



# City of Richmond

## Report to Committee

**To:** Public Works and Transportation Committee      **Date:** January 3, 2025  
**From:** Suzanne Bycraft      **File:** 10-6370-01/2024-Vol  
 Director, Public Works Operations      01  
**Re:** Trash Skimming Device Pilot Project Update

### Staff Recommendation

That the staff report titled, "Trash Skimming Device Pilot Project Update," dated January 3, 2025, from the Director, Public Works Operations be received for information.

Suzanne Bycraft  
Director, Public Works Operations  
(604-233-3338)

REPORT CONCURRENCE		
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>	<b>CONCURRENCE OF GENERAL MANAGER</b>
Finance Department	<input checked="" type="checkbox"/>	
<b>SENIOR STAFF REPORT REVIEW</b>	<b>INITIALS:</b>	<b>APPROVED BY CAO</b>

## Staff Report

### Origin

In 2023, the City installed the Collec'Thor trash-skimming device and has been piloting the technology's ability to retrieve or collect solid waste that floats on the water's surface within Fisherman's Wharf. The goal of the pilot was to assess the effectiveness of the water based trash-skimming device in removing harmful plastics and other non-organic materials from waterways. This report provides an update on the Collec'Thor device and advises of the conclusion of the pilot.

This report supports Council's Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

*Leadership in environmental sustainability through innovative, sustainable and proactive solutions that mitigate climate change and other environmental impacts.*

*5.2 Support the preservation and enhancement of Richmond's natural environment.*

*5.3 Encourage waste reduction and sustainable choices in the City and community.*

### Analysis

#### Background

A pilot project to collect floating debris from the waters within Steveston Harbour was approved as a part of the 2022 Utility Budget report. The original concept was to use the "Seabin" device, however, the company transitioned to a service based model, with minimum commitment costs of over \$1 million US to initiate. In the 2023 Utility Budget report, staff identified an alternative device called the "Collec'Thor" which was purchased and installed in June 2023.

The Collec'Thor is a water-based trash-skimming device that was installed at the Fisherman's Wharf located at 3800 Bayview Street to test the new technology and provide a better understanding of the types of materials being collected from our waterways through a waste characterization study. This site was chosen due to its proximity to an electrical power source, which the device requires to operate for pumping purposes, and in an area with limited currents and a slower moving body of water. This is the design basis for these units, which collect waste that accumulates in low flowing water bodies by pumping it through the device and skimming off any floating plastic and non-organic materials.



Figure 1: Staff servicing Collec'Thor device

To facilitate this pilot, the City worked with the Steveston Harbour Authority and Ocean Wise Conservation Association (Ocean Wise). The pilot also worked in close conjunction with the City's Rethink Waste campaign to share messaging about the importance of saying "no" to single-use items, and recycling materials correctly.

### Materials Retrieved by Collec'Thor

To gain a better understanding of the types of materials the device was able to recover, three waste characterization audits were undertaken by Ocean Wise with support from City operations staff. A total of 670 kg of material was pulled from the device from August 2023 to November 2024. Findings from the audits show the vast majority of items recovered being material commonly expected to be found in a river environment such as driftwood and seaweed. These materials are categorized as "river organics," and comprise 99% of all material collected from the device. Of the non-river organic material recovered, the next largest category by weight was rigid plastic followed by plastic film, however plastic was a very small component of the materials captured by the trash skimming device. Of the plastic material captured, all, or 100% of the audit samples, contained expanded polystyrene (EPS) pieces, commonly known as Styrofoam. This result suggests EPS is leaking into the environment from a main source, likely from aging EPS docks.

To address the prevalence of EPS from docks, staff note there is a private member's motion awaiting additional support in the House of Commons titled, *M-80 Styrofoam in Aquatic Infrastructure*, that moves to take immediate measures to ban the use of EPS and extruded polystyrene (XPS) in construction of floating structures in the aquatics environment, encased or not, under the *Canadian Environmental Protection Act, 1999*. This legislative measure would represent a progressive step toward reducing these harmful plastics since the presence of EPS and XPS materials in the marine environment is particularly harmful to aquatic life who consume it by mistaking it as a food source.

### Operational Considerations

The trash-skimming device has experienced regular issues which have required more intervention than expected. Staff have found the device is prone to pump blockages, breakdowns and often malfunctions, tripping the power to the shared dock. With limited support from manufacturers, City staff have retrofitted or made custom parts to provide ad-hoc repairs throughout the course of the pilot. As of early December, the device is currently out-of-order due to damage sustained along the front panel from driftwood debris and severe fraying of the cord that hoists the device in and out of the water. The quick-moving water has proven to be very hard on this type of equipment, rendering it generally ineffective and difficult to maintain.

### Pilot Project Outcomes and Next Steps

The pilot did not prove effective in achieving the stated objectives of removing harmful plastics and other non-organic material:

- Minimal quantities of materials were recovered or 670 kg.
- 99% or over 660 kg of the material recovered was river organics, or material commonly expected in the aquatic environment.

- Operational challenges led to frequent breakdowns, malfunctions and the power being tripped to the shared dock.

The unit deployed for this pilot project is a stationary trash skimmer designed for marine environments. Trash skimmers like the Collec'Thor are generally more effective in calmer waters, such as lakes, lagoons, or large marinas, rather than in dynamic locations like the Fisherman's Wharf. The combination of the wharf's environment, fast-moving water, and large debris created significant difficulties. Additionally, the harsh conditions of the marine environment, along with the need to submerge the unit, pose challenges for any equipment of this kind.

As with any environmentally harmful products such as plastic, waste prevention is the most important aspect of the waste management hierarchy. Legislative measures, such as through the private member's motion *M-80 Styrofoam in Aquatic Infrastructure*, would serve to reduce EPS and XPS from the marine environment, thereby avoiding the need to attempt to capture and remove these harmful plastics. This, coupled with other regulatory efforts to reduce prevalence of single-use and other plastics, are effective tools to address the challenge of plastic waste.

### **Financial Impact**

There are no financial impacts associated with this report. The total cost of the pilot project was \$65,000 funded from the Sanitation and Recycling operating budget.

### **Conclusion**

The Collec'Thor trash-skimming device pilot did not meet the stated objectives and the technology has proven not effective. As a result, the trash-skimming device will be removed and decommissioned. Staff will continue to investigate alternative technologies and solutions for removing plastic debris from waterways that are better suited to Richmond's river-based environment, and will provide updates as necessary.



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