

2023 Lindsay Ops Landfill



Wetland Impact and Assessment Study Review



Prepared for: Lindsay Ops PRC
September 2024

Overview

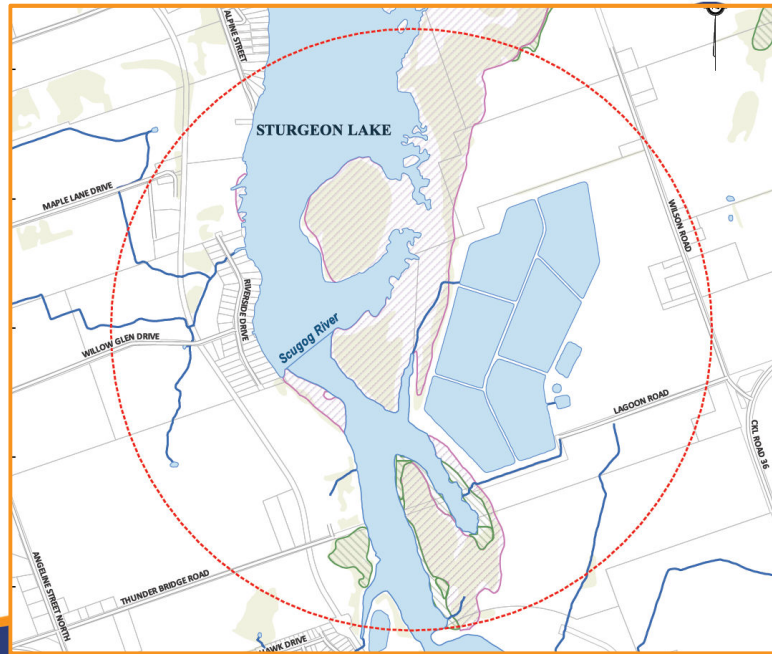


- Wetland Impact and Assessment Study, of the Scugog River;
- Identify any effects to the aquatic environment from the discharge from the Lindsay OPS landfill site;
- Information presented is based upon field work conducted in July & October 2023, along with previous monitoring programs conducted;
- Condition 12.1 of the ECA, regarding additional studies.



Overview

- Analysis completed:
 - Wetland Vegetation & Aquatic Habitat Survey
 - Fish Community Sampling
 - Surface Waster Sampling & Analysis
 - Sediment Sampling & Analysis
 - Benthic Invertebrate Community Sampling
 - Amphibian Survey



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Report Compilation

- Azimuth Environmental Consulting Inc. – completed sampling, surveying, and prepared the report
- Cambium Inc. – completed amphibian surveys
- CKL Waste Management Division – supported consultants throughout the study process and reviewed report draft

**AZIMUTH ENVIRONMENTAL
CONSULTING, INC.**
Environmental Assessments & Approvals



Kawartha Lakes

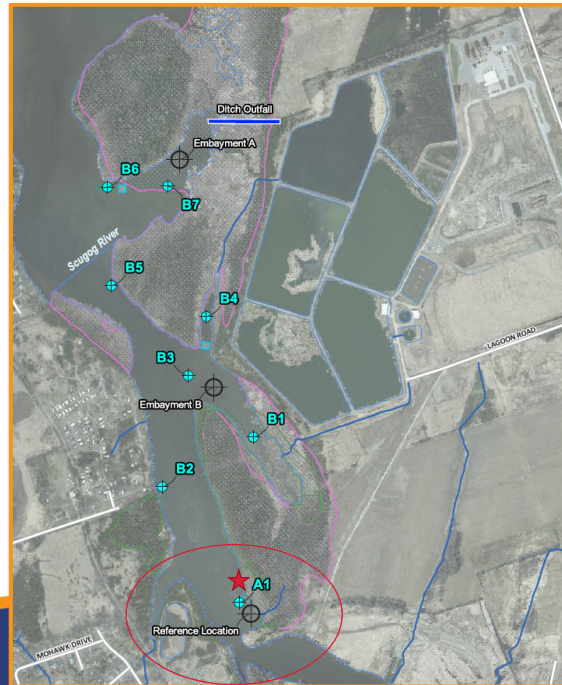


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New in 2023

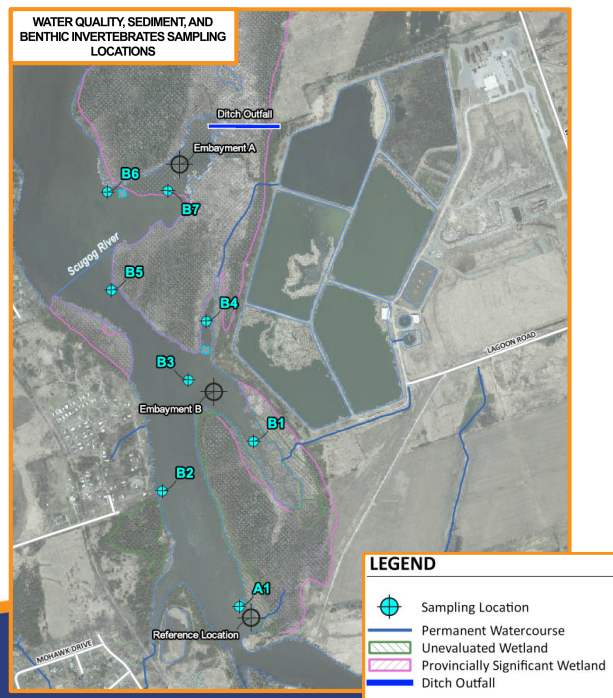
- Amphibian survey completed by Cambium, as per recommendation from previous report (2018)
- Sample locations were conducted by using GPS coordinates
- ★ Added reference/background sampling location, A1: not impacted from any runoff or discharge of the landfill, used for reference



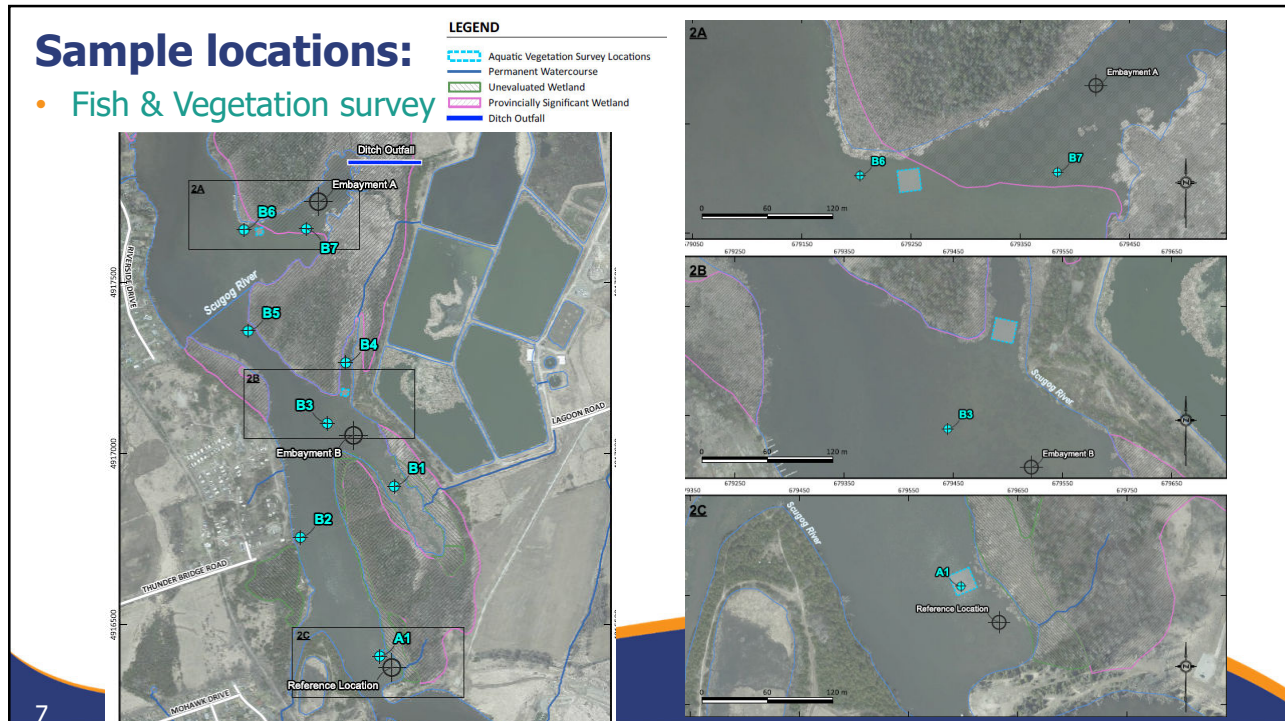
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Sample locations:

- Embayment A: downstream; from the Waste Water Treatment Plant it receives discharge, and runoff from the landfill
- Embayment B: upstream; gets surface water runoff of in-active portions from the landfill's southern section
- A1 (reference location): upstream from Embayment B, not impacted from any runoff or discharge of the landfill



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Methodology

Aquatic Habitat & Wetland Vegetation

- Identify any changes during the years
- Three field plots of 20x20m
- GPS coordinates obtained for future reference
- Note any wildlife & invasive species observed

Sampling of Fish Community

- Sampling completed July 11-12th
- Hoop nets (3) & minnow traps (9)
- Traps set for ~24 hours

Photograph 12: Hoop Net 2 deployed in Embayment A.

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Methodology

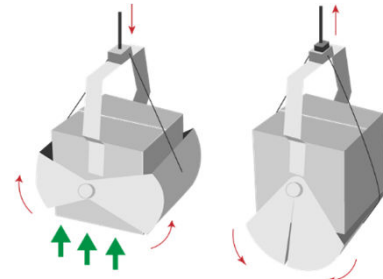


Sampling/Analysis of Surface Water

- Collected at B1-B7 and A1
- Collected under the surface of the water to ensure that no debris (such as vegetation) was collected

Sampling/Analysis of Sediment

- Collected using **Ekman Dredge**



- ★ Prepared bottles from the laboratory were used for sampling & sent within 24 hours in the cooler on ice

Methodology



Sampling of Benthic Invertebrate

- Collected October 5th, 2023 at B1-B7 & A1
- Weather conditions: zero precipitation, strong wind, overcast, & 24°C

Amphibian Survey (Cambium)

- Completed in the spring & beginning of summer
- Three Locations: ACS1 (near Embayment A), ACS2 and ACS3 (all near Embayment B)
- Breeding calls were used to determine population/health



Spring Peeper (*Pseudacris crucifer*), found at all 3 locations within the surveyed area

Results

Aquatic Habitat and Wetland Vegetation

- Sampling completed July 11-12th
- Riparian zone close to monitoring locations have naturalized, when compared to 2013 & 2018
- Embayment B and A1: mats of dense vegetation, aquatic vegetation was healthy
- Embayment A: filamentous algae mainly covered the bottom with little floating vegetation
- Algae indicates that the flow is low & the system is shallow.



Photograph 13: Minnow Trap 1 deployed in Embayment B, typical dense aquatic vegetation.

Results

Sampling Fish Community

- Total capture: 75
- Condition of the fish: good and healthy
- Capture numbers: decline, most were juvenile or small fish
 - No seine netting due to dense vegetation, which normally accounts for more fish captures
- Field observations: Embayment B & A1 had larger amounts, possibly from aquatic vegetation being dense
- Availability of nursery habitat: due to the type of fish captured = habitat gives good spawning opportunities



Photograph 4: Embayment B fish capture: Bluegill captured in hoop net.



Photograph 6: Embayment B fish capture: White Sucker captured in hoop net.

Results

Surface Water Samples

- Compared to previous years the quality of water has been consistent
- A1, B1 and B4: had total phosphorus above PWQO but is natural
- B1-B5: consistent with previous results
- B6: slight increase in total phosphorus, ammonia, & copper
- B7: remained stable from when trends began in 2003



Results

Surface Water Samples (Cont.)

- Water quality in Scugog River has no impairment from the Lindsay OPS landfill

Benthic Invertebrate Samples

- Locations include B1 to B7 and A1, completed October 5th, 2023
- Limited findings, based on poor sample extraction and analysis
- Recommend resampling in 2029



Results



Sediment Samples

- No detections of PCBs
- Concentrations of nutrients & metals are within the magnitude similar ranges from previous observations
- At almost all locations, even the reference sites, some exceedances were found in metals
- Due to the exceedances being found at reference locations, it suggests that the watershed has an alternate source of nutrient(s)
- Some other sources could be runoff from urban storm water, sewage systems, and runoff from agriculture
- The results show that they are not caused by Lindsay OPS landfill, aligning with the annually monitoring report

Results



Amphibian Survey

- Six species identified close to or on the Site
- Embayment A, less species diversity than Embayment B
- Near Embayment A: one (1) species found
 - Breeding amphibians do not tend to be in habitats with dense vegetation, which was present. This also may be due to limited floating and submerged vegetation
- Near Embayment B: five (5) species found
- All the species were common, none were endangered

Sample Point	Survey Direction	Species	Maximum Call Intensity	# of Individuals	Inside or Outside 100 m Sample Plot
ACS1	West	Wood Frog	1	1	Inside
		Spring Peeper	2	2	Outside
ACS2	West	Spring Peeper	1	4	Both
		Northern Leopard Frog	1	3	Inside
		Gray Tree Frog	2	4	Outside
		Bullfrog	1	4	Inside
ACS3	West	Green Frog	1	8	Inside
		Spring Peeper	1	3	Inside
		Northern Leopard Frog	1	2	Both
		Gray Tree Frog	3	Undetermined	Outside
		Bullfrog	1	3	Both
		Green Frog	1	3	Outside

Recommendations 2023



- Embayment A: In future studies, monitoring species diversity & vegetation should be continued using GPS locations in the plots of 20x20m;
- Monitoring of invasive species should continue to see if there is an increase of coverage or presence;
- Amphibian surveys: add an additional upstream location (A1);
- Sampling of fish community is not necessary, due to the fish being healthy.

Hoop Net deployed
in Embayment B



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Recommendations 2023



- Sediment & surface water have been fairly consistent. Both samples are collected and discussed in the landfill's annual report (AMR); not needed for this program anymore;
- Continued sampling PCBs & PAHs is unwarranted;
- No evidence that the river's quality of sediment or surface is effected by the landfill;
- Based on the assessment findings, it should be considered to discontinue this monitoring program.

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Thank you



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