

Spatial Distribution of Metals in Lake Bottom Sediment at a Pulp Mill Effluent Discharge Site, Pictou Co. NS



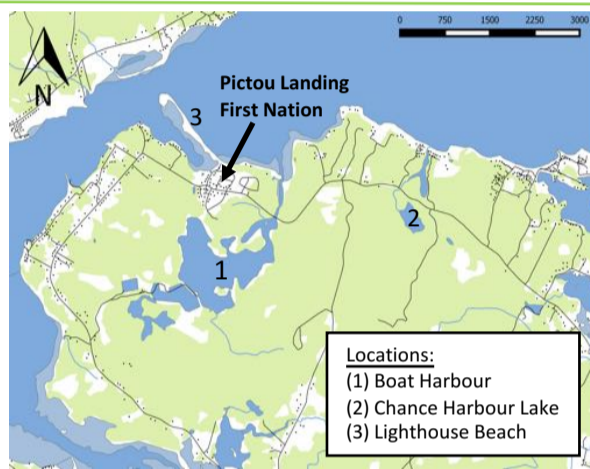
Baillie Holmes, Kirklyn Davidson, Dr. Ian Spooner

Site History

Boat Harbour in Pictou County, Nova Scotia was an estuary until around 1970 when it was dammed and transformed into a waste-water treatment site for a bleached kraft pulp and paper mill. Pulp effluent can contain organic compounds, metals, dioxins and furans. After 50 years of receiving waste, Nova Scotia Lands (a provincial crown corporation) is coordinating the remediation of the site and removal of contaminated sediment.

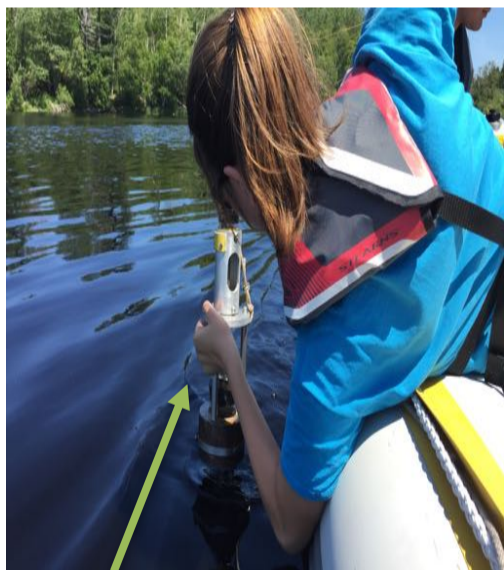
Metals, Legacy, and Background

In order to ensure the best methods are used in the remediation of the contaminated sediment, we need to understand: the *concentration* of metals in the sediment, *where* they are most concentrated, and what *proportion* of the metals have come from the effluent as apposed to natural or long-distance sources.



Community Engagement

We are working with two youth from Pictou Landing First Nation to assist them with a mini environmental assessment on nearby Lighthouse Beach.



Cores were taken using a gravity coring device-

Then split in half and sampled

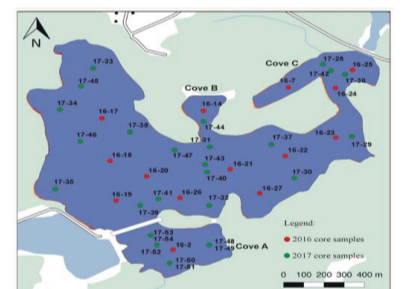
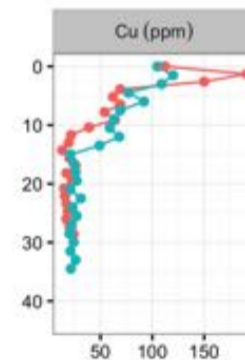


High organic post-mill sediment

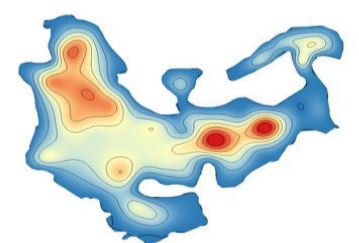
Pre-mill marine silt

Answering the metal questions

(1) Take sediment cores from Boat Harbour and reference site, Chance Harbour Lake



(2) Use X-ray fluorescence on samples taken from Boat Harbour to obtain *concentrations*



(3) Map metal concentrations to describe *where* metals are concentrated

(4) Compare concentrations in Boat Harbour sediment to nearby Chance Harbour Lake sediment to determine *proportion* of mill influence on sediment

