FINAL REPORT

PALEOSEISMICITY OF THE PUGET SOUND AREA FROM GEOLOGICAL AND GEOPHYSICAL STUDIES OF LAKE WASHINGTON

Award 1434-92-G2188

Robert Karlin
Geological Sciences, Mackay School of Mines/172
University of Nevada, Reno
Reno, NV 89557
(702) 784-1770 -- *karlin@mines.unr.edu*

INVESTIGATIONS

The overall goals of this project are to evaluate seismotectonics and possible paleoseismicity recorded in the sediments of Lake Washington, a large glacially formed lake on the eastern margin of Seattle. Our specific objectives are to:

1) Map neotectonic deformation related to different strands of the Seattle Fault as it passes through Lake Washington using high resolution seismic reflection profiling.

2) Map the areal distribution and geometry of subaqueous landslides and mass wasting along the margins of the lake and determine their relative ages using sidescan swath mapping combined with subbottom seismic profiling.

3) Evaluate the Holocene sedimentary record in the lake as a possible recorder of seismically-induced landslide activity through sediment analyses and dating of cores throughout the lake.

Lacustrine sediments in lakes such as Lake Washington potentially preserve tectonic structures that are otherwise obscured and obliterated on land. Neotectonic deformation of the lake sediments can allow relative timing of fault movements to be addressed. Along the steep-walled margins of the lake and in the catchment basin, landslides may be triggered by large earthquakes of both local origin and from great thrust earthquakes in the subduction zone. Turbidites derived from these mass movements may leave a datable record of Holocene seismic activity in the lake bottom sediments. In Lake Washington, we have found a series of terrigenous silt

layers that have been episodically deposited throughout the lake. The major challenges of this research are to identify and characterize these sedimentary disturbances, date them, and to properly interpret their causes.