

The most vulnerable school district in Oregon

When discussing Cascadia subduction zone earthquakes and tsunamis, I've learned that people come from one of three perspectives.

The first is **disbelief**. These people tell me, "I've lived here all my life and I've never seen anything like what you're describing. It's never going to happen."

The second is **despair**. These people believe there is nothing they can do to survive the situation. They don't see a reason to try. I've even heard them call the new campus an orphanage.

The third and most important perspective is **dedication**. These people seek tangible and practical options to prepare for a Cascadia event and to become more resilient in the aftermath. They believe we must protect our community's greatest resource, its children.

The children and families of Seaside School District make up a beloved part of our community but because of the condition and location of the schools, our students' physical safety cannot be guaranteed without each community's partnership and support.

Here is what our students are currently facing.

Our current schools have outlived their useful lives.¹ Gearhart Elementary School, Broadway Middle School, and Seaside High School were each built with a life-expectancy of 45 years. These schools currently have an average age of 65 years. It is expensive to keep their aging roofs from leaking on students and to replace rusted out sections of pipe so toilets don't overflow on the floor. Perhaps less visible, but more important, are the large areas of unreinforced masonry throughout the buildings. DOGAMI evaluated each of our schools and found these three buildings are prone to catastrophic collapse.²

In addition, our schools are located in the most sensitive and vulnerable areas along the Oregon Coast.³ There currently are only four public schools in Oregon that are designated as high risk within the tsunami inundation zone.⁴ Three of those four schools are in Seaside School District and each is less than 15 feet above sea level. In order to find a safe elevation to relocate its schools, Seaside School District commissioned DOGAMI to scientifically determine Cascadia tsunami inundation levels over the past 10,000 years.^{5,6} The findings of this study changed the evacuation elevations all communities along the Oregon Coast. DOGAMI found that, "Typical wave heights from tsunamis...have been 20–65 feet at the shoreline. However, because of local conditions a few waves may have been much higher — as much as 100 feet."⁷

Evacuation to high ground is highly unlikely for our students. If they can't escape the building and get above 70 feet, they will likely drown from the incoming tsunami. The students at Gearhart Elementary School can only get to a ridge that is 45 feet at its highest elevation. The students at Seaside High School have less than 15 minutes to run at least 1.3 miles across ground that has vertically dropped several feet and has laterally torn apart. Their only possibility is to hope the East 12th Avenue Bridge is passable, even though the design engineers say it will not survive a 9.0 magnitude earthquake. Even so, that bridge is their only chance of survival – so they must run toward it. The students at Broadway Middle School need to hope the East Broadway Bridge is passable. Once again, the bridge becomes their lifeline to safety and without crossing the bridge, they will perish.

No one can predict when a Cascadia earthquake is going to occur, but scientists have identified 41 distinct Cascadia events over the past 10,000 years.⁸ This tells us that the average recurrence interval is 244 years and we know it has been 316 years since the last Cascadia earthquake. Oregon is overdue. The scientists have also measured the time between Cascadia events going back 10,000 years. “By the year 2060 (just 44 years from now) if we have not had an earthquake, we will have exceeded 85-percent of the known intervals of earthquake recurrence in 10,000 years.”⁹

What will you do if you are in one of these schools when the next Cascadia subduction zone earthquake occurs?

Will you still be in **disbelief** when you are surrounded by collapsed roof beams and parts of fallen walls?

Will you give up in **despair** when you hear the screams and whimpers of surviving children who are looking to you for help?

Or will you **dedicate** yourself to relocating our children out of the tsunami inundation zone, giving them a better chance of surviving the inevitable?

Our children need your help. It’s your choice and this is your chance – but the clock is ticking and they are running out of time.

¹ Seaside School District Existing Facility Assessment by Willamette ESD, January 2013.

² DOGAMI Report to the 74th Oregon Legislative Assembly, Statewide Seismic Needs Assessment: Implementation of Oregon 2005 Senate Bill 2 Relating to Public Safety, Earthquakes, and Seismic Rehabilitation of Public Buildings, DOGAMI Open File Report 0-07-02, page 46, 2007.

³ Wood, Nathan, Variations in City Exposure and Sensitivity to Tsunami Hazards in Oregon, U.S. Department of the Interior, U.S. Geological Survey, pages 10-27, Scientific Investigations Report 2007-5283.

⁴ DOGAMI Report to the 74th Oregon Legislative Assembly, Statewide Seismic Needs Assessment: Implementation of Oregon 2005 Senate Bill 2 Relating to Public Safety, Earthquakes, and Seismic Rehabilitation of Public Buildings, DOGAMI Open File Report 0-07-02, 2007.

⁵ George R. Priest, Chris Goldfinger, Kelin Wang, Robert C. Witter, Yingling Zhang, Antonio M. Baptista, Tsunami Hazard Assessment of the Northern Oregon Coast: A Multi-Deterministic Approach Tested at Cannon Beach, Clatsop County, Oregon, DOGAMI Special Paper 41, 2009.

⁶ Robert C. Witter, Prehistoric Cascadia Tsunami Inundation and Runup at Cannon Beach, Clatsop County, Oregon, DOGAMI Open-File Report 0-08-12, 2008.

⁷ Tsunami Evacuation Map: Cannon Beach and Arch Cape Areas, Oregon. DOGAMI publication, 2008.
<http://www.oregongeology.org/pubs/tsubrochures/CannonEvac.pdf>

⁸ Chris Goldfinger, C. Hans Nelson, Ann E. Morey, Joel E. Johnson, Jason Patton, Eugene Karabanov, Julia Gutierrez-Pastor, Andrew T. Eriksson, Eulalia Gracia, Gita Dunhill, Randolph J. Enkin, Andrey Dallimore, and Tracy Vallier, Turbidite Event History - Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone, U.S. Geological Survey Professional Paper 1661-F, 2012.

⁹ 13-Year Cascadia Study Complete – and Earthquake Risk Looms Large, Oregon State University, News and Research Communications, 08/01/2012.