University of Alaska Southeast

"Lemon Creek Natural Sediment Assessment"

FY 03 Grant Award $23,508 *Project Match $17,681*

Description and Purpose:
This study was designed to demonstrate fluctuations in suspended sediment concentration in Lemon Creek dependent upon active glacial processes, such as supra-glacial lake drainage. Researchers proposed to determine the effective magnitude of these fluctuations; and define the impact of glacial activity on Lemon Creek sediment and discharge variability throughout the year. Year-round sampling for suspended sediment concentration (SSC) coupled with continuous discharge measurements and observation of active glacier hydrologic processes will improve community understanding regarding the effects of glacial activity on water quality and provide a basis for Lemon Creek Total Maximum Daily Load (TMDL)/Best Management Practices (BMP) revision. This project will aid a USGS proposal to monitor Lemon Creek discharge and sediment by providing more frequent sediment sampling and glacial observation, while determining natural sediment concentrations characteristic to active processes of Lemon Glacier.

Goals of this project included:
-Defining natural sediment concentrations and fluctuation with respect to seasonal discharge variability and active glacial processes
-Determining the relative amounts of natural sediment contribution vs. anthropogenic sediment pollutant along Lemon Creek
-Recommending TMDL revisions or removal of Lemon Creek from the impaired waterbody list.

Evaluation of Environmental Benefits:

Lemon Creek sediment aggradation, bank erosion, and flooding problems dramatically alter the surrounding environment, challenge resident and anadromous fish populations, and threaten local homes and businesses. The ultimate goal of this project is to provide local agencies with information crucial to amending current BMPs for Lemon Creek as well as to provide science-based insight to groups working toward designing and implementing reasonable restoration and protection policies and projects on Lemon Creek. By meeting these goals, researchers anticipate improvements to fish and invertebrate habitat, public safety, and community understanding of active glacial processes on stream sediment levels.

Deliverables for this project include:
- A DEC approved Quality Assurance Project Plan (QAPP)

- A press release highlighting Lemon Creek research and UAS cooperative agreements with local agencies and community groups for protection and restoration of local watersheds.
- A report summarizing all project findings and identifying all developed databases
  - -Seasonally variable sediment levels relative to natural processes, including glacial activity, in Lemon Creek.
  - -Definition and relative impact of anthropogenic vs. natural sediment sources of the Lemon Creek watershed.
  - -Detecting historic glacial outburst floods using a paired watershed approach (Lemon Creek and Gold Creek, southeastern Alaska.)
- Data entry into databases.
- A set of monitoring stations for continued evaluation of environmental changes in the Lemon Creek watershed area as it continues to be developed and/or altered by flood mitigation or bank stabilization projects.
- Recommendations to either amend TMDLs or remove Lemon Creek from the impaired waterbody list based upon year-round natural sediment inputs.

Project Contacts

Grantee Project Manager
Shannon Seifert
Env Sciences Laboratory Tech / Supervisor
University of Alaska Southeast
11120 Glacier Highway
Juneau, AK 99801
Ph: 907. 465-6523 fax: 907. 465-6406
E-mail: shannon.seifert@uas.alaska.edu

DEC Project Manager
Kent Patrick-Riley, Environmental Specialist
DEC, Air and Water Quality
555 Cordova St.
Anchorage, AK 99501
Ph: 269-7554 fax: 269-7508
E-mail: kent_patrick-riley@dec.state.ak.us