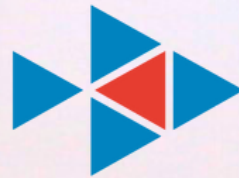


BUI 7 RESTRICTIONS ON DREDGING CRITERIA UPDATE

AUGUST 2022



HAMILTON
HARBOUR
REMEDIAL ACTION PLAN



Navigational Dredging Criteria Update



Hamilton Harbour is an active port accepting around 600 international and domestic ships every year. Channels and slips where the ships dock are periodically dredged so that navigation within the Harbour is safe. Some of the locations where navigational dredging occurs may have sediments that are contaminated from historical pollution. Contaminants in sediment do not restrict dredging activities, but they do necessitate proper disposal of dredged material in accordance with appropriate guidelines. When contaminants in dredged sediments exceed hazardous material guidelines, the additional costs associated with disposal at a hazardous waste facility are considered a restriction on dredging activities leading to an "Impaired" status.

International Joint Commission Delisting Guideline (1991)

When contaminants in sediments do not exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.

Current Delisting Criteria for Restrictions on Dredging Activities

When contaminants in sediments do not exceed biological and chemical standards, criteria, or guidelines such that there are no restrictions on disposal activities associated with navigational dredging.

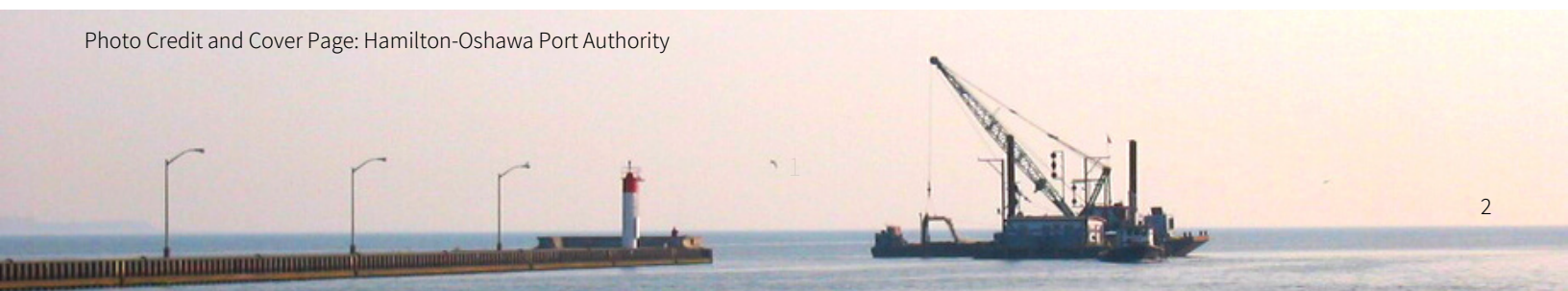
Updated Delisting Criteria (2022) for Restrictions on Dredging Activities

When contaminants in sediments do not exceed biological and chemical standards, criteria, or guidelines such that there are no restrictions on disposal activities (i.e., dredge material does not require disposal at a hazardous waste facility) associated with navigational dredging.

What are Delisting Criteria and why Review them?

Remedial Action Plans develop "Delisting Criteria" as a measure of what remediation looks like when it is complete and are established in consultation with the local community. In Hamilton Harbour, criteria were also adapted from the original listing and delisting guidance that the International Joint Commission (IJC) developed in 1991 (see Original Rationale section below). The Hamilton Harbour Remedial Action Plan Team is reviewing and updating the delisting criteria to bring clarity to and outline the steps needed to assess Restrictions on Dredging Activities. A decision-making tree was developed to help identify the assessment of this criteria and accompany this primer as a summary of navigational dredging in Hamilton Harbour. Hamilton is unique amongst Canadian AOCs in that there are known areas of contaminated sediment earmarked for navigational dredging. No change to the status of "Impaired" is being proposed at this time, but a status assessment will be conducted in the future. The impaired status can be removed when it has been assessed that all agencies that dredge for navigational purposes have moved through the decision maker and landed on "not impaired".

Photo Credit and Cover Page: Hamilton-Oshawa Port Authority



BUI 7 NAVIGATIONAL DREDGING DECISION MAKER

DELISTING CRITERIA

When contaminants in sediments do not exceed biological and chemical standards, criteria, or guidelines such that there are no restrictions on disposal activities (i.e., dredge material does not require disposal at a hazardous waste facility) associated with navigational dredging.

**NO
NAVIGATIONAL
DREDGING**

**NOT
IMPAIRED**

NAVIGATIONAL DREDGING SEDIMENT CHARACTERIZATION*

in accordance with applicable provincial
and federal legislation

Cleanfill

Disposal at upland location or in open water

**NOT
IMPAIRED**

Non-Hazardous Waste

Disposal at upland landfill, containment cells, or other as approved

Is there a dredgeate management plan developed by each organization with navigational dredging obligations?

YES

NO

Hazardous Waste

RESTRICTIONS

Disposal at a hazardous waste facility (additional costs)

IMPAIRED

Complete remedial actions (e.g., source control)

* Cleanfill, non-hazardous waste, or hazardous waste labels are determined by the approved sediment testing protocols from applicable provincial and/or federal legislation.

Navigational Dredging

Background and Original Rationale

What is a Remedial Action Plan?

A Remedial Action Plan (RAP) is a locally developed, partnership-driven plan to address environmental challenges or beneficial use impairments (BUIs). RAPs are created for Areas of Concern (AOCs) or areas in the Great Lakes basin with significant environmental challenges due to historical human activities at the local level.

The Great Lakes Water Quality Agreement identifies 14 BUIs that are assessed at the local level and constitute a reduction in the chemical, physical, or biological integrity of the waters of the Great Lakes. BUIs are identified within each Remedial Action Plan and are used to guide restoration efforts and track progress in a local AOC. Restrictions on Dredging Activities is one such BUI identified in the Hamilton Harbour AOC.

What is Navigational Dredging?

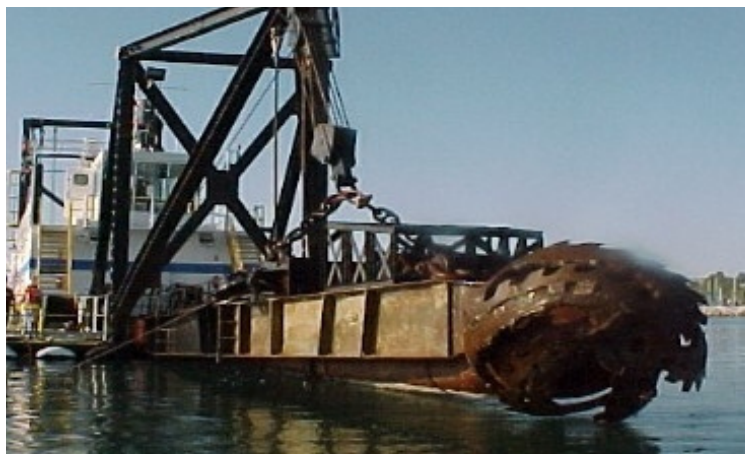
Navigational dredging refers to the removal of sediment from the bottom of a waterbody for any of the purposes associated with navigation and shipping. When the waterbody is used by vessels, especially for commercial purposes like in ports where ships sit low in the water, dredging may need to occur to ensure the safe passage and avoid vessels running aground or beaching on the bottom sediments, which can be dangerous.

Navigational Dredging in Hamilton Harbour

The industrialized southern shoreline of Hamilton Harbour is periodically dredged for navigational purposes. The sediment to be dredged is tested for contamination and disposed of in accordance with federal and/or provincial legislation and regulations that reduce the exposure to aquatic life. In Hamilton Harbour, sediments dredged for navigational purposes that do not contain hazardous material are currently disposed of within a confined disposal facility (CDF) at Pier 27 or alternatively at an upland disposal site. There are no plans to expand the CDF at this time.

Where sediments to be dredged for navigational purposes are tested and contain contaminant concentrations high enough to be considered hazardous waste, this would be considered a restriction on dredging activities due to the additional costs associated with disposal at a specially licensed hazardous waste facility in Ontario or Québec.

Photo Credit: Hamilton-Oshawa Port Authority



Sediments dredged for navigational purposes that test “clean” may be disposed of in open water in accordance with federal and/or provincial legislation and regulations. The clean dredged material would have to be of a similar sediment type to the disposal location (e.g. sand on sand) and avoid the harmful alteration, disruption, and destruction of fish habitat. Alternative disposal options for clean dredged materials include re-use for a variety of purposes including landscaping, agriculture, wetland creation, and upland fill. Clean sand on the Burlington side of the shipping canal is used for beach nourishment, but Hamilton Harbour's sediment would likely be too silty for this purpose.

Original Rationale for Restrictions on Dredging Beneficial Use Impairment

The International Joint Commission (IJC) provided guidance for listing and delisting Areas of Concern. In 1991 the IJC listing guideline considered dredging ‘Impaired’ when contaminants in sediments exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities. The guidance is issued with the understanding that it would be adapted to address local factors that caused the impairment and that there could be updates to the guidelines through time. The original intent of the dredging BUI was to address the added financial costs disposing dredged material on land instead of freely in the open waters of the Great Lakes. This is an economic BUI and it applies solely to areas with navigational dredging.

Dredging in the Hamilton Harbour AOC was originally considered ‘Impaired’ because open-water disposal of Harbour sediment was an issue due to contamination. Costs identified in the Stage 1 RAP Report for alternate disposal resulted in the 'impairment'; however, alternative disposal costs are now considered by all navigational dredging project proponents (even in non-AOC locations) and is no longer considered an additional cost.

The dredging restriction BUI was defined before provincial guidelines established best practices for dredging activities and disposal. In 1993, with the development of the Provincial Sediment Quality Guidelines (PSQGs), Ontario created an implementation procedure to assess sediment suitability for open water disposal (Persaud et al. 1993) as well as Lakefill Guidelines (Hayton et al. 1993). Since 1993, most new dredging projects have required that dredged sediments be tested prior to removal, and suitability for open water disposal be assessed against the PSQG guidance (Persaud et al. 1993). In addition to the PSQGs, there is also the provincial guidance document "Evaluating Construction Activities Impacting on Water resources Part III A - Handbook for Dredging and Dredged Material Disposal in Ontario" (OMOE 2011), as well as Parts III B and III C, that should be followed. The On-Site and Excess Soil Management Regulation (2019) would apply if dredged material were being applied or disposed of on third party land and not at a waste disposal facility with an Environmental Compliance Approval. Disposal of sediments from most new navigational dredging projects in Hamilton Harbour has been either in confined disposal facilities (CDFs) or at landfill sites.

Photo Credit: J. O'Connor





Photo Credit: J. Hanson

Currently, the Guidelines for Identifying, Assessing and Managing Contaminated Sediments (OMOE 2008) is the single integrated Ministry guidance document for identifying, assessing, and managing contaminated sediments in Ontario. It was adapted from the COA sediment assessment framework (EC & MOE 2007), which was based on four lines of evidence: sediment chemistry, toxicity, benthos alteration, and biomagnification potential. The Guidelines deal with the management of all other contaminated sediment where navigational dredging is not applicable. In addition to the provincial guidelines and regulations, the Federal CCME (Canadian Council of Ministers of the Environment) provides sediment quality guidelines applicable to dredging projects in some instances (CCME.ca).

Who is Responsible for Navigational Dredging in Hamilton Harbour?

The pier's owner is responsible to dredge and maintain seaway draft, and owners are proactive in monitoring conditions otherwise vessels may refuse to dock. Regulatory oversight in navigational dredging activities is largely achieved through the federal and/or provincial environmental protection legislation and approval processes (e.g., Fisheries Act, Environmental Protection Act, Canadian Navigable Waters Act). Approvals to dredge may be required from a number of agencies including Transport Canada and Ministry of Environment, Conservation and Parks (MECP). Fisheries and Oceans Canada also provides oversight through letters of advice that outline recommended mitigations to avoid the harmful alteration, disruption or destruction of fish habitat. The approvals process is consistent throughout Ontario's portion of the Great Lakes and does not vary in AOCs. Non-compliance with any legislation can also result in penalties to the proponent. To determine specific disposal options, proponents are required to collect sediment samples and compare them to the Provincial Sediment Quality Guidelines (PSQGs) and others such as the Soil, Groundwater and Sediment Standards.

Where is Navigational Dredging Completed in Hamilton Harbour and who is Responsible for Meeting Dredging Requirements?

Dredging occurs in places where sediment tends to accumulate (such as around piers and canals) in order to allow safe passage or docking of ships (Figure 1). The amount of sediment removed depends on the location. The Hamilton-Oshawa Port Authority (HOPA) occasionally completes maintenance dredging along the southern shore; the last round was in 2006/2007 with spot dredging since. The steel producing plants Stelco or ArcelorMittal Dofasco dredge if sediment builds up in their slips (happens infrequently). The City of Hamilton has the greatest responsibility by volume and frequency, and is responsible for dredging the Red Hill Creek outlet. HOPA currently completes dredging on behalf of the City under a 10-year agreement. The Burlington Canal is dredged for navigational purposes, but is technically outside the Area of Concern.

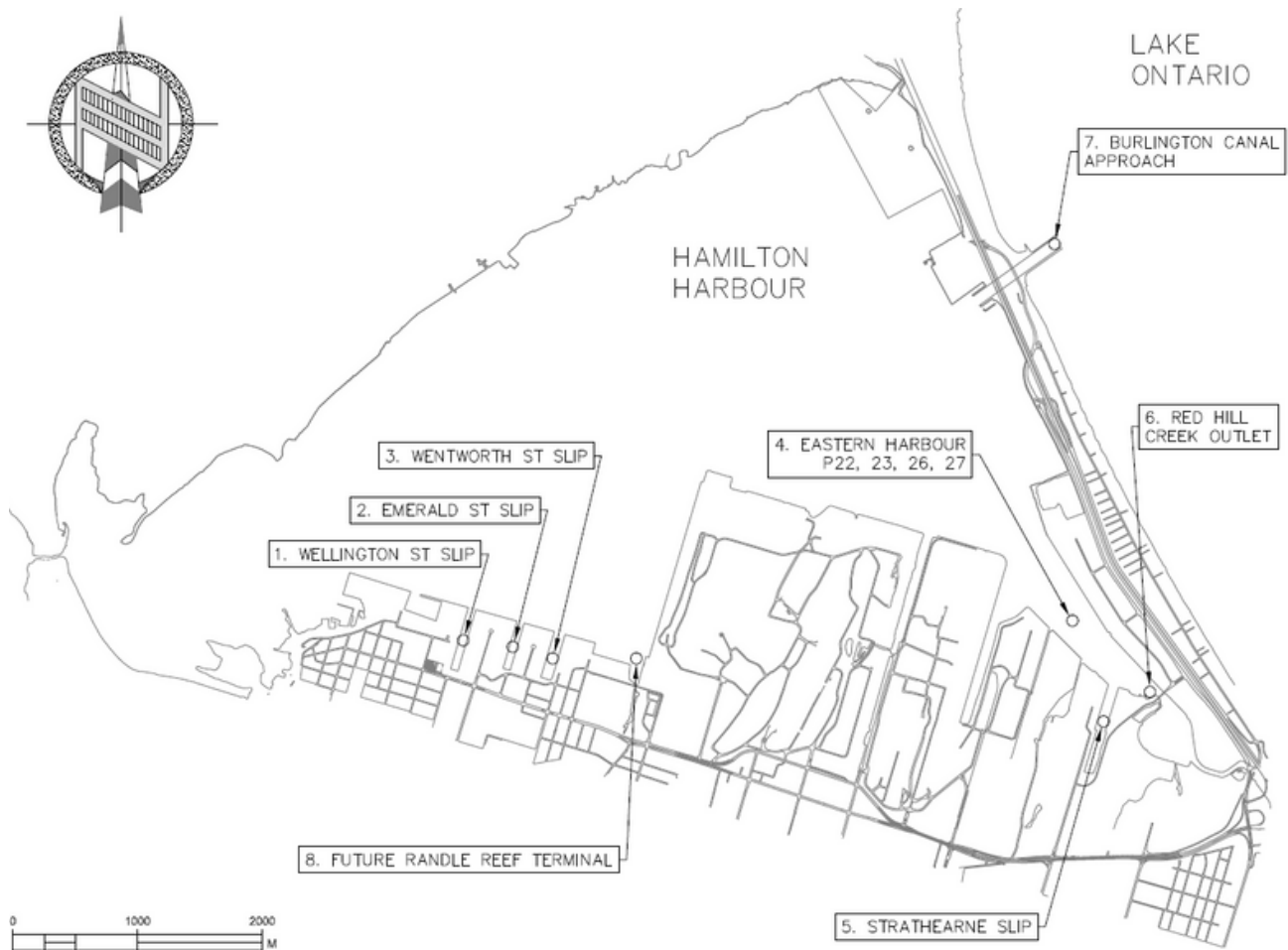


Figure 1. Locations of dredging for navigational purposes in Hamilton Harbour (Credit: HOPA).

There are areas of the Harbour with contaminated sediment that are being dredged as part of remediation actions related to other BUIs, not for navigational purposes. These projects, such as the Randle Reef Environmental Containment Facility (ECF) and the ArcelorMittal Dofasco Kenilworth Boat Slip, relate to the workplans of several other BUIs (e.g., Restrictions on Fish and Wildlife Consumption, Fish Tumours or Other Deformities, and Degradation of Benthos BUIs) and are being dealt with through the application of the COA Sediment Framework (EC & MOE 2007).

In the last decade, certain areas used for navigational purposes have been identified as potentially having hazardous levels of contaminants. Determining whether contamination exists in areas of navigational dredging will be the basis of a future assessment.

What are the Delisting Criteria used in other Canadian Areas of Concern?

Over the years, AOCs developed Delisting Criteria adapted to their local conditions and the status of their navigational dredging. Some RAPs determined that routine upland disposal for small scale dredging operations did not constitute an impairment. Other RAPs clarified that the BUI would not apply where only non-navigational dredging (to address contaminated sediment) was being undertaken. A Canada-Ontario Agreement (COA) Management Committee (Krantzberg et al., 1998) determined that in the absence of navigational dredging for shipping, the dredging BUI was redesignated as 'not impaired' in Nipigon Bay, Jackfish Bay, Spanish Harbour, Severn Sound, and Niagara River. Below are the Delisting Criteria for AOCs that have or recently had restrictions on dredging activities for comparison.

Table 1: Delisting Criteria for AOCs with recent restrictions on dredging activities.

Area of Concern	Current Status	Delisting Criteria
Hamilton Harbour	Impaired	When contaminants in sediments do not exceed biological and chemical standards, criteria, or guidelines such that there are no restrictions on disposal activities (i.e., dredge material does not require disposal at a hazardous waste facility) associated with navigational dredging.
Port Hope Harbour	Impaired	Sediments in the turning basin and west slip contain elevated levels of heavy metals, PCBs and radionuclides. The radionuclides present in the sediments require that storage and disposal of the dredgate be in a low-level radioactive waste management facility. As no such facility is presently available, dredging in the turning basin and west slip may not proceed (EC and OMOE, 2010)
St. Lawrence River	Not Impaired	Appropriate technologies have been identified that will protect against contamination of the river during dredging, transport, and disposal of sediment contaminated above the Lowest Effect Level (LEL). There is currently no navigational dredging which occurs in the AOC. The Cornwall Sediment Strategy has been completed, and an Administrative Controls protocol has been established to protect deeper sediments from disturbance by any future waterfront development (Mackay et al. 2007).
St. Mary's River	Impaired (pending redesignation to Not Impaired)	Administrative controls or other regulatory procedures are in place within the Area of Concern that provide guidance and oversight for dredging proponents and permitting agencies in the planning and undertaking of dredging activities, including mitigating measures to reduce negative impacts. Such guidance will be made clear in a multi-agency Dredging Administrative Controls document that will be part of a broader sediment management plan for the Area of Concern (Derickx and Mangat, 2019)
Spanish Harbour	Impaired (pending redesignation to Not Impaired)	Spanish Harbour Area in Recovery Status Report (2012) recommends that this BUI should be re-designated to 'Not Impaired' as there is currently no commercial navigation requiring dredging (ECCC and MECC, 2018).

References

- Derickx, L. & Mangat, G. 2019. Status of the Restrictions on Dredging Activities Beneficial Use Impairment - St. Marys River Area of Concern (Canadian Section). St. Marys River RAP.
- EC & MOE. 2007. Canada-Ontario Decision-Making Framework for Assessment of Great Lakes Contaminated Sediments. Environment Canada and Ministry of the Environment.
- EC & OMOE. 2010. Port Hope Harbour Area of Concern: Status of Beneficial Use Impairments. Environment Canada and the Ontario Ministry of the Environment, Toronto, Ontario. 4 pp.
- ECCC & MECC. 2018. Spanish Harbour Area of Concern in Recovery Status Report 2018 - Draft for Discussion. Environment and Climate Change Canada and the Ontario Ministry of the Environment and Climate Change, Toronto, Ontario. 32 pp.
- MECP. 2019. On-Site and Excess Soil Management Regulation. [<https://www.ontario.ca/laws/regulation/r19406>] Accessed May 9, 2022.
- Mackay et al. 2007. An Update to the Stage 2 Report for the St. Lawrence River (Cornwall) Remedial Action Plan. Environment Canada. 53 pp.
- Hayton, A., D. Persaud and R. Jaagumagi. 1992. Fill Quality Guidelines for Lakefilling in Ontario: Application of Sediment and Water Quality Guidelines to Lakefilling. Ont. Ministry of the Environment. Toronto. 20p.
- International Joint Commission. 1991. Commission Approves List/Delist Criteria for Great Lakes Areas of Concern. Great Lakes Water Quality Board. Focus Vol 16. Iss 1.
- Krantzberg, G., Boyd, D., Painter, S., Jaagumagi, R., Kalinauskas, R. 1998. Technical Memo for COA Management Committee: Restrictions on dredging is not an impairment in Nipigon Bay, Jackfish Bay, Spanish Harbour, Severn Sound, Niagara River and Bay of Quinte. Unpublished.
- Persaud, D., R. Jaagumagi and A. Hayton. 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. OMOE Report. 32pp
- OMOE. 2008. Guidelines for Identifying, Assessing and Managing Contaminated Sediments in Ontario. [<https://www.ontario.ca/document/guidelines-identifying-assessing-and-managing-contaminated-sediments-ontario>] Accessed November 22, 2021.
- OMOE. 2011. Evaluating Construction Activities Impacting on Water Resources Part III A: Handbook for Dredging and Dredged Material Disposal in Ontario. [<https://www.ontario.ca/page/evaluating-construction-activities-impacting-water-resources-part-iii-handbook-dredging-and-dredged>] Accessed May 9, 2022.