

## **Lake Tahoe Basin Management Unit Monitoring Strategy for the Angora Burn Area**

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June 2008

In the immediate aftermath of the Angora Fire, the Lake Tahoe Basin Management Unit moved quickly to determine monitoring and assessment needs related to impacts on US Forest Service lands, as well as consequent effects to downslope and downstream resources. Monitoring questions and strategies were identified which would provide essential information to evaluate the impacts of the fire on forest resources and establish a baseline for evaluation of natural recovery and restoration efforts. These monitoring strategies are currently being evaluated as part of planning for the Angora Phase III Restoration Project and may still be refined as part of the analysis process for this project currently underway. The current monitoring strategy is described in this document. The strategy focuses on two types of monitoring:

- 1) Implementation monitoring: To determine if restoration actions implemented during the two phases of mitigation actions of the Burned Area Emergency Response (BAER) were implemented according to design and contract specifications. This includes the fire suppression rehabilitation (Angora Restoration Phase 1), and BAER team recommended actions (Angora Restoration Phase II, primarily hand mulching and hydromulching). To determine whether design features are implemented as prescribed for the Angora Restoration Phase III project (may include the following management activities; forest regeneration, fuels reduction, road and trail retrofits, and channel restoration).
- 2) Effects/effectiveness monitoring: To evaluate (i) fire behavior and impacts in [fuels reduction] treated and untreated areas and (ii) short- and long-term recovery of the Angora Burn Area. The latter is focused on evaluating the effectiveness of Phase 1 and 2 BAER treatments, provide information to help determine which long-term restoration actions will be needed (Angora Restoration Phase III) to move the Angora Burn Area back to desired conditions, and evaluate effectiveness of those long term restoration actions.

These initial efforts do not include the identification or evaluation of new research opportunities to answer more general questions regarding fire impacts to ecosystems in the Basin, although we recognize the potential for such research opportunities, because these lie outside our immediate needs and our available funding. LTBMU's Program Managers are utilizing existing research to help guide our decisions regarding appropriate monitoring efforts to initiate; the most comprehensive source consulted is the series compiled by the Rocky Mountain Research Station of the US Forest Service (RMRS-GTR-42, volumes 1, 2, 3, 4, and 5, which synthesize existing research in regards to

wildfire effects on ecosystems as it relates to air, soil, water, biological and cultural resources, respectively).

We were able to re-prioritize a small amount of our FY07 base appropriations to address the immediate monitoring needs, albeit at minimal levels. In 2008 and beyond monitoring is expected to be funded through a combination of appropriations request (short term project level implementation and effectiveness monitoring) as well as funds available from SNPLMA for above project level monitoring (long term project effectiveness and desired condition monitoring).

Those monitoring studies initiated, or in development, by LTBMU and/or Region 5 USFS staff, are identified in Table 1, together with the monitoring questions they are designed to answer. These include strategies to evaluate (i) the condition of Angora Creek, (ii) upland soil quality, (iii) debris flow/erosion potential, and (iv) vegetation / habitat recovery.

In addition to the studies undertaken by the Forest Service, a small number of studies by other organizations have been granted area access permits to allow researchers and other agencies' staffs to conduct their own research and monitoring efforts and/or to assist the USFS in its data collection efforts. Conditions were identified in these area access permits to ensure that the participants fully understand the hazards and risk to personal safety in the burn area, as well as protect further damage to resources within the burn area. To date, all area access permit forms that have been submitted have been approved.

Although we have been able to accommodate the proponent-funded requests that have been submitted, the majority of requests submitted to the LTBMU have been for new funding from us and we simply have not been in a position to contribute. The long term monitoring strategy will be defined as part of the environmental analysis conducted for the Angora Fire Restoration Project.

We expect that the funding for research activities will be obtained independently by researchers from the SNPLMA research and monitoring funds coordinated through the Tahoe Science Consortium and/or from other outside funding sources. Our staff will provide input, when requested, regarding the relevancy of proposed research to our long-term management goals and regarding any cooperative or collaborative participation by our staff. Our staff will work with those researchers who obtain outside funding to provide the area access permit and to coordinate their research efforts with other activities underway in the Angora Burn Area.