

Government Response to the Eleventh Report of the Standing Committee on Transport, Infrastructure and Communities, entitled: *Reducing the Impact of Commercial Shipping on Shoreline Erosion in the Great Lakes–St. Lawrence Corridor*

The Government of Canada (the Government) acknowledges the six recommendations, and the Government Response (the Response) addresses these recommendations by focusing on current federal initiatives.

Mitigating the Impacts of Erosion and Restoring the Shoreline (recommendations 1, 3, 5 and 6 – re-establishing the shoreline protection program, drawing up an inventory of affected areas, evaluating the effectiveness of current voluntary speed reductions, and setting up a fund to restore shoreline environments affected by erosion)

Shoreline erosion is a complex multi-factor phenomenon. It can result from many natural factors, beyond vessel wake, including ice, waves caused by wind, currents and tides as highlighted in the Eleventh Report of the Standing Committee on Transport, Infrastructure and Communities, entitled: *Reducing the Impact of Commercial Shipping on Shoreline Erosion in the Great Lakes–St. Lawrence Corridor* (the Report).

The Government has been made aware of the concerns from shore property owners in certain regions bordering the St. Lawrence River through letters and other correspondence since the termination of the Shoreline Protection Program in 1997. The Shoreline Protection Program was initiated in 1966, as cited in the Report, and provided funding to assist property owners wishing to construct, maintain, and repair works to protect their shorelines against erosion. In all cases, and as per the qualifying criteria for the program, the structure became the property of the landowner who was to be responsible for the upkeep of the completed structure. While there have been no plans to re-instate the shoreline protection program since its termination, the Government currently supports various initiatives including voluntary speed reductions, documentation of potentially affected areas, restoration and funding for natural infrastructure that mitigate the impacts of shoreline erosion and restore already affected riparian environments.

Voluntary Speed Reductions

Created as a joint initiative in 1988 between the Governments of Canada and Quebec, the St. Lawrence Action Plan (SLAP) aims to conserve, restore, protect, and enhance the St. Lawrence ecosystem. SLAP operates through various advisory and coordination committees to help address issues related to climate change, agriculture, and navigation. In September 2000, through the Navigation Coordination Committee, voluntary measures were put in place to reduce the speed of commercial vessels in four sections along the St. Lawrence waterway (between Sorel-Tracy and Varennes, Quebec) to help mitigate the relative effects of wave action on shoreline erosion. These voluntary measures continue to be in place today. Since a vessel's speed has an impact on its wake, the Report recommended that the effectiveness of these voluntary speed reductions be evaluated, and formal regulations be considered.

The Government carries out ongoing monitoring of commercial vessel speeds in these areas and has observed a compliance rate of approximately 98 percent (%). Alongside compliance monitoring, evaluations have been conducted to measure the efficacy of these measures in meeting their goals. As part of the SLAP agreement, an efficacy evaluation study entitled "Bank Erosion in Freshwater" was carried out in 2010, to measure the impact of erosion on areas throughout the St. Lawrence, and to compare the impact of erosion in areas without a speed restriction against those subject to the voluntary measures.

Compliance monitoring and the efficacy evaluation have indicated that the voluntary speed restrictions along the St. Lawrence contribute to mitigating the effects of waves on bank erosion. However, should the effectiveness of the voluntary measures diminish, there exist legislative powers under the *Canada Shipping Act, 2001*- namely the *Vessel Operation Restriction Regulations* and *Navigation Safety Regulations, 2020* - which could provide a means of imposing regulatory requirements in areas of the St. Lawrence to address outstanding issues or concerns.

In addition to the voluntary speed reductions, the Government issues navigational warnings, used to inform mariners to navigate at safe speeds to avoid damage to shore properties in

sensitive areas in the St. Lawrence. A more detailed description of the channel, navigation hazards, water level and precautions to take are made available to mariners in the Canadian Sailing Directions for the St. Lawrence River, Cap Rouge to Montreal and Rivière Richelieu edition issued by the Canadian Hydrographic Service.

Inventory of Affected Areas

The Government documented areas potentially affected by erosion along the St. Lawrence through its Cumulative Effects of Marine Shipping (CEMS) initiative. This initiative was launched in 2017 to better understand the impacts of shipping activity on marine and coastal environments. In collaboration with Indigenous communities, the Province of Quebec, industry, academics, and non-government organizations, and with the support of Laval University, the Government undertook a cumulative effects assessment of vessel activities in the St. Lawrence and Saguenay Rivers. The assessment, which leveraged publicly available information, identified the susceptibility of natural and artificial shorelines to erosion and included a characterization of bank integrity in the fluvial (Châteauguay to Île d'Orléans, Quebec) portion of the St. Lawrence River. While the assessment focused on dredging and shipping activities, the Report acknowledged that other environmental stressors of anthropogenic and natural origins contribute to the natural geomorphological mechanisms that govern the dynamics of bank erosion.

In addition to the work undertaken by the CEMS initiative, the Government continues to assess the impacts of climate change on Canada's oceans. The Government is currently advancing work on coastal vulnerability to identify the future state of aquatic coastal infrastructure in the face of a changing climate through the Aquatic Climate Change Adaptation Services Program.

Although not specifically tied to an inventory of the areas potentially affected by erosion, the Government provides mapping services including flood maps, satellite imagery, and air photos of the Great Lakes – St. Lawrence Corridor. In addition, its Expedition Database contains information and data related to marine and coastal field surveys conducted by or on behalf of the Geological Survey of Canada.

Restoration

Currently, the Government funds various restoration activities that help restore and enhance riparian environments affected by various processes and activities, including erosion. Through the Freshwater Action Plan, the Government has supported projects that address erosion issues in some coastal areas in the Great Lakes and the St. Lawrence River. In the Great Lakes, the focus is on addressing habitat and eutrophication impairments in Great Lakes Areas of Concern using a variety of erosion control techniques. In the St. Lawrence River, the focus is on supporting the implementation of projects related to the protection and restoration of shorelines, as well as raising awareness about issues related to sedimentation and erosion in the St. Lawrence River through the Community Interaction Program of the St. Lawrence Action Plan 2011-2026.

In addition, through the Aquatic Ecosystems Restoration Fund (AERF), the Government supports restoration activities that help address the root causes of impacts to coastal and marine environments. AERF is a renewal and expansion of the Coastal Restoration Fund that provided funding from 2017 to 2022. The primary goal of the AERF is to support fish habitat restoration efforts that protect and restore coastal as well as marine areas.

Lastly, the Government also funds restoration related to aquatic species at risk recovery and protection through the Canada Nature Fund for Aquatic Species at Risk (CNFASAR). CNFASAR supports multi-species, place-based and threat-based stewardship actions that recover and protect aquatic species at risk. The St. Lawrence River is identified in priority places for CNFASAR in the Lower Great Lakes Watershed (Ontario) and St. Lawrence Lowland (Quebec).

Infrastructure Funding

The Government has established the Natural Infrastructure Fund to support natural and hybrid infrastructure projects to further Canada's commitment to climate change resilience while contributing to national biodiversity goals and targets. The program is being implemented through a two-stream approach that supports projects of diverse sizes. Natural infrastructure,

such as naturalized coastal restoration, can help prevent climate change impacts such as flash floods and erosion, and support the conservation and recovery of wild species, including species at risk.

Investing in Erosion Research (Recommendations 2 and 4 - leveraging current research, and funding applied research, to reduce the impacts of erosion and protect shorelines)

The Government has engaged, and continues to engage, in a range of research activities that are exploring themes related to, and relevant to, the multi-factor causes of coastal erosion with the aim of offering actionable solutions.

Climate Resilient Built Environment Initiative - This initiative, led and funded by the Government, was initiated in 2021. It builds on existing research and provides the knowledge to adapt our public infrastructure where necessary. It informs changes to building and infrastructure codes, and creates guides, standards, tools, and technical solutions for climate resilience. The initiative advances and informs work on resilience through collaboration across the construction sector, from design and decision-making to construction, operation, maintenance and retrofit. Proposed forthcoming research plans include: modelling riverine shoreline erosion; testing physical models of nature-based solution (NBS) vegetated revetment (shoreline protection) strategies; and field testing an optimized NBS vegetated revetment (shoreline protection) strategy. The Government also intends to engage broadly to assess the impacts of ship wake, climate, and associated risks along the entire St. Lawrence Corridor.

Climate-Resilient Buildings and Core Public Infrastructure Initiative (2016-2021) - During this initiative, the Government undertook research on the impacts of climate change, including flooding and extreme weather events on the built environment (buildings, roads, bridges, etc.) in urban, rural, northern, and coastal communities. The findings of this research have informed the development of the National Building Codes of Canada, and the recommendations of the Standards Council of Canada to address the impacts of coastal and riverine flooding and erosion risk management.

Freshwater Action Plan – The Government conducted a study between 2018 and 2022 to assess the resilience of Great Lakes coastal wetlands to a changing climate and other stressors. In addition to improving understanding of Great Lakes coastal wetlands vulnerability to plausible climate change scenarios and identifying coastal wetlands most at risk of becoming degraded or lost, the study also explored adaptation approaches best suited to enhance coastal wetland resilience to projected future climate changes. While this study did not focus on erosion due to shipping, it may provide complementary information to support assessing optimal solutions to shoreline erosion, given the ability of coastal wetlands to provide resilience to coastal hazards such as storm surges and erosion.

Coastal Environmental Baseline Program – Since its inception in 2018, the Coastal Environmental Baseline Program has been supporting research into the current state (“baseline”) of coastal ecosystems across Canada, in areas that experience high or increasing vessel traffic. This information on coastal ecosystems, collected by the Government and external organizations, can be used as a baseline against which future changes can be assessed to better inform conservation and management decisions for these coastal ecosystems. As part of the program, baseline data on the biological, physical, and biogeochemical characteristics of the ecosystem were collected in the Lower St. Lawrence Estuary, Quebec. This data is in the process of being made available to the public through Open Government and the St. Lawrence Global Observatory.

Innovative and Transformative Science Fund - The Government provides funding to support scientific research to increase our collective understanding of ocean and freshwater environments, including issues relating to erosion and aquatic habitats.

Geological Survey of Canada - The Government supports research to increase our collective understanding of the seafloor, including the causes and impacts of erosion, transport, and deposition of sediments (sediment dynamics). The Geological Survey of Canada’s research guides decisions about the use of Canada’s coastlines and offshore waters made by federal, provincial, and territorial governments, Indigenous communities and organizations, and municipalities across the country.

Conclusion

The Committee's study has reaffirmed that shoreline erosion is a complex multi-factor phenomenon, covered by a myriad of municipal, provincial, and federal regulations. Due to its complex nature, there is not one sole solution to reduce the causes of shoreline erosion. Moving forward, the Government will continue to employ a multi-pronged approach to reduce the impact of shoreline erosion in the Great Lakes – St. Lawrence Corridor and in other Canadian waters.

The Government extends its gratitude to the members of the Committee, and all the witnesses who appeared before it, for their work to identify ways to reduce the impact of commercial shipping on shoreline erosion in the Great Lakes – St. Lawrence Corridor.