

Hospital Beach - 2023

Site Information and Background:

General Information:

Name: Hospital Beach

Location: 37 Lakewatch Lane, Kingston ON K7M 9A7 (44.214755, -76.523105)

Year of Identification: 2020

Responsible Authority: Swim Drink Fish Canada - Kingston Water Monitoring Hub

Monitoring Points: Figure 1 (Appendix)

Waterbody Information:

Waterbody type: Freshwater; Lake

Watershed: Cataraqui River (Figure 2 - Appendix)

Drainage Area (km²): 67.742

Annual Precipitation for Watershed (mm): 957.000

Surrounding Land Use: List all that apply below

- Park Land
 - Beach is located on the Kingston Waterfront Pathway adjacent to Lake Ontario Park (Figure 3)
 - Lake Ontario Park - 920 King St W, Kingston, ON K7M 8H3
 - Large field North of the beach that is used by many dogs/owners.
- Commercial
 - Hands On Car Wash - 752 King St W, Kingston, ON K7L 4X3
 - Cataraqui Golf and Country Club - 32 Country Club Dr, Kingston, ON
- Institutional
 - Providence Care Hospital - 752 King St W, Kingston, ON K7L 4X3
 - Ontario Correctional Svc - 25 Heakes Ln, Kingston, ON K7M 9B1
 - Beechgrove Complex Recreation Centre - 11 Beechgrove Ln, Kingston, ON K7M 9A6
- Historical
 - Rockwood Asylum - 8 Gable Ln, Kingston, ON K7M 9A7
 - Old Coal Dock - Used as a deep water dock for large boats
- Parking Lots
 - Providence Care Hospital
 - Hands On Car Wash
 - Ontario Correctional SVC
 - Ontario Park
- Environmental Sources

Commercial Use Summary:

Hands On Car Wash is located in the parking lot of Providence Care Hospital. The Hospital's location is situated on top of a hill with a downward slope towards Hospital Beach where there is a stormwater pipe that flows directly into the swimming area. Potential chemical hazards could occur from the car wash.

Institutional Use Summary:

Providence Care Hospital is located North of Hospital Beach and is situated on top of a hill with a stormwater runoff pipe flowing down the hill and flowing directly into the swimming area. Any litter surrounding the hospital or pollutants from the parking lot pose as chemical and physical pollution hazards that may affect the water quality and the beach site as a whole. There are also a number of government buildings located near the beach which may increase the amount of people using the site.

Historical Use Summary:

The Rockwood Asylum is located approximately 300m east Hospital Beach. The Asylum is no longer open and has been closed since 2000 but has been listed by news sources as a “Spooky Attraction”¹ which may increase the amount of people near the beach site. The Old Coal Dock is located approximately 200m east of the beach which is no longer used for importing coal into Kingston. The Old Coal Dock was purchased by a construction company in 2021 who teamed up with Tourism Kingston to promote the dock as a Great Lakes Cruise Ship dock as well as for other larger boats to dock such as yachts.² During site visits it has been observed that the same large cruise ship has been docked at this location since the beginning of the sampling season. Through these observations it is believed that the dock is no longer used as an open large ship docking port as there are other large watercraft docks in Kingston that may be more suitable locations. If the current docked boat becomes active, there is a low potential risk of chemical and microbiological contamination.

Parking Lot and Parkland Use Summary:

There are a number of gray spaces along and near the shores surrounding Hospital Beach that are a potential pollution risk through stormwater runoff. Parking lots surrounding the location include the lots of Providence Care Hospital, Hands On Car Wash, Ontario Correctional SVC, and Ontario Park. Any physical or chemical contaminants that sit in these parking lots have a strong potential to reach the beach and its swimming area, affecting the water quality. Additionally, Hospital Beach has a significant amount of green space between the hospital and the beach. There is a large open green space located adjacent to the beach's water entrance where many people walking along the waterfront trail stop to let their dogs roam free. The area is not fenced in so dogs have easy access to the water and therefore may contribute to microbiological contamination in the water.

¹https://www.visitkingston.ca/historically-haunted-kingstons-eeriest-attractions/?utm_medium=paid-social&utm_source=facebook&utm_campaign=con&utm_content=boost&fbclid=IwAR1rCD-xFXIK1-nxSAXmJd hXfjiiuiFk_2MLwiJxqxkuc43j0zpcWTLMLQ

² <https://globalnews.ca/news/8146621/kingston-old-asylum-coal-dock-deep-water-dock-cruise-ships/>

Upstream Pollution Risks:

Based on the watershed for the area of Hospital Beach, stormwater runoff from multiple locations pose a risk for potential upstream pollution. Utilities Kingston Cataraqui Bay Waste Water Plant has two CSOs that discharge into the Lake to the west of Hospital Beach which can strongly affect the water quality after heavy rainfall occurs. Lake Ontario Park, its boat launch and the parking lot also pose a pollution risk through stormwater runoff. Additionally, the waterfront trail may be a source of pollution as it is used by many and is situated along the shoreline of Lake Ontario.

Hospital Beach is located on a large open area of Lake Ontario, which reduces the risks of entrapment of fecal contamination within the swimming area. The prevailing currents flow east and the prevailing winds in the area are out of Southwest, which could lead to some entrapment of contaminants along the shore, as there are three CSOs to the west of the beach (two at the Cataraqui Wastewater Treatment Plant and one at Greenview Drive, upstream from where Little Cataraqui Creek discharges into Lake Ontario). Furthermore, Hospital Beach is located on a slight bay. This could lead to the entrapment of some contaminants by partially blocking the flow of water to the east (Figure 4).

Potential Sources of Pollution:

1. Microbiological Hazard Assessment

Potential sources of fecal contamination

- Combined Sewer Outfalls (CSOs)
 - Greenview Drive discharges into Little Cat Creek (north of beach) (Figure 5)
 - Cataraqui Bay 1 and 2 discharge into Lake Ontario (west of beach) at the Cataraqui Bay Wastewater Treatment Plant (Figure 5)
- Stormwater Drains/Discharges
- Municipal Sewage Discharges
 - Cataraqui Bay Wastewater Treatment Plant (Figure 5)
- Stormwater Runoff from:
 - Parkland
 - Hospital parking lot
 - Surrounding streets

Overall Risk from Microbiological Hazards: *NOTE: need to check figures match in paragraphs**

Combined Sewer Outfalls (CSOs): **MEDIUM**

- There are three combined sewer outfalls (CSOs) located along Little Cataraqui Creek. The creek flows into Lake Ontario at Cataraqui Bay, approximately 1 km west of Hospital Beach. While the closest of these three outfalls is located about 2 km upstream from the creek outlet (Greenview Drive CSO, Figure 5), overflows have the potential to affect water quality at Hospital Beach due to Lake Ontario's easterly currents (Figure 4). There are also two combined sewer outfalls that discharge into Lake Ontario at the shoreline just south of the Cataraqui Bay Wastewater Treatment Plant. These are located about 1.5 km west of Hospital Beach. Again, due to Lake Ontario's easterly currents, overflows at these two sites have the potential to affect water quality at Hospital Beach. Data Utilities Kingston, suggest that CSOs in the Kingston area occur largely after heavy rainfall (Table 1).
- *Cataraqui Bay Wastewater Treatment Plant*
 - The Cataraqui Bay Wastewater Treatment Plant is a conventional activated sludge secondary treatment facility located on Cataraqui Bay (Figure 5). The treatment plant services the west end of Kingston and is currently undergoing upgrades to accommodate growing population and the redirection of wastewater from parts of central Kingston. The upgrading of the facility was noted as a priority in the 2010 Sewage Infrastructure Master Plan. Construction started in October 2016. As of March 3, 2022, construction was 90% complete.³ There are no new updates on when the project will be complete.
 - Upgrades to the plant include replacement of the secondary treatment system and an increase in the facility's capacity. These upgrades reduce the risk of sewage overflow from the facility. However, as mentioned above, its location west of Hospital Beach means that overflows still have the potential to affect water quality at Hospital Beach.
- The potential sources of fecal contamination listed above (including combined sewer outfalls and the wastewater treatment plant) are located a fair distance from Hospital Beach, which could reduce the likelihood of impact on water quality at the beach. However, easterly currents could increase the likelihood of the CSOs having an impact on water quality at the beach.

Stormwater Drains/Discharges: **MEDIUM**

- Stormwater runoff from the surrounding land has the potential to affect water quality at Hospital Beach due to the large stormwater pipes flowing directly into the swimming area, near sample site C (Figure 6&7). Runoff from the Providence Care Hospital parking lot

³ [Utilities Kingston. Cataraqui Bay Wastewater Treatment Plant Upgrades Project - Schedule and Project Downloads](#)

(approximately 50,000m²), located uphill and just north of the beach, may affect water quality at the site. A car wash station is present in the hospital parking lot. Furthermore, there is a large amount of parkland surrounding the beach site. It is not currently known whether the City of Kingston uses fertilizer in this particular area along the waterfront trail.

- Sources of stormwater runoff are located considerably closer to the site, and therefore have a higher chance of impacting water quality. The hospital parking lot is located approximately 300m uphill from the beach, and there is parkland adjacent to and surrounding the beach site.

Environmental Sources of Fecal Contamination: **LOW**

- Environmental sources of fecal contamination at Hospital Beach during the 2023 sampling season included birds, pet dogs, and swimmers (Table 2). Due to the parkland located north of the beach, just off of the waterfront trail, dogs are of the highest concern for fecal contamination. During site visit observations this particular greenspace has been used by pet owners and their dogs as a roam free area. The area is not completely fenced in, but does have one fence line separating the lot from the waterfront trail and beach area. However, this does not stop off-leash dogs from running into and using the water. People also walk along the trail with their dogs and stop at the beach to let their dogs go for a swim. Waterfowl have also been observed at this site but are considered low concern as they have typically been low in numbers.

2. Chemical Hazards

Potential Sources of Chemical Contamination:

- Motorized Watercraft
- Stormwater Runoff
 - Urban areas
 - Hospital/Car Wash Parking Lot
 - Areas subject to fertilizer application - *possible fertilizer on parkland, not yet known*

Overall Risk from Chemical Hazards:

Motorized Watercraft: **LOW**

- There are no barriers in the water that separate the swimming area from watercraft that passes by. During site visits it has been observed that some boats come within a ~200-300m distance from the shore where people may be entering the water. Any chemical runoff, including boat fuel and cleaning chemicals, from boats passing by may leak into the water and affect the quality of the water.

Stormwater Runoff: **MEDIUM**

- Hospital beach is surrounded by parkland, both directly bordering the beach and further west along the shoreline (upstream). Any contamination in stormwater runoff from the parkland is likely to affect the water quality at the beach. Similarly, contaminated stormwater runoff from Providence Care Hospital parking lot would be likely to impact the water quality at the beach due to the proximity of the site (the hospital is located approximately 250m north-west of Hospital Beach).
- Stormwater runoff from the Hands on Car Wash are also a concern for chemical contamination due to the amount of chemical based products known to be used at public car washes. Through heavy rainfall, these chemicals, including any chemicals from cars parked in the parking lots, has the potential to flow into Hospital Beach and affect the water quality.

3. Other Biological Hazards

Potential Sources of Biological Contamination:

- Cyanobacterial Blooms ✕
- Schistosomes (Swimmer's Itch) ✕
- Large Numbers of Aquatic Plants ✕

Overall Risk from Other Biological Hazards:

Cyanobacterial Blooms: **LOW**

- No reports of cyanobacterial blooms in the Kingston area exist from recent years. However, the Kingston Frontenac Lennox & Addington Public Health Unit released a statement in August 2018 cautioning community members to look out for blue-green algae in regional waterways⁴. There are no reports of cyanobacterial blooms at Hospital Beach.

Schistosomes (Swimmer's Itch): **LOW**

- Similarly, there are no recent reports of schistosomes or cases of swimmer's itch in the Kingston area. The public health unit provides information about swimmer's itch on their webpage, but has not released any reports of cases in the region.⁵

Cladophora Algae: **LOW-MEDIUM**

⁴<https://www.kflaph.ca/Modules/News/index.aspx?FeedId=f2a4adbc-2838-4b5d-a47c-bd9c8ef4e2e&newsId=0313a3b1-6ef4-4771-934b-3575e9fa9cdf>

⁵https://www.kflaph.ca/en/resource-catalogue/Swimmer_s-Itch.aspx

- Algae buildup on the eastern end of the beach was observed during each site visit in the 2020 sampling season: a large buildup of algae was observed in July and August, with a decrease in buildup occurring at the end of August, 2020. In June 2021, large buildup of algae was observed all along the eastern section of the beach. Initial site visits in 2022 also recorded large quantities of algae in the water and on the rocks of the eastern section of the beach. During all 2023 site visits thus far (June-July), there has been a significant amount of algae in the water and algae buildup along the shoreline. Algae levels will continue to be monitored for the remainder of the 2023 sampling season.
- While Cladophora Algae does not pose as a severe direct physical risk to humans, “rotting Cladophora incubates E. coli and other bacteria that can be harmful to people. E. coli can make you very sick with vomiting, diarrhea, or less commonly, a serious disease or infection.”⁶

4. Physical Hazards and Aesthetic Considerations

Sources of Subsurface Hazards

- Large Rocks
- Slippery or Uneven Bottom

Other Sources of Physical Hazards

- Litter on Beach
- Floating Debris
- Watercraft near the swimming area

Overall Risk from Physical Hazards:

Large Rocks and Uneven Bottom: **MEDIUM**

- There are many large rocks along the shoreline at the east and west end of Hospital Beach as well as in the center of the shoreline that separates the points of entry in the water. At times, Hospital Beach experiences periods of increased waviness which has the ability to push swimmers close to these large rocks. Due to the significant amount of large rocks at this site, there is a medium risk as these rocks have the potential to cause injury to swimmers.
- Additionally, the ground surface under the water at the beach is a cobblestone bottom with medium to large sized rocks throughout it. During sampling, it has been found difficult at times to find your footing and remain stable in the water. It creates an even stronger risk during times where Cladophora Algae levels are particularly high, making it extremely hard to see the bottom surface under the water.

[6https://www.theswimguide.org/2020/09/15/3-things-you-should-know-about-cladophora-algae-at-the-beach/](https://www.theswimguide.org/2020/09/15/3-things-you-should-know-about-cladophora-algae-at-the-beach/)

Litter and Floating Debris: **LOW**

- Litter has been quite minimal during site visits and therefore poses a low physical risk. Floating debris has very rarely been encountered but during one site visit, a glass bottle was observed below the water sitting within the rocks on the bottom. Glass is of strong concern surrounding litter and debris at beach sites as it has the potential to cause severe physical injury. Glass, or other debris in the water at Hospital Beach is of particular concern due to the low visibility of the cobblestone bottom when algae levels in the water are high, making it hard for swimmers to see physical hazards in the water.

Watercraft Near the Swimming Area: **LOW**

- Due to the lack of swimming barriers in place at Hospital Beach, motorized boats and other watercraft have the ability to come extremely close to shore. There is nothing separating the swimming area from the rest of the lake where boats pass by, which poses a risk for swimmers who swim a farther distance from shore.

Facilities and Provisions:

Facilities:

Toilets: none (public washrooms are available approximately 500m west of the beach at Lake Ontario Park)

Showers: None

Drinking Water Fountains: None

Litter Bins: None

Recycling Bins: None

Access for Persons with Disabilities: Renovations to the pathway that runs through the beach area were completed in June 2021. The pathway is fully paved, wide,

and accessible. However, the beach and shoreline are not accessible due to the need to descend a set of rock stairs.

Safety Provisions:

Lifeguard Station: None

Life Saving Equipment: None

Emergency Telephone: No

First Aid Station: No

Beach Postings/Suitability for Swimming: No

Emergency Contact Information: No

Other Information:

Reporting Mechanisms:

Municipal or Industrial Spills/Discharges/Treatment Bypasses

- MOECC - Spills Action Centre
 - To report a spill or a spill that is about to occur, call 1-800-268-6060. Available 24/7.
- City of Kingston: Spills and Environmental Incidents Reporting
 - 613-546-0000 (During normal operating hours). After hours, you may contact the Spills Action Centre number listed above.
- For marine search and rescue, nautical hazards, and marine pollution, contact the Coast Guard: 1-800-267-7270
- To report immediate environmental violations, call 1-866-663-8477
- Swim Drink Fish - (416) 861-1237

Waterborne Disease Outbreaks

- Call Kingston Public Health: (613) 549-1232
- Swim Drink Fish - (416)-861-1237

Swimmer Injuries

- Call 911

Where to find the water quality results:

- Swim Drink Fish: Swim Guide
 - <https://www.theswimguide.org/>
- Kingston Public Health
 - <https://www.kflaph.ca/en/health-topics/beach-water-listings.aspx>

Contact Details for EHSS information:

- Olivia Rideout - Kingston Community Based Water Monitoring Coordinator
olivia@swimdrinkfish.ca

Appendix:

Kingston Monitoring Hub Hospital Beach sampling site

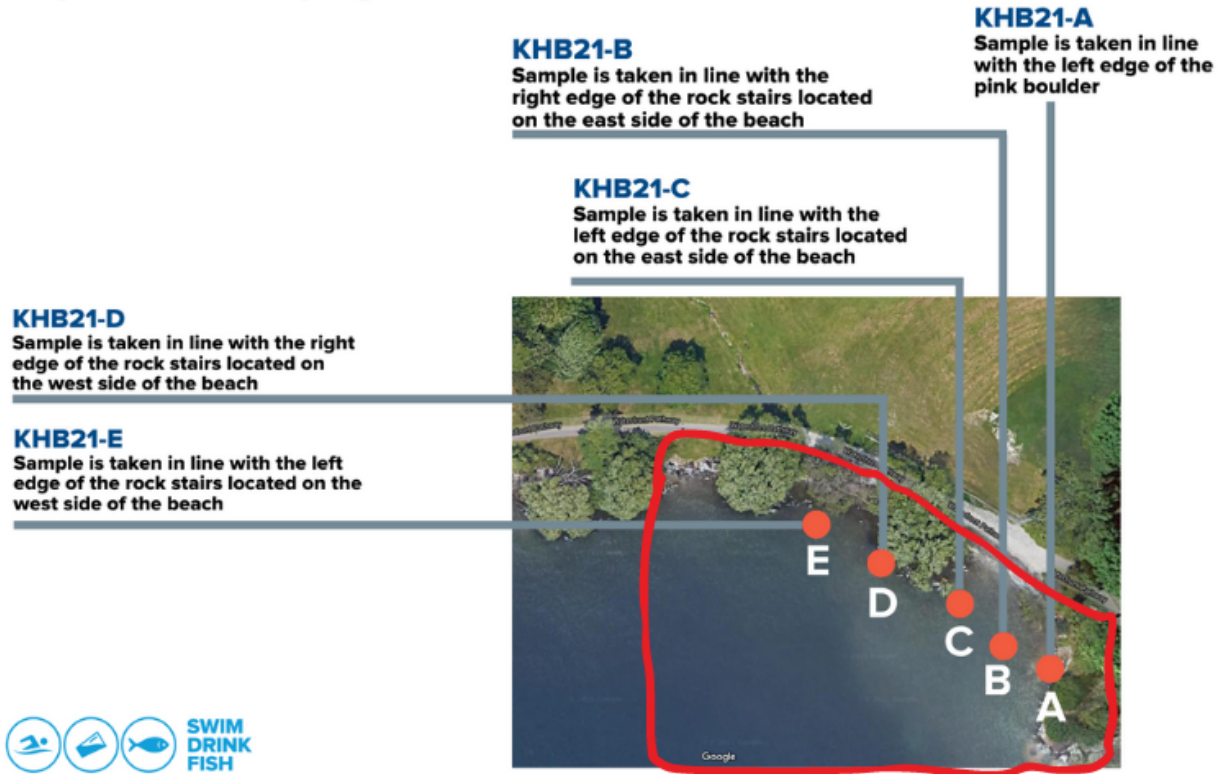


Figure 1. Hospital Beach sample sites A to E with descriptions of site locations. The red outlines indicate the local zone of influence.

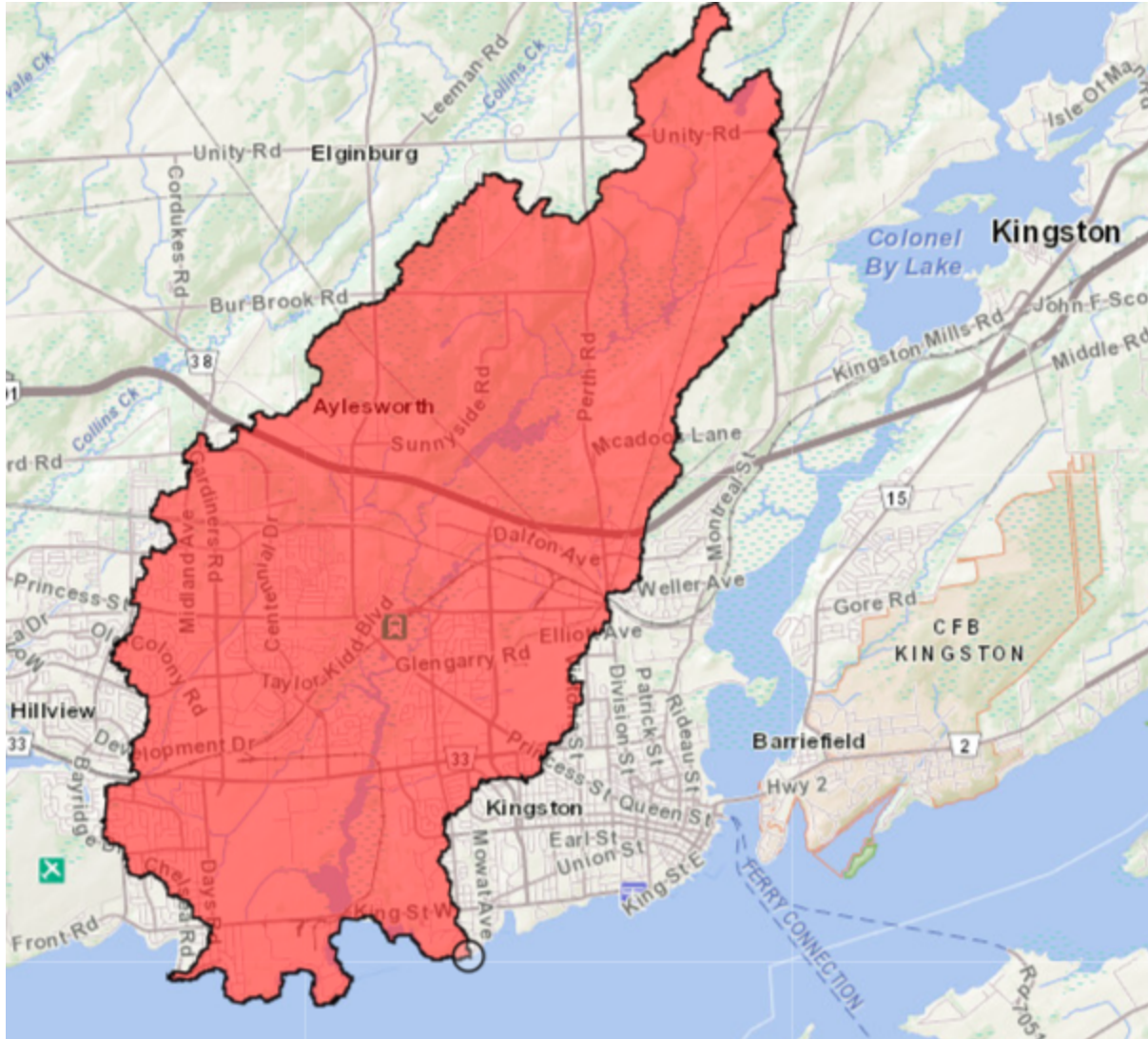


Figure 2. Map of Watershed for Hospital Beach..



Figure 3. Hospital Beach sampling sites (green), and Providence Care Hospital, Catarqui Golf Club, and Lake Ontario Park (blue).



Figure 4. Map of Kingston waterfront between Portsmouth Olympic Harbour (east) and Sand Bay (west), featuring Hospital Beach and nearby CSOs. Prevailing winds and prevailing currents are marked.

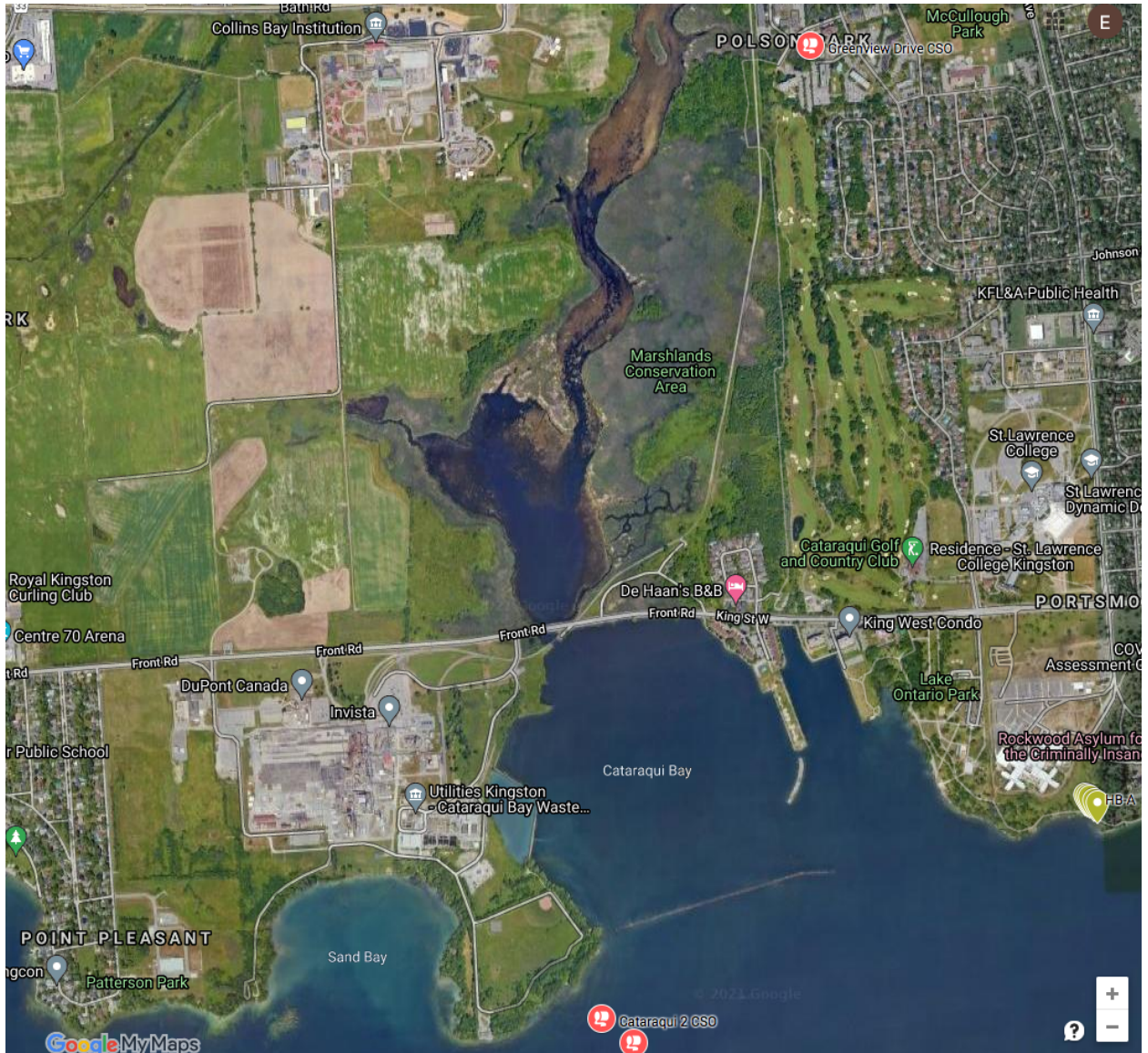


Figure 5. Hospital Beach (green); Utilities Kingston - Cataraqui Bay Wastewater Treatment Plant (grey); and three CSOs (red): Catawaqui 1, Catawaqui 2, and Greenview Drive.



Figure 6. Stormwater Drain Pipe located downhill from Providence Care Hospital and into the swimming area of Hospital Beach.



Figure 7. Stormwater Drain Pipe located downhill from Providence Care Hospital flowing directly into the swimming area of Hospital Beach.

Table 1. Collection system sewage overflow events that occurred between June and December of 2021, February and December of 2022, and January and June of 2023 in the Kingston collection system and corresponding amounts of precipitation. Last updated: 2023-06-05 10:05:44 AM [Sewer Overflow Log](#).

Date	Cause	Volume (m³)	Precipitation (mm)
June 03, 2023	Power Failure	25.5	0.0
April 30 - May 1, 2023	Heavy Rain	2750.0	36.1
April 10, 2023	Power Failure	547.0	0.0
April 01, 2023	Heavy Rain on Snowmelt	621.0	28.6
February 22, 2023	Equipment Malfunction	47.0	0.0

January 4-5, 2023	Heavy Rain	546.5	22.4
December 23, 2022	Heavy Rain	9699.2	54.0
June 03, 2022	Heavy Rain	37.8	20.1
June 01, 2022	Heavy Rain	864.9	48.1
March 06, 2022	Rain on Snowmelt	563.9	8.5
February 17-18, 2022	Rain on Snowmelt	7834.8	31.5
December 11-12, 2021	Rain + Power Failure	2506.6	15.4
October 26-27, 2021	Long Duration Rainfall	4639.0	49.9
October 26, 2021	Equipment Failure (spill)	38.0	0.0
October 16, 2021	Heavy Rain	8,315.4	43.8
September 27, 2021	Rain	0.1	7.7
August 11, 2021	Heavy Rain	5,970.8	43.8
July 15, 2021	Heavy Rain	474.5	26.1
July 13, 2021	Heavy Thunderstorms	1,684.6	34.9
July 5, 2021	Heavy Thunderstorms	260.1	35.7
July 1, 2021	Heavy Rain	333.0	18.5
June 19, 2021	Heavy Rain	1.1	17.0

Table 2. Environmental sources of fecal contamination at Olympic Harbour Beach and their associated risk categories in the 2022 sampling season

Environmental Sources	Risk Category (None, Low, Med, High)
Birds (e.g. gulls, ducks, geese, other)	Med
Other wildlife	Low
Pets (dogs)	Med
Swimmers	Low