

Paleoseismicity & Hazards, Las Vegas Wash, Southern Nevada

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In 1998, John Whitney (USGS) published an abstract suggesting that a fault that parallels and is exposed near Las Vegas Wash, Clark County, Nevada, has Holocene offset. We collected basic data (1:6000 and 1:12,000 scale geologic mapping) that allow us to state that an east-west striking Holocene fault is not present in the vicinity of Las Vegas Wash, although we were unable to examine the area presently under Lake Las Vegas. Map data and a water pipe trench do show N- to NW-striking Quaternary faults. These faults are clearly lapped by Holocene, and perhaps older, material. The opportunity to examine the water pipe trench was provided by Jim Werle.

In the proposal for this project, we also planned to perform shallow geophysical studies and paleoseismic studies on the Holocene fault. Since no Holocene fault was identified, Taylor conferred with the NESC Research Committee who suggested that the remaining funds could be used to study a different Quaternary fault in Las Vegas Valley. Thus, we pursued study of the Valley View fault. Las Vegas would clearly be affected by a major earthquake along this fault because it lies in the center of the city and largely cuts sand and finer grained materials. These fine-grained materials are less stiff than coarse materials and subject to greater shaking and have a higher liquefaction potential.

We identified an excellent site to study the Valley View fault in the vicinity of Cheyenne Avenue and 5th St as well as City View Park. In this area, the fault has multiple strands. We used geologic mapping, geophysical surveying, and paleoseismologic studies in the vicinity of a road cut through the Valley View fault on 5th St to better characterize the structural geology and paleoseismic hazard along the fault. Because of urbanization, Taylor did only limited geologic mapping. However, the detailed scale showed one large (several meters of offset) fault strand that breaks the surface and has a large scarp. The scarp is > 13 m high indicating that it is a multi-event scarp. The geophysical surveys, led by Barbara Luke, are shallow seismic soundings. The data processing is in progress. Taylor and UNLV students have performed preliminary logging of the exposure of the fault in the road cut. An additional small fault (~ 30 cm of offset), was identified in the cut. Final logging and section retrodeformation are in progress.

Work costs = 19496.18; overhead = 5790.365; Requested total = 25286.55. Total with match = 50678.13