USGS NSF GRIP Opportunity

Point of Contact Name:	JoAnn Holloway
USGS Center:	Crustal Geophysics and Geochemistry
Project Title:	Trace metal biogeochemistry in a mining-impacted watershed
Project Hypothesis or Objectives:	The goal of the project is to better understand the mobility of trace metals, particularly arsenic and mercury, originating from historical mining areas in the East Fork South Fork Salmon River (EFSFSR) watershed. This stream has been listed under the EPA National Priority List for elevated trace metals in water and stream sediment. Other stakeholders include the Nez Perce Tribe, the USDA Payette National Forest, and Midas Gold Corporation. All stakeholders have been actively engaged in aspects of the USGS study. The intern project will add a component that will ideally help to better understand the mobility of trace metals associated with historical mining areas in the upper watershed. This information will be used to advise stakeholders on landuse management decisions.
Duration:	6-12 months
Internship Location:	Lakewood, CO
Area of Discipline:	Environmental Health Hydrology Minerals
Expected Outcome:	The intern will have a project that will enhance current USGS research directions in isotope geochemistry, watershed characterization, and toxicology of metals in fish and invertebrates. The student will be guided through a study that can form the basis for a master's thesis, or a component of a doctoral thesis. The intern will be an important component of the overall project, and their study outcome should be publishable in a peer-reviewed journal.
Special skills/training Required:	The student must have demonstrated laboratory experience, including maintaining and using pH meters, water and sediment sample handing, and careful record keeping. This internship is not intended to substitute for coursework in chemistry or geochemistry.

	Previously acquired skills in ArcGIS could also be incorporated into the project.
Duties/Responsibilities:	The intern will develop a project in cooperation with the project chief (Holloway) to build upon work conducted in the EFSFSR watershed on watershed-scale biogeochemistry, isotope geochemistry of sulfur and mercury, or biological uptake of trace metals. This work will involve both field and laboratory work. The field and laboratory components should fit within the intern's goals for graduate work, and will become part of the intern's thesis research. The laboratory component may involve sample preparation using wet chemistry, analyzing isotopic composition of mine tailings and stream sediment under supervision, or conducting kinetic experiments to determine release rates of trace metals from sediments under simulated field conditions. If the student has experience using GIS, the project can incorporate spatial data management.
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