

Water Quality Implications of the Mustang Complex and Halstead Fires, Idaho

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Portions of Idaho experienced extreme fire behavior during the summer of 2012 as a result of below-normal snowpacks, early spring runoff, and low fuel moisture. The Mustang Complex and Halstead Fires, both started by lightning in late July 2012, burned nearly 475,000 acres within four sub-basins of the Salmon River Basin, primarily on the Salmon-Challis National Forest. Burned Area Emergency Response (BAER) assessments for these fires predicted the hydrologic response, identified values at risk, and recommended treatments to mitigate risks to critical values including life and safety, roads, trails, structures, native plant communities, critical habitat, and private residences. Post-fire erosion and runoff processes in this area are related to storm patterns, geology, topography, and burn severity. These fires are likely to have considerable impacts on sediment and turbidity in the Salmon River and its tributaries as a result of runoff and erosion during high intensity summer thunderstorms. Flash floods and debris flows are typical consequences of fires in this area, contributing a substantial portion of the sediment yield into the river system, shaping the landscape, and providing woody debris and sediment that is critical for maintaining salmonid spawning designated uses. Historical observations from fires in this area suggest that post-fire sediment influxes cause drastic, but temporary increases in stream channel fine sediments at depth, and the occurrence of these types of events can be more a function of storm pattern than burn severity. The Mustang Complex and Halstead Fires provide monitoring opportunities to better understand these effects as well as the effectiveness of BAER treatments.