

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

October 13, 2023

In 2020, the City of Hamilton (City) developed a framework for monitoring surface water quality throughout Hamilton's watersheds.

The City's Surface Water Quality Program (SWQP) was developed using a systematic approach by identifying existing sampling programs led by internal and external partners. Along with those collaborations, the SWQP identified areas where WQ data was either limited or non-existent. Thirty-three (33) City sample locations were selected relative to CSO infrastructure, including downstream of storm sewer outfalls within Hamilton Harbour.

Hamilton Harbour Phase I sample locations were sampled during the boating season of 2021 and 2022. In 2023, the ten (10) Hamilton Harbour sample locations were not sampled due to weather conditions along with health and safety concerns.

Due to the shift within the 2023 sampling schedule, internal discussions have highlighted key differences that set the Hamilton Harbour sample locations apart from the other City SWQP sample locations. These key watercourse/receiving waterbody differences include:

- The presence of storm water discharges with potential industrial influences, through private outfalls.
- Sample locations directly within the receiving waterbody, which is also a major shipping Port.
- Deep waterbody, with known water quality differences at specific water depths.
- An Area of Concern (AOC), as designated by the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, which is researched and monitored by multiple agencies, including academia, and divisions of Provincial and Federal governments.

To ensure the collection of representative data, sampling will be discontinued at the Hamilton Harbour sample locations. By removing these surface water sample locations, the City will amend the original Phase I sample locations and re-allocate resources by adding in approximately 17 new surface water locations throughout the watersheds.

An additional amendment proposed to the original Phase I sampling plan includes relocating LSC SW2 to a more up-stream location, closer to East St. N. Water quality data between LSC SW1 and LSC SW2 has been consistently similar at many of sampling events, therefore suggesting LSC SW2 may be influenced by the water quality within the Desjardin Canal. Due to these water quality similarities, LSC SW2.1 is proposed to replace LSC SW2, to ensure we are sampling representative up-stream water.

Existing and amended SW sample locations with rationale, are outlined below in Table 1. Table 2 provides a simple outline of each active and inactive Phase I, including Phase I-Amended locations and, Table 3 provides a visual of each new Phase I - Amended location.

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

Table 1: Detailed Rationale of Phase I & Phase I-Amended Sample Locations

Watershed	Sub-Watershed	Recommended Sample Location	Rationale	Photo as outlined in Table 3
Conservation Halton				
<p>Grindstone Creek</p> <p>Receiving water = Grindstone Marsh</p>	<p>Grindstone Creek Sub Watershed's 218, 220 & 222</p> <p>CH Grade: Very Poor to Insufficient Data</p>	<p>WQ Sample: Down-stream (Mill St S @ Smokey Hollow Park); GC222 SW1</p> <p>WQ Sample: Up-stream (Parkside Drive); GC218 SW1</p> <p>WQ Sample: Up-stream (Dundas St. E.); GC220 SW1</p>	<p>By adding two (2) up-stream sample locations to GC222 SW1, we will be able to trend how WQ changes throughout this section of Waterdown, within Grindstone Creek.</p> <p>Three (3) SLS with emerg. outfalls, multiple Stormwater Management Facilities, drinking water underground assets, and multiple storm sewer outfalls up-stream to all current and proposed sample locations.</p>	<p>#1</p>
Hamilton Conservation Authority				
<p>Spencer Creek</p> <p>Receiving water = Cootes Paradise</p>	<p>Lower Spencer Creek</p> <p>HCA Grade: Fair</p>	<p>WQ Sample: Down-stream Dundas WWTP FEO (Desjardins Canal; east of Olympic Drive); LSC SW1</p> <p>WQ Sample: Up-stream to Dundas WWTP FEO (Desjardins Canal; Centennial Park); LSC SW2 *Relocate upstream to eliminate backflow from Canal (see below for new location / sample name).</p> <p>WQ Sample downstream to Sterling St CSO (Churchill Gardens/aviary); LSC SW3</p> <p>1-WQ Sample: Up/mid-stream to Dundas WWTP FEO (Desjardins</p>	<p>1 - Current sample location LSC SW2 is trending similarly to LSC SW1; likely influenced by backflow of the Dundas WWTP effluent. Replacing LSC SW2 with LSC SW2.1.</p> <p>2 - The City of Hamilton owns Lake Jojo, which drains into RBGs West Pond. No WQ oversight on this drainage area (historic data available indicating possible high nutrients).</p> <p>3 - This up-stream sample location will help us to understand WQ changes as it flows through the storm sewer, which discharges to our LSC SW2.1 location.</p> <p><i>*Two (2) Stormwater Management Facilities, drinking water underground assets, a closed City owned landfill, multiple storm sewer outfalls, and the Dundas WWTP, including the Equalization Tank are either up or mid-stream to the newly proposed sample locations.</i></p>	<p>#2</p>

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

		<p>Canal @ Centennial Park); LSC SW2.1</p> <p>2-WQ Sample: outfall/drainage area of Lake Jojo (Olympic Dr.) – LSC SW4</p> <p>3-WQ Sample: Upstream (stream enters the storm sewer – McKay Rd.); LSC SW5</p>		
	<p>Middle Spencer Creek</p> <p>HCA Grade: Fair</p>	<p>WQ Sample: Upstream (MacNab St.); MSC SW2</p>	<p>By adding in a sample location within the upper portion of the sub-watershed, we are in a better position to understand how WQ changes as it flows through Dundas into Cootes Paradise, complimenting HCAs bi-weekly sampling program.</p> <p><i>* One (1) drinking water reservoir, drinking water underground assets and, multiple storm sewer outfalls are upstream to this location.</i></p>	#3
	<p>Spring Creek</p> <p>HCA Grade: Very Poor</p>	<p>WQ Sample: Downstream (Ogilvie Street); SprC SW1</p> <p>WQ Sample: Upstream (Ridgewood Blvd); SprC SW2</p>	<p>No Change</p>	NA
	<p>Sulphur Creek</p> <p>HCA Grade: Fair</p>	<p>WQ Sample: Upstream (Turnbull Rd.); SulC SW1</p>	<p>By adding in a sample location within the upper portion of the sub-watershed, we are in a better position to understand how WQ changes as it flows through Dundas towards Cootes Paradise, complimenting HCAs bi-weekly sampling program.</p> <p><i>*No Hamilton water assets are upstream to this proposed sample location.</i></p>	#4
	<p>Ancaster Creek</p>	<p>WQ Sample: Midstream (Golf Links Rd); AC SW1</p>	<p>No Change</p>	NA

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

	HCA Grade: Fair	WQ Sample: Up-stream (Garner Rd E); AC SW4		
	Tiffany Creek	WQ Sample: Up-stream (Glancaster/Garner Rd E); TC SW2	<p>With no current sample locations within Tiffany Creek, there is no oversight to water quality within this sub-watershed. With the implementation of the two sample locations, we will be able to trend WQ up-stream to any Hamilton Water assets and understand how or if WQ changes down-stream.</p> <p><i>*Multiple Stormwater Management Facilities, residential and commercial development, drinking water underground assets, drinking water reservoir and associated outfall and, multiple storm sewer outfalls between the proposed two sample locations.</i></p>	#5
	HCA Grade: Good	WQ Sample: Down-stream (Golf Links Rd.); TC SW1		
	Chedoke Creek	WQ Sample: Down-stream (Princess Point); CC SW1	<p>By adding in a monthly CC SW3 – WEST sample location, we are ensuring any potential WQ differences between the Glen Rd. twin concrete channels are captured. The original Phase I CC SW3 sample location sampled the east channel only.</p> <p><i>*The underground twin concrete channel between Main St. W. and Glen Rd. has been designed to allow for the mixing of surface water however, City CSO's including the Main/King CSO tank, and multiple stormwater assets discharge at various points within the east or west channels.</i></p>	#6
	HCA Grade: Very Poor	WQ Sample: Down/Mid-stream (Kay Drage Bridge); CC SW2		
		WQ Sample: Down/Mid-stream (Glen Rd: box culvert outfall); CC SW3 (EAST)		
		WQ Sample: Down/Mid-stream (Glen Rd: box culvert outfall); CC SW3 – WEST		
		WQ Sample: Mid-stream (Aberdeen CSO Outfall / Longwood Ave.); CC SW5		

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

		<p>WQ Sample: Up/Mid-stream (Radial Rail Trail @Beddoe Drive); CC SW7</p> <p>WQ Sample: Up/Mid-stream (Radial Rail Trail @Sanatorium); CC SW8</p> <p>WQ Sample: Up/Mid-stream (Radial Rail Trail @Scenic Dr); CC SW9</p> <p>WQ Sample: Up/Mid-stream (130 Daffodil Cres); CC SW10</p>		
<p>Red Hill Creek</p> <p>Receiving water: Hamilton Harbour</p>	<p>Red Hill Valley</p> <p>HCA Grade: Fair</p>	<p>WQ Sample: Down- stream (Windermere Park); RHV SW1</p> <p>WQ Sample: Mid- stream (Eastport Dr./Woodward Ave. Bridge; Down- stream to Woodward FEO); RHV SW2</p> <p>WQ Sample: Mid- stream (2245 Brampton Street); RHV SW3</p> <p>WQ Sample: Mid- stream (Hixon Rd/Parkdale Ave S); RHV SW4</p> <p>WQ Sample: Mid- stream (Hixon Rd/King St E); RHV SW5</p>	<p>A sample location added to the main, east tributary of the creek, before it merges with main Red Hill Creek, is beneficial to understand water quality before it enters the main Red Hill Creek.</p> <p><i>*Upstream to this newly proposed location are two (2) un-monitored/sampled sub-water sheds with multiple stormwater management facilities, drinking water underground assets including reservoirs and associated outfalls, multiple storm sewer outfalls, an active GFL landfill, housing development, and the escarpment split of the upper and lower City.</i></p>	#7

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

	Upper Ottawa HCA Grade: Insufficient Data	WQ Sample: Up/Mid-stream (Mnt Brow Blvd @ Pedestrian Bridge at Albion Falls Park); UO SW1	No Change	
	Hannon Creek HCA Grade: Poor	WQ Sample: Up/Mid-stream; HC SW1	Chlorides and E.Coli have been identified as higher trending analytes at the closest down-stream sample location, UO SW1. To understand where the potential contaminations of concern originate from, an up-stream sample will be beneficial to determine the source of potentially adverse water quality conditions in this area. <i>*Multiple Stormwater Management Facilities, residential and commercial development, drinking water underground assets, drinking water reservoir and associated outfall and, multiple storm sewer outfalls are upstream to this proposed sample location.</i>	#8
	Upper Davis Creek HCA Grade: Insufficient Data	WQ Sample: Up/Mid-stream (Valley Park); UDC SW2 WQ Sample: Down-stream; UDC SW1	Two (2) sample locations added to the Upper Davis Creek sub-watershed would ensure the understanding of how City assets and/or development has impacted water quality, before it drains off the escarpment. <i>*Multiple Stormwater Management Facilities, residential and commercial development, drinking water underground assets including a drinking water reservoir and, multiple storm sewer outfalls are surrounding both proposed locations.</i>	#9
Stoney-Battlefield Creeks	Battlefield Creek HCA Grade: Very Poor	WQ Sample: Down-stream (Lake Ave N/Huckleberry Dr); BatC SW1 WQ Sample: Mid-stream (King Street W/Battlefield	By adding an up-stream sample location, we can further trend how water quality changes throughout the Battlefield Creek sub-watershed. The proposed sample location is on Upper Centennial, which is on top of the escarpment, on the edge of rural	#10

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

		Museum); BatC SW2	agricultural lands and housing development.
		WQ Sample: Up-stream (Upper Centennial Parkway); BatC SW3	*Limited Hamilton assets are up-stream to this proposed sample location.
	Stoney Creek	WQ Sample: Down-stream; StoC SW1	By adding in three sample locations to Stoney Creek Sub-watershed, we can analytically trend how water quality changes from up- to mid- to down-stream. Currently, we do not have any sample locations within this sub-watershed.
	HCA Grade: Poor	WQ Sample: Mid-stream; StoC SW2	
		WQ Sample: Up-stream; StoC SW3	

Table 2: Outline of Phase I & Phase I-Amended Sample Locations

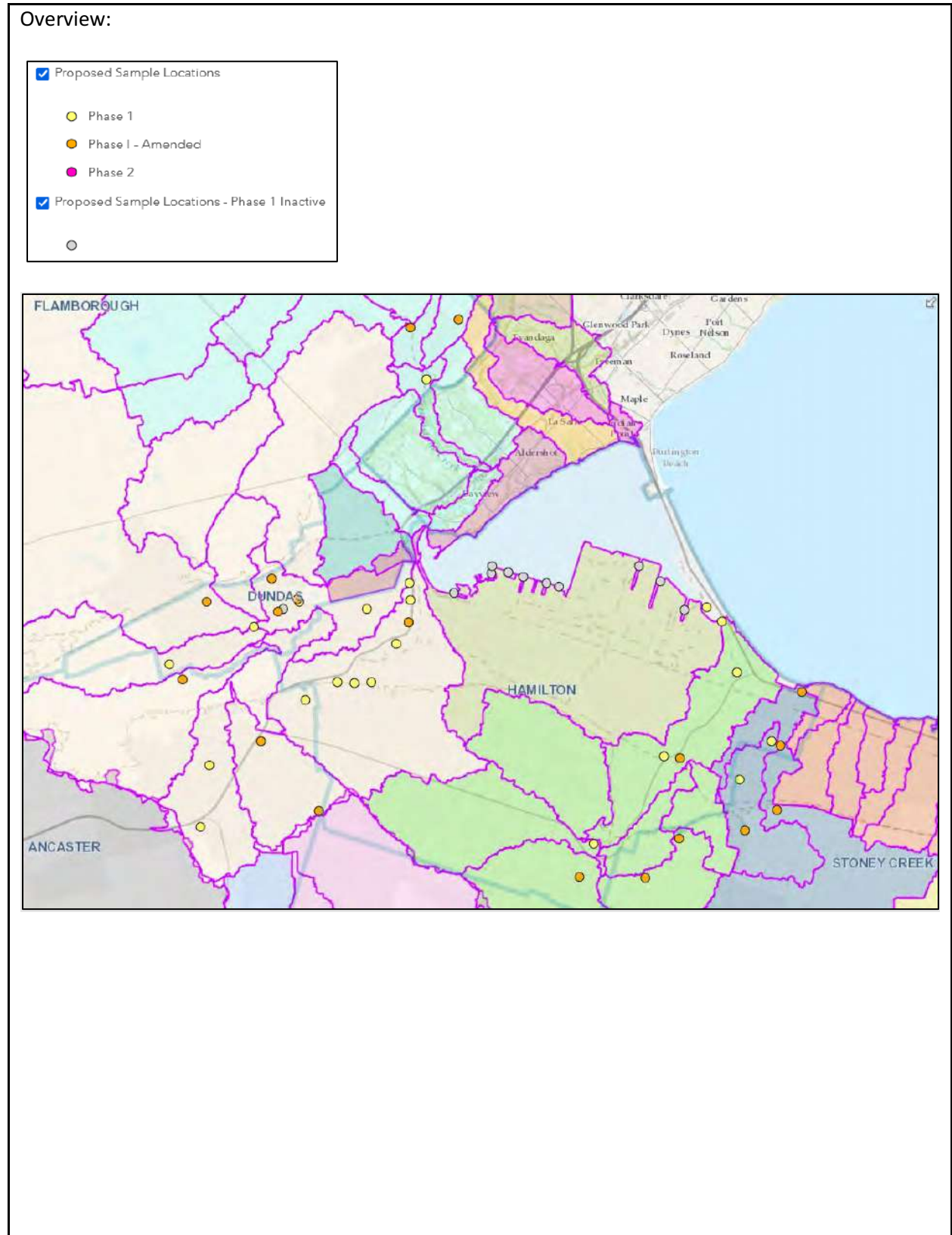
Number	Sample Point	Description	SWQP Framework Phase	GPS Location	
1	CC SW1	CHEDOKE CREEK	Phase I	-79.893510	43.273500
2	CC SW2	CHEDOKE CREEK	Phase I	-79.893340	43.268620
3	CC SW3	CHEDOKE CREEK	Phase I	-79.894040	43.262700
4	CC SW3 - West	CHEDOKE CREEK	Phase I - Amended	-79.894120	43.262680
5	CC SW5	CHEDOKE CREEK	Phase I	-79.898780	43.256470
6	CC SW7	CHEDOKE CREEK	Phase I	-79.908450	43.246000
7	CC SW8	CHEDOKE CREEK	Phase I	-79.914840	43.245790
8	CC SW9	CHEDOKE CREEK	Phase I	-79.921540	43.245850
9	CC SW10	CHEDOKE CREEK	Phase I	-79.93401	43.24093
10	RHV SW1	Red Hill Creek	Phase I	-79.78158	43.26858
11	RHV SW2	Red Hill Creek	Phase I	-79.77311	43.26322
12	RHV SW3	Red Hill Creek	Phase I	-79.76755	43.24846
13	RHV SW4	Red Hill Creek	Phase I	-79.79550	43.22525
14	RHV SW5	Red Hill Creek	Phase I - Amended	-79.78945	43.22458
15	UO SW1	Red Hill Creek	Phase I	-79.82242	43.20054
16	HC SW1	Hannon Creek	Phase I - Amended	-79.82803	43.19143
17	UDC SW1	Upper Davies Creek	Phase I - Amended	-79.78966	43.20218
18	UDC SW2	Upper Davies Creek	Phase I - Amended	-79.80246	43.19118
19	BatC SW1	Battlefield Creek	Phase I	-79.75388	43.22946

Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

20	BatC SW2	Battlefield Creek	Phase I	-79.76628	43.21868
21	BatC SW3	Battlefield Creek	Phase I - Amended	-79.76431	43.20442
22	StoC SW1	Stoney Creek	Phase I - Amended	-79.74217	43.24316
23	StoC SW2	Stoney Creek	Phase I - Amended	-79.75036	43.22820
24	StoC SW3	Stoney Creek	Phase I - Amended	-79.75204	43.21011
25	AC SW1	Ancaster Creek	Phase I	-79.97105	43.22260
26	AC SW4	Ancaster Creek	Phase I	-79.97426	43.20544
27	MSC SW2	Middle Spencer Creek	Phase I - Amended	-79.97206	43.26840
28	SprC SW1	Spring Creek	Phase I	-79.95388	43.26145
29	SprC SW2	Spring Creek	Phase I	-79.98630	43.25076
30	SulC SW2	Sulphur Creek	Phase I - Amended	-79.98129	43.24678
31	TC SW1	Tiffany Creek	Phase I - Amended	-79.95116	43.22935
32	TC SW2	Tiffany Creek	Phase I - Amended	-79.92901	43.20986
33	LSC SW1	Lower Spencer Creek	Phase I	-79.93634	43.26854
34	LSC SW2.1	Lower Spencer Creek	Phase I - Amended	-79.94449	43.26570
35	LSC SW3	Lower Spencer Creek	Phase I	-79.91011	43.26646
36	LSC SW4	Lower Spencer Creek	Phase I - Amended	-79.93702	43.26922
37	LSC SW5	Lower Spencer Creek	Phase I - Amended	-79.94690	43.27514
38	GC218 SW1	Grindstone Creek Subwatershed 218	Phase I - Amended	-79.89337	43.34517
39	GC220 SW1	Grindstone Creek Subwatershed 220	Phase I - Amended	-79.87472	43.34724
40	GC222 SW1	Grindstone Creek Subwatershed 222	Phase I	-79.88728	43.33069
Number	Sample Point	Description	SWQP Framework Phase	GPS Location	
1	LSC SW2	Lower Spencer Creek	Phase I - Inactive	-79.94253	43.26627
2	UC SW1	Urban Core	Phase I - Inactive	-79.87671	43.27082
3	UC SW2	Urban Core	Phase I - Inactive	-79.86420	43.27655
4	UC SW3	Urban Core	Phase I - Inactive	-79.86182	43.27827
5	UC SW4	Urban Core	Phase I - Inactive	-79.85533	43.27665
6	UC SW5	Urban Core	Phase I - Inactive	-79.84979	43.27552
7	UC SW6	Urban Core	Phase I - Inactive	-79.84070	43.27362
8	UC SW7	Urban Core	Phase I - Inactive	-79.83515	43.27200
9	UC SW8	Urban Core	Phase I - Inactive	-79.80480	43.27897
10	UC SW9	Urban Core	Phase I - Inactive	-79.79670	43.27421
11	UC SW10	Urban Core	Phase I - Inactive	-79.78678	43.26800

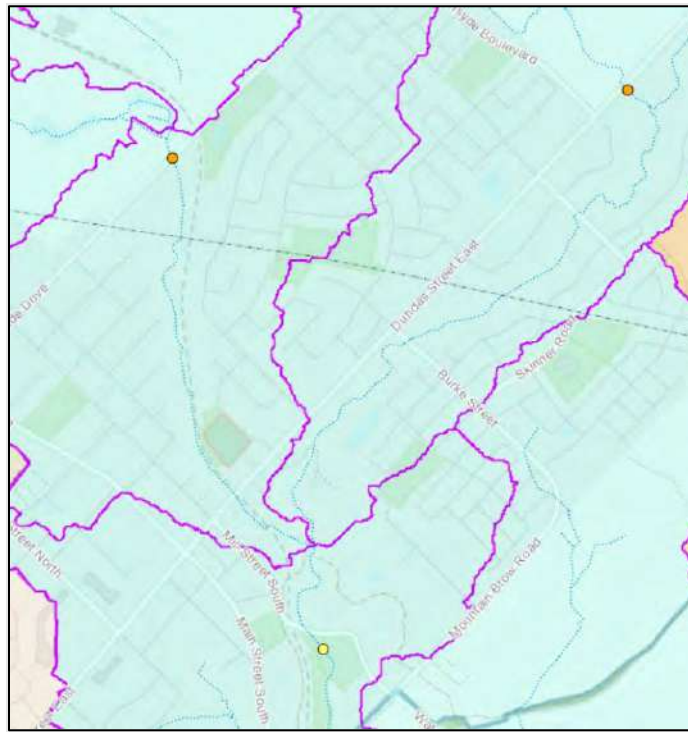
Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

Table 3: Visual of each Phase I-Amended Sample Locations

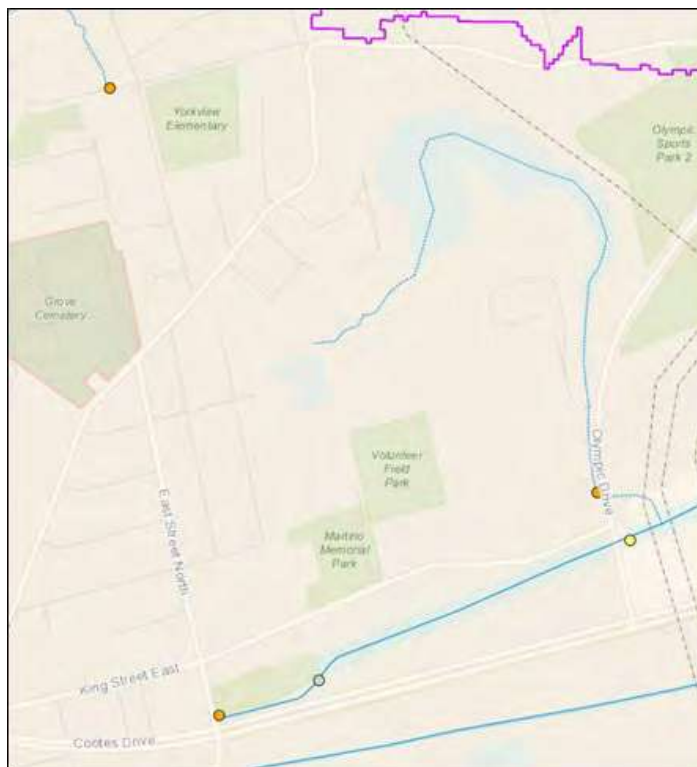


Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

#1- Grindstone Creek

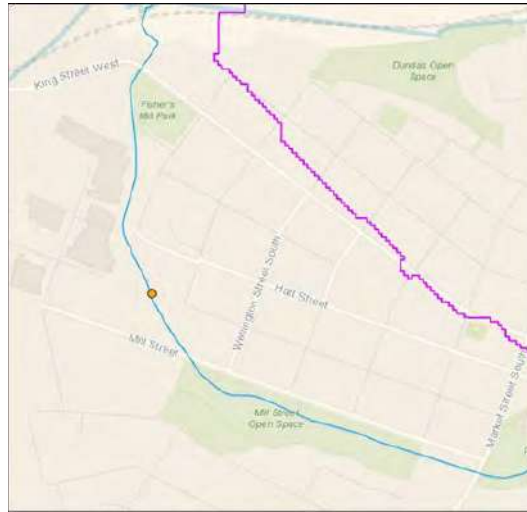


#2 - Lower Spencer Creek



Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

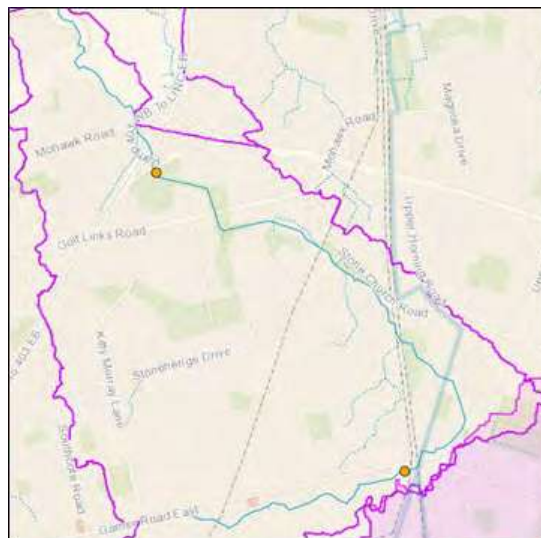
#3 - Middle Spencer Creek



#4 - Sulphur Creek

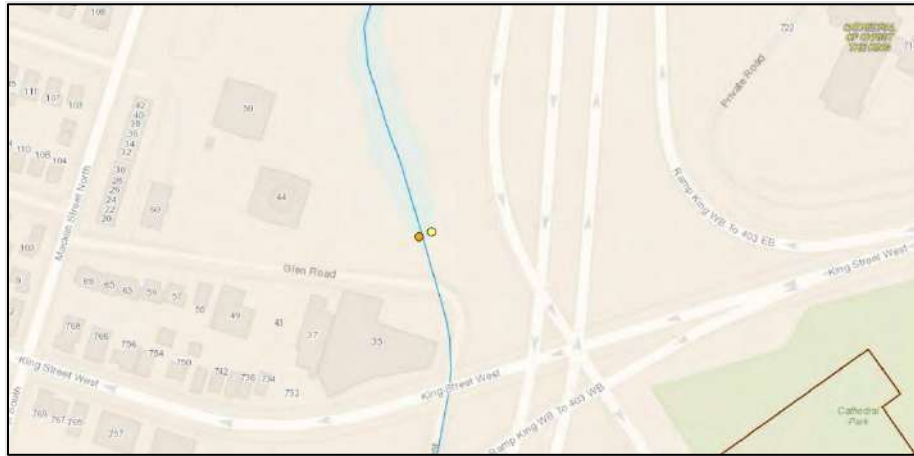


#5 - Tiffany Creek



Attn: SWQP Partners
Amendments to the City's Phase I Sample Locations

#6 – Chedoke Creek



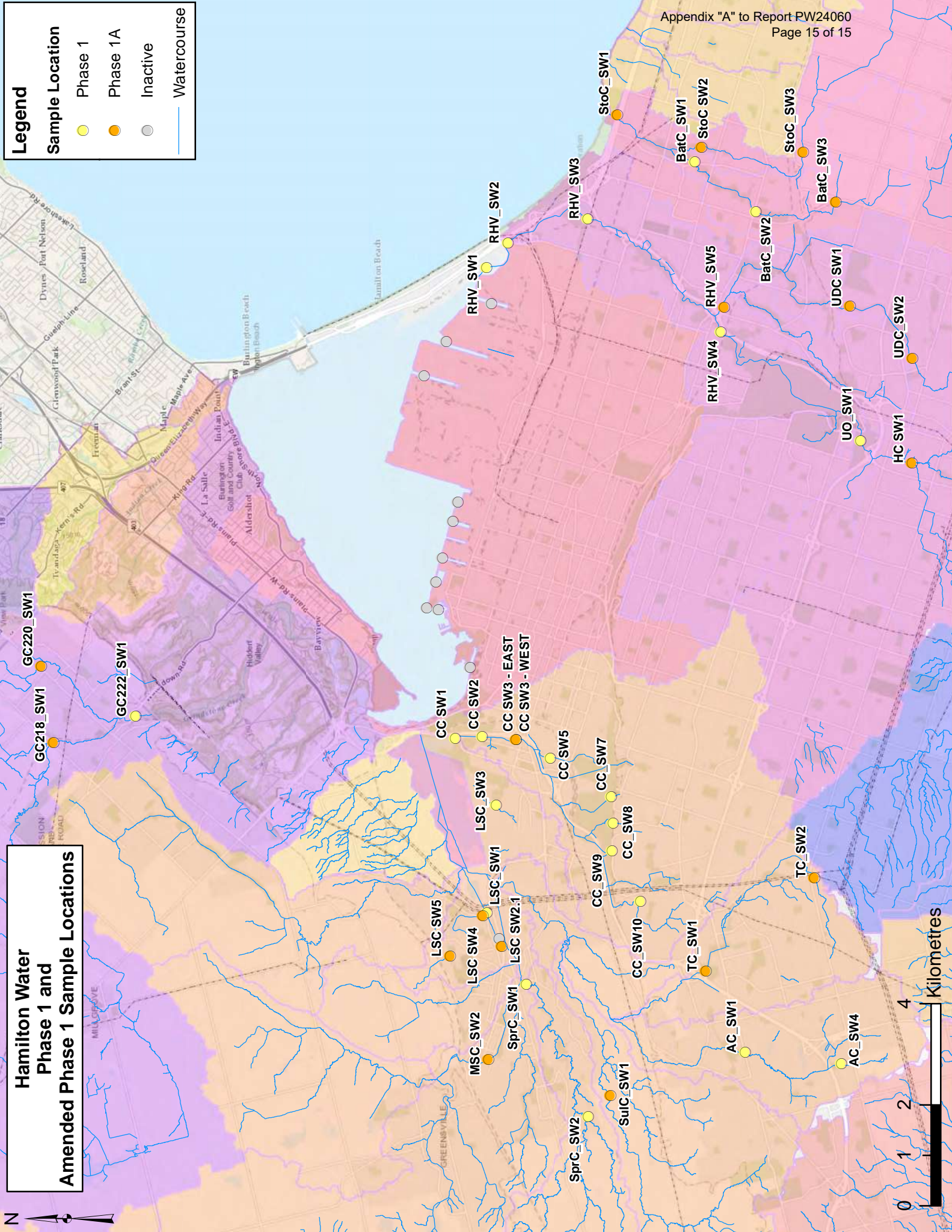
#7 – Red Hill Valley



Legend

Sample Location

- Phase 1 (Yellow circle)
- Phase 1A (Orange circle)
- Inactive (Grey circle)
- Watercourse (Blue line)



**Hamilton Water
Phase 1 and
Amended Phase 1 Sample Locations**

