**Tuesday, October 26, 2021**

**Modern Aggregate Gravel and Gold Mining in the Lower Yuba River with Field Evidence of the Historic Gold Mining Operation**

8:00 am – 4:00 pm

Leaders: Stephen Testa, CPG-06464 and Will Arcand

This field trip will be highlighted by a tour of active surface mining operations in and immediately adjacent to the historic Yuba Goldfields. Upstream hydraulic mining with high-pressure monitors blasted away at river cliffs, exposing gold nuggets and releasing over one billion cubic yards of tailings (averaging 22 feet thick). Massive dredges ripped placer gold flakes from gravels buried dozens of feet below the surface. Currently, sand and gravel are California’s most valuable industrial minerals, and voluminous deposits in the Lower Yuba River are desperately needed for a construction industry lacking adequate supplies. Placer gold is still collected in the surface mining process. The field trip will include modern extraction and reclamation activities, as well as a visit to a restoration project for salmonid habitat and flood control.

The lunch stop, Hammon Grove Park in Yuba County, California, provides a view into the rich past of Yuba County’s gold mining history. Encompassing just over 40 acres, Hammon Grove sits where Long Bar was located – an historic town that once flourished but has since been buried under the thick layers of hydraulic mining debris. The land and topographic features are a remnant of Wendell P. Hammon’s vast gold dredging operation, which originally contained 10,000+ acres. Search for forensic clues that are still visible in the park, such as the tell-tale signs of the quartz mining operation of days past. Extensive water canals traverse the park property and lead to the mine tailings brought forth from deep underground sediments. A one-mile hiking trail follows the circumference of the park, allowing visitors an opportunity to experience the essence of the Yuba County foothills.

Closed-toe shoes are suggested for minor walking on potentially uneven ground near Yuba River. Bring hats and sunscreen, although cooler temps and rain are possible in late October.

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**Monday, October 25, 2021**

**Mini-Workshops**

**Drones in Geology - Unmanned Aerial Vehicles for Site Assessment and Characterization**

7:00 am – 9:00 am

Drones are a tool that is giving the earth science industry a whole new capacity to evaluate a variety of geologic conditions and processes. If you haven’t added this to your geologist toolbox, then join us and jumpstart your effort by incorporating Unmanned Aerial Vehicles (UAVs) as a method for assessing and monitoring conditions across the landscape, spatially and temporally. This course will familiarize the participant with environmental and risk assessment applications of UAVs, and will provide an overview of the regulations governing their commercial use. We want to make it as easy as possible for you to begin using UAVs.

This course will introduce remediation, assessment, and site characterization applications of this tool. Topics will include the analysis of imagery from various types of sensors, including multispectral and thermal cameras, as well as photogrammetric measurements, magnetometer analysis, and the use of UAVs for sampling the physical environment (i.e., water, vapor). The regulatory landscape governing the commercial use of UAVs will also be covered, as well as the range of available platforms and UAV tools. The course is intended for students with limited background in the use of UAVs, who wish to begin using them, or who want to learn about considerations when hiring a contractor for UAV work. If time and conditions permit, students will have the opportunity to fly a small UAV.
Monday, October 25, 2021

Overview of Environmental Considerations for Hydraulic Fracking
7:00 am – 9:00 am
Leaders: Jim Jacobs, CPG-07760 and Stephen Testa, CPG-06464

If you are passionate about Hydraulic Fracking and want to not only understand the environmental ramifications but also take appropriate actions, then this is a mini-course for you. Both authors of the most recent published book Environmental Considerations Associated with Hydraulic Fracturing Operations (Wiley, 2019) will be presenting this two-hour workshop that explores some of the challenges of fracking, including an understanding of the economic, environmental and communication issues that are inherent with hydraulic fracturing with targeted approaches for helping to keep communities safe. You will hear an environmental economic assessment of the winners, losers, and unintended consequences of hydraulic fracturing operations. In order for participants to get as much usable information as possible, the instructors will provide an overview of the historical development of hydraulic fracturing and the technology currently employed. Risk, prevention, and mitigation factors associated with fracturing will be identified and discussed. Selected legal cases, regulatory issues, and economic studies will add a reality check to on-the-ground situations that are happening around us. Selected updated audit checklists that provide critical information and documentation relating to today’s environmental conditions associated with fracking operations and its impact on a community will be provided for your immediate use.


Tuesday, October 26, 2021

Meeting Your Wildfire Mitigation Planning Requirements for SB901
7:00 am – 9:00 am

This mini-workshop will jumpstart business leaders and consultants interested in developing wildfire mitigation workplan(s) within their area or jurisdiction in compliance with California Senate Bill SB901. Your time will be well spent because we will teach you by example. One to two large utility providers will share their experiences and workplan approaches that are needed to address rural sector challenges. Non-insulated aboveground transmission lines, distributed energy resources (DER), and maintaining right-of-way as well as mitigating wildfire liabilities will be focused on by the leaders of this mini-workshop.

Add to Your PFAS Toolbox
7:30 am – 9:30 am
Leader: Taryn McKnight, Eurofins Environment/Test America

There are a lot of moving parts to a PFAS project. This highly interactive workshop will enhance project opportunities through improvements made in project planning, building defensible data, and satisfying regulatory requirements. Make sure you come with a working knowledge of PFAS because this course is not an introduction. We will add to your existing PFAS toolbox with current state and federal laws and the legal obstacles for industry and regulatory communities. Case studies that cover the initial PFAS investigation, the regulatory framework that is currently operating, sampling considerations, the specific analyses and analytes that you will request from the laboratory, and ultimately how you will use the reported data. QA/QC will be specifically discussed with respect to sample collection procedures. Our conversation will be enhanced by the contributions of an attorney, consultant, state regulator, and chemist who will each push your abilities and knowledge in dealing with PFAS issues. Your confidence in addressing PFAS projects will be immediately strengthened by this mini-workshop.

Data gathering is a part of a sound wildfire mitigation plan. Information and discussion will include remote sensing methods like cameras and weather stations and microgrid placement of DER to strategically support areas within zones of power outage. DER for rural areas could include both utility and residential scale energy storage that may be tied to various renewable energy sources (i.e., solar PV, wind turbines, other). Participants will walk away with contacts and a framework for writing a wildfire mitigation workplan and identify the role earth scientists have in safeguarding communities from extreme wildfire conditions.