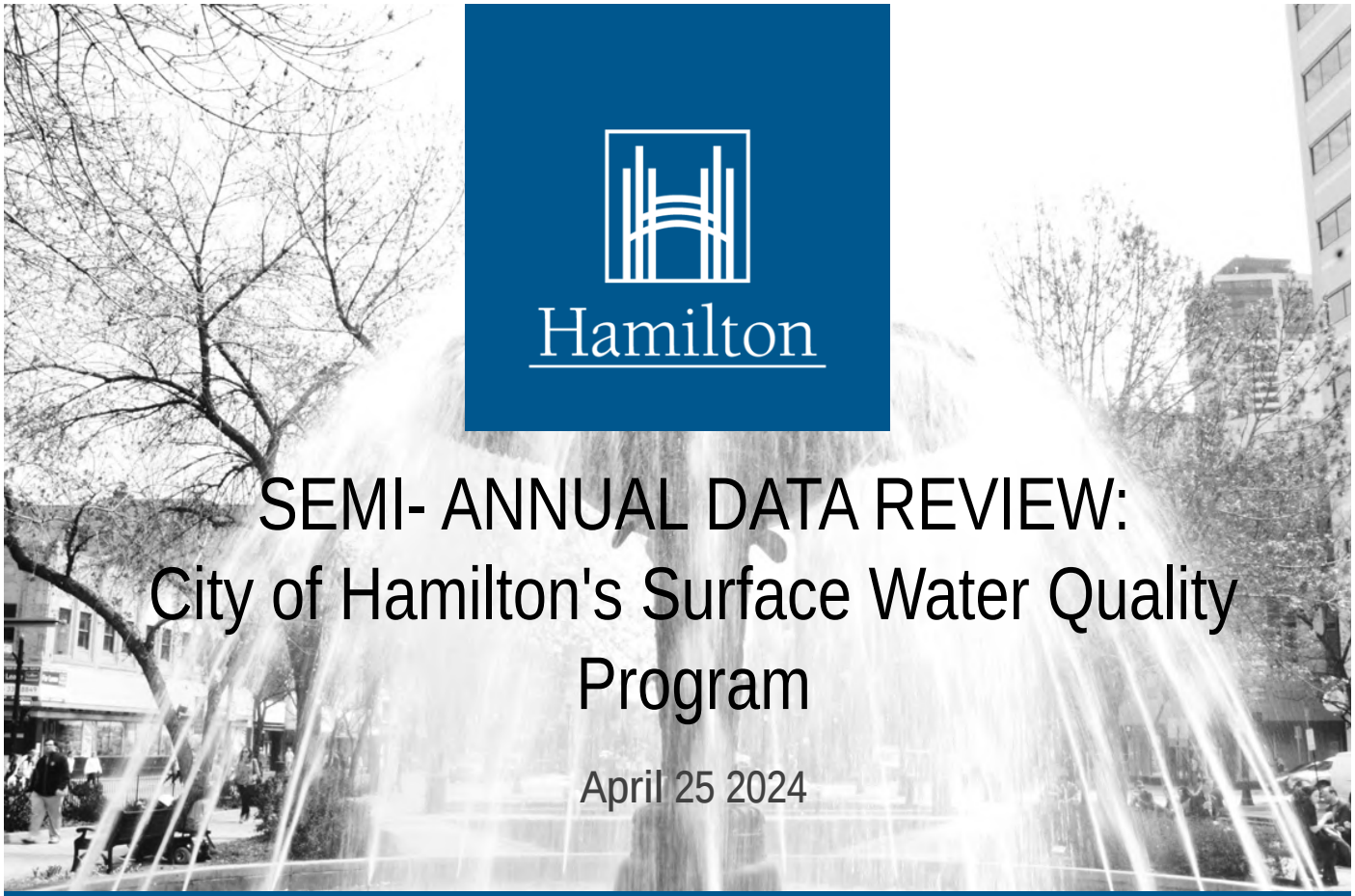


Hamilton

SEMI- ANNUAL DATA REVIEW: City of Hamilton's Surface Water Quality Program

April 25 2024

Hamilton

ENVIRONMENTAL MONITORING AND ENFORCEMENT

PUBLIC WORKS
HAMILTON WATER

AGENDA

- A Year in Review
- Areas of Interest (AOI): Semi-Annual SWQP Data Review
  - Chedoke Creek Sub-Watershed
  - Spencer Creek Watershed
    - West Pond/Cootes Paradise
  - Grindstone Creek Watershed
    - Long Pond
  - Red Hill Valley Watershed
  - Stoney – Battlefield Creeks Watershed
  - Niagara Peninsula CA Update

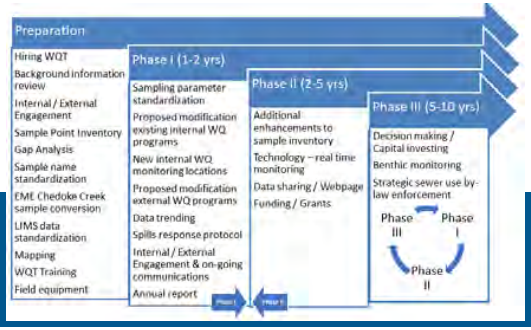
Conclusion, Action Items & Next Steps

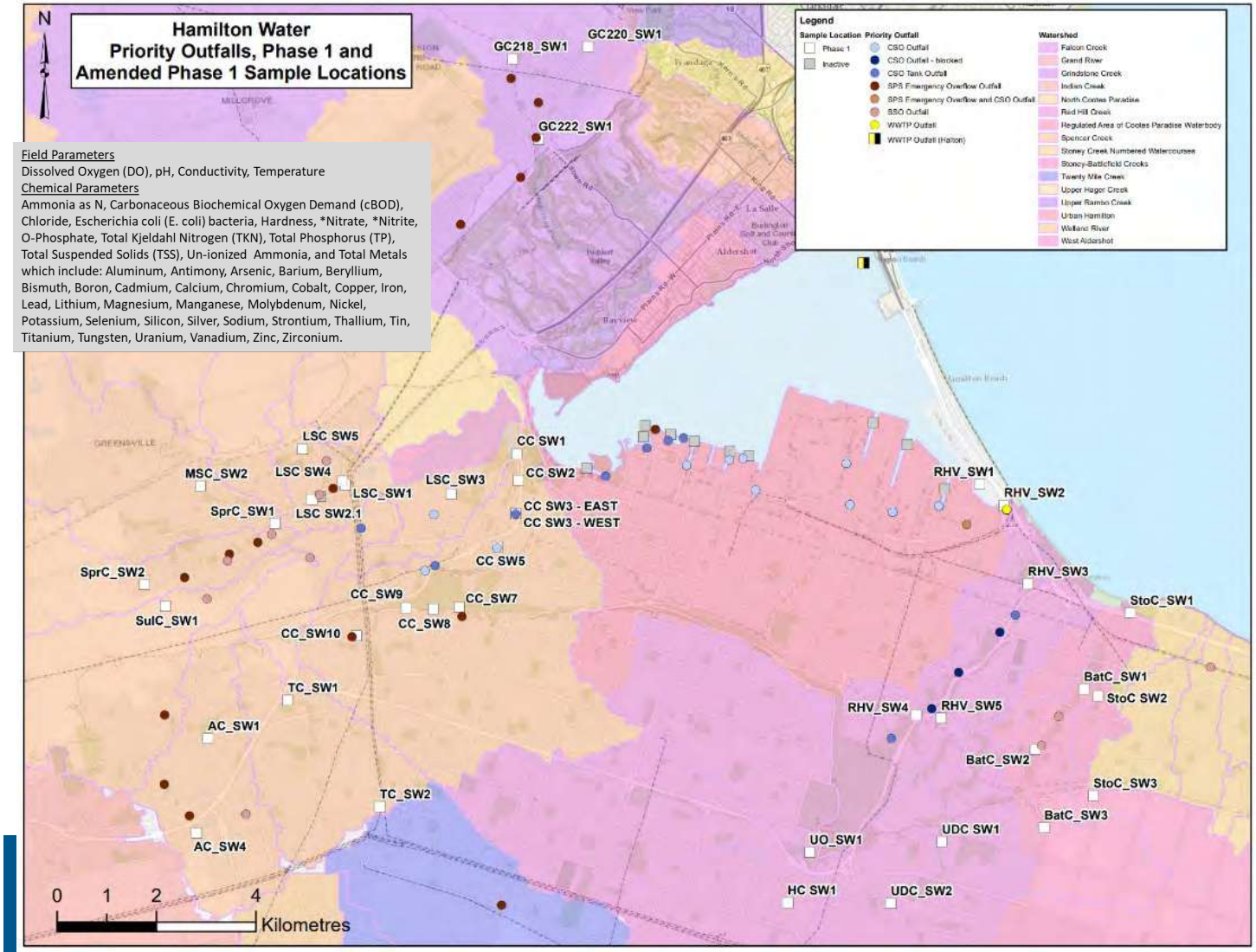
QUESTIONS & DISCUSSIONS THROUGHOUT

City's Surface Water Quality Program
A YEAR IN REVIEW

2023

- Monthly SW Sampling
- Monthly Data trending review of City SWQP results
- Semi-annual Data Review with Senior Leadership
  - City's SWQP, including other internal and external SW Programs
- Annual SWQP Operational Framework Review
  - Removed ten (10) Urban Core locations
    - Amendment of the Phase I dated Oct 13, 2023
  - Increased monthly sample locations from 33 to 40
  - Slightly modified LSC SW2 & RHV SW2 locations
- Annual Update to Council – SWQP 2022 Annual Update (PW23040)
- Council approved 2nd WQT position & Supervisor
- Renewed MOU/Partnership Agreements (next review 2025)
- Continue to work with Internal Units/Departments & External Partners

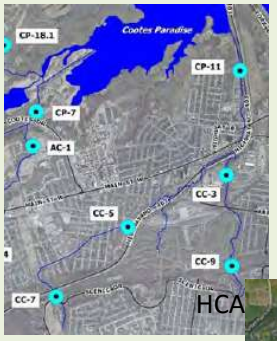


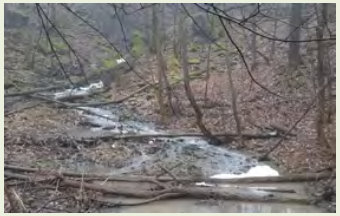

Hamilton Water
Priority Outfalls, Phase 1 and
Amended Phase 1 Sample Locations
N
Field Parameters
Dissolved Oxygen (DO), pH, Conductivity, Temperature
Chemical Parameters
Ammonia as N, Carbonaceous Biochemical Oxygen Demand (cBOD), Chloride, Escherichia coli (E. coli) bacteria, Hardness, *Nitrate, *Nitrite, O-Phosphate, Total Kjeldahl Nitrogen (TKN), Total Phosphorus (TP), Total Suspended Solids (TSS), Un-ionized Ammonia, and Total Metals which include: Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, Zirconium.
Legend
Sample Location
Phase 1
Inactive
Priority Outfall
CSO Outfall
CSO Outfall - blocked
CSO Tank Outfall
SPS Emergency Overflow Outfall
SPS Emergency Overflow and CSO Outfall
SSO Outfall
WWTP Outfall
WWTP Outfall (Halton)
Watershed
Falcon Creek
Grand River
Grindstone Creek
Indian Creek
North Cootes Paradise
Red Hill Creek
Regulated Area of Cootes Paradise Waterbody
Spencer Creek
Stoney Creek Numbered Watercourses
Stoney-Battlefield Creeks
Twenty Mile Creek
Upper Hager Creek
Upper Rambo Creek
Urban Hamilton
Welland River
West Aldershot
GC218_SW1
GC220_SW1
GC222_SW1
LSC SW5
LSC SW4
MSC_SW2
LSC_SW1
LSC_SW3
SprC_SW1
LSC SW2.1
CC SW1
CC SW2
CC SW3 - EAST
CC SW3 - WEST
CC SW5
SprC_SW2
CC_SW9
CC_SW7
CC_SW8
SulC_SW1
CC_SW10
TC_SW1
AC_SW1
TC_SW2
AC_SW4
RHV_SW1
RHV_SW2
RHV_SW3
StoC_SW1
BatC_SW1
StoC SW2
RHV_SW4
RHV_SW5
BatC_SW2
StoC_SW3
BatC_SW3
UDC SW1
UO_SW1
HC SW1
UDC_SW2
0 1 2 4
Kilometres

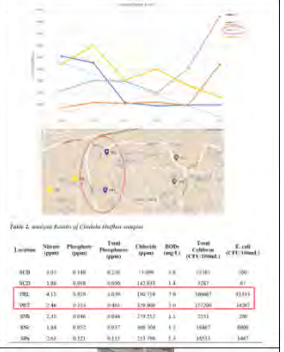
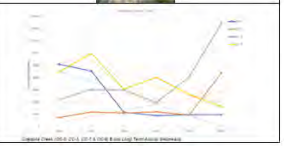
Chedoke Creek: LOWER

LOCATION	PARAMETERS OF INTEREST	INFORMATION	PHOTO
City's **CC SW3 East**	Unknown (Unknown GW quality - Landfill area)	Storm pipe at HE09OF01 = constant light flow of groundwater.	
Landfill Leachate Seep @ Storm pipe between CC SW2 & CC SW3	N/A (Landfills)	CCTV inspection completed; seep was identified. Landfills have retained Dillon Consulting: pipe is beyond the limit of waste & current leachate collection system.	

Chedoke Creek: SUMMARY

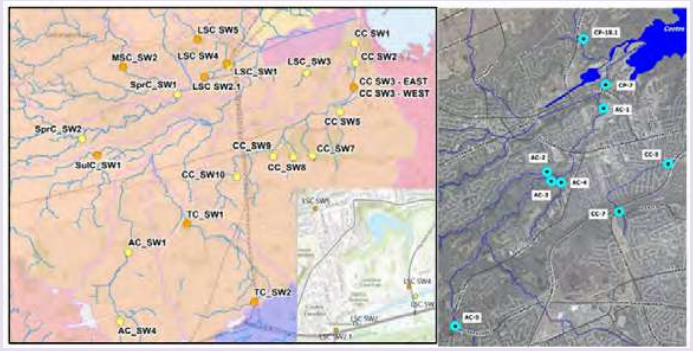




LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
HCA **CC-7** & Redeemer's Princess Falls	E.coli, Nutrients	Redeemer's PRL (up - stream to Princess Falls): phosphate and total phosphorus = significantly higher	
City's **CC SW9** & Redeemer's Mountview Falls	E.coli, Nutrients, incl. Ortho & Zinc	Geo-engineered overland flow route collapsed/ sinkhole formed.	
City's **CC SW8**	Metals (Al, Cu, Pb, Zn)	Min. to no flow during dry weather sampling; suggests flow is primarily run-off during wet weather events.	
City's **CC SW7** & Redeemer's Cliffview Falls	E.coli, Nutrients, incl. Ortho	See Redeemer data trends in Reference material.	
HCA **CC-9** & Redeemer's Chedoke Falls	E.coli, Nutrients	NA	

Hamilton

Spencer Creek: SUMMARY



LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
LSC SW1	Total Phos.	Desjardins Canal & downstream to WWTP.	
LSC SW2.1	Temp. (observed during 2024winter months)	May be cross connected upstream to outfall.	
LSC SW3	Chlorides & orange substance/organic sheen	Additional samples taken in 2023 for drinking water sweep for pesticides & an Open Characteristics. No findings. To date: considered natural.	
LSC SW4	Nutrients	Lake Jojo drainage into Cootes. More data requires to further trends/observations.	

Ancaster Creek

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
City's AC SW1	E.coli	Cross connections group made corrections upstream. Less floatables observed during sample events, in late 2023.	
HCA AC-5	E.coli	Annual concentrations of E.coli at this site appear to be improving, however the period of record for this site is only 6 years.	

Tiffany Creek

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
City's TC SW1	Chloride	*WQ Indicative of typical run-off; downstream to large commercial buildings & parking lots	

Cootes Paradise

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
General Water Quality	Nutrients & Erosion	**Westdale inlet:** Dramatic improvement in WQ. TP was 83 ug/l. Clarity was excellent. Lots of SAV through the whole season; just a few instances where the plants drove the DO < 5mg/l. **West Pond Water Lilies:** slowly recovering. Less floating algae at the boom. WQ slightly improved. **McMaster Creek** (downstream of the stormwater drains): Elevated E coli following storm events. - late 1960s agreement to allow stormwater into this inlet under the condition it was not negatively affecting RBG area – this is clearly not the case. - Emergency slope stabilization; fall 2023 below one of the outfalls. Another was a complete rebuild by McMaster in 2022. - It now needs to become a significant remediation project for the adjacent slope and adjacent old growth forest. Adjacent to the above, RBG still has an ongoing mystery of a contaminated spring.	 

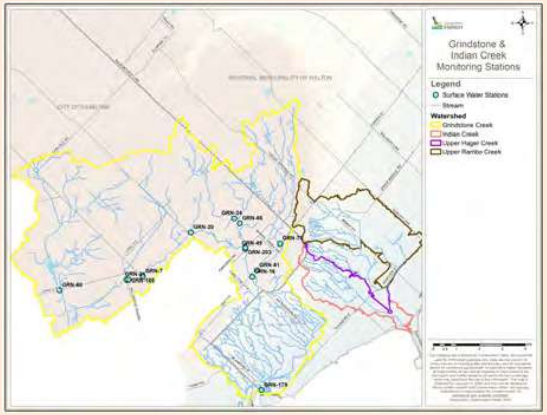
Grindstone Creek: SUMMARY

GRINDSTONE CREEK / MARSH

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
RBG General Water Quality	Nutrients & Erosion	Upper Long Pond: water lilies need time to recover. Tributaries that outfall to Long Pond: the upper most one (farthest west) showed evidence of sever erosion. The other two showed elevated TP and E coli suggesting some sewage contamination. Overall, WQ in 2023 saw an improvement to all WQ parameters. - Driven by high water levels and periods of DRY.	

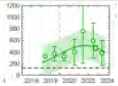
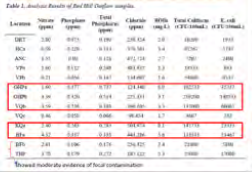
Conservation Halton:
<u>Grindstone and Indian Creek Water Quality Sampling Program</u>
In 2024, CH will monitor twelve (12) surface water sites within the City of Hamilton. These sites were also sampled in 2021 as part of a similar study. The monitoring stations within the Hamilton City limits, mostly encompass the headwaters of Grindstone Creek, with influences from wetlands within the Flamborough area.

Surface water quality samples are taken once monthly from March to November, and are analyzed for several parameters including nutrients, metals, bacteria, suspended solids, and general chemistry.



Red Hill Valley: SUMMARY

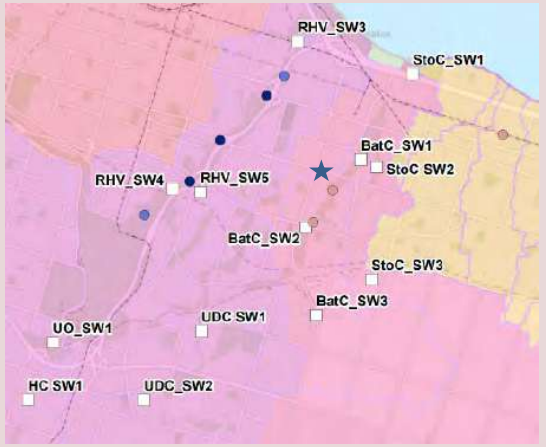
RED HILL VALLEY (includes SWQP Watersheds RHV, UO, HC, UDC & LDC)

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
RHV SW1 & SW2 / SW2.1 Redemeer's Woodward	Total Phos. Dissolved Oxygen Temp.	Change in WQ between City's RHV SW3 & RHV SW2.1 (Harbour water influence?)	
WUP WQ Locations	Nutrients Metals	Metal concentrations such as Copper, Lead, Iron, Zinc are consistently high; Boron and Cobalt concentrations should continue to be specifically monitored for trends in future years; Nutrient based parameters (Nitrate/Nitrite, TKN, Total Phosphorous, Ammonia) generally do show a consistent upward trend downstream for the sample locations; and PWQO exceedances at the upstream monitoring locations (**WQ1, WWTP effluent**) were **consistently lower** than those further downstream (WQ2, WQ3, WQ5);	
UO SW1 & HCA's Mt. Albion (Ecoli)	Chloride, E.coli, Zinc	HCA's analysis suggests that a steady source of E.coli within this creek could potentially be located near the Mt. Albion location	
Redeemer's Butternut Falls	Nutrients	Upstream of Buttermilk Falls (just east of where it passes under Mountain Brow Blvd), an overflow pipe appears to be an important source of bacterial and nutrient contamination for the Red Hill Creek Watershed. 	
Redeemer's Upper Glendale Falls	Chloride		
Redeemer's Lower Davies Creek area	Nutrients	Multiple sites within the Red Hill Creek watershed showed evidence of fecal contamination. Five sample sites had total coliform counts greater than 100 000 CFU/100mL. These five sites also had relatively high nitrate, phosphate and total phosphorus concentrations	

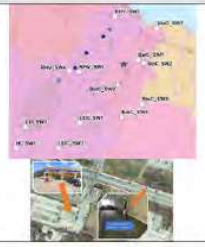
Stoney - Battlefield Creeks: AOI & SUMMARY

BatC SW1: Potential cross connection upstream at SD07OF01

- **December 2022** – Found with TC & reported to WWC
- **Sept 2023**: Cross Connections group rely on 'physical evidence'. Laundry machines are notoriously hard to pin down as they're all soluble contaminants and there's nothing left behind for us to see.
- CC will keep this area of concern in mind as they explore new investigation strategies within the upcoming Enhanced Sewer Inspection Program.
- **Oct 2023 EME Update:** CC did identify a potential source/property
  - No solids, but large amounts of flow
- EME sampled outfall and upstream MHs.
- **Current Update:** In-pipe sampling/tracing program will inspect.

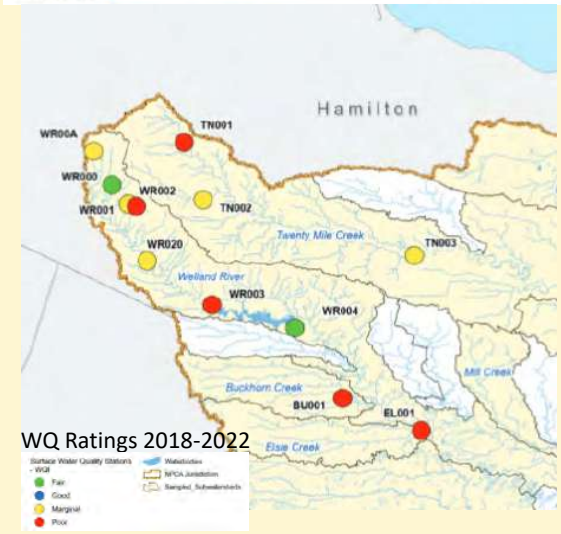


STONEY – BATTLEFIELD CREEKS

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
BatC SW1	Nutrients	Potential cross connection upstream at SD07OF01. **Oct 2023 Update:** CC did identify a potential source /property. No solids, but large amounts of flow. EME sampled outfall and upstream MHs. No further update.	

Update:
Oct 24, 2023: EME collected samples at the outfall and a manhole upstream.
Results indicate exceedances.

Niagara Peninsula CA Update



WQ Ratings 2018-2022

NIAGARA PENINSULA CA UPDATE

LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION
NPCA	Total Phos. = 96% of samples Chloride & Zinc = WROO2	NPCA monitors twelve (12) SW sites within the CoH Two of the sites were added in 2023 from the City's SWQP Phase II. Lake Niapenco in Binbrook Conservation Area is also monitored throughout the year. Chloride & Zinc commonly exceeds downstream to the Hamilton International Airport.

CONCLUSION, ACTION ITEMS & NEXT STEPS

- ✓ Continue with Monthly Field Monitoring & Sampling
- ✓ Annual Review the SWQP Framework (May-June 2024)
  - ✓ Phase II Expansion & 2nd WQT
  - ✓ Process Improvements = SWQP Findings, Communications & Actions/ Next Steps
  - ✓ Open Hamilton / Data Sharing & Trending
    - Currently no WQ Trending Dashboard
- ✓ WQ Trending Dashboard
- ✓ Annual Update to Council (September 2024)
- ✓ Next Semi-annual Data Review (November 2024)
- ✓ Continue to work with Internal Units / Departments & External Partners
  - ✓ WQ Trending & SW Threshold Development
  - ✓ Phase II Expansion
  - ✓ PW Infrastructure Sampling & Inspections
  - ✓ Knowledge & Data Sharing


Hamilton
THANK YOU!
Public Works
Hamilton Water

CITY'S SWQP SEMI-ANNUAL DATA REVIEW: REFERENCE MATERIAL

Hamilton

CHEDOKE CREEK

Hamilton

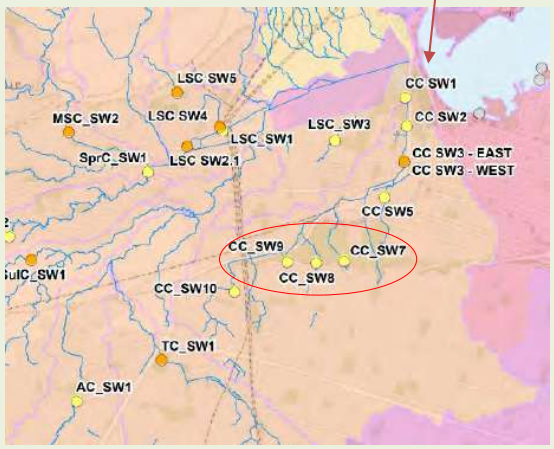
Chedoke Creek: Areas of Interest

- Lower Chedoke Creek
  - Storm Pipe at HE09OF01 – constant light flow
  - Landfills Update:

Leachate @ Stormwater drainage pipe: Completed CCTV inspection. Seep was identified. Pipe is partially lined; considering to line the remainder of the pipe.

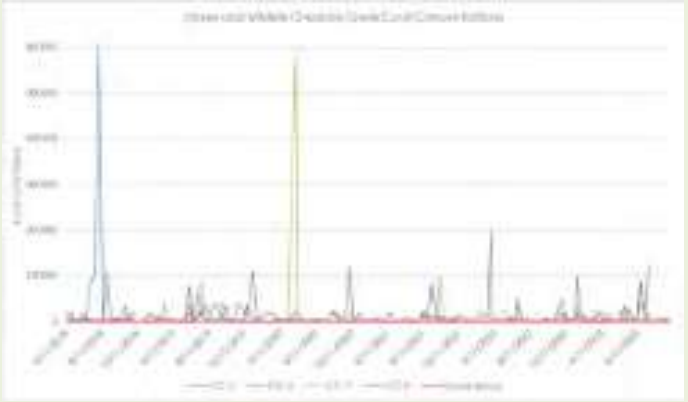
- *Retained Dillon Consulting: pipe is beyond the limit of waste & current leachate collection system.*

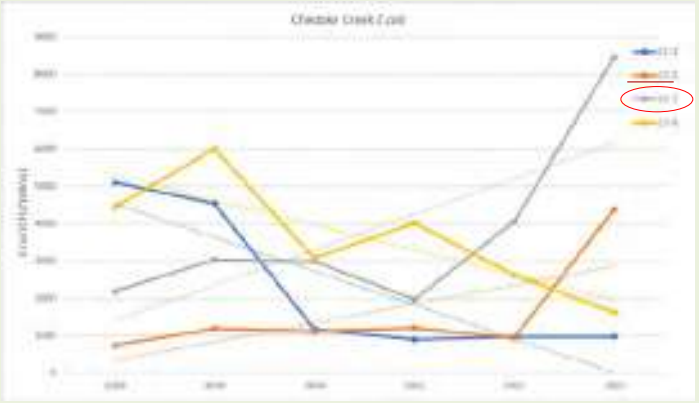
- Chedoke Creek Brow
  - CC SW7
    - Nutrients
  - CC SW8
    - Metals
  - CC SW9
    - Nutrients, Ort

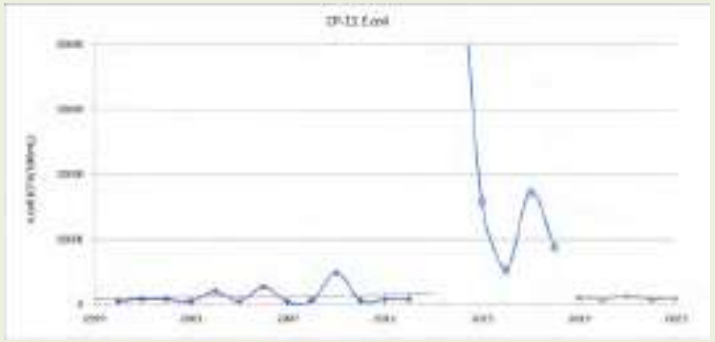


Chedoke Creek: Areas of Interest

HCA Data – E.coli

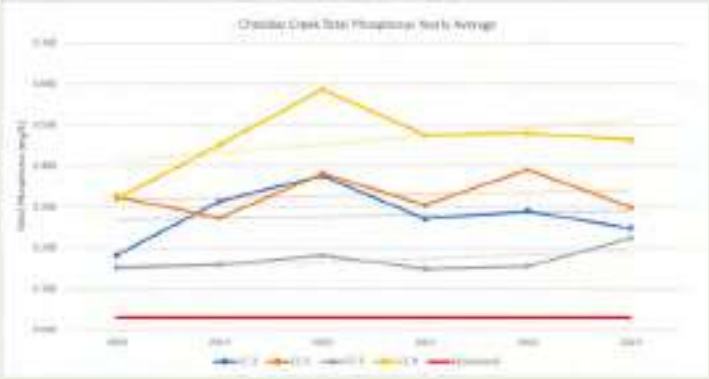


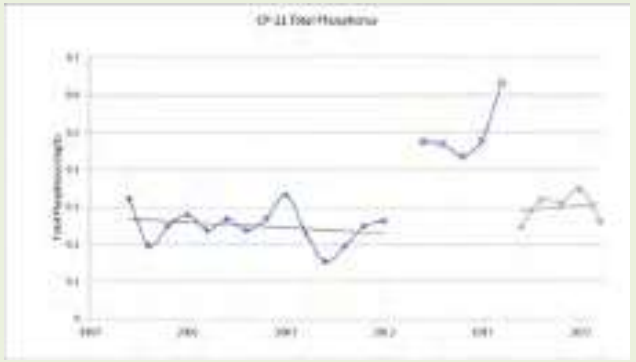




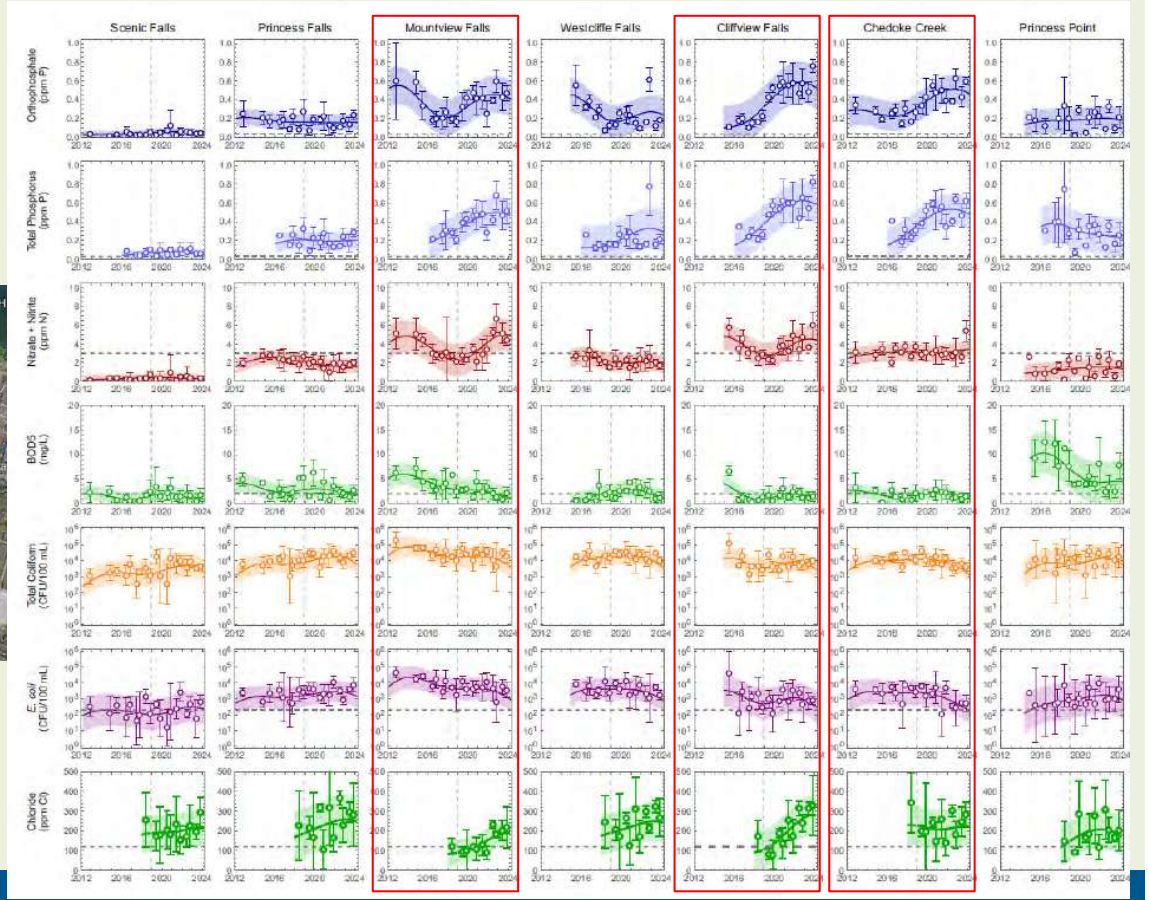
HCA Data – Total Phos.

Chedoke Creek: Areas of Interest





Redeemer Data: Chedoke Creek: Areas of Interest



Redeemer Data:

Chedoke Creek: Areas of Interest

PRL and PRT: elevated levels of all WQ parameters = indicate sewage of contamination.

PRL (upstream to Princess Falls): phosphate and total phosphorus concentrations significantly higher

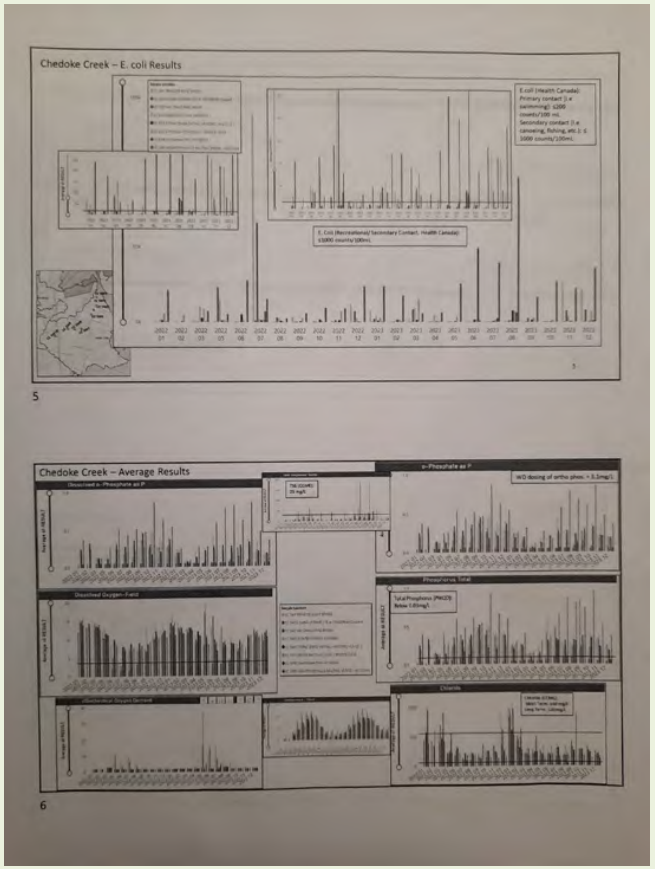
The outflows contained high nutrient concentrations and bacterial counts

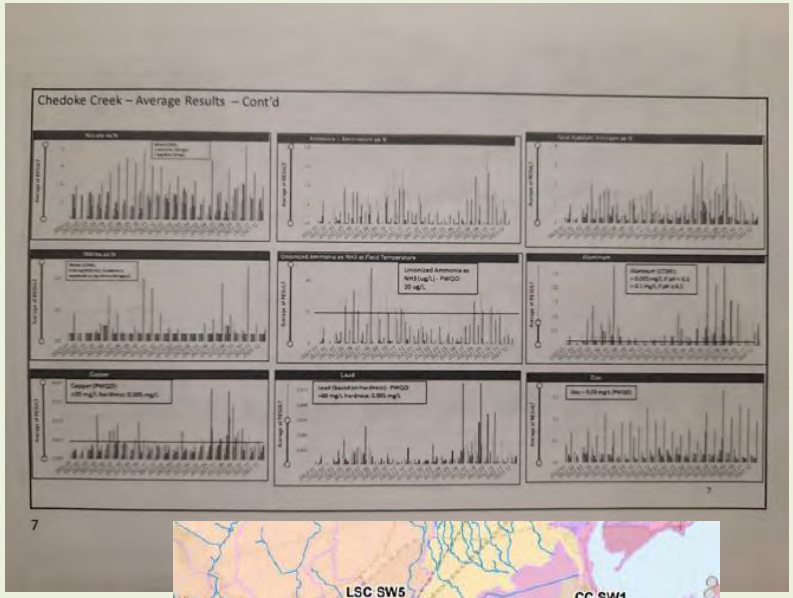
Possible cross-connections in these areas = source of sewage contamination in the falls.

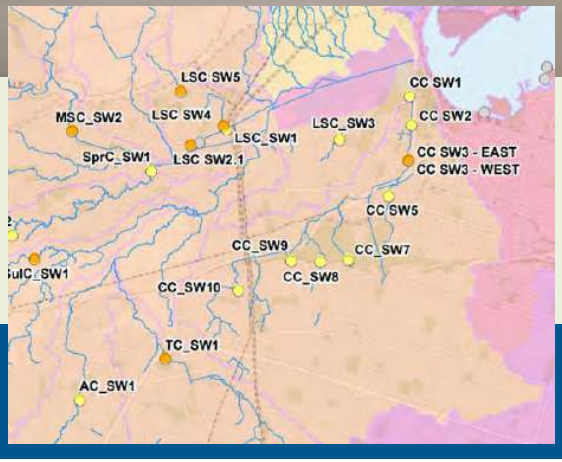
Table 2. Analysis Results of Chedoke Outflow samples.

Location	Nitrate (ppm)	Phosphate (ppm)	Total Phosphorus (ppm)	Chloride (ppm)	BOD5 (mg/L)	Total Coliform (CFU/100mL)	E. coli (CFU/100mL)
SCB	3.07	0.149	0.258	73.099	5.6	25267	200
SCD	1.80	0.058	0.050	142.938	1.4	3267	67
PRL	4.15	0.929	1.039	190.716	7.6	160667	81333
PRT	2.46	0.353	0.403	329.908	5.0	157200	34267
SNb	2.35	0.046	0.044	279.552	1.5	2533	200
SNc	1.84	0.052	0.037	369.704	1.2	16467	6600
SPa	2.63	0.121	0.113	213.796	1.3	16533	1467

Chedoke Creek: SWQP Data







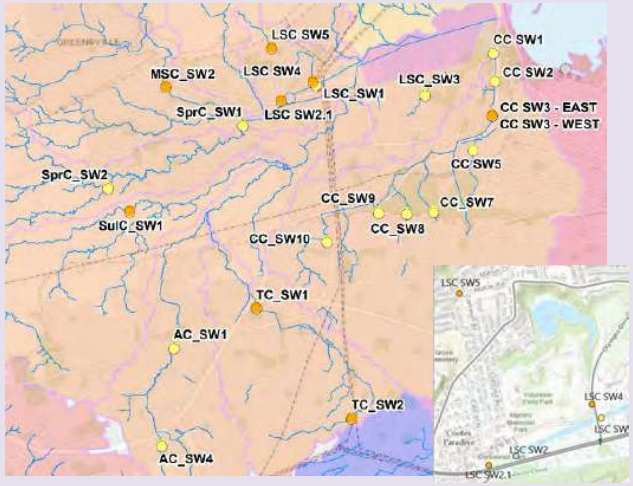
Hamilton

SPENCER CREEK & COOTES PARADISE

Hamilton

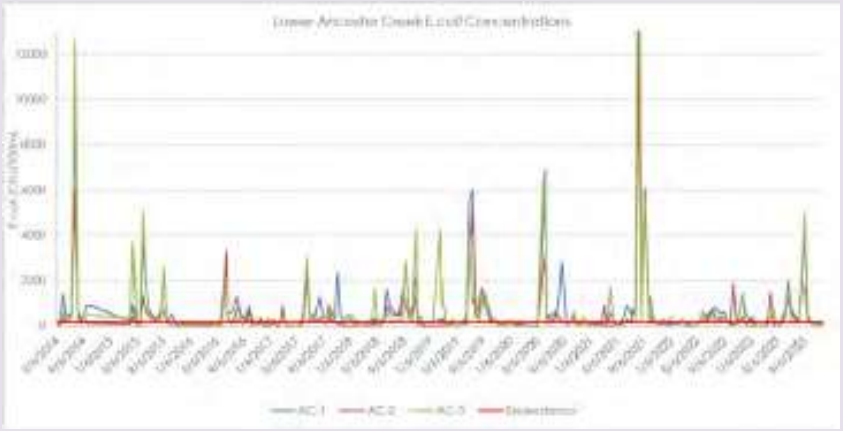
Spencer Creek: Areas of Interest

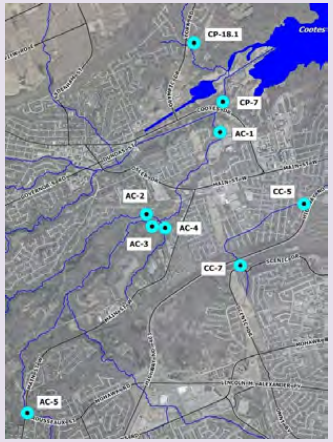
- Ancaster Creek
  - AC SW1 – cross con.
- Tiffany Creek
  - TC SW1 – urban creek
- Lower Spencer Creek
  - LSC SW2.1 – temp (winter)
  - LSC SW3 – chlorides
  - LSC SW4 – Lake Jojo

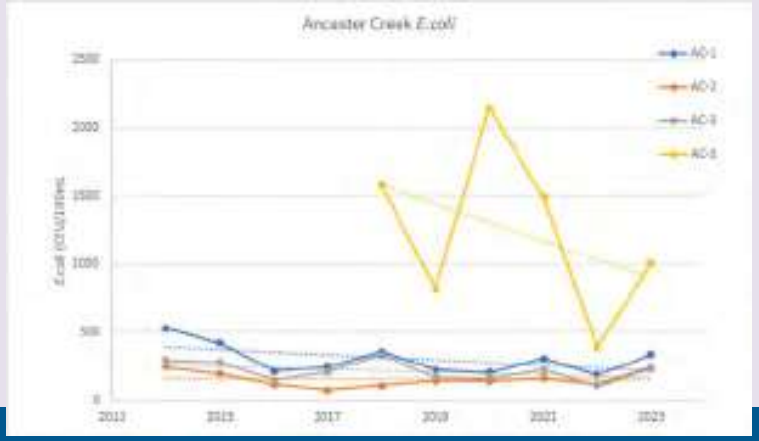


HCA – E.coli

Spencer Creek: Areas of Interest

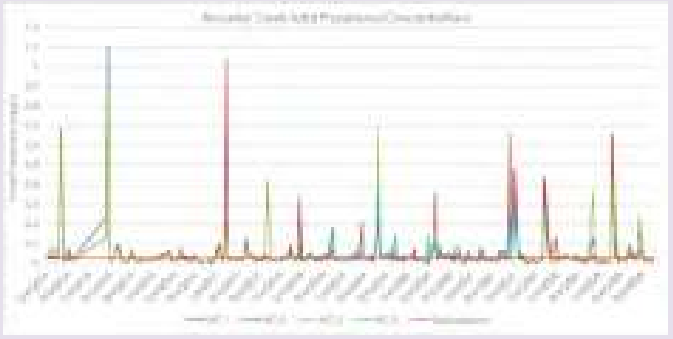


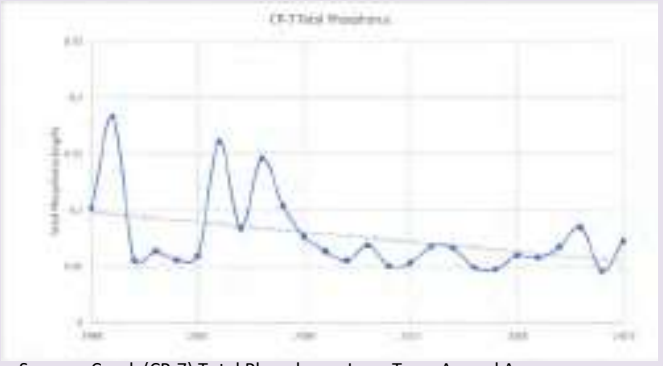




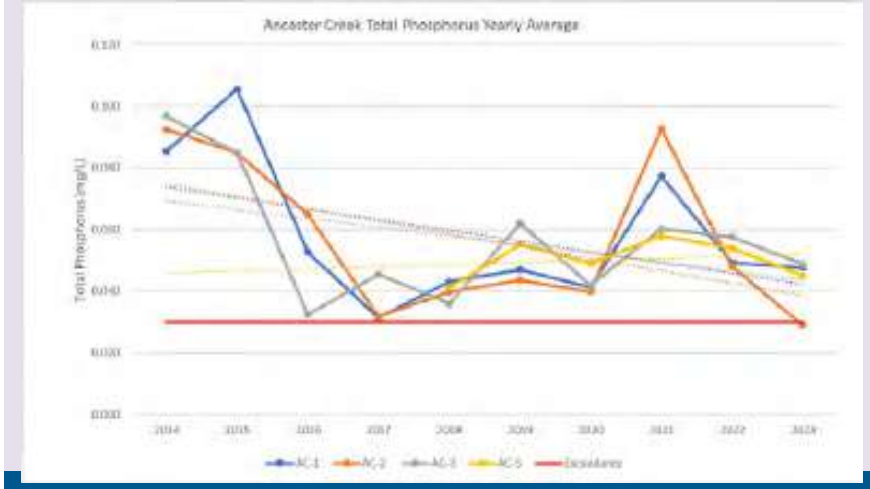
HCA – Total Phos.

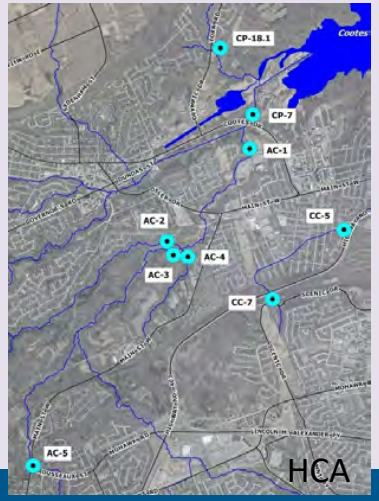
Spencer Creek: Areas of Interest





Spencer Creek (CP-7) Total Phosphorus Long Term Annual Average





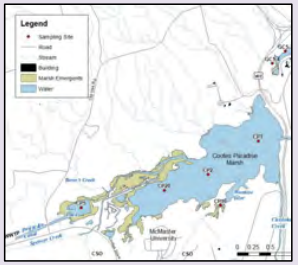
RBG

Spencer Creek: Areas of Interest

- Cootes Paradise Data & Summary

General:

- **WQ 2023 = Very Good. All WQ parameters were better in 2023 over 2022.**
- At delisting station in Cootes (CP2), 16 of the 22 samples met initial TP target for the RAP of <70ug/l.
  - The mean for May to Sept was 54 ug/l.
- **Right conditions in May to grow SAV (submergent aquatic vegetation)**
  - Lots of clear water; low in TP = few storms to add sediment.
  - The plants hold the water still and persisted through most of the year when we usually see a die off of the plants after June.
- We did have a couple samples with <5 mg/l of DO (likely due to SAV).



Specific Locations:

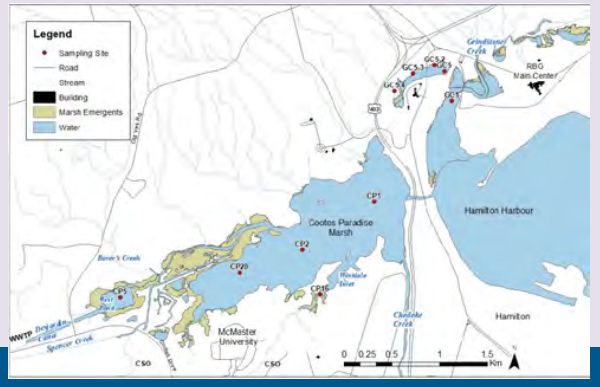
- **Westdale inlet:** Dramatic improvement in WQ. TP was 83 ug/l. Clarity was excellent. Lots of SAV through the whole season; just a few instances where the plants drove the DO < 5mg/l.
- **West Pond Water Lilies:** slowly recovering. Less floating algae at the boom. WQ slightly improved.
- **McMaster Creek** (downstream of the stormwater drains): Elevated E coli following storm events.
  - The one storm in July with 18mm of rain had E coli up to 23000. TP was elevated during the dry sampling as high as 279 ug/l so I guess that would be evidence of urban runoff.

RBG – Cootes Paradise

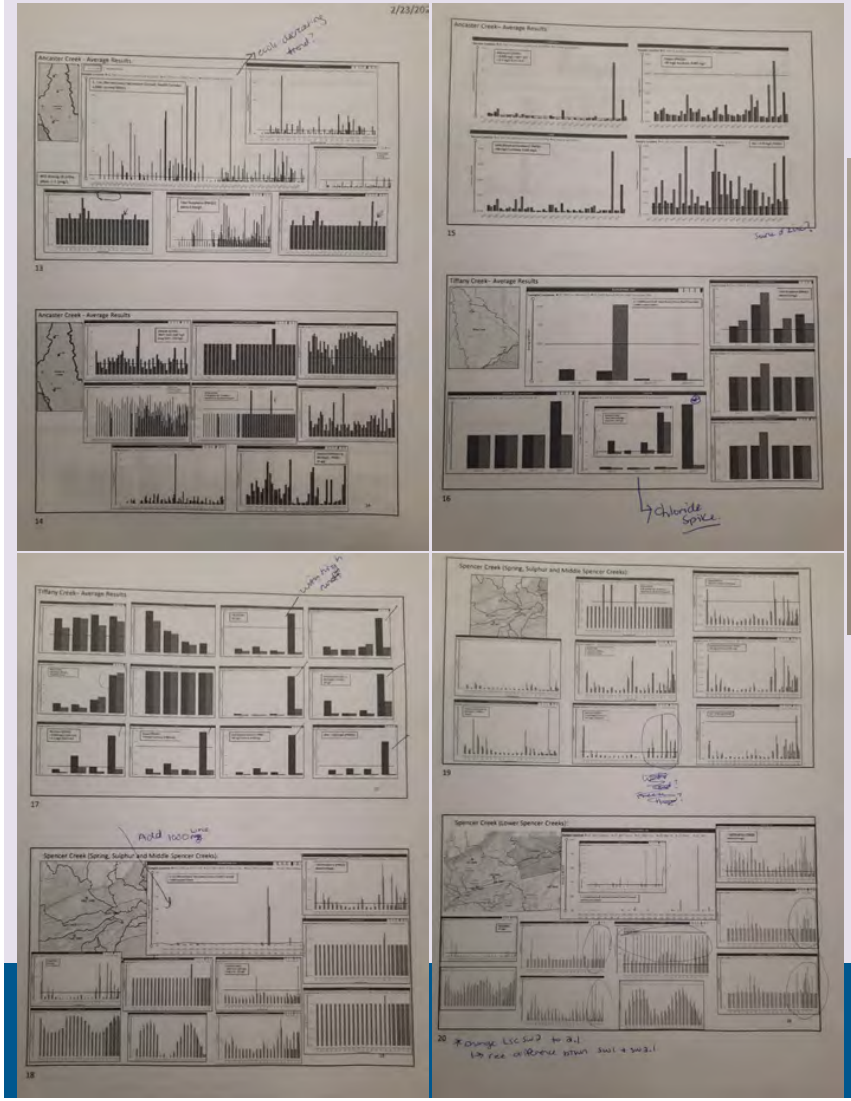
Spencer Creek: Areas of Interest

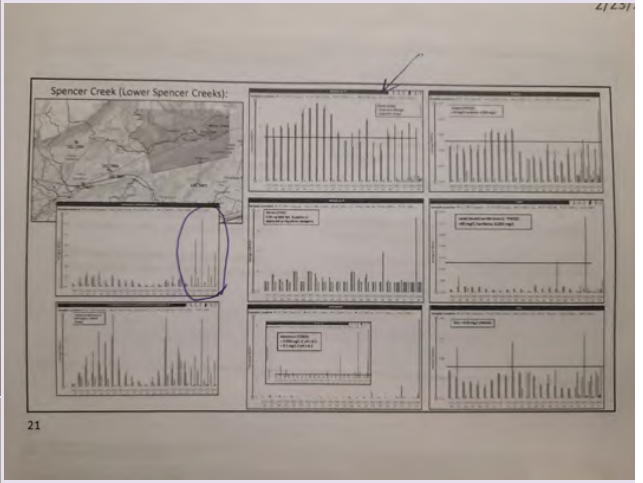
Parameters	HHRAP Targets Cootes/Grindstone		Guidelines	Cootes Sampling Stations				
	Initial	Proposed Final		1	2	5	16	20
Secchi (m)	>1.5/>1			**0.64**	**0.59***	**0.54**	**0.79**	**0.64**
Temperature (˚C)				19.90	18.09	20.07	18.80	19.31
pH				8.45	8.27	8.09	7.66	8.34
Chl a (µg/l)	<20			-	3.93	-	-	-
Turbidity (NTU)		<4 / <8		**8.31**	**7.87**	**9.20**	2.05	**5.16**
DO (mg/L)	>5	>5 for 80% of samples and >3 for 95% of samples		8.75	7.62	11.14	**4.46**	8.47
TP (µg/L)	60 – 70		<30[1,3]	57.39	54.33	**101.88**	**83.43**	57.37
Nitrate-N (mg/L)			<3.0[1]	-	0.39	**5.84**	-	-
Nitrite-N (mg/L)	< 0.06			-	0.025	**0.10**	-	-
Unionized Ammonia (mg/L)	<0.02	<0.02	<0.02[3]	0.003	0.003	0.0027	0.0003	-
TSS (mg/L)	<25	<10 / <14		14.85	10.11	15.52	4.92	-
ISS (mg/L)				8.93	3.54	7.63	0.55	-
E. coli (#/100 mL)			<1000[2]	17	105	15	17	-

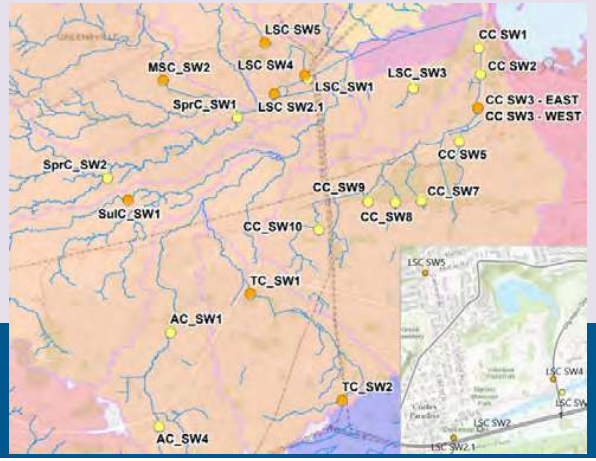
1 Canadian Council of Ministers of the Environment Guideline
2 Federal Secondary Contact for Recreation Guideline
3 Provincial Water Quality Objective
NOTE: * seven and ** two samples where secchi is equal than water depth.
CP5 samples were not collected beyond September 6th



Spencer Creek: SWQP Data







GRINSTONE CREEK & MARSH

Hamilton

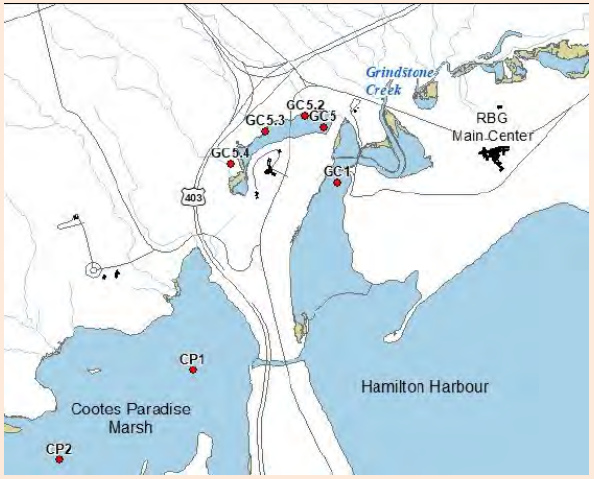
Grindstone Creek: Areas of Interest

RBG

Parameters	HHRAP Targets Cootes/Grindstone		Guidelines	Grindstone Sampling Stations	
	Initial	Proposed Final		1	5
Secchi (m)	>1.5/>1			**0.42****	**0.35**
Temperature (˚C)				19.36	20.77
pH				8.32	8.06
Chl a (µg/l)	<20			8.02	-
Turbidity (NTU)		<4 / <8		**16.54**	**21.05**
DO (mg/L)	>5	>5 for 80% of samples and >3 for 95% of samples		8.35	7.00
TP (µg/L)	60 – 70		<30[1,3]	**97.37**	**133.56**
Nitrate-N (mg/L)			<3.0[1]	0.76	-
Nitrite-N (mg/L)	< 0.06			0.03	-
Unionized Ammonia (mg/L)	<0.02	<0.02	<0.02[3]	0.004	0.0003
TSS (mg/L)	<25	<10 / <14		**25.40**	24.62
ISS (mg/L)				6.31	16.11
E. coli (#/100 mL)			<1000[2]	97	16

Water quality parameters (mean values) measured during the entire 2023 field season (May 3rd to September 27th); initial and proposed final HHRAP targets associated delisting stations in Cootes Paradise Marsh (CP2) and Grindstone Marsh (GC1) are also listed.
Values highlighted in bold exceed targets/guidelines.

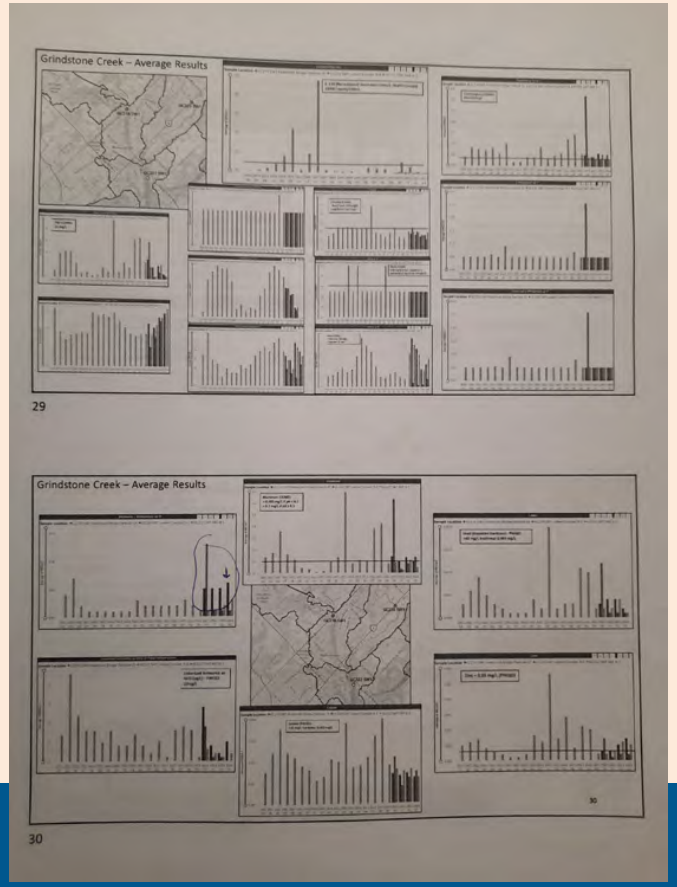
- Upper Long Pond: water lilies need time to recover. May be a similar West Pond; recover from seeding.
- 2022 monitoring: Collected info on tributaries that outfall to Long Pond. The upper most one (farthest west) showed evidence of sever erosion. The other two showed elevated TP and E coli suggesting some sewage contamination. See full 2022 report.



- At the Grindstone delisting station, saw an improvement in all parameters.
- The mean TP for May to Sept was 97.37 ug/l.
- The improvement at GC1 was driven by higher water levels. (The added water depth at the shallow site reduces the resuspension from the bottom).
- Results at GC1 were similar to 2019 and 2017 when we had the record-breaking high-water levels.

Grindstone Creek: Areas of Interest

Lots of development / sprawl in this area to keep an eye on with future WQ



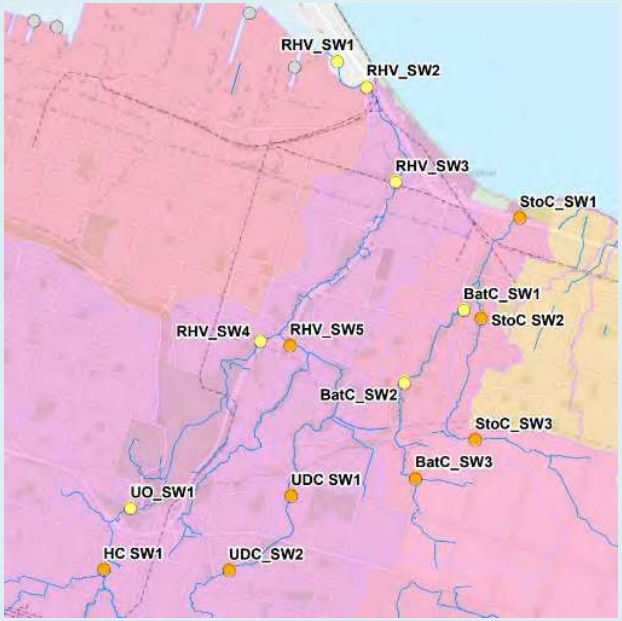
RED HILL VALLEY

Hamilton

Red Hill Valley: Areas of Interest

Red Hill Valley & Upper Davies Creek

- RHV SW1, RHV SW2 & SW2.1
  - Changes between RHV SW2 & RHV SW3 (Harbour influence?)
- UO SW1 (chlorides & zinc)
- RHV / Ham Harbour DOT data – No Update.



Red Hill Valley: Areas of Interest

WUP Data

- Metal concentrations such as Copper, Lead, Iron, Zinc are consistently high; **Boron and Cobalt concentrations should continue to be specifically monitored for trends** in future years;
- Nutrient based parameters (**Nitrate/Nitrite, TKN, Total Phosphorous, Ammonia**) generally do show a consistent **upward trend downstream** for the sample locations;
- PWQO exceedances at the upstream monitoring locations (**WQ1, WWTP effluent**) were **consistently lower** than those further downstream (WQ2, WQ3, WQ5); and
- A **consistent number of PWQO exceedances** was noted for the majority of the samples collected in 2023, these exceedances were **for parameters which typically exceed PWQO limits for urban watercourses** (metals, E. Coli).

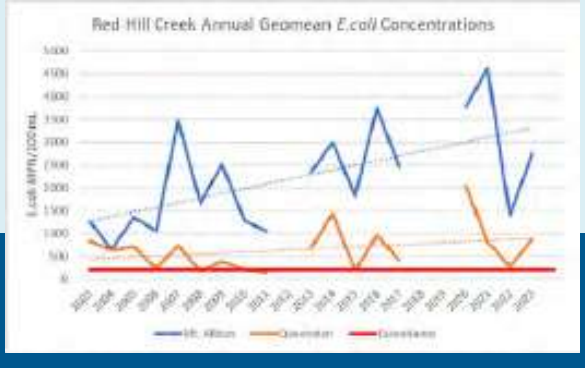
HCA's (MECP) PWQMN E. Coli Data

Red Hill Valley: Areas of Interest

Seven (7) locations sampled monthly from April – November in conjunction with Provincial Water Quality Monitoring Network sampling schedule and locations.

- Hamilton Water currently supports E. coli sampling and analyzing samples at the City's Environmental Laboratory.
- PWQMN Parameters include: Ammonia, Nitrate, Nitrite, TP, Dissolved Organic and Inorganic Carbon, and Metals analyzed at the MECP Laboratory.

- Red Hill Creek at Mt. Albion exceeded every sample event in 2023
- Red Hill Creek at Queenston Road exceeded on 5/7 samples in 2023
- Since sampling began in 2003 E.coli in Red Hill are experiencing an increasing trend in concentration
- HCA's analysis suggests that a steady source of E.coli within this creek could potentially be located near the Mt. Albion location
- Downstream at Queenston, E.coli concentrations suggest there is a dilution effect taking place within Red Hill Creek

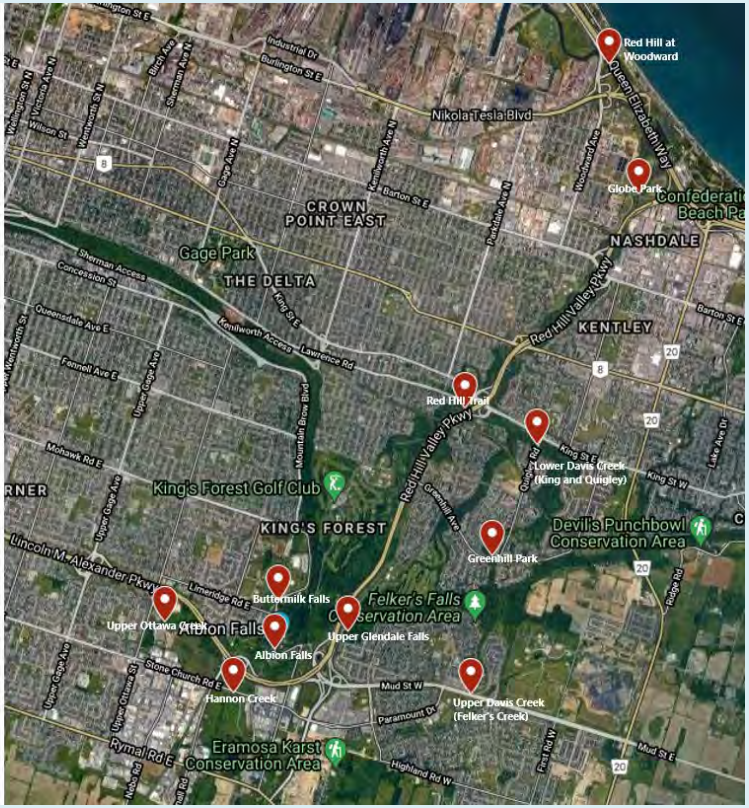


Redeemer

Red Hill Valley: Areas of Interest

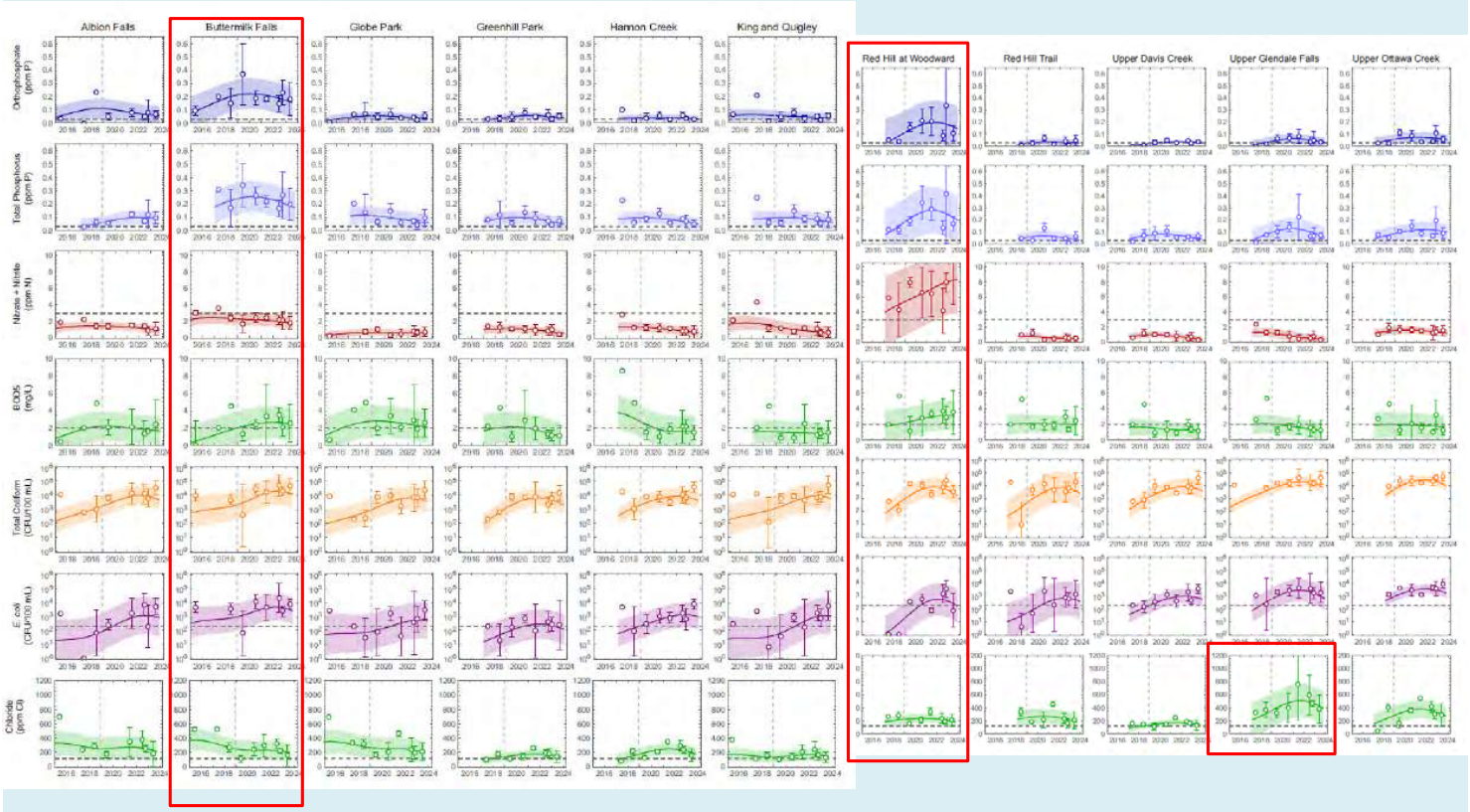
Sampling Locations – Red Hill Creek Watershed

- since 2017
  (2015 for some sites)
- in 2022
  - every two weeks May – June
  - every two weeks Oct – Nov



Redeemer

Red Hill Valley: Areas of Interest



Redeemer

Red Hill Valley: Areas of Interest

Five sample sites: GHPa, GHPb, VQb, KQa, and BFa

- total coliform counts greater than 100 000 CFU/100mL
- high nitrate, phosphate and total phosphorus concentrations.

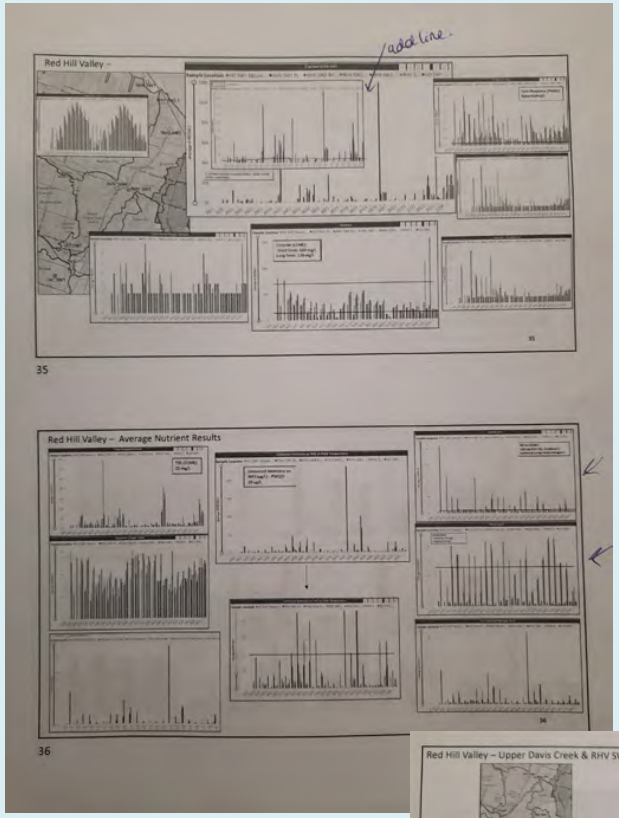
Table 1. Analysis Results of Red Hill Outflow samples.

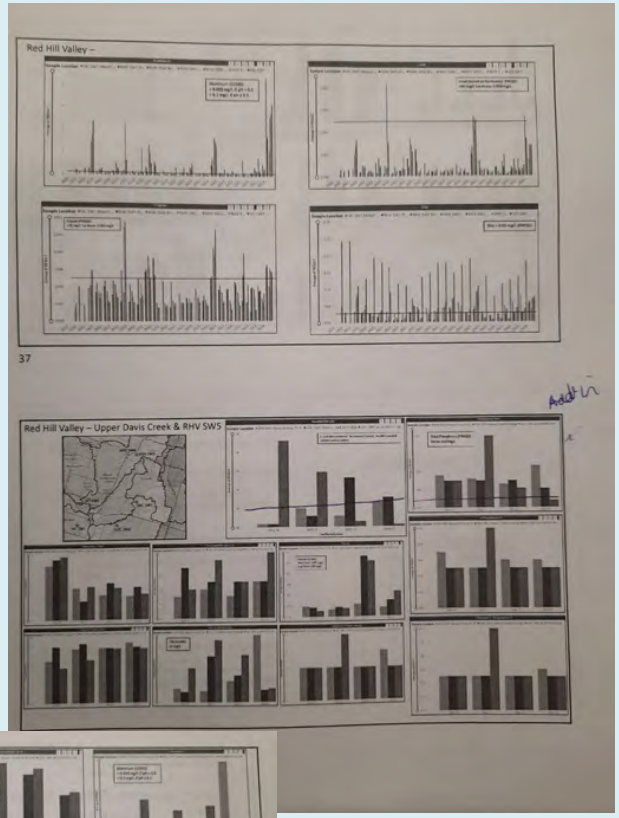
Location	Nitrate (ppm)	Phosphate (ppm)	Total Phosphorus (ppm)	Chloride (ppm)	BODs (mg/L)	Total Coliform (CFU/100mL)	E. coli (CFU/100mL)
DRT	2.80	0.073	0.190	238.324	2.0	16200	1933
HCa	0.59	0.228	0.313	370.501	3.4	92267	5733
ANC	1.55	0.00	0.128	472.724	2.7	7267	2400
VPa	1.60	0.112	0.248	483.937	1.3	14533	933
VPb	0.21	0.056	0.147	134.692	1.6	54800	8533
GHPa	1.60	0.377	0.737	124.348	6.0	102533	35333
GHPb	4.39	0.320	0.514	221.331	3.1	219200	140533
VQb	3.59	0.236	0.388	396.605	3.3	137000	60067
VQc	0.46	0.058	0.066	96.454	1.7	3667	333
KQa	2.40	0.263	0.243	504.974	8.1	141733	23333
BFa	4.32	0.337	0.335	443.286	3.6	133333	51467
BFb	2.61	0.106	0.176	256.325	3.4	21800	5800
THP	3.78	0.179	0.272	187.122	5.3	55000	17000

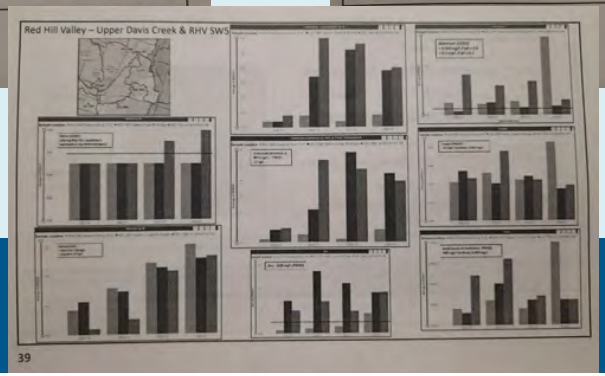
showed moderate evidence of fecal contamination

Butternut Falls(Bfa/b):

- Two (2) cross connections corrections (recent) along Upper Kenilworth
- LiquiForce relining sewers in area; unconfirmed if it's SAN/STM, both?







Red Hill Valley: SWQP Data

Hamilton

PUBLIC WORKS
HAMILTON WATER

BATTLEFIELD – STONEY CREEKS

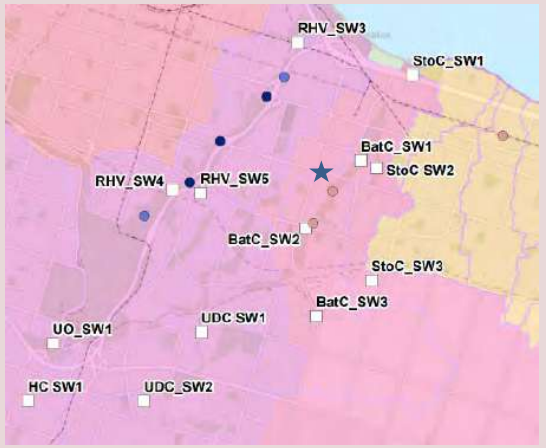
Hamilton

Stoney - Battlefield Creeks: AOI & SUMMARY

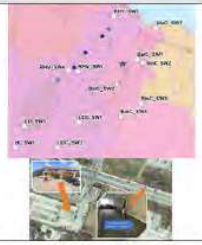
BatC SW1: Potential cross connection upstream at SD07OF01

- **Sept 2023**: Cross Connections group rely on 'physical evidence'. Laundry machines are notoriously hard to pin down as they're all soluble contaminants and there's nothing left behind for us to see.
- CC will keep this area of concern in mind as they explore new investigation strategies within the upcoming Enhanced Sewer Inspection Program.

- **Oct 2023 EME Update:** CC did identify a potential source/property
  - No solids, but large amounts of flow
- EME sampled outfall and upstream MHs.
- No further update as no inspections were completed in Oct 2023

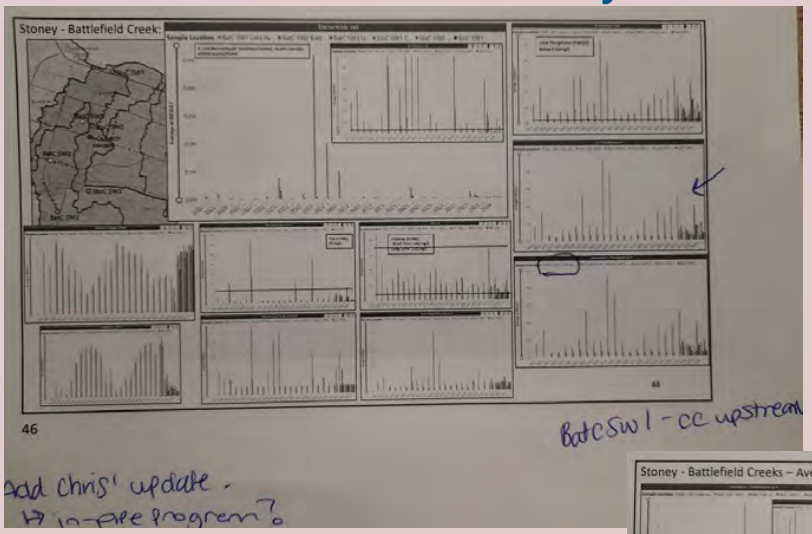


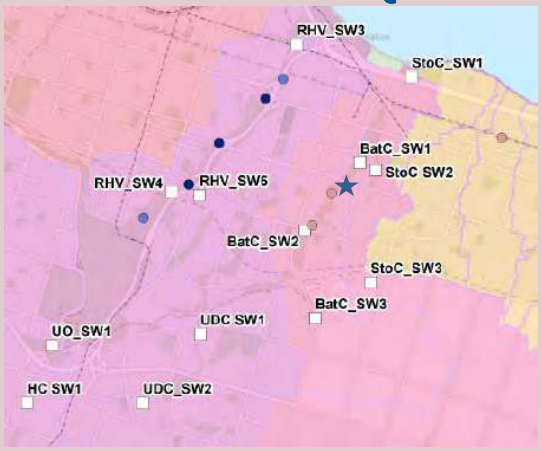
STONEY – BATTLEFIELD CREEKS

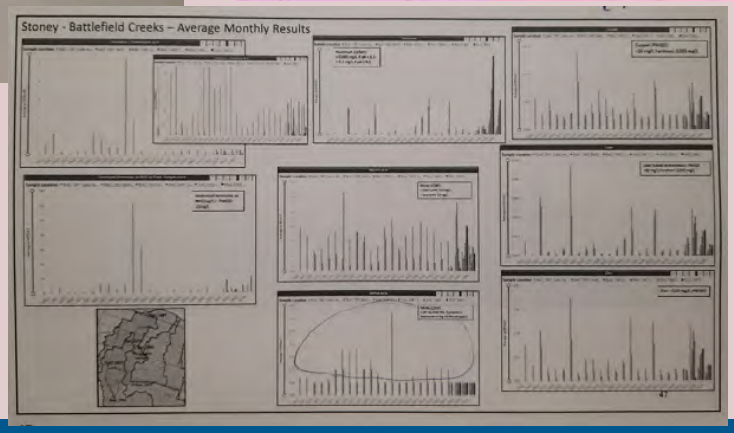
LOCATION	PARAMETERS OF INTEREST	OTHER INFORMATION	PHOTO
BatC SW1	Nutrients	Potential cross connection upstream at SD07OF01. **Oct 2023 Update:** CC did identify a potential source /property. No solids, but large amounts of flow. EME sampled outfall and upstream MHs. No further update.	

Update:
Oct 24, 2023: EME collected samples at the outfall and a manhole upstream.
Results indicate exceedances.

Stoney - Battlefield Creeks: SWQP Data







NIAGARA PENINSULA CA

Hamilton

Niagara Peninsula CA Update

- NPCA monitors twelve (12) SW sites within the CoH
- Two of those sites were added in 2023 from the City's SWQP Phase II.
- Lake Niapenco in Binbrook Conservation Area is also monitored throughout the year.

Surface water quality samples were taken once monthly from April to November.
total phosphorus, E.coli, chloride, nitrate, and zinc.

Total Phosphorus
In 2023, **96% of samples exceeded** total phosphorus.
Escherichia coli
E.coli guidelines were exceeded in 34% of the CoH sites.
Twenty Mile Creek and Sinkhole creek exceeded the guideline most frequently.
Chloride
The Canadian Water Quality Guideline (CWQG) for chloride is 120 mg/L. WR002, Welland River downstream of the Hamilton International Airport, exceeds the guideline frequently and has a median concentration of 657.5 mg/L which means it is a chronic issue.
Sinkhole creek, Twenty Mile Creek, and Welland River exceeded chloride guidelines on a few occasions.
Nitrate
Buckhorn Creek exceeded nitrate more frequently but still in fewer than half the samples taken.
Nitrate was only exceeded by Sinkhole Creek and WR003A once each.
Zinc
Zinc is commonly exceeded downstream of the Hamilton International Airport at site WR002. Zinc exceedances in WR002 are the highest seen in the NPCA ambient monitoring program.