

Ministry of the Environment,
Conservation and Parks

Addendum Water Monitoring Results 282 & 285 Ontario St., St. Catharines

City of St. Catharines
April 2021

Purpose

- To provide the City of St. Catharines with an update of the remaining surface water results from the ministry's surface water survey conducted to assess for any off-site impacts from the former GM site.

Twelve Mile Creek Surface Water Monitoring Locations



Surface Water Monitoring Locations – Nov 23 and Dec 9, 2020



Sample Location	Location Description
GM Manhole STE-53 (GM east discharge)	Former GM storm sewer manhole associated with the East Tilt Plate Separator that drains to the City storm sewer on Thomas Street.
City Manhole Woodruff	Municipal storm sewer manhole in creek valley near Woodruff Avenue that collects upstream City stormwater including Lowell Avenue.
TMC Upstream E	Twelve Mile Creek approximately 20 m upstream of the outfall from the City Manhole Woodruff.
TMC Downstream E	Twelve Mile Creek approximately 40 m downstream of the outfall from the City Manhole Woodruff.

Update Surface Water Monitoring Survey

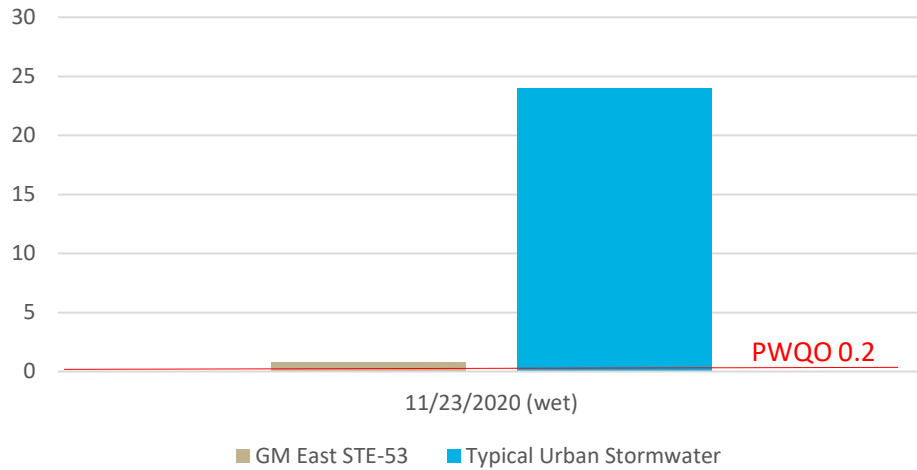
Sampling Events	Sample Location	Parameters Tested
December 1, 2020 – rain event	GM West plant and City outfalls	Solids Polychlorinated biphenyls (PCB)*
November 23, 2020 – rain event	GM East plant discharge and City Woodruff Manhole	General chemistry, Metals* Volatile Organic Compounds Acid base neutrals (semi-volatiles) Polycyclic aromatic hydrocarbons (PAH)* Polychlorinated biphenyls (PCB)*
December 9, 2020 – dry event	GM East plant discharge and City Woodruff Manhole	Solids Polychlorinated biphenyls (PCB)*

- Analysis results were compared to the following benchmarks, where applicable:
 - Provincial Water Quality Objectives (PWQO)
 - Canadian Water Quality Guidelines (CWQG)
 - Government of Canada 1993 Priority Substance List Assessment Report
 - Typical urban stormwater and dry weather water quality
 - Twelve Mile Creek Trackdown monitoring data

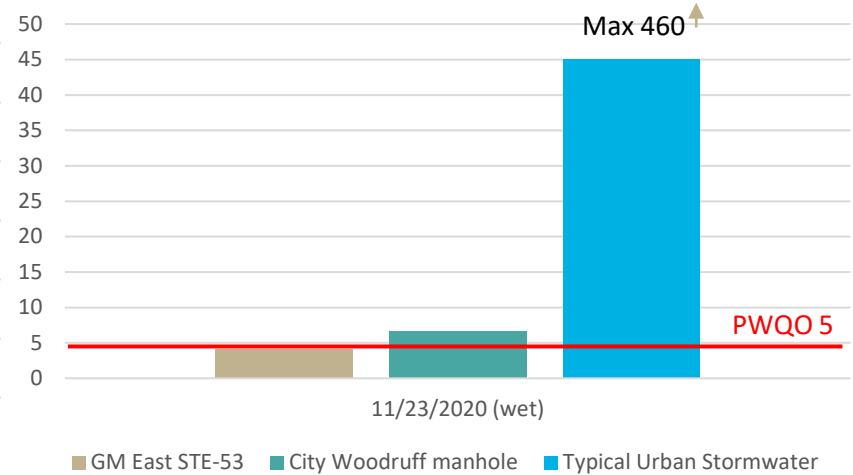
***Results indicated concentrations of metals, PAHs and PCBS in surface water above applicable benchmarks**

Metals Exceeding PWQO – GM East (STE-53) and City Woodruff Manholes

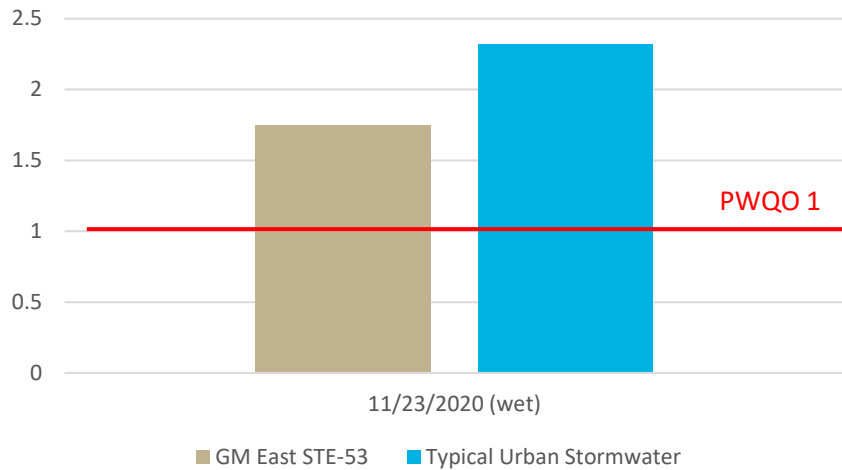
Cadmium ug/L



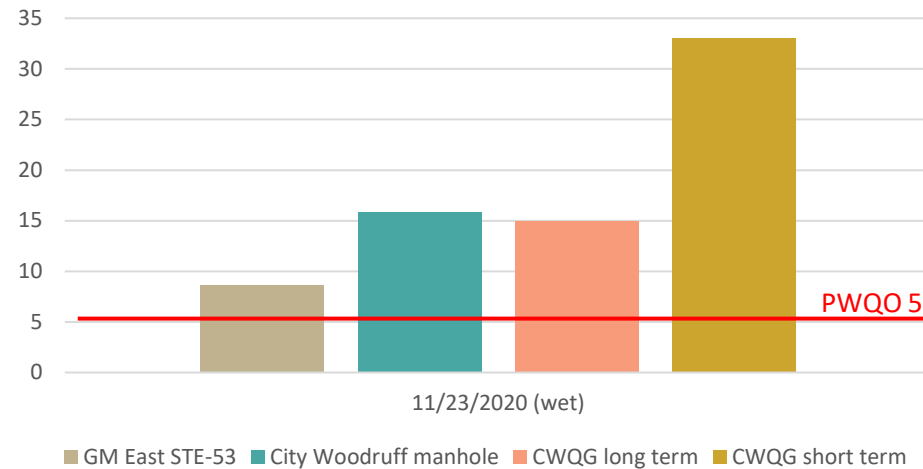
Copper ug/L



Chromium ug/L



Uranium ug/L



Overview of Metal Sampling Results - update

GM East STE-53 Manhole:

- Cadmium, chromium, and uranium exceeded PWQO in the November 23, 2020 wet event.
- The uranium result was less than CWQG short term and long-term exposures.
- **The metal concentrations discharging from the GW east manhole are considered typical of urban stormwater or are below water quality guidelines.**

City Woodruff Manhole:

- Cadmium, chromium, copper and uranium exceeded PWQO in the November 23, 2020 wet event.
- The uranium result was at the long term and well under the short-term exposures within the CWQG.
- **The metal concentrations discharging from the City sewer are considered typical of urban stormwater or are at or below water quality guidelines.**

Twelve Mile Creek – Upstream and Downstream of City Woodruff Manhole discharge

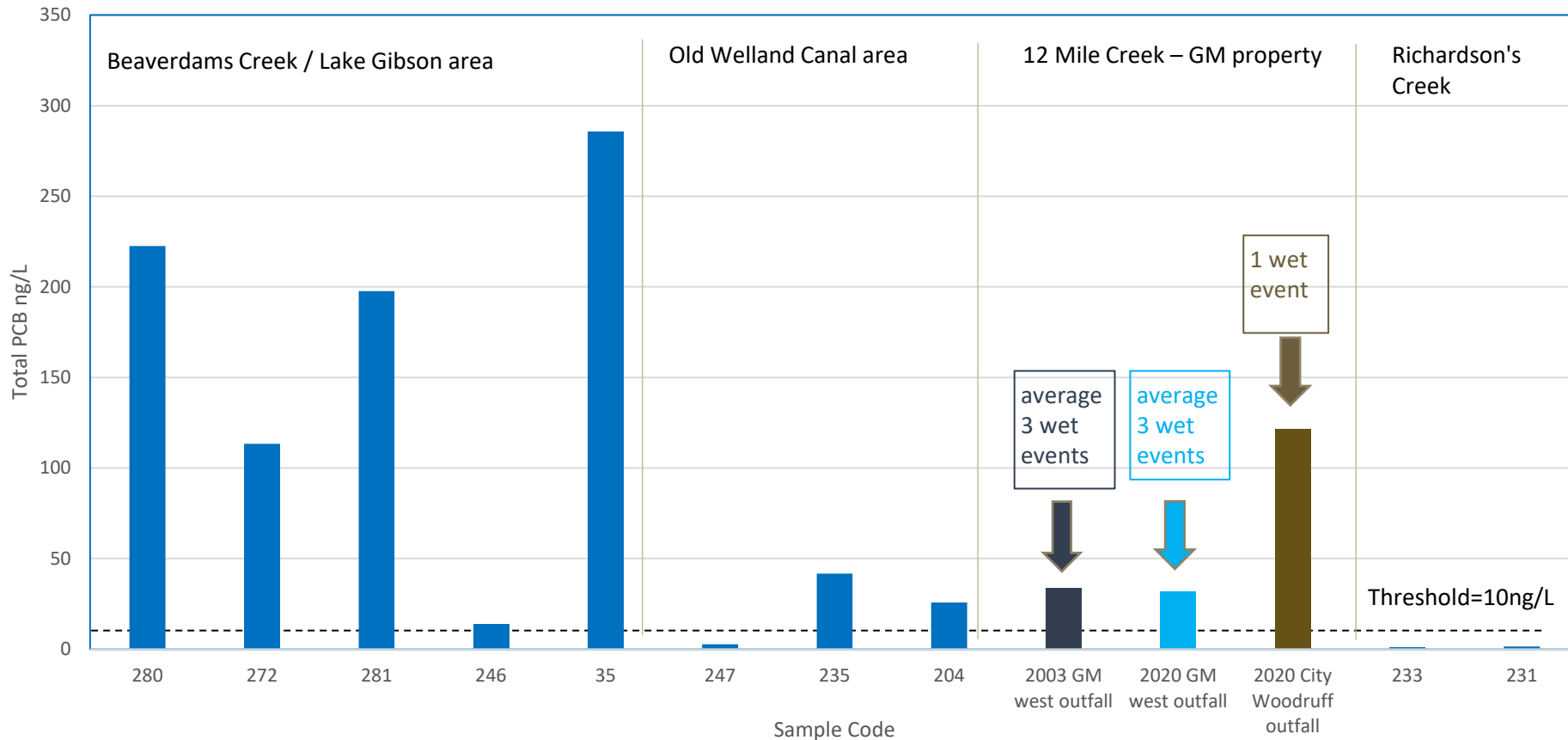
- Aluminum concentrations during the rain event November 23, 2020 exceeded PWQO in both the upstream and downstream creek samples. This is not a concern as aluminum levels are naturally elevated in the watershed due to geological features in the area.
- **All other metal concentrations in the upstream and downstream creek samples were below PWQOs and are not a surface water concern.**

PAH exceeding PWQO – GM East Manhole

- PAHs are chemicals that occur naturally in coal, crude oil, and gasoline and are also produced when coal, oil, gas, wood, garbage, and tobacco are burned.
- Many urban sources of PAH come from vehicles, asphalt, engine oil drips and tire wear.
- **The GM east discharge did exceed several PAH PWQO/CWQGs, however, these results were below values typically seen in urban roadway runoff.**
- **The City Woodruff manhole and Twelve Mile Creek up and downstream of the Woodruff outfall results were all below PAH PWQO/CWQGs.**

PAH	GM manhole STE-53 (east discharge) (ng/L)	City Woodruff Manhole (ng/L)	Urban Street Runoff (mean) (ng/L)	PWQO/CWQG (ng/L)
Anthracene	24	<detection limit	31	.08/ 12
Benz(a)anthracene	34	<detection limit	180	.4/ 18
Benzo(a)pyrene	36	<detection limit	290	15
Benzo(g,h,i)perylene	23	<detection limit	330	.02
Chrysene	41	<detection limit	230	0.1
Fluoranthene	120	<detection limit	640	.8/ 40
Phenanthrene	110	12	310	30/ 400
Pyrene	91	<detection limit	500	25

MECP PCB Sampling in Twelve Mile Creek Watershed – 2003 and 2020



- Efforts to control PCB discharges are warranted where a source can be identified.
- Bayshore has been directed to provide the ministry with a work plan to address the PCB discharges from the site, prioritizing the East plant discharge.

Updated Water Survey Results Summary

Surface Water Survey Outcomes

- Sample results continue to show no impacts to Twelve Mile Creek.
- Oil/grit separators on the former GM property will continue to be updated as part of development activities.
- The ministry has requested a work plan with time frames from the property owner to address elevated PCB concentrations discharging from the property to the municipal storm sewer on the east side of the property.

Minimizing exposure to contaminants in Ontario:

- The ministry's Guide to Eating Ontario Fish provides consumption advice based on guidelines provided by Health Canada to minimize exposure to PCBs in Twelve Mile Creek and over 2400 other fishing locations in the province.

Regional Public Health Review Comments

Public Health was consulted on the water survey addendum results and have confirmed that their original comments have not changed:

- Public Health has not detected any unusual health outcomes in the vicinity of the GM plant.
- Based on all the thorough sampling and analysis conducted by MECP, the water in the vicinity of the GM Plant appears to be better in terms of harmful contaminants than is typically seen in urban areas.
- Based on this evidence, Public Health believes there is no increased risk of adverse health to persons living in the vicinity of the former GM plant.
- Public Health is also supportive of mitigation measures recommended by MECP (i.e., updating on-site oil grit separators) to further protect local residents from environmental contaminants.