



CanNorth

# WOLLASTON LAKE

## Athabasca Working Group Environmental Monitoring Program 2007

The Athabasca Working Group (AWG) environmental monitoring program has been going on since 2000 and provides Northerners the opportunity to test the environment around their communities for contaminants that could come from active uranium mining and milling operations. Contaminants can potentially be spread by water flowing from lakes near the uranium operations, and small amounts may also be spread through the air. In order to address public concerns, lakes, rivers, plants, wildlife, and air quality are tested in northern Saskatchewan near the communities of Wollaston Lake, Uranium City, Black Lake, Stony Rapids, Fond-du-Lac, and Camsell Portage.



George St. Pierre

Selection of the types of plants, fish, and animals sampled, the locations sampled, and the sample collections were carried out by, or with the help of, northern community members. The purpose of this brochure is to inform the public of the results from the 2007 environmental monitoring program completed in the Wollaston Lake area.



The goal is to protect a remote living community with a proud history and to safe guard the wildlife that lives in the environment. This area is well known for its exciting fishing and attracts adventurers from far and wide. Wollaston Lake is also the largest lake known to naturally drain in two directions.



Beverly Herd Caribou

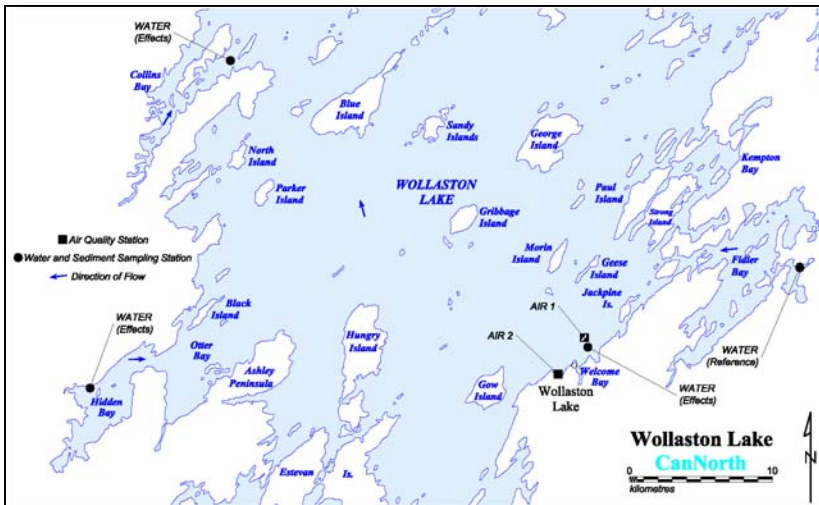


Ryan Washenfelder

## STUDY AREA

Water, sediment, and fish are sampled from “reference” and potential “effects” sites in Wollaston Lake. Fidler Bay is referred to as the “reference” site because there is no influence from uranium mining. Welcome Bay, Hidden Bay, and Collins Bay are referred to as the potential “effects” sites because they could possibly receive contaminants from uranium operations on the west side of Wollaston Lake.

Air quality is monitored at two locations near the communities at Wollaston Lake. Similarly, plants and wildlife samples are collected each year near the communities.



## KEY PARAMETERS

The focus is on certain contaminants related to uranium operations that are of concern to human and environmental health. These include: copper, lead, nickel, molybdenum, zinc, radium-226, uranium, selenium, and arsenic. All of these parameters occur naturally in the environment and in parts of northern Saskatchewan they can sometimes be found in large amounts. To help establish whether the key parameters found in samples are naturally occurring or whether they are from uranium operations, the amounts measured are compared: 1) between “reference” and potential “effects” sites, 2) between years, and 3) to available guidelines.

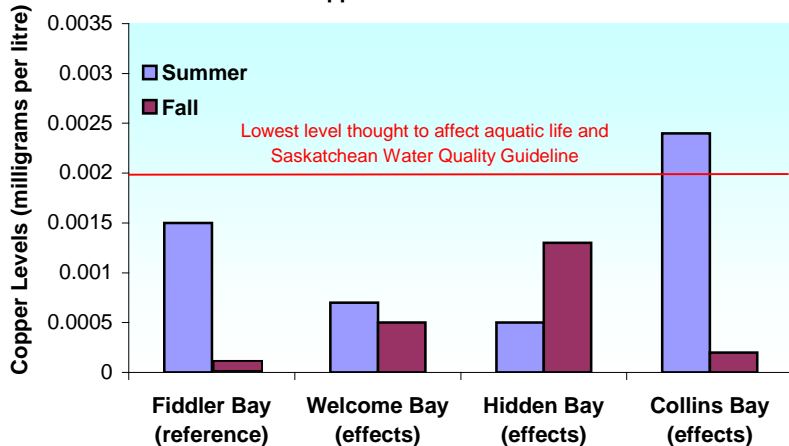


## RESULTS

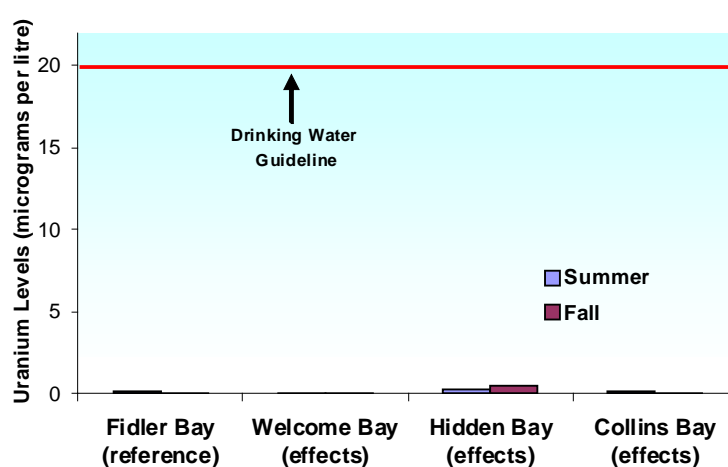
### WATER

In previous years, the levels of all parameters measured were below provincial guidelines for the protection of aquatic life and drinking water quality. In the summer of 2007, a set of water samples from Collins Bay were slightly higher in copper (as seen in the graph) than in previous years, but by fall again were down well below provincial guidelines. As seen in the next graph, uranium levels were well below the drinking water guideline.

2007 Copper Levels in Water



2007 Uranium Levels in Water

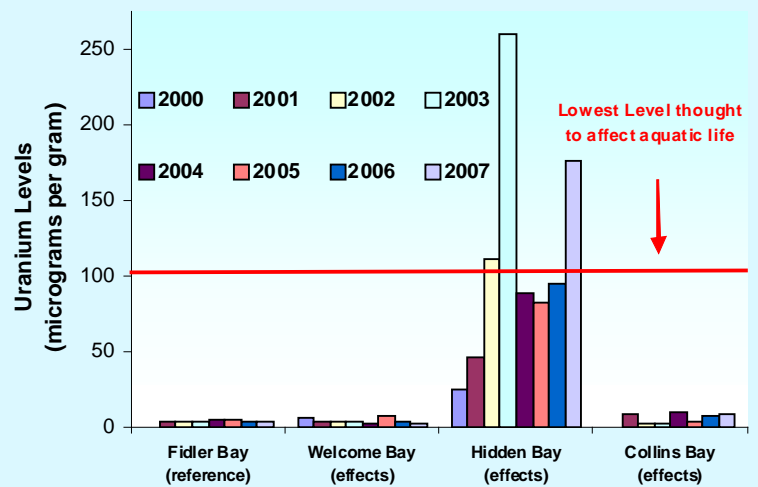


## SEDIMENT

Sediment is the mud on the lake bottom. Contaminants from mine sites may be carried by flowing water to lakes where they can be left in the sediment. It is important to sample sediment, because small animals that live in the sediment are often eaten by fish. Sediment samples were collected from the same locations used for water sampling.

Arsenic levels measured in Collins Bay in 2007 were slightly higher compared to 2005 and 2006, but were lower than reported in 2001 and 2004. For Fidler, Welcome, and Collins bays the key parameters in 2007 were all below the federal "probable effects level" guidelines. At these levels no harmful effects to aquatic life are expected to occur. Similar to previous years, levels of nickel, molybdenum, arsenic, and uranium (graph shows uranium results) were higher in the sediment from Hidden Bay compared to the other sites. Treated effluent from Rabbit Lake mine is released into Hidden Bay. In 2007, 2003, and 2002, the uranium levels in Hidden Bay were above the lowest level thought to have an effect on aquatic life.

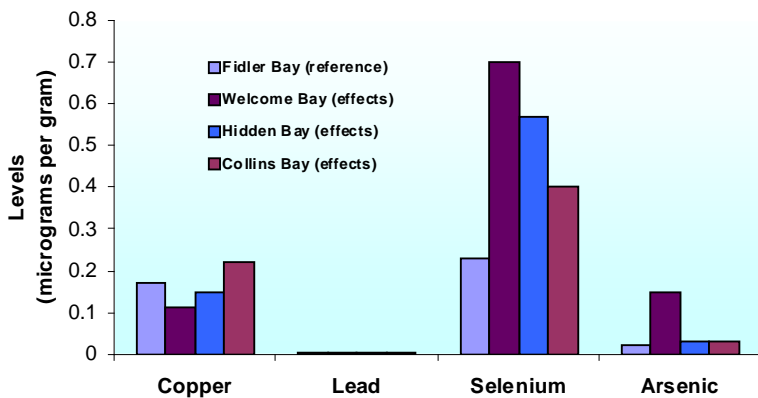
2000-2007 Uranium Levels in Sediment



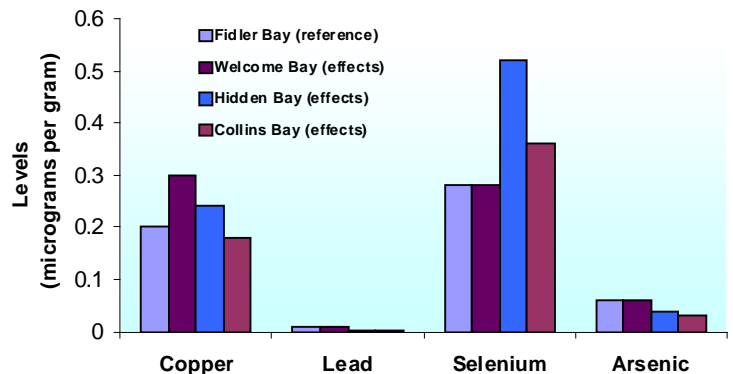
## FISH

In 2007, lake whitefish from Welcome Bay and northern pike from Collins Bay contained higher arsenic and selenium levels and northern pike from Collins Bay had higher copper levels when compared to "reference" site fish. In both types of fish, levels of selenium were higher in Hidden Bay when compared to the "reference" site, this was also true for copper levels in the northern pike sample (as seen in the graphs). The levels measured, however, at the "effects" sites in 2007 were similar to "reference" levels measured in previous years indicating that these are expected levels for the area. In 2006 the level of uranium was higher in the fish taken from Hidden Bay when compared to Fidler Bay, but this was not observed in 2007. In summary, there are some differences in levels of key parameters between sites and years, but there are no obvious environmental or health concerns.

2007 Levels in Lake Whitefish



2007 Levels in Northern Pike

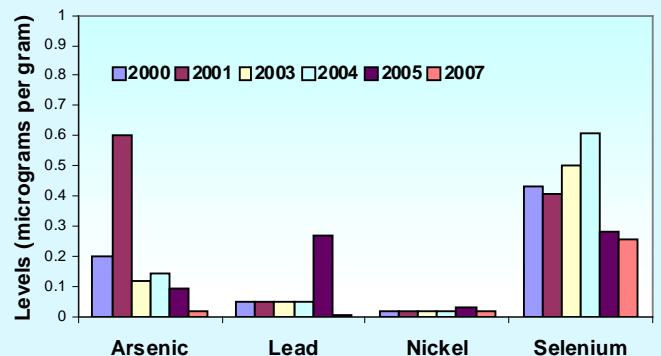


## WILDLIFE

Caribou samples were collected from the Wollaston Lake area in 2007. None of the contaminants measured appear to be increasing from year to year (as seen in the graph). Moose samples collected near other northern communities in 2007 also had expected levels of the key parameters for the area.



2000-2007 Levels in Caribou

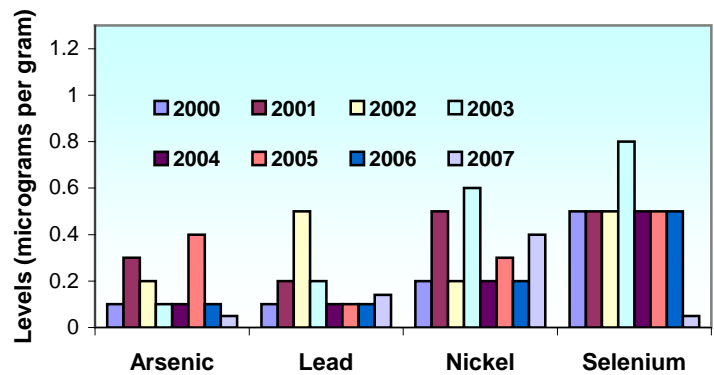


## PLANTS

Samples of blueberries, Labrador tea, and bog cranberries were collected near the community of Wollaston Lake in 2007. Lead measured in the bog cranberries was higher in 2007 than previous years, but similar to that measured in 2005. The levels of all other key parameters in the plants display some similarity between sampling years (as seen in the graph showing the Labrador tea results) and were similar to levels measured in plants collected near other northern communities.



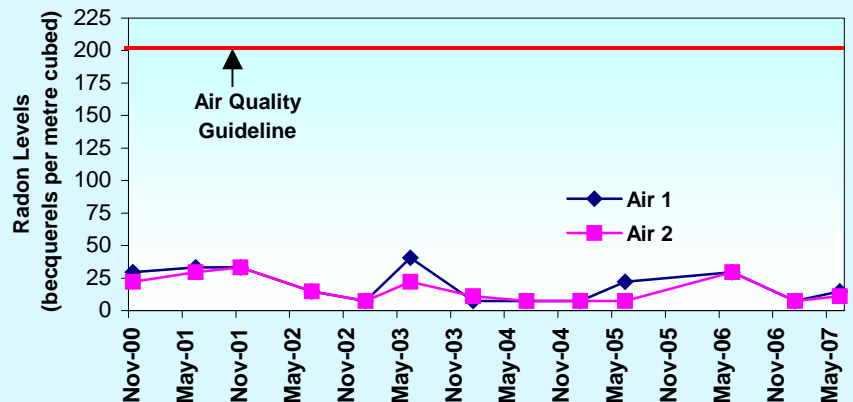
2000-2007 Levels in Labrador Tea



## RADON

Air quality was monitored at two locations near the community of Wollaston Lake by measuring radon levels. Radon is an odourless, tasteless gas produced naturally by the breakdown of uranium and radium-226 in the soil and water. As a result, radon levels are naturally higher in areas where uranium is found in the ground, especially in the summer months when the ground can thaw and release the gas into the air. Radon levels have remained low and show natural changes with the seasons (as seen in the graph).

Radon Levels from 2000-2007



## CONCLUSION

The levels of the majority of key parameters measured in the water samples were all well below provincial guidelines for the protection of aquatic life and drinking water quality. In the summer of 2007 the level of copper exceeded the provincial guideline, but by fall was below the lowest level thought to affect aquatic life. The uranium levels in the sediment from Hidden Bay continue to be higher than in the other bays tested. The fish and plant samples generally contained low levels of key parameters. Uranium levels were slightly higher in the northern pike flesh, Labrador tea, and blueberry samples in 2006, but in 2007 all levels had declined. The results of the 2007 AWG sampling program do not indicate any significant environmental or human health concerns near the communities of Wollaston Lake related to the operational uranium mining and milling projects.



## THANK YOU

The involvement of community members is very important in planning and conducting the AWG program. Thank you to the AWG members, who include representatives from the seven northern communities and the industrial partners, Cameco Corporation and AREVA Resources Canada Inc. The AWG program thanks all the northern residents who participated in the AWG sample collections over the past years, especially George St. Pierre who has done a great job collecting the samples from the Wollaston Lake area.



This project was managed by CanNorth, an aboriginal environmental services company owned by Kitsaki Management. If you have any questions or comments please contact Peter Vanriel at (306) 652-4432.