



Thunder Bay Harbour Sediment Problem

This letter is Environment North's response to EcoSuperior's request for public input on the proposed remedial options for the site and feedback on the Sediment Management Options (SMO) Evaluation and Final Report. The final recommendation in the report is SM Option #5 – Excavate and Move Sediment to a Confined Disposal Facility (CDF).

We agree that we need to remove the sediment. We strongly disagree that the CDF being considered are the Mission Lagoons near the mouth of the Kaministiquia River. We totally disagree with the CDF being in the water and our reasons are noted below.

The mercury sludge would still be on the lake shore, only moved from the north harbour to the south harbour, so it doesn't really seem like remediation. The Mission Lagoons are too near the mouth of a major fresh water tributary, the Kaministiquia River, flowing into Lake Superior and there is natural occurring turbidity due to the water mixing. There are no break walls in this area of the harbour to stop storm surges. Sault Ste. Marie experienced a 165cm. surge this summer that pulled away much of their shoreline. There are no studies on increased flooding occurrences and problems if the area is flushed into Lake Superior. There are no studies on the impact of ice formation in lagoons or adjacent areas. There are also no studies on seepage into the lake and public beaches at Chippewa Park.

Ownership of both properties is under The Thunder Bay Port Authority, not the City of Thunder Bay or Fort William First Nation. This facilitates the SMO #5 as ownership and approvals would appear easier to get, however, it is unclear who is responsible and liable for clean-up in any untoward event, such as flooding or seepage.

Costs for the variety of management options were a major deciding factor, a weighed impact of 100%, meaning it is critically important to find the cheapest method. Remediation costs are to be shared by the Canadian Federal Government, the Provincial Government and the International Joint Commission. No estimates, approvals for funding or financial commitments were addressed. No funds from former owners are mentioned in cost sharing. There is no indication that the City of Thunder Bay will commit funds, even though waterfront improvement is a major emphasis and monetary investment.

The current location of the toxic mercury sludge and large woody debris is very near the city water intake at Bare Point, approximately 2.5 km. The city may be liable to keep municipal water drinkable. If so, the City of Thunder Bay, not only, must contribute funding for this clean-up, but they must also allow other options, such as allowing a CDF on land in their jurisdiction. A sealed, covered structure is not subject to Lake Superior waves, Kaministiquia River flow, seepage, ice dams, storm surges, flood events, wildlife landing in open lagoons, microbe and fish migration into the settling pond lagoons.

Permission is needed by the owners: 1/ Wilderness North 2/ Superior Fine Paper and 3/ Lakehead Marine and Industrial. The Thunder Bay Port Authority (TBPA) may grant permission on behalf of Transport Canada. This project has a duty to consult both First Nations and local citizens. A title search is needed to confirm ownership and boundaries. Areas for laydown, berthing and staging are necessary. At minimum, permission and easements are needed from TBPA to also work near and on the Mission CDF lagoons. To know that all appropriate levels of government, First Nations, associations, authorities, etc., will help with initial or continued costs of monitoring would really help to choose the better option of segregated land disposal instead of in the water, as discussed in options SMO #2 and SMO #3.



SMO #5 describes some of the risks: separating a lot of the woody debris caught amid sediment will create a noxious gas release. There will be water released during dredging or excavating and the debris has a tendency to not settle. The area is to be mapped to locate logs and woody debris which would be removed with grappling hooks and a backhoe with a claw to be recycled or go to the John St. Landfill. The area would have a silt curtain or steel sheet pile installed before dredging. The sludge would be dredged with a clamshell scoop and put on a barge with the water draining through covered geo-textile filters. It is estimated to take 3 dredging seasons of 7 months duration from May to November.

SMO #5 also describes the Mission Bay enhancement necessary to be considered a CDF. The perimeter dyke is to be made with quarry material. The interior face of the new containment facility is to include geo-tubes filled with clean sand and a 1% carbon filter. The barge will off-load the sludge with a clamshell bucket. A thin 15 cm layer of sand will be placed on top at the end of each dredging season. When complete, an overlay or rip rap cover will cap the area and vegetation will be planted after consolidation of the material. The Mission Bay area will need a 25 year monitoring period, which is included in the capital cost. However, monitoring at the north harbour location was not looked at. This option is expected to take 6 ½ years after the final report, possibly by 2024. The cost is estimated at \$44.4 - \$50.3 million.

Currently, the toxins in the sludge bio-accumulate to the next level in the food chain. Chelation of the sludge may be possible in the future. Chelation describes a particular way that select ions and molecules bind metal ions. According to the International Union of Pure and Applied Chemistry, chelation is already in use to remove gold, silver and other precious metals from sludge and waste water. In the future, when we have the technology, it would be easier to remediate the sediment if it were already separated.

No one has a plan for the mercury laden sludge that was removed and placed on the far upland part of the property. This was a common practice to dredge the lagoon before the aeration system was installed in the early 1990's. This is still unresolved and sitting on the open ground, subject to run-off and leaching.

In conclusion, we prefer SMO #2 – Excavate and Upland Disposal in a CDF, and SMO #3 – Dredge and Upland Disposal in a CDF. These 2 options were deemed the best environmental choices, however their costs were also the most expensive, both over \$90 million. There are too many questions not addressed by the SM Unit about these options, as the committee chose to concentrate on the Mission Bay lagoon.

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Our goal is to benefit the community by protecting
the environment.

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