You can Survive the Big One!

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Tsunamis Happen ~ Are You Ready?
What is a Tsunami?

A tsunami is a series of waves in the ocean, most often caused by an earthquake or landslide.

- 1st wave may not be the largest one
- It can generate a surge of water along the shoreline causing dangerous inundation and serious infrastructure damage and casualties
Distant vs Local Tsunamis

**Local Tsunamis:** The first waves could reach the Washington coast within 15 to 20 minutes.

- *Cascadia Subduction Zone Fault*
- *Seattle and Tacoma Faults*

**Distant Tsunamis:** Waves higher than 3 feet could reach the Washington coast within 3 hours or more.

- *Alaska 1964*
- *Tohoku 2011*
Distant Tsunamis
Waves only a couple feet high...
# Tsunami Alerts

<table>
<thead>
<tr>
<th>Alert Name</th>
<th>Actions</th>
<th>Potential Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WARNING</strong></td>
<td>Get to high ground or inland IMMEDIATELY</td>
<td>Danger! Tsunami imminent! Flooding/powerful currents</td>
</tr>
<tr>
<td></td>
<td>Follow tsunami evacuation signage</td>
<td>Wave heights &gt; 3 ft. or unknown</td>
</tr>
<tr>
<td><strong>ADVISORY</strong></td>
<td>Stay out of the water and away from the shore</td>
<td>Strong currents and dangerous waves in or very near water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wave heights of 1 - 3 ft.</td>
</tr>
<tr>
<td><strong>WATCH</strong></td>
<td>Be prepared to take action</td>
<td>Tsunami possible</td>
</tr>
<tr>
<td></td>
<td>Stay tuned to local radio/TV/NOAA “alert”</td>
<td>Alert level may change once more information is known</td>
</tr>
<tr>
<td></td>
<td>weather radios</td>
<td></td>
</tr>
<tr>
<td><strong>INFORMATION</strong></td>
<td>No action needed</td>
<td>No tsunami impact expected</td>
</tr>
<tr>
<td><strong>STATEMENT</strong></td>
<td></td>
<td>Alert level may change once more information is known</td>
</tr>
</tbody>
</table>

**THREAT Message:** Intended to alert international partners only. Not applicable to U.S. coasts

Tsunamis affect wide areas & alerts are issued for specific locations. Always read the full alert. For information on current alerts, check: tsunami.gov
All Hazard Alert Broadcast Sirens

- OUTDOOR Tsunami Warning System
- *Activated* upon receipt of a Tsunami WARNING from the NTWC
- Wailing Tone followed by verbal warning in English and Spanish
• There are currently 68 sirens on the coast of Washington State.

• Coverage areas focus on major population centers

• From Neah Bay and Point Roberts in the North, all the way down to Cape Disappointment State Park and the Port of Chinook in the South
Regular Siren Tests

• Daily silent diagnostic checks
• Monthly test on the first Monday of every month at noon: chimes
• Shakeout (third Thursday of every October) only day we exercise the wail sound
• English and Spanish languages used (capable of more)
Are You Prepared?

- How will I know a tsunami is coming?
- Do I know my evacuation routes?
- Do I have a "Family Emergency Plan"?
- Do I have a go bag ready to take with me?
- How will I communicate/reunite with my family?
- Am I involved in Neighborhood / Community Preparedness?
Know the Warning Signs

FEEL
• If you FEEL the ground shaking severely

SEE
• Tsunamis may be preceded by a rapid fall in the sea level
• If you SEE fast receding water, or a wall of water coming towards you

HEAR
• If you HEAR a loud roar like a train or jet

RUN
• Move quickly inland to high ground!
First, Survive the Earthquake

DROP! COVER! HOLD ON!

The Great Washington ShakeOut
It could save your life!
You are in a tsunami inundation zone and you’ve just survived an earthquake by following the drop cover and hold on steps. What do you do next?

A. Check on your neighbors and call 911 for help
B. Wait to hear if the tsunami siren goes off before you evacuate
C. Grab your go bag and quickly walk your tsunami evacuation route to high ground
D. Listen to your TV or radio or check social media to see what is happening and what to do.
E. Grab your go bag and attempt to drive your car to safety
Get Moving

- When shaking stops get to high ground, **fast**!
- Tsunamis come in a series of waves
- The first wave is often not the highest wave

Get Off and Stay Off the beach
Project Safe Haven:
Vertical Evacuation Structures
Conceptual Cost Analysis

52 structure locations identified in Grays Harbor and Pacific Counties
# Guidance for Safe Minimum Offshore Depth for Vessel Movement

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Distant Source (ships in harbor)*</th>
<th>Local Source (ships at sea)*</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>30 fathoms</td>
<td>100 fathoms</td>
<td>Evaluated; may add potential safe areas within large bays and ports</td>
</tr>
<tr>
<td>Oregon</td>
<td>30 fathoms</td>
<td>100 fathoms</td>
<td>Evaluated, but is re-evaluating based on new data; also evaluating Columbia River</td>
</tr>
<tr>
<td>Alaska</td>
<td>30 fathoms</td>
<td>100 fathoms</td>
<td>Evaluated; ships should be at least 1/2 mile from shore for all scenarios</td>
</tr>
<tr>
<td>Washington</td>
<td>30 fathoms</td>
<td>100 fathoms</td>
<td>Evaluated; special conditions exist inside Puget Sound</td>
</tr>
<tr>
<td>Hawaii</td>
<td>50 fathoms</td>
<td>50 fathoms</td>
<td>Evaluated; implemented in Coast Guard plan in some locations</td>
</tr>
</tbody>
</table>

* Ships also recommended to be a minimum of 1/2 mile from shore or fringing reef
Plan to be on your own

Help will be slow in coming
Preparedness Kits

- 1 Gallon of Water per Person per Day (14 Day Minimum)
- First Aid Kit / Book
- Food
- Non-Electric Can Opener and multi-tool
- Portable NOAA Radio
- Flashlights, & Batteries
- Firestarter
- Extra Glasses, House/Car Keys
- Essential Medications and Medical Equipment
- ABC Fire Extinguisher
- Warm Clothes / Blanket
- Water Purification Kit
- Essentials for Infants, Elderly, or Pets
- Important documents
- Comfort Items
- Personal hygiene
Think of your feet

• After a nighttime earthquake the number one injury at emergency rooms is cut feet
• Keep the following in a bag tied to your bed:
  • Slip on shoes
  • Flashlight
  • Extra pair of glasses
  • Crowbar
Tragedy: Okawa Elementary School

- Okawa Elementary School in Japan did not conduct evacuation drills
- 72 of 76 children were killed by the tsunami
Success: Kamaishi City Schools

Schools in Kamaishi City had focused on education for disaster mitigation since 2006, and routinely conducted evacuation drills. On March 11, 2011, the school children evacuated to “A” at first, and then decided to go further to “B”. Finally, they ran up to “C” and all of them successfully avoided the tsunami.

Kamaishi city lost more than 1,000 lives to the disaster, but only 5 of them were school-age children.

Source: Disaster Social Engineering Laboratory, Gunma University
The Great Washington Shake Out

OCTOBER 18, 2018
@ 10:18 a.m.

Join us for the largest statewide Earthquake Drill & Tsunami Siren Test

REGISTER: www.shakeout.org/washington
2018 Youth Video Contest

Submit by Oct. 5, 2018

Open to: Washington State Students in the grade categories listed below

Categories: Middle School (Grades 6-8) and High School (Grades 9-12)

- Individual, class & other group submissions are permitted

Prizes provided by the Cascadia Regional Earthquake Workgroup

1st place $300
2nd place $100

- 1st and 2nd prizes will be awarded in both Middle School and High School categories
You can Survive the Big One!

Know the ‘natural warning signs’
FEEL, SEE, HEAR, RUN!!

Know what areas are at risk

Practice evacuations (*Walking*)
Know your evacuation routes,
Have multiple routes,
Walk the routes

Do not count on being able to drive

Be prepared to be on your own for a while!
Don’t Wait - Prepare Today
Resources

Washington State Emergency Management Division
  • mil.wa.gov/preparedness
  • mil.wa.gov/tsunami

Washington State Department of Natural Resources
  • geologyportal.dnr.wa.gov

National Oceanic and Atmospheric Administration
  • www.tsunami.gov

USGS
  • earthquake.usgs.gov/ens/register
THANK YOU FOR ATTENDING THE
Tsunami Roadshow

Enter To Win!

Don’t forget to submit this completed questionnaire for your chance to win a NOAA Weather “Alert” Radio (see back for details)