

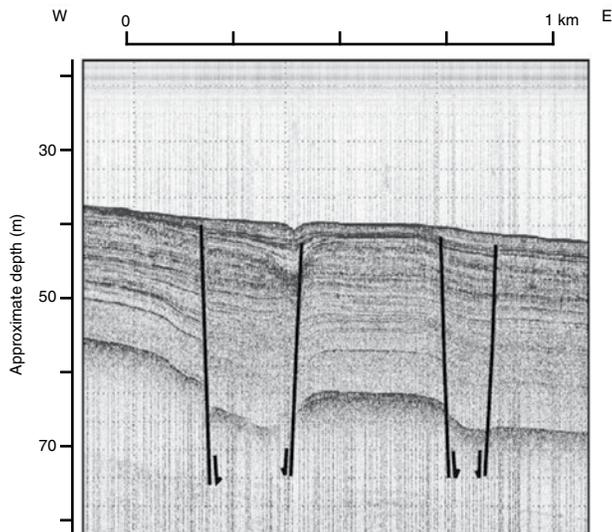
The Intermountain Seismic Belt in Southeastern Idaho

The mountains and valleys of southeastern Idaho lie within the Intermountain Seismic Belt and tectonic belts II and III of the Yellowstone Tectonic Parabola (p. 3). This is one of the most earthquake prone regions of Idaho. Paris and the Bear Lake Valley experienced strong shaking and damage in 1884 from a magnitude 6 earthquake. In 1934, the largest historic Utah earthquake (Hansel Valley magnitude 6.6) occurred just 20 miles south of the Idaho border. In 1975, the second largest historic Idaho earthquake struck the Pocatello Valley west of Malad City. This magnitude 6.1 event damaged 520 homes. Finally, in 1994, the magnitude 5.9 Draney Peak earthquake occurred along the Wyoming-Idaho border. For these reasons, the residents of Malad City, Preston, Paris, Montpelier, and Soda Springs are very familiar with the rumbling of earthquakes.

The Bear Lake fault zone is recognized as one of the most active in Idaho. The Cache fault hosted the 1962 magnitude 5.7 Richmond earthquake on the Utah-Idaho border. One of the most dangerous faults in southeast Idaho is the northernmost segment of the

Wasatch fault near Malad City. The Wasatch is one of the longest and most active normal faults in the world. This fault extends from central Utah 240 miles north to within 30 miles of Pocatello. Geologic studies indicate that magnitude 7 earthquakes occur on Wasatch fault segments every 300-400 years and that the most recent major earthquake occurred about 350 years ago. Although the activity of the Wasatch fault appears to decrease northward from Utah, a magnitude 6 or 7 event is possible on the Malad segment. In the event of such an earthquake, Pocatello will experience high intensity shaking and probable damage.

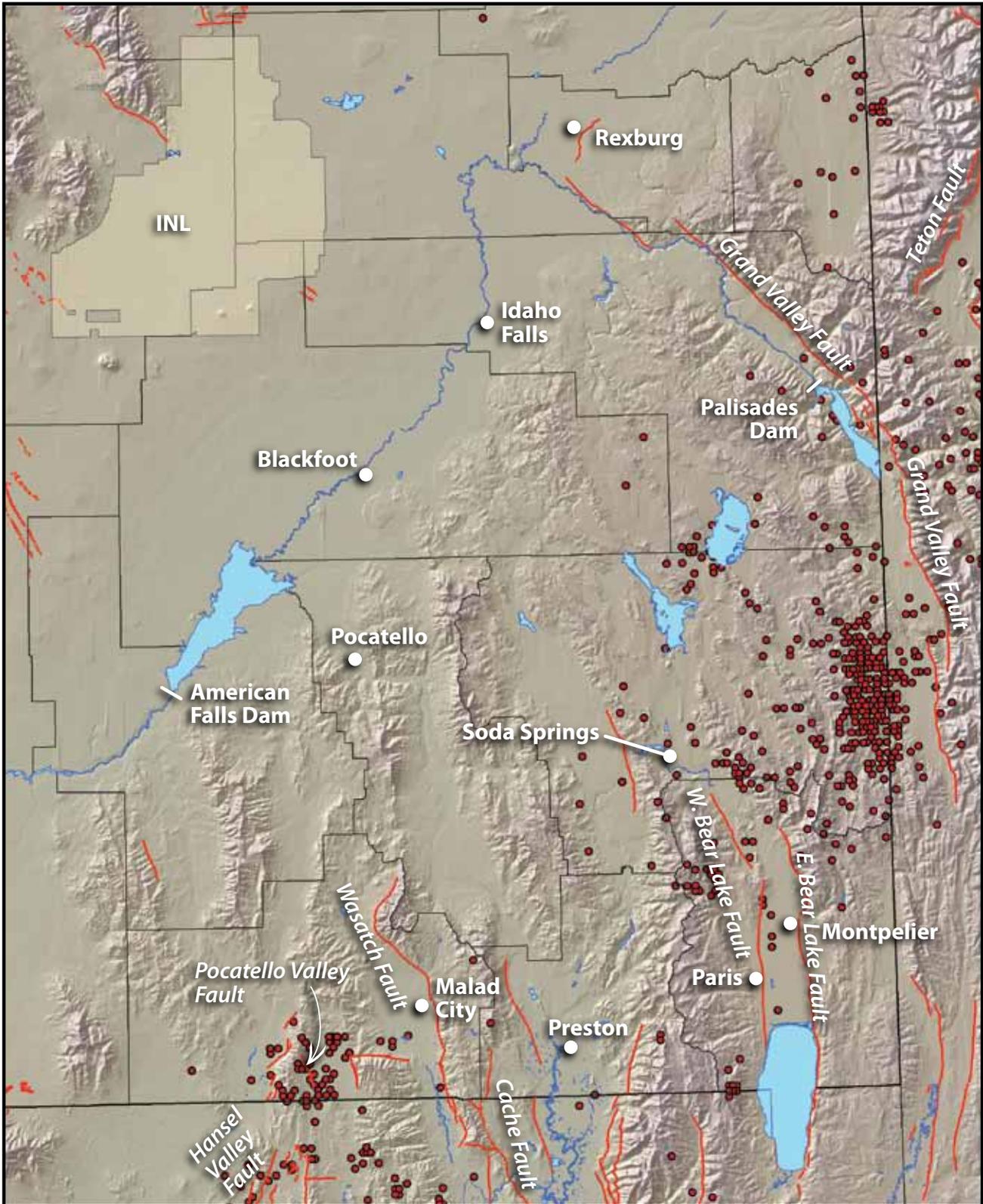
The Grand Valley fault system extends 85 miles from Star Valley, Wyoming into the valley of the South Fork Snake River in Idaho. The southernmost faults in Star Valley are the youngest, with recurrent motion over the past 10,000 years. Fault activity appears to lessen northward into Idaho and fault structures near Rexburg are probably inactive. The Palisades Dam and reservoir are located adjacent to the Grand Valley fault. Dams and reservoirs present special risks in earthquake-prone regions. Although carefully designed and operated to withstand earthquake damage, failure of the Palisades Dam during the spring when reservoir levels are high would cause extensive flood damage to downstream communities and infrastructure. Large multi-year economic losses to Idaho's agricultural economy would likely occur because of the key role that Palisades Dam plays in regional irrigation programs. Ground shaking from earthquakes on the Grand Valley and nearby Teton faults could also threaten the dam by generating large landslides into the reservoir, producing potentially damaging waves.



This seismic image was collected near the center of Bear Lake in the southeastern corner of Idaho. The profile shows normal faults, caused by regional extension, cutting lake bottom sediments that are probably less than 15,000 years old. The faults are related to the adjacent East Bear Lake fault (USGS image).



View of the Palisades Dam and Reservoir. Constructed in 1957, the Palisades Dam is 240 feet high and 2100 feet long. It dams the South Fork of the Snake River 18 miles west of the Idaho-Wyoming border. The reservoir is operated to supply about 670,000 acres of irrigated land in southern Idaho, generate about 177,000 kilowatts of hydroelectric power, and control floods. The trace of the Grand Valley fault zone is about 2.5 miles northeast of the dam (Bonneville Power Administration photo).



Map of southeastern Idaho showing the location of major faults and historical earthquakes (Source: USGS Quaternary fault and fold database and USGS/NEIC (PDE) earthquake catalog).