

# The Green Valley fault is not where it was mapped because landslides are more important here

## Admitting Failure in the Development of a Holocene Earthquake Record for the Green Valley Fault Zone, from a new “Paleoseismic” Site at Siqueira Ranch, Napa County, California

# But we do have some new info on the ~11 kA Clear Lake volcanic eruption

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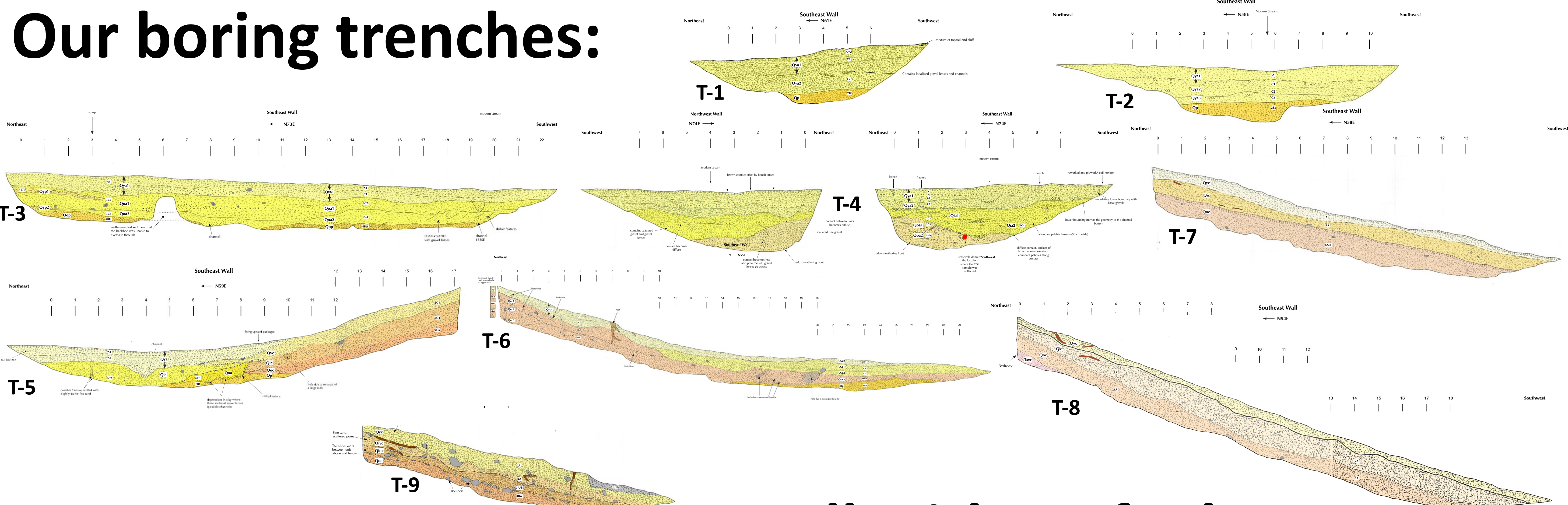
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with  
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However, the development of the closed linear valley is interesting and demonstrates that landslides play a greater geomorphic role than many consider. We infer that the north-flowing stream that initially incised Cole Hollow was blocked by a landslide at its northern end, resulting in ponding of fine-grained sediment, the clay beds exposed in the trenches. However, the southern end of the stream was also diverted to the east by headward expansion of a large landslide, fully isolating Cole Hollow from its original headwaters during the early Holocene. The modern ephemeral stream that transects the valley floor in Cole Hollow is significantly underfit and valley bottom sedimentation is now dictated by fan development from the adjacent hillslopes, principally from the eastern slope. With no through-flowing stream to transport sediment northerly, these fans have expanded across the valley floor, creating localized and transient ponding conditions that mimic tectonic sag ponds. The damming occurred approximately  $13.34 \pm 1.48$  kA ago based on a quartz optically stimulated luminescence age obtained for fluvial deposits 2.0 m below the ground surface in Trench 4. The isolation of the valley preserved volcanic ash within the upper valley sediments that are likely related to the most recent (~11 kA) Clear Lake volcanic field eruptive event (Donnelly-Nolan et al., 1981) sourced approximately 80-100 km north of Cole Hollow.

# Our boring trenches:



# REFERENCES

Baldwin, J.N., R.D. Koehler, and A. Barron, 2002, Final Technical Report - Paleoseismic Feasibility Study of the Green Valley Fault, San Francisco Bay Area, California: U.S. Geological Survey National Earthquake Hazard Reduction Program, Award Number 01-HQGR 0123 to William Lettis & Associates, Inc., 33p.

Donnelly-Nolan, J.M., B.C. Hearn Jr., G.H. Curtis, and R.E. Drake, 1981, Geochronology and evolution of the Clear Lake Volcanics: U.S. Geological Survey Professional Paper 1141, pp. 47-60.

Gath, E., K. Karlsson, T. Bogdanovich, and C. Kelty, 2022, Development of a Holocene Earthquake Record for the Green Valley Fault Zone from a New Paleoseismic Site at Siqueira Ranch; USGS Final Technical Report, NEHRP Award No. G20AP00052, 42 p.

# ... all with no faults



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