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## **STORMWATER IN SILVER BOW AND BLACKTAIL CREEKS: IMPLICATIONS FOR THE MICROBIAL COMMUNITY**

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Silver Bow and Blacktail Creeks are the headwaters of the Clark Fork River and are impacted by historic mining activities in the area. Although metal concentrations of runoff into the creeks are monitored and reported in previous studies, the composition and diversity of microbial communities are unknown. We seek to identify the microbial communities present and investigate changes in community structure due to stormwater impact, thereby determining and monitoring the overall environmental health of the system. We sampled five sites in Silver Bow and Blacktail Creeks in Butte, MT for chemical and biological analyses during high stormwater flow events. Water samples were collected for analysis of major anions and cations, metal concentrations, dissolved inorganic and organic carbon and carbon isotopes and hydrogen and oxygen isotopes in water. In situ measurements of pH, temperature and dissolved oxygen were taken at the time of sampling. Redox sensitive species - total dissolved sulfide, dissolved silica and ferrous iron - were measured using wet chemical tests and field spectrophotometry. Concurrent biological samples were collected for microbial identification and diversity (DNA), activity (protein), quantity (cell counts) and culturing. Overall microbial results are in progress, but water chemistry data provide clues about microbial habitats available in the creeks. Results upstream in Butte will be compared to downstream areas such as Durant Canyon and the Warm Springs Settling Ponds. The relationship between water chemistry, microbes, and overall ecosystem health can be characterized by deciphering how water chemistry affects microbial activity and vice versa.