WATERSHED TALK
NEWSLETTER
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Quesnel Lake Never Stops Rocking.

The continual rocking, or seiching, of Quesnel Lake is stirring up sediment and science in the wake of the Mount Polley spill.

Sam Albers is the Manager of the Quesnel River Research Centre. We first spoke with him last fall. Today he gives us an update.

WST: Have long-term monitoring and data collection stations been set up on the lake?

Sam: Last December, the mine paid for and installed five moorings: instruments arrayed on a rope, stretching from the bottom to just below the surface, measuring temperature, turbidity and fluorescence. The moorings take measurements every three seconds. They will be in place for the next three years.

At QRRC, we have a series of stations that we sample from. We go out in the boat to take measurements. And where the mine is focused a little closer to the actual breach site, we go a little further out on the lake.

Our analysis is done independent of the mine.

Forum season has wrapped up and a highlight was at Squiala, when on very short notice, Kolby and Tre, along with their teacher Mr. Charlie, delivered the Opening Prayer and Welcome in Halq'emeylem.

WST: Why do you go further out on the lake?

Sam: To stay ahead of the sediment plume. In the early days the plume was well-defined: it came out at the breach site and stayed in the lake's water column at 30 metres. That material has since spread up and down the lake.

In today's paper:

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Quesnel Lake *(continued)*

WST: Why has the sediment spread?

Sam: Two things: seiching *(pronounced SAY-shing)* and turnover.

Imagine the water as a layer system with warm water at the top and cold water at the bottom. Right between those two layers is a mixing zone that acts as a barrier between the warm and cold water.

A few years ago, researcher Bernard Laval identified an odd mixing pattern of those layers in the lake: seiching. What happens here is that wind pushes water to one end of the lake. When the wind stops, the water rocks in the opposite direction, then back again. And when the rocking motion is high enough, the cold, bottom layer of water can be exposed and jettisoned in both directions: down the river or back up Quesnel Lake.

All the sediment from the breach, the tailings and the scour material from the creek, was stuck underneath the barrier in the cold water layer. But when the lake rocked enough, it spat some out. We had a few pulses in August and September where for two days the lake turned green because of the high sediment levels. It was like a perverse test case of seiching.

Following this, in mid-November we had fall turnover. As the air temperature cools, so does the upper layer and as it sinks it mixes with the bottom layer, the water column becomes completely uniform. The barrier that kept the sediment trapped at 30 metres disappeared. Throughout December the sediment was flushed down Quesnel River.

WST: How might the movement of the plume and sediments impact the fish?

Sam: A key thing to remember is that a lot of the metals, those scoured from the creek and from the tailings pond itself, came into the lake in particulate form (as physical particles) in contrast to entering as dissolved metals (which enter the food web much more quickly). However, metals can change from particulate to dissolved form.

Right now one of the most pressing considerations is: How leachable are these metals? That's the biggest risk to the food web and that's how the metals could get transferred to the fish. That is, as of yet, an open and unanswerable question.

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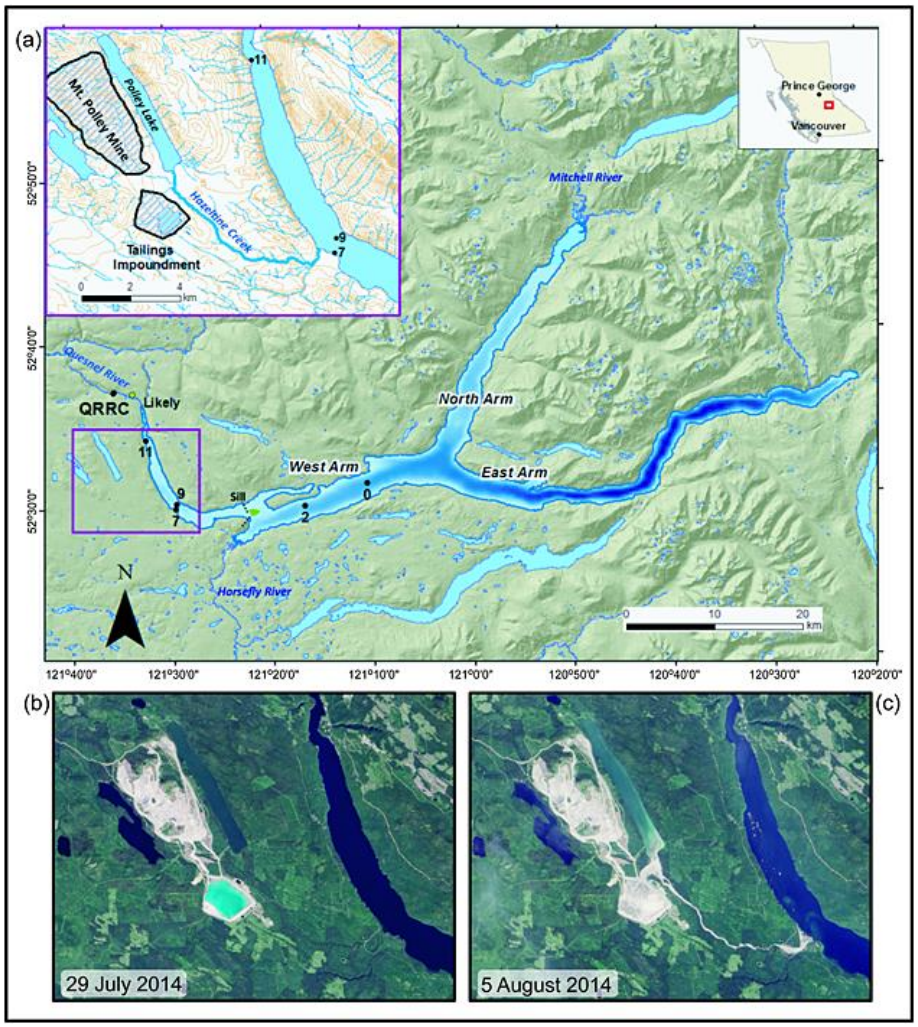
Quesnel Lake *(continued)*



Map source: UNBC/QRRC

WST: On May 5th, UNBC/QRRC released its first report regarding the Mount Polley incident (Impoundment Spill). What's coming up next?

Sam: One way to think of us is that we are a hub of scientific activity. For example, DFO is coming up to look at potential impacts on sockeye, and scientists are coming from as far afield as the United Kingdom to research topics such as leachability and the effects of copper on salmon.

At QRRC, we made the decision early on to try and look at what the fish are eating and to assess the risk of toxicity. That's what we'll be keeping an eye on.

FRAFS meets with the RDG.

On Tuesday, April 28th, the First Nations caucus of the FRAFS Executive Committee met with Susan Farlinger, Regional Director-General, Fisheries and Oceans Canada. Topics discussed included the Fraser Salmon Management Council, Fraser Steelhead and the FSC Allocation Framework process.

In this photo (L-R): Sarah Murdoch; Jeff Grout; Angela Stadel; Brigid Payne; Ernie Crey; Howie Wright; Adrian Wall; Gord Sterritt; Thomas Alexis; Neil Todd; Susan Farlinger; and Terri Bonnet. Also in attendance: Rebecca Reid and Jennifer Nener.

The next meeting is planned for the fall.