

Effects of pile burning in the Tahoe Basin on soil and water quality

Principal Investigators: Ken Hubbert and Matt Busse

Annual Accomplishments Update (October 1, 2008-September 30, 2009)[†]:

Work completed:

- Seventy-four plots (0.1 ha) were inventoried for pile density (number of piles per acre), ground coverage per acre, pile size (714 piles total), and thinning prescription (basal area reduction). The plots were randomly selected throughout the Tahoe Basin.
- Temperature-recording thermocouples were installed beneath 15 piles. We now have 24 piles of assorted sizes and fuel types instrumented for measuring soil temperature. The thermocouples are located at several depths beneath the center of each pile, and a subset of piles have additional thermocouples extending from the center of the pile to the outer perimeter to capture spatial variation during burning.
- Surface and subsurface water collectors were installed downslope from several piles at each site for quantifying post-fire nitrate, phosphate, and sediment release.
- The total fuel load of each instrumented pile (kg/pile) was weighed by fuel size class and decay class.
- Pre-burn soil water repellency, soil carbon and nitrogen concentrations, and microbial activity were measured. Data analysis is in progress.

Anticipated work for Oct. 1 to Dec. 31, 2009

- Coordinate burning of all instrumented piles. This will involve turning on 120 data loggers within a few days of the anticipated burn dates. We will have a crew of 4 scientists and professionals travel to the Basin immediately before burning to complete necessary tasks and to record observations during burning.
- Post-fire sampling of surface and subsurface water samples.
- Post-fire collection of all dataloggers will begin a minimum of two weeks after burning, which will allow us to capture the entire post-burn heat pulse. All data will be downloaded, and computer analysis of maximum temperatures and heat durations will begin.
- Post-fire sampling for soil chemical and biological changes beneath instrumented piles (weather depending).
- Commence laboratory analyses of post-burn water and soil samples.

[†] This document is an intermediate progress report, not a final report; consequently, any results should be considered preliminary and should not be cited. Please contact the principal investigators or the Tahoe SNPLMA Science Program Coordinator if you have questions.