Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Glacier National Park and the Flathead Basin Threatened by Coal Mine Development: Sediment Transport and Deposition Associated with Metals Contamination, Sequestration of Se and Hg in the Aquatic Food-web, and Riparian Habitat Evaluation

Type of Project: Research
Discipline: Natural Resources
Funding Agency: National Park Service
Other Partners/Cooperators: University of Montana, Flathead Lake Biological Station
Effective Dates: 7/1/2008 – 6/30/2010
Funding Amount: $150,000

Investigators and Agency Representative:
NPS Contact: Jack Potter, Glacier National Park, West Glacier MT 59936; 406-888-7821; Jack_potter@nps.gov

Investigator: Richard Hauer, Flathead Lake Biological Station, University of Montana 311 Bio Station Lane, Polson, MT 59960-9569; 406-982-3301 x232; ric.hauer@umontana.edu

Project Abstract:
To protect the interests of the United States, we need to conduct focused Environmental Assessment studies to clarify the existing environmental condition, the nature and breadth of the threat, and the level of risk associated with the proposed mine. Any assessment must be comprehensive and must be sufficiently broad in scope to address not only the Lodgepole/Foisey Mine being proposed currently by Cline Mining, but also be capable of addressing future mining proposals (including that of hard rock minerals), oil or gas development, or any large scale or industrial development of natural resources that would affect water quality, fisheries or wildlife of Glacier National Park or the Flathead River-Lake Ecosystem. All analyses will be conducted within the scope and processes analysis of the USA Federal Clean Water Act and the Federal Endangered Species Act.

Scope of Vital Components

TASK 1: ***Sediment and Metals Assessment***
Goal: Provide a baseline of deposited sediment and metals data with special reference to Se and Hg that allows assessment surface waters of the North Fork of the Flathead River including waters into Glacier National Park. Analyses shall include risk analysis of the proposed Lodgepole/Foisey coal mine in the Canadian Headwaters of the North Fork of the Flathead River and potential affects on Glacier National Park.

Objective: Measure depositional sediment and associated Se and Hg from the Canadian North Fork including the sediment type, size distribution and mineralogical composition of the inorganic portion, with specific comparisons between Flathead and Elk River sediments.

TASK 2: ***Se and Hg Assessment of the Stream and River Food-web***
Goal: Provide a baseline of Se and Hg contamination of the stream and river aquatic life. These data allow assessment of aquatic life accumulation of these important metals in food-webs known to create specific human health problems. Analyses shall include risk analysis of the proposed Lodgepole/Foisey coal mine in the Canadian Headwaters of the North Fork of the Flathead River and potential affects on Glacier National Park, the US reaches of the Flathead River. Sites on the Elk River will be used as direct comparison assessment sites.

Objective: Measure and assess the Se and Hg contamination sequestration by aquatic life in water associated with the Lodgepole/Foisey coal mine site, other coal deposits that might be exploited in the future, and ground and surface waters of the North Fork of the Flathead River.

TASK 3: ***Integrated River Corridor and Habitat Assessment***

Goal: Provide a baseline and characterization of the transboundary North Fork river and riparian habitats used by aquatic and terrestrial species. Assessment shall include risk analysis of the proposed Lodgepole/Foisey coal mine in the Canadian Headwaters of the North Fork of the Flathead River and potential affects on Glacier National Park, the US reaches of the North Fork Flathead River. This portion of the project integrates water quality, suspended sediment flux, aquatic life use, fisheries and wildlife in a geospatially explicit GIS context.

Objective: Using a combination of aircraft and satellite-based remote sensing coupled with groundtruth surveys, provide analysis of groundwater-surface water interactions, the hydraulic and habitat character of the river system, and classification of riparian habitats from the headwaters of the North Fork (including the Lodgepole/Foisey mine site) through the boundary waters and along the length of the North Fork in Glacier National Park.

Outcomes with Completion Dates: Annual reports will be completed each year that funding is awarded and the report for this project will be due March 31, 2009.

Keywords: Coal Mine Development, environmental assessment, sediment transport, habitat assessment, Glacier National Park, University of Montana, Flathead Lake Biological Station