Rabbit Creek: Geochemistry of an Alkaline Deeply Sourced Hot Spring with Abundant Microbial Mats

Jordan Foster, LEGEND Lab, Department of Chemistry & Geochemistry, Montana Tech of the University of Montana
Shanna Law, LEGEND Lab, Department of Chemistry & Geochemistry, Montana Tech of the University of Montana
Mallory Nelson, LEGEND Lab, Department of Chemistry & Geochemistry, Montana Tech of the University of Montana
Georgia Dahlquist, LEGEND Lab, Department of Chemistry & Geochemistry, Montana Tech of the University of Montana
Alysia Cox, Department of Chemistry & Geochemistry, Montana Tech of the University of Montana

The Rabbit Creek hot springs in Yellowstone National Park are located along the edge of the Mallard Lake Dome in the Midway Geyser Basin. The principal source, Rabbit Creek hot spring, contains high concentrations of arsenic and antimony relative to hot springs throughout the area. This study investigates the water chemistry of the Rabbit Creek hot spring outflow, geologic explanations for the distinct differences in hot spring compositions of the area, and the implications for the abundant thermophilic microbial mats present in the outflow. The distribution of the microbial mats may be related to the concentrations of arsenic and antimony throughout the outflow. In addition, changes in the microbial mats related to temperature and sulfide concentrations are discussed. This study aids in our understanding of the hot springs in the Rabbit Creek area and of the potential effects of the Mallard Lake Dome on the Midway Geyser Basin.