

Microplastics In Okanagan - Media Backgrounder

- The Microplastics In Okanagan Lake project is funded through the Okanagan Basin Water Board Water Conservation and Quality Improvement Grant Program, with support from FreshWater Life, Copper Sky Productions, Seven In the Ocean, the Okanagan Nation Alliance, the City of Kelowna, Okanagan College, The University of British Columbia Okanagan Campus, and the Fresh Outlook Foundation
- Microplastics (less than 5 millimetres in diameter) can be invisible to the human eye, mistaken for organic debris, or even food for aquatic organisms from invertebrates such as zooplankton, to fish and birds.
- Microplastics are classified as “primary” or “secondary” with the former consisting of purpose-built microplastics(i.e., microbeads); the latter consisting of particles that have “shed” from larger, macroplastics. These are categorized into three morphologies (fragments, films, and fibres) encompassing a wide range of polymer types.
- This project will benefit the Okanagan community and beyond, as it will shed light on the issues of microplastics locally but also on the solutions necessary to address this local-and-global issue.
- This is exclusively a scoping study, quantifying and possibly qualifying the presence/absence of microplastics in the lake. It will not attempt to characterize polymer types from any microplastics found (subsequent projects may undertake further research to characterize specific polymer types and more specific origin sources).
- Sampling for this project focused on inbound (influent) and outbound (effluent) wastewater at the Kelowna treatment plant; as well as surface water sampling of Okanagan Lake at 5 points: 1. The Okanagan Lake bridge-crossing, 2. Lake proximate to Mission Creek outlet, 3. Central lake at its widest point, north of the bridge, 4. Central lake at its widest point, south of the bridge, 5. Downstream of the Kelowna Wastewater Treatment plant near the outflow pipe.
- Surface water samples from Okanagan Lake were collected using a manta trawl with a 0.335 mm mesh net, fitted with a collection bag to collect samples.
- Wastewater samples were collected in cooperation with the City of Kelowna in early Fall.
- The project team worked with 8 capstone students from the Water Engineering Technology (WET) program at Okanagan College (Kelowna Campus).
- Despite microplastics being detected in microplastics in Okanagan Lake, their relative concentrations are low. We have an opportunity to prevent further, widespread contamination in the lake, as well as to create hope and opportunity for mitigation solutions to be developed.
- Relative to other freshwater samples, microplastics in Okanagan Lake are quite low (as compared to Lake Ontario, for example). Similarly, relative to marine environments, Okanagan Lake is also quite low (as compared to Pacific Ocean datasets, for example). We are encouraged by the relatively low values but we caution that this is a preliminary study. More work is needed to identify point source origins as well as mitigation solutions.

- The freshwater team discovered that microplastics were present in all five sampled locations of Okanagan Lake. In total, about 2.75 grams of plastic were collected across all five sample locations. (*out of a total of 155,000L water filtered across all sample sites*). The greatest concentration of microplastics was collected below the William R. Bennett bridge and yielded 1.1009g.
- Microplastic morphology (fragments, fibres, and films) was highly varied, randomized, and did not follow a distinct pattern.
- The wastewater team discovered that microplastics were present in both influent and effluent samples but there may have been some contamination while processing samples that impacted data results.
- Most of the particles recovered in wastewater samples (based on visual observation) appeared to be microfibers. Some plastic films, fragments, and particles that appeared like microbeads were also observed.
- There are many actions individuals can take to prevent more microplastics from entering our freshwater ecosystems.
 - Get involved in, or organize, a local beach, stream, or neighbourhood cleanup, to remove plastics and other trash from entering storm drains or waterways.
 - Remember to pack out what you pack in when visiting a beach, hiking, or camping.
 - Limit your use of single-use disposable plastics like bags, cutlery, takeout foam food packaging, and straws.
 - Consider your garment choices: synthetic clothing sheds microplastic fibres each time you wash them; transition to cotton or other natural fibres. Buy second-hand or on consignment to save on new material production.
 - Install or invest in microplastic-capturing devices for your washing machine. (i.e., [Lint Luv-r](#), [Filtrol](#), [Cora Ball](#), or [Guppy Friend](#)).
- Other actions:
 - Let your local government officials (Mayor and City Council; MLA; MP) know that you care about clean water and that you support more interventions and protections from microplastics in your area.
 - Support Canada's declaration of plastics as a toxic substance.
 - Support legislation to ban or remove harmful or excessive amounts of disposable plastics such as bags, straws, and take-out packaging.
- The project team is working to secure funding for Phase II of this project which will expand monitoring to include sub-surface and sediment sampling, as well as additional sampling at Kelowna's Wastewater Treatment Facility. The team is also finalizing a 10-minute short documentary about Phase I of this project.