

February 2022



LOS ANGELES BASIN GEOLOGICAL SOCIETY

February 24th (Thursday) – 12:00 Noon

This will be a virtual (on-line) meeting using ZOOM. See below for instructions.

John Oswald, Sr. Engineering Geologist, Cal. Geol. Survey

Post-wildfire geologic hazard assessment of the 2021 Bond Fire and hillslope response to significant storms during year-one of the burn scar recovery

Abstract

The Bond Fire occurred December 2 through 20, 2020 and burned a total of 6,681 acres within and adjacent to the Santiago Canyon area of the Santa Ana mountains in Orange County, California. CALFIRE deployed a Watershed Emergency Response Team (WERT) to identify and evaluate post-fire geologic hazards to residents downstream of the Bond Fire burned area. The WERT identified values at risk (VAR) that were rated low, moderate and high risk to property and life safety from post-fire geologic hazards (increased incidence of debris flows, flooding, and rockfall). The WERT identified 64 VAR within and downslope/downstream of the burned area. Seventy-seven percent of the VAR are identified as having a moderate to high life-safety threat with nineteen VAR identified as a high life-safety threat. The majority of the high life safety hazard VAR are located in Silverado Canyon (including White and Wildcat Canyons) with a lesser amount in Williams and Modjeska Canyons.

Following data collection, WERT staff attended discussions with the Orange County Bond Fire Debris Flow Coordination Group including Orange County Public Works (OCPW), Orange County Sheriff's Department (OCS), National Weather Service (NWS),

California Office of Emergency Services (CalOES) and other County departments. The discussions were called to determine year-one rainfall thresholds for warning and evacuation of identified VAR.

Three significant storms impacted the burn scar during the first year following the Fire in January, March and December of 2021. The three storms events produced precipitation that met or exceeded threshold values for debris flow initiation. The California Geological Survey (CGS) deployed staff to document post-storm response and evaluate if threshold recommendations to emergency management agencies were protective of public safety.

Shortly prior to the December 2021 storm event, CGS met with the Orange County Bond Fire Debris Flow Coordination Group again to discuss year-two thresholds for the Bond Fire. Based on prior storm monitoring showing thresholds were protective of public safety and an evaluation of the poor vegetation recovery across the burned area CGS recommended the year-one thresholds not be raised and be maintained for year-two emergency planning.

On December 14, 2021 a strong storm impacted the Bond Fire burn scar. The storm event followed a National Weather Service (NWS) flash flood warning with predicted one-hour rainfall rates at, or exceeding, threshold levels set for predicted initiation of debris flow

impacts. This presentation: 1) documents impacts observed and reported across the Bond Fire burned area in response to the December 14, 2021 storm event, 2) compares those impacts to the previous storms that occurred in January and March of 2021, 3) provides estimates of the volume of debris generated from two small catchments by storms for year-one storms and 4) evaluates the timing of impacts in relationship to the recorded rain gage data. These observations are used to approximate the expected recurrence interval of the storm intensities recorded using empirical rainfall data from National Oceanic Atmospheric Administration (NOAA) Atlas 14 precipitation frequency estimates.

slope stability conditions for timber harvest projects and road engineering. Since 2017, John has worked on post-wildfire geologic hazard evaluations for Watershed Emergency Response Teams deployed by CALFIRE as a technical lead and team member. Post-wildfire evaluations include: Thomas Fire, Atlas Fire, Carr Fire, Woolsey-Hill Fire, SCU Complex, Eldorado Fire, Apple Fire, Snow Fire, Bond Fire, Dixie Fire.

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Speaker's Biography



John has been a Senior Engineering Geologist with the California Geological Survey (CGS) in the Eureka office since 2018 and with CGS since 2013. John holds a Bachelor of Science in Geology from Humboldt State University, and a Master of Science in Geology from the University of Nevada, Reno. John is licensed in California as a Professional Geologist and a Certified Engineering Geologist. During the last 27 years, John has performed paleoseismic Investigations, site geologic hazard investigations for civil development, geologic mapping, landslide evaluations including regional and site-specific slope stability analyses. John has spent the last 22 years primarily working with the timber industry evaluating

When:
Thursday, Feb. 24th, 2022
12:00-1:00

To Join the Talk:

To join the talk, please paste the following ZOOM meeting link into your web browser. You should not need to use the password:

<https://csulb.zoom.us/j/89781400229?pwd=d3JOc2tQZlEyVGtSbkJzMHdQZFZEOU09>

Meeting ID: 897 8140 0229
Passcode: 441908

Please download the ZOOM meeting app before the start of the talk, if you have not already done so.

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If you don't know, please check via the PSAAPG website:

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Please inform a LABGS Board member if you have a pertinent announcement.

Notes:

Last month we had a near record ZOOM meeting attendance with 45 participants.