

Lesson Title: What Would You do? (Shell Midden)

Overview: In this lesson students will recognize an archaeological feature (the Shell Midden), and consider what would have happened when the earthquake, evidenced in the fault, forced abandonment of the site. Students will also make inferences as to what life might have been like before, during, and after the earthquake event and compare local myth(s).

Key goals and objectives: SWBAT recognize an archaeological site (the shell midden), and correlate abandonment with a 23-foot rise in sea level because of the mega-thrust shallow earthquake 1100 ybp. SWBAT infer what the people may have been doing with the land, and how they may have been living.

Introduction and Activity: You remember how the fault we were just looking at showed evidence of an earthquake that raised the ground surface. Well, down here along the harbor we have more evidence of the earthquake. First we have evidence of how it affected the people living here at the time, and later, when we walk to the harbor, we will see further evidence of uplifted ground surfaces.

The core lesson:

Part 1 (at the shell midden): Do you see any evidence of people here? What kinds of things do you think you would find? Write at least 5 things. How would you know when you found anything? Remember the earthquake was 1100 years ago. [Share some of the items out loud, which may include, but not limited to, stone, bone, or wood tools; faunal remains, shell remains, building structures; clothing; flora remains; hearths; etc.]

Here along the trail there is evidence of a Native American fish camp, the one mentioned in the Blakely Harbor Video, can you find it? I'll give you a hint, look for objects that you wouldn't expect to find in the forest...

Did anyone see the shells? [Go over to the shell midden and brush away some of the dirt to expose the shells.] How far away do you think the ocean is?

Now, I want everyone to draw what they think the fish camp would have looked like before the earthquake, then when you have finished your drawing I want you to

Theme: shell midden, Native American people, and archaeology.

Concepts: relative time, quantification, order, and scale

Skills: observation, infer, correlation, analyze,

Age group: 12- 97

Venue/s: at the shell midden (approx. 100 yards before the honey bucket), Country Club Rd. culvert (exposed sea wall with natural shell deposit), and Blakely Harbor (the head of the estuary to see Restoration Point)

Materials: ArchaeologicalSites.pdf, pencil and paper,

Time: *Part 1* 45 minutes, 10 minutes between parts (walking to venue), and *Part 2* 45 minutes

Set up: none

answer the question, "What would you do?" How did this event change how you got your food, where you got your food from, and whether or not you stayed? Did the earthquake destroy their houses?

Part 2 (at the exposed natural shell deposit at the Country Club Rd. culvert (east side of street, please see image below), and at the head of the estuary or the mill complex, where you can see Restoration Point and explain the raised tidal flats):

The flat area in front of the fish camp, and the field that we just crossed to get here was all once a tidal flat, just like you see in front of us. The wall that we just looked at shows the shells in place that were displaced by the earthquake. The 23 foot rise in sea happened suddenly and the tides have been filling that distance ever since. Can you see how much the earthquake caused the ground to uplift?

Where would you have gone, if an earthquake lifted your home and destroyed your feeding area? Write your ideas in your journal.

Conclusion: The mega-earthquake 1100 years ago raised the ground surface about 23 feet (7 meters), and directly affected the Native Americans living along the seashore. Because their camp was no longer adjacent to the tidal flats, they were forced to move to another location.

Part 1 and Part 2: facilitate a fish bowl discussion around the question:

What would you do if such an earthquake occurred? Do you think that your house would survive the shaking? What kinds of things should you have in the construction of your house to make it safer?

Compare some of the student's stories with local myths and legends about earthquakes (Ludwin 2002).

Assessment: Built-in to the experience or based on a follow-up. Check for understanding of how the ground shifted at the estuary, where you can see the uplift on Restoration Point. Have the students share what they would do if an earthquake affected their home, as it did to the Native Americans at the shell midden.

Extension: Artifact analysis— students should choose a tangible object that is important to them, their family, heritage, culture, ethnicity, or personal use. They will draw, describe, explain, and analyze the object as an archaeologist would (see attached "Artifact Analysis" below and on learn.IslandWood.org). Then students should switch objects, and repeat with someone else's. Compare what information was lost in the second attempt. Did it lose any meaning in the retelling?

Explain that this is the process of archaeology — to make assumptions about past cultures, ethnicities, and uses based upon a single tangible item found during excavation.

For more information on the method of archaeology consult the author's poster created for Science Methods, Winter 2004, and available in the learning studios.

Background information: The uplift of the Blakely harbor tidal flat raised both natural and cultural shell deposits. Natural deposits are distinguishable from cultural deposits primarily by the absence of cultural artifacts such as bone refuse, fire-modified rocks or boiling stones, lithic debitage, and other characteristics of human activity throughout the deposit. It is possible that Native people could deposit their own debris on top of a natural deposition area, due to tectonic events (Rooke, Schumacher, and Hartmann 2002:30).

The Shell Midden present on IslandWood campus is between 21 and 60 feet (6.4 to 18 meters) above the current mean sea level; there may be two areas associated with the site: the shell midden adjacent to the trail and the terrace twenty feet away (following the utility cable up the hill). These different figures describe the mean elevation change and the lateral distance from the contemporary shoreline. The distance does indicate its deposition prior to the earthquake uplift event circa 1100 years ago. Fire-modified rocks, charcoal, and bone were observed (2002:29,39).

The uplift event would mean that archaeological shell middens located near the present shore were likely deposited after 1100 years ago, while shell midden sites located inland were likely deposited prior to the earthquake as these sites should once have been located along the shoreline. Site 45KP104 (the IslandWood Shell Midden) located north east of Blakely Harbor, is a prime example of the correlative effects of the earthquake 1100 years ago; the shell midden deposit once located on the shoreline, is now located inland as a result of the documented uplift along the Seattle fault zone (2002:45).



Photo of the Shell Midden location, above the red line. The Honey Bucket is 100 yards immediately behind (taken by Matthew John Brewer).



Photo of natural shell deposit at Country Club Rd. culvert (grid created by and taken by Matthew John Brewer).



Image of drawing of the Shell Midden and other archaeological sites in the Blakely Harbor area, created by Matthew John Brewer (ArchaeologicalSites.pdf).

Safety Considerations: There are no immediate safety issues, except to cross the street to the Harbor.

Cultural sensitivity issues may arise if a Native American student is present, or when presenting how people used to live. It is important to note that the practice of archaeology (the method) makes assumptions about the way past peoples lived based upon the debitage (both naturally and culturally modified). It is also important to note that even though a shell midden is often associated with trash that may have been left behind, it may also have been an occupied living site — it cannot be referred to as a simple site for refuge.

References:

Ames, Kenneth M. and Herbert D.G. Maschner
(1999). *Peoples of the Northwest Coast: Their Archaeology and Prehistory*. London: Thames and Hudson Ltd.

Atwater, Brian and Andrew L. Moore
(1992). A Tsunami about 1000 years ago in the Puget Sound, Washington. *Science* 258:1614-1617.

Bucknam, Robert C., Estella B. Leopold, Brian L. Sherrod
(1998). *Puget Sound Paleoseismology*. USGS Project No. 7360-12260. United States Geological Survey, Annual Projects Summaries. Volume 39, Pacific Northwest Region.

Bucknam, Robert C., Eileen Hemphill-Haley, and Estella B. Leopold
(1992). Abrupt Uplift within the past 1700 years at Southern Puget Sound, Washington. *Science* 258:1611-1614.

Clark, Ella E.
(1953). *Indian Legends of the Pacific Northwest*. Berkeley, California: University of California Press.

Daugherty, R.D.
(1992a). Archaeological Site Inventory Form: 45KP104. On file with the Washington State Office of Archaeological and Historical Preservation, Olympia.

(1992b). Archaeological Site Inventory Form: 45KP105. On file with the Washington State Office of Archaeological and Historical Preservation, Olympia.

(1993). A Cultural Resource Survey of the Proposed Port Blakely Development. Part II Testing and Evaluation. Western Heritage, Lacey.

Erdoes, Richard and Alfonso Ortiz

(1984). *American Indian Myths and Legends*. New York: Pantheon Books.

Forsman, Leonard A., Dennis E. Lewarch, Jason B. Cooper and Lynn L. Larson
(1999). *Puget Sound Environmental Learning Center, City of Bainbridge Island, Kitsap County, Cultural Resources Assessment, Phase 1*. LAAS Technical Report 99-11, Larson Anthropological/ Archaeological Services, Gig Harbor, Washington.

Forsman, L.A. and L.L. Larson

(1998). Testing of Site 45KP114 at Jasmine Point, Bainbridge Island. Letter report from Larson Anthropological/ Archaeological Services, Seattle to Carol A. Beck, Port Blakely Communities, Issaquah, Washington, 4 March.

Forsman, L.A. and M. Madson

(1998). Washington State Archaeological Site Inventory Form: 45KP114. On file with the Washington State Office of Archaeological and Historical Preservation, Olympia.

Hannum, M.M.

(2000). Cultural Resource Assessment Survey of Jefferson Properties' Port Blakely Project, Bainbridge Island, Washington. Short Report OOS-007, Hemisphere Field Services, Bainbridge Island.

Judson, Katherine Berry

(1997). *Myths and Legends of the Pacific Northwest*. Lincoln, Nebraska: University of Nebraska Press.

Ludwin, Ruth

(2002). *Cascadia Megathrust Earthquakes in PNW Indian Legend*. Pages from Ruth Ludwin, University of Washington Dept. of Earth and Space Sciences. Updated December 2, 2002. http://www.ess.washington.edu/SEIS/PNSN/HIST_CAT/-STORIES/. Visited November 23, 2003.

Lewarch, D.E.

(1995). Washington State Archaeological Site Inventory Form: 45KP110. On file with the Washington State Office of Archaeological and Historical Preservation, Olympia.

Lewarch, D.E., and L.A. Forsman

(1995). Cultural Resources Assessment and Construction Monitoring of the US West Cross Sound Fiber Optic Cable Project, King and Kitsap Counties, Washington. LAAS Technical Report 95-5 Larson Anthropological/ Archaeological Services, Seattle.

McIntosh, Jane

(1994). *Archaeology*. New York: Dorling Kindersley Publishing, Inc.

Miller, Jay

(1999). *Lushootseed Culture and the Shamanic Odyssey: An Anchored Radiance*. Lincoln, Nebraska: University of Nebraska Press.

Murphy, L.R., L.A. Forsman, D.E. Lewarch, L.L. Larson

(2000). *Puget Sound Environmental Learning Center, City of Bainbridge Island, Kitsap County, Cultural Resources Assessment, Phases 2 and 3, Technical Report Addendum*. LAAS Technical Report 2000-1, Larson Anthropological/ Archaeological Services, Seattle.

Price, A. Jr.

(1989). *Port Blakely: The Community Captain Renton Built*. Port Blakely Books, Seattle.

Rooke, Lara C., Schumacher, James, and Hartmann, Glenn

(2002). *Bainbridge Island Archaeological Overview and Predictive Model*. Western Shore Heritage Services Technical Report No. 0106, February 2002.

Waterman, T.T.

(1920). *Puget Sound Geography*. Manuscript No. 1864, National Anthropological Archives, Washington D.C.

Welch, Jeanne M., and Richard D. Daugherty

(1991). *A Cultural Assessment of the Proposed Port Blakely Development: Part I Survey and Inventory*. Report prepared for Port Blakely Mill Company by Western Heritage, Inc. Olympia, Washington.

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