

On February 26, personnel from the NSSC, the Vermont Soil Staff, and the U.S. Fish and Wildlife Service's Missisquoi National Wildlife Refuge used a mobile ground-penetrating radar (GPR) platform to complete bathymetric and radar facies surveys across Lake Champlain's St. Albans Bay in northwestern Vermont. In a one-day period, more than 39 kilometers of continuous, geo-referenced bathymetric measurements were collected with GPR across ice-covered St. Albans Bay. This effort resulted in over 161,000 georeferenced water-depth measurements. The collected radar data will be used to identify differences in substrates and subaqueous landscape units based on bathymetry, slope, landscape shape, sediment type, and geographical location. Knowledge of the near-shore, submersed soil-landscapes of Lake Champlain and its bays is vital to deal with resource concerns that include water quality, sedimentation, eutrophication, and toxic algae blooms in Lake Champlain. A goal of this investigation is to develop alternative field methods and procedures for the rapid identification, classification, and delineation of subaqueous soils and landscapes. Also participating in this project are the University of Vermont, Vermont Geological Survey, and Vermont Department of Environmental Conservation.



Working with the staff of the U.S. Fish and Wildlife Service's Missisquoi National Wildlife Refuge, Jim Doolittle (Research Soil Scientist, USDA-NRCS-NSSC) points out some subsurface "anomalies" on a radar file that may well represent buried Native American cultural features along the banks of the Missisquoi River.

In addition, GPR was used to locate possible buried, Native American cultural features in an area that will be impacted by a streambank stabilization project near the confluence of two streams in the Missisquoi National Wildlife Refuge. In recent years, seasonal flooding has acutely eroded large sections of the stream banks. An erosion control project is planned that will replace soil materials from a 12 x 80-foot area with rip rap stone. Buried Native American cultural features have been observed along the eroding banks of the two streams. While these proposed erosion control measures will help to ensure the preservation of this important Native American cultural site, it is vital to know in advance the presence of any buried cultural features that will be

impacted by soil removal and to take measures to protect them. The information derived from the GPR surveys will be used by the archaeological team monitoring the excavation work in the construction phase of the stabilization project.