

Field Trip Guide for Ridge Basin Excursion
San Joaquin Geological Society

November 3, 2018

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Part 1: Road log and quick view of Ridge Basin field trip stops

1 Meet at 8:00am

- a. Exit I-5 at Templin Highway exit; go west to Golden State Highway. Drive north on Golden State Highway to Whittaker Summit side road on Golden State Highway. Park on side of GSH.
- b. Location: 34.588404 x -118.716226
- c. Overview of the Ridge Basin looking northward toward Pyramid Lake.
- d. Outcrops in the Miocene Fisher Spring Sandstone Member of the Ridge Route Formation.
- e. Lacustrine delta and lagoon bar depositional facies.

2 8:45am

- a. Drive south on Golden State Highway and turn left onto Templin Highway. Continue on Templin Highway to the intersection with Old Ridge Route. Park on the southeast side of Templin Highway
- b. Location: 34.576455 x -118.671233
- c. Outcrops of the Miocene Castaic Formation overlain by the Marple Canyon Sandstone Member of the Miocene Ridge Route Formation
- d. Marine delta overlain by upper fluvial and deltaic and lower slope and turbidite depositional facies

3 10:00am

- a. Continue on Templin Highway past the Old Ridge Route to a pull over.
- b. Location: 34.592032 x -118.673158
- c. Overview of the Paradise Ranch Shale Member of the Peace Valley Formation overlain by the Fisher Spring Sandstone Member of the Ridge Route Formation.
- d. Lateral extent of basin fill shales and easterly sourced deltaic depositional facies

4 10:30am

- a. Take Templin Highway back to Golden State Highway and to Frenchman's Flat Campground Rest rooms available
- b. Location: 34.616360 x -118.743735
- c. Overview to the east of Osito Canyon Shale Member of the Peace Valley Formation (walk from parking area toward the northeast, across Osito Creek)
- d. Return to overview to the west of Violin Breccia at Frenchman's Flat Campground.
- e. Walk to the west toward Piru Creek. View Osito Canyon Shale Member of the Peace Valley Formation at 34.612843 x -118.746610
- f. Continue walking west toward Piru Creek cut. View Violin Breccia at 34.610172 x -118.750148
- g. Note lateral extent of the shale and limited extent of the Breccia
- h. Eat lunch

5 12:30am

- a. Walk to Pyramid Lake Dam along Golden State Highway from the Frenchman's Flat parking area. This is a 2.1 mile (3.4 km) walk along a road. Total walking distance 4.2 miles (6.8 km). Should take ~40 minutes each way.
- b. Location: 34.640156 x -118.762039
- c. View Piru Gorge Sandstone Member of the Ridge Route Formation on the east and west side of the parking area at the base of the dam.
- d. Three Lower deltaic sequences with delta clino-forms (bottom set, fore set, top set). Overlain by fluvial deposits. Interbedded shales. Lower shales were deposited in brackish water; upper shales were deposited in freshwater lacustrine setting.

6 2:30pm

- a. Return to cars at Frenchman's Flat and drive back on GSH to Templin Highway. Take I-5 north to Vista del Lago exit. Go to the Vista Del Lago Visitor Center. Rest rooms available.
- b. Location: 34.662369 x -118.760841

- c. Overview of the Piru Gorge Sandstone Member and the Apple Canyon Sandstone Member of the Ridge Route Formation interfingering with the Alamos Canyon Shale member of the Peace Valley Formation.

7 3:00pm

- a. Return to I-5 north, exit at Smokey Bear Road, turn left and left again onto Pyramid Lake Road, southbound to an outcrop of the Alamos Canyon Shale Member of the Peace Valley Formation. Park on the side Pyramid Lake Road.
- b. Location: 34.687981 x -118.788560
- c. Note fissile nature of the shale, with soft sediment deformation

8 3:20pm

- a. Pyramid Lake Road northbound to intersection with Hungary Valley Road. Go left and park near Aqueduct.
- b. Location: 34.704298 x -118.799833
- c. View outcrop of Apple Canyon Sandstone Member of the Ridge Route Formation
- d. Note heterolithic nature and fine scale bedding features.
- e. Deltaic lacustrine depositional setting

9 3:45pm

- a. Return to Smokey Bear Road, get on I-5 northbound and exit at Quail Lake Road. Go left under the freeway to Ralphs Ranch Road (North Peace Valley Road), turn left and drive to outcrop just past LA County Fire Department Station #77 to view steeply dipping outcrops of the Mio-Pliocene lower Hungry Valley Formation on the west side of Ralphs Ranch Road.
- b. Location: 34.755891 x -118.796576
- c. Hungry Valley Formation is the final fill stage for the Ridge Basin
- d. It consists of alluvial fan and fluvial sediments.
- e. To the west and north, the Hungry Valley Formation overlies the San Gabriel Fault.

4:30pm Return to Bakersfield

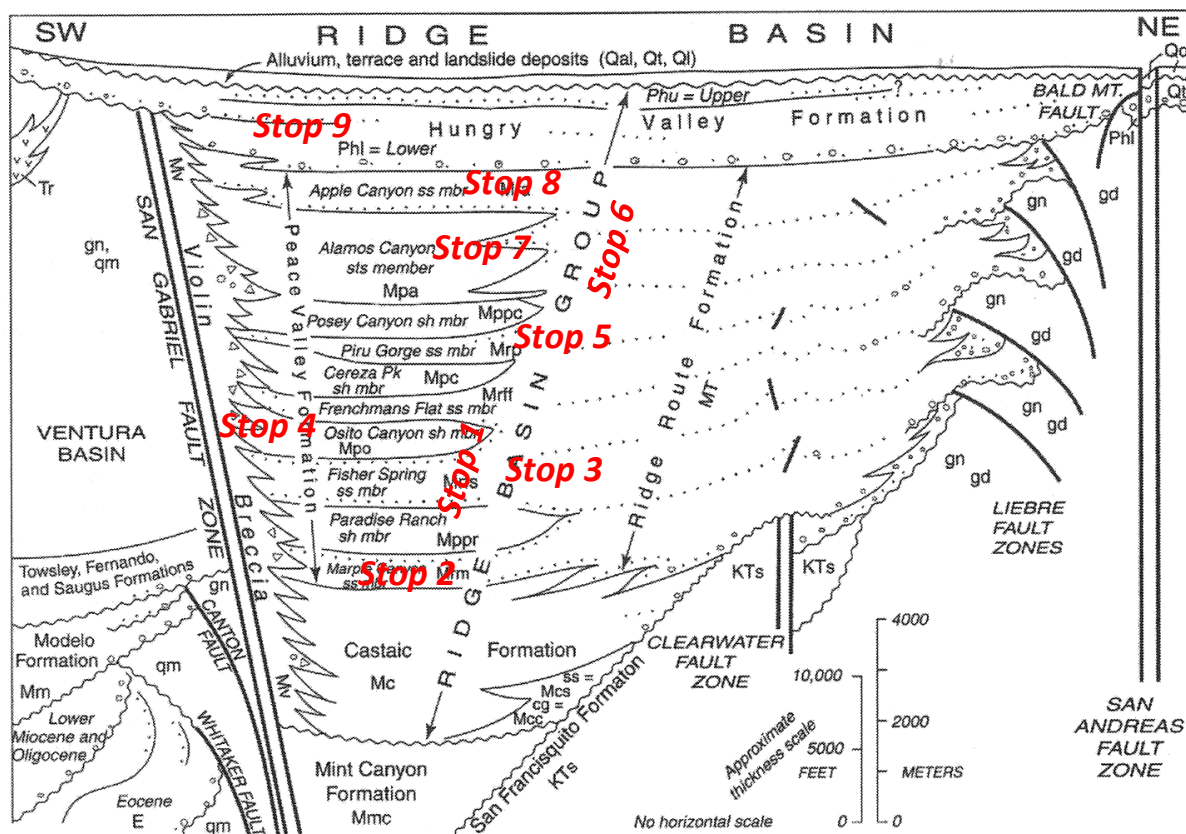


Figure 1 is a diagrammatic cross section with locations of field trip stops. Stops 1 and 6 provide overviews of the basin fill geometry. The remaining stops enable close evaluation of clastic depositional facies indicative of Ridge Basin tectonically influenced depositional systems. Detailed maps of stops are provided below.

Satellite images of the Ridge Basin field trip stop locations.

Figure 2. Satellite image of the locations of Field Trip Stops 1, 2, and .3

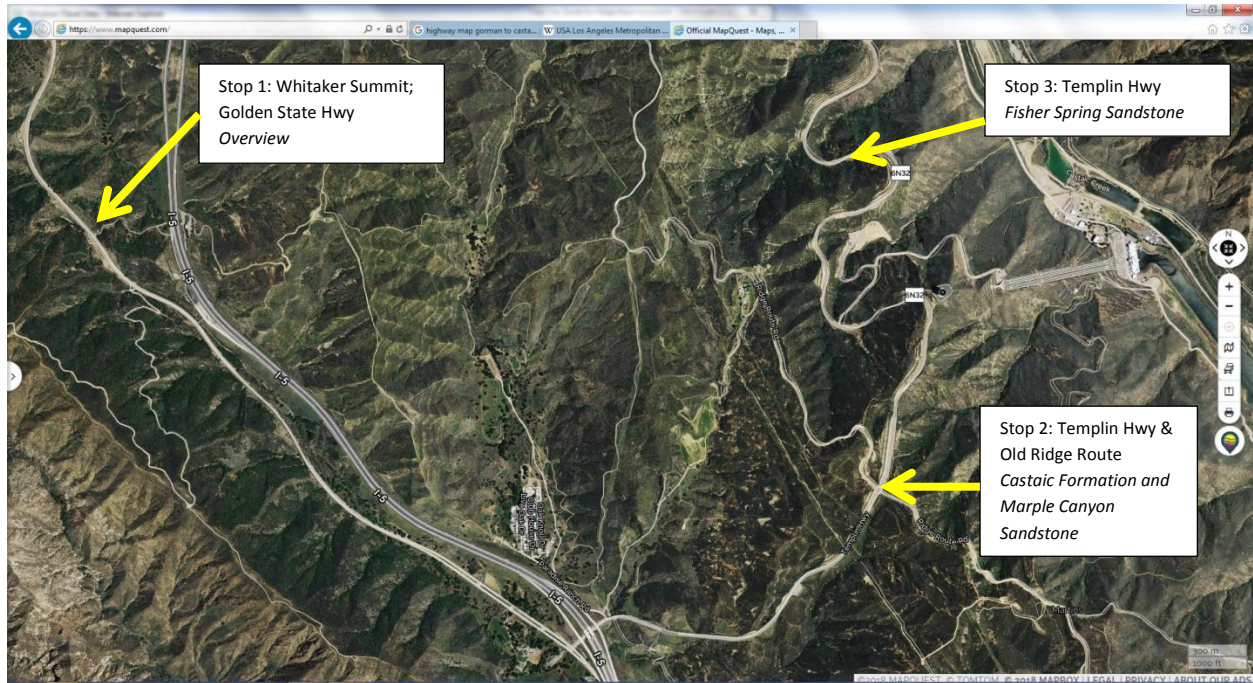


Figure 3. Satellite image of the locations of Field Trip Stops 4a, 4b

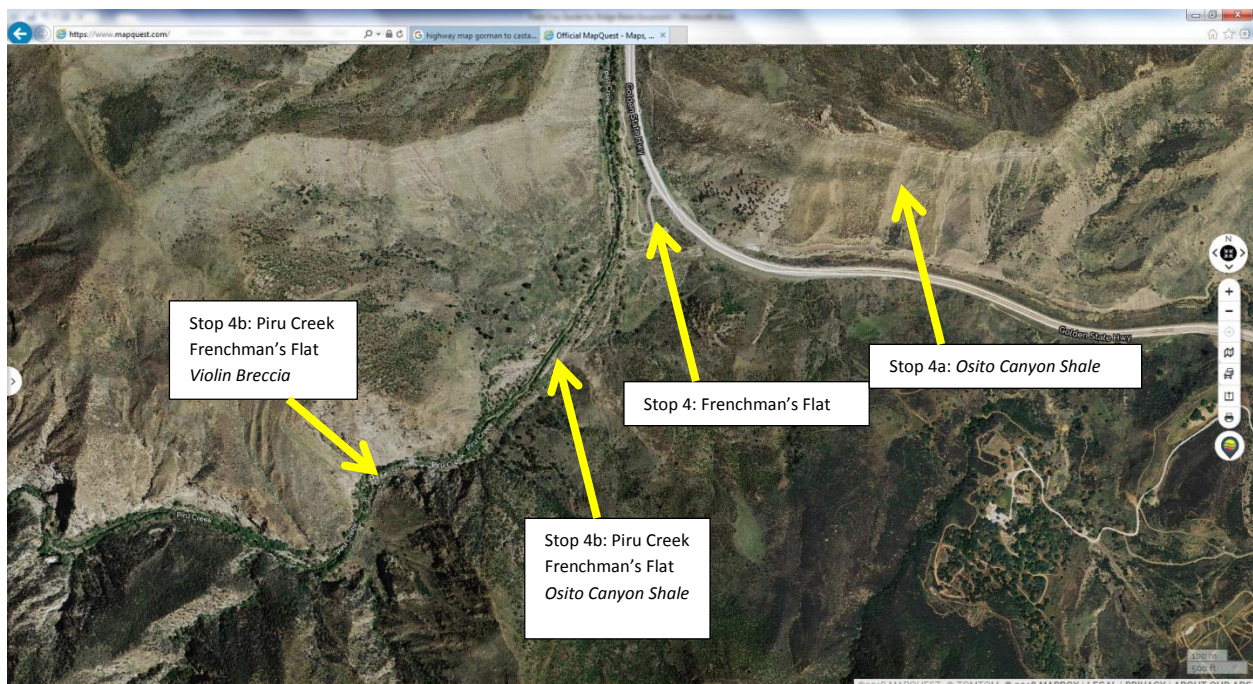


Figure 4. Satellite image of the location of Field Trip Stop 5

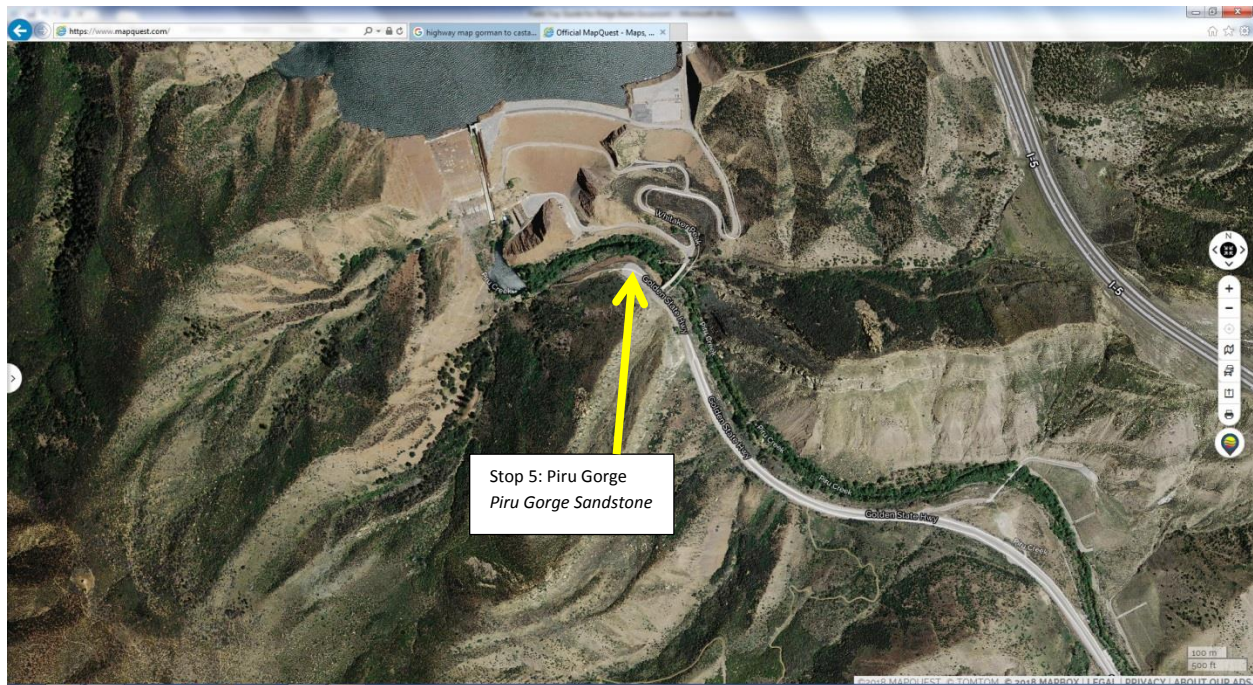


Figure 5. Satellite image of the location of Field Trip Stop 6

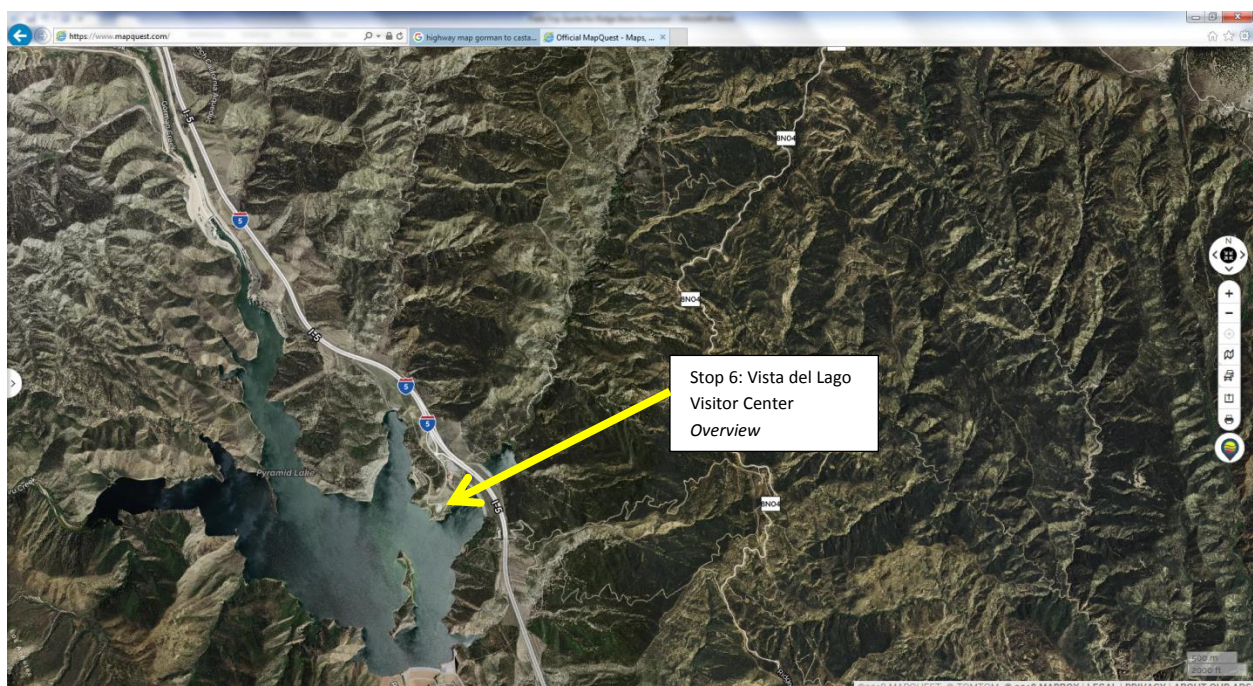
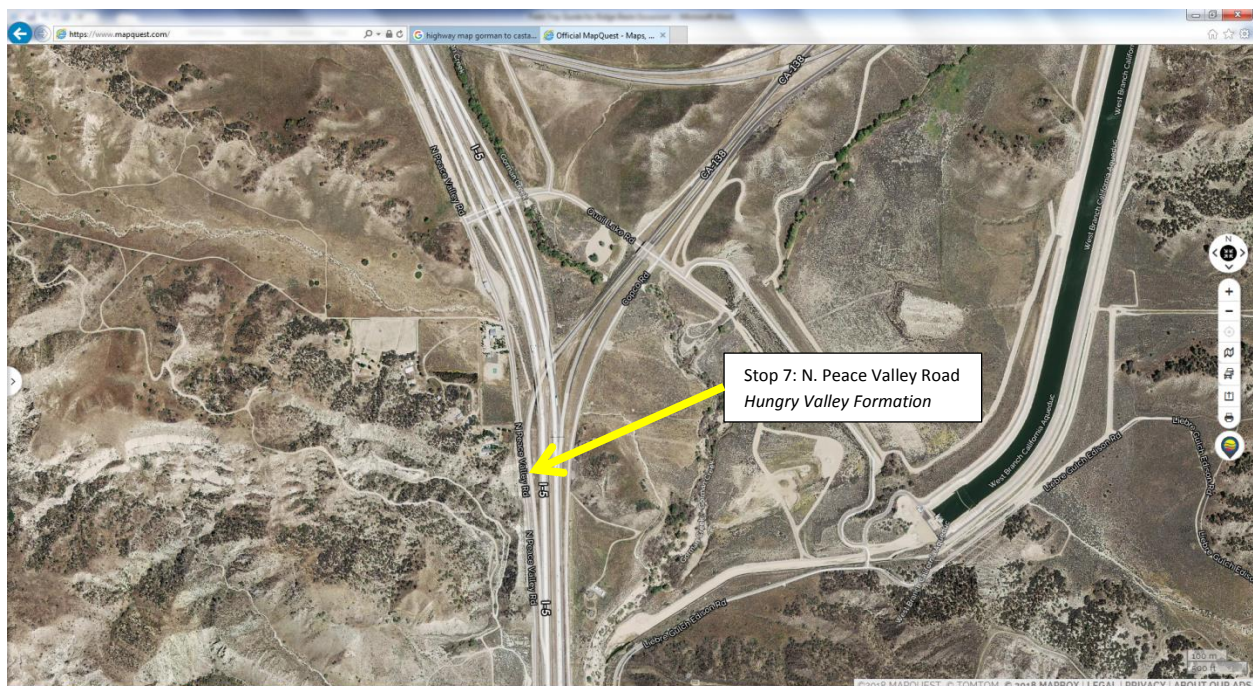


Figure 6. Satellite image of the location of Field Trip Stops 7, 8



Figure 7. Satellite image of the location of Field Trip Stop 9



San Joaquin Geological Society

Ridge Basin Field Trip

PURPOSE

Welcome to the 2018 San Joaquin Geological Society Fall Field Seminar. Ridge Basin is located in the central part of the Transverse Ranges of southern California, near the “big bend” of the San Andreas Fault. Over the course of the trip, we will focus on the interplay of tectonics and sedimentation, and relate similarities in depositional styles oil fields one might be working in the San Joaquin Basin.

We will introduce you to the different depositional systems and rock types found within Ridge Basin. The depositional systems vary from alluvial fans to marine basin-plain deposits; tectonic environments include compressional, extensional and transform styles

At the end of the one-day field trip, we hope you will:

- Have a basic understanding of the depositional systems in Ridge Basin, and their relationship to the different tectonic styles during development of the basin.
- Have a general understanding of the tectonic framework in which Ridge Basin developed, in the context of the dynamic tectonic history of southern California.
- Have a basic understanding of the infill history of Ridge Basin.
- Have a general understanding of the provenance of infill sediments in the basin.
- Understand how the depositional systems and structures observed in Ridge basin can create high- or low-quality oil reservoirs.

LOGISTICS

General Logistics

We will be traveling from Bakersfield to Ridge Basin, located between Castaic and Gorman, by personal vehicle. Participants are encouraged to join with others to minimize the number of cars on the trip. Drivers are required to have a valid driver’s license.

Some outcrops are exposed only in road-cuts and viewing of those outcrops requires extra caution, as roads may have oncoming traffic, loose rock hazards, may be relatively narrow and sinuous, and situated next to a steep drop on one side. We will be driving on highways and freeways, and traffic/road conditions can affect the fieldtrip schedule. Two outcrop areas (Frenchman’s Flat and Piru Gorge at Pyramid Lake Dam) require walking from a parking lot. The walk at Frenchman’s Flat is two kilometers. The walk to Pyramid Lake Dam is 6.8 kilometers (4.2 miles) roundtrip. It will take about 40 minutes each way. Since access at all sites is relatively easy and walks are not strenuous, sturdy walking (or hiking) shoes with good ankle support should be sufficient. Steel-toed boots are not required, and sandals are not appropriate.

The average temperature in Castaic, CA, for the month of November is 63°F with an average high of 80°F and low of 46°F. Weather may be variable, and participants are strongly encouraged to check the weather forecast prior to leaving on the fieldtrip to be prepared for inclement weather.

During the day, coolers with snacks and drinks will be available in certain vehicles. Participants should eat breakfast prior to Saturday morning departure and should bring their own lunch on the trip.

SAFETY

Safety is of utmost importance on this field trip. Neither the San Joaquin Geological Society nor the participants and organizers of the trip shall be held liable for any accidents or injury during this trip. The following is provided to the participants as suggestions for them to have a safe trip.

Due to the large number of participants and the nature of the transportation being used for the trip, it is imperative that everyone remain vigilant and exercises caution. The most common accidents, that occur during the field course include: (1) contact with poison oak, (2) rock fall at outcrop locations, or (3) having an automotive accident.

First-aid kits will be available in case of an emergency.

General Safety Issues

When walking on trails, participants should use caution as soils can be loose, and pebbles could roll down the path. Some of the locations that we will visit are on publically accessible roads, so participants should keep vigilant of oncoming traffic and keep to the shoulder whenever possible. There is abundant poison oak at one field trip stop, so participants should use caution when walking next to well vegetated areas.

The fieldtrip guide contains maps, locations, directions should anyone become separated from the group. Cell-phone coverage might not be adequate at all fieldtrip stops.

Driving

Drivers must exercise caution and obey speed limits. For all participants, traffic awareness is necessary. Do not walk out from between vehicles without looking to see if there is oncoming traffic. Wait for it to pass before crossing. We will be parking along roadsides or in designated parking areas.

General points of attention

Dehydration is an issue in the field. One should drink enough water such that they urinate at a normal frequency. Ensure an adequate water supply.

Participants should bring suitable outdoor clothing and footwear, and should be prepared for inclement weather (e.g., rain, slippery or icy conditions), as well as unusually hot and sunny weather (e.g., sunglasses, hats, sunblock cream).

Poison oak is abundant along parts of the Whitaker Summit Road and along the Frenchman's Flat trail to Piru Gorge. Be very careful and avoid brushing against plants. The poison oak is bright red and green-brown this time of year, or even without leaves. Some major identifying characteristics of poison oak are an oily sheen on leaf tops and leaves that grow in clusters of three.



Figure 8. Photograph of poison oak leaves.

Participants with allergies should bring their own EpiPen or suitable antihistamine.

Please inform contacts of field trip leader mobile number: 661-432-5407.

If there are medical emergencies there are three hospitals or health centers south of the Ridge Basin area (Valencia, Santa Clarita and Lebec).

Hospital Locations:

US Health Works Medical Group
25733 Rye Canyon Road
Valencia, CA 91355
Phone: +1 661.295.2500

Henry Mayo Newhall Memorial Hospital
23845 McBean Pkwy
Santa Clarita, CA 91355
Phone: +1 661.253.8000

Clinica Sierra Vista –
Frazier Mountain Community Health Center
704 Lebec Road
Lebec, CA 93243
Phone: +1 661.248.5250