

# ***The Rodgers Creek Fault, Sonoma County: What recent advances in mapping reveal about its contribution to Bay Area earthquake hazards***

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The Rodgers Creek fault (RCF) is a major strand of the San Andreas fault system in the San Francisco Bay Area and in combination with the Hayward fault to the south has the highest likelihood of producing an earthquake large enough to significantly impact the region in the coming decades (~33% chance of magnitude >6.7 within the next 30 years). Much of the fault's surface trace is obscured by forest canopy, urban development (in Santa Rosa), and, at the fault's south end, by San Pablo Bay. However, recent acquisitions of high-resolution topographic imagery (from airborne light detection and ranging, or lidar, surveys) have enabled us to map the RCF in unprecedented detail, resulting in increases in its known length and breadth. Our mapping shows that the active RCF continues at least 17 km farther to the northwest than previously thought, through and beyond the town of Healdsburg. We also identify potential rupture pathways between the RCF and the active Bennett Valley-Maacama fault to the east and toward a continuation of the Hayward fault beneath San Pablo Bay recently mapped by Janet Watt and colleagues using high-resolution subsurface imaging. Refined fault-strand mapping and increases in known fault length and connectivity allow for the possibility of longer, more complex ruptures (and thus larger earthquakes), with implications for both regional seismic hazard and local surface fault-rupture assessments.

**Biography:** Suzanne Hecker is a research geologist with the Earthquake Science Center in Menlo Park. She has a particular interest in applying studies of past large earthquakes (paleoseismology) to understanding fault behavior and has conducted field studies in the Basin and Range Province, as well as along the plate boundary in California. She has also synthesized and analyzed regional and global fault datasets for information on earthquake displacement and stress-drop characteristics and to test earthquake magnitude-frequency models. She has a BS in geology from Bucknell University in Pennsylvania and an MS in geosciences from the University of Arizona and was employed as a hazard geologist with the Utah Geological Survey before joining the USGS as a project geologist in 1991.

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