

## IJC Short Term Monitoring Final Report (Aug 2011)

### Executive Summary

Missisquoi Bay, located in the northeastern portion of Lake Champlain, historically has the highest in-lake Phosphorus concentrations of Lake Champlain. Frequent blooms of cyanobacteria in Missisquoi Bay during the summer months compromise the recreational value of this resource to Québec and Vermont residents as well as tourists from other locations around northeastern North America. The International Joint Commission tasked the Lake Champlain Basin Program to initiate a two-year monitoring program of secondary tributaries to the Missisquoi River, the largest tributary to Missisquoi Bay and among the largest tributaries to Lake Champlain. This program was designed to complement and support the Long-Term Monitoring Program, in which monitoring data are collected for over 20 years from all of the major tributaries in the Lake Champlain basin. In this study, water chemistry monitoring stations were established near the mouth of five tributaries (Hungerford Brook, Black Creek, Tyler Branch, Trout Brook, and Mud Creek) to collect nutrient (Phosphorus, Nitrogen), sediment (Total Suspended Solids) and other analytes (i.e. metals, chloride, alkalinity) to support ongoing research in this watershed. A total of 23 high-flow and 6 low-flow samples were collected from each of the five tributaries. An additional 54 samples were collected on Hungerford Brook by an automated sampler (ISCO) to augment the sample size for total Phosphorus and total suspended solids on this tributary. Monitoring data were reduced to high-flow, low-flow, and Spring 2011 flood events. Results from the study indicate that among the five tributaries, Hungerford Brook yielded the greatest mean concentrations for nearly all parameters measured in this study, including flow-weighted concentrations of total Phosphorus, total Nitrogen, and total suspended solids.