Field Trips at SEDHYD 2019

1. **LAKE TAHOE BASIN – Monday, June 24, 8-hours (guided tour with box lunch). Cost: $104. Minimum of 22 people, max of 55 people.**

2. **UPPER TRUCKEE RIVER – Monday, June 24, 8-hour, (guided tour with box lunch). Cost: $109. Minimum of 22 people, max of 55 people**, Tour Guide: Terry Svetich, Professional Engineer and Water Rights Surveyor.

3. **LOWER TRUCKEE RIVER AND MARBLE BLUFF DAM - Monday, June 24, 8-hour, (guided tour with lunch available at additional cost). Cost: $71. Minimum of 22 people, max of 55 people,** Tour Guide: Jennifer Bountry, Professional Engineer, Bureau of Reclamation.

4. **CENTRAL SIERRA NEVADA SNOW HYDROLOGY – Friday Afternoon, June 28, 5-hours, (guided tour, snack provided). Cost: $63. Minimum of 22 people, maximum of 55 people.** Tour Guide: Jeff Anderson, Water Supply Specialist, NRCS.

5. **UC BERKELEY SAGEHEN CREEK FIELD STATION RESEARCH – Friday Afternoon, June 28, 5-hour, (guided tour, snack provided). Cost: $68. Minimum of 20 people, maximum of 55 people.** Tour Guide: Jeff Brown, Director, UC Berkeley Berkeley Berkeley, Central Sierra Field Research Station.

Learning Objectives:

- Learn about the latest scientific research conducted by the **University of California Davis Tahoe Environmental Research Center**. Learn about the famous clarity of Lake Tahoe and the annual State of the Lake Report, which is an annual summary of scientific research on a broad array of topics by multiple agencies to assess the lake's health.
- Learn about the regulation and operations of Lake Tahoe Dam from **Federal Water Master** to meet water rights demands. Water rights to Truckee River water from Lake Tahoe satisfy many downstream water demands, including municipal and industrial demands for the Cities of Reno and Sparks, agricultural demands, and wildlife/endangered species water demands.
- Learn about the state-of-the-art streamflow gaging station just downstream from Lake Tahoe Dam from the **USGS**. This gaging station accurately quantifies the flow and volume of water released from Lake Tahoe.
- Learn about two **USGS** research sites that serve to monitor the water quality of tributaries and to characterize fluxes of nutrients and other water-quality constituents near the Lake Tahoe shoreline.

Figure 1. Explore Lake Tahoe in 3-D at the Tahoe Environmental Research Center, Incline Village, NV. Photo courtesy of UC Davis Tahoe Environmental Research Center.

Figure 2. Truckee River downstream of the Lake Tahoe Dam.

Figure 3. Nested mini-piezometers used by USGS to collect pore-water samples beneath Incline Creek just upstream from Lake Tahoe.

Tentative Itinerary for full-day trip (8-hours)

- Depart Peppermill Hotel in Reno
- Stop at UC Davis Tahoe Environmental Research Center, Incline Village, NV
    - See interactive exhibits on Lake Tahoe's pristine water quality, ecology, and clarity. Hear how the science performed at the lake uses collected data to identify and evaluate processes that may influence water-quality changes and trends.
- Stop at the Incline and Third Creek water monitoring sites, Incline Village, NV
    - Hear presentations and see how the water-quality of Lake Tahoe inflows are sampled. See how the USGS collects and disseminates turbidity information on a near-real time basis. Hear how scientists are studying how fluxes of nutrients affect the growth of algae on the shore of Lake Tahoe.
- Stop at Lake Tahoe Dam and Truckee River gaging station just downstream of the dam.
    - Hear how the waters of Lake Tahoe are regulated and released to the Truckee River to meet the demands of many downstream water users. Hear how water rights determine how much water can be delivered to the many users.
    - Discussion on the role atmospheric rivers play in Sierra Nevada snow hydrology, water supply, and flood hazards.
    - See the state-of-the art gaging station that accurately measures flow information at the most upstream site on the Truckee River.
- Return to Peppermill Hotel

Mode of Transport: Motor coach will transport attendees from the conference hotel to the field stops. Mild walking along paved and unpaved ground will be required.

Presenters: Scientists and resource managers from University of California Davis, U.S. District Court Federal Water Master, and U.S. Geological Survey will present the tour.

Field Trip Leader: To be determined.

Water Resources and Sediment Management in the Upper Truckee River, Nevada

Full-Day Field Trip June 24
SEDHYD Conference, June 24-28, 2019, Reno Nevada

https://www.sedhyd.org/2019/

Figure 1. The Truckee River; photo from: https://hiveminer.com/Tags/truckee,water

Learning Objectives:

- Learn about the unique water resources management of Lake Tahoe and Truckee River and their importance to the many users downstream users
- Learn about sedimentation issues at one of the largest ski resorts in the United States
- Visit a 100-year old hydroelectric power plant
- Learn about stormwater programs along the Truckee River from small mountain towns to that of the City of Reno and how they all work together for the health of one watershed

Tentative Itinerary for one-day trip

1) Depart Peppermill Hotel in Reno
2) Stop at Tahoe outlet in Tahoe City, CA
    a. Tour the dam and hear from US Bureau of Reclamation
3) Squaw Valley Ski Resort
    a. Learn about the resort's BMPs to minimize sediment from ski runs
4) Town of Truckee
    a. Hear from a speaker on the implementation of Truckee's stormwater program and sediment total maximum daily load (TMDL)
5) Donner Lake—Lunch stop
    a. Hear from the Truckee River Watershed Council, a non-profit group implementing restoration and education
6) Boca Reservoir
    a. Discuss reservoir operation and the Truckee River Operating Agreement
7) Verdi Power Plant
    a. Speaker from the Truckee Meadows Water Authority
8) Oxbow Park, on the Truckee River
    a. Learn about the Truckee Meadows Stormwater Program and bank stabilization using rootwads from City of Reno and Nevada Department of Wildlife
9) Return to Peppermill

Figure 2. Map of the Truckee River

Mode of Transport: A motorcoach will transport attendees from the conference hotel to the field stops. Mild walking along paved and unpaved ground will be required.

Presenters: Scientists and managers from Bureau of Reclamation, local ski resort, City of Truckee, Truckee River Watershed Council, Truckee Meadows Water Authority, Nevada Department of Wildlife will present the tour

Field Trip Leader: Terri Svetich, professional engineer and water rights surveyor. Terri worked 30 years working for the City of Reno and Washoe County in stormwater, wastewater, and effluent applications.

Understanding Reservoir Sedimentation and Channel Dynamics to Inform Fish Passage at Marble Bluff Dam on Lower Truckee River, Nevada

Full-Day Field Trip June 24, 2019
SEDHYD Conference, June 24-28, 2019, Reno Nevada

https://www.sedhyd.org/2019/

Figure 1. Planview of Marble Bluff Dam facility near Nixon, NV about 5 miles upstream of Pyramid Lake.

Learning Objectives:

- Learn about the Pyramid Lake Paiute Tribal connection with the Lower Truckee River and tribal perspective on future restoration and sustainable fisheries goals
- Learn how the Lower Truckee River morphology has and continues to respond to a century of water withdrawal and fluctuating Pyramid Lake levels

- Learn first-hand how fisheries expert and dam operators accomplish fish passage operations in the midst of reservoir sedimentation and downstream channel incision
- Learn about past and proposed management actions to address sedimentation issues impacting fish passage and upstream land management
- Learn about geomorphology, fisheries, and river modeling tools used to develop the conceptual model and proposed future monitoring

Erik Horgen, FWS fisheries biologist, holds a spawning-age Pilot Peak Lahontan cutthroat trout at the Lahontan National Fish Hatchery Complex's Marble Bluff Fish Passage Facility near Pyramid Lake. Credit: USFWS

Tentative Itinerary for one-day trip

- Depart Peppermill Hotel in Reno
- Stop at Pyramid Lake Paiute Museum in Nixon, NV
    - See historical photos and hear from a tribal member on river history and restoration vision
- Stop at Marble Bluff Dam near Nixon, NV
    - Tour of facility, overview of operating system, and fish sampling and tagging process for native species the fish facility passes upstream including the endangered Cui-ui, threatened Lahontan Cutthroat Trout (LCT), and the Tahoe Sucker.
    - Observe reservoir sedimentation issues and discuss how sediment deposition has affected facility operations and fish passage as a whole
    - Discuss management strategies and future operation plans.

- Lower Truckee River delta at Pyramid Lake, NV
    - Have lunch at fishway entrance and hear about history of the Pyramid Lake fluctuations, fish passage challenges, reintroduction of the Lahontan Cuthroat Trout, and importance of landscape to the tribe
    - After lunch walk over to river delta and explore the dynamics of how the Lower Truckee responds to fluctuating lake levels and effect on floodplain and terrace formation
- Overlook stop at Numana Dam – the upstream extent of river incision response from lowering of Pyramid Lake
- Return to Peppermill Hotel

Mode of Transport: Motor coach will transport attendees from the conference hotel to the field stops. Mild walking along paved and unpaved ground will be required.

Presenters: Scientists and river managers from Pyramid Lake Paiute Tribe, Bureau of Reclamation, and USFWS will present the tour.

Field Trip Leader: Jennifer Bountry, Professional Engineer, Bureau of Reclamation

Snow Hydrology in the Central Sierra Nevada Range, California and Nevada

Half-Day Field Trip, Afternoon of Friday June 28
SEDHYD Conference, June 24-28, 2019, Reno Nevada

https://www.sedhyd.org/2019/

Figure 1. Central Sierra Snow Lab near Donner Pass, CA.

Learning Objectives:

- Learn about the University of California Berkeley research station near Donner Pass and its history of contributions towards the measurement of snow, spatial and temporal distributions of snowpack, and ground and surface water response to snow accumulation and ablation.
- Learn about the Natural Resources Conservation Service (NRCS) mission to measure, evaluate, and disseminate snowpack conditions and how the NRCS uses that information to forecast water supplies.

- Learn how the NRCS currently measures snow pack conditions and disseminates that information to the public on a near real-time basis.
- Learn about the long history of snow measurement at Mount Rose, the location where Dr. James Edward Church measured and recorded snow and weather conditions since 1905. Dr. Church invented a sampling device, the Mount Rose snow sampler) that could penetrate deep ice and snow to measure snow depth and water content. These measurements continue to be used to help predict spring and summer runoff.

Figure 2. Jeff Anderson with the NRCS stands beside the set of snow tubes used in 2017 to measure record Lake Tahoe area snow. Photo courtesy of NRCS.

Tentative Itinerary for half-day trip (5-hours)

- Depart Peppermill Hotel in Reno
- Stop at Central Sierra Snow Lab near Donner Pass, CA
    - See the snowpack research site where measurement instruments are tested, and snowpack parameters are measured for snow physics and hydrology studies.
- Stop at Mount Rose snow measurement site, NV
    - Tour the NRCS SNOTEL site to see how snow surveys are done. See the automated and manual snow measurement instruments.
    - Discussion on the role atmospheric rivers play in Sierra Nevada snow hydrology, water supply, and flood hazards.
- Return to Peppermill Hotel

Mode of Transport: Motor coach will transport attendees from the conference hotel to the field stops. Mild walking along paved and unpaved ground will be required. If winter 2018/19 is a record or near record snowfall year, snow may still be in the ground in late June. In that case, hiking boots or shoes will be more comfortable than street shoes.

Presenters: Scientists and resource managers from University of California Berkeley, Natural Resources Conservation Service, and U.S. Geological Survey will present the tour.

Field Trip Leader: Jeff Anderson is the Nevada Water Supply Specialist for the Natural Resources Conservation Service (NRCS) Snow Survey and Water Supply Forecasting Program. He spends winters measuring snow in the Lake Tahoe region and keeping the public informed about snowpack and water supply conditions for the Silver State. His summers are spent maintaining SNOTEL stations in the eastern Sierra and across Nevada.

NOTE TO PARTICIPANTS: Due to the amount of snow received by California from recent storms, it is anticipated that there will be a lot of snow on the ground during this field trip. Participants will be required to hike on snow and the ground will be sloping. The walk to the Central Sierra Snow Lab will be seven minutes from the parking area to the laboratory, and the walk to the Mount Rose SNOTEL site will be a few minutes. For those with experience walking on snow, the walks will be easy. Shoes suitable for walking on snow (such as hiking boots) are required and trekking poles are suggested for those who need additional stability while walking on potentially slippery surfaces. This field trip is not recommended for those who have concerns with stability and walking on slippery surfaces.

Exploring Data Collection and Hydrologic Modeling in an Experimental Mountain Catchment, Sagehen Creek Field Station, California

Half-Day Field Trip, Afternoon of Friday June 28
SEDHYD Conference, June 24-28, 2019, Reno Nevada

https://www.sedhyd.org/2019/

Figure 1. View from upper catchment of Sagehen Creek; photo from: https://sagehen.ucnrs.org/plan-your-visit/location/

Learning Objectives:

- Learn about what an experimental field station is and how it can benefit scientific research
- Learn about Sagehen creek and challenges of estimating sediment loads

Tentative Itinerary for half-day trip

1) Depart Peppermill Hotel in Reno
2) Arrive at Sagehen Creek Field Station, north of Truckee, CA
3) Short presentation on the dynamics of the Field Station
    a. Why it was chosen
    b. How it is used in hydrologic modeling
4) Walk to USGS streamgage on Sagehen Creek
    a. Discussion of HBN network
    b. Challenges of gaging and chemistry/sediment estimates
5) Tour of in-site research equipment
    a. Micromet
    b. Tree water use
    c. Ecosystem carbon and water cycling
6) Return to Peppermill

Mode of Transport: A small bus will transport attendees from the conference hotel to the field stops. Mild walking along paved and unpaved ground will be required.

Field Trip Leader: Jeff Brown is the director of the UC Berkeley Central Sierra Field Research Stations