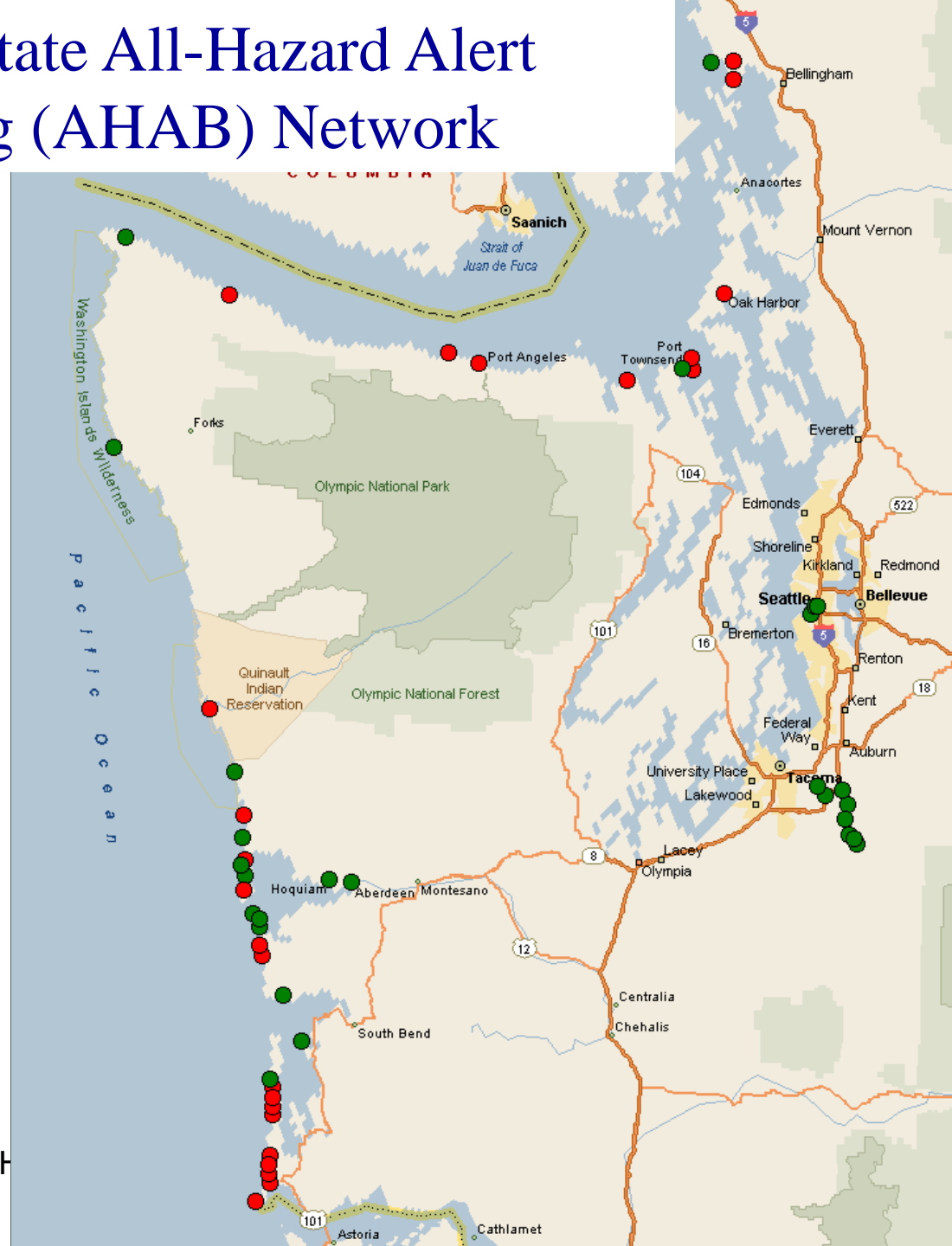
Washington State All-Hazard Alert Broadcasting (AHAB) Network

TO BE INSTALLED BY JUNE 2007 (24)

- Cape Disappointment
- Clallam Bay
- Copalis Beach
- Diamond Point
- Fort Worden
- Grayland (2)
- Ilwaco
- Island County
- Long Beach
- Lower Elwha
- Lummi Nation (2)
- Pacific Park
- Port Angeles
- Port Townsend
- Ocean Park (4)
- Ocean Shores (2)
- Seaview
- Taholah (Quinault Nation)

OPERATIONAL (27)

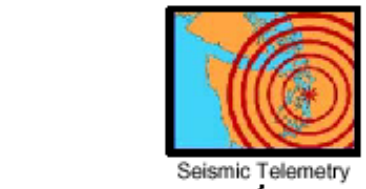
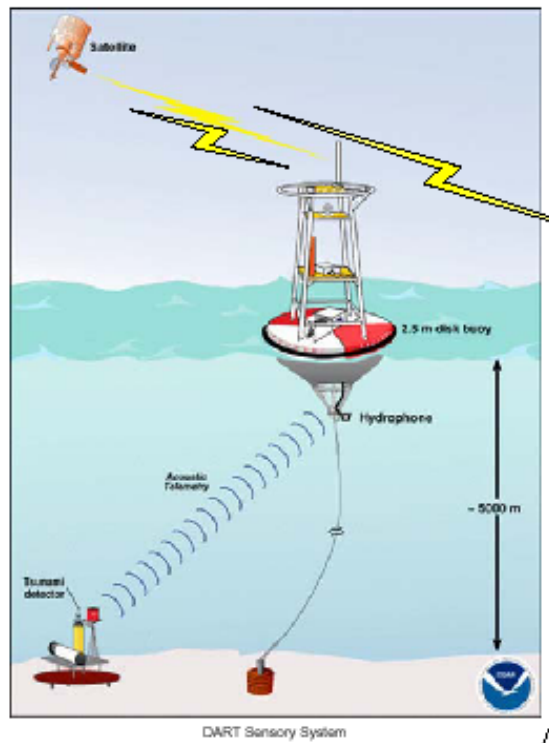
- Aberdeen
- Bay Center
- Hoquiam
- La Push (Makah Tribe)
- McAlder
- McMillin
- Neah Bay
- Ocean City
- Ocean Shores (2)
- Orting (3)
- Pacific Beach
- Port Townsend
- Puyallup (2)
- Sandy Point
- Seattle (3)
- Sumner
- Surfside
- Tokeland (Shoalwater Bay Tribe)
- Westport (3)



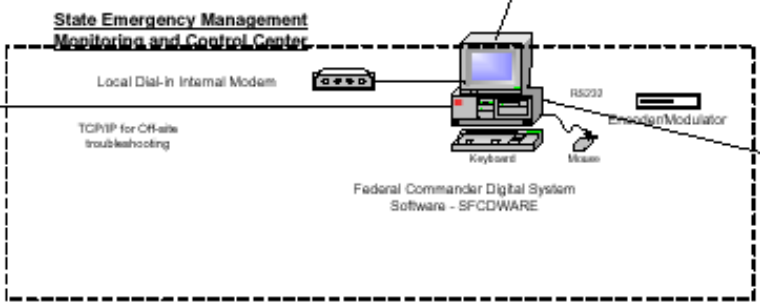
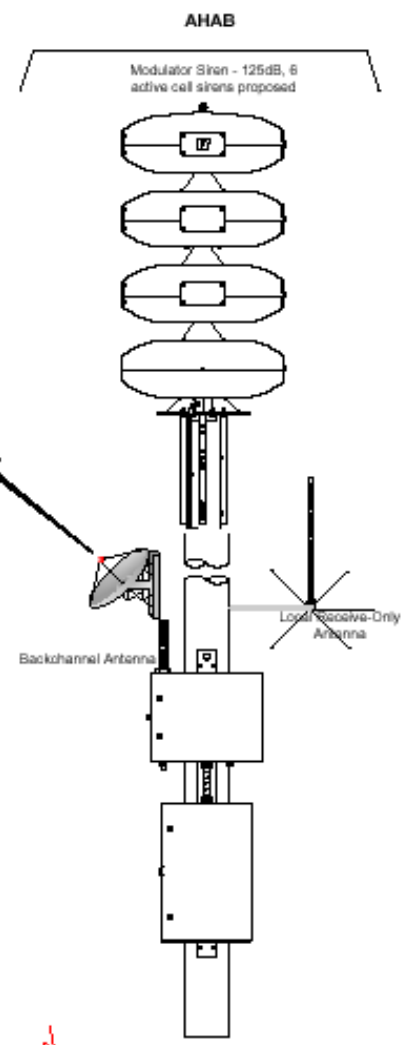
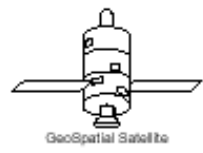
NTH



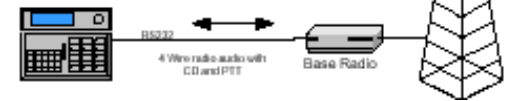
Federal Signal / State of Washington Satellite-Based AHAB (All Hazard Alert Broadcast system)



Data sent to State EMA



Local Activation Only, via push button encoder or DTMF keypad on Microphone



Washington State

NTHMP GOAL: Use social science tools to measure tsunami resilience of communities and the effectiveness of the NTHMP

A total of 7 social science surveys have been completed in Washington

❖ Surveys target residents/visitors, school children, businesses and tribes

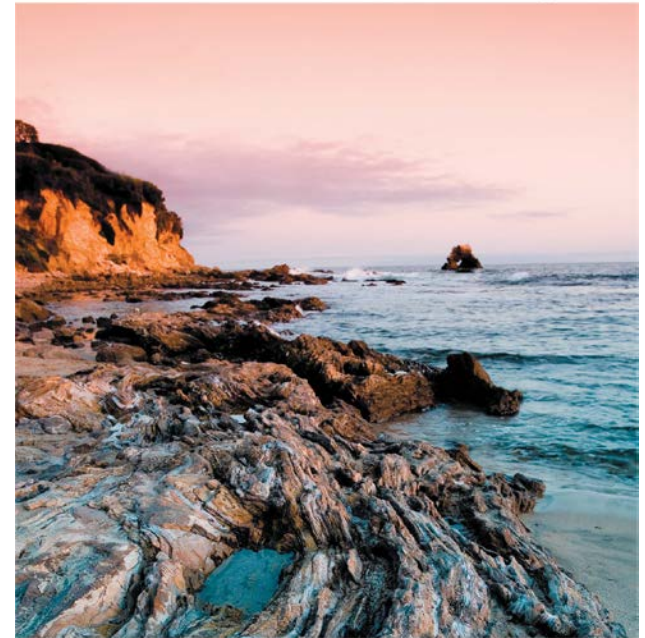
❖ Impact

- Development of *“How the Smart Family Survived a Tsunami”*
- Disaster Response Guidebook for Hotels and Motels on Washington’s Coast
- Development of *Map your Neighborhood*
- Crafting of State Tsunami Warning Message

❖ Challenges

- Funding of focus groups, studies, surveys, and products
- Implementing suggested changes within communities (buy-in)

DISASTER RESPONSE GUIDEBOOK for Hotels and Motels on Washington’s Coast



Governor’s Priority

Washington State

NTHMP Goal: Designate that 25% of communities at risk in each state are TsunamiReady

GMAP Quarterly Requirement

- ❖ Focus is on outer coast – 30% of recognized jurisdictions and tribes are TsunamiReady
- ❖ Six Tsunami Ready Communities
- ❖ Impact
 - Provides a foundation for communities to be prepared and stimulate continued preparedness and mitigation activities
- ❖ Challenges
 - TsunamiReady funding
 - Getting communities to apply





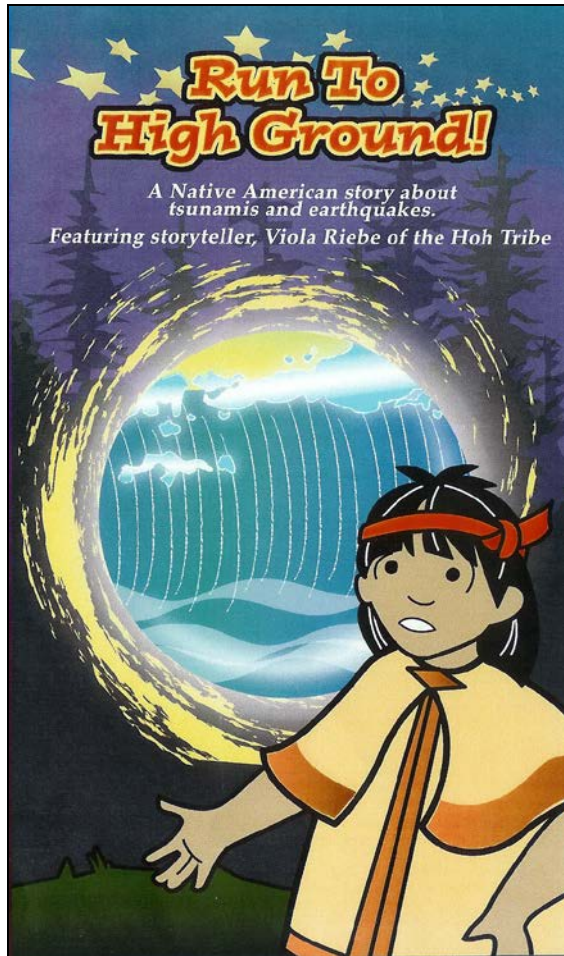
Washington State

NTHMP Goal: Ensure that public information is available; Display education posters in 75% of coastal water oriented/recreation businesses

- ❖ Public education products have been placed in visitor centers, hotel/motels, mailings, and other areas that are visited by residents and visitors
- ❖ 10-15 major workshops in coastal areas have been held each year for citizens and businesses
- ❖ Disaster campaign held semi-annual with evacuation drills; new posters are developed each year and distributed to communities
- ❖ Impact
 - Social science focus groups and surveys show that awareness levels have increased
 - Request for materials/publications have increased from community groups, businesses and individuals
 - Education is a Governor's Priority

Washington State

Native Americans - Use of traditional knowledge



Washington State

Governor's Priority: Access to Private Lands for Tsunami Evacuation

- ❖ High ground in some areas are on private land
- ❖ Project in Pacific County
 - Identified private property owners
 - Identified method that allows access with out private owner liability
 - DRAFT agreement under review
- ❖ Impact
 - Agreements will allow tsunami evocation on high ground that is close to the inundation zone



Washington State

Governor's Priority: Exercises and Drills

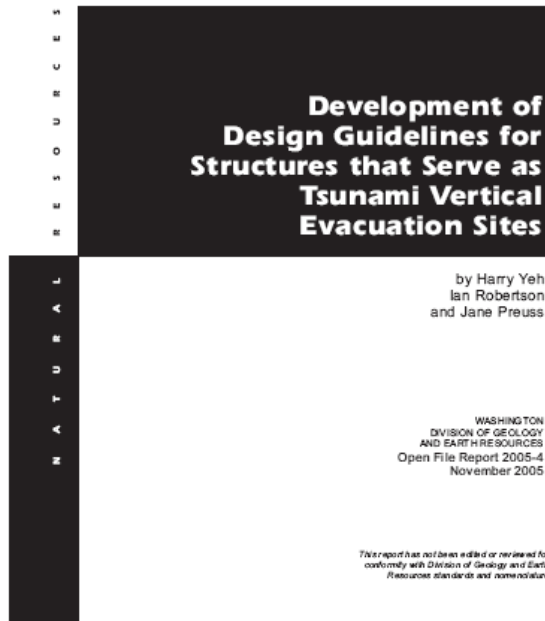
- ❖ Evacuation drills are held in April and September of each year
 - Evacuation drills are done for special events (India Study Tour)
- ❖ End-to-end communications test completed 3 times a year
- ❖ Impact
 - Provides staff training and stress test of communications equipment
 - Opportunity for residents to participate in exercise program



Washington State Tsunami Construction Guidance

•Washington lead

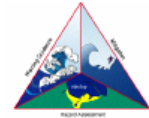
•**2003** – Phase 1: Examined unpublished tsunami survey reports for evidence useful for estimating of forces on buildings and structural characteristics of buildings that survived tsunami attack.



NTHMP 5-Y€

•**2002** – Workshop held to investigate the possibility of developing design guidance for shelters subject to earthquakes and tsunamis

PROCEEDINGS
of a
WORKSHOP ON CONSTRUCTION GUIDANCE
FOR AREAS OF HIGH SEISMIC AND TSUNAMI LOADING
convened by
TIMOTHY J. WALSH*, GEORGE CRAWFORD*, RICHARD EISNER*,
AND JANE V. PREUSS*
for the
NATIONAL TSUNAMI HAZARD MITIGATION PROGRAM
NOVEMBER 21, 2002



1. Washington Department of Natural Resources, Division of Geology and Earth Resources, Olympia, Washington
2. Washington Emergency Management Division, Camp Murray, Washington
3. California Governor's Office of Emergency Services, Oakland, California
4. GeoEngineers, Inc., Redmond, Washington

ATC 64

Design of structures for vertical
evacuation from tsunamis
State of the art report and preliminary
recommendations



•**2004** – Phase 2: In progress-
Development
of design
guidance

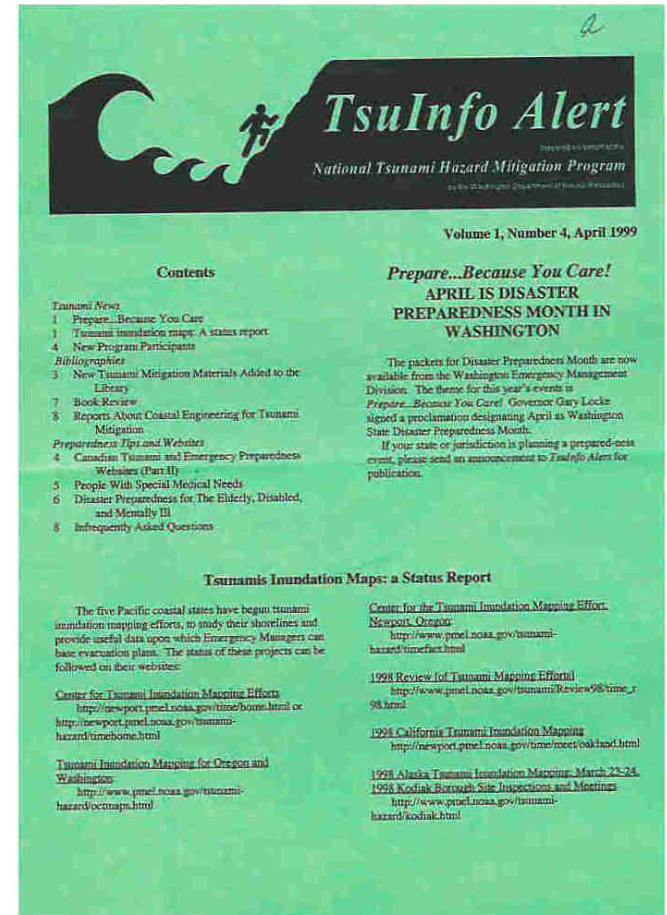
ATC Applied Technology Council

Funded by
Department of Homeland Security
Federal Emergency Management Agency

Washington State

TsuInfo Alert - Multi-State Mitigation Project

- ❖ Subscribers: 350
- ❖ Bimonthly publication
- ❖ Receive hard copy or go to website
www.dnr.wa.gov/geology/tsuinfo/index.html
- ❖ Challenges
 - Input from states
 - Involving new NTHMP states



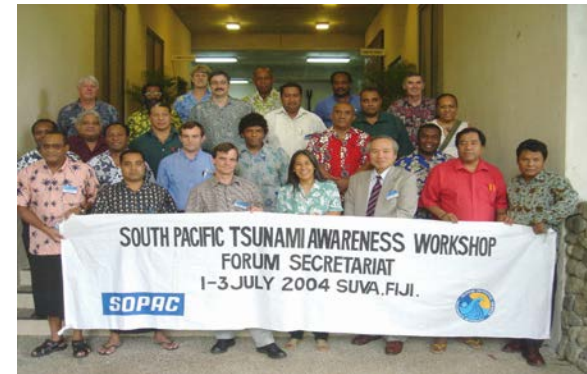
Washington State

International Outreach

- ❖ Provided resources and support to:
 - 11 Pacific Ocean Countries, New Zealand, Australia, Thailand, India, Japan, and Indonesia
 - Briefed all Indian Ocean Countries on NTHMP program and how to apply template
 - Released all public education free to international community
- ❖ Challenge
 - Availability to support international requests



NTHMP 5-Year Review





Washington State Future NTHMP Activities

- ❖ Define coastal areas that **do not** have to evacuate for a distant event (**PRIORITY**)
- ❖ Continue to work towards a seamless approach to alert and notification, disaster planning, response and recovery initiatives
- ❖ Continue to use social science tools to effectively educate residents and visitors and integrate human behavior into models that support/impact disaster management and local/state policies
- ❖ Assess geological impacts on evacuation routes and assembly areas to include potential damage to critical infrastructure from a Cascadia Event
- ❖ \$7.5M to obtain above efforts in next 5 years – Outer coast

Washington State

Challenges/Deficiencies

❖ Challenges

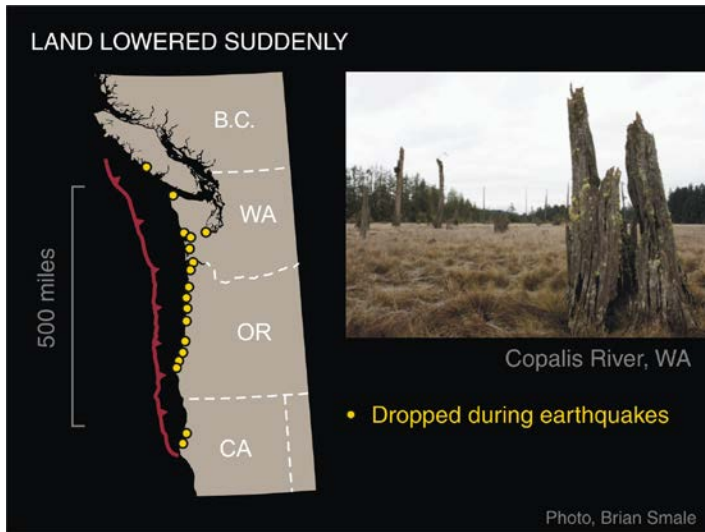
- Maintain a basic level
- Improving communications between federal (NTHMP) and State
- Increased workload to support NTHMP expectations

❖ Deficiencies

- Graphical products for dissemination for NOAA's tsunami warning system
- Lack of adequate resources at NOAA to address NTHMP

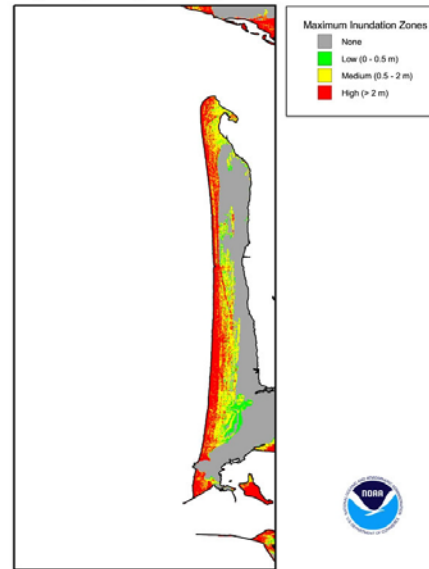
NTHMP

A Partnership Making a Difference!



Identify the hazard and source

Long Beach, Washington - Modeling Results



Vulnerability



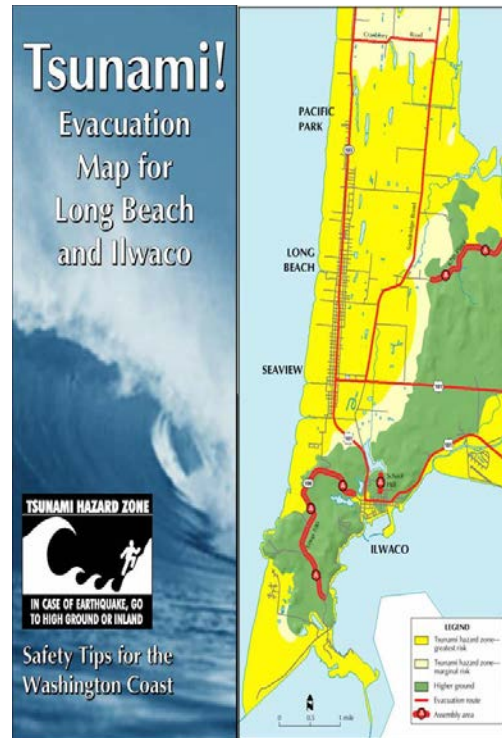
Extent of hazard

NTHMP

A Partnership Making a Difference!

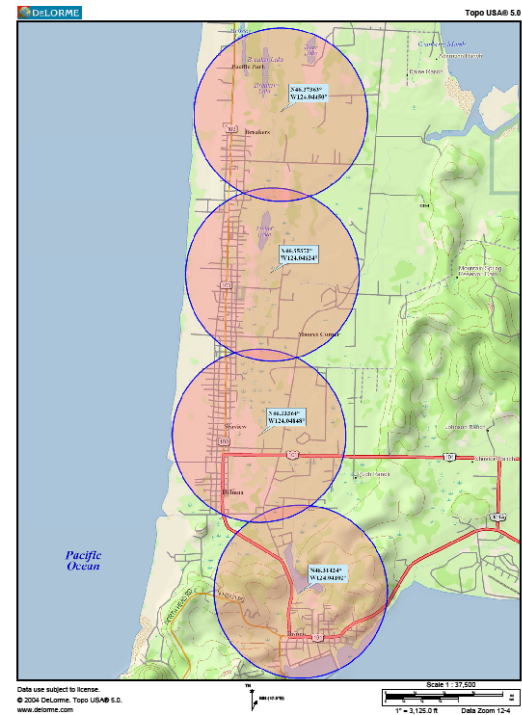


Evacuation maps



Brochure

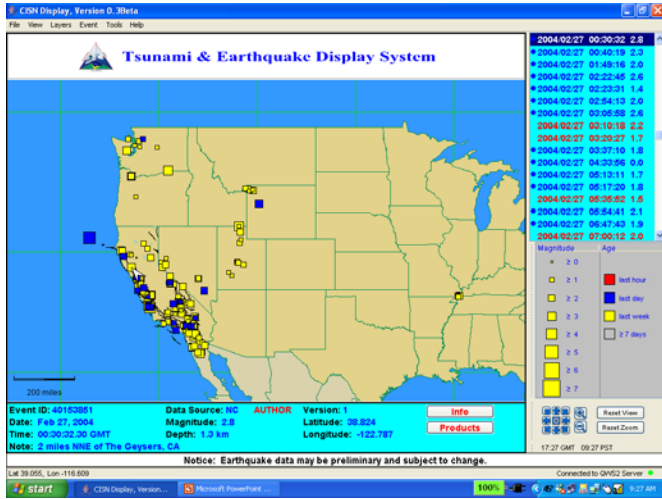
NTHMP 5-Year Review



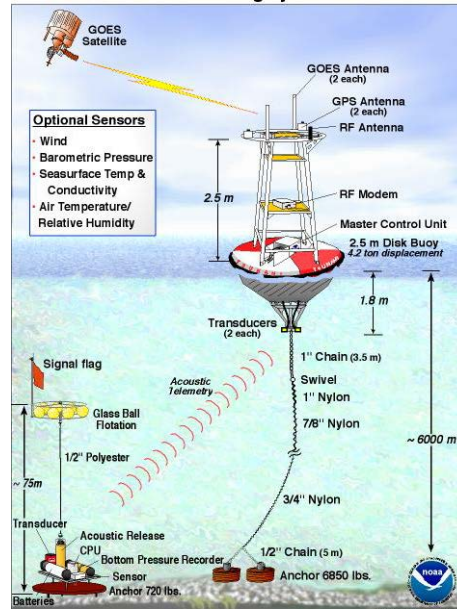
Communication modeling

NTHMP

A Partnership Making a Difference!



Identify Earthquake



Tsunami Data



The "Last Mile"

Washington State Contact Information

If you have additional questions during the review period, you may contact George Crawford at (253) 405-9419 or Tim Walsh at (360) 791-3130.

Thank You!