SALT CREEK LOOP GEOLOGY HIKE

(Auburn Dam and the Bear Mountains Fault Zone)

Monday April 14, 2025

RSVP to lkmariotti@gmail.com

DIFFICULTY (Rating):	Strenuous – due to distance and elevation gain.
HIKE DISTANCE:	8 miles (out-and-back with 4.4-mile loop in between)
ELEVATION/GAIN:	Start at 1600' (parking lot); lowest is about 550' (riverside); 1,050 feet back up. Trail map is available in **ALLTrails**.
PACE:	Moderate with pauses for geology discussions.
TRAIL CONDITIONS:	Paved road, one mile going downhill on loose-rock and hard packed earth switchbacks (trekking-poles recommended).
DESCRIPTION:	Hike is a field trip across the Bear Mountains fault zone and through the American River canyon to observe rocks, shear zones, and the massive foundation excavations upon which the Auburn Dam was to be constructed. The project was abandoned in 1979 because the design and construction of a dam to survive 9 inches of fault rupture was deemed infeasible at the time. Lunch at the river and trail out of the canyon is shaded.
FACILITIES:	Porta potty at trailhead
DRIVE TIME/MILES:	40 minutes and 22 miles
DONATION:	$5.00 + share of $10.00 parking fee or bring State Parks Pass
LEADER/SWEEP:	Mark Smelser (707.298.0102)/Lisa Mariotti.
MEET/LEAVE TIME:	Meet 7:45 AM at Orchard Creek parking lot behind the fitness center; and Leave 8:00 AM

PREPARATION FOR HIKE:

- Being prepared physically as well as having the right equipment makes for a better experience, not only for you, but for your fellow hikers.
- **If you have any health issues, please consider your condition before hiking at high altitude or at a fast pace.**

What to Bring:

- **PLENTY OF WATER!** Recommend 50 oz. /1.5 liters minimum for 5-mile hike – more if longer. Electrolytes suggested. Higher altitudes are dehydrating even when cool.
- Hiking boots/shoes, hat, sun protection, insect repellant, small first aid kit. Wind/rain jacket always advisable in the mountains. Trekking poles recommended.
- ID (driver's license), health insurance card, emergency contact / phone number.
- Extra pair of shoes to change into after hike and a plastic bag for muddy/dusty hiking boots to keep your driver's car clean.

>> Driving Directions and Auburn Dam information on next pages

Driving Directions:

Take I-80 East to Elm Street Exit (119C)
Turn left onto Elm Ave
Turn left onto Hwy 49
Turn right at the river to stay on Hwy 49
Continue appx 3.4 miles to Cool.
Turn right on St Florian Ct (just before Fire Station and blinking red light)
Trailhead is on south end of parking lot.
Park in the lower lot as the higher lot is reserved for trailers.

In maps navigate to Olmstead Loop Trailhead

Brief History of the Auburn Dam
from Wikipedia (February 2025)

1950's	Dam was first proposed
1967	Pre-construction design was finalized for a concrete thin-arch gravity structure over 680 feet high. Dam would be 4,200 feet long, 196 feet thick at the base, and equipped with five 150 megawatt generators at its base for a total generating capacity of 700 megawatts. Dam would create a reservoir with 2,300,000 acre-feet of capacity, more than twice that of Folsom Lake. Reservoir water surface elevation would be approximately 1,180 feet.
1968	Construction began.
1971-1972	Diversion tunnel under construction
1975 (8/1)	Oroville 5.7 magnitude earthquake with the fault plane directly beneath the reservoir. Auburn Dam construction was halted and detailed geological investigations were conducted. Moreover, it was essential that reservoir-induced seismicity be formally considered.
1975-1979	State-of-the-art geologic investigations by the California Department of Mines and Geology as well as the U.S. Geological Survey were conducted. In brief, it was determined that: 1) the dam was sited upon a strand of the Bear Mountains fault zone; and 2) the Bear River fault zone was active. In 1979, the California State Geologist (James Davis) formally stated that a magnitude 6.5 earthquake at the Auburn Dam site was credible and that any new dam be capable of withstanding a surface displacement of nine inches. As such the project to be drastically redesigned.
1979	Foundations for the Auburn Dam were completed.
1986 (2/18)	Coffer dam failed (per design) in response to high runoff.
1979-2008	Redesigns were very excessively expensive and value of the reservoir diminished significantly.
2008	Water Resources Control Board denies necessary water rights for the dam project due to lack of construction progress. After that, the diversion tunnel was backfilled and the entire area reclaimed/restored.

A few Auburn Dam and lake statistics

Canyon was carved out on both sides to anchor the concrete arch

Reservoir would be ½ the size of Shasta, 2.3x the size of Folsom

Shasta 4,552,000 acre-feet, 3,460’ wide, 602’ high

Oroville 3,540,000 acre-feet, 6,920’ wide, 770’ high

Auburn 2,300,000 acre-feet, 4,100’ wide, 680’ high 2+ times as much as Folsom

Folsom 976,000 acre-feet, 1,400’ wide, 340’ high

Narrow 2 pronged lake would start south of auburn have gone beyond Foresthill on middle fork and to Weimar on the north fork

2 pronged 40 mile lake would have submerged the Auburn State Recreation Area and 25 miles of the Western States 100 Endurance Run and would cover 38,000 acres and have 96 miles of “bathtub ring” shoreline

Proposed Lake: