



# City of Hamilton

## PUBLIC WORKS COMMITTEE REVISED

**Meeting #:** 23-012  
**Date:** September 8, 2023  
**Time:** 1:30 p.m.  
**Location:** Council Chambers  
Hamilton City Hall  
71 Main Street West

Carrie McIntosh, Legislative Coordinator (905) 546-2424 ext. 2729

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	<b>Pages</b>
<b>1. CEREMONIAL ACTIVITIES</b>	
<b>2. APPROVAL OF AGENDA</b>	
(Added Items, if applicable, will be noted with *)	
<b>3. DECLARATIONS OF INTEREST</b>	
<b>4. APPROVAL OF MINUTES OF PREVIOUS MEETING</b>	
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7.1 Tiffany Garvey, respecting DARTS (approved July 12, 2023)	
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| 9.1 | Procedural Changes Resulting from Chedoke Creek and Burlington Street Combined Sewage Discharge Incidents (PW23056) (City Wide) (Outstanding Business List Item) | 265 |
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**11. DISCUSSION ITEMS**

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**12. MOTIONS**

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| 12.1 | Investment in Victoria Park Pool, 100 Strathcona Avenue North, Hamilton (Ward 1) | 329 |
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**13. NOTICES OF MOTION**

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| *13.1 | Corman Park Basketball Court Replacement (Ward 10) | 331 |
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**14. GENERAL INFORMATION / OTHER BUSINESS**

- |      |   |
|------|---|
| 14.1 | Amendments to the Outstanding Business List |
|------|---|

a. Items Considered Complete and Needing to be Removed:

a. Free-Floating Carshare Pilot Program

Addressed as Item 11.1 (PED20168(b)) (today's agenda)

Item on OBL: ABW

- b. Chedoke Creek & Burlington Street Sewage Discharge Incidents

Addressed as Item 11.2 (PW23056) (today's agenda)

Item on OBL: ADG

- b. Items Requiring a New Due Date:

- a. Joint Action by City of Hamilton and Hamilton Police Service to Improve Pedestrian Safety

Item on OBL: ADJ

Current Due Date: September 18, 2023

Proposed New Due Date: December 4, 2023

- b. Roadway Safety Measures on Aberdeen Avenue from Queen Street to Longwood Road

Item on OBL: AZ

Current Due Date: September 18, 2023

Proposed New Due Date: November 13, 2023

- c. Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero

Item on OBL: ADN

Current Due Date: September 18, 2023

Proposed New Due Date: October 30, 2023

- d. Implementation plan for the two-way conversion of Main Street

Item on OBL: ACW

Current Due Date: October 16, 2023

Proposed New Due Date: October 30, 2023

- e. Reassessment of one-way streets

Item on OBL: ACX

Current Due Date: October 16, 2023

Proposed New Due Date: October 30, 2023

- c. Items Requiring a New Title:

- a. Current Title: Burlington Street Sewage Spill Update

Title to be Changed to: Annual Report Regarding  
Sewage Spills

Item on OBL: ADM

Current Due Date: September 8, 2023

Proposed New Due Date: Q2 2024

## 15. PRIVATE AND CONFIDENTIAL

- 15.1 Transit Maintenance & Storage Facility -Cost Increase (PW23051(a) / FCS23084(a)) (City Wide)

Pursuant to Section 9.3, Sub-section (k) of the City's Procedural By-law 21-021, as amended, and Section 239(2), Sub-section (k) of the *Ontario Municipal Act*, 2001, as amended, as the subject matter pertains to a position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board.

## 16. ADJOURNMENT

## 4.1



**PUBLIC WORKS COMMITTEE  
MINUTES 23-011**

1:30 p.m.

Wednesday, August 16, 2023

Council Chambers

Hamilton City Hall

71 Main Street West

**Present:** Councillors N. Nann (Chair), E. Pauls (Vice-Chair), C. Cassar, J.P. Danko, M. Francis, T. Jackson, C. Kroetsch, M. Spadafora, M. Tadeson, A. Wilson and M. Wilson

**Absent with**

**Regrets:** Councillors J. Beattie, T. McMeekin – Personal

**Also Present:** Councillor B. Clark

**THE FOLLOWING ITEMS WERE REFERRED TO COUNCIL FOR CONSIDERATION:**

- Intersection Control List - PW23001(b) (Wards 1, 5, 8, 9, 10, 12 and 14) (Item 9.3)**

**(Danko/Spadafora)**

That the appropriate by-law be presented to Council to provide traffic control as follows:

Intersection		Stop/Yield Control Direction		Class	Comments	Ward
Street 1	Street 2	Existing	Requested			
<b>Section "E" Hamilton</b>						
(a)	Emming Court	Delmar Drive	NC	WB	A	Currently an uncontrolled intersection 8
(b)	West 23 <sup>rd</sup> Street	Bendamere Avenue	EB/WB	NB/SB	A	Converting to All-Way Stop 14

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(c)	Seneca Avenue	Allison Crescent	NC	NB	A	Currently an uncontrolled intersection	8
(d)	Forsyth Place	Forsyth Avenue North	NC	WB	A	Currently an uncontrolled intersection	1
<b>Section "A" Ancaster</b>							
(e)	Book Road East	Southcote Road	All	NB/SB	D	Removal of All-way stop	12
<b>Section "F" Stoney Creek</b>							
(f)	Village Green Boulevard	Village Green Boulevard	SB	SB	B	Converting existing yield control to stop control	5
(g)	Barton Street	Jones Road	NB/SB	EB/WB	D	Converting to All-Way Stop	10
(h)	Lormont Boulevard	First Road West	NC	WB	C	New connection to existing All-Way Stop	9

**Legend**

No Control Existing (New Subdivision) – **NC**

Intersection Class: **A** – Local/Local **B** – Local/Collector **C** – Collector/Collector

**D** – Arterial/Collector

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora

Not Present – Ward 15 Councillor Ted McMeekin

**2. Hamilton Cycling Advisory Committee – Citizen Committee Reports (Items 11.1 to 11.3)**

**(Kroetsch/Danko)**

That the following reports be received and referred to staff to report back to the Public Works Committee on the recommendations from the Hamilton Cycling Advisory Committee:

**(1) Signed On-Street Routes (Hamilton Cycling Advisory Committee - Citizen Committee Report) (Item 11.1)**

- (a) That City of Hamilton staff be directed to review in the course of their work, the feasibility of the following changes to “Signed On-Street Routes”:
- (i) Review speed limits of “Signed On-Street Routes” to determine if there is justification to reduce to 40km/h or 30km/h where possible;
  - (ii) Review narrowing automobile lanes along these streets to the minimum lane width (3.0m) on “Signed On-Street Routes” that have painted lanes;
  - (iii) Review utilization of traffic calming measures including raised sidewalks, raised intersections, bump-outs, speed cameras and modal filters to disallow automobile traffic and allow active transportation on “Signed On-Street Routes”;
  - (iv) Review installing bicycle lanes where road width allows it to be feasible on “Signed On-Street Routes”; and
  - (v) Review installing paved shoulders on rural roads that are on the Bicycle Master Plan as “Signed On-Street Routes” and where roads connect to cycle routes in neighbouring municipalities.

**(2) Bicycle Oriented Corridors (Hamilton Cycling Advisory Committee - Citizen Committee Report) (Item 11.2)**

- (a) That City of Hamilton staff, through the ongoing review of zoning and land-use planning, be directed to review the inclusion of cycling focused by-laws and secondary plans. Some of these by-laws could include:

- (i) Increased development density nearby cycling infrastructure;
- (ii) Reduced minimum parking ratios for new development especially near cycling infrastructure;
- (iii) Reduced maximum parking ratios near cycling infrastructure;
- (iv) Requirements to have bicycle parking at ground floor for ease of access;
- (v) Increase requirements for short term bicycle parking outside mixed use, residential only, and commercial only development; and
- (vi) increased bicycle parking ratios for new development.

**(3) Bay Street North: Truck Route (Hamilton Cycling Advisory Committee - Citizen Committee Report) (Item 11.3)**

- (a) That staff be directed to review improved cycling accommodation on Bay Street North, between Cannon Street and Strachan Avenue for future work plans which could include:
  - (i) Addition of precast curbs where there is space;
  - (ii) Moving the bicycle lane behind parked vehicle lanes; and
  - (iii) Reduction of the speed limit to 40km/h.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin



### 3. Combustion Powered Small Equipment Manufacturer's Standardization Renewal (PW18028(a)) (City Wide) (Item 11.4)

#### (Spadafora/Pauls)

- (a) That Council approve the continued standardization of commercial grade combustion powered small equipment products and parts manufactured by Honda and Stihl and the single sourcing of the supply and delivery of the products, parts and services for the equipment with the licensed distributors identified in Appendix "A" to Report PW18028(a), pursuant to Procurement Policy #14 – Standardization, until August 18, 2028 for the Environmental Services, Waste Management and Transportation Divisions;
- (b) That the General Manager, Public Works, or their designate, be authorized to negotiate, enter into, and execute any required contract and any ancillary documents required to give effect thereto with those licensed distributors identified in Appendix "A" to report PW18028(a) with content acceptable to the General Manager of Public Works, and in a form satisfactory to the City Solicitor; and
- (c) That the General Manager, Public Works, or their designate, be authorized to amend any contracts executed and any ancillary documents as required if a service provider, manufacturer, or distributor identified in Appendix "A" to Report PW18028(a) undergoes a name change in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**4. Donations for Forestry-related Initiatives (PW23052) (City Wide) (Item 11.5)****(Cassar/Danko)**

- (a) That the General Manager, Public Works or designate be directed and authorized to execute a donation agreement and any other ancillary documentation with Tree Canada (the “Donor”) for the acceptance of \$3,500.00 on terms satisfactory to the General Manager, Public Works and in a form satisfactory to the City Solicitor;
- (b) That the General Manager, Public Works or designate be directed and authorized to execute a donation agreement and any other ancillary documentation with Trees for Hamilton (the “Donor”) for the acceptance of nursery stock trees, with an approximate value of \$5,000, acceptable to the Manager of Forestry and Horticulture or designate, on terms satisfactory to the General Manager, Public Works and in a form satisfactory to the City Solicitor;
- (c) That the General Manager, Public Works or designate be directed and authorized to execute a donation agreement and any other ancillary documentation with the Canadian National Railway Company (the “Donor”) for the acceptance of \$25,000.00 on terms satisfactory to the General Manager, Public Works and in a form satisfactory to the City Solicitor; and
- (d) That the General Manager, Public Works or designate be granted the authority to execute any future donation agreements and any other ancillary documentation with donors for the acceptance of donations relating to any Forestry-related initiatives, on terms satisfactory to the General Manager, Public Works and in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**5. Road Rehabilitation on Summercrest Drive, Marcella Crescent, Tara Court and St. Steven Street, Hamilton (Ward 5) (Item 12.1)**

**(Francis/Jackson)**

WHEREAS, Summercrest Drive, Marcella Crescent, Tara Court, and St. Steven Street, all in Ward 5, are in need of road rehabilitation to extend the life of these roadways and therefore improve service levels and reduce maintenance costs.

THEREFORE, BE IT RESOLVED:

- (a) That Public Works staff be authorized and directed to rehabilitate the road and associated concrete works (as required), to be funded from the Ward 5 Capital Re-Investment Reserve #108055 at an upset limit, including contingency, not to exceed \$1,500,000, with design anticipated to commence in 2023 and construction to be completed in 2024 on the following roads:
- (i) Summercrest Drive from Greenhill Avenue to Marcella Crescent;
  - (ii) Marcella Crescent from Summercrest Drive to Summercrest Drive;
  - (iii) Tara Court from Summercrest Drive to south end of Tara Court;
  - (iv) St. Steven Street from Greenhill Avenue to Summercrest Drive; and
- (b) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**6. Fence Share Cost Recovery, 19 Questor Court (Ward 6) (Item 12.2)**

**(Jackson/Francis)**

WHEREAS, the property located at 19 Questor Court is adjacent Mount Lion's Club Park;

WHEREAS, a City of Hamilton Parks and Cemeteries Section Fence Share Policy exists, supporting the split cost, of a chain link fence, between a property owner and the City of Hamilton for properties that share a fence with a City owned park;

WHEREAS, the property owner at 19 Questor has replaced a previously constructed wooden fence with another wooden fence along the joint property line;

WHEREAS, the Fence Share Policy states that wooden fence maintenance is the sole responsibility of the property owner; and

WHEREAS, the property owner is requesting to be reimbursed for 50% of the estimated cost of a chain link fence equivalent.

THEREFORE, BE IT RESOLVED:

- (a) That the property owner at 19 Questor Court be reimbursed for 50% of the estimated cost of a chain link fence equivalent to an upset limit of \$4,000, including any contingency;
- (b) That the City's share of this agreement be funded through the Environmental Services Division, Parks and Cemeteries Section's operating budget; and
- (c) That the Mayor and City Clerk be authorized and directed to approve and execute all required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar

Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**7. Feasibility and Costs to Construct a Multi-Use Trail on the South Side of Mud Street (Ward 9) (Item 12.3)**

**(Jackson/Francis)**

WHEREAS, the City of Hamilton is promoting active transportation to lower our greenhouse gas emissions;

WHEREAS, Ward 9 residents walk and cycle to local commercial amenities and municipal parks; and

WHEREAS, there is no sidewalk or multi-use trail along Mud Street between Paramount Drive and Winterberry Drive.

THEREFORE, BE IT RESOLVED:

- (a) That staff be directed to assess the feasibility and costs to construct a multi-use trail on the south side of Mud Street that would directly connect Paramount Drive to Winterberry Drive and report back to the Public Works Committee in Q4 2023; and
- (b) That the estimated costs for the project to construct a multi-use trail on the south side of Mud Street connecting Paramount Drive to Winterberry Drive be referred to the 2024 Capital Budget for consideration.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**8. Installation of Speed Cushions as a Traffic Calming Measure on Arno Street (Ward 6) (Item 12.4)**

**(Jackson/Spadafora)**

WHEREAS, residents on Arno Street in Ward 6 have advocated for the installation of speed cushions to address roadway safety concerns as a result of speeding; and

WHEREAS, signatures were collected from residents resulting in support by 10 of 16 homes (63%) on Arno Street for the installation of speed cushions as a traffic calming measure;

THEREFORE, BE IT RESOLVED:

- (a) That Transportation and Operations Maintenance staff be authorized and directed to install one speed cushion as a traffic calming measure on Arno Street between Anna Capri Drive and Templemead Drive as part of the 2023 Traffic Calming Program's fall application;
- (b) That the speed cushion installation on Arno Street be funded from the Ward 6 Minor Maintenance Account 4031911606, to be completed under contract # C15-18-23 at an upset limit, including contingency, not to exceed \$7,000; and
- (c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**9. Trenholme Bocce Courts at Trenholme Park, 135 Trenholme Crescent, Hamilton (Ward 6) (Item 12.5)**

**(Jackson/Danko)**

WHEREAS, the majority of City of Hamilton owned facilities and park assets (buildings) in Ward 6 are maintained by the City of Hamilton's Facilities Operations & Maintenance Section of the Energy, Fleet & Facilities Management Division, Public Works Department;

WHEREAS, the Recreation Master Plan (2022) recommends no new bocce courts or dedicated bocce buildings and instead emphasizes continued communication between the City and bocce user groups to ensure safe and reasonable use of bocce support buildings;

WHEREAS, the Trenholme Bocce Association members (all volunteers) are requesting a feasibility study of the current bocce clubhouse at Trenholme Park to investigate options including both an extended canopy as well as a new canopy over the existing bocce courts to provide a more sheltered environment against the sun, and rain and to extend the bocce playing season for the members;

WHEREAS, professional services are required to prepare as-builts, to determine feasibility and to investigate options to determine next steps (capital design options, construction cost estimates etc.) for extended and/or additional canopies at the current Bocce Clubhouse at Trenholme Park including a new canopy over bocce courts.

THEREFORE, BE IT RESOLVED:

- (a) That staff be authorized and directed to retain professional services to prepare as-builts, to determine feasibility and to investigate options for extended and/or additional canopies at the current Bocce Courts at Trenholme Park, 135 Trenholme Crescent, Hamilton, including a new canopy over bocce courts, to be funded from the Capital Re-Investment Reserve #108056 at an upset limit, including contingency, not to exceed \$50,000;
- (b) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann

Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**10. Installation of Speed Cushions as a Traffic Calming Measure on Folkestone Avenue (Ward 7) (Item 12.6)**

**(Pauls/Nann)**

WHEREAS, residents on Folkestone in Ward 7 have advocated for the installation of speed cushions to address roadway safety concerns as a result of speeding; and

WHEREAS, signatures were collected from residents resulting in support by 37 of 52 (71%) homes on Folkestone Avenue for the installation of speed cushions as a traffic calming measure;

THEREFORE, BE IT RESOLVED:

- (a) That Transportation and Operations Maintenance staff be authorized and directed to install up to three speed cushions as a traffic calming measure on Folkestone Avenue between Berko Avenue and Lawnhurst Drive as part of the 2023 Traffic Calming Program's fall application;
- (b) That the speed cushion installation on Folkestone Avenue be funded from the Ward 7 Minor Maintenance Account 4031911607, to be completed under contract # C15-18-23 at an upset limit, including contingency, not to exceed \$21,000; and
- (c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis



Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**11. Installation of Speed Cushions as a Traffic Calming Measure on Dicenso Drive (Ward 8) (Added Item 12.7)**

**(Danko/M. Wilson)**

WHEREAS, residents have advocated for the installation of speed cushions on Dicenso Drive in Ward 8 to address roadway safety concerns as a result of speeding and cut-through traffic.

THEREFORE, BE IT RESOLVED:

- (a) That Transportation and Operations Maintenance staff be authorized and directed to install two speed cushions as a traffic calming measure on Dicenso Drive between Cielo Court and Genoa Drive as part of the 2023 Traffic Calming Program's fall application;
- (b) That the speed cushion installation on Dicenso Drive be funded from the Ward 8 Capital Re-Investment Reserve #108058, to be completed under contract # C15-18-23 at an upset limit, including contingency, not to exceed \$14,000; and
- (c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson

Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**FOR INFORMATION:**

**(a) APPROVAL OF AGENDA (Item 2)**

The Committee Clerk advised of the following changes to the agenda:

**7. DELEGATIONS**

7.1 Tiffany Garvey, respecting DARTS (approved July 12, 2023) –  
 WITHDRAWN

**13. NOTICES OF MOTION**

13.1 Installation of Speed Cushions as a Traffic Calming Measure on  
 Diconzo Drive (Ward 8)

**CHANGE TO THE ORDER OF ITEMS**

12.2 Feasibility and Costs to Construct a Multi-Use Trail on the South  
 Side of Mud Street (Ward 9), is to be considered following Item 4.1,  
 Approval of the Minutes of the Previous meeting.

**(Cassar/Tadeson)**

That the Agenda for the August 16, 2023 Public Works Committee  
 meeting be approved, as amended.

**Result: MOTION, CARRIED by a vote of 8 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Not Present – Ward 7 Councillor Esther Pauls  
 Not Present – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson

Not Present – Ward 14 Councillor Mike Spadafora  
Not Present – Ward 15 Councillor Ted McMeekin

**(b) DECLARATIONS OF INTEREST (Item 3)**

There were no declarations of interest.

**(c) APPROVAL OF MINUTES OF PREVIOUS MEETING (Item 4)**

**(i) July 12, 2023 (Item 4.1)**

**(Cassar/Francis)**

That the Minutes of the June 12, 2023 meeting of the Public Works Committee be approved, as presented.

**Result: MOTION, CARRIED by a vote of 9 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
Yes – Ward 2 Councillor Cameron Kroetsch  
Yes – Ward 3 Councillor Nrinder Nann  
Yes – Ward 5 Councillor Matt Francis  
Yes – Ward 6 Councillor Tom Jackson  
Not Present – Ward 7 Councillor Esther Pauls  
Yes – Ward 8 Councillor J. P. Danko  
Not Present – Ward 10 Councillor Jeff Beattie  
Yes – Ward 11 Councillor M. Tadeson  
Yes – Ward 12 Councillor Craig Cassar  
Yes – Ward 13 Councillor Alex Wilson  
Not Present – Ward 14 Councillor Mike Spadafora  
Not Present – Ward 15 Councillor Ted McMeekin

**(d) DELEGATION REQUESTS (Item 6)**

**(i) Chris Ritsma respecting Item 11.3 Bay Street North: Truck Route (Hamilton Cycling Advisory Committee - Citizen Committee Report) (for today's meeting) (Item 6.1)**

**(Spadafora/Pauls)**

That the Delegation Request from Chris Ritsma respecting Item 11.3 Bay Street North: Truck Route (Hamilton Cycling Advisory Committee - Citizen Committee Report), be approved.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson

Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**(e) DELEGATIONS (Item 7)**

**(i) Chris Ritsma, respecting Item 11.3 Bay Street North: Truck Route (Hamilton Cycling Advisory Committee - Citizen Committee Report) (Item 7.1)**

Chris Ritsma addressed the Committee respecting Item 11.3 Bay Street North: Truck Route (Hamilton Cycling Advisory Committee – Citizen Committee Report), with the aid of a PowerPoint presentation.

**(Cassar/Francis)**

That the delegation from Chris Ritsma, respecting Item 11.3 Bay Street North: Truck Route (Hamilton Cycling Advisory Committee - Citizen Committee Report), be received.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**(f) CONSENT ITEMS (Item 9)****(i) Citizen Committee Member Resignation - Jeff Axisa, Hamilton Cycling Advisory Committee (Item 9.1)****(Spadafora/Tadeson)**

That the Citizen Committee Member Resignation from Jeff Axisa, Hamilton Cycling Advisory Committee, be received.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**(ii) Hamilton Cycling Advisory Committee Minutes - May 3, 2023 (Item 9.2)****(Spadafora/Tadeson)**

That the Hamilton Cycling Advisory Committee Minutes – May 3, 2023, be received.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora

Not Present – Ward 15 Councillor Ted McMeekin

**(g) NOTICES OF MOTION (Item 13)**

**(i) Installation of Speed Cushions as a Traffic Calming Measure on Diconzo Drive (Ward 8) (Item 13.1)**

**(Danko/M. Wilson)**

That the Rules of Order be waived to allow for the introduction of a Motion respecting Installation of Speed Cushions as a Traffic Calming Measure on Diconzo Drive (Ward 8).

**Result: Motion CARRIED by a 2/3 majority vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

For further disposition of this matter, refer to Item 11.

**(h) GENERAL INFORMATION / OTHER BUSINESS (Item 14)**

**(i) Amendments to the Outstanding Business List (Item 14.1)**

**(Pauls/Jackson)**

That the following amendments to the Public Works Committee's Outstanding Business List, be approved:

**(1) Items Requiring a New Due Date: (Item 14.1(a)):**

- (i) Winterizing Public Washrooms (Item 14.1(a)(a))**  
 Item on OBL: ABV  
 Current Due Date: August 16, 2023  
 Proposed New Due Date: October 18, 2023

- (ii) Environmentally Sustainable Solutions for Food Trucks in Bayfront (and other Park(s)) (Item 14.1(a)(b))  
Item on OBL: ADB  
Current Due Date: December 4, 2023  
Proposed New Due Date: Q4 2024
- (iii) Roadway Safety Measures on Aberdeen Avenue from Queen Street to Longwood Road (Item 14.1(a)(c))  
Item on OBL: AZ  
Current Due Date: July 5, 2023  
Proposed New Due Date: September 18, 2023
- (iv) Beverly Community Park, 680 Hwy. No. 8 (Flamborough), Pathway Proposal by the Rockton Lions Club (Ward 13) (Item 14.1(a)(d))  
Item on OBL: ADO  
Current Due Date: September 18, 2023  
Proposed New Due Date: Summer 2024
- (v) Maintenance and Beautification of Birch Avenue Greenspace and Gardens (Item 14.1(a)(e))  
Item on OBL: ADW  
Current Due Date: October 30, 2023  
Proposed New Due Date: Q1 2024

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**(i) PRIVATE AND CONFIDENTIAL (Item 15)**

**(i) Closed Session Minutes – July 12, 2023 (Item 15.1)**

**(Cassar/Kroetsch)**

That the Public Works Committee Closed Session Minutes of July 12, 2023, be approved and remain confidential.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin

**(j) ADJOURNMENT (Item 16)**

**(Tadeson/Spadafora)**

That there being no further business, the meeting adjourned at 2:56 p.m.

**Result: MOTION, CARRIED by a vote of 11 to 0, as follows:**

Yes – Ward 1 Councillor Maureen Wilson  
 Yes – Ward 2 Councillor Cameron Kroetsch  
 Yes – Ward 3 Councillor Nrinder Nann  
 Yes – Ward 5 Councillor Matt Francis  
 Yes – Ward 6 Councillor Tom Jackson  
 Yes – Ward 7 Councillor Esther Pauls  
 Yes – Ward 8 Councillor J. P. Danko  
 Not Present – Ward 10 Councillor Jeff Beattie  
 Yes – Ward 11 Councillor M. Tadeson  
 Yes – Ward 12 Councillor Craig Cassar  
 Yes – Ward 13 Councillor Alex Wilson  
 Yes – Ward 14 Councillor Mike Spadafora  
 Not Present – Ward 15 Councillor Ted McMeekin



**Public Works Committee  
Minutes 23-011**

**August 16, 2023  
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Respectfully submitted,

Councillor N. Nann, Chair,  
Public Works Committee

Carrie McIntosh  
Legislative Coordinator  
Office of the City Clerk

# 6.1

## Request to Speak to Committee of Council

Tue, 08/15/2023 - 14:44

==Committee Requested==

**Committee:** Public Works Committee

**Will you be delegating in person or virtually?** In-person

**Will you be delegating via a pre-recorded video?** No

==Requestor Information==

**Name of Individual:** Sean Forde

**Name of Organization:**

**Contact Number:** [REDACTED]

**Email Address:** [REDACTED]

**Mailing Address:**  
[REDACTED]


**Reason(s) for delegation request:** Concerns about the change in the schedule for the buses to Stoney Creek. The Number 58 bus has been discontinued. The only option now for bus access to Stoney Creek is transferring to the Number 5 Delaware from the Number 44. This is very inconvenient, especially for seniors.

**Will you be requesting funds from the City?** No

**Will you be submitting a formal presentation?** No



**CITY OF HAMILTON**  
**PUBLIC WORKS DEPARTMENT**  
**Hamilton Water Division**

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	September 8, 2023
<b>SUBJECT/REPORT NO:</b>	Burlington Street Sewage Spill Update (PW22088(b)) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Shane McCauley (905) 546-2424 Ext. 1020
<b>SUBMITTED BY:</b>	Nick Winters Director, Hamilton Water Public Works Department
<b>SIGNATURE:</b>	

## RECOMMENDATION

- (a) That the Hamilton Water Divisional staff complement be increased by 12 permanent full-time equivalents; and that the 12 additional full-time equivalents be used to resource the new sewer sampling program, the enhanced sewer inspection program and to mitigate other risks to the wastewater program as outlined in Report PW22088(b), funding through the 2023 Hamilton Water Divisional gapping; and,
- (b) That future operating costs as outlined in Report PW22088(b) be referred to the 2024 Rate budget.

## EXECUTIVE SUMMARY

As required by [Provincial Officer's Order # 1-142403769](#) attached as Appendix "A" to report PW22088(b) issued by the Ministry of Environment Conservation and Parks (the Ministry), Hamilton Water engaged two consultants to evaluate and make recommendations for developing a new sewer sampling program, to assess the feasibility of completing a detailed in-pipe inspection of the City of Hamilton's (City) sewer system, and to assess and identify enhancements to the City's sewer inspection programs. Based on the recommendations from these two assignments Hamilton Water

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OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

**SUBJECT: Burlington Street Sewage Spill Update (PW22088(b)) (City Wide) –  
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is recommending the addition of 12 new permanent full-time equivalent positions. The 12 positions will include five new permanent full-time staff to support the new sewer sampling program and four new permanent full-time staff to support the enhanced sewer inspection program. In addition, Hamilton Water has identified risks with the ability to have Water/Wastewater Treatment Operators regularly attend and inspect the over 80 wastewater outstations and combined sewer overflow facilities, and in providing the needed management oversight for the growing Water Distribution and Wastewater Collection Section within Hamilton Water. As a result, Hamilton Water is recommending two additional Water/Wastewater Treatment Operators and one new Manager position.

**Alternatives for Consideration – See Page 7**

**FINANCIAL – STAFFING – LEGAL IMPLICATIONS**

Financial: Staff hired in 2023 would be funded utilizing 2023 gapping savings and would not require an in-year increase to the 2023 operating budget. Net increase to the 2024 Water, Wastewater and Stormwater Rate Budget of approximately \$2,010,000. Table 1 below contains a break down of the associated costs and savings.

Table 1

Increase or Savings	Reason	Amount
Increase	Staff costs	\$1,470K
Increase	Operational cost	\$ 200K
Savings	Contractor	- \$ 100K
Savings	Overtime	- \$ 60K
One-time Capital	Vehicles and Equipment	\$ 500K
Total		\$2,010K

For staff that are being recommended, a cost breakdown is attached as Appendix “B” to Report PW22088(b). Increased operational costs include additional closed-circuit camera inspections and vehicle operating expenses. All additional costs would be built into the recommended 2024 Water, Wastewater and Stormwater Rate Operating Budget. The Capital investment would be included in the recommended 2024 Water, Wastewater and Stormwater Rate Capital Budget.

Staffing: Approval of the Recommendation in this report will increase the Hamilton Water Divisional complement by 12 full-time equivalents on a permanent basis.

**SUBJECT: Burlington Street Sewage Spill Update (PW22088(b)) (City Wide) –  
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Approval of the Recommendation in this report would necessitate some staffing realignments and minor organizational structure changes. While Hamilton Water has identified the need for these changes, they have not yet been planned. Pending Council approval, Hamilton Water will work with Human Resources to ensure that any changes are made in accordance with the City's established processes and policies.

**Legal:** Hamilton Water in conversations with the Ministry understand that if the City does not voluntarily implement the recommended sampling and inspection programs, The Ministry may issue a follow-up Provincial Order mandating the City to do so.

### **HISTORICAL BACKGROUND**

On January 18, 2023, the City received [Provincial Officer's Order Number 1-142403769](#) (the Order) issued by the Ministry of Environment, Parks (the Ministry) and Conservation. The eight-part Order was a result of the Burlington Street and Rutherford Avenue sewage spills. The details of these spills are contained in the November 28, 2022 Public Works Committee Report PW22088, and the February 13, 2023 Public Works Committee Report PW22088(a). The Order required the City to undertake several actions to develop a sewer sampling program, assess the feasibility of a detailed in-pipe inspection of the City's sewer system, and assess existing inspection programs with the goal of identifying unauthorized discharge of untreated sewage to the natural environment from the City's sewer systems.

Table 2 below provides the dates each part of the Ministry's Order was met and reference to the corresponding communications.

Table 2

Date	Provincial Officer's Order #1-142403769 Part Numbers	Communication Reference
February 3, 2023	1, 2	Report PW22088(a)
March 16, 2023	3, 4	Communications Update HW.23.02 - Update - Provincial Officer's Order #1-142403769 - Attached as Appendix "C" to Report PW22088(b)
May 10, 2023	5, 6	Communications Update HW.23.04 - Update - Provincial Officer's Order #1-142403769 - Attached as Appendix "D" to Report PW22088(b)

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June 29, 2023	7, 8	Communications Update HW.23.05 - Update - Provincial Officer's Order #1-142403769 - Attached as Appendix "E" to Report PW22088(b)
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## **POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS**

The recommendations in Report PW22088(b) are in alignment with the Rate Budgeted Complement Control Policy (Policy No: CBP-1).

## **RELEVANT CONSULTATION**

Legal & Risk Management Services - regarding the responses to the Ministry orders.

Finance & Corporate Services - regarding the recommended staffing and budget implications.

Human Resources - regarding the proposed staffing changes and organizational restructuring.

## **ANALYSIS AND RATIONALE FOR RECOMMENDATION**

The Order required Hamilton Water to retain the services of a qualified person(s) to develop a sewer sampling program, assess the feasibility of completing a detailed in-pipe inspection of the City's sewer system, and assess existing sewer inspection programs considering opportunities for enhancements, with the goal of identifying unauthorized discharges of untreated sewage to the natural environment from the City's sewer systems.

DiCaro & Associates (DiCaro) was retained to assist Hamilton Water in developing a sewer sampling program and provided their recommendations in "Report for the City of Hamilton on the January 18, 2023, Provincial Officer's Order # 1-142403769" included in Appendix "C" to Report PW22088(b). The cost to complete this assignment was \$10K.

The DiCaro report provides a review of the City's current sampling programs and recommends that a proactive dry weather in-pipe sewer sampling program (sampling program) be implemented within the City's combined sewer system.

Section 5 of DiCaro's report outlines the recommended staffing and resources required to undertake the new sampling program. While the DiCaro report recommends four full-time equivalent positions and two student positions, the scope of the report did not consider the additional resources required to process the samples; work that is done by

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the City's Environmental Laboratory. Hamilton Water has reviewed the consultants' recommendations and believe that the new sampling program can be implemented with the addition of five permanent full-time staff as outlined in Appendix "B" to Report PW22088(b). Two additional vehicles would be required to support the new sampling program with one-time capital costs of approximately \$175K and annual operational costs of approximately \$20K. Hamilton Water considered whether this new program could be undertaken with the existing complement; however, due to the scope of the work involved as outlined in the DiCaro report this would not be possible without significantly affecting other Hamilton Water programs.

If approved, the new sampling program would encompass the sewer lateral cross connection sampling that is currently being completed by an external contractor at a cost of \$100K annually. This contract would no longer be needed making these operational funds available to offset some of the additional operating costs associated with the program.

Stantec Consulting (Stantec) was retained to conduct the feasibility assessment of completing a detailed in-pipe sewer inspection and to complete a gap analysis of the City's existing sewer inspection programs to identify opportunities for enhancements. Stantec provided their recommendations in their report "100% Study Report to Address Items 5.1-5.4 of MECP Order No. 1-142403796", included in Appendix "D" to Report PW22088(b). The cost to complete this assignment was \$144K.

The Stantec report provides a detailed review of the City's current sewer inspection and maintenance programs; analyses the feasibility of a detailed in-pipe inspection program versus a risk-based inspection program for the City's sewer system; performs a gap analysis of the City's current sewer inspection and maintenance programs against industry best practices and provides recommendations to address these gaps.

A detailed in-pipe inspection program was assessed and deemed impractical due to its high cost (over \$50M) and length of time to complete (seven to 10 years). The Stantec report highlighted that the City's current programs (which included the risk-based inspection pilot) have proven to be highly effective, aligning well with industry best practices and even surpassing them in certain areas. Stantec recommended adopting the risk-based inspection pilot program on a permanent basis until all the City's sewers have been inspected.

Section 4.2.3 of the Stantec report outlines the recommended resources to effectively manage the enhanced risk-based sewer inspection program (inspection program). While the Stantec report recommended four full-time equivalent positions and two student positions, Hamilton Water has reviewed the recommendations and believe that the two student positions can be mitigated utilizing existing staff and are therefore only recommending the addition of four new permanent full-time staff to support the

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inspection program as outlined in Appendix “B” to Report PW22088(b). Two additional vehicles would be required to support the new inspection program with one-time capital costs of approximately \$175K and annual operational costs of approximately \$20K. The initial pilot program was completed utilizing existing staff who completed the work on overtime. Stantec has estimated that it will take one crew dedicated to the inspection program at least five years to inspect the City’s entire sewer system. Hamilton Water considered whether this new inspection program could be undertaken with the existing complement; however, due to the scope of the work involved as outlined in the Stantec report this would not be possible without significantly affecting other Hamilton Water programs.

Hamilton Water, as required by the City’s Wastewater Quality Management System, conducts an annual review of the Wastewater Program to review its effectiveness and identify risks. This is followed up by a sectional annual review process where each section presents program overviews, successes, opportunities, challenges, and risks. After the discovery of the Burlington Street spill, it was through these processes that Hamilton Water identified additional risks that had not been previously assessed and were outside of the scope of both the DiCaro and Stantec assignments.

The Wastewater Collections Outstations Team consists of six full-time staff including one Superintendent, one Supervisor and four Water/Wastewater Treatment Operators (Operators). This team is responsible for the operation, preventative maintenance, and oversight of the Dundas Wastewater Treatment Plant (Dundas Plant) and Outstations (consisting of 74 Wastewater/Stormwater Pumping Stations, nine Combined Sewer Overflow tanks and several combined sewage overflow control structures). Two Operators are dedicated to the operation of the Dundas Plant while two Operators are dedicated to the Outstations.

Currently, absences within the Wastewater Collections Outstations Team due to training, sick-time or vacation are managed either through overtime or by assigning one of the two Outstation Operators to the Dundas Plant. This means that regularly there is only one Operator available to manage the numerous Outstations. Evidence has shown that routine inspections and the operators’ ability to effectively troubleshoot and problem-solve issues have suffered. This has led to the creation of unnecessary maintenance work orders which ultimately affects the maintenance team’s ability to perform preventive maintenance.

Adding two Water/Wastewater Treatment Operators as identified in Appendix “B” to Report PW22088(b) to this team will enable the team to effectively manage absences and improve the Operators ability to perform the necessary preventative maintenance and troubleshooting of Hamilton Water’s Outstations. Two additional vehicles would be



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required with one-time capital costs of approximately \$150K and annual operational costs of approximately \$20K. With the addition of the two Operators Hamilton Water will be able to reduce overtime costs by approximately \$60K per year and improve staff work-life balance.

The Water Distribution and Wastewater Collection Section of Hamilton Water is responsible for the operation and maintenance of the City's watermains, sewer pipes and associated structures, stormwater management facilities and municipal drains. The responsibility for stormwater management facilities and municipal drains was added to this team's portfolio in 2019. As such, this section currently has a budgeted complement of 98 staff, an operating budget of over \$23M and a capital budget of over \$15M under a single Manager.

This team has performed exceptionally well and is known for their robust and industry leading operational and maintenance programs such as the Leak Detection Program, Sewer Lateral Cross Connection Program and Water Main Flushing Program. However, Hamilton Water has identified that having one Manager overseeing the entire breadth of Water Distribution, Wastewater Collection, Stormwater Management Facilities and Municipal Drains poses a significant risk. In addition to managing the large number of staff required for these programs, each program has significant regulatory requirements that must be met to ensure the safety of staff, the safe delivery of drinking water and the protection of the environment.

Hamilton Water is requesting the addition of a new Manager position as identified in Appendix "B" to Report PW22088(b) which will be used to mitigate the risks associated with such a large portfolio that has extremely heavy regulatory demands.

While the risk has been identified, Hamilton Water has not yet determined what the new structure will be. Hamilton Water will work with Human Resources following approved processes and in harmony with recommendations coming out of the corporate organizational structure review.

## **ALTERNATIVES FOR CONSIDERATION**

Alternative 1:

- (a) That the Hamilton Water Divisional staff complement be increased by 11 new permanent full-time equivalents; and, that the 11 additional full-time equivalents be used to resource the new sewer sampling program, the enhanced sewer inspection program, and add two new Water/Wastewater Treatment Operators to increase the complement of the Wastewater Collection Outstations team;
- (b) That for 2023 funding be provided through Hamilton Water Divisional gapping;

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- (c) That future operating costs as outlined in Report PW22088(b) be included in the annual Water, Wastewater and Stormwater Rate Operating Budget starting in 2024; and,
- (d) That staff be directed to include one full-time equivalent, as a Manager Water Distribution & Wastewater Collection for consideration in the recommended 2024 Water, Wastewater and Stormwater Rate Budget.

**Financial:** Net Increase to the 2024 Water, Wastewater and Stormwater Rate Budget of approximately \$1,830,000. Table 3 below contains a break down of the associated costs and savings.

Table 3

Increase or Savings	Reason	Amount
Increase	Staff costs	\$1,290K
Increase	Operational costs	\$ 200K
Savings	Contractor	-\$ 100K
Savings	Overtime	-\$ 60K
One-time Capital	Vehicles and Equipment	\$ 500K
Total		\$1,830K

For the staff that are being recommended in Alternative 1 a cost breakdown is attached as Appendix “B” to Report PW22088(b). Increased operational costs include additional closed-circuit camera inspections and vehicle operating expenses. All staffing costs would be built into the recommended 2024 Water, Wastewater and Stormwater Rate Operating Budget. Any staff hired in 2023 would be funded utilizing 2023 gapping savings and would not require an increase to the 2023 operating budget. The Capital investment would be included in the recommended 2024 Water, Wastewater and Stormwater Rate Capital Budget.

**Staffing:** Approval of the Recommendations in Alternative 1 will increase the Hamilton Water Divisional complement by 11 full-time equivalents on a permanent basis.

Approval of the Recommendations in Alternative 1 will necessitate some staffing realignments and minor organizational structure changes. While Hamilton Water has identified the need for these changes, they have not yet been planned. Pending Council approval Hamilton Water will work with Human Resources to ensure that any changes are made in accordance with the City’s established processes and policies.

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**Legal:** Hamilton Water in conversations with the Ministry understand that if the City does not voluntarily implement the recommended sampling and inspection programs, The Ministry may issue a follow-up Provincial Order mandating the City to do so.

The Recommendations in Alternative 1 would allow Hamilton Water to implement the new sewer sampling program, the enhanced sewer inspection program, and address the immediate need of the Wastewater Collection Outstations team. However, referring the Manager Water Distribution and Wastewater Collection full-time equivalent for consideration in the recommended 2024 Water, Wastewater and Stormwater Rate Budget would delay Hamilton Water in working with Human Resources to determine a new structure for the Water Distribution and Wastewater Collection section that mitigates the risks that have been identified in Report PW22088(b). Therefore, Hamilton Water is not recommending Alternative 1 of Report PW22088(b).

Alternative 2:

- (a) That the Hamilton Water Divisional staff complement be increased by nine new permanent full-time equivalents; and, that the nine additional full-time equivalents, be used to resource the new sewer sampling program and the enhanced sewer inspection program;
- (b) That for 2023 funding be provided through Hamilton Water Divisional gapping;
- (c) That future operating costs as outlined in Report PW22088(b) be included in the annual Water, Wastewater and Stormwater Rate Operating Budget starting in 2024; and,
- (d) That staff be directed to include three full-time equivalents identified in Appendix “B” to Report PW22088(b) as “staff to address other risks”, for consideration in the recommended 2024 Water, Wastewater and Stormwater Rate Budget.

**Financial:** Net Increase to the 2024 Water, Wastewater and Stormwater Rate Budget of approximately \$1,510,000. Table 4 below contains a break down of the associated costs and savings.

Table 4

Increase or Savings	Reason	Amount
Increase	Staff costs	\$1,080K
Increase	Operational cost	\$ 18 K
Savings	Contractor	-\$ 100K
One-time Capital	Vehicles and Equipment	\$ 350K
Total		\$1,510K

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OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

**SUBJECT: Burlington Street Sewage Spill Update (PW22088(b)) (City Wide) –  
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For the staff that are being recommended in Alternative 2 a cost breakdown is attached as Appendix “B” to Report PW22088(b). Increased operational costs include additional closed-circuit camera inspections and vehicle operating expenses. All staffing costs would be built into the recommended 2024 Water, Wastewater and Stormwater Rate Operating Budget. Any staff hired in 2023 would be funded utilizing 2023 gapping savings and would not require an increase to the 2023 operating budget. The Capital investment would be included in the recommended 2024 Water, Wastewater and Stormwater Rate Capital Budget.

**Staffing:** Approval of the Recommendations in Alternative 2 will increase the Hamilton Water Divisional complement by nine full-time equivalents on a permanent basis.

Approval of the Recommendations in Alternative 2 will necessitate some staffing realignments and minor organizational structure changes. While Hamilton Water has identified the need for these changes, they have not yet been planned. Pending Council approval Hamilton Water will work with Human Resources to ensure that any changes are made in accordance with the City’s established processes and policies.

**Legal:** Hamilton Water in conversations with the Ministry understand that if the City does not voluntarily implement the recommended sampling and inspection programs, The Ministry may issue a follow-up Provincial Order mandating the City to do so.

The Recommendations in Alternative 2 would allow Hamilton Water to implement the new sewer sampling program and the enhanced sewer inspection program. However, they would delay Hamilton Water in addressing the immediate needs of the Wastewater Collection Outstation steam and in working with Human Resources to determine a new structure for the Water Distribution and Wastewater Collection section that mitigates the risks that have been identified in Report PW22088(b). Therefore, Hamilton Water is not recommending Alternative 2 of Report PW22088(b).

Alternative 3:

That staff be directed to include all the staffing needs identified in Report PW22088(b) in the recommended 2024 Water, Wastewater and Stormwater Rate Budget.

**Financial:** N/A

**Staffing:** N/A

**SUBJECT: Burlington Street Sewage Spill Update (PW22088(b)) (City Wide) –  
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**Legal:** Hamilton Water in conversations with the Ministry understand that if the City does not voluntarily implement the recommended sampling and inspection programs, The Ministry may issue a follow-up Provincial Order mandating the City to do so.

While Alternative 3 would allow Council to consider all of Hamilton Water's 2024 staffing requests at the same time during the 2024 Water, Wastewater and Stormwater Rate Budget deliberations, it would delay the implementation of the sampling and inspection programs. In correspondence with the Ministry there is an expectation that steps to implement these programs will be underway before the end of 2023 which will not be possible if the consideration of the nine staff required for the implementation of these programs is delayed. Therefore, Hamilton Water is not recommending Alternative 3 of Report PW22088(b).

**Alternative 4:**

That staff be directed to report back to the Public Works Committee with recommendations and implications of implementing the new sewer sampling program and enhanced sewer inspection program using existing staff and resources, by reducing existing levels of service, eliminating other Hamilton Water programs, or by using a contracted or a hybrid model.

**Financial:** Financial impacts would need to be assessed and included in the recommendation report.

**Staffing:** Staffing impacts would need to be assessed and included in the recommendation report.

**Legal:** Legal implications would need to be assessed and included in the recommendation report.

Due to the tight timelines and staffing demands associated with meeting the requirements of The Order, Hamilton Water has not been able to complete an analysis of what the implications of this Alternative would be. Staff would require at least six months to complete this analysis and bring a comprehensive report to Public Works Committee. In correspondence with the Ministry there is an expectation that steps to implement these programs will be underway before the end of 2023 which would not be possible. Therefore, Hamilton Water is not recommending Alternative 4 of Report PW22088(b).

**SUBJECT: Burlington Street Sewage Spill Update (PW22088(b)) (City Wide) –  
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**APPENDICES AND SCHEDULES ATTACHED**

Appendix “A” to Report PW22088(b) – Provincial Officer's Order # 1-142403769

Appendix “B” to Report PW22088(b) – Staffing Cost Breakdown

Appendix “C” to Report PW22088(b) – Communications Update HW.23.02 - Update  
Provincial Officer’s Order #1-142403769

Appendix “D” to Report PW22088(b) – Communications Update HW.23.04 - Update –  
Provincial Officer’s Order #1-142403769

Appendix “E” to Report PW22088(b) – Communications Update HW.23.05 - Update –  
Provincial Officer’s Order #1-142403769

## Provincial Officer's Order

Order Number

1-142403769

### Order Issued To

THE CORPORATION OF THE CITY OF HAMILTON  
71 MAIN ST W , HAMILTON, ON, L8P 4Y5

### Site

Woodward Ave Wastewater Treatment Plant  
700 WOODWARD AVE, HAMILTON, ON, L8H 6P4

Refer to the Definitions section in the Provincial Officer's Report, Part B of this Order, for the meaning of all the capitalized terms that are used in this Order.

### PART A - WORK ORDERED

Pursuant to my authority under **EPA | 157.1, OWRA | 16.1, OWRA | 16.2**, I order you to do the following:

**Item No. 1**      **Compliance Due Date:** 02/06/2023

Retain the services of a Qualified Person(s) that has the experience and qualifications with the following order items.

**Item No. 2**      **Compliance Due Date:** 02/06/2023

Submit to the undersigned Provincial Officer written confirmation that the Qualified Person(s) has been retained to carry out the work specified in this Order, that a copy of the Order has been given to the Qualified Person(s) and that the Qualified Person(s) has the experience and qualifications to carry out the work.

**Item No. 3**      **Compliance Due Date:** 03/17/2023

Develop a sampling program within the sewage works of the City of Hamilton that discharges to the Natural Environment. The program shall include at a minimum but not limited to:

i. Identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton storm and combined sewer system that discharges or potentially discharges to the Natural Environment.

ii. In-pipe representative sampling of storm and combined sewers that discharge to the natural environment during Dry Weather Flow(s), where

upstream, downstream samples cannot be collected at the receiving water body.

iii. Trigger conditions, parameters, and/or limits to initiate further investigation to identify Spill(s) and unauthorized discharges of untreated Sewage.

iv. Investigation procedures for identifying Spill(s) and unauthorized discharges of untreated Sewage.

v. Timelines to implement the sampling program.

**Item No. 4 Compliance Due Date: 03/17/2023**

A copy of the sampling program referred to in Item No. 3 shall be submitted to the undersigning Provincial Officer for acceptance by the Ministry.

**Item No. 5 Compliance Due Date: 05/12/2023**

Identify recommendations for enhancements to the City's sewer inspection programs to better identify identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton sewer system. These recommendations shall include at a minimum but not limited to:

I. An analysis of the feasibility of conducting a detailed in-pipe inspection of the City of Hamilton's sewer system.

II. An analysis of the feasibility of conducting risk-based inspections of the City of Hamilton's sewer system.

III. The Terms of Reference for an assignment to complete a gap-analysis review of current programs, procedures, and measures to inspect, monitor and identify Spill(s) and unauthorized discharges from the City of Hamilton's sewer system.

IV. A review of additional physical and analytical inspection programs to identify Spill(s) and Spill(s) and unauthorized discharges from City of Hamilton sewage system.

V. Procedures for updating City of Hamilton's current digital mapping system when discrepancies are determined.

**Item No. 6 Compliance Due Date: 05/12/2023**

A copy of the recommendations referred to in Item No. 5 shall be submitted to the undersigning Provincial Officer for acceptance by the Ministry.

**Item No. 7 Compliance Due Date: 06/30/2023**



Ministry of the Environment,  
Conservation and Parks

Ministère de l'Environnement, de la  
Protection de la nature et des Parcs



Document the City's programs and processes for identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton sewer system, including the program enhancements identified on the findings of order Items No. 3 and No. 5 in a suitable operating procedure, guidance document or report.

**Item No. 8**

A copy of the standard operating procedure, guidance document or report referred to in Item No. 7 shall be submitted to the undersigning Provincial Officer within eight (8) weeks of acceptance of order Items No. 3-6, or such other date approved by the undersigning Provincial Officer

## **PART B - PROVINCIAL OFFICER'S REPORT**

This Order is being issued for the reasons set out below.

### **Definitions**

For the purposes of this Order, the following capitalized terms shall have the meanings set out below:

"Dry Weather Flow(s)" means sewage flow resulting from both, Sanitary wastewater (combined input of industrial, domestic and commercial flows); and Infiltration and inflows from foundation drains or other drains occurring during periods with an absence of rainfall or snowmelt.

"EPA" means the Environmental Protection Act, R.S.O. 1990, c. E.19.

"Flow Regulator" means a any structure that in dry weather permits the passage of all flows to treatment and in wet weather permits discharge to an outfall or relief sewer of all flows in excess of some specific flowrate.

"Ministry" or "MECP" means the Ontario Ministry of the Environment, Conservation and Parks.

"Natural Environment" has the same meaning as defined in section 1 of the EPA.

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40.

"Provincial Officer" means the undersigned provincial officer or, if the undersigned is unable to act, any other provincial officer authorized to act pursuant to the EPA and OWRA.

"Qualified Person" means a person who has obtained the appropriate education, training and credentials and has demonstrated experience and expertise in the areas relating to the work required to be carried out in this Order.

"Sewage" has the same meaning as defined in section 1 of the OWRA.

"Sewage Works" has the same meaning as defined in section 1 of the OWRA.

"Spill" has the same meaning as defined in section 91 of the EPA.

"Waters" has the same meaning as defined in section 1 of the OWRA.

"Wet Weather Flows" Means the combined sewage flow resulting from, Sanitary wastewater; and Infiltration and inflows from foundation drains or other drains resulting from rainfall or snowmelt; and Stormwater runoff generated by either rainfall. or snowmelt that enters the combined sewer system.

### **Description of Person(s) Subject to the Order**

The Corporation of the City of Hamilton, herein referred to as 'The City', is a single tier municipality located in Ontario. The geographic area is approximately 1,118 km<sup>2</sup> comprised of rural and urban land uses.

### **Description of the Site and/or System/Facility**

The Corporation of the City of Hamilton, herein referred to as 'The City', owns and operates a Sewage Works, namely a wastewater collection system, comprised of combined, separated and partially separated sewer infrastructure. In addition to the wastewater collection system, The City also owns and operates a Sewage Works, for the conveyance, treatment and discharge of Sewage, namely storm water.

### **Reasons for the Order**

On November 22, 2022 at approximately 12:14, the Ministry's Spills Action Centre (SAC) received a report from a City of Hamilton, Wastewater Collection Supervisor. The City indicated that while reviewing sewer videos on November 22, 2022 as part of a infrastructure renewal project in the area of Burlington Street East and Wentworth Street North there appeared to be a *Spill of combined sewage into the Hamilton Harbour via a storm sewer*. Later that day, The City confirmed to SAC that a Spill was observed. The City indicated emergency contractors have been dispatched to bypass the storm sewer in question by vacuuming to stop the spill. The City explained they will be coordinating repairs in the morning of November 23, 2022.

On November 22, 2022, at 17:00 I responded to the Spill. I arrived at the intersection of Burlington Street East and Wentworth Street North. I met with a City of Hamilton Wastewater Collection Operator. The operator stated he is a certified, level I wastewater collection operator. The City operator and I reviewed The City's digital sewer maps . The City operator explained that combined sewage flows north down Wentworth Street North in a combined sewer, which then discharges Sewage into a storm sewer. The storm sewer then transmits and discharges untreated Sewage from the combined sewer directly into the Hamilton Harbour. The City operator was unaware as to why it was configured that way. The City operator indicated his supervisor would have that information.

The City operator and I inspected the combined manhole. I observed a vacuum truck actively vacuuming the combined manhole to stop the spill of combined sewage. I observed sandbags in the manhole to further prevent combined sewage from entering the storm sewer. The City operator stated the vacuum truck has been on-site since approximately 16:00. The City operator explained that we would be unable to view where the combined sewer discharged into the storm sewer due to the vacuum truck being parked over the manhole.

I inspected the outfall location of the impacted storm sewer for impacts. The outfall is known in the collection system as the Wentworth combined sewer overflow Outfall. The outfall is located near Hamilton Port Authority pier 14 docking slip, at the North end of Wentworth Street North. I was unable to observe the outfall location, possibly due to the night conditions or that the outfall is submerged under water. I observed the receiving waterbody (Hamilton Harbour) by walking up and down the docking slip. I did not observe any signs of sewage or impacts to the receiving waterbody.

At 19:25 I collected five samples. I collected the samples from the storm sewer manhole located at Land Street and Wentworth Street North, down gradient of the combined sewer connection. I collected the samples using a stainless-steel bucket attached to a rope. I tripled rinsed the stainless-steel bucket and triple rinsed the PET500 bottles. I affixed legal seals to the sample bottles. The storm sewer had liquid material in the pipe. The storm sewer did not appear to be flowing at this location.

At 20:10 a City of Hamilton Wastewater Collection Supervisor arrived on site. The City Supervisor stated he is a class III wastewater collection operator. The City Supervisor and I reviewed past drawings. The City Supervisor explained a 1996 issued for tender drawing by Parker Consultant, where it shows the storm sewer in question discharges into a manhole. At this manhole there is a note indicating "break into top of existing box culvert with 15" storm sewer". The City Supervisor indicated that the storm sewers are misidentified, and they are in fact combined sewers. The City Supervisor explained where the "break into top of existing box culvert with 15" storm" is where combined sewage discharges downward into the top of a storm sewer. The City Supervisor stated prior to the City noticing this, combined sewage flowed from combined manhole to the storm manhole where, the top of the storm sewer was chipped out allowing combined sewage to enter the storm sewer. The City Supervisor showed me a CCTV video taken earlier that day by City Operators. In the video I saw where combined sewage entered the storm sewer. The City Supervisor confirmed the storm sewer flows to the North, down Wentworth Street North, ultimately discharging into the Hamilton Harbour at the Wentworth CSO Outfall.

At 21:30 I collected five samples. I collected the samples from the storm sewer manhole down gradient of the combined sewer connection, at the intersection of Burlington Street East and Wentworth Street North. I collected the samples using a stainless-steel bucket attached to a rope. I tripled rinsed the stainless-steel bucket and triple rinsed the PET500 bottles. I affixed legal seals to the sample bottles. The storm sewer did not appear to be flowing at this location.

At 21:50 I left the site. Later that evening I followed up with the City Supervisor requesting The City sample results, inspection videos, drawings, number of connections discharging to the storm sewer and a log of the volume collected by the vacuum truck that was discharged to the sanitary sewer as discussed with City staff earlier that day.

On November 23, 2022, repairs were conducted and completed to the storm water sewer, such that no untreated Sewage from the combined sewer would enter the storm sewer and discharge to the Hamilton Harbour. The combined sewer was modified to discharge into a nearby sanitary sewer.

On November 24, 2022, I submitted the samples collected on November 22, 2022 to the MECP Laboratory for analysis.

On December 1, 2022, at 10:00 I had a meeting with City of Hamilton representatives, Director of Hamilton Water/Wastewater Operations, Manager of Compliance and Regulations, Manager of Wastewater Collection, and Manager of Infrastructure Renewal to follow up with the Spill. During the meeting the City representatives explained past drawings of the sewer infrastructure in the area of the spill. City of Hamilton representatives indicated that during a construction

project tender in 1996 drawings were mislabeled as storm sewers when they were combined sewers, conveying combined Sewage. The City indicated that this project would have been initiated following the drawings, likely around 1996-1997. The City confirmed that combined Sewage would have been discharging into the storm sewer since approximately 1996-1997. The City indicated this Spill was identified during a infrastructure renewal project, where City staff observed an anomaly in the system. The City indicated the infrastructure renewal project was conducted to determine if replacement is required. The City indicated CCTV inspections were conducted by third party contractors in the area of the spill in 2009 and 2013. The City indicated, City staff do not review these inspections unless there is an identified need or prompt from the contractor. The City indicated these CCTV inspections focus on assets management, not identifying spills. The City indicated there are no proactive programs to assess unauthorized connections in the combined sewer sections of the collection system. The City indicated that only reactive work is conducted (ex. sewer back-up). The City indicated that the cross-connection program to identify where sewage is being directed to storm sewers does not apply to combined sewers. The City indicated other techniques such as smoke or dye testing is not proactively conducted in combined sewers. The City explained their surface water monitoring program implemented in 2021 to identify issues within their sewer system. The City indicated they have approximately 14 months of sampling. The City indicated the sampling in the area of the Spill in is in the Hamilton Harbour, not directly in the boat slip. I explained that I do not believe that sampling in the Hamilton Harbour is representative of what is being discharged from The City sewer infrastructure due to environmental conditions found in the Hamilton Harbour, and other industrial discharges to the Hamilton Harbour. I indicated that trigger conditions need to be implemented to determine further investigations instead of waiting to review trends in the data. During the meeting I requested several documents discussed during the meeting. The City indicated they would provide that information as soon as possible via email.

December 9, 2022, I had a meeting with MECP staff and City of Hamilton representatives, Director of Hamilton Water, Director of Hamilton Water/Wastewater Operations, Manager of Compliance and Regulations, Manager of Wastewater Collection, Manager of Infrastructure Renewal, Sr. Project Manager, Infrastructure Renewals and Senior Regulatory Coordinator, Compliance and Regulations. The City indicated they cannot be assured there are not more unauthorized connections similar to the one found at Burlington Street East and Wentworth Street North. The City also noted they observed flow regulators used to trigger overflows, that they were unaware of until the November 22, 2022 Spill was discovered. They are reviewing the accuracy of this flow regulator inventory. The City indicated they are currently reviewing and conducting field inspections of high-risk manholes with similar infrastructure configurations of where the event occurred. This is focused on the North end of Hamilton, where this type of infrastructure predominantly exists within The City. The City also discussed proposed potential new programs and reviewing their inspection programs and surface water monitoring program to identify unapproved discharges of Sewage from City of Hamilton's Sewage Works.

After reviewing the information, I collected during my inspection, such as, drawings, sewer inspection videos, sample results, along with my on-site observations, I confirmed that untreated combined Sewage was discharging into Hamilton Harbour via a City of Hamilton storm sewer, which was not authorized by the MECP or approved under the OWRA. The City estimated that 337,000,000 litres of combined Sewage from 50 mixed use service connections

was discharged into the Hamilton Harbour over 26 years due to this spill. The current City reactive inspection programs were unable to detect this Spill for the duration of the Spill, and it is my opinion the reactive inspection programs would not have identified this Spill. It is my opinion that the City of Hamilton does not have adequate programs to inspect, monitor and identify unauthorized connections causing Spills from City of Hamilton's Sewage Works infrastructure. With the absence of adequate programs, it is in my opinion that additional Spills, similar to this event could be currently occurring, and thus result in the unauthorized discharge of sewage from the works into the Natural Environment, including Waters such as the Hamilton Harbour.

Furthermore, On January 9, 2023, Ministry's Spills Action Centre (SAC) received a report from The City, Wastewater Collection Supervisor that another sewage Spill was discovered during a pilot proactive inspection program implemented as an outcome of the November 22, 2022, sewage Spill. The City determined a combined sewer was directly connected, and transmitted sewage to a storm sewer. Through this connection, untreated sewage from 11 residential homes was transmitted to a storm sewer that then discharges to the Hamilton Harbour from the Wentworth combined sewer overflow outfall.

On January 10, 2023, I responded to the sewage Spill. I collected samples and information regarding the Spill. It is my preliminary findings that this spill is similar to the November 22, 2022, where unauthorized connections were made from a combined sewer into the storm sewer. The storm sewer conveyed Sewage to the Hamilton Harbour. This inspection is currently on-going, and I am awaiting further information from the City of Hamilton and sample results from the MECP Laboratory.

During my January 10, 2023, inspection it was also communicated by The City, Wastewater Collection Supervisor that several flow regulators unknown to the City of Hamilton have been identified during the pilot proactive inspection program implemented as an outcome of the November 22, 2022, sewage spill.

Under certain emergency conditions, Sewage Works may be authorized to discharge untreated Sewage to the Natural Environment with no to minimal treatment typically during Wet-Weather Flows. These authorized discharges are necessary to prevent storm water and wastewater from backing up and causing basement flooding, surface flooding, and potential damage to wastewater treatment plants. The two sewage Spills discovered by the City, are not authorized as the Spills would have been discharging to the Natural Environment during Dry Weather Flows.

I reasonably believe the requirements specified in this Order are in the public's interest as untreated Sewage often contains high levels of floatables, pathogenic microorganisms, suspended solids, oxygen-demanding organic compounds, nutrients, oil and grease, toxic contaminants and other pollutants. Untreated sewage discharged to the Natural Environment represent a potential health hazard and can have adverse effects on aquatic life, recreational uses and water supplies.

#### **Authority to Issue the Order**

Ministry of the Environment,  
Conservation and Parks

Ministère de l'Environnement, de la  
Protection de la nature et des Parcs



I am issuing this Order under my authority as a Provincial Officer under the following legislation, which also includes the authority to take intermediate action and/or procedural steps:

This Order is being issued pursuant to my authority under section 157.1 of the EPA and Section 16.1 and 16.2 of the OWRA.

I reasonably believe that the requirements specified in this Order are necessary or advisable so as to prevent or reduce the risk of a discharge of a contaminant, namely Sewage into the Natural Environment from the undertaking or the property.

AND

I further reasonably believe that the requirements in this Order are in the public interest in order to prevent a discharge of Sewage into Waters in the area of the City, such as but not limited to the Hamilton Harbour that may impair the quality of water.

AND

I further reasonably believe that the requirements in this Order are in the public interest.

#### **Attachments**

The attachments listed below, if any, form part of this Order:

Ministry of the Environment,  
Conservation and Parks

Ministère de l'Environnement, de la  
Protection de la nature et des Parcs



**ISSUING OFFICER**

**Name:** Tyler Kelly

**Job Title:** Senior Environmental Officer

**Badge Number:** 1887

**Officer Email:** tyler.kelly@ontario.ca

**Office Email:** Environment.Hamilton@ontario.ca

**Date:** 2023/01/18

**Signature:**

A handwritten signature in cursive script that reads "Tyler Kelly". The signature is written in black ink and is positioned above a horizontal line.



## REVIEW AND APPEAL INFORMATION

### REQUEST FOR REVIEW

You may request that this Order be reviewed by the Director. Your request must be made in writing or orally with written confirmation. Your written request or written confirmation of your oral request must be received by the Director within 7 days after the date this Order was served on you and must be given to the Director as indicated in the Contact Information below.

In your written request or written confirmation, you must:

- specify the portions of this Order that you wish to be reviewed;
- include any submissions to be considered by the Director with respect to issuance of this Order to you or any other person and with respect to the contents of this Order;
- apply for a stay of this Order, if necessary; and
- provide an address for service by one of the following means, in person, by mail, by commercial courier, by fax, or by email.

In response to your request, the Director may confirm, alter/amend or revoke this Order. As an intermediate step, the Director may stay this Order by providing written notice to you that additional time is required to make a decision.

The Director will serve you with a copy (written notice) of the decision to revoke this Order or of an order, a Director's Order, to confirm or alter/amend this Order, together with reasons.

### DEEMED CONFIRMATION OF THIS ORDER

If within 7 days of the Director receiving your request for review you do not receive written notice of a stay, or oral or written notice of the Director's decision on your request for review, this Order is deemed (considered) to have been confirmed by Order of the Director and deemed to have been served upon you at the expiry of those 7 days.

### APPEAL INFORMATION (REQUIRE A HEARING)

A. If this Order is deemed confirmed as explained above, you may require a hearing by the Ontario Land Tribunal on the deemed confirmed Order within 15 days of the deemed service date:

- you must serve as indicated in the Contact Information below, written notice of your appeal on the Ontario Land Tribunal and the Director within those 15 days of the deemed service date;

- your notice must state the portions of the deemed confirmed Order for which a hearing is required and the grounds on which you intend to rely at the hearing;
- unless you have leave (permission) of the Ontario Land Tribunal, you are not entitled to appeal a portion of the deemed confirmed Order or to rely on grounds of appeal that are not stated in your notice requiring the hearing; and
- written notice requiring a hearing must be served on the Ontario Land Tribunal and the Director as indicated in the Contact Information below.

B. If this Order is confirmed or altered/amended by the Director by a written order served upon you (as opposed to the deemed confirmation noted above), such Director's Order will include the appropriate instructions for appealing that order to the Ontario Land Tribunal.

### CONTACT INFORMATION

The contact information for the Director and the Ontario Land Tribunal is the following:

Registrar  
Ontario Land Tribunal  
655 BAY STREET, 15<sup>th</sup> FLOOR  
TORONTO, ON M5G 1E5  
OLT.Registrar@ontario.ca

and

Director (Provincial Officer's Orders)  
Ministry of the Environment,  
Conservation and Parks  
Hamilton District Office  
119 KING ST W, 9TH FLR  
HAMILTON, ON L8P 4Y7  
Office Email: Environment.  
Hamilton@ontario.ca  
Fax: (905) 521-7806

The contact information of the Ontario Land Tribunal and further information regarding its appeal requirements can be obtained directly from the Tribunal at:

Tel: (416) 212-6349, Toll Free: 1(866) 448-2248 or [www.olt.gov.on.ca](http://www.olt.gov.on.ca)

### SERVICE INFORMATION

Service of the documentation referred to above can be made personally, by mail, by fax (in the case of the Director only), by commercial courier or by email in accordance with the legislation under which this Order is made and any corresponding Service Regulation.

### ADDITIONAL INFORMATION

Unless stayed by the Director or the Ontario Land Tribunal, this Order is effective from the date of service.

Failure to comply with a requirement of this Order constitutes an offence.

The requirements of this Order are minimum requirements only and do not mean that you are not required to comply with any other applicable legal requirements, including any:

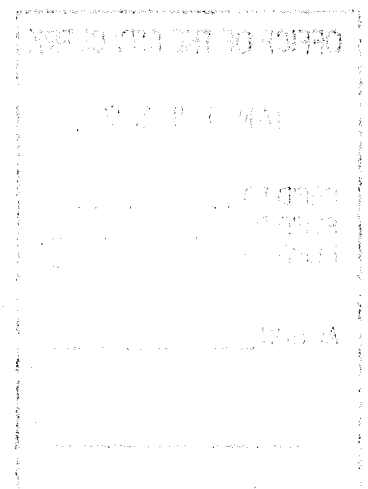
- statute, regulation, or by-law;
- federal, provincial, or municipal law; or
- applicable requirements that are not addressed in this Order.

The requirements of this Order are severable. If any requirement of this Order, or the application of any requirement to any circumstance, is held invalid, such finding does not invalidate or render unenforceable the requirement in other circumstances. It also does not invalidate or render unenforceable the other requirements of this Order.

Further orders may be issued in accordance with the legislation as circumstances require.

This Order is binding upon any successors or assignees of the persons to whom this Order is issued.

**The procedures to request a review by the Director or require a hearing and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference. Further information can be obtained from e-Laws at [www.ontario.ca/laws](http://www.ontario.ca/laws).**



**OFFICE OF THE CITY CLERK**

JAN 18 2023

REF'D TO \_\_\_\_\_

REF'D TO \_\_\_\_\_

REF'D TO \_\_\_\_\_

ACTION \_\_\_\_\_

\_\_\_\_\_

Ministry of the Environment, Conservation and Parks  
Tyler Kelly, Senior Environmental Officer/Provincial Officer  
Badge #1887      Tyler.Kelly@ontario.ca  
Hamilton District Office - West Central Region  
119 King Street West, 9th floor  
Hamilton, ON L8P 4Y7  
Tel 905-515-2152 Fax 905-521-7806  
Provide feedback on my visit at 1-800-565-4923 (Individuals) or  
1-888-745-8888 (Businesses) or [ontario.ca/inspectionfeedback](http://ontario.ca/inspectionfeedback)

Spills Action Centre: 1-800-268-6060  
Pollution Hotline: 1-866-663-8477  
[ontario.ca/reportpollution](http://ontario.ca/reportpollution)





## Staffing Cost Breakdown

### Recommendation Staffing and Associated Costs

Description	Position Title	2024 Individual Compensation			Number of FTEs	Total Impact
		Salary	Benefits	Total Compensation		
New Sewer Sampling Program	Supervisor Environmental Monitoring & Enforcement	\$111 K	\$28 K	\$139 K	1	\$139 K
	Regulatory Field Technician	\$82 K	\$22 K	\$105 K	2	\$209 K
	Environmental Quality and Compliance Technologist	\$86 K	\$23 K	\$109 K	1	\$109 K
	Laboratory Technician	\$98 K	\$25 K	\$123 K	1	\$123 K
Enhanced Sewer Inspection Program	Superintendent Water Distribution & Wastewater Collection	\$136 K	\$34 K	\$170 K	1	\$170 K
	Operations Technologist	\$98 K	\$26 K	\$124 K	1	\$124 K
	Wastewater & Stormwater Collection System Operator	\$81 K	\$22 K	\$104 K	2	\$207 K
Staff to Address Other Risks	Water/Wastewater Treatment Operator	\$83 K	\$23 K	\$106 K	2	\$211 K
	Manager Water Distribution & Wastewater Collection	\$150 K	\$36 K	\$186 K	1	\$186 K
<b>Recommendation Totals</b>		<b>\$926 K</b>	<b>\$240 K</b>	<b>\$1,165 K</b>	<b>12</b>	<b>\$1,479 K</b>

### Alternative 1 Staffing and Associated Costs


Description	Position Title	2024 Individual Compensation			Number of FTEs	Total Impact
		Salary	Benefits	Total Compensation		
New Sewer Sampling Program	Supervisor Environmental Monitoring & Enforcement	\$111 K	\$28 K	\$139 K	1	\$139 K
	Regulatory Field Technician	\$82 K	\$22 K	\$105 K	2	\$209 K
	Environmental Quality and Compliance Technologist	\$86 K	\$23 K	\$109 K	1	\$109 K
	Laboratory Technician	\$98 K	\$25 K	\$123 K	1	\$123 K
Enhanced Sewer Inspection Program	Superintendent Water Distribution & Wastewater Collection	\$136 K	\$34 K	\$170 K	1	\$170 K
	Operations Technologist	\$98 K	\$26 K	\$124 K	1	\$124 K
	Wastewater & Stormwater Collection System Operator	\$81 K	\$22 K	\$104 K	2	\$207 K
Staff to Address Other Risks	Water/Wastewater Treatment Operator	\$83 K	\$23 K	\$106 K	2	\$211 K
<b>Alternative 1 Totals</b>		<b>\$776 K</b>	<b>\$203 K</b>	<b>\$979 K</b>	<b>11</b>	<b>\$1,293K</b>

### Alternative 2 Staffing and Associated Costs

Description	Position Title	2024 Individual Compensation			Number of FTEs	Total Impact
		Salary	Benefits	Total Compensation		
New Sewer Sampling Program	Supervisor Environmental Monitoring & Enforcement	\$111 K	\$28 K	\$139 K	1	\$139 K
	Regulatory Field Technician	\$82 K	\$22 K	\$105 K	2	\$209 K
	Environmental Quality and Compliance Technologist	\$86 K	\$23 K	\$109 K	1	\$109 K
	Laboratory Technician	\$98 K	\$25 K	\$123 K	1	\$123 K
Enhanced Sewer Inspection Program	Superintendent Water Distribution & Wastewater Collection	\$136 K	\$34 K	\$170 K	1	\$170 K
	Operations Technologist	\$98 K	\$26 K	\$124 K	1	\$124 K
	Wastewater & Stormwater Collection System Operator	\$81 K	\$22 K	\$104 K	2	\$207 K
<b>Alternative 2 Totals</b>		<b>\$693 K</b>	<b>\$181 K</b>	<b>\$874 K</b>	<b>9</b>	<b>\$1,082 K</b>



# COMMUNICATION UPDATE

<b>TO:</b>	Mayor and Members City Council
<b>DATE:</b>	March 16, 2023
<b>SUBJECT:</b>	Update: Provincial Officer's Order #1-142403769 - HW.23.02
<b>WARD(S) AFFECTED:</b>	City Wide
<b>SUBMITTED BY:</b>	Nick Winters Director, Hamilton Water Public Works Department
<b>SIGNATURE:</b>	

As you are aware, the City of Hamilton was served with a Provincial Officer's Order #1-142403769 (Order) from the Ministry of the Environment, Conservation and Parks (MECP) related to the Burlington Street spill on November 22, 2022 which can be found on the City's Ministry Order webpage ([here](#)).

The City has been actively working to comply with all Order item due dates since it has been issued. In addition, the City has continued ongoing work related to the risk-based inspection program pilot that focuses on other areas of the combined sewer system where similar sewer cross connections could be present.

City staff completed Items No. 1 and No. 2 of the Order in February 2023 and as of today, have fulfilled all necessary requirements of Items No. 3 and No. 4 which includes developing a sampling program within the sewage system of the City that discharges to the Natural Environment. The sampling program aims to:

- (a) Identify Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton storm and combined sewer system that discharges or potentially discharges to the Natural Environment.
- (b) Outline requirements for in-pipe representative sampling of storm and combined sewers that discharge to the natural environment during dry weather, where upstream, downstream samples cannot be collected at the receiving water body.



- (c) Identify trigger conditions, parameters, and/or limits to initiate further investigation to identify Spill(s) and unauthorized discharges of untreated Sewage.
- (d) Outline investigation procedures for identifying Spill(s) and unauthorized discharges of untreated Sewage.

A copy of the recommended sampling program has been submitted to the MECP today in advance of the March 17, 2023 compliance due date. It has also been attached to communications update HW.23.02 as Appendix "A" for your convenience and uploaded to the Ministry Order webpage.

To ensure Council remains informed of the City's progress on the Order, staff will provide further updates as additional requirements are fulfilled. After the recommendations required by Items No. 5 and 6 have been completed and submitted to the MECP by the May 12, 2023 due date, Hamilton Water plans to submit a Recommendation Report to the Public Works Committee (PWC) for consideration that details the resources that will be required to implement the identified new programs. Staff estimate that this report will be presented to PWC in June 2023.

As always, the City remains committed to working with the MECP to fulfill all requirements set out in the Order.

#### **APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Communication Update HW.23.02 - Report for the City of Hamilton on the January 18, 2023, Provincial Officer's Order # 1-142403769 Item #3

# DiCaro & Associates Inc.

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March 16, 2023

Report for the City of Hamilton on the  
January 18, 2023, Provincial Officer's Order # 1-142403769  
Item #3

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## 1.0 Introduction

On January 18, 2023, the Ontario Ministry of Environment, Conservation & Parks (MECP) issued Provincial Officer's Order 1-142403769 ("Order") to The Corporation of the City of Hamilton ("City" or "Hamilton") in relation to dry weather overflow of the combined sewer system into the storm sewer system, at Burlington Street East and Wentworth Street North, and ultimately, into the natural environment (Hamilton Harbour). This report addresses specifically Item No.3 of the Order.

### MECP Order Item No.3:

Develop a sampling program within the sewage works of the City of Hamilton that discharges to the Natural Environment. The program shall include at a minimum but not limited to:

- i. Identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton storm and combined sewer system that discharges or potentially discharges to the Natural Environment.
- ii. In-pipe representative sampling of storm and combined sewers that discharge to the natural environment during Dry Weather Flow(s), where upstream, downstream samples cannot be collected at the receiving water body.
- iii. Trigger conditions, parameters, and/or limits to initiate further investigation to identify Spill(s) and unauthorized discharges of untreated Sewage.
- iv. Investigation procedures for identifying Spill(s) and unauthorized discharges of untreated Sewage.
- v. Timelines to implement the sampling program.

Under the Order, sewage is defined under the Ontario Water Resources Act (OWRA) that which includes drainage, stormwater, commercial wastes, industrial wastes and such other matter or substances as is specified by the Regulations.

It should be noted that Hamilton's sanitary/combined sewer system, like other older Ontario cities, is a complex system which was designed with regulators to intentionally allow for overflows into the storm sewer system to occur under certain wet weather conditions. These overflows allow for relief basement flooding and in Hamilton's case, prevents the Woodward Avenue Wastewater Treatment facility from flooding during heavy rains. Regulators provide intentional interconnections between the combined sewer and storm sewer and exist only at maintenance access hole chambers.

## 2.0 Hamilton Proactive Programs to Detect, Mitigate or Eliminate Sewage Pollution into the Natural Environment.

The City has undertaken numerous initiatives over the years to detect, mitigate and eliminate sewage/wastewater pollution from entering the natural environment. Below is a synopsis of the City's extensive efforts:

- Enforcing a Sewer Use Bylaw since 1989. The City has a long history of regularly presenting to City Council amendments to strengthen the Sewer Use Bylaw against emerging issues or pollutants. The City has increased staffing levels within the Environmental Monitoring & Enforcement (EME) unit over the years to enforce the Sewer Use Bylaw. It also added Environmental Enforcement Officers on a weekly on-call rotational basis, 24 hours, 7 days per week, to provide spills response to protect the City's natural environment.
- In 2001, the City created a Sewer Lateral Cross Connection (SLXC) Program within the separated sewer areas which were developed post World War II: Ancaster, Binbrook, Stoney Creek and Waterdown, and parts of the top of the Escarpment (Source – Stantec Report, 2021). This Program has found sewage entering the storm sewer system from improperly connected residential sewer laterals and has repaired 471 cross connections which diverts over an estimated 105 million litres of sewage out of the storm sewer and back into the sanitary sewage collection system thereby protecting and improving the natural environment (Source: March 7, 2023, Hamilton Water Division Program staff).
- Asset Management of the City has professional contractors who use closed-circuit television (CCTV) contractors to visually inspect storm sewer conditions for infrastructure condition assessment. The CCTV contractors have been instructed to make additional notes in the 'Remarks' field under the inspection condition record at connections where signs of sanitary cross connection are visible, e.g., 'Sanitary Waste' and inform the City's Asset Management group. Further, the SLXC Program coordinates water quality sampling at storm sewer outfalls to check for elevated levels of E.coli and the presence of caffeine (as an indicator for human sewage contamination). These results help to prioritize storm sewer catchment areas for a detailed in-pipe CCTV inspection. The CCTV inspections assess and document overall mainline sewer condition while also looking specifically for physical evidence in the storm sewer of sanitary sewer cross connections (e.g., 'Sanitary Waste' or dark staining around cross connected laterals). When these connections are identified, City staff initiate a follow-up dye test inspection of the address to confirm and coordinate the required repair of sewer lateral cross connections.

- In 2020, Hamilton initiated a Surface Water Quality Program (SWQP) to monitor 33 surface water quality areas, consisting of rivers, tributaries, and the Hamilton Harbour nearshore environment, adjacent to City sewer infrastructure. The SWQP is integrated with Hamilton Water's Spill Response protocol and identifies, but not limited to:
  - hot spots and whether these are from the City's infrastructure, heavy industry and international ships or other sources
  - seasonal trends (e.g., saltwater pool discharges in residential areas versus road salt application to the environment)
  - baseline ambient surface water conditions
  - data collection of both dry and wet weather events

The SWQP data is shared with surrounding area water quality partners (local conservation authorities, academia, Royal Botanical Gardens, Environmental Groups, select Provincial Ministries) and the public.

- In December 2022, a risk-based proactive sewer inspection pilot program was created to investigate combined and storm sewer maintenance access holes (MH) during dry and wet weather, within a specific area of the combined sewer area. This program focuses on MHs based on risk, stemming from the findings of the November 2022 Burlington Street East combined sewer cross connected to storm (a dry weather finding). The risk basis was also derived from the available SWQP data. The pilot covered the area known as SWQP Urban Core (UC) Surface Water (SW) UC-SW 6, 7, 8 & 9, which demonstrated high levels of E. coli and common industrial/commercial wastewater pollution. 292 MHs in the combined sewer and 346 storm sewer MHs were identified to be inspected. Between two (2) to six (6) staff were utilized for the inspections and as of early March 2023, Program staff advised approximately 90% of the pilot program MH inspections have been completed. The Program has resulted in the finding of three (3) improper cross connections and identified nine (9) previously unchartered critical regulators (source: February 21, 2023 Program Staff communications).

### **3.0 Key Issues about Hamilton Storm Sewers under influence by Combined Sewers**

A dry weather inspection and sampling program, of the City's storm sewers under influence by combined sewers, must consider the following key issues:

- 1) 53 storm sewer outfalls discharge to receiving waters within the Urban Core, Chedoke Creek, Westdale/McMaster University area and Red Hill Creek during wet weather events.

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Some storm sewer outfalls built within the combined sewer system (CSS) may be influenced by wet weather from the combined sewer system.

- 2) Regulators within the CSS are designed to overflow into the storm sewer system during wet weather and may become influenced in dry weather due to a condition in the combined sewer system such as, downstream blockages, significant volumes of sewage in short duration exceeding sewer design criteria, or grease build up restricting flows.
- 3) Some storm sewer outfalls within the Urban Core of Hamilton that discharge into Hamilton Harbour are submerged and not visible. These outfalls are also directly influenced by the Great Lakes water level. Lake Ontario water levels vary with annual Great Lakes water levels and seasonality.
- 4) Storm sewer MHs are generally located on roadways rated 40 to 60 Km/hr necessitating strict Occupational Health & Safety Act compliance using Ministry of Transportation Ontario Traffic Manual Book 7 (Traffic Control Planning). When observations of MHs are required on the roadway, inspections will take time as a result.
- 5) Other storm sewer outfalls and their associated MHs may be in ravines and steep sloped settings, necessitating very specific health and safety training. Speciality equipment for inspection and / or sample collection in these areas, may be required.
- 6) Animals nest/live in storm sewers and contribute to the presence of E. coli bacteria.
- 7) Other discharges to the storm sewer during dry weather may occur as a result of the following conditions or situations and many of these discharges would fall within the OWRA definition of sewage:
  - a. City issued permits for construction dewatering,
  - b. Residential/business overuse of potable water at a property,
  - c. illicit sewer connections,
  - d. illicit discharges/spills,
  - e. infiltration from connected foundation drains,
  - f. infiltration through sewer joints,
  - g. seasonal swimming pool discharge,
  - h. watermain leaks, and
  - i. vehicle/car washing or washing equipment.

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#### 4.0 Dry Weather In-Pipe Storm Sewer Inspection and Sampling Program in CSS

The CSS is bounded by Hamilton Harbour (Lake Ontario), the top of the Mountain from the brow of the Niagara Escarpment up to Mohawk Road, Red Hill Creek to the East, and Wilson Street East (Ancaster/West Hamilton) to the West.

A proactive Dry Weather In-Pipe Storm Sewer Inspection and Sampling Program for Hamilton is recommended to be implemented within the CSS, in a phased approach. Further, the City's December 2022 risk-based Pilot program involving proactive MH inspections in a high-risk Urban Core area remains active at the time of writing this report. It is recommended that the In-Pipe Inspection and Sampling Program begin to expand outside of the current Pilot program area.

Phase I of this Program would comprise of:

- Westdale/McMaster University area storm sewer outfalls that discharge to Chedoke Creek, and to the south side of Cootes Paradise.
- A storm sewer MH inspection within a portion of the Urban Core (UC) of the City, which extends to the upper Hamilton Mountain (Niagara Escarpment), (Source: Stantec Combined Sewer System Characterization Study Report, 2021, Figure 3.3).
- Areas along western portion the Red Hill Creek from the Escarpment brow

The brow's storm sewer system and that of the western side of Red Hill Creek from the brow were selected as these have not been intensely monitored in the past compared to the lower City storm sewer systems. This presents an opportunity to understand if the CSS can impact the storm in dry weather in those residential communities. Moreover, the Westdale/McMaster University area was also selected for the same reasons as the latter locations, with the exception of a higher density in population due to the University campus and associated housing, as well as the presence of commercial businesses. Many of these businesses generate grease which may block or restrict flow in the combined sewers to potentially impact the storm sewers in dry weather. Targeting these areas in Phase I is expected to yield valuable logistical and resource information within the lower parts of the City where the CSS is complicated.

The In-Pipe Inspection and Sampling Program would start at an accessible outfall or at the first MH entering the storm sewer system at the bottom of the Mountain. Please refer to Figure 1 which identifies storm sewer outfalls and the associated upstream MH, as well as each outfall's catchment area within the CSS. The circled areas within Figure 1 depict the three areas of the Program's Phase I.



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Following Phase I of the In-Pipe Inspection and Sampling Program, it is recommended to inspect and sample the remaining areas of the CSS, which discharge to the natural environment. For example, several SWQP UC sampling zones not covered by the December 2022 risk-based pilot program, starting with UC SW10 working westwards and UC SW1 working eastwards. Other CSS storm sewer MH inspections can be added to the Phase II scope, as the program matures.

SWQP data should be reviewed on an ongoing basis along with sampling data collected from the In-Pipe Inspection and Sampling Program.

The In-Pipe Program is expected to cycle through all storm sewers possibly influenced by the CSS in dry weather, within 2 to 3 years. It will assist the City in complying with MECP's Ontario Water Resources Act and Environmental Protection Act by locating, mitigating, and preventing unauthorized discharges to the natural environment.

The In-Pipe Program will supplement existing efforts and programs in which the City has undertaken since 1989 to find and eliminate wastewater pollution sources from entering the storm sewer system and into the natural environment.

#### **4.1 Dry Weather Definition**

Dry Weather for the In-Pipe Storm Sewer Inspection and Sampling Program, is defined as:

- 24 hours following a 10 mm or less precipitation event and/or no significant snow melt\*
- 48 hours following a 10.1mm up to 14.9 mm precipitation event and/or no major snow melt
- 72 hours following a 15 mm or greater precipitation event and / or following significant snow melt event

\*(in keeping with Hamilton Water EME dry weather definition for permits)

The In-Pipe Inspection and Sampling program operates in dry weather only.

#### **4.2 In-Pipe Inspection and Sampling Procedures Within Storm Sewer System Catchment Areas Key Health & Safety Training:**

For MH inspections on roadways, all staff must follow the Ontario Occupational Health and Safety Act (OH&SA) requirements (e.g., MTO Book 7 Traffic Control Planning). For inspection and sampling in ravines and steep/high areas, fall arrest training and equipment may be required, as well as any other applicable OH&SA training and equipment identified by the Program Supervisor and City H&S specialists.

#### 4.2.1 Inspection of Storm Sewer Outfalls and MHs

When inspecting a storm sewer outfall and/or MH, document all observations of flow, no flow, debris build up at the base of the outfall, staining, and any odours. Take a photograph of the full outfall pipe, if safe to do so. If vegetation or tree build up is obstructing the outfall, or erosion around the outfall structure has occurred, contact the appropriate City team to rectify.

If there is no flow from the outfall, document that there is no flow on the specific day and time for the Asset ID and move upstream to inspect the first accessible upstream MH.

If there is flow at the outfall or within an upstream MH:

- Take a photograph of the infrastructure (outfall or MH Interior);
- Collect an initial sample in a clear observatory sample jar (not for laboratory submission) to determine if olfactory and visual observations of the flow can be made;
- Estimate the approximate flow rate (using known volume sample bottle / container and stopwatch approach);
- Sample for In-Pipe Sampling Program parameters;
- Take a photograph of the collected Program sample bottles lined up; and,
- Document all findings:
  - Date
  - Asset ID number
  - Staff member's name
  - Street name; park name of MH location (add additional reference point if possible)
  - non-natural odours (e.g., sewage, chemicals, raw materials)
  - vegetation obstruction/excessive vegetation
  - erosion around outfall
  - cloudiness
  - colour
  - foam
  - suds (non-natural)
  - sanitary waste
  - orange staining
  - oily sheen
  - oil separated layers
  - floatables
  - algae
  - approximate flow rate
  - Time sample was collected

Once the outfall has been inspected, sampled (if flow observed), and all documentation completed, proceed to the next upstream MH for inspection and sampling, if required. Continue to systematically inspect next upstream storm MH in dry weather, to complete the storm sewer outfall catchment area. Follow Section 4.2.6 for Spill determination.

#### 4.2.2 Documenting Lake Level Influence on upstream MH

Documenting the influence of Lake levels and possible ship crossings wakes on the storm sewer system is important to establish baseline conditions at submerged outfalls. This documentation will create an official baseline record for the Program. It is understood that over time, outfalls and MHs influenced by lake water, may change depending on Lake Ontario water levels. Due to changing lake levels, inspections will begin at the visible Outfalls for this Program and will then move upstream to the MH. From the submerged storm sewer outfalls, the first upstream MH influenced by Lake water, is to be documented as such and then work backwards, upstream, inspecting, and documenting conditions in each upstream MH. This upstream MH inspection will continue until a MH, not influenced by lake water levels, can be properly inspected and sampled, if flow is present.

#### 4.2.3 Non-Lake water influence MH Inspection and Sampling

Once the first, non-Lake water influenced, upstream storm sewer MH from a submerged CSS storm sewer outfall catchment area is determined, it is to be inspected and where it is found to contain a flow, in dry weather, it shall be sampled, and observations documented:

- Date
- Asset ID number
- Staff member's name
- Street name; park name of MH location (add additional reference point if possible)
- non-natural odours (e.g., sewage, chemicals, raw materials)
- cloudiness
- colour
- foam
- suds (non-natural)
- sanitary waste
- orange staining
- oily sheen
- oil separated layers
- floatables
- algae
- approximate flow rate
- Time sample was collected

#### 4.2.4 In-Pipe Inspection Checks for Non-Lake influenced Storm MH Procedure

- Is there flow in the MH?
- Is there the presence of detectable odours of sewage, chemicals, or raw materials within or emanating from of the MH, regardless of flow or absence of flow in the storm sewer?
- Record sewer conditions and observations.
- Take photograph of internal MH condition.

If no observations are made of flow or odours, document these conditions; continue to systematically inspect next upstream storm MH in dry weather, to complete the storm sewer outfall catchment area.

#### 4.2.5 In-Pipe Inspection and Sampling:

If a flow is present in the storm sewer MH, in dry weather, samples are to be collected. Table 1, below references a list of parameters recommended for sampling in the Dry Weather In-Pipe Program which will assist in identifying illicit connections, illicit ICI (industrial/commercial/institutional) discharges/spills, groundwater infiltration, watermain breaks, and sewage:

**Table 1: In-Pipe Sampling Program Parameters, Rationale and Trigger Condition**

Parameter	Rationale	Trigger Condition
○ Metals Group*	○ Representative of ICI discharges and are within Hamilton’s Sewer Use Bylaw & meets definition of OWRA Sewage	○ Storm parameter exceedances of Hamilton Sewer Use Bylaw 14-090 limits ○ Presence of other metals without storm limits that should not be in the storm sewer and potentially a spill
○ Total Mercury	○ Recent findings of dental practices in Hamilton using low pH cleaners and solubilizing Mercury and meets definition of OWRA Sewage	○ Greater than 0.05 ug/L (microgram per Litre), which is the detection limit for Mercury. ○ Mercury should not be present in the storm sewer and is an indicator of a spill
○ Caffeine	○ Caffeine is only found in Human Sewage	○ Presence of Caffeine at or above the analytical detection level of 5 ug/L
○ Biochemical Oxygen Demand (BOD <sub>5</sub> )	○ Indicator of sewage	○ BOD <sub>5</sub> exceeds 15 mg/L. ○ A number of Greater Toronto Area municipalities have this limit in their storm section of Sewer Use Bylaws

		and this would be an indicator of a sewage spill.
○ E. coli	○ Indicator of sewage and animals	○ Over 3400 counts/100 ml to account for animal sewage
○ pH	○ Representative of ICI discharges and within Hamilton the Sewer Use Bylaw and meets definition of OWRA Sewage	○ Exceedance of the Hamilton Sewer Use Bylaw 14-090 storm sewer limits ○ An indicator of a spill
○ O-Phosphate	○ Indicator of potable water leak due to use of substance for lead control in watermains and an opportunity to find and fix non-revenue water losses.	○ Presence of O-Phosphate will indicate a leak of potable water or contributions from fertilizers or ICI discharges.
○ Chloride	○ Indicator of saltwater pool discharge, road salt, and industrial dischargers and meets definition of OWRA Sewage	○ Greater than 1500 mg/L to detect industrial discharges, excessive road salt or saltwater pool discharges
○ Temperature	○ Indicator of sewage, spill, or potable water leak and meets definition of OWRA Sewage	○ Greater than 40°C. A number of Greater Toronto Area municipalities have this limit in their storm section of Sewer Use Bylaws and would be indicative of Sewage under OWRA.

\* Hamilton Water’s Laboratory has a predetermined list of metals it automatically analyzes when metals are selected for analysis. Metals Group is comprised of: *Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium Calcium, Chromium, Cobalt, Copper, Iron, Potassium, Lead, Magnesium, Manganese, Molybdenum, Nickel, Silver, Sodium, Selenium, Strontium, Thallium, Tin, Titanium, Vanadium, and Zinc.*

#### 4.2.6 Is the Flow a Spill?

When determining if the flow is a spill in the storm sewer, in dry weather:

- An observatory clear and known volume sample jar should be used to collect a sample from the storm sewer MH flow to:
  - a) Estimate the flow rate; and,
  - b) observe for any olfactory observations of non-natural odours

This sample bottle will not be submitted to the Laboratory for analysis.

- Should the initial observatory clear jar sample show cloudiness, colour, oily sheen, oil separated layers, foam, suds (non-natural foam determined from shake test), sewage odours, non-natural odours, suspended material or solids:
  - Take a photo of the MH condition.
  - Take a grab sample to be analyzed for the In-Pipe Program parameters.

- 
- Photograph filled sample bottles, which are lined up.
  - Document observations, time of sampling and sampling actions before proceeding to upstream MH.
  - Mandatory tracing upstream to find the source in dry weather is required.
- When Source Not Found:
- When working in the office to review sample data of flow in MH with no source found, determine if sample parameter trigger conditions, per above, were detected. Add to master tracking spreadsheet that flow was detected, and whether trigger exceedances were recorded.
  - When no trigger exceedances of the program parameters occur – return to inspecting the next upstream MH in the catchment area and inspect MH and sample if flow is present and continue moving upstream inspecting and sampling as required.
  - When exceedances are detected return to MH displaying exceedances and check for flow again and if present collect a sample for comparison with original sample and then attend upstream MH and determine if flow is present and if so, collect sample and trace upstream to find the source.
- When Source is found from tracing and deemed a spill under the Hamilton Sewer Use Bylaw and other Legislation:
- Report to MECP Spills Action Centre (SAC) at 1-800-565-4923 immediately.
  - Report to the City Spill Reporting Centre (905-540-5188) for spill response initiated through Hamilton Water.
  - Spill containment and cleanup may be required along with an updated report to MECP SAC.
  - Information is recorded in the master tracking spreadsheet of spill found (add date) contributing to source of exceedance(s).
  - Following spill remediation and clean-up and sampling data review return to catchment area and re-check that the MH which had flow deemed as a spill to ensure no other flows exist and to confirm the spill had been the source of the observed flow. If flow exists, repeat 4.2.5.
- Should the flow be traced to be between two MHs, (meaning there is no flow in upstream MHs, but there is flow in two downstream MHs), then this is to be documented in the master tracking sheet and a request for CCTV work is to be made to determine if the flow is from damaged infrastructure or unknown connection in between the two MHs.
- Following CCTV work and conclusion that infrastructure repairs are required and made, the master tracking spreadsheet is updated, and the downstream MH is re-inspected to confirm

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if the flow has ceased. If flow exists upon repairs being made, this is likely indicative of another event occurring and the steps in 4.2.6 are repeated.

Data management and review is key for the In-pipe Inspection & Sampling Program to evaluate data and trends and evaluate together with the SWQP.

## 5.0 Program Logistics, Operation and Resources Required

The Program should commence when staffing and equipment resources are approved by Council and secured. Ideally the Program should take advantage of dry weather periods using existing resources, if possible, before resource approvals secured.

Phase I of the Program contemplates four (4) temporary Full Time Equivalent (FTEs) and two (2) dedicated students (summer or co-op). Specifically, the FTEs are:

- 1 FTE for a temporary data analytical position to review data and trends and prepare presentations, graphs, maps, reports etc., as required.
- 1 FTE for a temporary Supervisor to oversee and manage the team and ensure OH&SA training and equipment is provided.
- 2 FTEs for temporary field staff with experience in water/wastewater sampling, knowledge of sewer infrastructure and environmental law training
- 2 summer or co-op students with experience in water/wastewater sampling and/or knowledge of sewer infrastructure.

One full time temporary field staff member would be teamed with a student for training and experience, such that there are two teams. This would also build experience for students in a unique and limited profession. Due to OH&SA requirements, specifically traffic control planning, teams of two employees should work together in the tracing and sampling of a storm sewer catchment area. Each team is responsible for its own storm sewer outfall catchment area.

Phase I would operate in dry weather until all catchment area MHs are inspected, and sampled where applicable, to allow City management to assess the Program needs, equipment, length of time to complete MH inspections and sampling, lessons learned, impacts to the Laboratory or other units in Hamilton Water and staffing resources. This would allow for Hamilton Water to present to Council a fact-based resource needs Recommendation Report to operate the program year-round.

It is recommended that staffing resources be from existing position classifications within the City.

This is a year-round Program, very much weather dependent, and it is understood that certain months of the year will not permit for extensive field operations due to rain, snow melt or snow-covered MHs.

Non-field days are an opportunity for data entry, to reassess or review data, to complete training, and to hold team meetings for collaboration, brainstorming and sharing updates.

Once Phase I of the Dry Weather In-Pipe Storm Sewer Inspection and Sampling Program is completed, it is recommended to move onto the remaining outfalls and MHs associated with the CSS as outlined in Section 4.0.

It is anticipated that it should take 2 to 3 years to complete the CSS In Pipe Inspection and Sampling Program, based on the size of the area. Should the technology outlined in this report be utilized or future technology prove to be assistive, the timeframe for complete program completion may shorten.

**Expected Minimum Equipment Resources:**

- Vehicles for sampling and inspection field work
- Sampling equipment
- Health & Safety equipment
- Cameras
- Smartphones
- Field laptops/Tablets\*

**Inspections sheets and electronic repository needs:**

- Inspection summary information fields on a summary form to capture infrastructure information or tablet with built in and customized form\*
- Centralized and shareable electronic repository of MH inspection reports

\*Field tablets with a customizable form able to be uploaded to a centralized and shareable electronic repository system is recommended to maximize field staff efficiencies and reduce duplication in the office with data entry of collected information.

## **6.0 Technology Recommendations**

### **6.1 Aerial Infrared Thermography**

It is recommended that the City research aerial infrared (IR) thermography technology with drones, by way of a contractor offering such service, to monitor the outfalls entering surface



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waters surrounding the CSS to determine if unauthorized discharges are occurring during dry weather. Multiple sectors utilize this technology including the MECP to visually assess pollution sources, leaks, etc.

Wastewater pollution will have a higher temperature from the surrounding area and any release of wastewater or sewage into surface waters from outfalls can be visualized as visible coloured plumes through the variations depicted by temperature. “The amount of radiation emitted by an object increases with temperature, therefore thermography allows one to see variations in temperature” (Source: 2009, Lega & Napoli).

Lega & Napoli provided numerous examples in their September 2009 article of the use of IR technology to discern sanitary wastewater and wastewater pollution in surface waters. In one case, during dry weather, a catch basin connected to the sea at a popular tourist town was found to display a temperature variation using IR, concluding that a pollution event had occurred.

Several United States municipalities have utilized IR on a short-term basis to assist in finding illicit wastewater discharges. A Greater Toronto Area Municipality utilized the technique in late 2000 with the use of a helicopter in a one-time event which yielded images in one watershed with sewage outfalls at night. However, the use of IR at that time was cost prohibitive due to the helicopter and pilot rental to consider for long term use. More recently IR has been used with drones making it practical and generally more affordable. Nassau County, New York utilized the technique with great success, in 2020, through various grant programs available to it.

After Phase I of the In-pipe Inspection & Sampling Program, is completed and if the City has had an opportunity to investigate IR technology and available contractors in Ontario, the use of IR may assist in determining which storm sewer outfalls to prioritize for the In-Pipe Inspection and Sampling Program Phase II. Further, the use of IR may assist the City in identifying if other sources are contributing actively to discharges within Hamilton Harbour.

## **6.2 Real-time monitoring In MH Level sensing equipment with overflow alarms in Dry Weather**

It is recommended that the City investigate the use of battery operated, real-time remote monitoring MH level sensors, in storm sewers to provide information on possible dry weather overflow, in areas within the CSS which may be subjected to extreme high sanitary flows. For example, during a Tim Horton’s Field event or an event at the FirstOntario Centre, where potentially excessive flows causing surcharge may occur and areas with known heavy grease discharges from restaurants and/or grocery stores are known to cause blockages. These latter types of situations may cause the combined sewer to rise to a level which may then trigger the regulator to overflow into the storm sewer during dry weather. The real-time in sewer monitor in the combined sewer and storm sewer systems alarm to a computer monitoring network and to smart phones. Satellite or cellular systems are used to transmit information. Upon an alarm condition, key dedicated sampling staff could be mobilized to assess the alarm and if an overflow

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into the storm sewer is occurring, or about to occur, they can initiate sampling, inspection, tracing, and spill control at the storm sewer until the cause of the overflow or potential overflow is determined. The goal of this dry weather pilot is to assess if there are overflow/surcharge conditions in the examples provided to take proactive measures through the use of alarm notifications of potential overflow. Also, a proactive sewer cleaning program may result from the data if it proves valuable.

Following the City's investigation of the real-time monitoring MH level sensing technology as potential assistance to its dry weather programs, it could explore with a vendor a trial demonstration of four (4) real-time monitoring systems, in the downstream portion of a combined sewer regulator, and in the nearby receiving storm sewer downstream of the regulator, to determine if this technology is an option for future use as opposed to potentially hiring more Program staff.

Approximately 20 Ontario municipalities are utilizing this technology for overflow conditions.


### 6.3. References

1. Stantec Consulting Inc. Combined Sewer System Characterization Study Report, June 4, 2021
2. Hamilton Water, Surface Water Quality Program Council Report PW2258, 2021
3. September 2009, *Aerial Infrared Thermography In The Surface Waters Contamination Monitoring*, M. Lega and R.M.A. Napoli





## COMMUNICATION UPDATE

<b>TO:</b>	Mayor and Members City Council
<b>DATE:</b>	May 11, 2023
<b>SUBJECT:</b>	Update: Provincial Officer's Order 1-142403769 - HW.23.04
<b>WARD(S) AFFECTED:</b>	City Wide
<b>SUBMITTED BY:</b>	Nick Winters Director, Hamilton Water Public Works Department
<b>SIGNATURE:</b>	

The City of Hamilton was served with a Provincial Officer's Order #1-142403769 (Order) from the Ministry of the Environment, Conservation and Parks related to the Burlington Street spill on November 22, 2022 which can be found on the City's Ministry Order webpage ([here](#)).

City staff completed Items No. 1 through 4 of the Order in February and March 2023. This update is to advise that as of yesterday, staff have fulfilled all necessary requirements of Items No. 5 and No. 6, which required the City to identify recommendations for enhancing the City's sewer inspection programs.

The City continues actively working to comply with all Order item due dates since it has been issued. In addition, the City has completed the initial risk-based inspection program pilot (Pilot Program) that focused on other areas of the combined sewer system where similar sewer cross connections could be present. Information on the results from that pilot have been published on the City's webpage ([here](#)).

A copy of the report completed by Stantec Consulting Ltd. was submitted to the Ministry of the Environment, Conservation and Parks yesterday (May 10) in advance of the May 12, 2023 compliance due date. The Stantec report fulfills the analysis required by Order items 5.1, 5.2, 5.3 (including providing the full gap analysis instead of simply a Terms of Reference) and 5.4. The Stantec report also fulfills the requirement of Order item 5.5. for a documented procedure that describes how the City's digital mapping system is updated when discrepancies are discovered. Please refer to Appendix "A" and

Appendix "B" respectively, and/or the Ministry Order webpage ([here](#)), to review the full Stantec report or the submitted procedure.

In summary, the Stantec report identifies that the City's existing maintenance and inspection programs were in-line with Industry Best Practices, and that the implementation of the Pilot Program eliminated the program gap that prevented the Burlington Street Spill from being discovered sooner. The Stantec report identifies that the completion of a Detailed In-Pipe Inspection Program would require 7-10 years to complete at a cost exceeding \$50 million, and that such a program would provide less value for the identification of cross-connected sewers and spills than extending the Pilot Program, and at a much higher cost. As a result, the Stantec report recommends extending the Pilot Program and acquiring staff resources to support the program over a period of at least 5 years.

Further updates on the City's progress on the Order will be provided as additional requirements are fulfilled. After the recommendations required by items No. 7 and 8 have been completed and submitted to the Ministry of the Environment, Conservation and Parks by the June 30, 2023 due date, Hamilton Water plans to submit a Recommendation Report for Council consideration that details the resources required to implement the identified recommendations. Staff estimate that this report will be presented to Public Works Committee in September 2023.

As always, the City remains committed to working with the Ministry of the Environment, Conservation and Parks to fulfill all requirements set out in the Order.

#### **APPENDICES AND SCHEDULES ATTACHED**

- Appendix "A" to Communication Update HW.23.04 - Study Report to Address Items 5.1 To 5.4 of MECP Order No. 1-142403796
- Appendix "B" to Communications Update HW.23.04 - Updating Asset Information Using WIMS Redlining



**100% STUDY REPORT TO ADDRESS  
ITEMS 5.1 TO 5.4 OF MECP ORDER NO. 1-  
142403796  
FINAL**

May 9, 2023

Prepared for:  
City of Hamilton

Prepared by:  
Stantec

Project Number:  
163401837

**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**

<b>Revision</b>	<b>Description</b>	<b>Author</b>	<b>Date</b>	<b>Quality Check</b>	<b>Date</b>	<b>Independent Review</b>	<b>Date</b>
1	Draft 50%	Pierre Wilder, Joon Choi, Adrien Comeau	24/03/23	Michael Kocher	24/03/23	Gerald Bauer	24/03/23
2	Draft 90%	Pierre Wilder, Joon Choi, Francine Lei	18/04/23	Michael Kocher	18/04/23	Gerald Bauer	18/04/23
3	Final	Pierre Wilder Joon Choi, Francine Lei	26/04/23	Michael Kocher	27/04/23	Gerald Bauer	27/04/23
4	Final Rev 1	Pierre Wilder Joon Choi, Francine Lei	08/05/23	Naomi Latimer	08/05/23	Michael Kocher	08/05/23



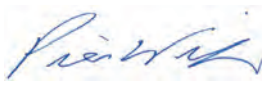


**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**

The conclusions in the Report titled 100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796 are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.


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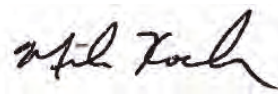
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## Executive Summary

### Introduction, Purpose and System Description

This report was prepared in response to Ministry of the Environment, Conservation and Parks (MECP) Order No. 1-142403769 issued to the City of Hamilton (City). Stantec completed a review of the City's collection system and its current inspection-related programs and initiatives to address MECP Order Items 5.1 to 5.4 (refer to **Sections 3 to 6**, respectively). The purpose of this report is to summarize this review, address the MECP Order Items and provide recommendations to improve the City's ability to identify spills and unauthorized discharges from its collection system.

The City of Hamilton operates a large network of sewers to service its population and manage both sanitary sewage and rainfall runoff (i.e. stormwater). While the newer, peripheral parts of the City have generally been developed with separated systems (i.e. with sanitary sewage flowing towards treatment plants and collected stormwater being discharged into surface water bodies), the urban core is mostly serviced by combined sewers, as is common in larger and older cities. The City's combined sewer is designed to manage excess flow during rainfall events and balance sewage treatment with limiting sewer surcharge and flooding. In total, the City has over 3,080,237m of sewers, of which 40% is sanitary, 41% is storm and 19% is combined. There are also areas that were formerly combined and are now separated, including a number of storm relief sewers that reconnect into the combined network. Refer to **Section 2** for more descriptions and maps of the City's collection system.

With such a large, complex sewer network that was mostly constructed several decades ago and which continues to be expanded and upgraded over time, there exists the possibility of cross connections within the network that could lead to spills and unauthorized discharges, which is not uncommon for collection systems of a similar size and age to Hamilton. Based on review of the City's collection system, the most likely unknown sources of spills and unauthorized discharges that may exist includes the following (detailed descriptions of each are provided in the report):

**Table 1-1: Potential Sources of Spills and Authorized Discharges**

Condition	Type of Discharge	Frequency
Mainline Cross-Connection	Continuous, Dry Weather	Occurs most or all of the time (dry weather)
Sewer Lateral Cross-Connection	Continuous, Dry Weather	Occurs most or all of the time (dry weather)
Unknown / Unauthorized Critical Regulator	Intermittent, Wet Weather	Occurs over shorter / more limited time periods
Failed Critical Regulator	Transitory, Dry Weather	Occurs rarely and without predictable frequency



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**

**Item 5.1 - Feasibility Analysis to Complete a Detailed In-Pipe Inspection Program**

As requested in Item 5.1 of the MECP Order, Stantec evaluated the City's collection system and performed a high-level feasibility analysis for conducting a potential City-wide detailed in-pipe inspection program (refer to **Section 3** for details and assumptions of the analysis). The following table shows estimated CCTV Contractor costs for various ranges of sewer sizes:

**Table 1-2: Estimated CCTV Costs for Various Sewer Sizes**

Sewer Size (mm)	Total length (m)	CCTV cost per m (\$)	Total cost (\$)
<=750	2,532,560	\$ 10.50	\$ 26,591,885
750 to 1200	320,851	\$ 13.75	\$ 4,411,695
>1200	226,826	\$ 25.00	\$ 5,670,639
<b>TOTAL COST</b>			<b>\$ 36,670,000</b>

The cost above is considered a low-end cost as it assumes ideal conditions (favorable weather, no traffic restrictions, no accessibility or visibility issues, etc.). We expect the actual cost to complete this inspection program to be at least 35% higher, approaching \$50M.

City-wide CCTV inspections not practical:  
 7-10 years, 4-5 new staff, \$50M+

The program would be expected to take over 10 years using 2 CCTV crews in tandem and would require the hiring of 4 additional City staff members (at an estimated City resourcing cost upwards of \$3.7M).

Additionally, completing in-pipe camera inspections is not likely to provide the most benefit in identifying spills or unauthorized discharges, as the vast majority of these conditions (as listed in **Table 1-1** above) are expected to occur at a maintenance hole (MH) or structure - aside from sewer lateral cross-connections, which would occur most commonly along smaller local sewers in separated areas. Unknown critical regulators would be discovered by first opening MH covers, while mainline sewer cross-connections are most likely to occur due to a sanitary or combined sewer being connected to the wrong MH (i.e., into a storm MH).

For these reasons, conducting a City-wide in-pipe sewer inspection program for the purposes of identifying unauthorized discharges is not recommended. It should be noted that the City's current condition assessment inspection program, is expected to remain ongoing outside of the inspections discussed in this report.

**Item 5.2 - Feasibility Analysis to Complete a Risk-Based Inspection Program**

This section of the report (**Section 4**) outlines the components of a programmatic approach and risk-based assessment methodology that is based on Industry Good Practices and deemed to be a feasible approach to address the risk of unauthorized discharges impacting water quality at CSO and storm drainage outfalls within the City of Hamilton. It is important to note that the City has, in fact, been following many of these practices over the past 10 years since they have initiated a program to address cross-connections within their separated sewer system, and have recently begun to focus their efforts



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**

within the combined sewer system with pilot area studies. While various City programs use Industry Good Practices to inspect, identify and correct potential spills and unauthorized discharges, there is a need for a centralized task-force or overall program (referred to herein as the System-wide Unauthorized Discharge Removal and Inspection Program, aka SUDRIP) that will oversee these inspection efforts and connect current programs with an integrated prioritization process.

It is also recommended that the City continue and expand its current programs that are designed to identify potential sources of spills and unauthorized discharges within the combined sewer area and the separated sewer area of the City. The combined sewage area is covered via the Regulator Inspection Program and the Risk-Based Proactive Pilot Program (aka the Pilot Program), which inspects high-risk, or "critical" MHs for potential cross-connection or unknown regulators / mainline relief connections. Refer to **Section 5.1.1.1** for prioritization and definition of "critical" MHs and outfalls. It is recommended that the Pilot Program be expanded to inspect all storm sewer MHs and adjacent combined sewer MHs within the combined sewer area of the City. This would likely take an additional 5 years to complete.

The separated sewer area is very effectively covered by the Sewer Lateral Cross-Connection (SLXC) Program, which has been ongoing since 2009 to trace, identify and correct sewer lateral cross-connections. We recommend that a verification step (i.e. re-sampling and re-testing outfalls that previously showed evidence of sanitary sewage contamination) be adopted by the program moving forward. This will also require some additional staffing resources.

**Expected Resources Needed for New Program and Expansion SLXC and Pilot Program:**

- > 4 new or reassigned full-time employees and 2 additional junior staff or coop-students.
- > Additional funding for increased frequency of CCTV video inspections (contracted work)
- > Additional funding for increased sampling and additional physical / analytical tools.

**Estimated expanded program costs: \$600K / Year**

In summary, we expect the City would need to **hire or reassign an additional 4 full-time**

**employees and 2 junior engineers or co-op students** to carry out the new and expanded inspection programs described in this section, at an estimated annual program cost of **\$600,000 / year** for the initial 5 years of the Program, which would be in addition to the City's existing programs such as their SLXC program (refer to **Table 1-3** for other details). The Program costs and staffing needs can then be re-assessed based on both the number of issues identified and resolved, and the anticipated success of the program moving forward after the four critical areas have been thoroughly investigated.



100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796

**Table 1-3: Summary of New and Expanded Program Resource Requirements and Interim Completion Dates**

	Overall Program Management	Combined System Program	Separated System Program
<b>Description of Needs</b>	Establish and oversee new program, including reporting and ongoing improvements	Complete remaining storm / adjacent combined MH inspections within combined sewer area	Begin follow-up screening of previously inspected outfalls / subcatchments
<b>Additional Staff Requirements (FTEs)</b>	1 Program Manager FTE	3 WW Collection Staff FTEs shared among programs	
<b>Additional Support Staff</b>	0.5 Co-op / Junior Staff	1.5 Co-op / Junior Staff	
<b>Estimated Additional City Staffing Costs</b>	\$110,000 / yr	\$310,000 / yr	
<b>CCTV Contractor Costs</b> (in addition to current budget)	N/A	\$100,000 / yr	\$40,000 / yr
<b>Additional Sampling and Analytical Costs</b> (in addition to current budget)	N/A	\$20,000 / yr	\$20,000 / yr
<b>Expected Interim Completion Date</b>	On-Going	2028-2029	On-going

**Item 5.3 – Gap Analysis of the City’s Current Sewer Inspection-Related Programs**

Within **Section 5**, we provide a review of the City’s other programmatic initiatives and compare them with each of the components of the recommended risk assessment-based framework with the purpose of evaluating their consistency with Industry Good Practices, and identifying any gaps and/or opportunities for enhancements. The scope of this review serves as the Terms of Reference for a Gap Analysis as specified under MECP Order Item 5.3. The current City programs and initiatives were found to be very effective and in line with Industry Good Practices. This assessment informed the recommended program enhancements and new overall program (SUDRIP) described within **Section 4**.

Current approaches very effective and in line with Industry Good Practices

Programs in place target a variety of potential spill / unauthorized discharge sources. No clear blind spots remain after expansion of Pilot Program.

In addition to comparing against Industry Good Practices, the Gap Analysis includes a review of the City’s current programs and their potential for identifying each of the potential sources of spills or unauthorized discharges listed above. We found that the implementation of the Risk-Based Proactive Pilot Program filled a major gap

within the combined sewer area by providing an inspection initiative that targets potential mainline cross-connections and unknown regulators / mainline relief connections. Further expansion of this program is recommended and described under **Section 4**.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796****Item 5.4 – Additional Physical and Analytical Inspection Programs**

This section identifies a number of potential physical and analytical inspection programs that the City may consider for enhancements or additions to their existing programs, procedures and measures to inspect, monitor and identify spills and unauthorized discharges. The following technologies and analytical inspection programs were reviewed for the City's consideration. **Table 6-1** provides a summary of each program, including a high-level summary of its local availability, effectiveness/timeline and cost impact.

- Chemical indicators
- Dye testing
- Canine scent tracking
- CCTV on storm relief sewers
- Flow monitoring on storm relief sewers
- Dry weather sand-bagging
- Sequence-based genetic testing
- Lab-based microbial analysis
- Rapid coliform tests
- qPCR

As noted in **Section 6**, it is recommended that the City proceed with implementing field-based physical investigations including dry weather sand bagging within storm sewer MHs, dye flooding (trial as part of existing SLXC program), CCTV storm relief sewers in critical storm outfall areas, chemical indicators (trial as part of existing SLXC program or the combined sewer area investigation), and flow monitoring on storm relief sewers. In addition, it is recommended the City continue with microbiological lab-based testing and consider sequence based genetic testing where other sampling results are inconclusive.





100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
1 Introduction and Purpose

# 1 Introduction and Purpose

This report has been prepared in response to Ministry of the Environment, Conservation and Parks (MECP) Order No. 1-142403769 issued to the City of Hamilton (the City). The City retained Stantec Consulting Ltd (Stantec) to support in the completion of Compliance Item No. 5 (specifically sub-items I to IV – referred to herein as MECP Order Items 5.1 to 5.4), as follows:

**Item No. 5 Compliance Due Date: 05/12/2023**

*Identify recommendations for enhancements to the City’s sewer inspection programs to better identify identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton sewer system. These recommendations shall include at a minimum but not limited to:*

- I. An analysis of the feasibility of conducting a detailed in-pipe inspection of the City of Hamilton’s sewer system.*
- II. An analysis of the feasibility of conducting risk-based inspections of the City of Hamilton’s sewer system.*
- III. The Terms of Reference for an assignment to complete a gap-analysis review of current programs, procedures, and measures to inspect, monitor and identify Spill(s) and unauthorized discharges from the City of Hamilton’s sewer system.*
- IV. A review of additional physical and analytical inspection programs to identify Spill(s) and Spills(s) and unauthorized discharges from the City of Hamilton sewage system.*

Item 5.5 (V) was completed by the City of Hamilton staff:

- V. Procedures for updating City of Hamilton’s current digital mapping system when discrepancies are determined.*

Stantec completed a review of the City’s on-going and planned sewer inspection programs to address MECP Order Items 5.1 to 5.4. This report summarizes Stantec’s findings and recommendations and generally follows the sequence of the MECP Order Items above. The following summarizes how the MECP Order Items are addressed in this report:

- 5.1: Stantec evaluated the City’s collection system and performed a high-level feasibility analysis for conducting a potential City-wide detailed in-pipe inspection (refer to **Section 3**). This includes estimated costs based on past CCTV contract data and estimated program duration and staffing requirements, as well as potential limitations due to available resources within the CCTV Contractor industry.
- 5.2: The MECP Order specifies a feasibility analysis for conducting “risk-based inspections”. The City currently has a number of inspection-type programs or programmatic initiatives in effect that can be considered “risk-based” and aim at identifying potential cross-connections and other sources of spills and unauthorized discharges. As such, in



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**1 Introduction and Purpose**

**Section 4** we identified a larger need for an new overall management program (referred to herein as the System-wide Unauthorized Discharge Removal and Inspection Program, aka SUDRIP) that will connect these initiatives under a common goal and can be used for the Gap Analysis in **Section 5**. Industry good practices for such a program are discussed in the first part of this section, however a feasibility analysis (i.e., total program costs, duration and resources) for this would be difficult to conduct until the program begins to take form and immediate and ongoing needs are identified.

The second part of this **Section 4** provides an overview of the City's Risk-Based Proactive Sewer Inspection Pilot Program (referred to herein as the "Pilot Program") that was initiated in Fall 2022. To satisfy Item 5.2, we have conducted a feasibility analysis on an expansion of this program, with recommendations for improvement.

- 5.3: Stantec has completed a Gap Analysis of the City's current programmatic initiatives as discussed in **Section 5**. The scope of this Gap Analysis, which serves as the Terms of Reference specified under MECP Order Item 5.3, is to compare the City's collection of programmatic initiatives against the Industry Good Practices for an overall risk-based framework (discussed in **Section 4**).
- 5.4: Finally, under **Section 6**, we investigate a number of potential physical and analytical technologies, techniques and methods that the City could consider implementing within the SUDRIP program.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**2 Overview of The City's Collection Systems**

## 2 Overview of The City's Collection Systems

### 2.1 Summary of City Collection System Infrastructure

The City of Hamilton operates a sewer network that services the City and parts of the previous municipalities (now amalgamated) of Flamborough, Dundas, Ancaster, Glanbrook and Stoney Creek. The network consists of storm, sanitary and combined sewers. Sewage (sanitary and combined) is treated at two municipal wastewater treatment facilities (Woodward and Dundas). The peripheral areas of the City are generally separated systems (sanitary and storm sewers only), while the urban core (referred to as the "combined area") is serviced by combined sewers as well as localized storm and sanitary sewers. The combined area features 195 known critical CSO regulators, which under certain wet weather conditions, divert excess combined sewage from the wastewater collection system towards one of the City's 22 combined sewage outfall locations. In total, the City has over 3,080,237m of sewers, of which 40% is sanitary, 41% is storm and 19% is combined. There are also areas that were formerly combined and are now separated, including a number of storm relief sewers that reconnect into the combined network.

**Table 2-1** and **Table 2-2** below provide a further breakdown of the City's collection system features based on areas of the City. The trunk sewer network is also illustrated on **Figure 2-1**, while **Figure 2-2** presents an overview of the regulators and outfall locations within the combined sewer area.

**Table 2-1: Summary of City of Hamilton Collection System**

Area	Sanitary Sewers (m)	Storm Sewers (m)	Combined Sewers (m)	CSO Points	Critical Regulators
Flamborough	92,052	108,705	0	0	1
Dundas	97,590	74,701	71	1	6
Ancaster	163,712	122,451	0	0	1
Glanbrook	90,375	75,391	0	0	0
Stoney Creek	272,812	241,767	0	0	6
Hamilton	506,186	660,774	573,649	29	181
Total	1,222,728	1,283,789	573,720	30 (CSO Points) 22 (CSO Locations)	195



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**2 Overview of The City's Collection Systems**

**Table 2-2: City of Hamilton Sewer Length Breakdown**

Area	Diameter (mm)	Sanitary (m)	Storm (m)	Combined (m)	All (m)
Flamborough	<=750	87,640	85,992	0	173,631
	>750-<=1200	4,103	15,698	0	19,801
	>1200	309	7,015	0	7,324
Dundas	<=750	89,082	66,334	71	155,487
	>750-<=1200	6,379	6,465	0	12,844
	>1200	2,129	1,902	0	4,031
Ancaster	<=750	152,921	93,322	0	246,242
	>750-<=1200	8,261	21,330	0	29,590
	>1200	2,530	7,799	0	10,330
Glanbrook	<=750	82,339	51,872	0	134,211
	>750-<=1200	5,776	14,964	0	20,740
	>1200	2,260	8,556	0	10,816
Stoney Creek	<=750	257,914	176,608	0	434,522
	>750-<=1200	3,270	40,917	0	44,187
	>1200	11,628	24,242	0	35,870
Hamilton	<=750	447,822	458,666	481,978	1,388,467
	>750-<=1200	30,668	106,556	56,464	193,688
	>1200	27,696	95,551	35,207	158,454
All	<=750	1,117,718	932,794	482,049	2,532,560
	>750-<=1200	58,457	205,930	56,464	320,851
	>1200	46,553	145,065	35,207	226,826



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 2 Overview of The City's Collection Systems

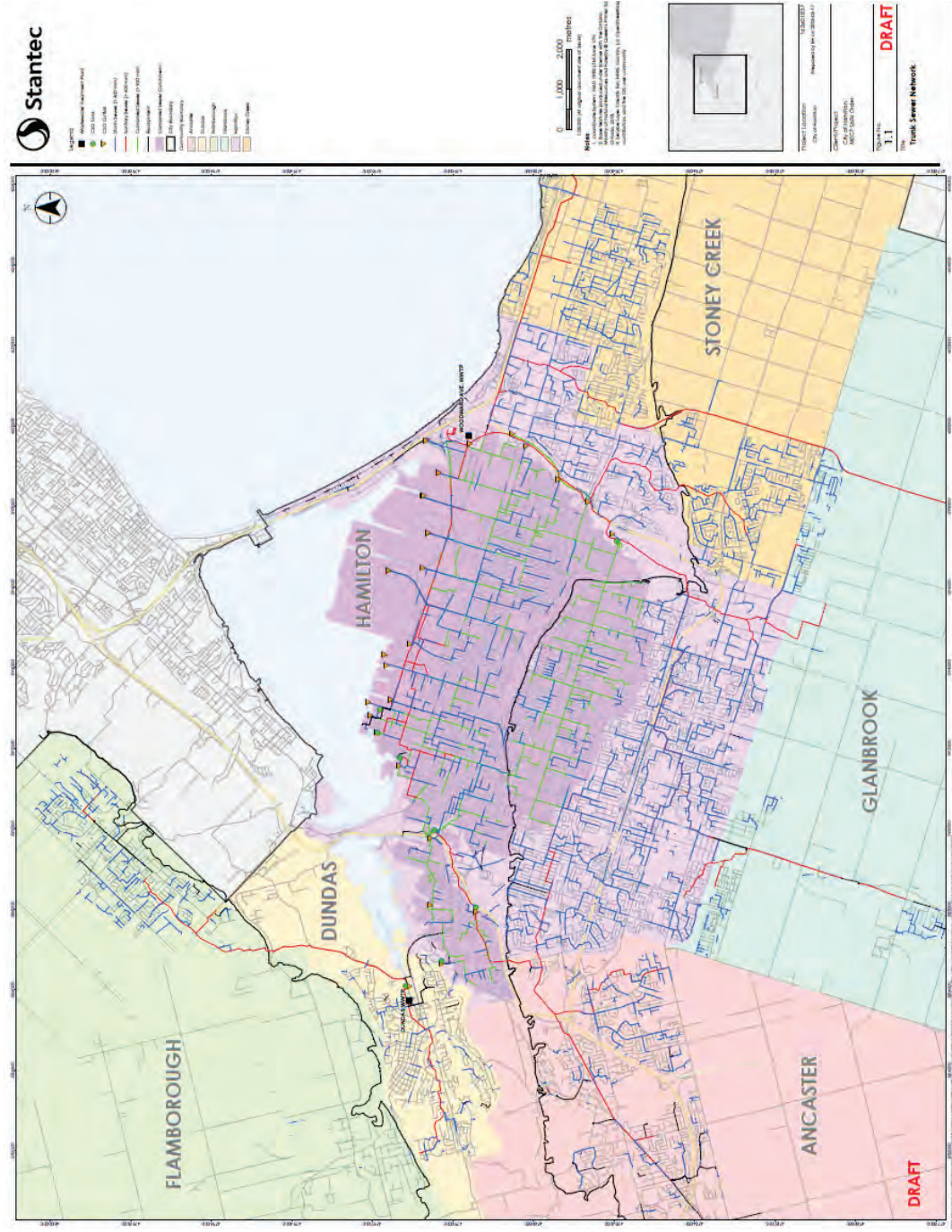


Figure 2-1: City of Hamilton Trunk Sewer Network (Refer to Appendix A for full-sized Figure)





**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**2 Overview of The City's Collection Systems**

## 2.2 Potential Sources of Spills and Unauthorized Discharges

Based on a review of the City's sewer systems, Stantec has identified the following four (4) potential unknown and undesired conditions that may exist and lead to spills and unauthorized discharges:

1. Mainline Cross Connection (Sanitary/Combined to Storm)
  - a. This condition involves a sanitary or combined sewer main discharging into a storm sewer main. These are unintentional connections due to field errors during original construction or retrofit of existing systems. For example, a contractor may unknowingly connect a sanitary or combined sewer to a storm MH due to incorrect or insufficient as-built records. These most often occur at a MH structure.
2. Sewer Lateral Cross Connection (Sanitary/Combined to Storm)
  - a. This condition involves one or more sanitary sewer laterals from a house or building that is directly connected to a storm sewer. These are normally isolated cross-connections (only impacting one house on a street) but are occasionally found in clusters, in which multiple units in a row of houses may have been accidentally connected to the wrong pipe during construction or during a sewer replacement. These are most often found along the span of a sewer segment.
3. Unknown / Unauthorized Critical Regulator (i.e. Mainline Sewer Relief Connection)
  - a. Discovering an unknown critical regulator (or mainline sewer relief connection) does not necessarily mean that a dry weather spill has occurred, however, any overflow from this structure that discharges into the environment is considered unauthorized because the regulator is not approved by the MECP and not covered under a current ECA. These are normally discovered during a MH inspection. Person-entry inspection is required to confirm the regulator features, flow configuration and dimensions.
4. Failed Critical Regulator
  - a. This condition involves the failure of a critical regulator feature, causing sanitary sewage discharge during dry weather conditions, or potentially leading to a reduced rate of combined sewage capture during wet weather compared to the regulator's design. Dry weather spills from failed regulator may be caused by a number of defects such as a collapsed weir, a pipe blockage or a damaged / leaking relief gate. A regulator may also be deemed to have failed if a gate is inadvertently set to the wrong position or if monitoring equipment that controls it is faulty.



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**2 Overview of The City's Collection Systems**

These conditions can also be described based on the type of discharge (continuous, intermittent or transitory) as per **Table 2-3** below.

**Table 2-3: Types of Potential Spills and Unauthorized Discharges**

Condition	Type	Frequency of Spills / Unauthorized Discharge
Mainline Cross-Connection	Continuous, Dry Weather	Occurs most or all of the time (dry weather)
Sewer Lateral Cross-Connection	Continuous, Dry Weather	Occurs most or all of the time (dry weather)
Mainline Sewer Relief Connections (Unknown / Unauthorized Critical Regulator)	Intermittent, Wet Weather	Occurs over shorter / more limited time periods
Failed Critical Regulator	Transitory, Dry Weather	Occurs rarely and without predictable frequency

This report and the program recommendations herein are limited to these types of spills and unauthorized discharges. Other conditions that such as broken pipes, which may lead to contamination of soil and groundwater, are not discussed in this report but are expected to be identified on an ongoing basis through the City's current condition assessment inspection program.





100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
3 Feasibility of Completing a City-Wide Detailed In-Pipe Inspection Program (MECP Order 5.1)

## 3 Feasibility of Completing a City-Wide Detailed In-Pipe Inspection Program (MECP Order 5.1)

### 3.1 Approach

Stantec's interpretation of this task is to complete a feasibility analysis on the option to conduct a detailed in-pipe inspection program of the entire sewer network to find potential spills and unauthorized discharges, including CCTV camera inspection of every meter of sewer, as well as MH s and other structures. Under this scenario, any past inspections are assumed to be unusable as they were generally completed for other purposes (e.g. condition assessment or construction records), and not conducted with the intent of identifying all of the potential spill sources listed above under **Section 2**.

The feasibility analysis includes a high-level cost estimate and program duration. Program duration depends on the number of CCTV crews deployed simultaneously, which is highly variable and dependent on industry availability. As such, we evaluated the number of CCTV crews (and City staffing resources) required to complete the program within various time-frames (5-years, 10-years and 20-years). An assumption of how many additional CCTV crews the industry can support (further to other on-going inspection needs for construction, condition assessment and other) was made and used to evaluate the feasibility of each time-frame.

### 3.2 Inputs and Assumptions

This feasibility analysis is based on the following assumptions:

- Assumes every linear meter of City-owned sewer (min 150mm) will be inspected via CCTV camera.
- Assumes past inspections cannot be reviewed for this assessment and do not count towards the total length to inspect.
- Includes only the cost and time required to inspect the sewers. Cost and time to repair or correct any issues discovered will be extra.
- Cost per meter of sewer inspected is based on previous CCTV contract data from the Sewer Lateral Cross Connection (SLXC) Program and from capital projects, generally for condition assessment. The unit costs for condition assessment projects is much higher than for the SLXC program because they generally have larger, more complex sewers with higher flows, and require a greater level of cleaning and flushing. A weighted average was used to establish a cost that accounted for these differences.
- Assumes MHs inspected by City field staff while waiting for CCTV camera truck to set up. No additional time or cost assumed for this.



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- Inspection speed was assumed based on past experience:
  - <750mm pipe: 800m/day
  - >750 to <=1200mm pipe: 600m/day
  - >1200mm pipe: 400m/day
- Program duration assumes that inspection can be completed on all available working days (weekdays less holidays), however a 20% increase to the program duration was added for delays due to inclement weather.
- Maximum number of additional CCTV crews available: 3
  - Assumed each of the 3 primary CCTV contractors in the area could recruit and assemble 1 additional crew if needed
- Assumes the following full-time employees (FTE's) will be required for the program:
  - 1 manager to coordinate the program;
  - 1 field staff per CCTV crew to direct / review video on site (dedicated to a CCTV contractor crew)
  - 1 office staff per every 3 CCTV crews to review and log CCTV data and coordinate the crew's progress
  - Staffing cost (including overhead, vehicles and equipment) is assumed to be \$100,000 / year on average

### 3.3 Cost Analysis

**Table 3-1: Detailed In-Pipe Inspection Cost Estimate**

Sewer Size (mm)	Total length (m)	CCTV cost per m (\$)	Total cost (\$)
<=750	2,532,560	\$ 10.50	\$ 26,590,000
750 to 1200	320,851	\$ 13.75	\$ 4,410,000
>1200	226,826	\$ 25.00	\$ 5,670,000
<b>TOTAL COST</b>			<b>\$ 36,670,000</b>

The cost above is considered a low-end cost as it assumes ideal conditions (favorable weather, no traffic restrictions, no accessibility or visibility issues, etc.). Furthermore, we understand that a significant portion of sewers upstream of outfalls are submerged and/or influenced by Lake Ontario. These sewers would require more advanced inspection technology, such as underwater Remote Operated Vehicles (ROVs) equipped with sonar, that is much more expensive and time-consuming than traditional CCTV. Since the preliminary estimated cost figure is already impractically high under ideal conditions, it was not necessary to perform a detailed evaluation of the length of submerged pipes or add other costs for accessibility



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issues, poor weather, re-inspections (due to poor visibility), etc. We expect the actual cost to complete this inspection program to be at least 35% higher, **approaching \$50M.**

The total estimated cost as shown in **Table 3-2** is broken down to show the estimated cost per area for each of the six community areas. This information will be included in the quantitative legend of the GIS figure maps in **Appendix A**, in addition to expected staffing costs and total cost with contingency.

**Table 3-2: Detailed In-Pipe Inspection Cost Estimate Breakdown Per Area**

Area	Cost Breakdown Per Area
Flamborough	\$2,280,000
Dundas	\$1,910,000
Ancaster	\$3,250,000
Glanbrook	\$1,965,000
Stoney Creek	\$6,065,000
Hamilton	\$21,200,000
<b>Total</b>	<b>\$36,670,000</b>

### 3.4 Program Duration and Resource Requirements

**Table 3-3** below presents the number of CCTV Contractor crews that would be required, performing continuous inspections simultaneously year-round (working days only), to complete the inspection program within various time-frames (5-years, 10-years and 20-years). The additional City staff required for each scenario is presented as well as the estimated cost for those resources.

**Table 3-3: Contractor and City Resources Required to Complete Program in X Years**

# of Years to Complete	CCTV Contractor Crews Required	Additional Full-Time City Staff Required	Total City Resource Cost
5	4	6	\$ 3,200,000
10	2	4	\$ 3,700,000
20	1	2	\$ 4,700,000

As discussed in the assumptions and inputs section above, the duration of the program is limited by the number of excess full-time CCTV crews the local industry can supply. CCTV contractors must maintain adequate resources (trucks and staff) for other works, such as ongoing condition assessments, operational sewer maintenance work and construction verifications. For this analysis, it was assumed that each of the three main local CCTV contractors (PipeFlo, Pipetek, and Empipe), could each secure 1 additional CCTV crew for this special program (3 crews in total), which is a reasonable assumption. A fleet of three (3) CCTV crews could theoretically complete the inspections in 7 years, however this would require hiring an additional 5 full-time employees, which could be considered excessive. Based on this limitation, the program would be expected to take over 10 years using 2 CCTV crews in tandem and



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would require the hiring of 4 additional City staff members (at an estimated City resourcing cost upwards of \$4M).

### **3.5 Discussion**

Based on the analysis presented above, a City-wide in-pipe inspection program would be prohibitively expensive. Furthermore, to complete the program within a reasonable timeframe (under 10 years), it would require a significant number of additional full-time City staffing resources. These are low-end estimates and do not account for many of the challenges and limitations that will inevitably be encountered as the program progresses through the City's complex system.

Additionally, completing in-pipe camera inspections is not likely to provide the most benefit in identifying spills or unauthorized discharges, as the vast majority of these conditions are expected to occur at a maintenance hole (MH) or structure, aside from sewer lateral cross-connections, which would occur most commonly along smaller local sewers in separated areas. Unknown critical regulators would be discovered by first opening MH covers, while mainline sewer cross-connections are most likely to occur due to a sanitary or combined sewer being connected to the wrong MH (i.e. into a storm MH).

For these reasons, conducting a city-wide detailed in-pipe inspection program for the purposes of identifying unauthorized discharges is not recommended.



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4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)

## 4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)

This section outlines the components of a programmatic approach and risk-based assessment methodology that is based on Industry Good Practices and deemed to be a feasible approach to address the risk of unauthorized discharges impacting water quality at CSO and storm drainage outfalls within the City of Hamilton. The framework for Industry Good Practices was compiled using the Illicit Discharge Detection and Elimination (IDDE) Manual by the US Environmental Protection Agency (EPA), as well as inquires to subject matter experts within Stantec's internal outreach throughout North America, and informal communications with various municipalities. It is important to note that the City has, in fact, been following many of these practices over the past 10 years since they have initiated a program to address cross-connections within their separated sewer system and have begun to focus their efforts within the combined sewer system with pilot area studies.

The City has currently implemented a number of programmatic initiatives that are designed to locate and address unauthorized discharges and spills within various areas of the City (discussed further within **Section 5**). In the second part of this section, we describe how the City's current programmatic elements will integrate within and follow the overall programmatic framework of a feasible risk-based approach. A new overall risk-based management program (SUDRIP) is presented along with recommended enhancements to the City's current inspection programs for the combined and separated system and anticipated resource requirements for managing all three.

Within **Section 5**, we provide a review of the City's other programmatic initiatives and compare them with each of the components of the recommended risk assessment-based framework with the purpose of evaluating their consistency with Industry Good Practice and identifying any gaps and/or opportunities for enhancements. Based on this assessment, recommended program enhancements and or additions are described along with terms of reference for their further development outside of the scope of this response to the MECP's order.

### 4.1 Industry Good Practices for a City-Wide and Risk-Assessment Based Inspection Program

**Problem Description:** Polluted stormwater drainage from outfalls with unauthorized discharges and spills can have a dramatic impact on receiving waters, and cause exceedances of water quality objectives and recreational use standards. The need for investigation of a drainage area tributary to an outfall exhibiting signs of pollution typically arises as a result of a recorded pollution incident, reporting from a member of the municipal/utility operating group, another agency, the public, or a developer.

Finding unknown sources of spills and unauthorized discharges is often described as trying to find a needle in a haystack on a limited budget. Monitoring and sampling are often assumed to be the most effective means of identifying sources but it is usually the most expensive component of any spills/unauthorized discharge program. It is therefore of key importance to understand the infrastructure



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**4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)**

and characterize the risk of various sources of pollution to then be strategic in the approach to investigating, detecting, and finding the combinations of sources that create the greatest risk for unauthorized discharges at each outfall location.

A Risk-Assessment Based approach to investigating and addressing unauthorized discharges and spills is consistent with the Industry Standard approach and provides a sustainable means of investing in the works necessary to mitigate the risk of measurable impacts to the community and the environment. A risk-based approach, informed by both a desktop risk assessment and screening-level investigations is first employed to develop a prioritized list of outfalls requiring detailed investigation along with the prioritized basin-specific action plans that are then deemed most effective for locating and removing the identified sources of pollution that impact the outfall and its receiving waters.

**A Programmatic Approach:** Every community will develop a unique spills control and unauthorized discharge detection program that reflects its environmental impacts, size and complexity, development history, land use, and legacy infrastructure types (combined, partially separated, previously combined systems that have been separated, or fully separated systems). Nevertheless, there are many commonalities between municipalities in the nature of the problem and in the methods that can be employed to understand its likely extent and potential impacts to then be able to feasibly locate and address the sources of unauthorized discharges having an impact. Recognizing these commonalities, the City of Hamilton has looked to Industry Good Practices to provide a basis to guide the development and implementation of an effective and well-managed spills management and unauthorized discharge elimination program.

This section describes a feasible programmatic and operational approach for investigation and resolution of systemwide pollution risks stemming from sewage systems affected by unauthorized discharges and spills to outfalls within both combined and separated sewer systems. This is an approach that is based on proven Good Practice guidance documents and methodologies followed by agencies in both North America and the UK in tackling this problem, which is common to most operational systems.

It is important to note that most of the guidance documents available within the industry are mainly focused on addressing unauthorized discharges to storm drainage systems within separated sewer systems and/or systems that were once served by combined sewer or septic systems but were subsequently converted to separated sewer systems. The detection of unauthorized sources of continuous discharges, and especially intermittent or transitory discharges, within combined sewer systems is complicated by the fact that relief sewers and combined sewer outfalls most often contain background concentrations of all the typical constituents that are used as indicators of pollutant sources from wastewater sources. While the good practice programmatic approach and the associated risk-based assessment methodologies are perfectly valid, the investigative strategies within separated and combined sewer systems will vary in accordance with the site-specific conditions.



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**4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)**

**Program Components: (Good Practices from Industry Guidelines)** The key components of an unauthorized discharge removal and spills control program are described below.

1. **Problem Definition and Program Goals:** An understanding of the nature and impact of unauthorized discharges and spills in urban watersheds is essential in defining the extent of the problem and in setting realistic and sustainable goals to then be able to develop implementation strategies designed to find, fix, and prevent them. This must be established in context of regulatory requirements and measurable impacts to both the community and the environment. The implementation of the program and the timelines to meet the established goals at a system-wide level must consider the prioritization of efforts and the corresponding allocation of resources based on meeting the goals and deriving the greatest benefit in a manner that is affordable to the community and sustainable by the operating entity.

The terms “unauthorized discharge” and “spills” can be interpreted to have many meanings within both the regulatory and operational context, which then extends to the definition of a broad range of potential sources of pollution. It is important that the terminology and the scope of the definitions be well defined to be able to classify those types of discharges that fall within the scope of the program and thus the control techniques that will be employed.

The sources of unauthorized discharges and potential spills that fall within the context of this program are limited to direct cross-connections of sewage from the wastewater collection system to the storm drainage and/or combined sewer outfall system. The terminology describing the pertinent systems as well as the relevant types and modes of discharges and spill events that are pertinent to this order are defined in **Section 2.2** (incl. Terminology).

2. **Program Governance Structure** (Roles and Responsibilities, Support programs and integration)

The development, implementation, and operation of a systemwide unauthorized discharge/spills control program will require consideration that the initiative may be managed as a distinct program and, at minimum, as an integral and specific component of the City’s operations. It also establishes the local legal authority to regulate unauthorized discharges by third parties, either by amending an existing by-law or developing a new unauthorized discharge or spills by-law, if required.

Critical to its successful implementation and operation is the establishment of a program governance structure that identifies and assigns both accountability and responsibility for each of the key roles that are necessary to lead and support the Planning, Implementation and Operation of a program. The planning, implementation, and operation of a systemwide program requires a multi-disciplinary team that possesses the diverse skills and knowledge needed for the program, ranging from legal analysis, GIS, monitoring, stakeholder management and pipe repairs. Implementation of the program requires on-going inter-divisional collaboration within the City’s water and wastewater operations department (Hamilton Water) as well as collaborations with other departments and external agencies.



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3. **System Characterization:** For very large systems that include a variety of legacy system types, like the City of Hamilton, the level of inherent risk of cross-connections that result in continuous or intermittent discharges will vary considerably from one system type to another. Compared to newer separated sewer areas, older legacy systems such as combined sewers retrofit with storm relief sewers and/or having numerous flow regulating structures (both mechanically operated and static) inherently have an increased likelihood of having cross-connections or system failures that could lead to unauthorized discharges and/or spills. This includes the consideration of formerly combined areas that were subsequently separated through the addition of storm sewers as well as older partially separated areas where storm sewers were constructed to replace former ditch drainage.

The characteristics of the drainage area to each outfall can, and is often, a key screening factor in prioritizing efforts at a systemwide level. It is therefore important to have access to mapping and data within GIS systems, maintenance management systems, system models, as well as system drawings that provide the ability to readily characterize and describe the connectivity of the systems tributary to each outfall in order to prioritize areas of focus within the system. This understanding can be further enhanced with access to system monitoring and operational data, historical records, and institutional knowledge.

Similarly, it is important to consider that the effectiveness of various investigation strategies will vary considerably from one system type to the other and that system owners must be strategic in their approach in order to achieve their goals in a cost-effective and affordable manner.

4. **Strategic Risk-Based Prioritization Process:** When considering the programmatic structure at a systemwide level, it may be deemed preferable to structure distinct streams of work for combined and separated sewer system outfalls given that the inherent risks and investigation strategies for each will differ. **Figure 4-1** outlines the process by which a system-wide program can be feasibly managed by employing a risk-based prioritization and strategic source identification methodology. The process is designed to prioritize and focus efforts on outfalls at greatest risk of being impacted and by addressing those sources that have the potential for causing the greatest impact on those outfalls. The process described herein is applicable to various forms of combined and separated sewer systems and can be used to set priorities and applicable investigation strategies while recognizing these distinct differences.

**Table 4-1** Illustrates the relative risks of encountering various types of unauthorized discharges and/or spills within various system types. This depicts the rational and typical result that, compared to separated sewer systems, combined and previously combined sewer systems inherently possess a greater likelihood of having legacy cross-connections and/or flow control regulator malfunctions (e.g. failures, improper settings) that could result in continuous and/or intermittent unauthorized discharges. This high-level desk-top assessment would typically sway priorities towards the investigation of outfalls within combined, partially combined, and previously combined sewer system areas. While this may be the case, the process described herein provides the ability to also elevate priorities within separated sewer systems and/or shift priorities





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**4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)**

to other parts of the system when all reasonable efforts in a priority area have been suitably addressed. The key steps in the process are described as follows:

**a. Outfall Risk Assessment and Prioritization**

The first phase of the systemwide prioritization process consists of conducting a desktop risk assessment of unauthorized discharge and spills potential at each outfall in order to prioritize sub-catchment areas for further investigation. This can be assessed both holistically as well as further prioritized on the basis of system type (i.e. with distinct prioritization streams and investigation strategies for combined and separated sewer systems).

The desk-top assessment evaluates risk on the basis of understanding the sensitivity of the receiving water body, historical records, and the characteristics of the tributary sub-catchment area. It is also informed by conducting a field reconnaissance inventory at each outfall (and stream reach) where the objective is to confirm the geospatial location or identify undocumented outfalls, record basic characteristics of individual storm drain outfalls, evaluate suspect outfalls, and assess the severity of unauthorized discharge problems in each basin. In addition to observing visual evidence and scent indicators of unauthorized discharges or spills, water quality samples may be collected for analysis where unauthorized discharges are suspected or are likely to occur. Within combined sewer areas, sampling for the purposes of source detection is only recommended for storm relief sewers discharging separately from CSO outfalls or at CSO outfalls where significant amounts of continuous discharge is observed under dry conditions.

The order in which the field inventories are conducted can be prioritized on the basis of the initial desk-top risk assessment. The results of the field inventory are subsequently factored into the outfall risk assessment that will then inform the prioritization of tributary areas for further investigation.



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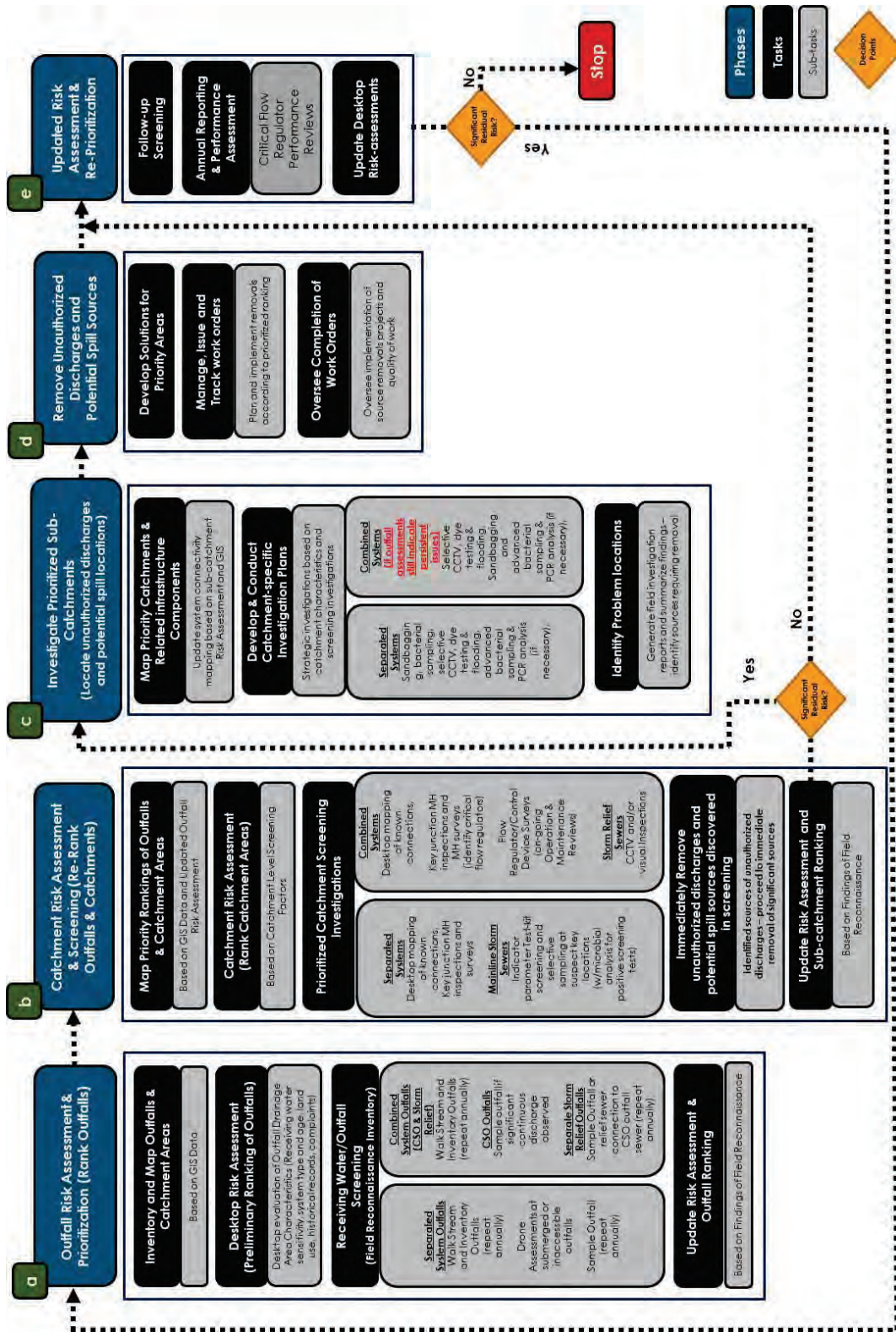


Figure 4-1: Systemwide Risk-based Prioritization and Source Investigation/Removal Methodology

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Table 4-1: Illustrative Example of Inherent Relative Risks of Unauthorized Discharges and/or Spills in Various System Types

		System Level Risks														
		Combined Sewer System Outfalls						Storm Sewer Outfalls								
Type	Description	Combined Sewers Only			Partially Combined with Storm Relief Sewers			Previously Combined but Subsequently Separated			Partially Separated Sewers (older ditched systems with piped storm drainage added)			Separated Sewer System (constructed with separate sanitary and storm sewers)		
		Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk
1	Mainline Sewer Cross-Connection (Continuous Discharge)	L	H	LH	M	H	MH	M	H	MH	M	H	L	H	M	LM
2	Sewer Lateral Cross-Connection (Continuous Discharge)	L	M	LM	L	M	LM	L	H	LH	L	H	L	H	H	LH
3	Mainline Sewer Relief Connection / Unknown or Unauthorized Critical Regulator (Intermittent Spill)	M	M	MM	M	M	MM	L	M	LM	L	M	L	M	M	LM
4	Critical Flow Regulator Malfunction (Transitory Spill)	M	H	MH	M	H	MH	L	M	LM	L	M	L	M	M	LM

**Likelihood of:** Having unknown sources based on legacy system  
**Impact of:** Degrading receiving water quality and/or environment based on the frequency and relative magnitude of the discharge



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**Table 4-2** lists typical screening factors used in the outfall risk assessment. For each of the screening indicators, the table also provides a perspective on typical level of risk by indicating the relative likelihood of finding issues and sources within various classifications of sub-catchment types. It must be noted that this is indicative of typical findings and what may be expected from the perspective of program implementation planning. However, each system is unique and there will be exceptions.

**Table 4-2: Typical Screening Factors for Outfall Risk Assessment and Prioritization**

Screening Factors	Combined and Partially Combined Sewer Systems		Separated Sewer Systems		
	CSO Outfalls	Storm Relief Outfalls	Formerly Combined Outfalls	Partially Separated Outfalls	Separated Storm Outfalls
<b>Desk-top Risk Assessment Impact Factors</b>					
Sensitivity of Receiving Water at Outlet (ecological & habitat classification or biological stream indicators, recreational value/use)	Site dependent impact	Site dependent impact	Site dependent impact	Site dependent impact	Site dependent impact
<b>Desk-top Risk Assessment Likelihood Factors</b>					
<b>Outfall &amp; Tributary Area</b>	<b>Relative Likelihood of Finding Issues and Sources (typical)</b>				
Past Discharge Complaints and Reports	H	H	H	M	L
Prevalent Type of Sewer System	H	H	H	M	L
Historical and Current Configuration of Tributary System	H	H	M	M	L
Age and General Condition of Tributary Sewer System	H	H	H	M	L
Prevalence of Critical Flow Regulating Structures in Tributary Area	H	H	M	L	L
<b>Post Site Reconnaissance Risk Assessment Likelihood Factors</b>					
Observed Water Quality at and in the vicinity of the Outfall (flow, odor, color, or visual indicators)	Site specific findings	Site specific findings	Site specific findings	Site specific findings	Site specific findings
Sampled Dry Weather Water Quality at Outfall	Site specific findings	Site specific findings	Site specific findings	Site specific findings	Site specific findings
Temperature Zones	H	M	L	L	L



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**4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)****b. Catchment Risk Assessment and Screening:**

Upon developing a prioritized list of outfalls, the focus of the risk assessment is then expanded to conducting a more in-depth assessment of the prioritized area's tributary sub-catchment characteristics along with strategic in-system investigations that are designed to isolate likely problem areas and/or locate the largest sources. This is designed to cost-effectively identify locations within the collection system where there is a higher potential for encountering unauthorized discharges or spills and, where necessary, will prioritize more expensive follow-up investigations to further isolate and locate the remaining sources.

As depicted in **Figure 4-1**, typical investigations at this stage will include inspections of all flow control/regulating structures, inspections of all key junction chambers and documented connections, as well as in-pipe investigations in those areas of elevated potential of finding sources. For storm sewers/drains within separated or partially separated areas, these follow-up investigations typically include in-field water quality sampling with test kits during dry weather conditions for detection of possible contamination along with the collection of samples for microbial analysis where the test kits indicate a high likelihood of contamination.

Within combined sewer catchments, the screening level in-field water quality testing and sampling methods are not reliable or effective given the high likelihood of contamination from background concentrations of the typical indicator constituents. Indicative sampling efforts should be limited to upstream reaches of storm relief sewers where there are no known relief connections/diversions from the combined sewer system and where the storm relief sewer does not connect back into the combined sewer upstream of a flow regulating structure. Flow regulator inspection, junction chamber inspections, and CCTV inspections within the storm relief and the CSO outfall sewers downstream of any flow control structure provides a more effective means of identifying cross-connections and unauthorized discharges within the combined sewer system.

Any cross-connections identified during the sub-catchment screening process will proceed immediately to the development and implementation of solutions for removal. Upon completion of all screening level investigations and where it can be demonstrated that completed removals have likely addressed the identified issues, the work within that sub-catchment can be considered complete and proceed to on-going maintenance and operational conditions monitoring. Where the screening level investigations result in the identification of highly likely or other potential sources needing further investigation, the process will continue with the development and implementation of catchment specific investigation plans.

**c. Prioritized Sub-Catchment Strategic Investigations**

The screening level in-system investigations in the previous step will either have identified the problem sources of discharges and spills and/or helped isolate the location and likely sources. This next step consists of developing sub-catchment specific investigation plans and implementing more focused and potentially more advanced investigative techniques to confirm and locate sources for subsequent removal. **Table 4-3** provides an overview of the recommended investigation techniques designed to locate various potential sources of discharge or spill potential at each stage of the investigations process.



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Table 4-3: Recommended Sub-Catchment Investigation Strategies for Various Sources of Discharge or Spill Potential to Priority Outfalls

		Recommended Sub-Catchment Investigation Strategies for Priority Outfalls	
Description of Sources	Stages of In-System Investigation	Combined and Partially Combined Sewer Systems	Separated Sewer Systems
Type 1: Mainline Sewer Cross-Connection (Continuous)	Initial Source Isolation Investigations	1) Desktop screening & assessment of system connectivity 2) Junction Chamber Inspections 3) MH Inspections within storm-relief sub-catchments 4) CCTV of storm relief sewers & tracking of connections (prioritize storm relief sewers discharging directly to outfalls)	1) Desktop screening & assessment of system connectivity 2) Junction Chamber and MH Inspections (with Test-kit sampling and sandbagging where required)
	Targeted Follow-up Investigations	1) Complete CCTV of storm relief sewers & tracking of connections (storm relief sewers re-connecting to combined sewer U/S of flow control chamber) 2) Complete MH inspections in priority sub-catchments (survey connections) if necessary: 1) Follow-up microbial and human waste indicator (e.g. caffeine) sampling (with sandbagging where required) 2) CCTV of adjacent mainline combined sewer and tracing of connections (if necessary) 3) Follow-up Dye Testing and tracing of sources (where CCTV is inconclusive) 4) Advanced microbial sampling and genetic tracing (where sampling results are inconclusive)	1) Follow-up microbial and human waste indicator (e.g. caffeine) sampling (with sandbagging where required) 2) CCTV of isolated storm sewer sections and tracing of connections (where testing results are conclusive) 3) CCTV of adjacent mainline sanitary sewer and tracing of connections (if necessary) 4) Follow-up Dye Testing and tracing of sources (where CCTV is inconclusive) 5) Advanced microbial sampling and genetic tracing (where sampling results are inconclusive)



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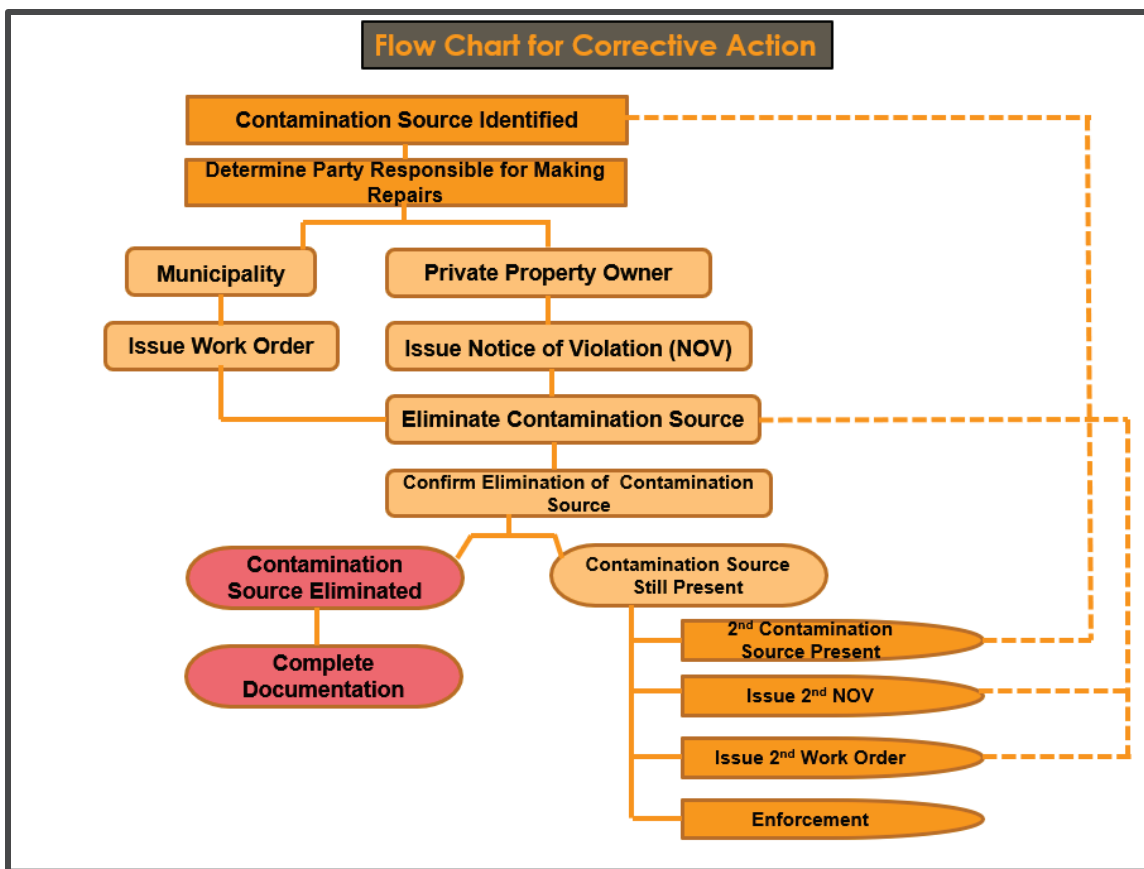
		Recommended Sub-Catchment Investigation Strategies for Priority Outfalls	
Description of Sources	Stages of In-System Investigation	Combined and Partially Combined Sewer Systems	Separated Sewer Systems
Type 2: Sewer Lateral Cross-Connection (Continuous)	Initial Source Isolation Investigations	Same as Type 1 above	Same as Type 1 above
	Targeted Follow-up Investigations	1) Where outfall or storm relief sampling (if deemed necessary) indicates contamination and minimal to no continuous flow observed during DWF, use sandbagging to capture and sample for possible lateral cross connections 2) Where positive result recorded, follow same procedures as Type 1 above	1) Where outfall sampling indicates contamination and minimal to no continuous flow observed during DWF, use sandbagging to capture and sample for possible lateral cross connections 2) Where positive result recorded, follow same procedures as Type 1 above
Type 3: Mainline Sewer Relief Connection (Intermittent)	Initial Source Isolation Investigations	Same as above	Same as Type 1 above
	Targeted Follow-up Investigations	Same as above	1) Where outfall sampling indicates contamination and no continuous flow observed during DWF, use sandbagging to capture and sample for possible spills 2) Where positive result recorded, follow same procedures as Type 1 above
Type 4: Critical Flow Regulator Malfunction (Transitory)	Initial Source Isolation Investigations	1) Desktop screening & assessment of system connectivity 2) Critical Flow Regulator inventories, surveys and operational reviews 3) Junction Chamber Inspections 4) MH Inspections within storm-relief sub-catchments 5) CCTV of storm relief sewers	1) Desktop screening & assessment of system connectivity If necessary 2) Critical Flow Regulator inventories, surveys and operational reviews (if high level relief to storm is present)
	Targeted Follow-up Investigations	Monitoring and/or regular inspection (depending on risk of malfunction)	If critical regulators are present in the system 1) Monitoring and/or regular inspection (depending on risk of malfunction)



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**d. Prioritized Source Removals**

Once a source of unauthorized discharge or potential spill has been identified, steps should be taken to fix or eliminate the discharge as soon as possible. Sources of discharges or spills will either be on the publicly owned and operated system or located on private property. Sources located on the public system fall under the jurisdiction of the system owner and can thus be readily addressed using public funds. Access to investigate and then remove sources on private can be challenging, costly, and require significant time and resources to complete. Some of the greatest challenges to removing sources from private property are not technical; rather, they are related to legal and policy issues, enforcement of by-laws, engaging the property owner in the program through education, and establishing equitable means of funding of private side remedial measures. **Figure 4-2** provides an example decision-making process for removing or correcting unauthorized discharges and is based on a similar graphic provided in the USEPA's Illicit Discharge Detection and Elimination (IDDE) Guidance Manual for Program Development and Technical Assessments (2004).



**Figure 4-2: Example Decision-making Process for Removing or Correcting Unauthorized Discharges or Sources of Potential Spills (adapted from USEPA IDDE Guidance Manual 2004)**





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**4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)****e. Re-assessment and Re-prioritization**

After a few years of analysis and field surveys, communities get a good handle on the actual severity and residual risk of their unauthorized discharge problems. In some communities, outfalls and storm drains will be relatively clean, whereas others may have persistent problems. Effective and sustainable programs are flexible and adaptive, and shift program resources to the management measure that will reduce the greatest amount of pollution where it has the most benefit to the community and the environment.

5. **Program Management Tools (For Future Consideration):** An effectively managed unauthorized discharge and spills control program requires effective data management and reporting tools to be able to monitor and track progress on the program, log all program findings, as well as facilitate the reporting on the overall performance for the purposes of both compliance reporting, decision-making on priorities and work plans, along with justifying recommendations on priorities, program revisions, and adaptation strategies (as required). The City currently utilizes a number of internal document management and work order tracking tools for data management. For consideration in the future, the City may wish to explore the creation of an integrated tracking system for the overall program that consolidates these items into a consistent platform.

Within the industry, more and more water utilities and municipalities are leveraging digital technologies to deliver better outcomes in a timely manner through better decision-making processes that are informed by better access to better data. The technological advances in cloud computing and communications, coupled with analytic capabilities, are enabling system owners to better use the data they already have as well as plan and execute new ways of collecting data that lead to improving the efficiency of their programs and operations. The ideal tracking system consists of a web-based portal that provides an interactive window to a relational database (on-premise or cloud-based) that is linked to a GIS system, which can be used to ingest, store, and analyze data from multiple sources and produce maps. Through cloud-based data collection and data management platforms, field collected observations and data collected by system operators can be accessed and/or input directly to the program's supporting databases. The web-portal can also integrate or link to the risk assessment framework tools that document the risk evaluation process and decisions on priorities that are made therein.

6. **Resources** (Staff and budget) Most programs are challenged by having sufficient resources to perform the amount of investigation and remediation work necessary to fully eliminate all sources of continuous, indirect, and transitory discharges in their community. Consequently, effective programs target their discharges of greatest concern, with continuous discharge sources as a priority, and spend their scarce dollars in the outfall and catchment areas, neighbourhoods or business sectors most likely to generate them.



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**4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)**

## 4.2 Feasibility and Recommendations for Implementing a City-Wide and Risk-Assessment Based Inspection Program

As discussed under **Section 5**, the City already accomplishes the majority of the elements discussed in the above framework for risk-assessment based inspections. These elements are covered effectively and thoroughly by activities completed within a variety of ongoing City programs (refer to **Table 5-2** for summary). While there appears to be effective communication between the programs, they each operate and report individually on the type of spill or unauthorized discharge source that the program is designed to uncover. There appears to be a need for a centralized task-force overseeing inspection and information on the City's collection system as it relates to potential spills and unauthorized discharges.

It is therefore recommended that the City implement a new overall risk-assessment based program using the framework described above. This new program (referred to herein as the System-wide Unauthorized Discharge Removal and Inspection Program, aka SUDRIP) will be used to inform and serve as an information hub between individual inspection programs. This will take shape over a number of years as the City continues to investigate its collection systems in detail and evaluates its ongoing needs for inspections. As such, it is difficult to define the long-term requirements for SUDRIP, however, a reasonable place to start is to establish the new program mandate and use it to propose expansions and potential refocusing of the City's current Sewer Lateral Cross-Connection Program and the Risk-Based Proactive Pilot Program.

Expansion and completion of these programs will serve as the initial inspection activities for the separated system and the combined system, respectively. The outfall and sub-catchment prioritization process has already been completed by the City while developing and executing these programs. When these expanded programs are complete, the City can re-initiate the outfall and sub-catchment prioritization phase and determine the next steps for the overall program. This initial conception of SUDRIP is described and evaluated in this section for the purposes for completing a feasibility analysis in response to MECP Order Item #5.2.

The other purposes of SUDRIP will be to serve as a hub for the City's various departments and their ongoing activities on the collection system to share information and maintain a common objective of identifying and correcting potential sources of spills and unauthorized discharges. Several other ongoing City programs and activities will continue to exist outside of SUDRIP but should develop a formal communication protocol and consider using feedback from one-another to incorporate potential sources of spills and unauthorized discharges into their prioritization methodology and budgetary planning. This includes, but may not be limited to:

1. Regulator inspections;
2. Sewer condition assessments;
3. Operational sewer maintenance; and
4. Construction pre- and post- inspection procedures.



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4 Feasibility of Completing a Risk-Based Inspection Program (MECP Order 5.2)****4.2.1 COMBINED SYSTEM INSPECTION PROGRAM**

The City has a number of current programs and activities that may be useful in identifying sources of spills and unauthorized discharges within the combined system, including those listed above. Aside from the routine regulator inspections, which are essential to help prevent spills from failure of a known regulator, these other programs and activities generally have other primary objectives than identifying spills and unauthorized discharges, though they can be useful to that end. Prior to 2022, there was not a program in place that specifically targeted potential mainline sewer cross-connections or the discovery of unknown regulators / mainline relief connections (refer to **Section 5.3** for a summary and gap analysis of which current City programs are designed to target various sources of spills and unauthorized discharges).

This missing link is now being addressed as the City has undertaken a Risk-Based Proactive Pilot Program (aka The Pilot Program) in response to issues that were discovered in 2022. The Pilot Program objective is to locate and identify other spills due to mainline sewer cross connections, specifically within the combined sewer area. The Pilot Program has focused primarily in the combined sewer area along the flow paths of the following four "critical subcatchments" for: Wentworth, Birch, Ottawa, and Kenilworth outfalls. The methodology of this program revolves around MH structure inspections along the critical flow paths (i.e. subcatchments to the four critical outfalls) to identify potential mainline cross-connections. Note that these particular subcatchments are considered "critical" because any sanitary sewage that enters these sewer sub-networks will ultimately flow into the Hamilton Harbour. Further details on the Pilot Program are provided in **Section 5**.

To date, the Pilot Program has completed inspections on all MHs on storm sewers that are 600mm in diameter or smaller within the four critical flow paths, as well as any combined sewer MHs directly adjacent to these. This program has been very effective to date, having identified several mainline cross-connections and unknown regulator structures and gained valuable knowledge on where in the combined sewer area these structures may exist. In addition to expanding the Pilot Program to inspect all remaining MHs within the critical storm catchments areas, as per **Table 4-3** it is also recommended that the City complete CCTV videoing of the entire storm sewer network within these critical areas to complement the chamber inspections. The purpose of the CCTV inspections within these critical areas will be to provide a robust, thorough review of these areas to minimize the chance of a missed cross connection. The CCTV reports along with the City's MH inspection reports should be combined into an overall summary report prepared by the City that will summarize the results of the investigation, number of issues identified, and remedial plans or actions taken.

In addition to completing inspections on the larger MHs and CCTV video along the critical flow paths (222 MHs outstanding), we recommend that this program be expanded in the future to cover more outfall subcatchments within the combined sewer area. Most of the other outfalls in the combined system are configured such that any unexpected upstream dry weather flow is directed to the treatment facility (these outfalls generally serve as wet weather relief points). However, in combined sewer areas identified for future sewer separation projects, it would be prudent during the planning and engineering phases of these projects to proactively search for and identify unknown cross connections and regulators within the target subcatchment areas, so that future separation of the combined system does not result in



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unintended dry weather spills or discharges. This phase of the program in the combined sewer area would be considered low priority and can be re-assessed in the future after the investigations into the higher priority areas are completed.

Some potential improvements to the Pilot Program methodology could also be considered as it progresses towards inspecting larger diameter storm sewer MHs (i.e. on sewers greater than 600mm) within the critical flow path, and potentially into other geographic areas. These improvements incorporate some observations from the Gap Analysis discussed in **Section 5** and some additional inspection methodologies available as discussed in **Section 6**. Some potential improvements that will be considered for completion and expansion of the Pilot Program, include the following:

- Formalize documentation procedures:
  - Prepare standard data collection forms / templates;
  - Standardize methods of identifying & recording discrepancies from GIS / as-built records.
- Consider zoom-camera to confirm pipe alignments / flows / potential inflow within pipe span;
- Complete storm MH inspections during dry weather only to better identify unexpected flows;
- Complete newly found regulator inspections during wet weather to evaluate regulator behavior; and
- Conduct sampling and testing of any dry weather flow observed from storm sewers.

#### 4.2.2 SEPARATED SYSTEM INSPECTION PROGRAM

The City's separated sewer area is unlikely to have many (if any) mainline cross-connections and by definition, will not have any regulators. The primary expected source of spills and unauthorized discharges (at least of those that can be easily identified through inspection) in these areas is cross-connections of sanitary sewer laterals into stormwater sewers. To identify and correct these issues, the City has a Sewer Lateral Cross Connection (SLXC) Program that has been ongoing since 2009. The program has evolved to become very robust and effective over the years. The inspection methodology is MH-to-MH CCTV of all local sewers within the separated area where outfall sample results indicate the possibility of cross connections. The program is limited to the separated area as lateral cross-connections are much less likely within the combined area. When residences in the combined area were originally constructed, they would have only had one sewer lateral into the combined sewer system. Storm sewer trunks that were later installed were most likely only capturing roadway runoff and included only leads from catch basins or ditch inlets (i.e., not modifying the existing laterals to the combined sewers).

To prioritize subcatchments, the outfalls are sampled and tested for E. Coli and caffeine, used as human waste indicators. To date, the SLXC program has inspected approximately 75% of the City's separated sewer areas, expecting to be complete the remaining 25% by 2025 (first round inspections of the separated system). Further details on the SLXC Program are provided in **Section 5**.



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As the CCTV inspections for this program approaches full coverage of the separated sewer area, it is recommended that the City promptly complete follow-up sampling and testing of the outfalls (and select MHs within the subcatchments) as a means to verify that issues have been corrected. This activity would serve as the "Follow-Up Screening" step in the "Updated Risk Assessment and Re-Prioritization" phase of the process outlined in **Figure 4-1**. This will inform decision-making on the need to re-inspect areas for cross-connections that were missed or other types of spill and unauthorized discharge sources that may not have been expected in these areas.

### 4.2.3 RESOURCES AND TIMING

#### Overall Program (SUDRIP):

Since creation and implementation of SUDRIP is primarily a management and administrative assignment, this is expected to require office staff only. We believe this could reasonably be managed by one full-time employee (FTE) and 50% time support from a junior staff or co-op student. The initial focus of the program could be to implement more robust communication protocols between other programs, as they relate to identifying and correcting sources of spills and unauthorized discharges, and to recommend and oversee expansion of the combined sewer and separated sewer inspection programs described above. The FTE's responsibilities would be expected to evolve over time.

#### Combined System:

The continuation of the Risk-Based Proactive Pilot Program is assumed to require completely new staff (as the original push was conducted exclusively during overtime hours). The first leg of this program involves completing inspections on the larger storm MHs and adjacent combined MHs along the four critical flow paths (222 storm MHs, and an estimated 186 adjacent combined MHs based on previous ratio of storm vs combined MH inspection: 0.84).

The secondary (and more extensive) expansion of this program will be to conduct inspections on all the remaining storm MHs and adjacent combined MHs within other outfall catchments in the combined sewer area (approximately 2,874 storm MHs and an estimated 2,414 adjacent combined MHs). However, as described previously, since these storm catchment areas typically have downstream control structures in place to keep flows within the combined sewer network and flowing to the WWTP during dry weather conditions, we would recommend the City initially prioritize areas that are identified for future sewer separation projects. In addition, the City will be able to leverage the knowledge gained through MH investigations and sampling work in the four critical flow path areas, to help inform and improve the MH inspection approach the remainder of the combined sewer area moving forward.

Information from the City on the Pilot Program to date suggests that one crew of 2 field staff can generally inspect 1 MH per hour on the smaller sewers. This number should be expected to increase for larger sewers, especially as many of them may require confined space entry. A more reasonable estimate for larger MHs (on sewers > 600mm diameter) may be 2hr per MH, with a blended rate of 1.5hr per MH for the remaining outfall catchments. The following table outlines the remaining requirements and expected duration. The number of years assumes crews are working 8 hours in the field per day for an average of



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200 days per year (250 working days accounting for inclement weather, vacation, sick days and office requirements).

**Table 4-4: MH Inspections and Estimated Durations for Expanded Pilot Program**

	Storm MHs	Combined MHs (estimated)	Total Hours	Estimated Years (1 crew)	Estimated Years (2 crews)
Larger MHs on critical flow paths	222	186	816	0.5	0.25
Remaining MHs in combined sewer area	2,874	2,414	7,932	5	2.5

As shown in the table above, it would take approximately 5 years for a single crew to complete the MH inspections within the combined sewer area.

Separated System:

The SLXC Program is currently expected to complete its first round of inspections in 2025. The City staff and CCTV contractor costs required to complete this is assumed to be already budgeted and available to the City. An added cost for sampling and testing is assumed for completing follow-up outfall sampling at a similar rate as in recent years (\$40,000/year based on 70 locations every 2 years, 3 samples per location). CCTV Contractor costs for any re-inspection will be extra to this, but we recommend that some of the budget and resources available after the completion of the first round of the SLXC program in 2025 be retained for re-inspecting subcatchments that have persisting indicators and for repairing new issues where necessary. Ultimately this program is expected to evolve and subside as more issues are identified and corrected.

Summary:

**Table 4-5** below provides a summary of the resourcing needs as a high level annual budget to complete the program expansions outlined above and to implement the new overall program.



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**Table 4-5: Summary of New and Expanded Program Resource Requirements and Interim Completion Dates**

	<b>Overall Program Management</b>	<b>Combined System Program</b>	<b>Separated System Program</b>
<b>Description of Needs</b>	Establish and oversee new program, including reporting and ongoing improvements	Complete remaining storm / adjacent combined MH inspections within combined sewer area	Begin follow-up screening of previously inspected outfalls / subcatchments
<b>Additional Staff Requirements (FTEs)</b>	1 Program Manager FTE	3 WW Collection Staff FTEs shared among programs	
<b>Additional Support Staff</b>	0.5 Co-op / Junior Staff	1.5 Co-op / Junior Staff	
<b>Estimated Additional City Staffing Costs</b>	\$110,000 / yr	\$310,000 / yr	
<b>CCTV Contractor Costs</b> (in addition to current budget)	N/A	\$100,000 / yr	\$40,000 / yr
<b>Additional Sampling and Analytical Costs</b> (in addition to current budget)	N/A	\$20,000 / yr	\$20,000 / yr
<b>Interim Completion Date</b>	On-Going	2028-2029	On-going

It is understood that the City is anticipating spending approximately \$250,000 annually on CCTV and \$40,000 annually on sampling to support the existing SLXC program. The additional resourcing needs provided in **Table 4-5** are in addition to the City’s existing continuing programs, such as their SLXC program needs.

In summary, and to support the additional resourcing in **Table 4-5**, we expect the City would need to **hire or reassign an additional 4 full-time employees and 2 junior engineers or co-op students** to carry out the new and expanded inspection programs described in this section, at an estimated annual program cost of **\$600,000 / year**, in addition to current budgets for the existing programs.



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5 Gap Analysis of City's Current Programs, Procedures & Measures (MECP Order 5.3)

## 5 Gap Analysis of City's Current Programs, Procedures & Measures (MECP Order 5.3)

The existing programs that are currently implemented by the City of Hamilton that pertain to identifying the previously noted potential sources of spills and unauthorized discharges are described below within the context of geographic coverage, methodology, potential to miss spills/unauthorized discharges, progress to date, and execution speed / inspection frequency. As per the outlined framework above, these key programs will then be evaluated against the components of the Industry Good Practice Framework to develop the Gap Analysis.

A second component of the Gap Analysis, which is presented later in this section, is to review the collection of current programs and their potential for identifying each of the potential sources of spills or unauthorized discharges. This will provide a clearer understanding of which of these sources are well-covered under current or future initiatives and which the City should dedicate more resources towards tracing.

### 5.1 Summary of Current Programs and Initiatives

The following four (4) existing programs have been identified for review and evaluation based on their relevance in identifying/remediating the potential spills and unauthorized discharges as characterized in Section 2.2. As such, the work contained within these programs will be considered as the primary source of contribution to the City's existing approach in the Gap Analysis in **Section 5.2**. Other routine City sewer works, such as sewer condition assessments, operational sewer maintenance and pre/post construction inspections, also provide incidental identification opportunities. Updates have been made to the standard procedures for these activities to notify the wastewater team and in the future, the SUDRIP program manager.

#### 5.1.1 RISK-BASED PROACTIVE PILOT PROGRAM

Prior to the issuance of the MECP Order, the City of Hamilton initiated a Risk-Based Proactive Sewer Inspection Pilot Program to locate and identify other spills, specifically due to mainline sewer cross-connections. This section provides a description and evaluation of the City's current pilot program and recommends improvements to the program before analyzing the feasibility of expanding it across a larger area of the City.

##### 5.1.1.1 Geographic Coverage and Prioritization

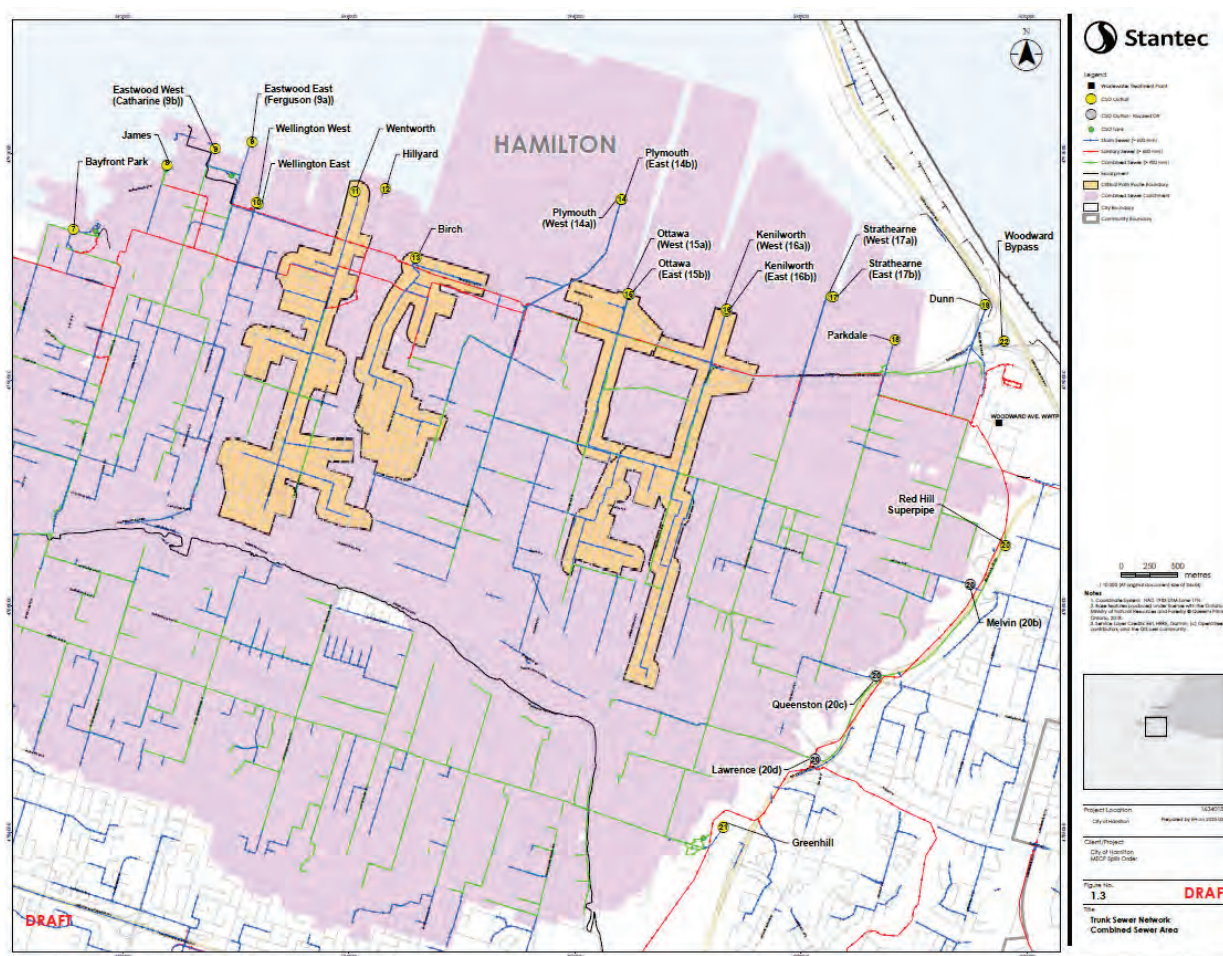
The Pilot Program is focused within the combined sewer area of the City, specifically along the flow paths (upstream sewer catchments) of four critical outfalls: Wentworth, Birch, Ottawa and Kenilworth (see **Figure 5-2** for CSO point locations and these critical flow paths). Any dry weather flow that enters these upstream catchments will discharge directly to the Hamilton Harbour. Therefore, these four outfalls were identified by City staff as the most vulnerable to cross-connections (i.e., having the greatest likelihood of





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an upstream cross-connection resulting in an environmental spill). Conversely, many other storm sewers within the combined system serve as storm relief sewers and end up discharging back into the collection system during dry weather where all flow is directed to the Woodward Wastewater Treatment Plant.



**Figure 5-1: Flow Paths for Critical CSO Outfalls**

The program is being conducted using City staff only and consists of MH structure inspections along these critical flow paths. As noted above, mainline cross-connections are unlikely to occur along a pipe span as connections of larger pipes (tees, wyes, crosses, etc.) are almost always done at a structure with an access point. All storm sewer MHs along the flow paths are being inspected, as well as any adjacent combined sewer MHs that are within a few meters of the main storm MH's. Only MHs on smaller diameter storm sewers (up to 600mm) along the critical flowpaths are inspected for the pilot program, while there is no restriction on the size of adjacent combined sewer MHs.



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Before entering the field, City staff review the City's sewer network GIS data and any available as-built drawings on record for the structures to determine expected sewer sizes, types, alignments and number of connections. The storm MH structure inspections are generally completed from surface - hence why only smaller MHs were inspected as the larger sewers are generally deeper and darker, having higher flows and are likely to have intermediary structures such as staged landings. City field staff remove the MH covers and look into the structure to confirm the number of connections to compare with the expectations from GIS and drawings. Approximate sizes and alignments of the connections are also verified. Any signs of live flow in a storm sewer (which is not expected during dry weather conditions) is noted, as well as any other indications of sanitary or combined sewage, such as strong sewage smells or staining. Inspections are completed during all weather conditions, on weekends during daytime hours. No samples of flow are taken for analysis and no video recording or person-entry into the structure is performed.

For the often-larger combined sewer MHs, City field staff completed a video inspection of the MH after visually inspecting. A Go-Pro camera is lowered into the MH using an extendable pole. Video is reviewed in real-time on site to record information and determine whether further inspection is required before proceeding to the next MH location. The video inspection of the combined sewer MHs is also used to find regulators (if present). If visibility is compromised due to depth, darkness or live flow, a follow-up person-entry inspection is performed at a later date. Videos are later reviewed in further detail in the office.

**5.1.1.3 Results**

A total of 346 storm sewer MHs and 292 adjacent combined sewer MHs have been inspected. During these inspections, nine (9) previously unknown critical regulators were identified, which have the potential to discharge to the environment during rainfalls events. These discharges would be considered unauthorized as the unknown regulators are not currently covered under an Environmental Compliance Approval issued by the MECP. These were added to the City's regulator database and will be incorporated into the biannual regulator inspection program. Additionally, three (3) previously undocumented mainline sewer cross-connections were discovered. These were subsequently repaired.

With these findings, the Pilot Program has been quite effective to date. The methods used and areas targeted in this in this Pilot Program can be considered the start of a subcatchment-specific investigation of the City's combined system that can be effective in identifying spills and unauthorized discharges within the combined sewer area. This program should be adopted under the new overall Risk-Assessment Based framework (the SUDRIP program) as it progressed and expanded.

Recommendations for expansion of this program, along with a feasibility analysis of such, is provided in the following section. Although it cannot be confirmed whether any cross-connections or other potential spill sources may have been missed within the program area, we believe that these are unlikely as the program focused on smaller diameter sewers with MH's that are generally visible from surface.



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**5.1.2 SEWER LATERAL CROSS CONNECTION PROGRAM (SLXC)**

Between 2001 and 2009, Hamilton Water’s Public Works department completed investigations to identify storm sewer outfalls of concern and to isolate sources of E. coli contamination based on the Ministry of Environment’s Orders regarding the unauthorized discharge of E. coli contaminated storm water. It was concluded that all storm sewer outfalls within the separated sewer system presented a risk of having improperly (cross) connected sewer laterals to them. In 2009, an official pilot program was initiated for the Sewer Lateral Cross Connection Pilot Program. The objective of this program was to find and repair complete cross connections in the separated sewer system between residential sanitary outputs to storm sewer laterals and thus storm sewer mains, to address the sources of E. coli. In 2016, the program was extended to a permanent Sewer Lateral Cross Connection Program (SLXC) with FTE’s assigned to the program.

The program focused on the separate sewer areas of the City and as of 2022, covered most of Hamilton Mountain, parts of Dundas, Ancaster, and Stoney Creek. The prioritization sequence which steers the SLXC program is through the results of the storm sewer outfall sampling assignments as described in the following sections. The following figure depicts the SLXC program activities as of February 2022.



**Figure 5-2: Sewer Lateral Cross-Connection Activity Map – February 2022**

The SLXC Program identifies outfalls of concern based on sample results for E. coli and caffeine. Based on the results of the outfall sampling, upstream storm sewers of the flow path are inspected via CCTV. Signs of sanitary flow (staining of the pipe walls, visible wastewater flow, etc.) are captured along the storm sewer network and are traced upstream to a residential source. Homeowner participation is requested and once confirmed, a dye test is used to confirm the improper connection and complete cross connections are repaired. As of March 2023, the SLXC has repaired 471 cross connections, successfully diverting over an estimated 105 million liters of sewage, annually, from discharging out to the environment and back into the wastewater collection system for treatment. In addition, effective January 2016, new



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subdivision agreements require a dye test to ensure that all sanitary drains in newly constructed dwellings have been properly connected to the sanitary sewer system.

The SLXC program is still currently underway, and the completion of its first inspection round of the separated system will be dictated by the remaining sample results and the corresponding need for further investigation (first inspection round expected to be completed in 2025). A key limitation of the current program is regarding partial cross connections (improper connection of a single sanitary fixture to the storm sewer lateral), which stems from the lack of enforcement and financial incentive for homeowners to repair the misconnection (the repair must be made internally on private plumbing). It should be noted that changes are forthcoming to the Sewer and Drain Bylaw (estimated to be October 2023) specifically for identifying complete and partial cross connections as contraventions with enforcement being added under the Municipal Act.

**5.1.3      OUTFALL INSPECTION PROGRAM**

The outfall inspection program (outfall sampling assignments) is a component of the SLXC program implementation. However, it has been broken out as an individual program for evaluation as outfall inspections and sampling are a crucial first step in allocating the limited resources for the SLXC program. Since the permanent implementation of the SLXC program in 2016, outfall and associated MH sampling works were scoped and conducted by consultants and contractors. A summary of the information obtained to date by the City of Hamilton is presented in **Table 5-1** below.

**Table 5-1: Summary of Outfall / MH Sampling Projects**

<b>Outfall/MH Sampling Project</b>	<b>Date of Sampling and Company</b>	<b>Scope</b>	<b>Results</b>
City of Hamilton Upper Ottawa Outfall Dry Weather Sampling	May 2016 – Oct 2017  Calder Engineering Ltd.	812 storm MHs Inspected for E. coli (visual and laboratory test) in Central Hamilton (between Garth Street, Upper Ottawa Street, Mohawk Rd East, and Rymal Rd West)	Cases of Contamination: 52 – via visual inspection 36 – via laboratory testing  (10.8% of total)
City of Hamilton 2018/2019 Outfall Sampling Program	March 2019 – March 2020  Calder Engineering Ltd.	Dry weather sampling of 101 storm sewer outfalls for E. coli/caffeine in the City of Hamilton (all over Hamilton, Stoney Creek, Flamborough, Dundas, and Ancaster)	Outfalls with detected E. coli concentrations above 10,000 CFU/100mL (or 5,000 + CFU/100mL E. coli & 0.5+ positive caffeine indication):  24 of 101 (2 of which were noted with sewage odor)
City of Hamilton Storm Sewer Outfall Sampling for E. coli –	Nov 2021 – June 2022  Aquafor Beech Ltd.	Inspections and variable weather monitoring of 61 storm sewer outfalls	9 cases of Positive Human marker (HF183)



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Outfall/MH Sampling Project	Date of Sampling and Company	Scope	Results
Sewer Lateral Cross Connection Program		primarily within Ancaster and Dundas	
City of Hamilton Storm Sewer Outfall Sampling and Monitoring Program Category 9 Roster Assignment	2022 – 2024  WSP	Inspections and sampling of 80 storm sewer outfalls across Flamborough, Glanbrook, and Stoney Creek to determine if cross-connections are likely within the upstream sewer shed area	Efforts are currently on-going

Sampling of storm outfalls have taken place all throughout the City of Hamilton, however, most of the effort was focused in the separated sewer system area as aligned with the primary objective of the SLXC program.

**5.1.4 CRITICAL REGULAR INSPECTION PROGRAM**

As previously mentioned, the combined sewer system area features 195 known critical regulators, which divert excess combined sewage from the wastewater collection system towards one of the City’s twenty-two (22) authorized combined sewage outfall locations. It is worth noting that 2 of the 4 potential sources of spills and unauthorized discharges are directly related to the state of the critical regulators (failed/unknown), as described in **Section 2.2**. The asset management of these combined sewer flow regulators was initiated in 2019, in which asset information was gathered on any structure that functioned as a flow regulator in the combined sewer system. Over 900 regulators were identified, and the flow path of each asset was traced to determine whether a regular was deemed critical (overflow correlates to outflow to natural environment) or non-critical (overflow ends up back in combined collection system). There are currently 751 non-critical regulators recorded and subject to an annual inspection schedule, and the 195 identified critical flow regulators are inspected twice a year for condition and flow characteristics.

The City of Hamilton maintains a critical regulator log that contains the asset name, associated outfall, street address location, and the type of structure. Within the City of Hamilton collection system, a majority of the critical regulators are within Hamilton, as previously shown in **Table 2-1**.

In response to the findings of the on-going inspection program which utilizes confined space entries as well as Go Pro inspections, 23 structural weir repairs were completed between January 2020 and as recently as February 2023. The types of repairs included the full replacement of corroded boiler plate weirs (metal) with PVC, rehabilitation of deteriorating weir walls via parging with hydraulic cement, and parging of leaking inlet/outlet connections to seal off spilling.



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## **5.2 Gap Analysis between Current Programs / Initiatives and Industry Good Practices Framework**

As stated previously, the City of Hamilton has looked to Industry Good Practices to provide a basis to guide the development and implementation of an effective and well-managed spills management and unauthorized discharge elimination program. This is evident through the summary of the various programs in the above section.

**Section 4.1** describes an approach that is based on proven good practice guidance documents and methodologies followed by agencies in both North America and the UK in tackling the problem of combating spills and unauthorized discharges, which is common to most operational systems. The following table is a qualitative summary of the evaluation of the current programs and initiatives analyzed against the components of the Industry Good Practices framework.

A summary of the recommendations from this evaluation is provided until Section 5.3.



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Table 5-2: City of Hamilton's Existing Programs Evaluated Against Industry Good Practices

Program Components of Industry Good Practices	City of Hamilton's Current Approach	Recommendations
<p>1. Problem Definition and Program Goals</p>	<p>The City of Hamilton Public Works Department has been diligently searching for, and correcting potential unauthorized discharges and spills through a variety of programs over the past decades. As per the Surface Water Quality Program – A Framework Report Outlining the Program Details (June 2022), "This Surface Water Quality Program (SWQP) Framework is the starting point for the City in gaining a holistic understanding of its receiving waters and the potential impacts from various City assets within the storm and wastewater collection and treatment system. Hamilton's goal is to build a baseline understanding of ambient surface water conditions over time, develop open communications and transparency with various partners, and respond to and investigate any water quality anomalies that may be due to infrastructure malfunctions and standard operating conditions. Based on this overarching objective, the Hamilton Water Division has been operating programs such as the SLXC and Risk-Based Pilot Program, as well as performing routine inspections at critical regulators and outfalls.</p>	<p>As shown in Table 5-3, the current efforts by the Hamilton Water Division collectively contribute to identifying/remediating all the various potential sources of spills and unauthorized discharges. The four (4) types of spills and unauthorized discharges in question are described in Section 2.2. It is recommended that current efforts and programs be consolidated into sub-branches of a new holistic Hamilton Water program that identifies the four (4) previously described types of spills and unauthorized discharges as the Problem Definition (the main targets of focus), and define the Program Goals to create, enhance, and implement on-site programs to identify and repair the targeted spills and unauthorized discharges. More suggestions regarding the new holistic program are mentioned in the recommendations pertaining to Program Governance Structure.</p>
<p>2. Program Governance Structure</p>	<p>The City of Hamilton Public Works Committee currently oversees the operations of the Hamilton Water Division. Within this structure, standards and programs such as the Wastewater Quality Management System (WWQMS), SLXC, and SWQP, are developed and implemented. However, within the context of field-investigation programs, there is a need for improvement to consolidate the combined sewer system and separated sewer system efforts into one umbrella that is governed with an objective to combat all types of spills and unauthorized discharges in the City of Hamilton.</p>	<p>It is recommended that the City of Hamilton, under the governance of Hamilton Water, organize the capital resources, time, and FTE staff into one "mother program" that focuses on the investigation and remediation of spills and unauthorized discharges, as previously noted in the recommendations pertaining to the Problem Definition and Program Goals. Under one unified umbrella, the existing programs (e.g., SLXC, Risk-Based Pilot Program, Outfall Inspections, and Critical Regular Inspections, etc.) may become the main branches that make up the mother program, as described in Section 4.2. Having one unified mother program that is dedicated towards the one main objective (combating spills and unauthorized discharges in the City of Hamilton) will enhance clarity associated with staffing, planning operations, and coordination with multi-disciplinary works. The mother program should be championed with a FTE staff member to oversee, prioritize, and delegate reconnaissance/repair fieldworks. Suggested title of the mother program: <b>System-wide Unauthorized Discharges Removal and Inspection Program (SUDRIP)</b>.</p>
<p>3. System Characterization</p>	<p>The City of Hamilton has a strong understanding of their current system and how it operates.</p> <p>The overall sewer system is generally divided into the combined sewer area (urban core) and the separated sewer area (peripheral areas). Based on the characterization of the system, varying sources of spills and unauthorized discharges are expected (e.g., efforts to find failed critical regulators would be focused in areas with a need for critical regular – combined sewer system). The City's current programs and activities to identify these sources use knowledge of their sewer system to focus their efforts. Further description of the system is provided in Section 2.</p>	<p>Having a well-defined and characterized system allows municipalities to maximize efficiency in terms of the scope of the program and the desired outcomes. This is achieved through a thorough evaluation of what can be done and what should be done within the scope of the defined program. The effectiveness of the implemented investigation strategy will vary considerably from one system type to another. In the case of the proposed System-wide Unauthorized Discharges Removal and Inspection Program (SUDRIP), the various activities (made up of current and future programs) should continue to target the areas of the City that are most relevant to the type of spill and/or discharge source that the activity is intended to identify. As these programs and the overall system evolve, system characterization should be re-investigated to ensure efforts can continue to prioritize the proper areas.</p>
<p>4a-c. Strategic Risk-Based Prioritization Process – Outfall Risk Assessment and Prioritization to Prioritized Sub-Catchment Strategic Investigations</p>	<p>The City currently follows a risk-based outfall and sub-catchment prioritization process.</p> <p>It has been noted by the Hamilton Water Division staff that the Outfall Sampling Program prioritization has evolved over time. The program first started in the Chedoke Creek sub-watershed area due to local water quality concerns and then moved to Red Hill Creek Watershed for the same reasons. From there, the program filled in the remaining areas on the Hamilton Mountain and lower Stoney Creek as they had a similar infrastructure profile to those initial areas of concern.</p> <p>From 2019 onwards, the outer areas were sampled (Ancaster, Dundas) and then prioritized based on sample results as the focus shifted toward completing a first "low hanging fruit" type pass through the entire separated system.</p> <p>In 2023, it is planned to finish sampling the system by looking at the newest development areas (Binbrook, Waterdown, S/E Hamilton Mountain) and prioritized CCTV inspections are likely to be complete during/by 2025.</p>	<p>Figure 4-1 outlines the process by which a system-wide program can be feasibly managed by employing a risk-based prioritization and strategic source identification methodology. The process is designed to prioritize and focus efforts on outfalls at greatest risk of being impacted and by addressing those sources that have the potential for causing the greatest impact on those outfalls. It may be preferable to structure distinct streams of work for combined and separated sewer system outfalls given that the inherent risks and investigation strategies for each will differ. While the City currently appears to follow this approach informally, the implementation of a new SUDRIP program would allow it to formalize this strategy.</p> <p>The City of Hamilton currently aims to finish the sampling the system in 2023. Therefore, the outfall risk assessment and prioritization strategies laid out in Section 4.1 are recommended to be adopted for future prioritization efforts, and within the SUDRIP. In essence, a "Plan-Do-Check-Act" feedback loop is created and maintained, starting from the desktop risk assessment of the outfall risk assessment and prioritization step, to the updated risk and re-prioritization step in which follow up screening, annual reporting, and other field reconnaissance data is used to update the desktop risk assessments.</p>



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Program Components of Industry Good Practices	City of Hamilton's Current Approach	Recommendations
<p>4d. Prioritized Source Removals</p>	<p>The City's current programs include a source removal strategy.</p> <p>In the case of the existing SLXC program, once the source of contamination has been identified, the following four steps are taken:</p> <ul style="list-style-type: none"> <li>• Letters to Homeowners Requesting Participation</li> <li>• Dye-Testing and Sewer Lateral CCTV Inspections</li> <li>• Engineering Investigations for Corrective Action</li> <li>• Sewer Lateral Cross Connection Corrections</li> </ul> <p>The Pilot Program identified several previously unknown critical regulators and led directly into efforts for inspection and rehabilitation.</p>	<p>It is recommended that the City continue their source removal strategy and formalize it into the new SUDRIP program.</p> <p>The flowchart as depicted in Figure 4-2 is recommended to be followed once a source of unauthorized discharge or potential spill has been identified (Flow Chart for Corrective Action). Sources of discharges or spills will either be on the publicly owned and operated system or located on private property. Sources located on the public system fall under the jurisdiction of the system owner and can thus be readily addressed using public funds. Access to investigate and then remove sources on private can be challenging, costly, and require significant time and resources to complete. Some of the greatest challenges to removing sources from private property are related to legal and policy issues, enforcement of by-laws, engaging the property owner in the program through education, and establishing equitable means of funding of private side remedial measures.</p>
<p>4e. Re-assessment and Re-prioritization</p>	<p>In the case of the existing SLXC program, once a correction has been made, the case is deemed complete and closed. In summary, the SLXC currently lacks a "repeat sampling" or validation step in its current process.</p> <p>The Pilot Program is too new to comment on this step.</p>	<p>The SLXC program doesn't focus on the re-assessment &amp; re-sampling of the sewer network to confirm the elimination/reduction of unauthorized discharge from areas previously covered. As per the flowchart for Corrective Action (Figure 4-2), it is imperative that a step to "confirm elimination of contamination source" is conducted after the actual work to eliminate the source. This step either allows for the confirmation of the contamination source being fully eliminated, or provides for an opportunity to issue the second Work Order or Notice of Violation (NOV). Once again, the essence of the process would be to create the "Plan-Do-Check-Act" feedback loop and reinforce the process such that the loop is maintained.</p>
<p>5. Program Management Tools</p>	<p>As previously noted, the existing City of Hamilton programs that are directly relevant to identifying and remediating spills and unauthorized discharges are independently operated by the Hamilton Water Division under the Public Works Department. However, as made evident by the recommendation to unite the programs under one umbrella, the programs are operated independently, and without the use of established data management tools that combines the data derived from investigating/remediating the combined and separated sewer systems.</p>	<p>It is recommended that the SUDRIP consider adopting established enterprise data management and analytics platforms. Business insights beyond system operations can now be generated in real-time through computer assisted analytics that can be applied to multiple and disparate data sets. Such systems enable the integration of data source and interoperability of applications for near-real-time decision making. This includes integrating business (IT-GIS/CIMMS/CRM/AM/LIMS) and operational (OT-SCADA) technologies for application use. The key benefits are listed below:</p> <ul style="list-style-type: none"> <li>• Enables a connected &amp; insightful workforce</li> <li>• Enhances the ability to abstract, share, and visualize information</li> <li>• Enhances the ability to analyze and interpret data</li> <li>• Provides for better informed decision making and program/project execution</li> </ul>
<p>6. Resources (Staff and Budget)</p>	<p>As previously noted, the existing City of Hamilton programs that are directly relevant to identifying and remediating spills and unauthorized discharges are independently operated by the Hamilton Water Division under the Public Works Department. However, as made evident by the recommendation to unite the programs under one umbrella, the programs are operated with the resources available at the time of implementation under the Hamilton Water Division's control and staff are generally not fully dedicated to the programs (not FTEs for the program).</p>	<p>Under the SUDRIP team structure, it is recommended that an FTE program manager is dedicated to the program to oversee and manage all branches of the program. Under the dedicated program manager/leader, it is recommended to create a team of 3 FTE SUDRIP staff that can assist with leading the sampling efforts, coordination of inspections, CCTV work, and be the information controllers to help maintain consistency in documentation and record keeping. In addition to full-time City staff, co-op students can be incorporated into the team to reduce labour costs. This model can be compared to the City of Toronto's (Toronto Water) Outfall Monitoring Program (OMP), in which the program is championed by a dedicated supervisor and is operated by a staffing team of 1 manager, 2 FTEs, and 3 co-op students. The recommendation to build on the existing SLXC and Pilot Programs and the staffing upgrades needed to maintain those programs under the SUDRIP umbrella are explored in Section 4.2.3.</p>





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### 5.3 Gap Analysis between Current Programs / Initiatives and Potential Sources of Spills & Unauthorized Discharges

Table 5-3 below summarizes the relevant inspection-related programs and initiatives and scores them in terms of their potential to identify each type or source of potential spill or unauthorized discharge. This Gap Analysis is under development. A discussion will follow on the types of spills and unauthorized discharges that are most or least likely to be discovered through the City's current programs. This will be used to recommend focus of programs and future allocation of resources.

**Table 5-3: Overview of City's Current Inspection-Related Programs and Initiatives (Scores: 0 – Ineffective, 5 – Most Effective)**

Program	Years Active	Areas Covered	% of City Covered	% of Program Complete	Potential to Detect Spills and Discharges			
					Main Line XC	Lateral XC	Failed Regulator	Unknown Regulator
Risk-Based Proactive Pilot Program	2022-current	Hamilton Core	~40%	100%	4	1	1	5
Sewer Lateral Cross-Connection	2009-current	Hamilton Dundas Ancaster Stoney Creek	~80%	~75%	1	5	0	1
Outfall Inspection Program	2016-current	Hamilton Flamborough Dundas Ancaster Stoney Creek	~90%	~80%	2	2	2	2
Critical Regulator Inspection Program	2019-current	Hamilton Flamborough Dundas Ancaster Stoney Creek	~90%	2x annually	0	0	5	1
- Sewer Condition Assessments - Operational Sewer Maintenance - Construction Pre / Post Inspection	Ongoing	Entire City	100%	Ongoing	1	1	1	1
<b>Total Scores</b>					<b>7</b>	<b>7</b>	<b>8</b>	<b>7</b>



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As shown by the total scores presented in **Table 5-3**, when all the individual programs are considered together in the context of their potentials to detect spills and discharges, there is no apparent blind spot (collectively speaking, all sources of spills and discharges have a strong way to be found and repaired). A limitation of this quantitative gap analysis table is that the effectiveness of past and current inspection programs to identify spills and unauthorized discharges cannot be verified because the true number of these conditions is unknown. Unless multiple programs were completed in quick succession, there is no way to confirm whether spills or unauthorized discharges were missed by the inspection program, or whether they simply did not exist.

In summary, there is no specific need for a new program to target one of the spills/discharge types, however, as presented in **Table 5-2**, it would seem natural to unite all the existing programs under one umbrella. The above is essentially an evaluation of the proposed System-wide Unauthorized Discharges and Removal Inspection Program (SUDRIP). Under the SUDRIP, each of these programs should be reinforced with a Plan-Do-Check-Act feedback loop (within the outfall prioritization process, as well as within the re-assessment and re-prioritization processes), as noted in **Table 5-2**. In summary, under the proposed SUDRIP:

- Each main branch (i.e., current programs) should undergo a system characterization evaluation to ensure that each program is defined and scoped in a way that makes the most efficient use of available resources and geographical coverage (Table 5-2, Item 3 – System Characterization)
- Incorporate a reiterative components of the program to re-prioritize outfall and catchment / sub-catchments as detection and removal efforts continue (Table 5-2, Item 4e – Re-assessment and Re-prioritization)
- A team of FTE SUDRIP staff should operate these programs with an assessment / re-assessment, prioritization/ re-prioritization framework (Table 5-2, Item 7 – Resources)
- Make use of established enterprise data management and analytics platforms (Table 5-2, Item 6 – Program Management Tools).



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6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

## 6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)

As part of the gap analysis in **Section 5.3**, Stantec completed a holistic review of the City's ongoing programs to identify potential spill(s) and unauthorized discharges from the City of Hamilton sewage system. The purpose of the section herein is to review additional physical and analytical inspection programs that the City may consider for enhancements or additions to their existing programs, procedures and measures to inspect, monitor and identify spills and unauthorized discharges. Stantec consulted with internal Stantec staff with extensive experience in Illicit Discharge Detection and Elimination (IDDE) approaches, methodologies and technologies, inclusive of experience in Canada, the United Kingdom, and the United States. Stantec also reached out to a municipality who has used one of the techniques mentioned herein (canine scent tracking), for further clarification on their experience using this technique. Stantec compiled a list of potential physical and analytical inspection technologies, measures and methods for the City's further review and consideration. The following provides a general overview of each technology that was reviewed.

### 6.1 Field-Based Sampling

#### 6.1.1 QUANTITATIVE POLYMERASE CHAIN REACTION (QPCR)

Traditional fecal indicator bacteria (FIB) tests that culture total coliforms, fecal coliforms, *E. coli*, or *Enterococci* is widely recognized. However, there are limitations as the traditional FIB tests are not specific or sensitive and can have a high percentage of false positive and false negative results. Specific organisms can be detected using Polymerase Chain Reaction (PCR). Quantitative PCR (qPCR) is performed by amplifying DNA using fluorescent tags, which can be more sensitive and specific compared to the traditional FIB tests to determine the presence of fecal or sewage contamination. To date, the most promising use of qPCR technology is to test for total *Bacteroides*, human *Bacteroides*, and human Polyomaviruses (HPyVs). *Bacteroides* species are anaerobic bacteria that only presents in fecal contamination with a huge concentration in feces, unlike *E. coli* and *Enterococcus* species which are not specific to feces only. The enormous concentration of *Bacteroides* in feces also make testing more effective and easier than using FIB culture tests. HPyVs are even more specific than *Bacteroides*, since it can only be found in human urine. QPCR testing results can be available within 24 hours or less, it is much also much quicker than cultured-based testing, which typically require 10-14 days to complete testing. To track illicit discharge within a stormwater system, qPCR appears to be much more effective compared to traditional FIB tests, however, it can be costly, so there is a need for better approaches to strategically select the testing locations. If not already used, the City may consider using qPCR testing to enhance their sampling program.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

## 6.2 Field-Based Physical Investigations/Test

### 6.2.1 DRY WEATHER SAND BAGGING

Where outfall sampling indicates contamination and minimal to no continuous flow is observed during DWF, sandbags can be placed in storm MHs from upstream and proceed downstream to capture and sample for possible lateral cross connections. If flow captured by the sandbag was tested and has results that identify no contamination, then the upstream segments are assumed to be clear of contamination and field crews can proceed to the next strategic MH. Field test kits are used to determine if sewage is contaminated, as indicated by detection of ammonia, surfactants, or total residual chlorine greater than 3.4 ppm. MH should be strategically selected until it is possible to isolate a section with illicit connection(s) to identify source(s) of contamination. Note that sand bagging may not be appropriate due to standing water when there is too much flow in storm drains to allow sandbagging, then dye testing can be used instead, however, dye testing would cost more than sandbagging and require a greater level of effort as the field crew will need to coordinate to get access to the buildings.

### 6.2.2 DYE FLOODING

Dye flooding involves the isolation of a segment of mainline sewer to find cross connections between storm and sanitary, as opposed to dye testing which injects dyed water in a potential source of cross-connection (e.g. lateral, drain, etc.). Dye flooding is typically done in conjunction with CCTV where a segment of the storm sewer is isolated and flooded with dyed water to see if it comes out in the sanitary (or in the City's case, between the combined and storm relief sewers). This method could be used as a follow-up test to find or confirm intermediate sources of cross-connection that are not visible from surface and suspected based on CCTV results.

### 6.2.3 CANINE SCENT TRACKING

Canine scent tracking involves using trained dogs to scent the human sources of bacterial (e.g., E. coli) in a storm drain system or waterbody. Environmental Canine Services (ECS) in the United States has trained dogs to identify and track illicit sewage discharges. This method is cost-efficient and provides a rapid result in the field, however, this program currently may not be available in Canada. Dogs can indicate the presence of human waste by either barking or sitting. One literature review of diverse scent source types reports high specificity (82 to 100%; most sources .96%) and sensitivity (75 to 100%; most sources .87%) for canines and their trained target sources (Helton, 2009). Stantec contacted a municipality in the United States who has used canine scent tracking as a pilot as part of Illicit Discharge Detection and Elimination program. The following pros are identified with using canine scent tracking for detection of illicit discharges including:

- Cost-efficient.
- Provides immediate rapid results (i.e., detection of human waste) in the field.
- Ability to quickly investigate locations and help prioritize which locations to complete sampling.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

- More successful for screening outfalls for human waste where the outfalls are spread apart from each other.
- Dogs have strong sensitivities and can detect low levels of human waste. Dogs typically become more animated when higher levels of human waste are detected.

Several challenges were identified by this municipality with using canine scent tracking to detect illicit discharges, which included:

- Dogs can make mistakes and can be distracted by outside influences, particularly in noisy, busy and urban areas.
- Dogs have varying sensitivities and cannot determine what they are identifying in the field, only that they have identified something.
- The level of sewage cannot be measured, this methodology detects if sewage is present or not.
- Sampling may still be required to verify results.
- Dogs get sick which can cause delays.
- Trained and experienced canine handlers are required.
- Water Environment Research report titled "The Canine Scent Detection and Microbial Source Tracking of Human Waste Contamination in Storm Drains" dated June 2014, noted that the dogs accurately identified human waste which was verified by PCR testing. However, there were some false positives by the dogs, later verified by PCR testing. In addition, the report noted that no false negatives were identified in this study (i.e., where dogs indicated that human waste was not present, the PCR testing verified these results). In conclusion, the report noted that canine scent tracking provides immediate field results, unlike other methods and that the quantitative approach can greatly assist in locating contamination problems at a low expense (Van De Werfhorst, 2014).

#### **6.2.4 CCTV ON STORM RELIEF SEWERS**

Within the formerly combined areas, the City of Hamilton has numerous storm relief sewers that are connected to combined sewers. Those storm relief sewers are critical as they have high likelihood of cross-connections or system failure of unauthorized discharges and/or spills. The use of mobile video cameras that are guided remotely through those storm relief sewers to observe and note possible illicit discharges can be effective for finding continuous potential illicit discharges and/or unaccounted for connections, however, it will be difficult to identify "blind cross-connection" (e.g. between two MHs with no surface access/visibility). While this tool is definitive as it provides real-time data and high-quality images/videos back, but when used in isolation it can be relatively costly and time consuming when compared to other source isolation techniques. Ideally, targeted CCTV videoing is used in conjunction with sampling and MH investigations where cross connections are suspected to exist.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)****6.2.5 CHEMICAL INDICATORS**

Although the most common source of contamination in illicit discharge is wastewater, other sources, such as washwater (contains detergents), can contribute as well. It is also useful to identify tap water presence in the storm system to identify water system leaks and reduce chlorine and fluorine that discharges to the environment. Chemical indicators (such as Fluorescein or Rhodamine Dye) can be used to identify a specific type of discharge and potential cross-connections. Samples collected from outfalls or pipes, along with techniques to store and preserve them for subsequent laboratory analysis will identify the presence of chemical parameters. The following are the typical chemical field parameters that can identify potential illicit discharges. No single indicator is perfect, a combination of testing different parameters is often the best approach. List below are several indicators and what they can detect, as described in the Detection of Wastewater Contamination Technical Paper dated 2019 (Barker et. al., 2019):

- Ammonia – Good indicator of wastewater, however, volatilizes easily.
- Boron – Potential indicator of any discharge containing detergents.
- Chlorine – Can identify tap water presence.
- Fluorine – Since tap water is fluoridated in most communities, fluoride can often distinguish tap water from groundwater.
- Nitrogen/Phosphorus – An in-stream parameter to identify large-scale wastewater contamination.
- pH – Identifies some industrial discharges.
- Potassium – Excellent indicator of industrial discharges.
- Detergents – Surfactants: Surfactants (found in detergents) can distinguish an illicit discharge from other natural water or tap water because surfactants are not typically found in groundwater.

**6.2.6 FLOW MONITORING ON STORM RELIEF SEWERS**

The sewer monitoring programs provide real-time flow, depth and velocity measurement at different time intervals at MHs. Typically, a third-party vendor will be responsible for overall data QA/QC, including daily review, maintenance, and activity logs, and sensor verification measurements. The selection of the MH for monitoring station also need to consider site access, hydraulics (i.e. avoid bends, drop structures), upstream land use and size of drainage area, known construction/ maintenance conflicts, and the identification of back-up secondary/tertiary sites to optimize installation time. The City of Hamilton can consider putting flow monitoring stations at the critical regulators next to the storm relief sewers that diverts combined sewage overflow to the CSO outfalls to identify any potential unknow critical regulator failures. Storm relief sewers typically should only discharge combined overflow during rainfall events, monitoring critical regulators could identify any dry weather (sanitary) flow that occurs at the cross-connections. Additionally, the monitoring data can also be used for model calibration.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

## 6.3 Microbiological

### 6.3.1 RAPID COLIFORM TEST

Rapid Coliform test is a fast test to simultaneously detect both total coliforms and E.coli in water samples to provide results within 18 hours (Xebios Diagnostics GmbH, n.d.). According to research, suppliers that carry rapid coliform testing kits to test water contamination are Colikat Rapid and 3M™ Petrifilm™ Series, which uses either a plate or a tray to put the water sample into that will turn sample into yellow if coliforms are presented, if it shows fluorescence under UV-light E.coli is presented (Xebios Diagnostics GmbH, n.d.). The number of coliforms or E.coli in the sample can be estimated by counting the number of the squares that turned yellow or showed fluorescence under UV-light (Xebios Diagnostics GmbH, n.d.). Colikat Rapid is designed to test the surface water and wastewater samples, however it appears that it is only available in Germany. 3M™ Petrifilm™ is available to purchase in Canada but it is more direct to be used within the food safety industry, using it for the purpose of stormwater contamination testing should be verified with 3M™ Petrifilm™.

### 6.3.2 LAB-BASED MICROBIOLOGICAL

Lab-based microbiological is widely used procedure that sampling water and applying testing techniques to identify and quantify microbiological organisms in a water sample. One of the most effective ways to check water sample for fecal contamination is microbiological analysis, instead of carrying out separate tests for each potential pathogens, viruses, or parasites that might be in the water (Rapid Microbiology, n.d.). Coliform has the characteristics of allowing for “easy isolation, detection and enumeration in the lab and are good standard for microbial water testing” (Rapid Microbiology, n.d.). The microbiologist typically would look for count of fecal coliforms such as E. coli, whose only habitat is the intestine as the ideal indicator of fecal contamination (Rapid Microbiology, n.d.). “The presence of fecal streptococci/Enterococci is also evidence of fecal contamination” (Rapid Microbiology, n.d.). “Conventional testing methods may also give false positive, in that case, additional testing may be required” (Rapid Microbiology, n.d.).

### 6.3.3 SEQUENCE-BASED GENETIC

Sequence-based genetic has been developed to establish evidence of fecal contamination in surface freshwaters through alternative DNA-based indicators (Tan et. al., 2015). Sequencing methods targeting small subunit (SSU) rRNA hypervariable regions have allowed identification of signature microbial species that serve as bioindicators for sewage contamination (Tan et. al., 2015). The microbiomes associated with sewers were predominantly unique compared to those associated with animal hosts, surface freshwaters and other environmental sources (Tan et. al., 2015). For example, qPCR, analysis of profiles of microbial SSU rRNA genes, and use of bacterial taxonomic groups identified through next-generation sequencing (NGS)-based surveys are the few methods that has been used for detecting human microbial species in sewer system (Tan et. al., 2015). Since this is one of the newer technologies in the market, it is recommended that the City confirm which laboratories, if any provide this type of analysis in Ontario.



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
 6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

## 6.4 Summary

These technologies were reviewed based on Stantec’s experience and knowledge of the industry as well as high level desktop research completed as part of this assignment. **Table 6-1** provides a summary of each technology and analytical inspection program, and a high-level summary of its local availability, effectiveness/timeline and cost impact. Stantec has also provided recommendations on which technologies to carry forward as part of SUDRIP. It is noted that the details provided are based on high-level review, and it is recommended that the City further review these technologies for suitability in the City’s existing programs as well as validate the availability and accessibility of these technologies should the City be interested in pursuing these further.

**Table 6-1: Potential Physical and Analytical Inspection Program Summary**

Program	Previously Implemented by the City	Locally Available	Effectiveness/ Timeline	Cost	Comments	Recommended for Implementation
Field-Based Physical Investigations						
Dry Weather Sand Bagging within storm sewer MHs	Yes	Yes	Effective	\$	As noted in Table 4-3, sandbagging can be used as part of a follow up investigation if necessary.	✓
Dye Flooding	Yes	Yes	Moderately Effective	\$	The City may consider implementing dye flooding as a trial as part of the SLXC program.	✓
Canine Scent Tracking	No	Unlikely	Less Effective	\$	Cost-efficient and provide rapid results in the field, however, likely not currently available in Canada.	✗
CCTV Storm Relief Sewers	No	Yes	Less Effective	\$\$	Low likelihood but high severity if major sewer cross-connection is found. The City may consider completing CCTV of storm relief sewers within critical within storm outfall areas.	✓





**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

Program	Previously Implemented by the City	Locally Available	Effectiveness/Timeline	Cost	Comments	Recommended for Implementation
Chemical Indicators	No	Likely	Moderately Effective	\$\$	Most tests are simple and provide quick results, however, some of the chemical parameters can be difficult to detect. The City may consider implementing chemical indicators as part of a pilot project and trial as part of either the SLXC program or the combined sewer area investigation.	✓
Flow Monitoring on Storm Relief Sewers	No	Yes	Less Effective	\$\$\$	Provides real-time flow, depth and velocity measurement at critical regulator locations.	✓
Microbiological Lab Based Testing						
qPCR	No	Likely	Effective	\$\$\$	More sensitive and specific than the traditional culture-based FIB testing method, but it can be costly.	✗
Rapid Coliform Test	No	Yes	Effective	\$	Can be done in the field and test results can be ready within 18 hours. However, these tests do not appear to be either readily available in Canada or are currently used for different applications.	✗
Lab-based Microbiological	Yes	Yes	Moderately Effective	\$	Widely used, non-specific. The City should continue with their lab-based microbiological testing.	✓



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796  
 6 Additional Physical and Analytical Inspection Programs (MECP Order 5.4)**

Program	Previously Implemented by the City	Locally Available	Effectiveness/ Timeline	Cost	Comments	Recommended for Implementation
Sequence-Based Genetic	No	Likely	Effective	\$\$\$	Rapid and accurate, relatively new, limited resources available. High cost. As noted in Table 4-3, genetic tracing can be used where other sampling results are inconclusive.	✓



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**7 Conclusions and Recommendations**

## 7 Conclusions and Recommendations

Stantec has prepared this report in response to MECP Order No. 1-142403769 issued to the City of Hamilton. This report summarizes our review of the City's collection system and its current inspection-related programs and initiatives and provides our recommendations to improve the City's ability to identify spills and unauthorized discharges, in compliance with MECP Item No. 5 (specifically sub-items I to IV – also referred in this report to herein as MECP Order Items 5.1 to 5.4), as follows:

***Item No. 5 Compliance Due Date: 05/12/2023***

Identify recommendations for enhancements to the City's sewer inspection programs to better identify identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton sewer system. These recommendations shall include at a minimum but not limited to:

- I. An analysis of the feasibility of conducting a detailed in-pipe inspection of the City of Hamilton's sewer system.*
- II. An analysis of the feasibility of conducting risk-based inspections of the City of Hamilton's sewer system.*
- III. The Terms of Reference for an assignment to complete a gap-analysis review of current programs, procedures, and measures to inspect, monitor and identify Spill(s) and unauthorized discharges from the City of Hamilton's sewer system.*
- IV. A review of additional physical and analytical inspection programs to identify Spill(s) and Spills(s) and unauthorized discharges from the City of Hamilton sewage system.*

Item 5.5 (V) was completed by the City of Hamilton staff:

- V. Procedures for updating City of Hamilton's current digital mapping system when discrepancies are determined.*

In summary and based on our review of the City's on-going sewer inspection programs, this report concludes the following in response to MECP Order Items 5.1 to 5.4:

- As noted in Section 3, completing a city-wide detailed in-pipe inspection program is not likely to provide the most benefit in identifying spills or unauthorized discharge.
- The City has many ongoing inspection-related programs that have proven to be very effective in identifying various types of spills and unauthorized discharges.
- Collectively, these programs and other activities cover many of the elements of Industry Good Practices for identifying and eliminating illicit discharges.
- The City could benefit from establishing a centralized task-force / overall program, namely the System-wide Unauthorized Discharges Removal and Inspection Program (SUDRIP) to



**100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796**  
**7 Conclusions and Recommendations**

connect efforts within these various inspection-related programs, activities and initiatives with an integrated prioritization process.

- It is recommended that the current Risk-Based Proactive Pilot Program be expanded to inspect the remaining MHs within the combined sewer area.
- It is recommended that the Sewer Lateral Cross-Connection Program adopt a verification exercise to re-sample outfalls and sub-catchments that previously showed signs of sanitary sewage and evidence of potential cross-connections.
- It is recommended that the City proceed with implementing field-based physical investigations defined in Section 6. In addition, it is recommended the City continue with microbiological lab-based testing and consider sequence based genetic testing where other sampling results are inconclusive.



## 100% Study Report to Address Items 5.1 to 5.4 of MECP Order No. 1-142403796

## 8 References

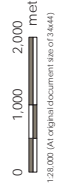
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# APPENDIX A GIS MAPS



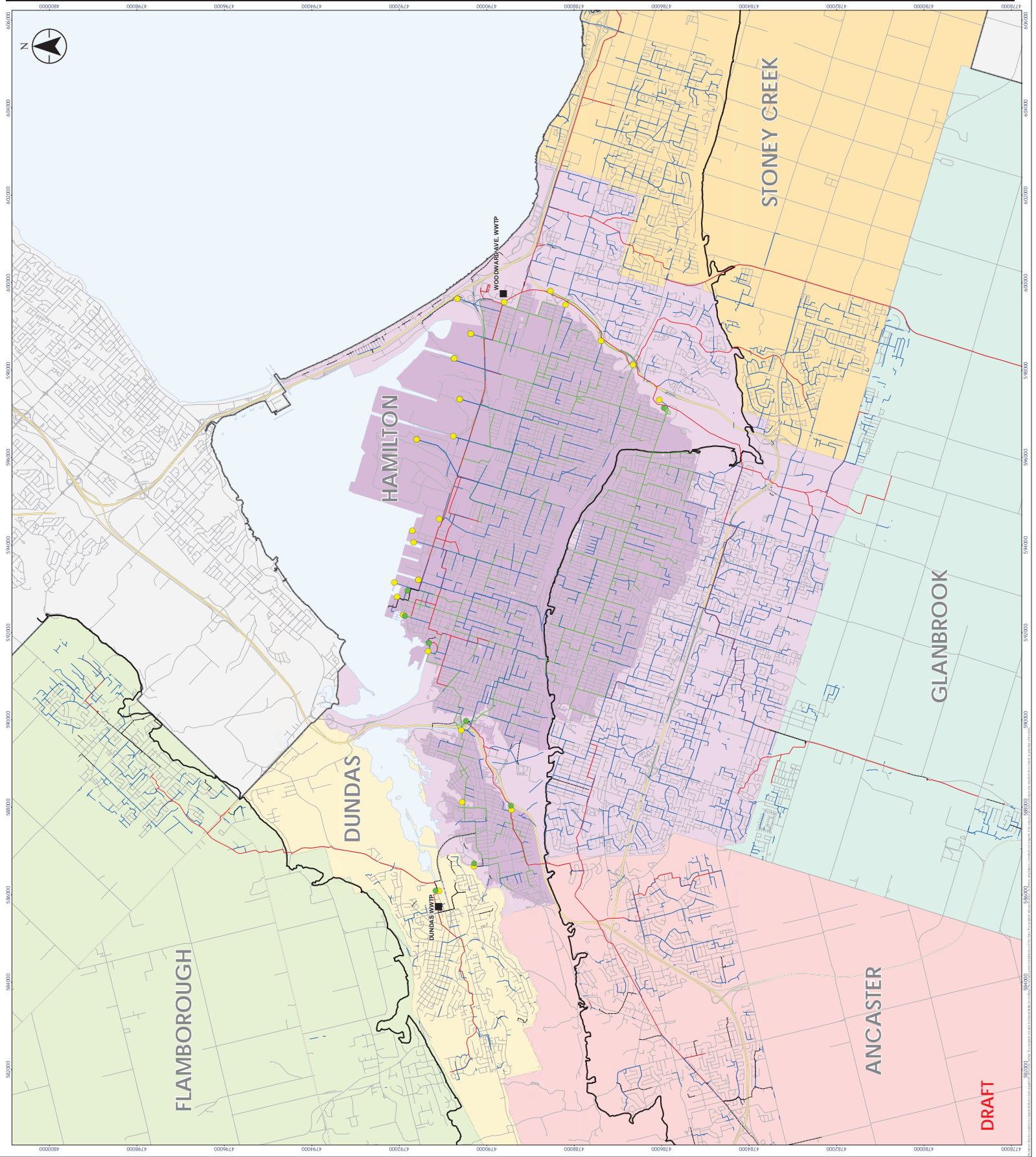
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- Wastewater Treatment Plant
  - CSD Inlet
  - CSD Outfall
  - Storm Sewer (> 600 mm)
  - Sanitary Sewer (< 600 mm)
  - Combined Sewer (> 900 mm)
  - Escarpment
  - Combined Sewer Catchment
  - City Boundary
  - Community Boundary
  - Ancaster
  - Dundas
  - Flamborough
  - Glanbrook
  - Hamilton
  - Stoney Creek



1:25,000 (At original document size of 24x44)  
 1. Coordinate System: NAD 1983 UTM Zone 17N  
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Crown in Right of Ontario, 2018  
 3. Data sources: Esri, DeLorme, Garmin, (C) OpenStreetMap contributors, and the GIS User Community

Project Location: City of Hamilton  
 Prepared by: EIT  
 Client/Project: City of Hamilton  
 M&E/Spec Order

Figure No. 1.1  
 Title: Trunk Sewer Network



**DRAFT**

- Legend**
- Waterwater Treatment Plant
  - CSD Outfall
  - CSD Outfall - Backed Up
  - CSD Tank
  - Critical Regulator
  - Non-Critical Regulator
  - Storm Sewer (< 600 mm)
  - Sanitary Sewer (< 600 mm)
  - Combined Sewer (< 600 mm)
  - Equipment
  - Combined Sewer Catchment
  - City Boundary
  - Community Boundary

0 500 1,000 metres

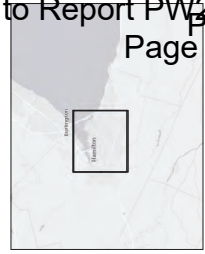
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1. Coordinate System: NAD 1983 UTM Zone 17N

2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer, Ontario, 2018.

3. All other features are the property of Stantec Inc. or its subsidiaries.

4. All other features are the property of Stantec Inc. or its subsidiaries.

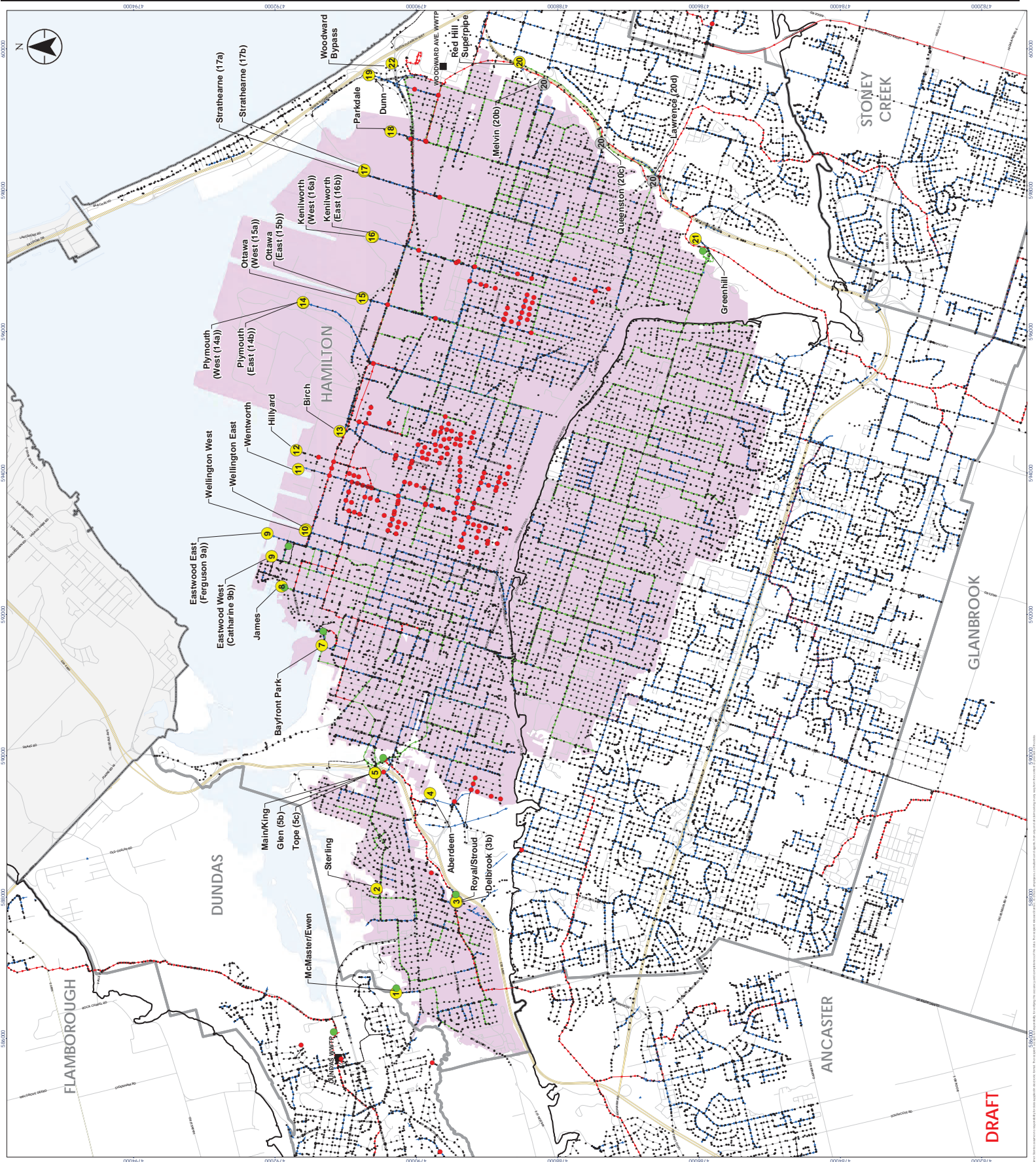


Project Location: City of Hamilton  
 Prepared by: ST

Client/Project: City of Hamilton  
 M.E.P. Order

Figure No.: 1.2  
 Title: Trunk Sewer Network  
 Critical Regulator Locations

**DRAFT**





- Legend**
- Wastewater Treatment Plant
  - CSD Outfall
  - CSD Tank
  - CSD Outfall - Backed C/P
  - Storm Sewer (< 600 mm)
  - Sanitary Sewer (< 600 mm)
  - Combined Sewer (< 900 mm)
  - Escarpment
  - Critical Path Route Boundary
  - Combined Sewer Catchment
  - City Boundary
  - Community Boundary

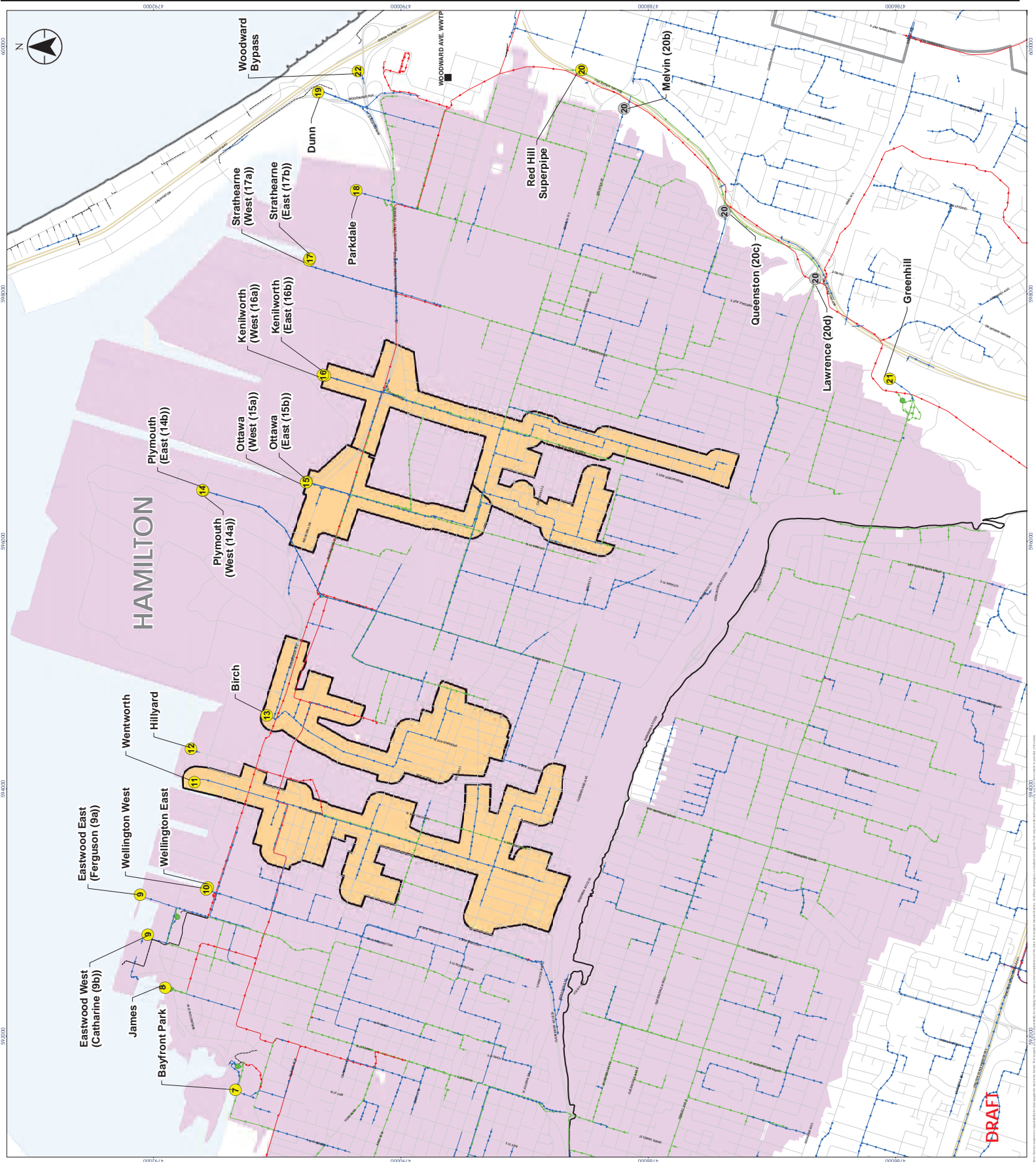
0 250 500 metres

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 2. Base feature produced under license with the Ontario  
 Survey Commission under the name of "Queen's University  
 Survey of the City of Hamilton, Ontario, (C) OpenStreetMap  
 contributors and the CC-BY-SA community"



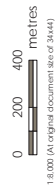
Project Location: City of Hamilton  
 Prepared by: [Name]  
 Client/Project: [Name]  
 M.E.P. Scale: Order  
 Figure No.: 1.3  
 Title: Trunk Sewer Network Combined Sewer Area

**DRAFT**

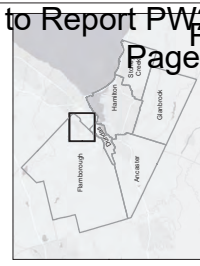


**DRAFT**

- Legend**
- Storm Mainline
  - Sanitary Mainline
  - Sanitary Pumping Station
  - Storm Sewer
  - Sanitary Sewer
  - Easement
  - City Boundary
  - Community Boundary



18,000 (at original document size of 34x44)  
 1. Coordinate System: NAD 1983 UTM Zone 17N  
 2. Base feature produced under license with the Ontario Survey and Mapping Authority (OSMA) of Ontario, 2018  
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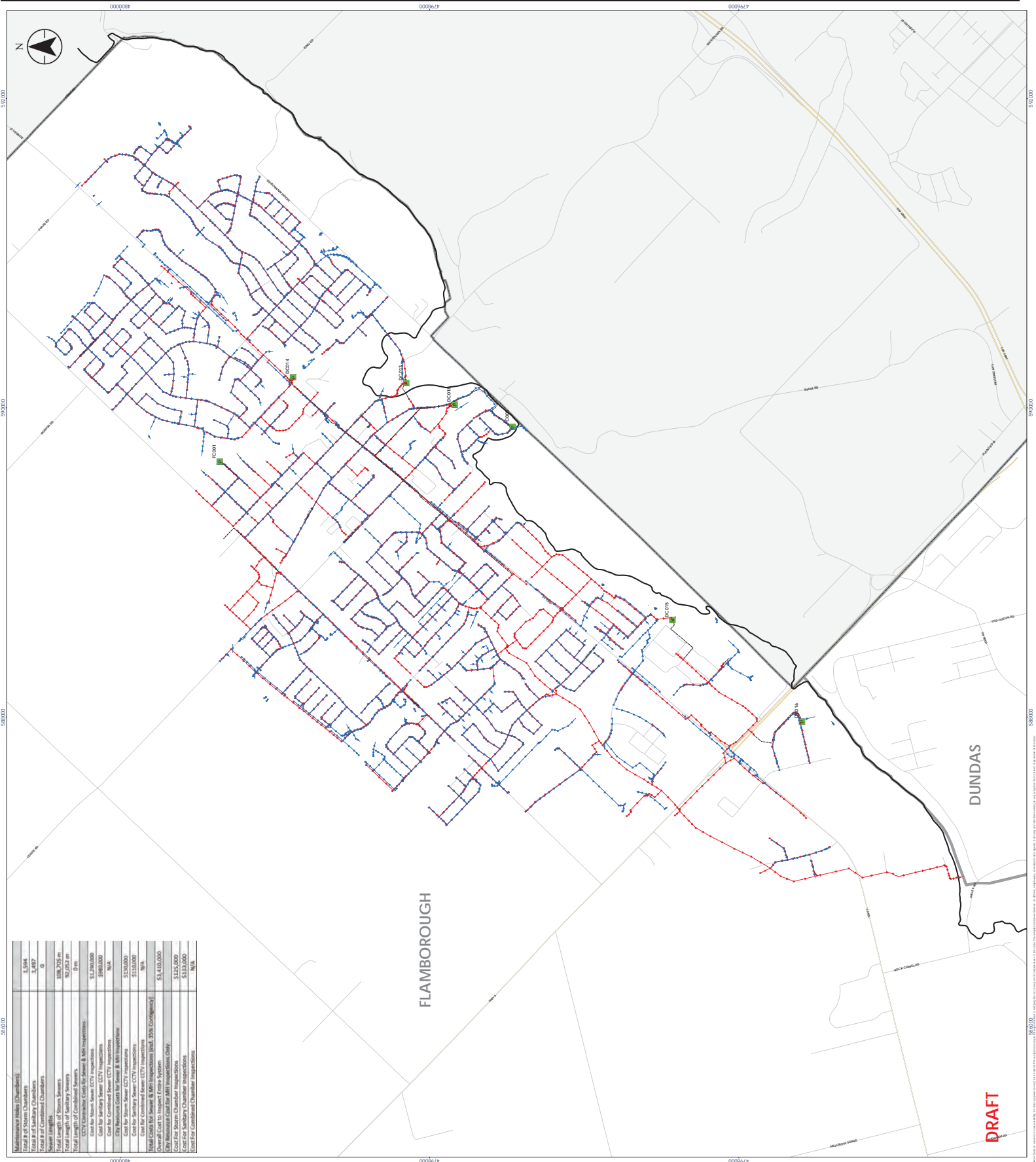


Project Location: City of Hamilton  
 Prepared by: ST

Client/Project: City of Hamilton  
 MECF Split Order

Figure No.: 2.1  
 Title: Community Sewer Network  
 Flamborough

**DRAFT**



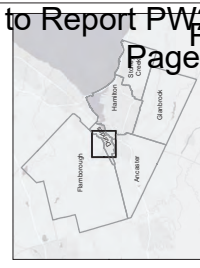
<b>Sanitary Sewer (S)</b>	1,544
<b>Storm Sewer (M)</b>	1,437
<b>Total # of Sanitary Chambers</b>	0
<b>Total # of Combined Chambers</b>	0
<b>Sanitary Lengths</b>	
Length of Sanitary Sewer	155,726 m
Length of Combined Sewer	99,105 m
<b>Total Length of Combined Sewers</b>	0 m
<b>CCTV Contractors Costs for Sewer &amp; Manhole Inspections</b>	\$1,290,000
<b>Cost for Storm Sewer CCTV Inspections</b>	300,000
<b>Cost for Sanitary Sewer CCTV Inspections</b>	200,000
<b>Cost for Combined Sewer CCTV Inspections</b>	N/A
<b>City Required Costs for Sewer &amp; Manhole Inspections</b>	\$510,000
<b>Cost for Storm Sewer CCTV Inspections</b>	\$130,000
<b>Cost for Sanitary Sewer CCTV Inspections</b>	\$110,000
<b>Cost for Combined Sewer CCTV Inspections</b>	N/A
<b>Total Costs for Sewer &amp; Manhole Inspections (Total, 25% Contingency)</b>	\$1,410,000
<b>City Required Costs for Manhole Inspections Only</b>	\$135,000
<b>Cost for Storm Chamber Inspections</b>	\$130,000
<b>Cost for Sanitary Chamber Inspections</b>	\$130,000
<b>Cost for Combined Chamber Inspections</b>	N/A

**DRAFT**

- Legend**
- Waterwaster Treatment Plant
  - Storm Chamber
  - Sanitary Chamber
  - Combined Chamber
  - Sanitary Pumping Station selection
  - Storm Sewer
  - Sanitary Sewer
  - Combined Sewer
  - Encroachment
  - City Boundary
  - Community Boundary

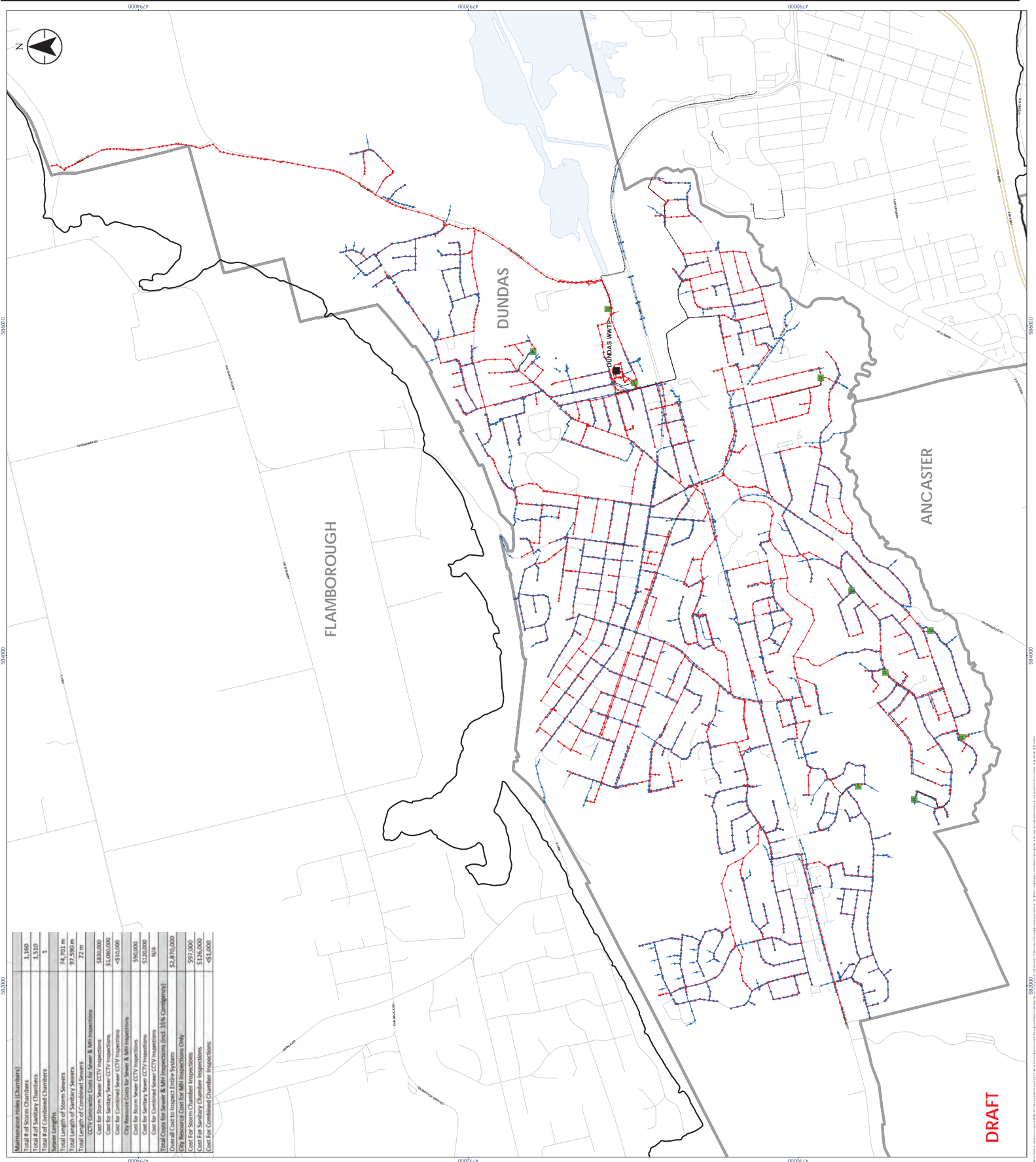


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 1. Coordinate System: NAD 1983 UTM Zone 17N  
 2. Base features produced under license with the Ontario Survey Commission and County of Cobourg  
 3. Source: City of Hamilton, 1985, Corridor (3) Operational  
 4. Source: City of Hamilton, 1985, Corridor (3) Operational  
 5. Source: City of Hamilton, 1985, Corridor (3) Operational



Project Location: City of Hamilton  
 Prepared by: [Name]  
 Client/Project: [Name]  
 M.E.C.P. Staff Order: [Number]  
 Figure No. 2.2  
 Title: Community Sewer Network  
 Dundas

**DRAFT**



Maintenance Holes (Chambers)	1,169
Total # of Sanitary Chambers	1,510
Total # of Combined Chambers	1
<b>Sanitary Lengths</b>	
Total Length of Storm Sewers	74,703 m
Total Length of Sanitary Sewers	97,590 m
Total Length of Combined Sewers	72 m
<b>CCTV Inspections (Sanitary &amp; Storm)</b>	
Cost for Sanitary Sewer CCTV Inspections	\$1,080,000
Cost for Combined Sewer CCTV Inspections	<\$10,000
<b>City Resources Costs for Sewer &amp; MHI Inspections</b>	
Cost for Storm Sewer CCTV Inspections	\$50,000
Cost for Sanitary Sewer CCTV Inspections	\$120,000
Cost for Combined Sewer CCTV Inspections	N/A
<b>Total Resources Costs for Inspections (incl. 35% Contingency)</b>	\$2,870,000
<b>City Resource Cost for MHI Inspections Only</b>	
Cost for Storm Chamber Inspections	\$97,000
Cost for Sanitary Chamber Inspections	\$126,000
Cost for Combined Chamber Inspections	<\$1,000

**DRAFT**

- Legend**
- Storm Chamber
  - Sanitary Chamber
  - Sanitary Pumping Station
  - Storm Sewer
  - Sanitary Sewer
  - Encroachment
  - City Boundary
  - Community Boundary

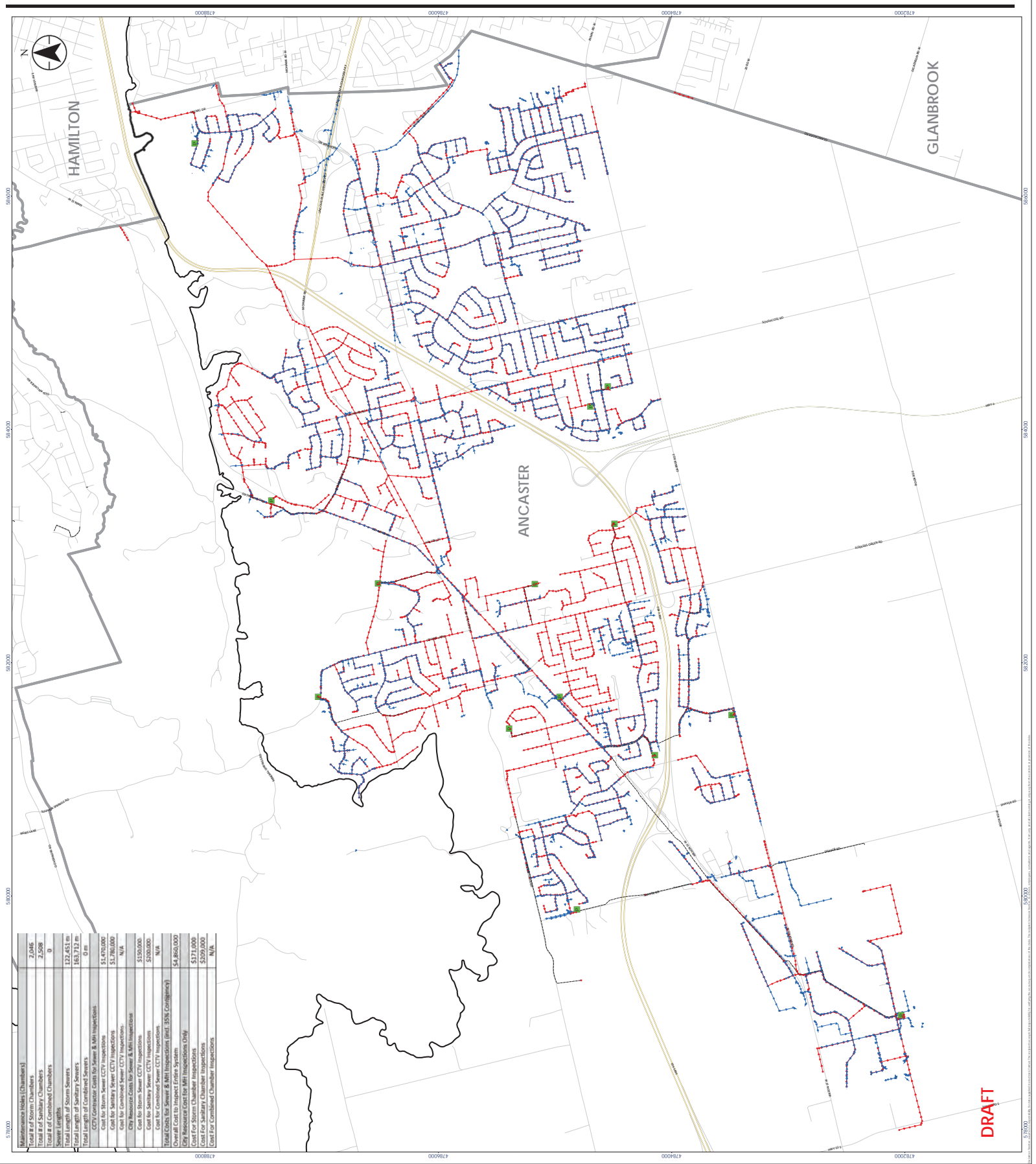
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1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Transportation and Infrastructure, © Queen's Printer, Ontario, 2018
3. Sanitary Sewer Chamber: En 1825, German, (© OpenStreetMap contributors and CC-BY-SA, Germany)



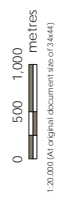
Project Location: City of Hamilton  
 Prepared by: [Name]  
 Client/Project: City of Hamilton  
 MEC# Split Order  
 Figure No.: 2.3  
 Title: Community Sewer Network  
 Ancaster

**DRAFT**

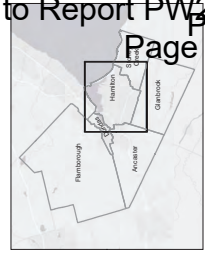


Maintenance Holes (Chambers)	2,045
Total # of Storm Chambers	2,508
Total # of Sanitary Chambers	0
Sewer Lengths	
Total Length of Storm Sewers	122,451 m
Total Length of Sanitary Sewers	163,712 m
Total Length of Combined Sewers	0 m
CCTV Chamber Costs For Storm & MH Inspections	\$1,470,000
CCTV Chamber Costs For Sanitary & MH Inspections	N/A
Cost For Combined Sewer CCTV Inspections	N/A
City Resource Costs For Storm & MH Inspections	\$150,000
Cost For Storm Sewer CCTV Inspections	\$100,000
Cost For Sanitary Sewer CCTV Inspections	N/A
Cost For Combined Sewer CCTV Inspections	N/A
Total (Storm & Sanitary) Inspections (incl. 35% Contingency)	\$4,860,000
City Resource Cost For MH Inspections Only	\$37,000
Cost For Storm Chamber Inspections	\$209,000
Cost For Sanitary Chamber Inspections	\$209,000
Cost For Combined Chamber Inspections	N/A

**DRAFT**

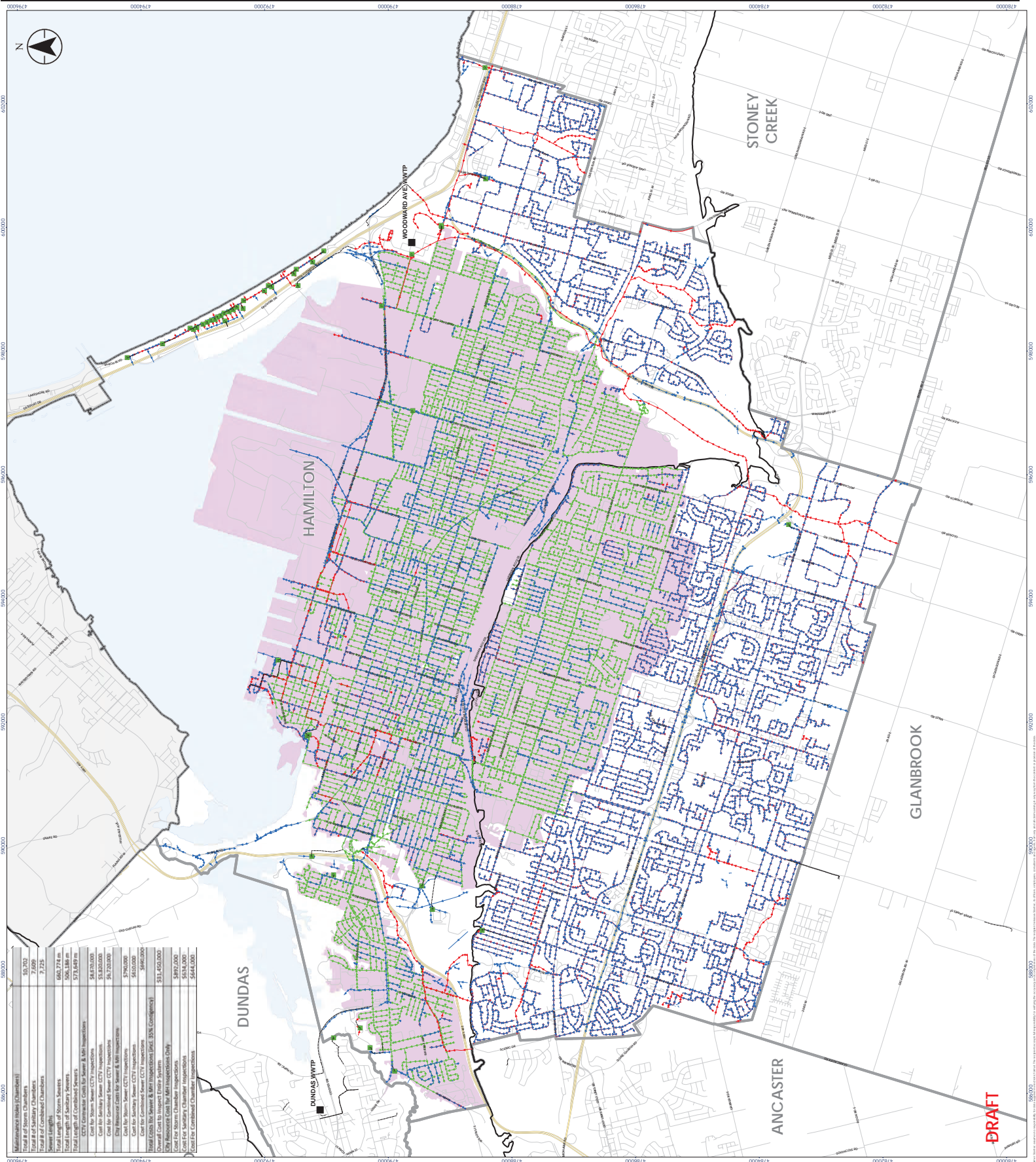


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Project Location: City of Hamilton  
 Prepared by: [Redacted]  
 Client/Project: City of Hamilton  
 MCEP Spill Order  
 Figure No.: 2.4  
 Title: Community Sewer Network  
 Hamilton

**DRAFT**



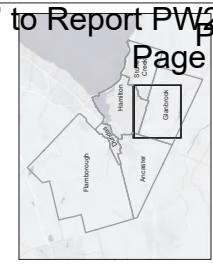
Population (City of Hamilton)	50,702
Total # of Storm Chambers	7,609
Total # of Sanitary Chambers	7,725
Total Length of Combined Sewers	651,374 m
Total Length of Sanitary Sewers	506,118 m
Total Length of Combined Sewers	573,649 m
Cost for Storm Sewer CCTV Inspections	\$4,870,000
Cost for Storm Sewer CCTV Inspections	\$5,720,000
Cost for Storm Sewer CCTV Inspections	\$790,000
Cost for Sanitary Sewer CCTV Inspections	\$400,000
Cost for Sanitary Sewer CCTV Inspections	\$400,000
Overall Cost to Inspect Entire System	\$51,450,000
Cost for Storm Chamber Inspections	\$487,000
Cost for Sanitary Chamber Inspections	\$487,000
Cost for Combined Chamber Inspections	\$444,000

**DRAFT**

- Legend**
- Storm Chamber
  - Sanitary Chamber
  - Sanitary Pumping Station
  - Storm Sewer
  - Sanitary Sewer
  - Easement
  - City Boundary
  - Community Boundary

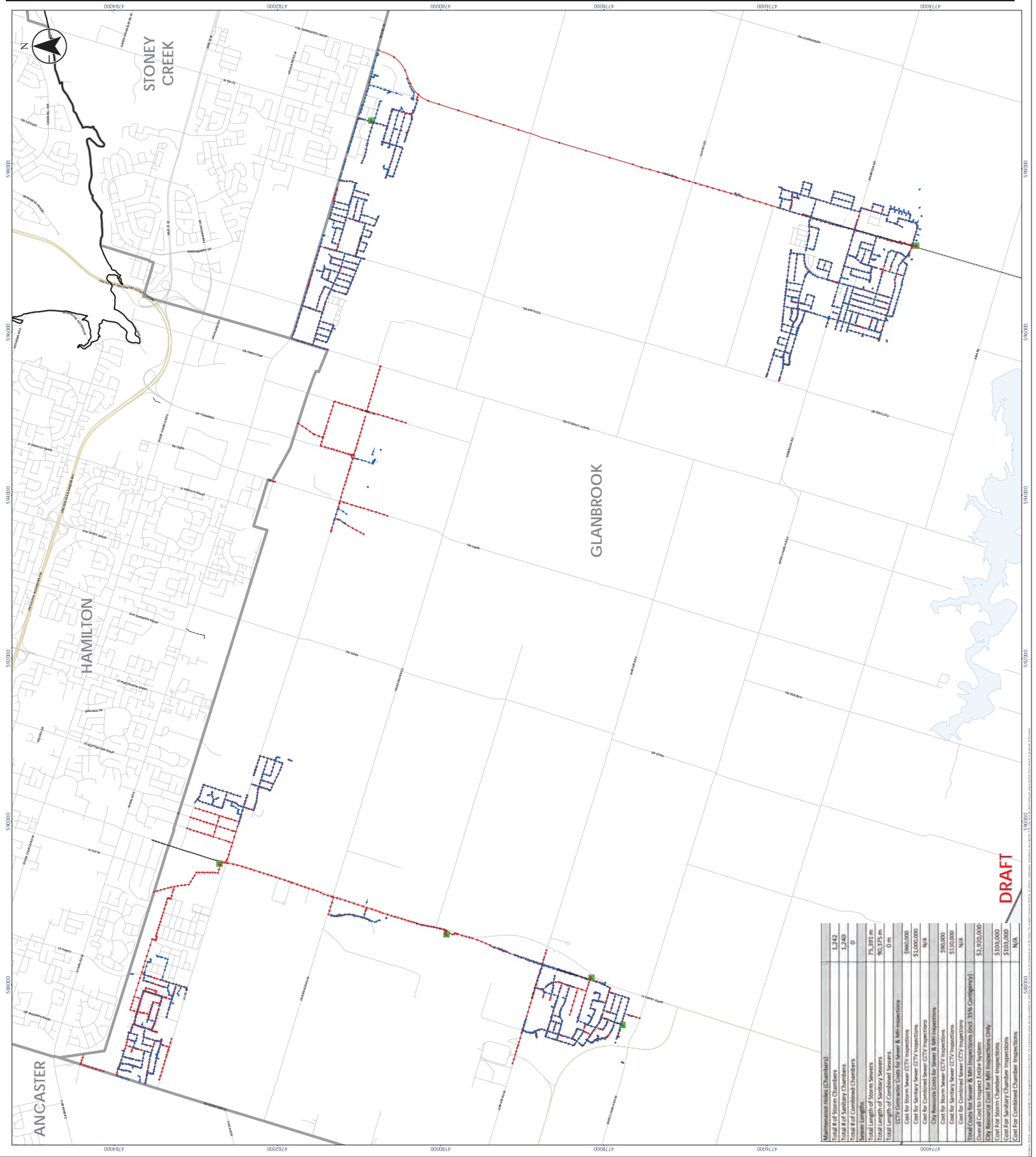


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Project Location: City of Hamilton  
 Prepared by: [Name]  
 Client/Project: [Name]  
 MCEP/Spec Order: [Number]  
 Figure No.: 2.5  
 Title: Community Sewer Network  
 Glanbrook

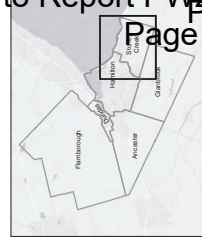
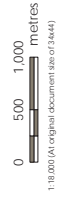
**DRAFT**



Manhole Holes (Chambers)	1,242
Total # of Storm Chambers	1,242
Total # of Sanitary Chambers	0
Total # of Combined Chambers	0
Storm Length	75,301 m
Sanitary Length	90,375 m
Total Length of Combined Sewers	0 m
CCTV Contingency Costs for Sewer & MH Inspections	\$960,000
Cost for Storm Sewer CCTV Inspections	\$1,000,000
Cost for Sanitary Sewer CCTV Inspections	N/A
Cost for Combined Sewer CCTV Inspections	N/A
Cost for Storm Sewer CCTV Inspections	\$960,000
Cost for Sanitary Sewer CCTV Inspections	N/A
Cost for Combined Sewer CCTV Inspections	N/A
Total Costs for Sewer & MH Inspections (incl. 35% Contingency)	\$2,970,000
Overall Costs to Inspect Entire System	\$103,000
Cost for Storm Chamber Inspections	\$103,000
Cost for Sanitary Chamber Inspections	N/A
Cost for Combined Chamber Inspections	N/A

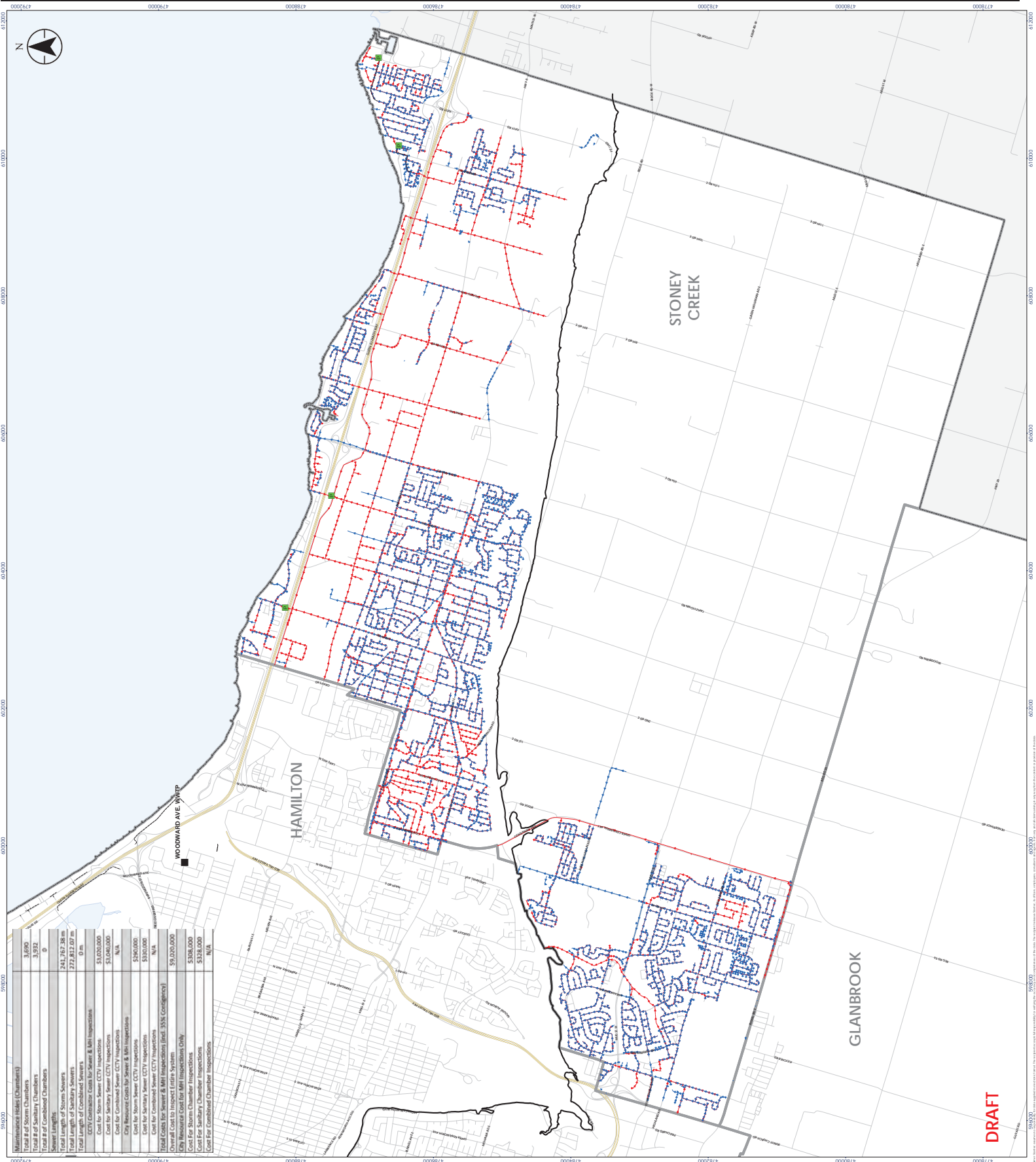
**DRAFT**

- Legend
- Wastewater Treatment Plant
  - Sanitary Pumping Station
  - Storm Sewer
  - Sanitary Sewer
  - Encasement
  - City Boundary
  - Community Boundary



Project Location: City of Hamilton  
 Prepared by: [Name]  
 Client/Project: [Name]  
 Drawing No.: [Number]  
 Figure No.: 2.6  
 Title: Community Sewer Network  
 Stoney Creek

**DRAFT**



Maintenance Holes (Chambers)	3,600
Total # of Sanitary Chambers	3,932
Total # of Combined Chambers	0
Sewer Length	241,767.38 m
Total Length of Sanitary Sewers	277,812.07 m
Total Length of Combined Sewers	0 m
Cost for Sanitary Sewer & MH Inspections	\$1,070,000
Cost for Combined Sewer & MH Inspections	N/A
Cost for Sanitary Sewer CCTV Inspections	\$1,040,000
Cost for Storm Sewer CCTV Inspections	\$50,000
Cost for Sanitary Sewer CCTV Inspections	\$50,000
Cost for Combined Sewer CCTV Inspections	N/A
Cost for Sanitary Sewer CCTV Inspections (incl. 55% Contingency)	\$1,090,000
Cost for Storm Sewer CCTV Inspections	\$50,000
Cost for Sanitary Sewer Chamber Inspections Only	\$300,000
Cost for Storm Chamber Inspections	\$320,000
Cost for Combined Chamber Inspections	N/A

**DRAFT**

**1 PURPOSE**

The redline function in WIMS allows users to indicate changes to water, stormwater, and sewer assets by placing a point or line on the map and adding text comments. This procedure outlines the process by which these changes are requested and updated.

**2 SCOPE**

This procedure applies to staff in HW that submit Redlining updates within WIMS.

Redlines submitted by staff are reviewed by the Water Information Systems (WIS) team and update e-mails are sent to users when assets have been added, edited, or retired. Redlines can also lead to the WIS team making changes in IPS (Hansen). Water and sewer assets displayed in WIMS are synchronized to reflect potential changes every evening

This process does not include alterations in the water and wastewater systems that require approvals, as per the following Level III procedures: DWQMS Approvals Process for Alterations of Drinking Water Systems PW-WW-P-004-001 and Procedure for Wastewater Approvals PW-WW-P-004-006.

**3 DEFINITIONS**

Asset	Tangible item or entity connected to City of Hamilton water, wastewater or stormwater infrastructure. These items may be part of the infrastructure operations that has potential or actual value to the City of Hamilton.
COH	City of Hamilton
CS&CO	Customer Service and Community Outreach Section
Hamilton Water (HW)	Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.



IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
WD&WWC	Water Distribution and Wastewater Collection System
WIMS	Water Information Management System
WIS	Water Information Systems unit of CS&CO

**4 RESPONSIBILITY**

4.1 Sectional Managers

- Ensure that staff follow this procedure and are trained on this procedure

4.1.1 Senior Spatial Systems Application Analyst, Asset Management Application Technologist, Asset Management Application Specialist, WIS

- Responsible to understand this procedure and ensure that this process is completed when required

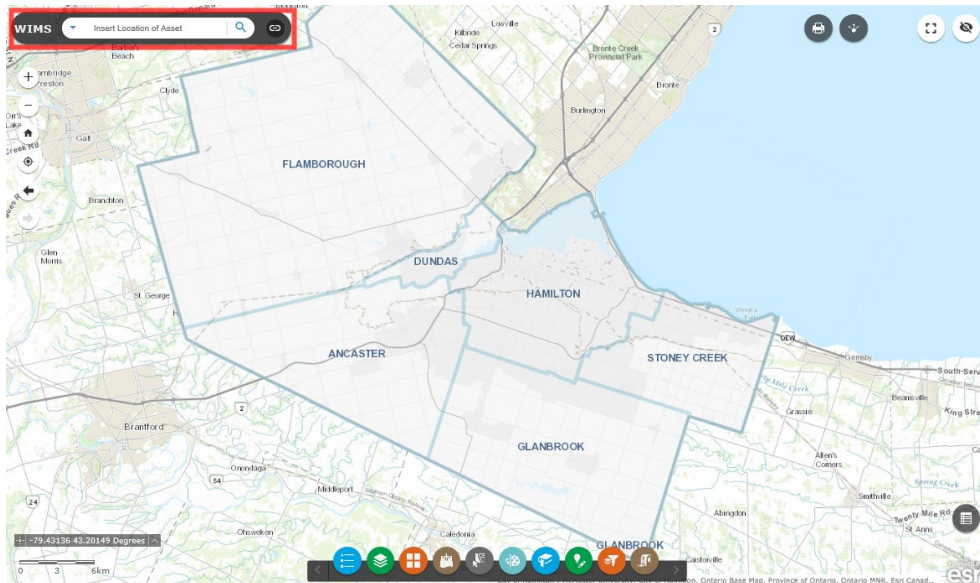
4.2 All HW WIMS end users

- Submit redlining points in WIMS to indicate changes to water and sewer assets

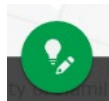
**5 PROCEDURE**

5.1 Directions

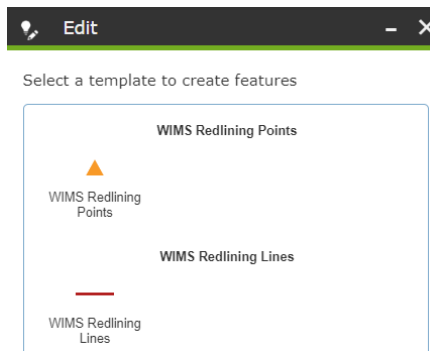
1. To begin the redline process, open [WIMS](#).
2. Navigate to the location that requires changes by searching for an address or asset using the indicated widget or by panning and zooming the map.



3. Click the Edit widget on the bottom toolbar.



4. Select WIMS Redlining Points or WIMS Redlining Lines from the Edit pop-up.



5. Click on the map to add a point. (Line can also be used with multiple points)

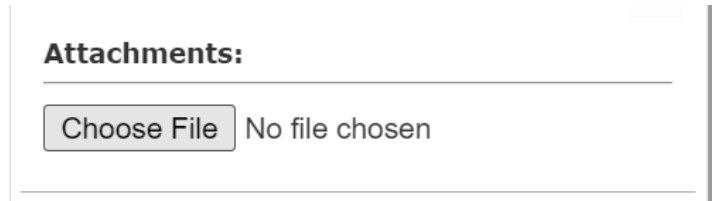
6. Enter a USER\_NAME, ASSET\_INFO and COMMENTS into the first three boxes of the WIMS Redlining pop-up.

**USER\_NAME** – User’s name indicating who is requesting the change. First initial and last name is acceptable. User name may be used to contact the requestor for more details.

**ASSET\_INFO** – Asset identifier (i.e. AN16V042) or type of asset that requires a change. If indicating multiple changes with one redline, multiple asset ID's can be included here.

**COMMENTS** – Explanation of the required changes.

7. Staff can also choose to upload an attachment near the bottom of the editing window.



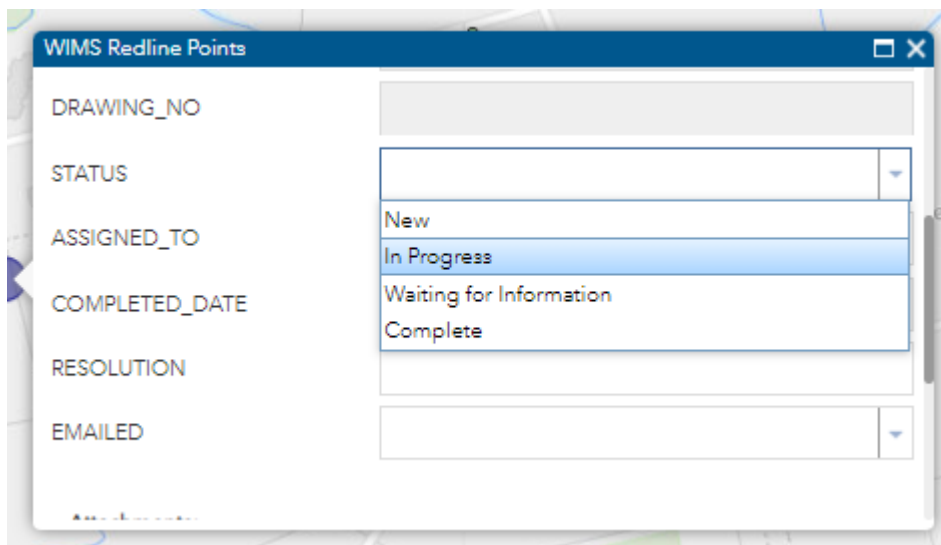
8. Click 'Save' to submit the redline.
9. To add another redline, repeat steps 5-8. If redlining is complete, click the 'x' in the Edit pop-up to dismiss the tool.

## 5.2 Directions to Edit an Existing Redline

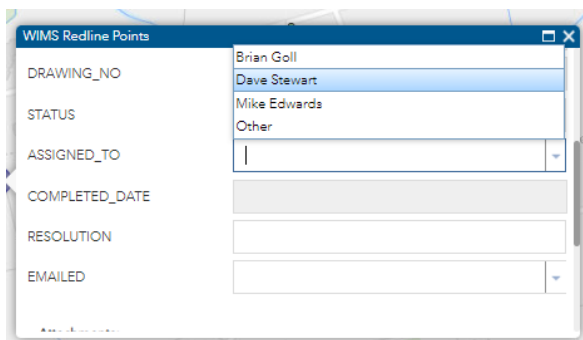
1. Navigate to an existing redline location.
2. Click the redline point on the map to view a pop-up containing COMMENTS, ASSET\_INFO and USER\_NAME.
3. Click the menu option in the pop-up and select Edit to make changes to COMMENTS, ASSET\_INFO and/or USER\_NAME.
4. Click 'Save' to submit the updated redline.
5. Staff will receive an email from a WIS member upon completing redline actions.

## 5.3 WIS

1. Navigate to the following:  
<https://hamiltonwater.maps.arcgis.com/apps/webappviewer/index.html?id=f6b472f2135246dc9f358d1140919567> using your HW AGOL account or tap into the redline layers via the corporate database in order to make edits (GEODBA.WIMS\_REDLINE\_POINTS and GEODBA.WIMS\_REDLINE\_LINES)
2. Select a redline to review.
3. Update the status field accordingly.



4. Fill in the "Assigned to" field



5. Review the request and make appropriate actions. Some back and forth communications may be necessary to ensure interpretation is correct.

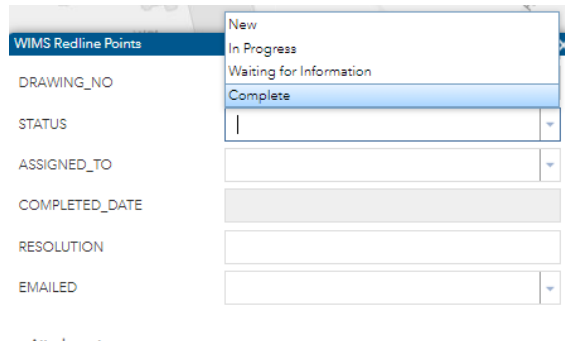
6. Send email to redline requestor that the redline has been completed. Details/ snapshots may be included if needed.

7. Add resolution details if necessary.

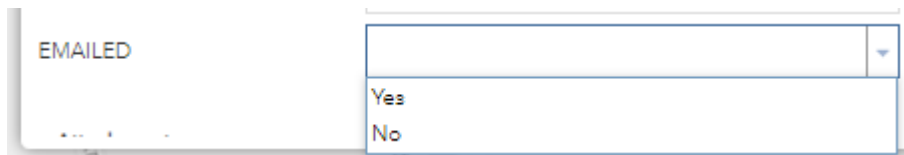


8. Change status to "Complete". This will auto trigger the completed date to be filled in.

9. This task is actioned on a weekly basis.



10. Change "Emailed" field to "Yes"



5.4 Notes

1. All redlines are stored and kept within the redline layers.
2. Completed redlines are filtered out of WIMS.
3. For efficiency purposes a batch editor was added to our internal redline app.


6 ASSOCIATED DOCUMENTS

- [Transfer of Assets PW-WW-P-004-003](#)
- [DWQMS Approvals Process for Alterations of Drinking Water Systems PW-WW-P-004-001](#)
- [Procedure for Wastewater Approvals PW-WW-P-004-006](#)
- [BCOS + DWQMS Water Main - Dead end Flushing Procedure PW-WW-DC-WD-P-011-022](#)
- [Operation – Water Valves and hydrants PW-WW-DC-WD-P-011-002](#)

**BCOS software tracks the revision history of document.**



# COMMUNICATION UPDATE

<b>TO:</b>	Mayor and Members City Council
<b>DATE:</b>	June 29, 2023
<b>SUBJECT:</b>	Update: Provincial Officer's Order #1-142403769 - HW.23.05
<b>WARD(S) AFFECTED:</b>	City Wide
<b>SUBMITTED BY:</b>	Nick Winters Director, Hamilton Water Public Works Department
<b>SIGNATURE:</b>	

The City of Hamilton was served with a Provincial Officer's Order #1-142403769 (Order) from the Ontario Ministry of the Environment, Conservation and Parks (the Ministry) related to the Burlington Street spill that occurred on November 22, 2022. The Order can be found on the City's Provincial Orders webpage ([here](#)).

In total, there were eight (8) Items within the Ministry's Order for Hamilton Water to address, which have all now been fulfilled by staff and submitted to the Ministry.

Hamilton Water staff previously completed Items No. 1 through 4 of the Order in February and March 2023 and all requirements of Items No. 5 and 6 in May 2023. This update is to advise that as of today, staff have fulfilled all of the actions required of Items No. 7 and 8 of the Order. These were the final two (2) Items to be submitted to the Ministry as requested in the Order.

Item No. 7 required the City to document the City's programs and processes for identifying spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton sewer system. This includes the program enhancements identified on the findings of Order Items No. 3 and 5 in a suitable operating procedure, guidance document or report.

Item No. 8 required the procedures, guidance documents and/or reports to be submitted to the Ministry by June 30, 2023. Please refer to Appendix "A" and/or the City's Provincial Orders webpage ([here](#)), to review the full list of documents provided.

Hamilton Water plans to submit a Recommendation Report for Council consideration in September 2023 with an implementation plan for the program enhancements identified on the findings of Order Items No. 3 and 5. This report will be presented to Public Works Committee and it will identify resource requirements to implement the enhanced programs and an analysis of the legal and financial implications.

Should you have any questions about this communication update please feel free to contact me via email at [Nick.Winters@hamilton.ca](mailto:Nick.Winters@hamilton.ca) or at Extension 1474.

## **APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Communication Update HW.23.05 - Documents to Address Items No. 7 and 8 of MECP Order No. 1-142403796

## **1 INTRODUCTION**

The following are programs and processes for identifying Spill(s) and unauthorized discharges of untreated sewage within the City of Hamilton sewer system, including program enhancements identified by addressing the items in Provincial Officers' Order Number 1-142403769 dated January 18, 2023. Note that the below programs include associated documents that support the programs.

## **2 SAMPLING & MONITORING**

### 2.1 Dry Weather Sampling (PW-WW-P-013-012)

Note: Release of procedure is pending council approval for resources.

### 2.2 [Hamilton Water Surface Water Quality Program Framework](#)

## **3 MAINTENANCE**

### 3.1 [Infrastructure Maintenance, Rehabilitation and Renewal \(PW-WW-P-026-001\)](#)

### 3.2 [Updating Asset Information Using WIMS Red Lining \(PW-WW-P-011-014\)](#)

## **4 SPILL RESPONSE**

### 4.1 [Spills Response Notification, Coordination and Corrective Actions \(PW-WW-P-12-003\)](#)

## **5 COMMUNICATIONS**

### 5.1 [External Regulatory and Other Communications \(PW-WW-P-008-002\)](#)

### 5.2 [Process for Issuing External Communications with the Public \(PW-WW-P-008-10\)](#)

### 5.3 Sewage Spills Communication Plan (PW-WW-P-012-018)

Note: Release pending.

**BCOS software tracks the revision history of document.**



## 1 PURPOSE

To describe how stormwater collection system dry weather sampling testing and monitoring is undertaken. This procedure also describes how results are communicated, as required, and how regulatory reporting requirements are met.

## 2 SCOPE

This procedure applies to the Hamilton Water Division. The procedure outlines the process to conduct dry weather in-pipe sampling for the stormwater collection system.

## 3 DEFINITIONS

CCC	Customer Contact Centre (Corporate), the 24-hour call centre for the City of Hamilton: 905-546-CITY (2489)
Chain of Custody Form	Form accompanying a sample that contains all pertinent information about the sample ensuring that a sample is traceable from collection through analysis
CHEL	City of Hamilton Environmental Laboratory
Combined Sewer Overflow (CSO)	A discharge to the environment from a combined sewer system that usually occurs as a result of a precipitation event when the capacity of the combined sewer is exceeded. It consists of a mixture of sanitary wastewater and stormwater runoff and often contains high levels of floatables, pathogenic microorganisms, suspended solids, oxygen-demanding organic compounds, nutrients, oil and grease, toxic contaminants and other pollutants.
C&R	Compliance and Regulations Section
Cross-Connection Control Project (CCCP)	Initiatives designed to locate and eliminate crossed sewer pipes that are discharging sewage into the City of Hamilton's storm sewer system, thus allowing that sewage to enter the harbour untreated
CS&CO	Customer Service and Community Outreach Section
CSG	Compliance Support Group

ECA	Environmental Compliance Approval
EME	Environmental Monitoring & Enforcement Unit
Final Approved Lab Reports	Analytical results provided to CHEL clients
Grab Samples	Discrete samples representing characteristics at a particular time
Hamilton Water (HW)	The Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton
IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement
LIMS	Laboratory Information Management System
MOE	Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP))
Operating Authority	Staff within the Hamilton Water Division who are responsible for the operation, maintenance and providing support services to the COH DWSs and WWSs (including water treatment and distribution)
PO	Plant Operations Section
PWCS	Public Works Department- Engineering Services Division- Construction Services

Regulators/Regulatory Bodies	Regulatory bodies which oversee activities, products and services of the HW Division including Ministry of the Environment (MOE), Ministry of Labour (MOL), Public Health Services (PHS) and others
SAC	MOE, Spills Action Center (1-800-268-6060)
WD&WWC	Water Distribution and Wastewater Collection Section
WM	Watershed Management group in Hamilton Water.

#### **4 RESPONSIBILITY**

##### **4.1 Owner (Stormwater Systems)**

- Oversee the sampling, testing and monitoring of the City of Hamilton’s Drinking Water and Wastewater Systems to ensure that regulatory requirements are met.
- Provide resources as required for sampling, testing and monitoring.

##### **4.2 CHEL**

- Complete testing and analysis of collected samples. CHEL may conduct the analysis or subcontract the analysis as required.
- Record analytical results from analyzed samples.
- Provide final analytical reports to the Operating Authority.
- Maintain records as per [Document and Records Control procedure PW-WW-CR-EL-P-010-P-010](#).

##### **4.3 WD&WWC Section**

- From time to time on an as needed basis, will support EME sample collection where complex sampling or complex traffic control situation exist.

##### **4.4 CSG**

- Provide analytical results and or other related information as may be requested by MOE inspectors.

##### **4.5 EME**

- Sampling plans, schedules, sampling, reporting, and spills response.

## **5 PROCEDURE**

### **5.1 Sampling Requirements**

- 5.1.1 Sampling schedule (to be developed).
- 5.1.2 Sampling location list (to be developed).
- 5.1.3 The list of sample analytes and trigger conditions for spill investigation related to this procedure will be maintained and updated from time to time by EME.
- 5.1.4 The In-Pipe Inspection and Sampling program operates in dry weather only.

### **5.2 Dry Weather Definition**

- 5.2.1 Dry Weather for the In-Pipe Storm Sewer Inspection and Sampling Program, is defined as:
  - 5.2.1.1 24 hours following a 10 mm or less precipitation event and/or no significant snow melt (in keeping with Hamilton Water EME dry weather definition for permits); and
  - 5.2.1.2 48 hours following a 10.1mm up to 14.9 mm precipitation event and/or no major snow melt; and
  - 5.2.2 72 hours following a 15 mm or greater precipitation event and / or following significant snow melt event.

### **5.3 Inspection of Storm Sewer Outfalls and Maintenance Holes**

- 5.3.1 When inspecting a storm sewer outfall and/or maintenance hole (MH), document all observations of flow, no flow, debris build up at the base of the outfall, staining, and any odours.
- 5.3.2 Take a photograph of the full outfall pipe, if safe to do so.
- 5.3.3 If vegetation or tree build up is obstructing the outfall, or erosion around the outfall structure has occurred, contact the Wastewater Collection team to rectify.
- 5.3.4 If there is **no flow** from the outfall, document that there is no flow on the specific day and time for the Asset ID and move upstream to inspect the first accessible upstream MH.
- 5.3.5 If there is flow at the outfall or within an upstream MH, document the following findings:

- Date
- Asset ID number
- Staff member's name
- Street name: park name of MH location (add additional reference point if possible)
- Non-natural odours (e.g., sewage, chemicals, raw materials)
- Vegetation obstruction/excessive vegetation
- Erosion around outfall
- Cloudiness
- Colour
- Foam
- Suds (non-natural)
- Sanitary waste
- Orange staining
- Oily sheen
- Oil separated layers
- Floatables
- Algae
- Approximate flow rate
- Time sample was collected

5.3.6 Once the outfall has been inspected, sampled (if flow observed), and all documentation completed, proceed to the next upstream MH for inspection and sampling, if required. Continue to systematically inspect next upstream storm MH in dry weather, to complete the storm sewer outfall catchment area.

#### **5.4 Documenting Lake Level Influence on upstream Maintenance Access Holes**

5.4.1 Documenting the influence of Lake levels on the storm sewer system is important to establish baseline conditions at submerged outfalls. This documentation will create a baseline record. It is understood that over time, outfalls and MHs influenced by lake water, may change depending on Lake Ontario water levels. Due to changing lake levels, inspections will begin at the visible Outfalls for this Program and will then move upstream to the MH. From the submerged storm sewer outfalls, the first upstream MH influenced by Lake water, is to be documented as such and then work backwards, upstream, inspecting, and documenting conditions in each upstream MH. This upstream MH inspection will continue until a MH, not influenced by lake

water levels, can be properly inspected and sampled, if flow is present.

## **5.5 Non-Lake water influence MH Inspection and Sampling**

5.5.1 Once the first, non-Lake water influenced, upstream storm sewer MH from a submerged CSS storm sewer outfall catchment area is determined, it is to be inspected and where it is found to contain a flow, in dry weather, it shall be sampled, and observations documented.

- Date
- Asset ID number
- Staff member's name
- Street name: park name of MH location (add additional reference point if possible)
- Non-natural odours (e.g., sewage, chemicals, raw materials)
- Vegetation obstruction/excessive vegetation
- Erosion around outfall
- Cloudiness
- Colour
- Foam
- Suds (non-natural)
- Sanitary waste
- Orange staining
- Oily sheen
- Oil separated layers
- Floatables
- Algae
- Approximate flow rate
- Time sample was collected

## **5.6 In-Pipe Inspection Checks for Non-Lake influenced Storm Maintenance Access Holes Procedure**

5.6.1 Assess the following Testing, Analysis & Recording of Results

- Is there flow in the Maintenance access Hole?
- Is there the presence of detectable odours of sewage, chemicals, or raw

materials within or emanating from of the MH, regardless of flow or absence of flow in the storm sewer?

- Record sewer conditions and observations
- Take photograph of internal MH condition

5.6.2 If no observations are made of flow or odours, document these conditions; continue to systematically inspect next upstream storm MH in dry weather, to complete the storm sewer outfall catchment area.

## **5.7 In-Pipe Inspection and Sampling**

5.7.1 If a flow is present in the storm sewer MH, in dry weather, samples are to be collected.

5.7.2 As this program will have iterative improvements, regularly confirm with Program Supervisor the specific samples to be collected.

5.7.3 Collect and preserve samples as per [City of Hamilton Environmental Laboratory Sampling Protocols, PW-WW-CR-EL-V-011](#).

## **5.8 Determining if the flow is a spill**

5.8.1 An observatory clear and known volume sample jar should be used to collect a sample from the storm sewer MH flow to estimate the flow rate; and, observe for any olfactory observations of non-natural odours This sample bottle will not be submitted to the Laboratory for analysis.

5.8.2 Should the initial observatory clear jar sample show cloudiness, colour, oily sheen, oil separated layers, foam, suds (non-natural foam determined from shake test), sewage odours, non-natural odours, suspended material, or solids:

- Take a photo of the MH condition
- Take a grab sample to be analyzed for the In-Pipe Program parameters
- Photograph filled sample bottles, which are lined up
- Document observations, time of sampling and sampling actions before proceeding to upstream Maintenance access hole
- Proceed to trace upstream to find the source in dry weather

5.8.3 When Source Not Found:

5.8.3.1 When working in the office to review sample data of flow in maintenance access

hole with no source found, determine if sample parameter trigger conditions, per above, were detected. Add to database that flow was detected, and whether trigger exceedances were recorded.

- 5.8.3.2 When no trigger exceedances of the program parameters occur – return to inspecting the next upstream maintenance access hole in the catchment area and inspect maintenance access hole and sample if flow is present and continue moving upstream inspecting and sampling as required.
- 5.8.3.3 When exceedances are detected return to maintenance access hole displaying exceedances and check for flow again and if present collect a sample for comparison with original sample and then attend upstream maintenance access hole and determine if flow is present and if so, collect sample and trace upstream to find the source.
- 5.8.4 When Source is found from tracing and deemed a spill under the Hamilton Sewer Use Bylaw and other Legislation:
  - 5.8.4.1 Report to MOE Spills Action Centre (SAC) at 1-800-565-4923 immediately.
  - 5.8.4.2 Report to the City Spill Reporting Centre (905-540-5188) for spill response initiated through Hamilton Water.
  - 5.8.4.3 Spill containment and cleanup may be required along with an updated report to MOE Spills Action Centre.
  - 5.8.4.4 Information is recorded in the database of spill found (add date) contributing to source of exceedance(s).
  - 5.8.4.5 Following spill remediation and clean-up and sampling data review return to catchment area and re-check that the maintenance access hole which had flow deemed as a spill to ensure no other flows exist and to confirm the spill had been the source of the observed flow. If flow exists, repeat 5.7.
- 5.8.5 Should the flow be traced to be between two maintenance access holes, (meaning there is no flow in upstream maintenance access holes, but there is flow in two downstream MHs), then this is to be documented in the database and a request for CCTV work is to be made to determine if the flow is from damaged infrastructure or unknown connection in between the two maintenance access holes.
  - 5.8.5.1 Following CCTV work and conclusion that infrastructure repairs are required and made, the master tracking spreadsheet is updated, and the downstream MH is re-inspected to confirm if the flow has ceased. If flow exists upon repairs being made,



this is likely indicative of another event occurring and the steps in 5.8 are repeated.

## 5.9 Initial In-Pipe Sampling Program Spill Investigation Trigger Conditions

5.9.1 Sample analytes will evolve and change over the life of this program and will be maintained in EME by the supervisor of this program. The initial analytes and trigger conditions are as follows:

5.9.2 Table of initial analytes:

Parameter	Rationale	Trigger Condition
Metals Group	Representative of ICI discharges and are within Hamilton's Sewer Use Bylaw & meets definition of OWRA Sewage	Storm parameter exceedances of Hamilton Sewer Use Bylaw 14-090 limits  Presence of other metals without storm limits that should not be in the storm sewer and potentially a spill
Total Mercury	Recent findings of dental practices in Hamilton using low pH cleaners and solubilizing Mercury and meets definition of OWRA Sewage	Greater than 0.05 ug/L (microgram per Litre), which is the detection limit for Mercury  Mercury should not be present in the storm sewer and is an indicator of a spill
Caffeine	Caffeine is only found in Human Sewage	Presence of Caffeine at or above the analytical detection level of 5 ug/L
Biochemical Oxygen Demand	Indicator of sewage	exceeds 15 mg/L. A number of Greater Toronto Area municipalities have this limit in their storm section of Sewer Use Bylaws and this would be an indicator of a sewage spill
E. coli	Indicator of sewage and animals	Over 3400 counts/100 ml to account for animal sewage
pH	Representative of ICI discharges and within Hamilton the Sewer Use Bylaw and meets definition of OWRA Sewage	Exceedance of the Hamilton Sewer Use Bylaw 14-090 storm sewer Limits and is an indicator of a spill.

O-Phosphate	Indicator of potable water leak due to use of substance for lead control in watermains and an opportunity to find and fix nonrevenue water losses	Presence of O-Phosphate can indicate a leak of potable water or contributions from fertilizers or ICI discharges
Chloride	Indicator of saltwater pool discharge, road salt, and industrial dischargers and meets definition of OWRA Sewage	Greater than 1500 mg/L to detect industrial discharges, excessive de-icing salt or saltwater pool discharges
Temperature	Indicator of sewage, spill, or potable water leak and meets definition of OWRA Sewage	Greater than 40°C. A number of Greater Toronto Area municipalities have this limit in their storm section of Sewer Use Bylaws and would be indicative of Sewage under OWRA

## 5.10 Grab and Composite Samples

5.10.1.1 CHEL analyzes grab and composite samples as required. CHEL may also subcontract the analysis of samples.

5.10.1.2 CHEL records analytical data through LIMS.

## 5.11 Communication of Results

5.11.1.1 CHEL provides grab and composite sample analytical results to the Operating Authority through the provision of Final Approved Lab Reports.

5.11.1.2 Analytical results will be provided to MOE Inspectors upon request.

## 5.12 Storage of Records

5.12.1 All records will be controlled as per the [Control of Records Procedure, PW-WW-P-016-001](#).

## 6 ASSOCIATED DOCUMENTS

- [City of Hamilton Environmental Laboratory Sampling Protocols, PW-WW-CR-EL-V-011](#)
- [Document Control and Records Control PW-WW-CR-EL-P-010-P-010](#)
- Sampling Schedule [to be developed]
- List of Sample Locations [to be developed]

**Intelix software tracks the revision history of document.**

## 1 PURPOSE

The purpose of this procedure is to describe how the Hamilton Water Division implements infrastructure maintenance, rehabilitation and renewal programs. Infrastructure maintenance, rehabilitation and renewal depends on the condition of infrastructure, the life-cycle costs of various rehabilitation options, redundancy of equipment and the related operational risk.

## 2 SCOPE

This procedure provides a generic overview of infrastructure maintenance, rehabilitation and renewal programs within Hamilton Water. Connections to other City Departments will be highlighted in this procedure (e.g., AM of Engineering Services).

## 3 DEFINITIONS

AM Section	Asset Management Section of the Engineering Services Division
ArcGIS Online Application	ArcGIS Online Application is a cloud-based mapping and analysis solution used to make maps, analyze data, and to share and collaborate information
Asset	<p>Item, thing or entity controlled by Hamilton Water related to water, wastewater and stormwater operations that has potential or actual value to the City of Hamilton.</p> <p>Value can be tangible or intangible, financial or non-financial, and includes consideration of risks and liabilities. It can be positive or negative at different stages of the asset life. Physical assets usually refer to equipment, inventory and properties owned by the City. Physical assets are the opposite of intangible assets, which are non-physical assets such as leases, brands, digital assets, use rights, licences, intellectual property rights, reputation or agreements. A grouping of assets referred to as an asset system could also be considered as an asset.</p>
Asset Management	Integrated approach involving planning, engineering and finance to effectively manage existing and new municipal infrastructure in a sustainable manner to maximize benefits, reduce risk and provide satisfactory levels of service to the community user in an environmentally and ecologically responsible manner.

Breakdown Emergency Maintenance	Emergency activities undertaken to restore the operation or function of an asset that has ceased to operate, or for which continued operation presents an unacceptable risk.
Breakdown Scheduled Maintenance	Planned activities undertaken to restore the operation or function of an asset that has ceased to operate, or for which continued operation presents an unacceptable risk.
CD	Capital Delivery Section
CMMS	Computerized Maintenance Management System
Corrective Emergency Maintenance	Emergency maintenance activities undertaken to restore the degraded operation or function of an asset or correct an identified deficiency before a loss of operation or function occurs (see table below).
Corrective Scheduled Maintenance	Planned maintenance activities undertaken to restore the degraded operation or function of an asset or correct an identified deficiency before a loss of operation or function occurs (see table below).
COH	City of Hamilton
CS&CO	Customer Service & Community Outreach Section
CSO Facilities	Includes Combined Sewer Overflow tanks and active control structures within the combined sewer system (e.g. motorized and non-motorized gates, stop logs, sensors and monitoring equipment).
DWQMS	Drinking Water Quality Management System
DWS	Drinking Water System
EAM	Enterprise Asset Management
ECA	Environmental Compliance Approval
Emergency Maintenance	Maintenance activities for a breakdown that requires immediate response. This may include declaring COH Policy#10 for emergency purchasing.
Engineering Services (ES)	The Engineering Services Division of the Public Works Department
Horizontal Infrastructure	Infrastructure controlled and maintained by the WDWWC Section, with capital rehabilitation and renewal services supplied by Engineering Services. For example, it includes watermains, valves, hydrants, trunk sewers, force mains, gravity mains, and storm drains.

<b>Hamilton Water (HW)</b>	<b>Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.</b>
Infrastructure	Interconnected structural elements that provide the framework for supporting the operation of the DWS including buildings, workspaces, process equipment, hardware and software and supporting services such as transport or communication.
Infrastructure Renewal	Replacement of infrastructure
Infrastructure Rehabilitation	Any process of repairing or refurbishing infrastructure that returns the infrastructure to near-original condition and performance (e.g. concrete-lining of pipes, flushing watermains).
IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
<b>Maintenance</b>	<b>All processes required to keep equipment operational. This includes scheduled maintenance (breakdown, corrective, preventative and predictive) and emergency maintenance (breakdown or corrective).</b>
<b>MOE</b>	<b>Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP))</b>
<b>MDWL</b>	<b>Municipal Drinking Water Licence – Drinking Water System Licence issued by MOE</b>
O&M	Operations and Maintenance Manual
<b>Owner (DWS/WWS)</b>	<b>Every person who is a legal or beneficial owner of the City's DWSs and WWSs. Since the City's DWSs and WWSs are publicly owned and operated, the Mayor and Council of the City of Hamilton have been identified as Owners of the City's DWSs and WWSs.</b>
ORO	Overall Responsible Operator
<b>Predictive Maintenance</b>	<b>Planned maintenance actions aimed at the prevention of</b>

	breakdowns and failures (see table below).
Preventative Maintenance	Planned maintenance actions aimed at the prevention of breakdowns and failures. Includes performance-based maintenance. Includes routine or minor maintenance or inspection tasks to increase reliability of assets (see table below).
Project Wise	Electronic project management software used to keep project information by divisions throughout the City of Hamilton
PMATS	Plant Maintenance and Technical Services Section
PO Section	Plant Operations Section
RTC	Real Time Control
SCADA	Supervisory Control and Data Acquisition
Scheduled Maintenance	Activity that is planned, documented, and scheduled to reduce downtime, breakdowns or failures.
SMR	Systems Management Representative (for the BCOS, DWQMS, and WWQMS Systems) - Manager of Compliance and Regulations Section. Equivalent to QMS Representative as described in the DWQMS Standard.
Top Management (DWQMS/WWQMS)	The DWQMS and WWQMS Top Management has been identified as: the General Manager of Public Works and the Director of Hamilton Water Division.
Unit	Operational areas of sections within the Hamilton Water Division
Vertical Infrastructure	Infrastructure controlled by the PO Section and maintained by the PMATS Section including the water and wastewater treatment plants, communal well uptake and treatment systems. Although part of the water distribution and collection system, the PO and PMATS Sections are also responsible for water booster stations, storage reservoirs, water towers and re-chlorination systems (referred to as Outstations). Similarly, PO and PMATS Sections are responsible for CSO tanks, RTC structures, leachate stations and pump stations within the wastewater collection systems.
WTP	Woodward Water Treatment Plant
WDWWC	Water Distribution & Wastewater Collection Section

Work Order (PO/ WDWWC)	Generated by CMMS to schedule and record maintenance and breakdown activities
Wastewater System (WWS)	Any works for the collection, transmission, treatment and disposal of sewage or any part of such works but does not include plumbing.
WUP	Woodward Upgrades Project
WWWS	Water & Wastewater Systems Planning Section
WWQMS	Wastewater Quality Management System

**Comparison of definitions for Types of Maintenance**

	<b>Emergency</b>	<b>Scheduled</b>
<b>Breakdown</b>	Emergency maintenance activities that requires immediate response. These activities are undertaken to restore the operation or function of an asset that has ceased to operate, or for which continued operation presents an unacceptable risk. This may include declaring COH Policy#10 for emergency purchasing.	Planned activities undertaken to restore the operation or function of an asset that has ceased to operate, or for which continued operation presents an unacceptable risk.
<b>Corrective</b>	Emergency maintenance activities that requires immediate response. These activities are undertaken to restore the degraded operation or function of an asset or correct an identified deficiency before a loss of operation or function occurs. This may include declaring COH Policy#10 for emergency purchasing.	Planned maintenance activities undertaken to restore the degraded operation or function of an asset or correct an identified deficiency before a loss of operation or function occurs.
<b>Preventative</b>	NA	Planned maintenance actions aimed at the prevention of breakdowns and failures. Includes performance based maintenance. Includes routine or minor maintenance or inspection tasks to increase reliability of

**Predictive** NA

assets. Maintenance may include equipment downtime.

Planned maintenance actions aimed at the prevention of breakdowns and failures. Maintenance does not result in equipment downtime.

## 4 RESPONSIBILITY

### 4.1 Owner (DWS/WWS)

- Ensure adequate resources for implementation of maintenance, rehabilitation and renewal programs for water, wastewater and stormwater infrastructure.
- Review infrastructure maintenance, rehabilitation and renewal programs including the evaluation of their effectiveness as reported by the Operating Authority.

### 4.2 Top Management

- Provide the Owner with information regarding the maintenance, rehabilitation and renewal programs including the evaluation of their effectiveness as reported by the Operating Authority.
- Ensure the adequacy of infrastructure maintenance, rehabilitation and renewal programs to support the continued delivery of safe, clean drinking water to COH customers, environmentally safe collection and processing of wastewater, and to ensure the health and safety of HW staff.
- Communicate the status of maintenance programs to the Owner

### 4.3 SMR

- Ensure the effectiveness of infrastructure maintenance, rehabilitation and renewal programs are discussed at DWQMS and WWQMS Management Review meetings.
- Report DWQMS and WWQMS Management Review outcomes to the Owner.

### 4.4 Director HW

- Oversee the infrastructure maintenance, rehabilitation and renewal programs for vertical and horizontal infrastructure programs.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required.



#### 4.5 Director, Water & Wastewater Operations

- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required.
- Ensure that the long-term forecast is reviewed at least once every calendar year.
- Ensure adequate resources for infrastructure maintenance and rehabilitation programs for vertical, horizontal and SCADA infrastructure.
- Ensure the effectiveness of maintenance programs for vertical, horizontal and SCADA infrastructure to maintain compliance with regulation.

#### 4.6 Director, Water & Wastewater Planning and Capital

- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required.

#### 4.7 Manager, CD

- Development and use of an asset management database for vertical assets.
- Monitor and maintain the asset management program for vertical Infrastructure.
- Ensure adequate resources for the asset management program for vertical infrastructure.

#### 4.8 Senior Project Managers, WWSP

- Develop plans for infrastructure programming
- Assist WDWWC Section with the infrastructure renewal program for horizontal infrastructure.

#### 4.9 Manager, WDWWC

- Ensure adequate resources for infrastructure maintenance and rehabilitation programs for horizontal infrastructure.
- Ensure the effectiveness of horizontal infrastructure maintenance programs to maintain compliance with regulation.
- Oversee, in conjunction with relevant sections from Engineering Services, the infrastructure rehabilitation and renewal programs for horizontal infrastructure.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required.

#### 4.10 Superintendent Water Distribution ORO

- Oversee water quality, customer service, and compliance programs for horizontal DWS infrastructure
- Oversee Hydrant Painting Program.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required

#### 4.11 Superintendents Water Distribution – (East & West Districts)

- Oversee the maintenance programs for horizontal DWS infrastructure.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required

#### 4.12 Superintendent – Contract Services & Wastewater Collection

- Oversee contracted programs for horizontal DWS and WWS infrastructure
- Oversee contracted programs for stormwater/drainage programs
- Oversee customer service, compliance and maintenance programs for horizontal WWS and stormwater infrastructure
- Oversee the evaluation and effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required
- Oversee non-contract related work (e.g. inspections, in-house repairs, etc)

#### 4.13 Project Manager – Stormwater Operations & Maintenance, WDWWC

- Ensure contracted monitoring and repair programs for stormwater infrastructure
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required

#### 4.14 Stormwater Management Technologist - WDWWC (Stormwater & Drainage)

- Ensure work orders are scheduled in IPS for preventative and event driven group projects.

#### 4.15 Project Managers, CD

- Ensure relevant PMATS Section Maintenance Supervisors and Planners have information required to support maintenance of new assets (e.g. asset inventory with appropriate details, recommended maintenance schedules, warranty details)

for projects under their area of responsibility.

#### 4.16 **Manager, PMATS**

- Ensure adequate resources for infrastructure maintenance and rehabilitation programs for vertical infrastructure.
- Oversee, in conjunction with PO, the maintenance programs for vertical infrastructure and SCADA to ensure compliance with regulations.
- Ensure the effectiveness of maintenance programs for vertical infrastructure.
- Provide input, in conjunction with PO, WWWS, CD and WUP, the infrastructure rehabilitation and renewal programs for vertical infrastructure.
- Oversee, in conjunction with PO, WWWS, CD and WUP, the rehabilitation and renewal programs for SCADA infrastructure.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required.

#### 4.17 **Senior Project Manager – Capital & Technical Services, PMATS**

- Oversee maintenance and small capital work projects related to immediate needs and emergencies for vertical DWS and WWS assets utilizing maintenance capital budgets.
- Oversee DWS and WWS facility management program and projects (including contracted programs).
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required

#### 4.18 **Superintendent Maintenance, PMATS**

- Ensure PMATS has information required to support maintenance of assets (e.g. asset inventory with appropriate details, maintenance schedules, warranty details).
- Oversee maintenance programs for vertical DWS, WWS and stormwater infrastructure.
- Oversee contracted programs for vertical DWS, WWS and stormwater infrastructure maintenance.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required

#### 4.19 **Superintendent – SCADA, PMATS**

- Ensure PMATS has information required to support maintenance of SCADA

assets.

- Oversee maintenance programs for SCADA infrastructure.
- Oversee contracted programs for SCADA infrastructure renewal and maintenance.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required

#### 4.20 Maintenance Supervisors – Mechanical, Electrical and Instrumentation, PMATS

- Support the Maintenance planners with the development of maintenance schedules for vertical infrastructure.
- Assign Work Orders to trades staff for completion and coordinate activities for scheduled and emergency breakdown or corrective maintenance.
- Verify the completion of Work Orders, and the accuracy of EAM data.
- Ensure the effectiveness of vertical maintenance programs.

#### 4.21 Maintenance Planners, PMATS

- Receive information required to support maintenance of assets (e.g. asset inventory with appropriate details, maintenance schedules, warranty details), and coordinate input into EAM.
- Receive input from Maintenance Supervisors for the development of maintenance schedules for vertical infrastructure.
- Ensure that resources are available and scheduled for the completion of maintenance work orders.
- Assign work orders to appropriate trades and communicate work schedules to trades supervisors, PO and other stakeholders as necessary.
- Develop and maintain maintenance schedules for vertical infrastructure in CMMS.
- Ensure that Work Order records are maintained in EAM.

#### 4.22 Manager, PO

- Oversee, in conjunction with PMATS, WWWSP, CD and WUP, the infrastructure rehabilitation and renewal programs for vertical infrastructure.
- Oversee, in conjunction with PMATS, the maintenance programs for vertical infrastructure and SCADA to ensure compliance with regulations.
- Oversee, in conjunction with PMATS, WWWSP, CD and WUP, the rehabilitation and renewal programs for SCADA infrastructure.

- Ensure that equipment failures and maintenance issues are entered into **EAM** and communicated to the PMATS Section for action.
- Assist in evaluating the effectiveness of maintenance, rehabilitation and renewal programs and authorize changes, as required.

#### **4.23 PO Maintenance Operators**

- Conduct inspections and routine maintenance as required.
- Notify Process Supervisor immediately of any abnormal operating conditions or SCADA alarms/malfunctions.

#### **4.24 CS&CO**

- Update IPS and **EAM** with information about new assets
- Ensure the functionality and effectiveness of IPS and **EAM** to support maintenance, rehabilitation and renewal programs.
- Assign service request through IPS for inspection or maintenance of Horizontal infrastructure.
- Conducts community outreach about infrastructure renewal programs as necessary

#### **4.25 Superintendent, Inventory & Fleet Management (IFM)**

- Ensure the effectiveness of supply chain and inventory management programs/functions to support the vertical, horizontal and SCADA infrastructure maintenance programs.

### **5 PROCEDURE**

#### **5.1 Infrastructure Renewal**

- 5.1.1 Horizontal - The **Infrastructure Renewal** Section, Engineering Services has developed an asset management program for horizontal infrastructure. The horizontal asset management program identifies the condition (i.e. age, material, repair history, life span estimates) of watermains, **sewers** and other infrastructure (e.g. underground chambers, outfalls, etc.) to prioritize infrastructure rehabilitation and renewal projects for linear infrastructure.

The **Infrastructure Renewal** Section produces the following two reports for the Wastewater Collection System:

**Operational Report:** This report identifies recently completed inspections with high ratings (indicating poor condition) in operational codes such as debris, surcharging,

and obstructions. It helps identify areas where flushing or maintenance may be required to address the identified issues. The report is shared with WD&WWC.

**Structural Report:** This report identifies recently completed inspections with high ratings (indicating poor condition) in structural defect codes such as broken pipes, fractures, and deformations. The Infrastructure Renewal Section reviews this report to assess the need for rehabilitation or replacement of the sewer based on the identified structural issues.

WDWWC administers the Substandard Water Service Replacement program to replace substandard water service pipes. The CS&CO Scheduler / Dispatcher assigns service requests to WDWWC through IPS as per [Scheduler/Dispatcher – Water Service Line Operation PW-WW-CS-CS-P-011-010](#).

5.1.2 Vertical – CD is in the process of developing an asset management program for vertical infrastructure. The procedure entitled [Review and Provision of Infrastructure procedure \(PW-WW-P-025-001\)](#) has been developed to document the process followed by Hamilton Water in reviewing the adequacy of its drinking-water, wastewater and stormwater systems infrastructure for both horizontal and vertical infrastructure. This procedure defines the Hamilton Water infrastructure renewal program.

## 5.2 Horizontal Infrastructure Maintenance & Rehabilitation

### 5.2.1 IPS

5.2.1.1 HW uses the IPS database to maintain records (for horizontal infrastructure) related to scheduled and emergency maintenance, defective infrastructure and customer complaints regarding drinking water, stormwater and wastewater infrastructure. WDWWC Section Staff are responsible for logging maintenance activities into the IPS database and reporting incorrectly tagged field assets as per [Updating Asset Information Using WIMS Redlining \(PW-WW-P-011-014\)](#) ensuring the accuracy of the IPS data.

5.2.1.2 CS&CO update IPS with information about new horizontal assets as per [Transfer of Assets \(PW-WW-P-004-003\)](#).

### 5.2.2 Water Distribution Preventive Maintenance

5.2.2.1 The inspection and preventive maintenance program for horizontal infrastructure is overseen by WDWWC staff. The program items in the table below are completed by WDWWC staff as well as by Contract Services. WDWWC directs the inspection program conducted by Contract Services.

<b>Water Distribution Preventive Maintenance Program</b>	<b>Frequency</b>
Valve Exercising/Inspection Program	<ul style="list-style-type: none"> <li>Once every year for large watermains (≥400mm) in the Hamilton DWS.</li> <li>Once every three years for small watermains (&lt;400mm) in Hamilton DWS and all valves in the Fifty Road DWS.</li> <li>Once every three years for the Communal Well Systems - Carlisle, Freelton, Greenville, Lynden</li> </ul>
Hydrant Flow and Code Program	<ul style="list-style-type: none"> <li>Inspect hydrants once every year to meet the requirements of the Ontario Fire Code</li> <li>Flow testing hydrants every 3 years</li> </ul>
Hydrant Painting Program	<ul style="list-style-type: none"> <li>Hydrants are painted as required. Colour of hydrant tags indicates flow range.</li> </ul>
Dead End Flushing Program	<ul style="list-style-type: none"> <li>Flushing select dead ends to prevent low chlorine residuals, promote low tuberculation levels and improve water clarity. Automatic Flushing Stations are set up by including the use of blow offs and post hydrants.</li> </ul>
PRVs and Check Valves	<ul style="list-style-type: none"> <li>Annual inspection check of valves in the water distribution system</li> <li>Annual inspection of PRV settings and check valves to ensure they are functioning as designed</li> </ul>
Auto Flusher Units	<ul style="list-style-type: none"> <li>Twice a year perform preventative maintenance and inspection</li> </ul>
Sample Stations	<ul style="list-style-type: none"> <li>Twice a year perform preventative maintenance and inspection</li> </ul>
Anti-stagnation Valves	<ul style="list-style-type: none"> <li>Annual inspection of valves, replace batteries and ensure that valves are functioning as designed</li> </ul>
Air Valves	<ul style="list-style-type: none"> <li>Once every five (5) year inspect for operation and maintenance of the air valves</li> </ul>

5.2.2.2 Scheduled Breakdown or Corrective Maintenance, and Emergency Breakdown or Corrective Maintenance, is completed as per Repairs - Watermains, Valves and Hydrants PW-WW-DC-WD-P-011-005. This procedure outlines the process and requirements for horizontal WDS infrastructure repairs.

### 5.2.3 Wastewater Collection Preventive Maintenance

5.2.3.1 WDWWC manages the Sewer Lateral Cross Connection Program to help isolate cross connections between storm and sanitary/combined sewers.

5.2.3.2 Inspections completed by the Wastewater and Stormwater Collection team outlined below may have instances where follow up maintenance is required. The maintenance is completed either immediately or scheduled for a later date, as required.

Wastewater & Stormwater Collection Preventive Maintenance Program	Frequency
Sanitary Air Valves	<ul style="list-style-type: none"> <li>Inspect and maintain all sanitary air valves annually or more frequently as required</li> </ul>
Sewer Boom Inspections	<ul style="list-style-type: none"> <li>Inspect all floating sewer booms weekly for debris and signs of CSOs</li> </ul>
Sensitive Inlets/Outfalls	<ul style="list-style-type: none"> <li>Inspect monthly or more frequently as required</li> </ul>
Inlets/Outfalls	<ul style="list-style-type: none"> <li>Inspect Annually</li> </ul>
Syphons	<ul style="list-style-type: none"> <li>Inspect bi-monthly for blockages or more frequently as required</li> </ul>
CSO Outfalls	<ul style="list-style-type: none"> <li>Inspect monthly</li> </ul>
Odour Lids	<ul style="list-style-type: none"> <li>Inspect all odour lids annually</li> </ul>
Biofilters	<ul style="list-style-type: none"> <li>Inspect every 4 months</li> </ul>
Manholes	<ul style="list-style-type: none"> <li>Inspect as required based on historical needs</li> </ul>
Oil Grit Separator	<ul style="list-style-type: none"> <li>Inspect monthly</li> </ul>
Critical regulator	<ul style="list-style-type: none"> <li>Inspect biannually, or more frequently as required</li> </ul>
Non-critical regulator	<ul style="list-style-type: none"> <li>Inspect annually</li> </ul>
Glanbrook Forcemain swabbing	<ul style="list-style-type: none"> <li>Biannually or more/less frequently depending on pumping output</li> </ul>

#### 5.2.4 Stormwater and Drainage Assets

Stormwater and Drainage Assets: stormwater ponds, watercourses, and municipal drains. It does not include the linear assets described above (5.2.3.2)

Stormwater Technologist schedules stormwater infrastructure maintenance in IPS as work orders for preventative maintenance and event driven group projects. Upon completion, the records are stored in the ArcGIS Online Application. All necessary



forms are found in the ArcGIS Online Application. These forms include, but are not limited to: compliance inspection, rainfall inspection, grass cutting and litter collection inspection, encroachment inspection, graffiti inspection, and watercourse inspection. Engineering drawings and ECAs are stored in Project Wise.

Wastewater & Stormwater Collection Preventive Maintenance Program	Frequency
Storm Storage basin, compliance inspections	<ul style="list-style-type: none"> <li>Annual</li> </ul>
Storm Storage basin, sensitive pond inspections	<ul style="list-style-type: none"> <li>Biweekly (less frequent during fall/winter season)</li> </ul>
Watercourse inspections (Program under development)	<ul style="list-style-type: none"> <li>TBD</li> </ul>
Municipal Drains (Program under development)	<ul style="list-style-type: none"> <li>TBD</li> </ul>

Divisional responsibility for stormwater infrastructure can be found in the [Stormwater Asset Responsibility in Public Works PW-P-026-001](#).

## 5.2.5 Effectiveness of Maintenance

5.2.5.1 The effectiveness of maintenance programs is continually tracked within the WDWWC section through the monitoring of performance metrics and KPIs. Program summaries are prepared, presented and discussed annually as part of the HW Sectional Annual Reporting process.

## 5.3 Vertical Infrastructure Maintenance & Rehabilitation

### 5.3.1 CMMS/EAM

5.3.1.1 The PMATS Section staff uses an EAM database that houses data related to the asset number (unique identifier) for vertical infrastructure, preventative maintenance, predictive maintenance, emergency or scheduled breakdowns and calibration of equipment. Asset IDs are structured as per [CMMS Naming Structure \(PW-WW-MT-V-011-003\)](#).

5.3.1.2 PMATS update EAM with information about new assets as per [Transfer of Assets \(PW-WW-P-004-003\)](#).



5.3.6.2 The procedure [Review and Provision of Infrastructure PW-WW-P-025-001](#) discusses the infrastructure review process.

#### 5.4 Reporting To the Owner (DWS/WWS)

5.4.1 Top Management reviews the effectiveness of infrastructure maintenance, rehabilitation and renewal programs at the [Management Review meetings \(PW-WW-P-018-001\)](#). DWQMS and WWQMS Management Review outcomes are reported to the Owner (DWS/WWS).

### 6 ASSOCIATED DOCUMENTS

[Control of Documents Procedure \(PW-WW-P-010-001\)](#)

[Control of Records Procedure \(PW-WW-P-016-001\)](#)

[Management Review \(PW-WW-P-018-001\)](#)

[Review & Provision of Infrastructure \(PW-WW-P-025-001\)](#)

[Transfer of Assets \(PW-WW-P-004-003\)](#)

[Breakdown and Corrective Work Order Process for Maintenance \(PW-WW-MT-P-011-002\)](#)

[Preventative Work Order Process for Maintenance \(PW-WW-MT-P-001-003\)](#)

[CMMS Naming Structure \(PW-WW-MT-V-011-003\)](#)

[Repairs - Watermains, Valves and Hydrants \(PW-WW-DC-WD-P-011-005\)](#)

[Scheduler/Dispatcher – Water Service Line Operation \(PW-WW-CS-CS-P-011-010\)](#)

[BCOS + DWQMS Operation - Water Service Size and Type \(PW-WW-DC-WD-P-011-007\)](#)

[Stormwater Asset Responsibility in Public Works \(PW-P-026-001\)](#)

[CD/PMATS Decision Tree](#)

[Updating Asset Information Using WIMS Redlining \(PW-WW-P-011-014\)](#)

**BCOS software tracks the revision history of document.**

**1 PURPOSE**

The redline function in WIMS allows users to indicate changes to water, stormwater, and sewer assets by placing a point or line on the map and adding text comments. This procedure outlines the process by which these changes are requested and updated.

**2 SCOPE**

This procedure applies to staff in HW that submit Redlining updates within WIMS.

Redlines submitted by staff are reviewed by the Water Information Systems (WIS) team and update e-mails are sent to users when assets have been added, edited, or retired. Redlines can also lead to the WIS team making changes in IPS (Hansen). Water and sewer assets displayed in WIMS are synchronized to reflect potential changes every evening

This process does not include alterations in the water and wastewater systems that require approvals, as per the following Level III procedures: DWQMS Approvals Process for Alterations of Drinking Water Systems PW-WW-P-004-001 and Procedure for Wastewater Approvals PW-WW-P-004-006.

**3 DEFINITIONS**

Asset	Tangible item or entity connected to City of Hamilton water, wastewater or stormwater infrastructure. These items may be part of the infrastructure operations that has potential or actual value to the City of Hamilton.
COH	City of Hamilton
CS&CO	Customer Service and Community Outreach Section
Hamilton Water (HW)	Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.

IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
WD&WWC	Water Distribution and Wastewater Collection System
WIMS	Water Information Management System
WIS	Water Information Systems unit of CS&CO

**4 RESPONSIBILITY**

4.1 Sectional Managers

- Ensure that staff follow this procedure and are trained on this procedure

4.1.1 Senior Spatial Systems Application Analyst, Asset Management Application Technologist, Asset Management Application Specialist, WIS

- Responsible to understand this procedure and ensure that this process is completed when required

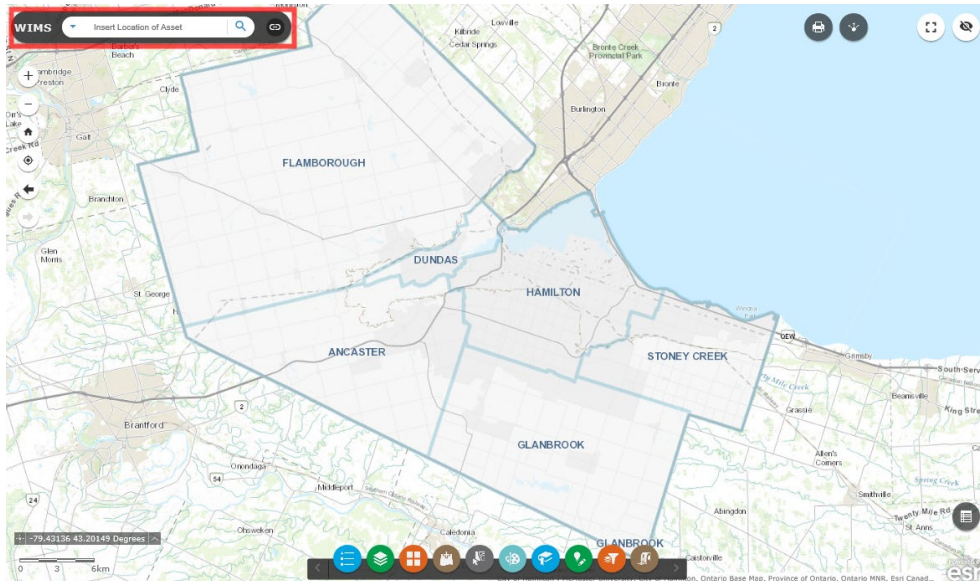
4.2 All HW WIMS end users

- Submit redlining points in WIMS to indicate changes to water and sewer assets

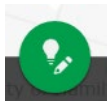
**5 PROCEDURE**

5.1 Directions

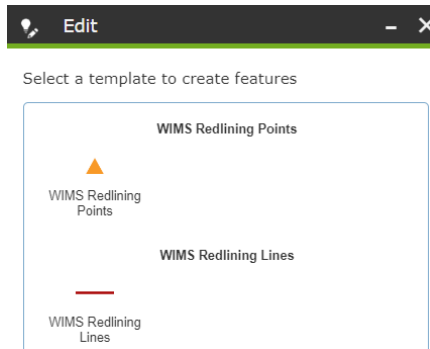
1. To begin the redline process, open [WIMS](#).
2. Navigate to the location that requires changes by searching for an address or asset using the indicated widget or by panning and zooming the map.



3. Click the Edit widget on the bottom toolbar.



4. Select WIMS Redlining Points or WIMS Redlining Lines from the Edit pop-up.



5. Click on the map to add a point. (Line can also be used with multiple points)

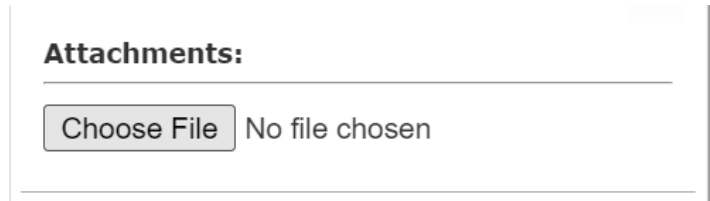
6. Enter a USER\_NAME, ASSET\_INFO and COMMENTS into the first three boxes of the WIMS Redlining pop-up.

**USER\_NAME** – User's name indicating who is requesting the change. First initial and last name is acceptable. User name may be used to contact the requestor for more details.

**ASSET\_INFO** – Asset identifier (i.e. AN16V042) or type of asset that requires a change. If indicating multiple changes with one redline, multiple asset ID's can be included here.

**COMMENTS** – Explanation of the required changes.

7. Staff can also choose to upload an attachment near the bottom of the editing window.



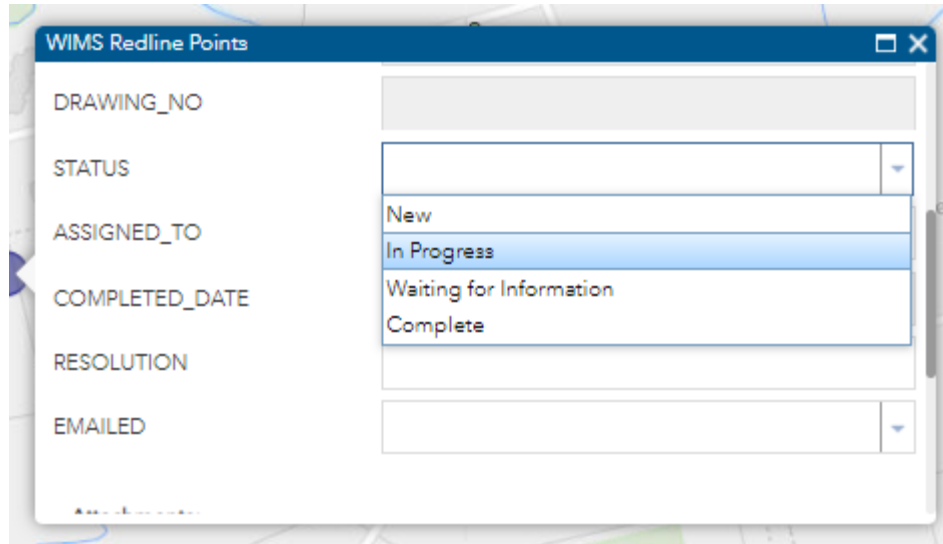
8. Click 'Save' to submit the redline.
9. To add another redline, repeat steps 5-8. If redlining is complete, click the 'x' in the Edit pop-up to dismiss the tool.

## 5.2 Directions to Edit an Existing Redline

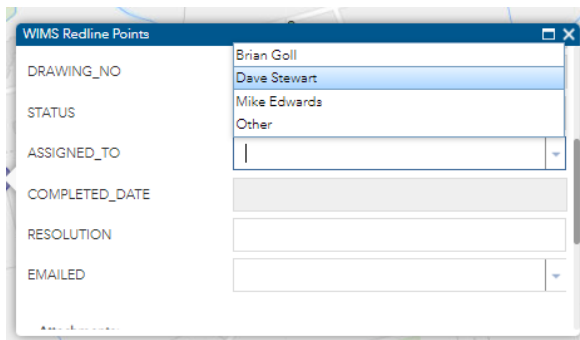
1. Navigate to an existing redline location.
2. Click the redline point on the map to view a pop-up containing COMMENTS, ASSET\_INFO and USER\_NAME.
3. Click the menu option in the pop-up and select Edit to make changes to COMMENTS, ASSET\_INFO and/or USER\_NAME.
4. Click 'Save' to submit the updated redline.
5. Staff will receive an email from a WIS member upon completing redline actions.

## 5.3 WIS

1. Navigate to the following:  
<https://hamiltonwater.maps.arcgis.com/apps/webappviewer/index.html?id=f6b472f2135246dc9f358d1140919567> using your HW AGOL account or tap into the redline layers via the corporate database in order to make edits (GEODBA.WIMS\_REDLINE\_POINTS and GEODBA.WIMS\_REDLINE\_LINES)
2. Select a redline to review.
3. Update the status field accordingly.



4. Fill in the "Assigned to" field

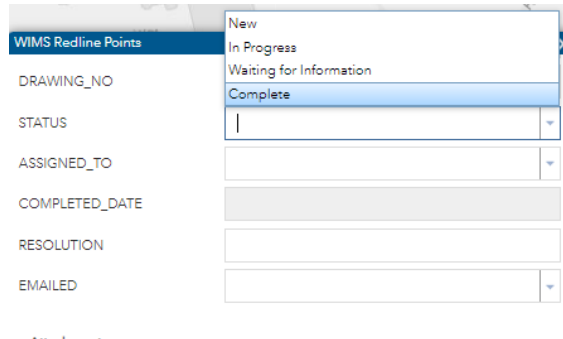


5. Review the request and make appropriate actions. Some back and forth communications may be necessary to ensure interpretation is correct.
6. Send email to redline requestor that the redline has been completed. Details/ snapshots may be included if needed.
7. Add resolution details if necessary.

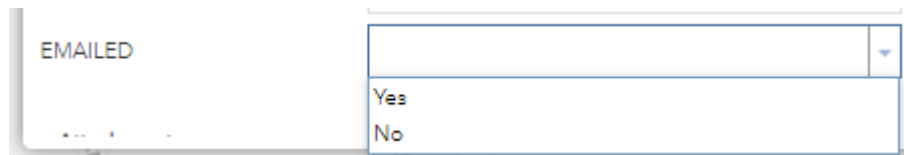


8. Change status to "Complete". This will auto trigger the completed date to be filled in.
9. This task is actioned on a weekly basis.





10. Change "Emailed" field to "Yes"



5.4 Notes

1. All redlines are stored and kept within the redline layers.
2. Completed redlines are filtered out of WIMS.
3. For efficiency purposes a batch editor was added to our internal redline app.

6 ASSOCIATED DOCUMENTS

- [Transfer of Assets PW-WW-P-004-003](#)
- [DWQMS Approvals Process for Alterations of Drinking Water Systems PW-WW-P-004-001](#)
- [Procedure for Wastewater Approvals PW-WW-P-004-006](#)
- [BCOS + DWQMS Water Main - Dead end Flushing Procedure PW-WW-DC-WD-P-011-022](#)
- [Operation – Water Valves and hydrants PW-WW-DC-WD-P-011-002](#)

**BCOS software tracks the revision history of document.**

## 1 PURPOSE

To explain the protocol for notification and coordination among HW staff to ensure that immediate and sufficient corrective actions are implemented in a consistent and efficient manner in the case of spills of various magnitudes.

## 2 SCOPE

Spills originating from HW infrastructure, caused by HW staff, HW contractors or that have potential to enter HW property or infrastructure.

For spills occurring within CHEL, lab staff follow the [Chemical Hygiene Plan PW-WW-CR-EL-P-019-065](#).

## 3 DEFINITIONS

BCOS	Beyond Compliance Operating System – Environmental, Health and Safety Management System for the Hamilton Water Division. BCOS is an umbrella system to the Environmental Laboratory QMS and the DWQMS sub-systems and the WWQMS sub-systems.
CCC	Customer Contact Centre (Corporate), the 24-hour call centre for the City of Hamilton: 905-546-CITY (2489)
C&R	Compliance & Regulations Section
CD	Capital Delivery Section
CHEL	City of Hamilton Environmental Laboratory
COH	City of Hamilton
Corporate EOC	The City of Hamilton’s Emergency Operations Centre located at 1227 Stone Church Road. This EOC can be activated in the event of a city-wide emergency
CS&CO	Customer Service and Community Outreach Section
EEO	Environmental Enforcement Officer
EME	Environmental Monitoring & Enforcement Unit

External Spill	A spill that is caused by anyone other than HW Staff or those working on behalf of HW
Hamilton Water (HW)	The Hamilton Water Division, which is the water and wastewater Operating Authority for the City of Hamilton.
HW Staff Having Control of Spill	Staff who are responsible for capital projects at HW sites or operational staff from WD&WWC, PO, PMATS, CD and the Woodward Capital Upgrade Project.
HW - SMT	The Hamilton Water Senior Management Team includes the Directors & Section Managers of the Hamilton Water Division
Intake Protection Zone (IPZ)	<p>The contiguous area of land and water immediately surrounding a surface water intake, which includes:</p> <p>The distance from the intake;</p> <p>A minimum travel time of the water associated with the intake of a municipal residential system or other designated system, based on the minimum response time for the water treatment plant operator to respond to adverse conditions or an emergency;</p> <p>The remaining watershed area upstream of the minimum travel time area, as applicable to inland water courses and inland lakes only.</p>
Internal Spill	A spill that is caused or permitted by HW Staff or those working on behalf of the <b>COH</b> .

IPS (HANSEN)	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement. Also, will be defined as designated work order management system
Leadership Teams	Specific Teams in the City of Hamilton DLT (Departmental Leadership Team), SLT (Senior Leadership Team), EMT (Extended Management Team),
Major Spill	<p>The release of a substance of such magnitude and nature that it requires resources outside the normal scope of HW staff to control, contain, and clean-up and/or remediate the affected area. The spill may or may not have entered the COH sewage system, a COH WTP or WWTP, the natural environment, an IPZ, or a WHPA; is beyond the normal scope of the owner or person having control of the spill to control, contain, and clean-up; and may cause or is likely to cause adverse effects or public concerns in the immediate vicinity of the spill or beyond.</p> <p>Any spill that is likely to cause significant adverse effects or public concerns in the immediate vicinity of the spill or beyond.</p>
Minor Spill	A minor spill is the release of a substance of such a magnitude and nature that it has not entered, and has no potential to enter the sewage system, a COH WTP or WWTP, the natural environment, an IPZ, or a WHPA; the spill can be easily controlled, contained <u>and</u> cleaned by the owner or person having control of the spill without adverse effects or public concerns.
Moderate Spill	A moderate spill is the release of a substance of such magnitude and nature that may or may not have entered the sewage system, a COH WTP or WWTP, the natural environment, an IPZ, or a WHPA; the spill is beyond the normal scope of the owner or person having control of the spill to control, contain, and clean-up. There may be adverse effects or public concerns in the immediate vicinity of the spill, but the resources required to control, contain, and clean-up the spill and/or remediate the affected area are within the normal scope of HW staff.

MOE	Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP))
Natural Environment	The land, water, air or any combination or part thereof, within the COH municipal boundaries.
Overflow	Sewage flows to the environment outside of normal operating conditions. Means a discharge to the environment from the sewage works at a location other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point. All diversions of sewage from the collection system (including pumping stations) are Overflows. The definition of overflow contained within MECP approvals takes precedent.
Person Having Control of Spill	The person and the person's employee or agent, if any, having the charge, management or control of the spilled substance immediately before the spill.
PMATS	Plant Maintenance & Technical Services
PO	Plant Operations Section
Policy #10	COH policy for emergency purchasing (refer to the <a href="#">COH Purchasing Policy By-law 20-205</a> , As Amended).
PW-EOC	Public Works Emergency Operations Centre located at 330 Wentworth. This EOC may be activated if an emergency event requires support from multiple Divisions within the Public Works Department. It may also be activated by the Corporate EOC in support of a city-wide emergency.
RFQ	Request for Quotations
SAC	MOE, Spills Action Center (1-800-268-6060)
Sewage	According to Sewer Use By-Law 14-090 defined as: The composite of water and water-carried matter from agricultural, commercial, industrial, institutional or residential premises or any other source, but does not include stormwater.

SLT	COH Senior Leadership Team
Spill	According to O. Reg 675/98 spill (when used with reference to a pollutant), means a discharge (a) into the natural environment, (b) from or out of a structure, vehicle or other container, and (c) that is abnormal in quality or quantity considering all the circumstances of the discharge.
Spills Reporting Line	<b>905-540-5188:</b> A telephone line strictly for reporting spill occurrences and/or to request assistance. An EEO is on-call to assess each incident and respond appropriately. This line is monitored 24 hours a day, 7 days a week and the number is 905-540-5188. Outside business hours a caller must hold the line to speak to a CCC representative.
Spill Response Team (SRT)	Initiated, as needed by the HW Director (or designate), the SRT is a group of COH staff from different sections with a connection to a spill. This group is responsible for directing COH assets and resources to efficiently and effectively bring the specific event to resolution.
Substance	Any solid, liquid or gas, or any combination of any of them.
Third Party	Any person(s), outside of HW.
WD&WWC	Water Distribution and Wastewater Collection Section
WHPA	Wellhead Protection Area. The surface and underground area surrounding a water well or well field that supplies a municipal residential system or other designated system through which contaminants are reasonably likely to move to eventually reach the water well or wells.
WTP	Water Treatment Plant
WUP	Woodward Upgrade Project
WWWPC	Water & Wastewater Planning & Capital Section
WWWSP	Water & Wastewater Systems Planning Section

WWTP	Wastewater Treatment Plant
WWW	Water and Wastewater

## 4 RESPONSIBILITY

### 4.1 Director of HW or Designate

- Ensure resources are available to deal with spills as required by this procedure.
- Approve purchasing documents, contract documents, and Policy #10 requests related to this procedure.
- Communicate with the MOE at the Director level, other government agencies, other COH departments, media, HW - SMT, SLT, DLT and COH Council as required.
- Provide support with internal and external communication in the case of spills.
- Initiate SRT on an as needed basis and as required by this procedure.
- Delegates the coordination of the assessment, control, containment, and clean-up of spills as required by this procedure.
- Delegates the coordination of the remediation of areas affected by spills as required by this procedure.

### 4.2 Manager of C&R or Designate

- Coordinate all spill related communication with MOE and other government agencies.
- Communicate with HW - SMT in the case of spills, as required.
- Become a member of SRT as required.
- Ensure that all HW staff are aware of and are trained to follow this procedure.

### 4.3 Directors and Managers, or Designate(s)

- Ensure that spills are reported and dealt with as required by this procedure.
- Communicate with C&R staff and HW - SMT in the case of spills, as required.
- Approve purchasing and contract documents related to this procedure.
- Ensure resources are available to deal with spills as required by this procedure.
- Become a member of SRT as required.

#### 4.4 CCC

- Customer Contact Centre (Corporate), the 24-hour call centre for the City of Hamilton: 905-546-CITY (2489)
- Follow the [Service Level Agreement between the Customer Contact Centre and Hamilton Water](#).

#### 4.5 CHEL Staff

- Coordinate analytical testing services for samples submitted in relation to this procedure.
- Become members of SRT or otherwise support SRT as required.

#### 4.6 CS&CO Staff

- Provide support with internal and external communication in the case of spills.
- Become members of SRT or otherwise support SRT as required.

#### 4.7 EME Staff

- Respond to and initiate the coordination of the assessment, control, containment, and clean-up of spills as required by this procedure.
- Coordinate the cleanup to ensure no further detrimental impact to City sewage works. EME notifies appropriate City section for impacted asset e.g. Roads, for remediation.
- Communicate with the MOE, other government agencies, spill clean-up contractors, and consultant companies as required.
- Communicate with other COH staff and involve them, as appropriate to facilitate this procedure.
- Document actions taken in relation to spills as required.
- Collect samples for analytical testing as required. If a sewage spill or overflow (as required by MOE approvals) from COH infrastructure, collect sample if safe and practical to do so.
- Contact the Source Protection Planning Senior Project Manager as required.
- Provide details for fact sheets and reports as required.
- Investigates source of spill and evaluates enforcement action as required
- Update Service Request and upload pertinent documents as required.
- Become members of SRT or otherwise support SRT as required.
- Contact the section from where the internal spill originated from to inform them of MECP communications



#### **4.8 Source Protection Planning Senior Project Manager (or designate)**

- Confirm impact or potential impact of spills on IPZs or WHPAs.
- Notify the representative Source Protection Authority of the impact of spills on IPZs or WHPAs.
- Provide information on the natural attributes and managed land in IPZs or WHPAs.

#### **4.9 HW Staff Having Control of Spill**

- Report all spills to the COH Spill Reporting Line and, if necessary, SAC.
- Take operational measures as required to correct immediate spill factors as directed by each section operational requirements.
- Communicate with other COH staff and involve them as appropriate to facilitate this procedure.
- Document actions taken in relation to spills as required.
- Assist EME to coordinate tasks and contractors as required to control, contain, and clean-up spills that originate from the WD&WWC system or PO facilities.
- Manage all costs associated with spills originating from the WD&WWC system, or PO facilities as required.
- Develop and forward fact sheets and reports as required.
- Upload documents into **designated work order management system** as required.
- Become members of SRT or otherwise support SRT as required.
- If EME is not required to act as support, HW staff shall:
  - Take emergency measures to control impact to people, property, and the environment as contain, and clean-up spills as required by this procedure.
  - Coordinate the assessment, control, containment, and clean-up of spills as required by this procedure.
  - Coordinate the remediation of areas affected by spills as required by this procedure.
  - Communicate with the MOE, other government agencies, spill clean-up contractors, and consultant companies as required

#### **4.10 HW Staff**

- Report any identified internal and external spills to the COH Spills Reporting Line and, if necessary, SAC.

### **5 PROCEDURE**

#### **5.1 Communications**

### 5.1.1 Spill Reporting

5.1.2 HW staff, who may witness an internal or external spill regardless of severity (Minor/Moderate/Major) are to immediately report the spill to the COH Spill Reporting Line.

5.1.2.1 The HW staff and/or HW business unit having control of the spilled substance or the HW staff who causes or permits the spill (Moderate/Major Spills), immediately reports the spill to SAC and the COH Spill Reporting Line.

5.1.2.2 Where the responsible party is unclear, or if it is unknown if a spill has been reported, the first HW staff member that becomes aware that a spill has occurred, must report the spill to COH Spill Reporting.

5.1.2.3 According to O. Reg. 675/98 Class II, discharge portable water from man-made reservoirs due to natural causes or potable water released from watermains due to accidental failure are exempted from reporting, but release of super-chlorinated water from watermains due to maintenance, repair and/or testing, is not exempted from reporting.

5.1.2.4 The information reported to the COH Spill Reporting Line and/or SAC may include the following:

- Name and contact information for the reporter and the owner of the spilled material.
- Location of the spill.
- What has been spilled and what caused the spill.
- Approximate volume of spilled substance.
- Where the spilled substance went.
- Time of the spill and its duration.
- Actions taken to control the spill.
- Whether Police, Fire, Harbour Master (Hamilton Port Authority) or other external assistance is required.
- Whether SAC has been notified and if so SAC reference number.

Note: Information reported to SAC will be prompted by the SAC Officer handling the call and the reference # shall be documented. Not all information may be available at the time of report. It is OK to answer "I don't know" to any of the questions above if the information is not available. EME working together with HW business units may identify additional information and will update SAC as required.

### 5.1.3 Communication with the Media

5.1.3.1 Staff not authorized to communicate with the media will forward any inquires to the Media Contact and/or Director. (refer to the COH Media Relations Policy).

#### 5.1.4 Notification to Leadership Teams

- 5.1.4.1 Details regarding minor spills are communicated to HW SMT by the Manager(s) of any involved HW section(s). HW SMT notify any other Leadership Team(s) as required. For spills that have the potential to impact COH drinking water, Managers of C&R, PO and WD&WWC must be notified immediately.
- 5.1.4.2 Details regarding moderate and major spills are communicated through EME staff to the Manager of C&R, and to the Director of HW as required. The Director of HW notifies any other COH Leadership Teams as required (e.g. HW SMT, SRT, PW-EOC, Corporate EOC).
- HW's Moderate and Major spills may require a written information update to be forwarded through the same channels. MOE may request a formal spill report from COH.

#### 5.1.5 Document Control

- 5.1.5.1 Involved HW sections/units keep track of their own correspondence, reports, and invoices related to a spill.
- 5.1.5.2 EME staff log the spill information and appropriate associated documents into Service Request. Access to this section of the **workorder** database is limited to COH staff who enter or review spill information. The database is located on the COH server.
- 5.1.5.3 Where applicable, written correspondence with the MOE or other government agencies, follow up reports and any other information as directed by the Manager of C&R is uploaded into **designated work order management system**.

### 5.2 Third Parties Working on HW Projects

- 5.2.1 Third parties working on HW Projects are responsible for following all applicable federal, provincial, and municipal legislation (including spill reporting to COH and SAC)
- 5.2.2 In addition, for third party projects that have the potential for spills to occur, contract documents must require that the HW staff member in charge of the project be immediately notified if a spill occurs.

### 5.3 Internal Spills - Summarized in Appendix 1.

- 5.3.1 HW Staff and/or HW business unit having Control of Spill (The spill originates from their assets) take emergency operational measures to stop and/or contain the spilled material. Plant Operations to follow [PW-WW-PO-P-012-000-005](#), WDWWC to follow [PW-WW-DC-WC-P-012-005](#), and/or other applicable Level IV or V procedures.
- 5.3.2 HW Staff and/or HW business unit having Control of Spill report the spill to SAC and

the COH Spill Reporting Line.

**Note: HW Staff Having Control of Spill can contact the COH Spill Reporting Line for advice from EME prior to contacting SAC. However, HW Staff Having Control of Spill are still required to contact SAC to report the spill.**

- 5.3.3 If the spilled material affects or has the potential to affect an IPZ or a WHPA the SPM of Source Protection Planning is to be notified by EME staff. **Refer to the [Intake Protection Zones and Well Head Protection Areas Visual Aid PW-WW-V-012-009](#) for additional detail**

**Note:**

- **Only spills that occur in the area bounded by the Mountain Brow, Nash/Quigley Road, Fruitland Rd., and Lake Ontario have potential to affect the Woodward WTP IPZ.**
- **Only spills that occur in the area bounded by the Mountain Brow, McNeilly Road, Lake Ontario, and the Hamilton/Grimsby border have the potential to affect the Grimsby IPZ.**
- **Only spills that occur near the communities of Carlisle, Freelton, Greensville, and Lynden have potential to affect WHPAs.**

- 5.3.1 When EME is contacted to provide support for a spill (via the City of Hamilton Spills Line), EME staff will assume responsibility and provide direction for all ongoing communications with the MOE, other government agencies, spill clean-up contractors, and consultant companies (as appropriate).
- 5.3.2 The HW business unit that was in control of the substance before the spill will document any pertinent facts/data related to the incident that will be used for further reporting concerning their operational system.
- 5.3.3 EME staff will initiate a preliminary investigation of the spill via telephone, or by visiting the site of the spill, following the [EME Spills Response Procedure PW-WW-CR-EM-P-012-SP01-002](#).
- 5.3.4 For spills that have the potential to impact COH drinking water, Managers of C&R, PO and WD&WWC must be notified immediately.
- 5.3.5 EME staff will assist to assess the potential for the spilled material to impact a COH WTP, WWTP, the WD&WWC system, a natural body of water, an IPZ or a WHPA: If necessary EME staff notify PO, WD&WWC and/or CD staff of the spill following [PW-WW-CR-EM-P-012-SP01-002](#)
- 5.3.6 If the spill impacts an IPZ or a WHPA, Source Protection Planning Senior Project Manager staff will take appropriate action. If the spill occurs in an IPZ or a WHPA,

Source Protection Planning Senior Project Manager must be notified about assessment, control, containment, clean-up of spill and remediation work as required by this procedure. EME staff will provide required updates to SPM Source Protection Planning.

- 5.3.7 EME staff develops and implements a plan to characterize the spilled material and/or impact by collecting samples (if necessary), following [PW-WW-CR-EM-P-012-SP01-002](#).
- 5.3.8 EME staff ensures the clean-up and disposal of the spilled material, and notifies the asset owner of any necessary site remediation, following [PW-WW-CR-EM-P-012-SP01-002](#)

**5.4 Internal Spills -Third Party Summarized in Appendix 2.**

- 5.4.1 In the event that HW Staff identify that a spill has occurred as a result of a third party working on a HW project, but the person having control of the spilled substance or the person who caused or permits the spill is not on-site/available, HW Staff and/or HW business unit with operating control takes control of the spill (as outlined in Appendix 1). HW Staff to respond by following all steps outlined in this procedure as if it was caused directly by HW operations.
- 5.4.2 Upon receiving notification **related to** a third party working on a HW **project (while present)**, the HW staff member in charge of the project ensures that:
  - The person responsible for the spill has notified SAC, verifying that such notification has in fact been made; and
  - The person responsible for the spill has notified the COH Spills Reporting Line, verifying that such notification has in fact been made; and
  - The person or third party responsible for the spill coordinates the containment and clean-up of the spilled substance(s) and the remediation of affected areas; and where necessary, the HW staff member in charge of the project takes action to prevent, eliminate, and ameliorate any adverse effects and to restore the surrounding area in accordance with COH policies and procedures through a suitable sourced contractor. EME assistance may be requested as required.
  - The third party working on a HW project may be requested to submit a report to meet MOE requirements for spill reporting and/or requirements of the City Sewer Use By-Law.

**5.5 External Spills - EME Assistance Required**

- 5.5.1 In the event that COH staff report via COH Spills Reporting Line that a spill has occurred as a result of a third party working for the COH (not associated with HW operations), and the call is triaged to EME for incident investigation, EME will ensure

that:

- Report to SAC as required.
  - The person having control of the spilled substance or the person who caused or permits the spill is contacted and made aware of the situation.
  - Ensures the person responsible for the spill coordinates the containment and clean-up of the spilled substance(s) and the remediation of affected areas; and where necessary, acts to prevent, eliminate, and ameliorate any adverse effects and to restore the surrounding area in accordance with COH policies and procedures through a suitable sourced contractor.
  - Ensures any impacted third parties are notified of spill incident.
  - The third party working on a COH project may be requested to submit a report to meet MOE requirements for spill reporting and/or requirements of the City Sewer Use By-Law.
  - Enforce the City's Sewer Use Bylaw (as required)
  - EME to coordinate immediate clean-up, EME will notify appropriate COH department or HW section responsible for impacted asset for remediation.
- 5.5.2 If a resident, business, MOE, Conservation Authority or any other third-party report via COH Spills Reporting Line that a spill has occurred and the call is triaged to EME for incident investigation, EME will ensure that:
- Report to SAC as required.
  - The person having control of the spilled substance or the person who caused or permits the spill is contacted and made aware of the situation.
  - Ensures the person responsible for the spill coordinates the containment and clean-up of the spilled substance(s) and the remediation of affected areas; and where necessary, acts to prevent, eliminate, and ameliorate any adverse effects and to restore the surrounding area in accordance with COH policies and procedures through a suitable sourced contractor.
  - The person having control of the spilled substance or the person who caused or permits the spill submit a report to meet requirements of the City Sewer Use By-Law (typically related to IC&I sectors)
  - Enforce the City's Sewer Use Bylaw (as required)
- 5.5.3 When EME are activated by CCC to provide support for a spill, EME staff will assume responsibility for all immediate communications with the MOE, other government agencies, spill clean-up contractors, and consultant companies (as appropriate).
- 5.5.4 EME staff initiate a preliminary investigation of the spill via telephone, or by visiting the site of the spill, following the **EME Spills Response Procedure PW-WW-CR-EM-P-**

### **012-SP01-002.**

- 5.5.5 EME staff assess the potential for the spilled material to impact a COH WTP, WWTP, the WD&WWC system, a natural body of water, an IPZ or a WHPA:
- 5.5.6 EME staff develops and implements a plan to characterize the spilled material and/or impact by collecting samples (if necessary), following [PW-WW-CR-EM-P-012-SP01-002](#).
- 5.5.7 EME staff ensures the clean-up and disposal of the spilled material, and notifies the asset owner of any necessary site remediation, following [PW-WW-CR-EM-P-012-SP01-002](#).

### **5.6 Involvement of the HW Director**

- 5.6.1 The HW Director reviews the details of the spill as provided by the C&R Manager and decides whether an SRT needs to be initiated.
- 5.6.2 The HW Director notifies Leadership Teams (as required).
- 5.6.3 If an SRT is initiated, the HW Director delegates the coordination of the containment/clean-up of the spilled material, and/or the remediation of the affected area to the most appropriate HW section manager or business unit lead. The SRT provides support and expertise to the HW Director to facilitate this end.
- 5.6.4 Should an SRT not be initiated, the HW section/unit with control of the spilled material coordinates containment/clean-up of the spilled material, and remediation of affected area(s). EME assistance may be requested as required.

### **5.7 Cost Recovery**

- 5.7.1 Invoices for work related to internal spill are forwarded to HW Staff or HW business unit having control of spill as appropriate. Clean-up is the **immediate** action to stop the spill whether at operational level (closing valves) or preventing the spill from reaching any further (booms and berms) or having EME coordinate vacuum trucks to clean up contaminant.
- 5.7.2 **Invoices for work related to external spill for immediate clean up are covered by EME and a cost recovery package is sent to the appropriate party through Risk Management. Remediation and associated costs are the responsibility of the asset owner and may be recovered through cost recovery with Risk Management.**
- 5.7.3 Remediation is the process of returning the site to its original condition after the immediate spill has been cleaned.

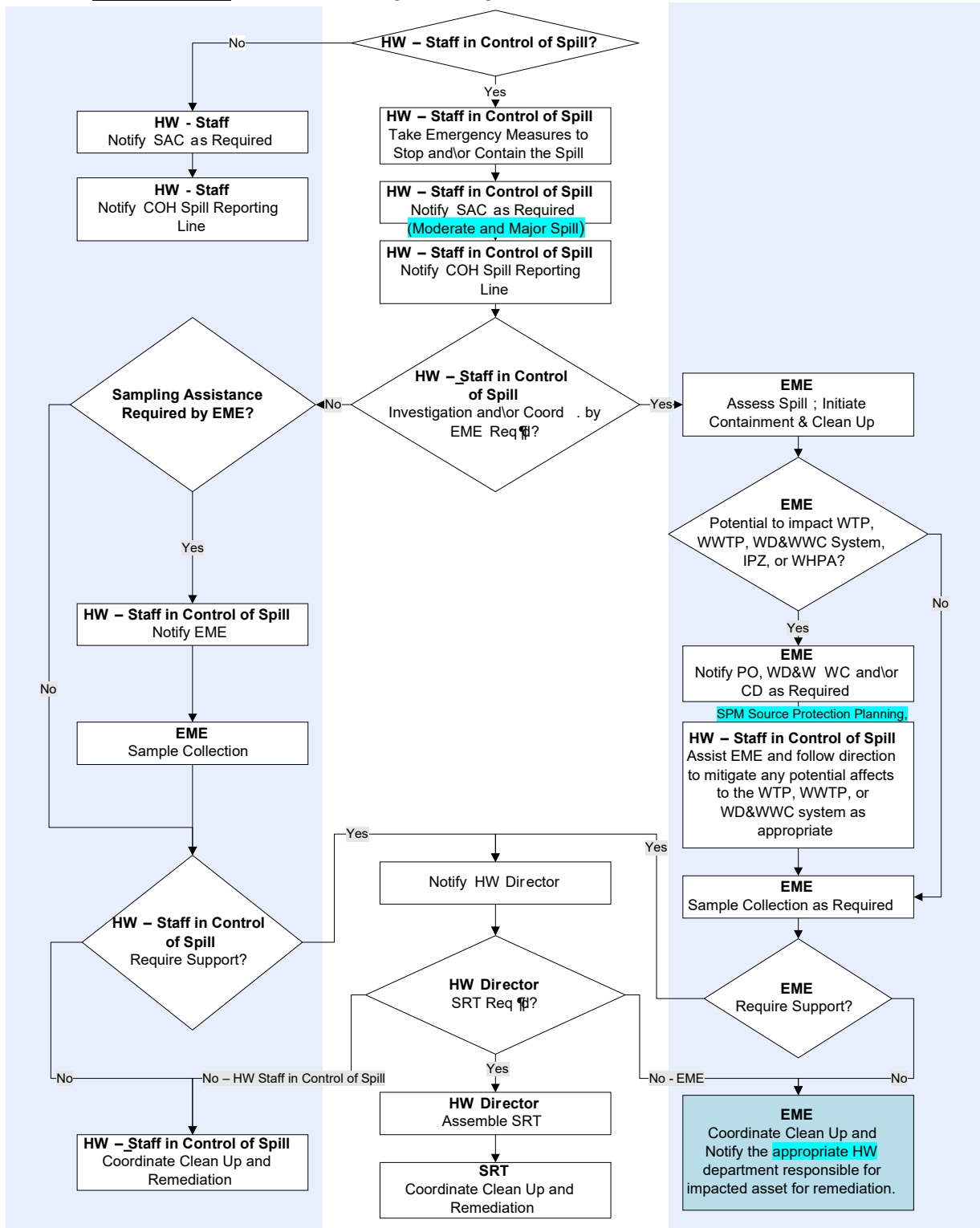
## 6 ASSOCIATED DOCUMENTS

- BCOS Emergency-Sewage Collection System Spills PW-WW-DC-WC-P-012-005
- COH Media Relations Policy
- COH Purchasing Policy By-law 20-205 ,
- EME Spills Response Procedure PW-WW-CR-EM-P-012-SP01-002
- Environmental Protection Act, R.S.O. 1990, c. E. 19
- Halton-Hamilton Source Protection Plan
- Grand River Source Protection Plan
- Niagara Source Protection Plan
- Intake Protection Zones and Well Head Protection Areas Visual Aid PW-WW-V-012-009
- MOE Spills Reporting – A Guide to Reporting Spills and Discharges
- Spills Emergency Procedure – Plant Operations PW-WW-PO-P-012-0000-005
- Chemical Hygiene Plan PW-WW-CR-EL-P-019-065
- SLA between CCC and HW
- Notifications and Response to Reported Algae/Cyanobacteria Events PW-WW-P-008-011
- Sewage Spills Communication Plan PW-WW-P-012-018 (Under development)

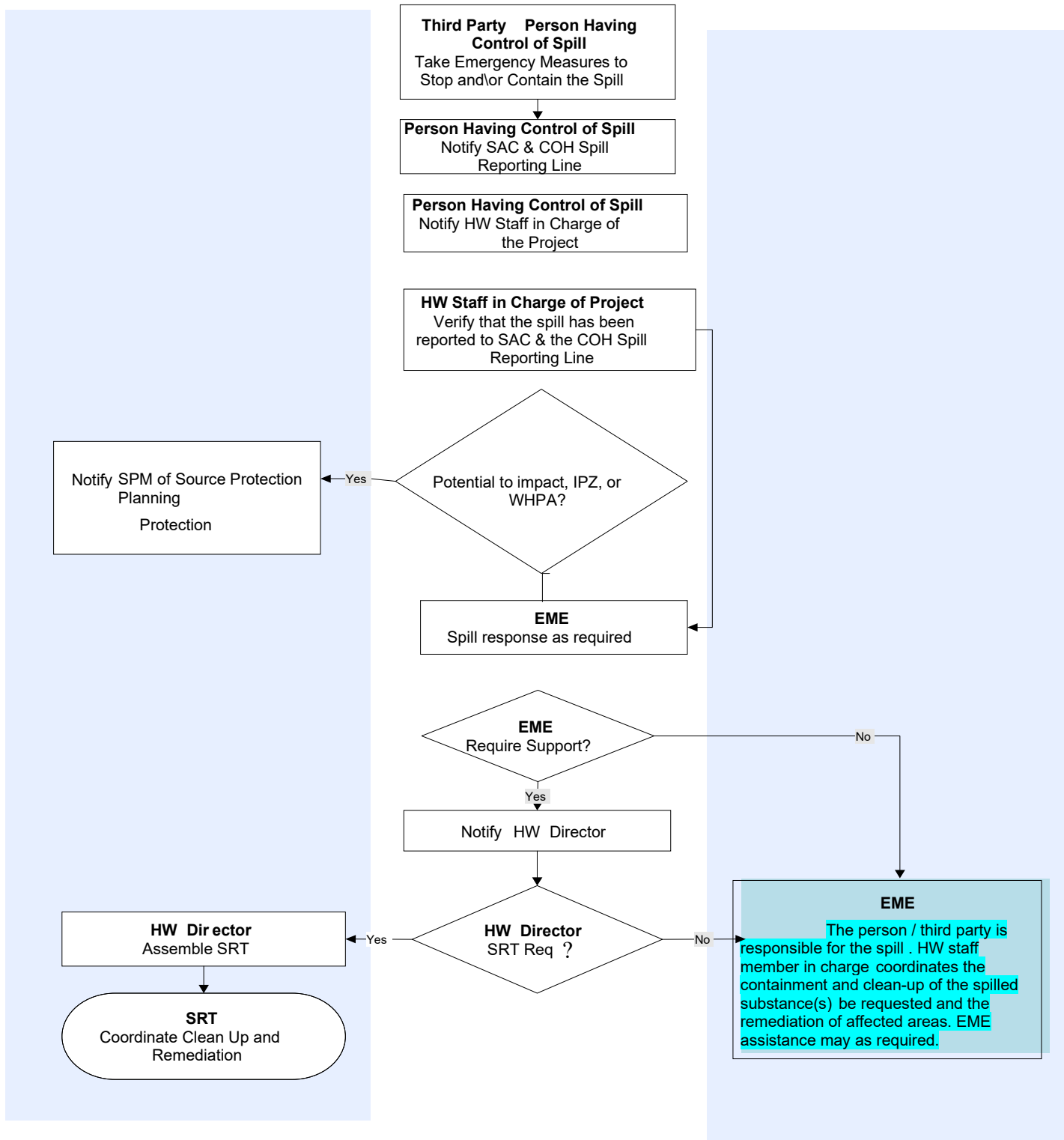
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### Appendix 1 Internal Spills - Spills Coordination Decision Matrix



### Appendix 2 Internal Spills – Third Party Involvement Spills Coordination Decision Matrix



## 1 PURPOSE

The purpose of this procedure is to outline the Hamilton Water Division's communication process, related to water, stormwater and wastewater programs and processes, with external (i.e. person's from outside of COH) regulatory and other external environmental stakeholders.

## 2 SCOPE

This procedure applies to the Hamilton Water Division of the City of Hamilton.

## 3 DEFINITIONS

AWQI	Adverse Water Quality Incident. Any situation where the drinking water in the system (treatment/distribution) does not meet the requirements listed in O. Reg. 170 Schedule 16
BCOS	Beyond Compliance Operating System – Environmental, Health and Safety Management System for the Hamilton Water Division. BCOS is an umbrella system to the Environmental Laboratory QMS, DWQMS and WWQMS sub-systems.
BLT	BCOS Lead Team. Includes SMR, Compliance Support Group, staff representatives (QA Supervisors or equivalent) from the Hamilton Water Division.
CD	Capital Delivery Section
CALA	Canadian Association for Laboratory Accreditation – a not-for-profit Canadian laboratory accreditation body. CALA delivers laboratory accreditation in the fields of environmental, food, mineral, petroleum testing, cannabis and sampling. Accreditation is based on site assessments to international standards.
CHEL	City of Hamilton Environmental Laboratory

CHEL QMS	City of Hamilton Environmental Laboratory (CHEL) Quality Management System (QMS). CHEL is accredited to ISO/IEC 17025 – general requirements for the competence of testing and calibration laboratories for specific tests which are listed in their scope of accreditation. If testing laboratories comply with the requirements of ISO/IEC 17025, they operate a QMS for their testing activities that also meets the principles of ISO 9001.
COH	City of Hamilton
COH Documents	Documents originating from within the City of Hamilton
C&R	Compliance and Regulations Section
CS&CO	Customer Service and Community Outreach Section
Development Engineering Section	The Development Engineering Section of the Planning and Economic Department
DWQMS	Drinking Water Quality Management System
DWWP	Drinking Water Works Permit - Drinking Water System Permit issued by MOE
DWS	Drinking Water System
ER/ERO	Environmental Registry of Ontario
ECA	Environmental Compliance Approval
EME	Environmental Monitoring & Enforcement Unit
EQH&S	Environment, quality, health and safety
<b>ES</b>	<b>The Engineering Services Division of the Public Works Department</b>
External Stakeholders	External stakeholders are not COH employees. They include people and organizations with a vested interest in the activities, products and services provided by the HW Division including customers/public, suppliers, regulatory bodies, industry/local businesses and residential neighbours.
<b>Form 1</b>	<b>Record of Watermain Authorized as a Future Alteration</b>
<b>Form 2</b>	<b>Record of Minor Modification or Replacement to the DWS</b>

<b>Form 3</b>	<b>Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere</b>
Hamilton Water - HW	The Hamilton Water Division, which is the water, wastewater and stormwater Operating Authority for the City of Hamilton
HW-SMT	The Hamilton Water Senior Management Team includes the Directors & Section Managers of the Hamilton Water Division.
HW-SMT Legal Update	An internal communication document provided to BLT and HW-SMT members. It may contain legislative proposals/updates, new/modified legislation, updates on regulatory approvals/inspections/audits etc.
Internal Stakeholders	HW Division employees and other COH employees
MDWL	Municipal Drinking Water Licence – Drinking Water System Licence issued by MOE
MMAH	Ministry of Municipal Affairs and Housing
MOE	Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP))
Non-compliance	Non-fulfillment of a relevant legal requirement of federal or provincial environmental and health and safety laws.
Non-conformance	Non-fulfillment of the requirements of the approved EQH&S Standards, policies and/or procedures for the BCOS System. In the case of vendors of essential supplies and services, non-fulfillment of contract requirements.
OHS	Occupational Health and Safety
Owner (AWQI)	Manager of C&R Section (owner for the purpose of adverse water quality notifications) or Superintendent of CHEL or designate (Owner backup)

Owner (DWS /WWS)	Every person who is a legal or beneficial owner of the City's DWSs and WWSs. Since the City's DWSs and WWSs are publicly owned and operated, the Mayor and Council of the City of Hamilton have been identified as Owners of the City's DWSs and WWSs.
Owner Representative/Owner Designate	The Supervisor, Lab Services or designate
<b>P&amp;ED</b>	<b>Planning and Economic Development Department</b>
PMATS	Plant Maintenance & Technical Services Section
PO	Plant Operations Section
Project Proponents	Those who propose to make alterations to the COH's water & wastewater systems and who prepare and submit Amendment Applications. Project Proponents may include: staff from the Planning & Economic Development (P&ED) Department and the HW Division. P&ED staff act as Project Proponents on behalf of private developers.
PTTW	Permit to Take Water issued by the MOE
QA	Quality Assurance (staff): Staff who are responsible for maintaining quality within HW's Quality Management Systems. e.g. Sectional Quality Assurance Analyst, Quality Assurance Supervisor etc.  Quality Assurance (process): Planned and systematic pattern of actions necessary to ensure that management and technical controls are being followed.
Regulators/Regulatory Bodies	Regulatory bodies which oversee activities, products and services of the HW Division including Ministry of the Environment (MOE), Ministry of Labour (MOL), Public Health Services (PHS) and others
SMR	Systems Management Representative (for the BCOS, DWQMS and WWQMS Systems) - Manager of Compliance and Regulations Section. Equivalent to QMS Representative as described in the DWQMS Standard.
Top Management (DWQMS / WWQMS)	The DWQMS and WWQMS Top Management has been identified as: the General Manager of Public Works and the Director of Hamilton Water Division.
<b>WM</b>	<b>Watershed Management</b>

WWS	Wastewater System
WWQMS	Wastewater Quality Management System
WWWSP	Water & Wastewater Systems Planning Section

## 4 RESPONSIBILITY

### 4.1 Director, Hamilton Water or Designate

- Communicates vital information to Top Management and Owner regarding external environmental regulatory requirements and reports back to staff.
- Communicates with Hamilton Water staff regarding any decisions/feedback related to the DWQMS, WWQMS and BCOS made by the Owner or Top Management in relation to external regulatory and other requirements. Responsible for decisions regarding MOE inspection and/or investigation processes.
- Notifies Council of any Federal and Provincial Orders.
- Responsible for ensuring Federal and Provincial Orders are posted in locations that may be specified in the Order.
- Inform the General Manager of any identified imminent risk to human health or safety in the community and provide details on recommendations from consultant and mitigation plans as available.

### 4.2 Hamilton Water Directors and Section Managers or Designate

- Ensure that technical information required by regulatory bodies is provided by staff to appropriate internal and external stakeholders in a timely manner.
- Ensure that the SMR is informed of new documentation and developments relating to regulatory communications.
- Communicate information regarding external regulatory activities to supervisors within their respective sections.
- Orders, communications and/or requests for information from regulators shall be copied to the SMR and CSG.
- When advised of any imminent risks to human health or safety in the community by a consultant, ensure that all identified risks are communicated immediately to their direct Supervisor or designate and the Director of their division.
- Directors will inform the General Manager of the Department of the identified imminent risk to human health or safety in the community and provide details on recommendations from consultants and mitigation plans as available.

#### 4.3 Manager CS&CO

- Oversees community outreach communications and events, educational and promotional materials (i.e. fairs, presentations, brochures, signs, public notices (excluding media releases), program and project marketing, electronic marketing etc.) related to the DWQMS, WWQMS and BCOS systems.

#### 4.4 Manager C&R

- Acts as System Management Representative (SMR) for the BCOS, WWQMS and DWQMS systems, as described in the Roles, Responsibilities and Authorities Matrix (PW-WW-G-006-001), and as such, ensures that staff, management and members of council are informed of interactions with regulatory bodies, as they relate to this role in the above systems.
- Acts as owner representative of the Operating Authority for COH DWSs and WWSs.
- Oversees CSG to ensure activities related to inspections, approvals related to alterations to MDWLs, DWWPs, ECAs or Permits to Take Water are undertaken.
- Oversees compliance to EQH&S legal requirements related to Hamilton Water sections.

#### 4.5 Senior Regulatory Coordinator

- Assists the SMR with compliance support and external communications related to the BCOS, WWQMS and DWQMS systems.
- Oversees activities of CSG related to external communications with the MOE and other regulatory stakeholders.

#### 4.6 CSG

- Provides the public with access to the DWQMS and WWQMS Operational Plan Summary Report and Financial Plan, and updates information as required.
- Coordinates the maintenance of MOUs and associated documents with other municipalities and hospitals.
- Participates in the preparation, submission and distribution of the Annual Drinking Water Report to public and Council as per Preparation of Annual Drinking Water Report to Public and Council PW-WW-P-004-005
- Coordinates the review of requested documentation for MOE drinking water inspections.
- Uploads records to BCOS as necessary.
- Logs recommendations and non-compliances in the Audits & Inspection application of the BCOS database.



- Enters, assigns, and maintains legal tasks for regulatory reports in the BCOS database.

#### 4.7 CHEL

- Provide data to assist CSCO with compilation of O. Reg. 170/03 Section 11 Annual Drinking Water Quality Reports and the Schedule 22 Annual Summary Report
- Distribute O. Reg. 170/03 Section 11 Annual Drinking Water Quality Report for the Woodward DWS and the Schedule 22 Annual Summary Report to Halton Region and Haldimand County.

#### 4.8 CS&CO

- Participates in the preparation, submission and distribution of the Annual Drinking Water Report to public and Council as per Preparation of Annual Drinking Water Report to Public and Council PW-WW-P-004-005
- Makes available to the public the Operational Plan Summary Reports (PW-WW-R-001-002 and PW-WW-R-001-003), the Financial Plan, the DWQMS and WWQMS Policy (PW-WW-R-002-002 and PW-WW-R-002-003).

#### 4.9 WWWSP

- Completes and submits regulatory reports (e.g. as per ECA conditions) and assigned legal tasks within the BCOS database.

#### 4.10 EME

- Prepares and makes available to the public and other stakeholders (e.g. contractors, industry, regulatory agencies) information related to spills, environmental enforcement and pollution prevention.
- Completes and submits regulatory reports as per the legal tasks within the BCOS database.

#### 4.11 CD

- Prepares and makes available to others (e.g. special interest groups, regulatory bodies) information related to Hamilton Water large capital projects.
- Applications and amendments to regulatory bodies will be managed by the respective project manager.

#### 4.12 PO

- Coordinates on-site MOE inspections.
- Working in coordination with CSG, to amend any license or ECA/CofA changes requested or required.

- Completes and submits regulatory reports as per the legal tasks within the BCOS database.

#### **4.13 PMATS**

- Applications and amendments to regulatory bodies will be managed by the respective project manager.
- Completes and submits regulatory reports as per the legal tasks within the BCOS database.

#### **4.14 WD&WWC**

- Coordinates on-site MOE inspections.
- Applications and amendments to regulatory bodies will be managed by the respective project proponent e.g. project manager.
- Prepares and makes available to others (e.g. special interest groups, regulatory bodies) information related to stormwater management as required or as requested.

#### **4.15 WM**

- Prepares and makes available to others (e.g. special interest groups, regulatory bodies) information related to Hamilton Water environmental assessments.
- Prepares and makes available to others (e.g. special interest groups, regulatory bodies) information related to Hamilton Water source water protection.

#### **4.16 All Staff**

- Communications and/or requests for information from regulators shall be copied to the SMR and CSG.
- When advised of any imminent risks to human health or safety in the community by a consultant, ensure that all identified risks are communicated immediately to their direct Supervisor or designate.
- Responsible to follow this procedure and submit change requests as required.

### **5 PROCEDURE**

#### **5.1 Public**

- 5.1.1 CSG makes the DWQMS Operational Plan Summary Report Binders available to the public at select COH locations, as indicated in the Document Control Application of the BCOS Database. The DWQMS Operational Plan Summary Report is also available on the COH website.

- 5.1.2 The Communications section of the City Manager's Office (via [webrequest@hamilton.ca](mailto:webrequest@hamilton.ca)) posts (electronically) annual Water Quality Reports pursuant to Section 11 of O. Reg. 170/03 on the City of Hamilton Website.
- 5.1.3 The SMR or Director of Hamilton Water or designate informs CS&CO – O&E of Regulatory Orders. Upon notification, CS&CO – O&E posts the Orders on the City Website. CS&CO – O&E notifies Members of Council of the new orders posted to the City's website via email at the time of posting. Upon closure, the SMR informs CS&CO – O&E to update the status of the posting on the City Website.
- 5.1.4 CS&CO – O&E prepares letters, newspaper notifications, flyers etc. for public/community events and displays as relevant.
- 5.1.5 Information about responding to customer complaints is provided in the following Level V procedures: DWQMS – Scheduler/Dispatcher – Water Quality (PW-WW-CS-CS-P-011-003) and BCOS + DWQMS Water Quality Complaints (PW-WW-DC-WD-P-024-004).
- 5.1.6 Information on general communication with the public is provided in the following Level IV procedure: CS&CO Internal and External Communication (PW-WW-CS-P-008-003).
- 5.1.7 Information on all HW related correspondence with the public (except for Public Service Notices managed by Public Health Services, and Media Advisories / Media Releases / Social Media Releases are managed by the Communications Officer) can be found in Process for Issuing External Communications with the Public PW-WW-P-008-010.
- 5.1.8 Information related to spills, environmental enforcement and pollution prevention is prepared by EME and made available to the public and other stakeholders (e.g. contractors, industry, and regulatory agencies) as required.
- 5.1.9 Information related to stormwater management is prepared by WD&WWC and is made available to others (e.g. special interest groups, regulatory bodies) as required or as requested.
- 5.1.10 Information related to Hamilton Water environmental assessments is prepared by WWWSP and is made available to others (e.g. special interest groups, regulatory bodies, and Council) as required.
- 5.1.11 Information related to Hamilton Water source water protection is prepared by WM and is made available to others (e.g. special interest groups, regulatory bodies and Council) as required.
- 5.1.12 Information related to Hamilton Water large capital projects is prepared by CD and is made available to others (e.g. special interest groups, regulatory bodies) as required.

## **5.2 Suppliers**

- 5.2.1 Communication with essential suppliers is carried out according to the Essential Supplies and Services Procedure (PW-WW-P-035-001).

## **5.3 Other Municipalities**

- 5.3.1 Memorandums of Understanding and Agreements are in place with the Town of Grimsby, the Region of Halton and Haldimand County. These MOUs are in place to facilitate emergency communication in the event of a water quality incident in one municipality that could affect water quality in the neighbouring municipality.
- 5.3.2 Contact lists for MOUs are created as separate documents. Contact information is reviewed and updated annually. The communication procedures are reviewed and updated every two years. The MOU is updated as necessary, both may be updated more frequently, as required.
- 5.3.3 Section 11 Annual Water Quality Report for the Woodward DWSs and the Schedule 22 Summary Report are sent to Halton Region and Haldimand County as required by O. Reg. 170/03 as per Preparation of Annual Drinking Water Report to Public and Council PW-WW-P-004-005.

## **5.4 MOE Inspections**

- 5.4.1 The MOE notifies Hamilton Water staff of upcoming inspections (announced and unannounced). Staff from PO and WD&WWC coordinate any associated on-site inspections.
- 5.4.2 CSG coordinates the review of requested documentation including the facilitation of associated meetings, as required. CSG distributes the list of required documentation to Sectional Managers, BLT, and relevant staff. Each affected Section Manager or designated staff provides CSG with the required documentation within the required time frame. The Section Manager or designate undertakes a quality assurance review of the information to be submitted to the MOE.
- 5.4.3 CSG compiles all information received and follows up with the respective sections if additional information is requested/required. CSG reviews the information for submission to ensure documentation requested by the MOE has been provided.
- 5.4.4 CSG sends completed information packages to the MOE and maintains a duplicate copy. Select files are stored electronically in the BCOS Database. The location of hard copies is tracked with a record profile in the Environmental Records application of the BCOS Database.

## 5.5 MOE Inspection Reports

- 5.5.1 MOE draft Inspection Reports are forwarded to HW-SMT and BLT for review. CSG consolidates comments on the draft report and submits them to the MOE, copying applicable staff.
- 5.5.2 The MOE Final Inspection Report is uploaded to the BCOS database and distributed to HW-SMT and BLT. Recommendations and Non-compliances are logged through the Audits & Inspection application of the BCOS database in accordance with Non-conformance, Corrective & Preventive Action Process, PW-WW-P-015-002. They are assigned to applicable staff in consultation with their Section Managers and/or sectional QA staff.
- 5.5.3 Formal communications regarding inspection reports are uploaded into BCOS.

## 5.6 Regulatory Orders

- 5.6.1 Upon receipt of a Regulatory Order, the SMR immediately notifies the Director of Hamilton Water and other applicable Directors. The Director of Hamilton Water notifies the General Manager of Public Works.
- 5.6.2 The SMR, Director of Hamilton Water, and Senior Regulatory Coordinator will seek advice from the Legal Services Division, as required.
- 5.6.3 The Senior Regulatory Coordinator or designate facilitates the collection of data in response to the Order in a Solicitor Client Privileged folder on the Network drive.
- 5.6.4 Responses to the Order are reviewed by the Legal Services Division prior to submission to regulator.
- 5.6.5 The SMR may review and update the status of orders (including closure) as needed.

## 5.7 MOE Drinking Water and Wastewater System Approvals

- 5.7.1 Communications between the COH and the MOE regarding DWS approvals are described in DWQMS Approvals Process for Alterations of Drinking Water Systems (PW-WW-P-004-001).
- 5.7.2 MDWLs are renewed every five years. CSG coordinates the licence renewal process with the MOE in consultation with the SMR and relevant HW-SMT managers.
- 5.7.3 Communications between the COH and the MOE regarding wastewater system approvals are described in BCOS Alterations to Wastewater Systems (PW-WW-P-004-006 – under development).

5.7.4 CSG uploads amended documents and distributes the document to HW-SMT, BLT and any other relevant staff.

## **5.8 MOE Permits to Take Water**

5.8.1 Communications between the COH and the MOE regarding Permit to Take Water applications are described in DWQMS Approvals Process for Alterations of Drinking Water Systems (PW-WW-P-004-001).

5.8.2 New PTTW applications are prepared by relevant Hamilton Water Division sections. The completed application packages are submitted to the SMR for verification and signature as the DWS Owner Representative.

5.8.3 PTTW renewal applications must be submitted 90 days prior to the expiration date of the existing permit. CSG assigns a task in the BCOS Database to notify relevant staff in advance of the submission dates.

5.8.4 New Permits to Take Water are uploaded and distributed by CSG to HWSMT, BLT, and other relevant staff.

## 5.9 Communication with MOE

5.9.1 The table below identifies SMR notification requirements for communication with MECP:

Description	Type of Communication	Originated From	One Window to/from SMR?	SMR Cc'd	Who Sends to MOE	Who uploads to BCOS?
Licence/DWWP	Renewal Application, and Amendment	CSG, CD	Y	N/A	CSG	CSG
Form 1	Owner Verification	P&ED, ES	N/A	N	N/A	WWWSP
Form 2 & 3	Owner Verification	CD, PO, PMATS	Y	Y	N/A	CSG
PTTW - Woodward	Renewal Application	PO	Y	Y	PO	CSG
PTTW - Wells	Renewal Application	WM	Y	Y	WM	CSG
ECA	New Application	CD, WUP	Y	Y	CSG, WUP	CSG
ECA	Amendment	CD, WUP	Y	Y	CSG, WUP	CSG
Comments on PTTW Application which may affect source water of Hamilton DWS	Correspondence	WM	N/A	Y	N/A	

Description	Type of Communication	Originated From	One Window to/from SMR?	SMR Cc'd	Who Sends to MOE	Who uploads to BCOS?
MECP DWS Inspections	Data submission	CSG	N/A	N	CSG	CSG
MECP DWS Inspections	Draft/Final Report	CSG	N/A	Y	CSG	CSG
Lab Technical Updates/Direction	Email/Bulletin	CHEL	N/A	N	CHEL	CHEL
Lab Licencing/Licence Amendments	Email	CHEL	N/A	N (FYI email after approval)	CHEL	CHEL
Spill Reporting	Phone Call	EME	N/A	N	EME - EEO	N/A
Spill Incident Detail Request(s)	Phone Call / Email Communication from MECP	EME	N/A	Y	CSG	
Community Lead Owners Spreadsheet to MECP	Email	EME	N/A	Y	EME -PM- RM	EME



Description	Type of Communication	Originated From	One Window to/from SMR?	SMR Cc'd	Who Sends to MOE	Who uploads to BCOS?
Corrosion Control Annual Report - Evaluating effectiveness of corrosion control measures	Email	EME - PMRM with support from C&R	N/A	N/A	(SMR)	CSG
DW sampling / CCP information Request(s)	Phone Call / Email Communication from MECP or CSG	EME	N/A	Y	CSG	CSG
AWQI Reporting	Phone call	CHEL	N/A	Notified verbally/text	CHEL	CHEL
Bypass reporting (New)	Email	Process Supervisor Public Health Inspector	N/A	Y	Process Supervisor	CSG
Annual HW/MECP Meeting	Meeting Minutes	CSG	N/A	Y	CSG	CSG

## 5.10 Regulatory Reports

5.10.1 Regulatory reports are completed and submitted as per the legal tasks within the BCOS database.

## 5.11 Legislative Proposals and Consultations

5.11.1 CSG reviews legislative postings that relate to water and wastewater programs and processes and notify relevant HW-SMT managers and staff of postings. CSG or other staff, if appropriate, coordinate comments in consultation with relevant HW-SMT managers and provide responses, as required. Formal communications regarding legislative postings and responses are uploaded into BCOS.

## 5.12 Adverse Water Quality Incidents in Drinking Water Systems

5.12.1 The Adverse Water Quality Incidents (AWQIs) and Corrective Actions procedure (PW-WW-P-015-001) documents the communication requirements relating to an adverse water quality event. Relevant records are uploaded in the BCOS Database.

## 5.13 Hospitals

5.13.1 The SMR ensures that Hamilton Health Sciences Corporation (HHSC) and St. Joseph's Healthcare Hamilton (SJHH) is notified of circumstances listed in the Hamilton Health Sciences Corporation, St. Joseph's Healthcare Hamilton and Public Works Memorandum of Understanding including events relating to the potential or actual water reduction or complete loss of water to any of the HHSC (General, Juravinski, McMaster, St Peter's) or SJHH (Charlton, King, West 5<sup>th</sup>, West End Clinic/Urgent Care Centre) sites.

## 5.14 Ministry of Municipal Affairs and Housing (MMAH)

5.14.1 The SMR ensures that the MMAH is provided a copy of the Council-endorsed Financial Plan as per deadlines specified in [O. Reg. 453/07 s.2](#).

5.14.2 [CS&CO – O&E](#) facilitates access to the Financial Plan through the COH website, and places notices in newspapers. The Financial Plan is also available for viewing on the DWQMS website. [Hamilton Water Storefront](#) provides free copies to the public upon request.

## 5.15 Ministry of Labour

- 5.15.1 The COH Health, Safety and Wellness group has established corporate and Public Works OHS procedures including those related to critical accident reporting (Critical Injury Investigation and Reporting Procedure - COH-RQ-WI-024).
- 5.15.2 The MOL may visit the workplace, conduct onsite inspections, and/or issue an Order/Requirement/Notice. If this occurs, staff shall follow the corporate Safety Guideline Ministry of Labour Workplace Visits and Powers of Inspectors COH-RQ-GD-030.
- 5.15.3 Upon receipt of a MOL Order, the respective director and manager immediately notifies the Hamilton Water Leadership Team who notifies the Director of Hamilton Water as per Sec 5.6.
- 5.15.4 The respective manager performs a root cause analysis and ensures corrective and preventative actions are completed to ensure timely closure of the Order.
- 5.15.5 CS&CO – O&E notifies Members of Council of the new orders posted to the City's website via email at the time of posting as per Sec 5.1.3.

## 5.16 Accreditation/Licencing Bodies

- 5.16.1 CHEL coordinates all communications to/from CALA as pertains to the lab accreditation.
- 5.16.2 CHEL coordinates all communications to/from the MOE as pertains to the lab licencing.
- 5.16.3 The SMR or delegate coordinates communication with the DWQMS Accreditation Body.
- 5.16.4 CSG initiates contact with the DWQMS Accreditation Body in advance of third-party audits and ensures that all required documentation is provided. The SMR, together with other members of HW-SMT, initiates appeals as warranted by audit results.

## 5.17 Project Applications

- 5.17.1 Applications and amendments to regulatory bodies will be managed by the respective project manager.
- 5.17.2 Project managers will notify developers of requirements of the MDWL and DWWP as required.

## 5.18 Distribution of Federal and Provincial Orders

5.18.1 Upon receipt of a Federal or Provincial Order, the respective director and manager immediately notifies the Hamilton Water Leadership Team who notifies the Director of Hamilton Water as per Sec 5.6.

5.18.2 Staff shall follow Procedure for Distribution of Federal and Provincial Orders (CM20001) (City Wide) when any federal and/or provincial ministry or provincial officer orders are received by management/staff, the actual orders or copies of the orders are to be immediately forwarded to City Council and such orders or copies of orders are to be displayed in a prominent place on the City web site and at the site of the incident as per Sec 5.1.3.

## 5.19 Sharing of Consultant Reports with Identified Imminent Risks to Human Health or Safety

5.19.1 Staff shall follow Procedure for Sharing of Consultant Reports with Identified Imminent Risks to Human Health or Safety (HUR20002) (City Wide), where City staff receive a report from a consultant that identifies an imminent danger to human health or safety, the City Manager will ensure that information is promptly and appropriately shared with Council.

## 5.20 Spill Notification Stakeholders

5.20.1 If a sewage spill is deemed to originate from Hamilton Water infrastructure, the communication protocol *Sewage Spills Communication Plan, PW-WW-P-012-018* will be followed. Actions taken and stakeholders notified will be based on the magnitude of the spill. Examples of stakeholders are Public Health, residents, Public Works General Manager, Senior Leadership/Council, the media, Hamilton Harbour Remedial Action Plan Partners, Indigenous Nations and conservation organizations. Examples of notifications are emails, resident notifications, webpage updates, media releases, press conferences, social media updates and COH E-newsletter updates. Types of communication and stakeholders to be notified are delineated in the "Procedure PW-WW-P-012-018 Sewage Spills Communication Plan" and are based on the spill scenario.

## 6 ASSOCIATED DOCUMENTS

Adverse Water Quality Incidents (AWQIs) and Corrective Actions, PW-WW-P-015-001

Control of Documents, PW-WW-P-010-001

Control of Records, PW-WW-P-016-001

Internal Communications, PW-WW-P-008-001

Roles and Responsibilities, PW-WW-P-006-001

BCOS Principles, PW-WW-R-002-001

Legal and Other Requirements, PW-WW-P-004-004

DWQMS Approvals Process for Alterations of Drinking Water Systems, PW-WW-P-004-001

DWQMS Operational Plan Summary Report PW-WW-R-001-002

DWQMS – Scheduler/Dispatcher – Water Quality PW-WW-CS-CS-P-011-003

BCOS + DWQMS Water Quality Complaints PW-WW-DC-WD-P-024-004

Essential Suppliers and Services, PW-WW-P-035-001

DWQMS Management Review, PW-WW-P-018-001

DWQMS Operational Plan Manual - CSG PW-WW-M-001-001

DWQMS Operational Plan Summary Report Binders PW-WW-M-001-002, 003

DWQMS Policy, PW-WW-R-002-002

Memorandum of Understanding Between City of Hamilton Water and Wastewater Division and Town of Grimsby Public Works Staff

DWQMS Operational Communication Between City of Hamilton & Town of Grimsby - Water Supply or Water Quality Incident, PW-WW-P-008-005

Extended Contact List - DWQMS Operational Communication Between City of Hamilton and Town of Grimsby - Water Supply or Water Quality Incident, PW-WW-L-008-001

Agreement-2012 March 9-Communication Protocol between the City of Hamilton & the Region of Halton (Signed Copy)

Contact List: Operational Communication Between Hamilton & Halton - Emergency Situations, PW-WW-L-008-002

Operational Communication Between Hamilton & Halton - Emergency Situations, PW-WW-P-008-004

Memorandum of Understanding Between City of Hamilton ESI Division and the Corporation of Haldimand County Environmental Services

DWQMS Operational Communication Between City of Hamilton & Haldimand County – Water Supply or Water Quality Incident, PW-WW-P-008-008

Extended Contact List - DWQMS Operational Communication Between City of Hamilton & Haldimand County – Water Supply or Quality Incident, PW-WW-L-008-003

Memorandum of Understanding Between Public Health Services and Public Works, Hamilton Water Division

BCOS Alterations to Wastewater Systems (PW-WW-P-004-006 - under development)

Non-conformance, Corrective & Preventive Action Process PW-WW-P-015-002

Critical Injury Investigation and Reporting Procedure COH-RQ-WI-024

Safety Guideline Ministry of Labour Workplace Visits and Powers of Inspectors COH-RQ-GD-030

Roles, Responsibilities and Authorities Matrix PW-WW-G-006-001

Procedure for Distribution of Federal and Provincial Orders (CM20001) (City Wide)

Sharing of Consultant Reports with Identified Imminent Risks to Human Health or Safety (HUR20002) (City Wide)

Regulatory Lead Sampling Program PW-WW-P-013-009

CS&CO Internal and External Communication PW-WW-CS-P-008-003

SLA between CCC and HW

Process for Issuing External Communications with the Public PW-WW-P-008-010

Sharing of Consultant Reports PW-P-008-001

Preparation of Annual Drinking Water Report to Public and Council PW-WW-P-004-005

Communications & Strategic Initiatives Intake Form

Distribution of Federal and Provincial Orders PW-P-008-002 (in development)

Sewage Spills Communication Plan, PW-WW-P-012-018 (pending release)

**BCOS software tracks the revision history of document.**

**1 PURPOSE**

Outline the roles and responsibilities of HW staff with regards to external communications, specifically public notices, direct mail, advertisements, brochures, policies and reports to residents or ICI customers.

**2 SCOPE**

This procedure refers to all HW related correspondence with the public **except for** Public Service Notices which are managed by Public Health Services. In addition, Media Advisories and Media Releases are managed by the Communications Officer.

**3 DEFINITIONS**

<b>BCOS</b>	Beyond Compliance Operating System – Environmental, Health and Safety Management System for the Hamilton Water Division. BCOS is an umbrella system to the Environmental Laboratory QMS, the DWQMS, and the WWQMS sub-systems.
<b>BCOS Database</b>	Electronic management system software provided by Intelx. Scope of software is EQH&S and meets the requirements of the BCOS standards.
<b>CHEL</b>	City of Hamilton, Environmental Lab
CS&CO	Customer Service and Community Outreach Section
<b>DWQMS</b>	<b>Drinking Water Quality Management System</b>
Hamilton Water (HW)	The Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.
ICI	Industrial, Commercial, and/or Institutional
IPS	Infor Public Sector (Formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
O&E	Outreach & Education <b>group within CS&amp;CO</b>

PIC	Public Information Centre
PO	Plant Operations <b>Section</b>
PM	Project Manager
QA	Quality Assurance (staff): Staff who are responsible for maintaining quality within HW's Quality Management Systems. e.g. Sectional Quality Assurance Analyst, Quality Assurance Supervisor etc.
<b>Sectional Workspaces</b>	<b>Websites for individual Hamilton Water sections, providing links to key documents, records and other websites</b>
SPM	Senior Project Manager
SME	Subject Matter Expert
SMR	Systems Management Representative (for the BCOS, DWQMS, and WWQMS Systems) - Manager of Compliance and Regulations Section. Equivalent to QMS Representative as described in the DWQMS Standard.
WD&WWC	Water Distribution and Wastewater Collection Section
WDO	Water Distribution Operators
<b>WWQMS</b>	<b>Wastewater Quality Management System</b>

#### **4 RESPONSIBILITY**

##### 4.1 HW **Directors** and Sectional Managers

- Ensure that all staff follow this procedure
- Review and/or approve communications as required

##### **4.2 Manager, Compliance & Regulations**

- **One window to inform the MOE of any sensitive communications to the media or to Council.**

##### 4.3 **SPM and PM**, Outreach & Education (O&E)

- Work with HW staff to ensure that there is consistency in the message and



appearance (e.g., spelling, grammar and easy to understand language).

4.4 Quality Assurance Staff or designate

- Upload the required materials into the BCOS database and upload to the Sectional Workspaces as required

4.5 HW Staff

- Follow this procedure

**5 PROCEDURE**

**5.1 Methods of External Communication**

Table 5-1 lists examples of the types of communication that may be sent externally to the public. The list is not exclusive and is meant to serve as a guide to HW staff involved in distributing external communications. It also includes a summary of the review, approval, distribution and record keeping requirement for the various types of communication sent to the public. In the context of this table, recordkeeping refers to uploading into the BCOS database.

Address and/or location specific customer communications (i.e., letters) are uploaded to BCOS database by the CS&CO QA for O&E.

Advertisements are not upload as a record in BCOS currently. PM, O&E maintains a tracking sheet that consists of what ads run, where and the cost.

**Table 5-1: Methods of External Communications**

<b>Communication</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	<b>Public Distribution</b>	<b>BCOS Record Keeping</b>
Adverse Water Quality Incidents (AWQI's) Documents (e.g., Boil Water Advisories)	PO and/or WD&WWC SME, in collaboration with PHS	Relevant Section's Quality Supervisor or equivalent and SMR	Director, HW or Director Water & Wastewater Operations	WD&WWC – WDO's	CSG or Applicable QA
Customer / Address Specific Regulatory Letter Templates	Applicable Section	SME and SMR	Manager of Applicable Section	CS&CO	Applicable QA or Designate (template only)
Advertisements: Newspaper or Magazine (e.g., Release of the Financial Plan, Annual DW Report, Hydrant Maintenance Program)	SME with help from O&E – CS&CO	Author, SME and O&E	Manager of Applicable Section	O&E	CHEL (Annual DW Report only)
PIC Notice	Applicable Section PM or designate	SPM or Equivalent	Section Manager	Applicable Section or O&E	Applicable Section QA, PM or Designate
Marketing Materials	SME, O&E	SME	Manager of Applicable Section	Applicable Section or O&E	Applicable QA or designate

Communication	Author	Reviewer	Approver	Public Distribution	BCOS Record Keeping
CS&CO Letters & Templates (e.g., Meter Operation Letter Templates)	SME	Applicable Supervisor, Superintendent or SPM	Applicable Supervisor, Superintendent or SPM	Relevant Staff	CS&CO QA or Designate (Template only)
Other HW Section Letters (except CS&CO) (e.g., Construction Notices, Corrosion Control Plan)	SME	Section Manager or Senior Project Manager	Director, HW or Director of Water & Wastewater Operations or Director Water & Wastewater Planning & Capital	Hand delivered – Relevant Section Mail Out –O&E	Applicable Sections QA or designate.
Web Page Content	SME and/or O&E	SME	Relevant Section Manager	O&E, in conjunction with the Web Team	N/A
Website (i.e., DWQMS and WWQMS Policies, Water Quality Report)	SME	SME	Relevant Section Manager and SMR as applicable	O&E, in conjunction with the Web Team	Applicable QA or designate

Communication	Author	Reviewer	Approver	Public Distribution	BCOS Record Keeping
<p>Notification of Sewage Spill from HW Infrastructure. Depending on the spill scenario this may include emails, resident notifications, webpage updates, media releases, press conferences, social media updates and COH E-newsletter updates. See Sewage Spills Communication Plan PW-WW-P-012-018.</p>	<p>SME</p>	<p>SME</p>	<p>Director, HW or Director of Water &amp; Wastewater Operations or Director Watershed Management</p>	<p>Applicable Section or O&amp;E</p>	<p>Applicable Sections QA or designate.</p>

## 5.2 Ensuring Consistency of Messaging and Tone and relevance to audience

5.2.1 Consider the following when communicating with the public:

- Are materials widely distributed?
- Is the purpose related to public education or promotional materials?
- Does the communication require consistency of messaging?
- Does it need to be displayed on the website?
- Corporate branding ([Visual Identity and Branding Guideline – At a Glance](#))

5.2.2 For the communication process for the management of marketing materials see Management of Marketing Material PW-WW-P-010-002

5.2.3 For responding to media inquiries, please refer to Communications Policy – Media Relations

## 5.3 Utilization of Social Media

5.3.1 Hamilton Water may use social media to relay messages to the public, where scope, messaging, and content are decided by Managers, Directors, or applicable staff in Hamilton Water. Message content should be reviewed and issued by the Communications Officer.

## 6 ASSOCIATED DOCUMENTS

- [Control of Records - PW-WW-P-016-001](#)
- [BCOS - Creating Mailing Lists - PW-WW-CS-P-011-006](#)
- [BCOS + DWQMS Hamilton Water Emergency Response Plan PW-WW-P-012-001](#)
- [Memorandum of Understanding Between Public Health Services and Hamilton Water – PW-WW-R-012-009](#)
- [Management of Marketing Material - PW-WW-P-010-002](#)
- [Visual Identity and Branding Guideline – At a Glance](#)
- [Communications Policy – Media Relations](#)
- [Preparation of Annual Drinking Water Report to Public and Council PW-WW-P-004-005](#)
- [Sewage Spills Communication Plan PW-WW-P-012-018 \(Under development\)](#)
- [External Regulatory and Other Communications Procedure # PW-WW-P-008-002](#)

BCOS software tracks the revision history of document.



<b>Title:</b>	<b><i>Sewage Spills Communication Plan</i></b>		
<b>Document #</b>	<b><i>PW-WW-P-012-018</i></b>	<b>Document Level</b>	<b><i>Level III</i></b>
<b>Issue #:</b>	<b><i>1.0</i></b>	<b>Issue Date:</b>	<b><i>June 2023</i></b>

**1 PURPOSE**

To identify required communications when staff discover Hamilton Water sewer infrastructure discharging to the natural environment during dry weather.

**2 SCOPE**

The procedure is to assist staff in keeping Council, Senior Leadership, the community, media, and other stakeholders informed in an open, transparent and consistent manner. It applies to any staff in the Hamilton Water Division who discover a sewage spill from City infrastructure that can potentially impact the natural environment that occurs during dry weather. This procedure does not apply to overflows due to wet weather or at critical regulators.

**3 DEFINITIONS**

COH Spills Reporting Line	<b>905-540-5188:</b> A telephone line strictly for reporting spill occurrences and/or to request assistance. An Environmental Enforcement Officer is on-call to assess each incident and respond appropriately. This line is monitored 24 hours a day, 7 days a week and the number is 905-540-5188. Outside business hours a caller must hold the line to speak to a Customer Contact Centre representative.
Hamilton Water (HW)	Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.
MOE	Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP)
SAC	MOE, Spills Action Center (1-800-268-6060)
Spill	When used with reference to a pollutant, means a discharge: (a) into the natural environment, (b) from or out of a structure, vehicle or other container, and (c) that is abnormal in quality or quantity in light of all the circumstances of the discharge.



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**4 RESPONSIBILITY**

**4.1 Director Hamilton Water or Delegate**

- Ensure Senior Leadership Team and Council is notified via email for all the Scenario B & Scenario C spills.
- Respond to the questions from press and attend all the press conferences in response to the Scenario C spills.

**4.2 Director Water and Wastewater Operations or Delegate**

- Ensure Public Health Services is notified via email in response to all the spills
- Ensure that impacted residents, HSR, Emergency Services and Ward Councillor of the area are notified of any traffic impacts.
- Ensure all the available information is posted to City’s website for public awareness and is updated in a timely manner as new information in response to the spill is discovered
- Ensure all the required communications in response to Scenario B & C spills are happening from Communications Officer to the local media
- In the event of scenario C, ensure Director, Watershed Management (or designate) is notified of the details of the spill to communicate to external stakeholders.

**4.3 Director Watershed Management or Delegate**

- Ensure all the related external stakeholders are notified in response to Scenario C spills as identified in section 5.1.2 of this procedure.

**4.4 Communications Officer**

- Ensure all the spills are noted in the City of Hamilton e-newsletter for public awareness.
- Ensure all the Scenario B and C spills are posted on City of Hamilton’s social media Refer to figure 5.1: Response Scenario to identify different spill scenarios

**4.5 Manager of Compliance and Regulations**

- One window for notifications and follow-up communications to the MOE Local District Office.

**4.6 All Staff**

- Report spills and investigate spills



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**5 PROCEDURE**

**5.1 Communication Process**

5.1.1 If a potential sewage spill from Hamilton Water infrastructure is identified, staff will notify the MOE of the potential spill through the SAC and the COH Spills Reporting Line as per the [Spills Response Notification, Coordination and Corrective Actions, PW-WW-P-012-003](#). Staff will then investigate the situation further to confirm if there is a spill occurring from Hamilton Water infrastructure or from a private cross-connection.

- If a spill is confirmed, staff will follow up with the SAC with the appropriate information.
- If the investigation determines that there is a private sewer lateral cross-connection, staff will follow the processes that have been created under the sewer lateral cross-connection program.

Note: If the investigation confirms a sewage spill originating from Hamilton Water infrastructure, the communication protocol will be based on the relative magnitude of the spill and its corresponding response scenario as indicated below.

5.1.2 Figure 1 outlines 3 different scenarios that trigger a specific response protocol. The response scenario will be based on the highest factor in Figure 1. For example, a cross-connection within Hamilton Water Infrastructure involving 5 houses with an estimated spill volume of 150 million litres would trigger Response Scenario B in Figure 2; or, if there were a cross-connection with 15 houses and an estimated spill volume of 50 million litres, this would also trigger Response Scenario B in Figure 2. **Also, a spill with environmental impact, e.g. fish kill, impact to or loss of fish and wildlife habitat, will escalate the spill to a higher scenario.**

**Figure 1: Response Scenario**

Scenario Matrix	Scenario A	Scenario B	Scenario C
# of Properties Connected	Up to 10 properties	11-49 properties	50 + properties
Estimated Volume of Spill	Up to 100 million litres	101 million litres to 500 million	Over 500 million litres

5.1.3 These numbers are based on past events and responses. As new scenarios arise, the criteria need to be evaluated and confirmed and inform council as required.

5.1.4 Figure 2 outlines the various communication channels that would be used in each scenario. The requirements below are meant to be minimum levels of communication. It is recognized that each situation may have unique factors that may require increased levels of communication.







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**Figure 2: Communication Channels and Person Responsible for each Scenario**

Communication Channel	Response Scenario A	Response Scenario B	Response Scenario C	Person Responsible or Delegate
Public Health Services Notification via E-Mail	x	x	x	Director of Operations
Resident Notification - Immediately Impacted Residents and Ward Councillor - if traffic or service disruption occurs	x	x	x	Director of Operations
Post on City Website (dedicated webpage)	x	x	x	Director of Operations
Notify Senior Leadership Team (SLT)/Council via E-Mail		x	x	Director Hamilton Water
Media Note (e-mail from Comms to local media)		x	x	Director of Operations
Media Release		x	x	Communications Officer
Press Conference			x	Director Hamilton Water
City of Hamilton Social Media		x	x	Communications Officer
City of Hamilton E- Newsletter (for subscribers)	x	x	x	Communications Officer
Notify External Stakeholders (see section 5.15 for list)			x	Director Watershed Management
Notification to the Local District Office of the MOE, prior to <b>any</b> public notifications by Hamilton Water (e.g., media, posting on City Website, etc.). Also responsible for follow-up communications (i.e., following the initial reporting to SAC as per 5.1.1)	x	x	x	Manager of Compliance & Regulations



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5.1.5 The following additional stakeholders will be directly notified in Response to Scenario C in Figure 2:

**External Stakeholders**

- Hamilton Harbour Remedial Action Plan partners
- Haudenosaunee Confederacy Chiefs Council
- Huron-Wendat Nation
- Mississauga’s of the Credit First Nation
- Six Nations of the Grand River
- Joint Stewardship Board in the event of a discharge to Red Hill Creek
- The following Agencies in the event of a discharge to lands or waters under their jurisdiction:
  - Hamilton-Oshawa Port Authority
  - Royal Botanical Gardens
  - Hamilton Conservation Authority
  - Halton Regional Conservation Authority
  - Niagara Regional Conservation Authority
- Local Industry or impacted landowners in the area of outfalls to the environment

5.1.6 Email communications will use the email template included in Appendix 1.

**5.2 Sewage Spills Webpage**

5.2.1 Information about sewage spills originating from Hamilton Water infrastructure is recorded and available as public information through a web-based mapping system. This webpage provides background information on Hamilton Water’s sewer inspection programs, includes a registry of all sewage spills originating from Hamilton Water infrastructure and shows the location of each spill on an interactive map. List below outlines the information that is included in the registry:

- Date of Discovery
- Location
- Asset ID in WIMS
- Background/Cause
- Corrective Actions
- Date Remediation Complete
- Estimated Spill Volume
- Estimated Duration of Spill
- Cost of Repair



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**6 ASSOCIATED DOCUMENTS**

- [Spills Response Notification, Coordination and Corrective Actions, PW-WW-P-012-003](#)

BCOS software tracks the revision history of document.

**7 APPENDIX 1 – EMAIL NOTIFICATION TEMPLATE**

Subject: Sewage Spill Notification

Note: The intent is to create a standard Outlook template, which is under development.

<b>Sewage Spill Notification</b>	
<b>Spill Discovery Location</b>	
<b>Spill Discovery Date</b>	
<b>Spill Discovery Method</b>	
<b>Background / Cause</b>	
<b>Corrective Action</b>	
<b>Remediation Completed</b>	
<b>Estimated Volume</b>	
<b>Estimated Duration</b>	
<b>Cost of Repair - Excluding staff time</b>	

Insert Signature



Hamilton

# BURLINGTON STREET SEWAGE SPILL UPDATE

SEPTEMBER 8, 2023

# OVERVIEW

Timeline

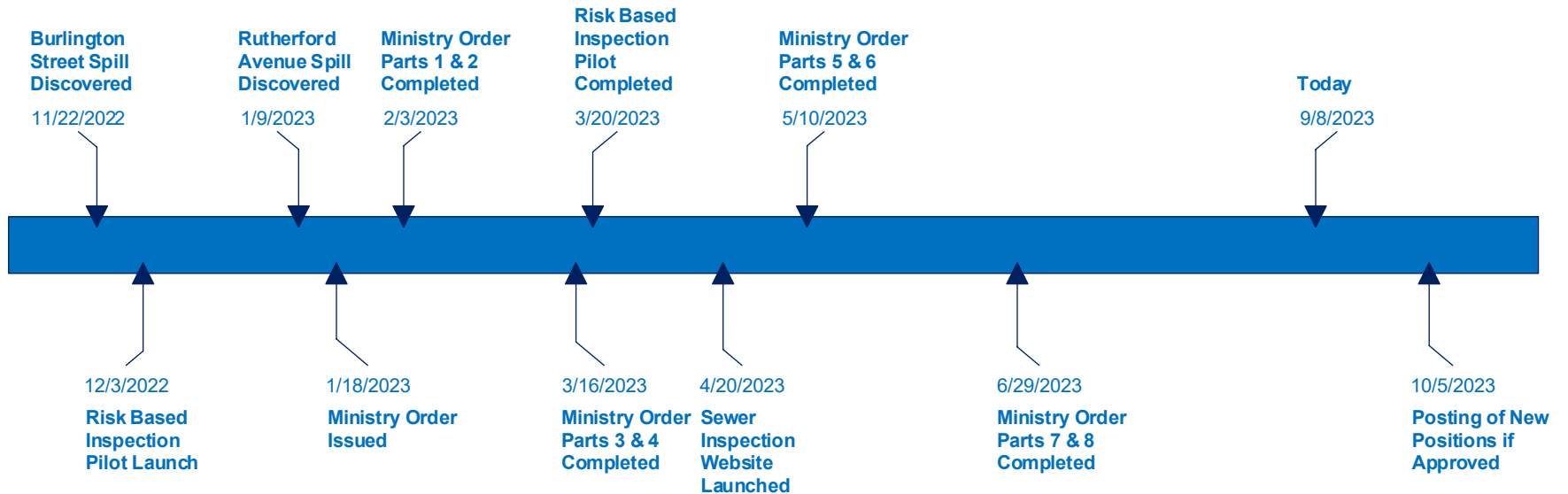
Ministry Order Objectives

Assessments and Recommendations

Additional Risks and Recommendations

Summary of Recommendation and Alternative Costs

# TIMELINE



# MINISTRY ORDER OBJECTIVES

## Identifying spills and unauthorized discharges



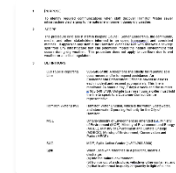
### Sampling

- In-pipe sampling
- Determining appropriate parameters for further investigation



### Inspection

- Sewer inspections
- Feasibility of videoing all sewers
- Feasibility of risk-based inspection
- Gap analysis of programs



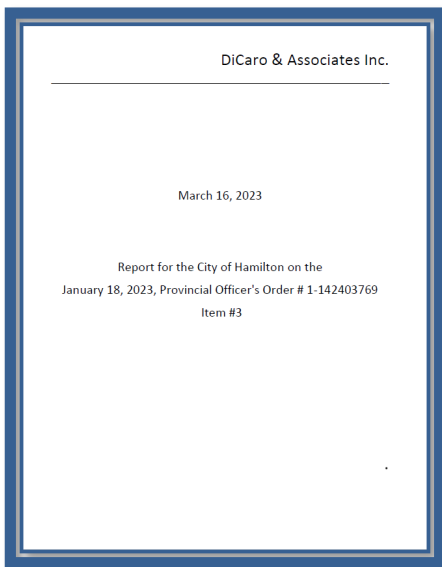
### Documentation

- Documented program
- Ties existing programs, new sampling and inspection programs together

# MEETING THE MINISTRY'S ORDER REQUIREMENTS

## Order Parts 1,2,3,4

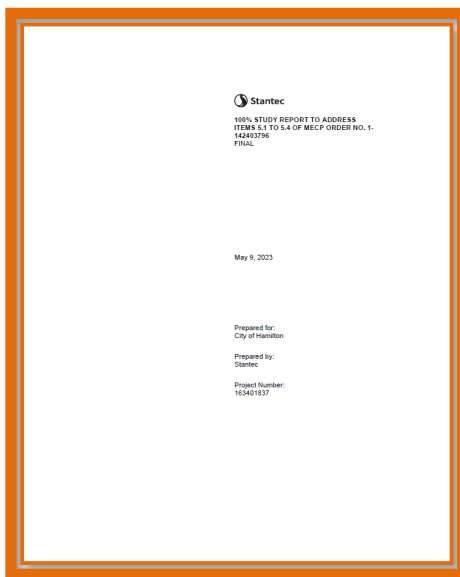
### Sampling



DiCaro & Associates

## Order Parts 1,2,5,6

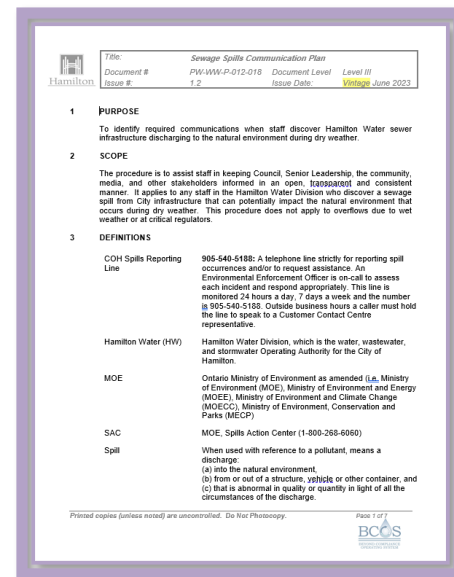
### Inspection



Stantec Consulting

## Order Parts 7,8

### Documentation



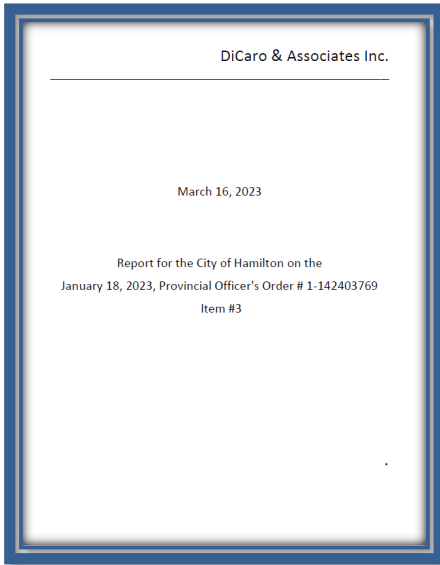
Hamilton Water Staff



# FOCUS OF THIS RECOMMENDATION REPORT

## Order Parts 3,4

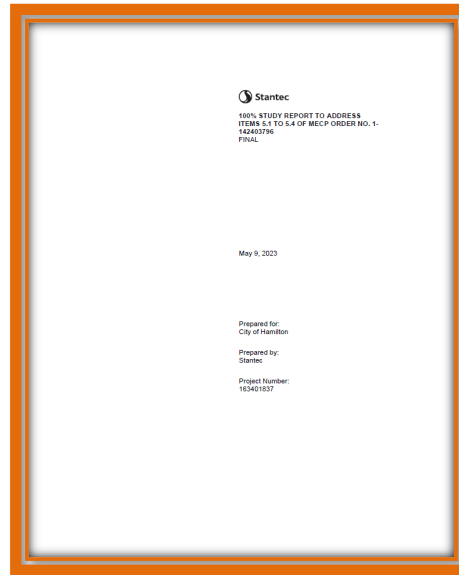
### Sampling



DiCaro &  
Associates

## Order Parts 5,6

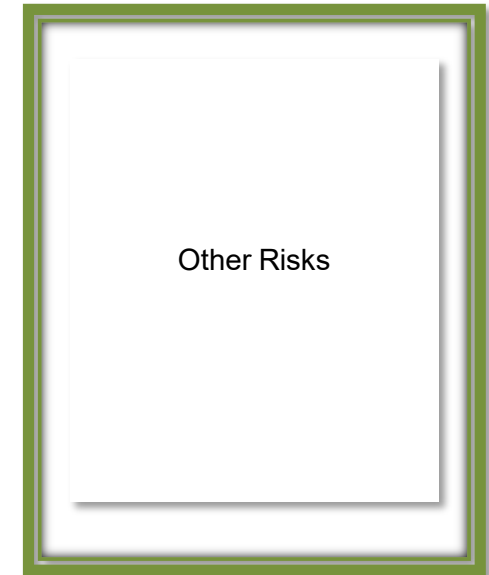
### Inspection



Stantec  
Consulting

## Non-Order Items

### Other Risks



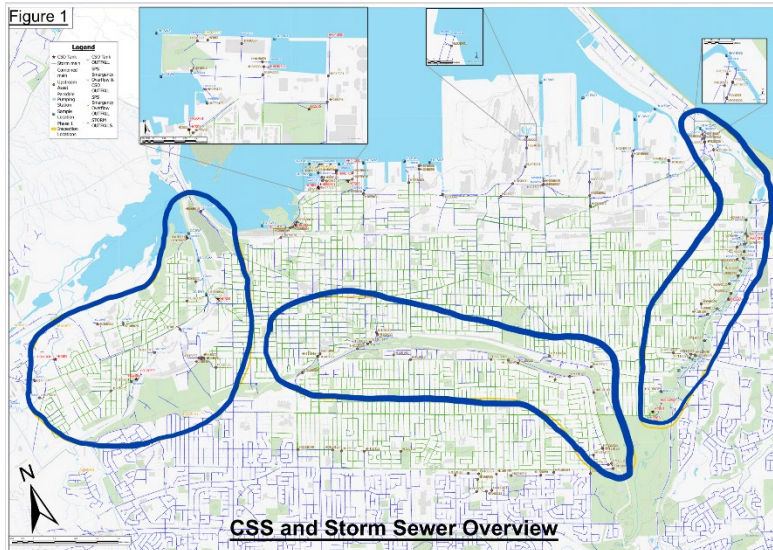
Hamilton Water  
Staff

# NEW SEWER SAMPLING PROGRAM

Order Parts 3,4

Recommended – A Dry Weather In-Pipe Storm Sewer Sampling Program Within the Combined Sewer System

## Phase 1



## Phase 2



# NEW SEWER SAMPLING PROGRAM RESOURCES

Staffing Recommendations  
\$580 K



Vehicles and Equipment  
\$195 K



Contract Savings  
\$100 K

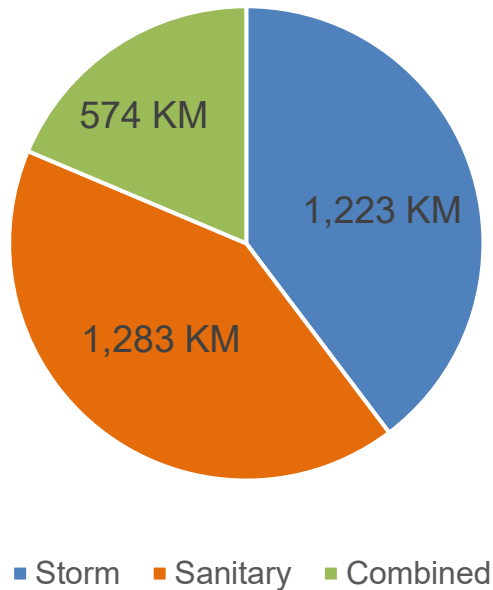


2024 Net Budget  
Impact \$675 K

Order Parts 5,6

# DETAILED IN-PIPE INSPECTION PROGRAM

## 3,080 KM of Sewer System



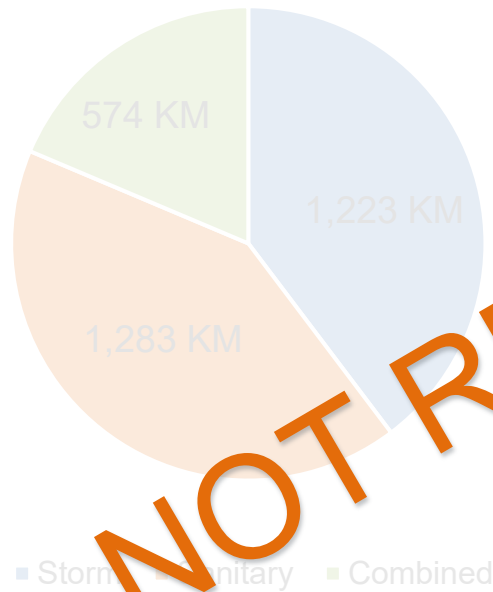
\$ 50 Million

8 4-5 Staff

7-10 Years

# DETAILED IN-PIPE INSPECTION PROGRAM

3,080 KM of Sewer System



**NOT RECOMMENDED**

\$100 Million

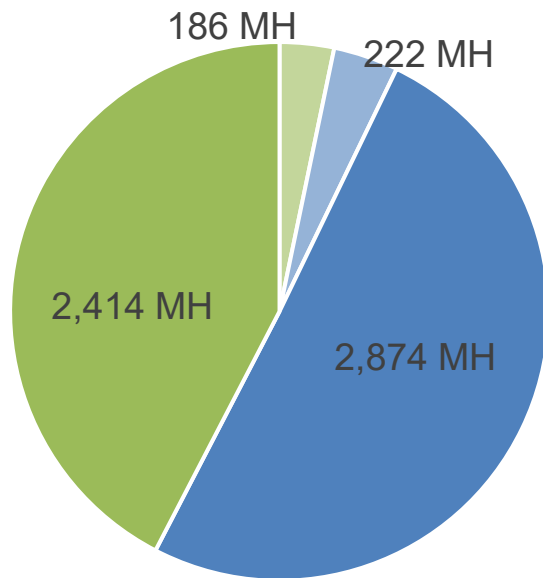
4-5 Staff



7-10 Years

# RISK-BASED INSPECTION PROGRAM

## 5,696 Sewer Maintenance Holes



- Pilot Combined
- Remaining Storm
- Pilot Storm
- Remaining Combined



3 Million



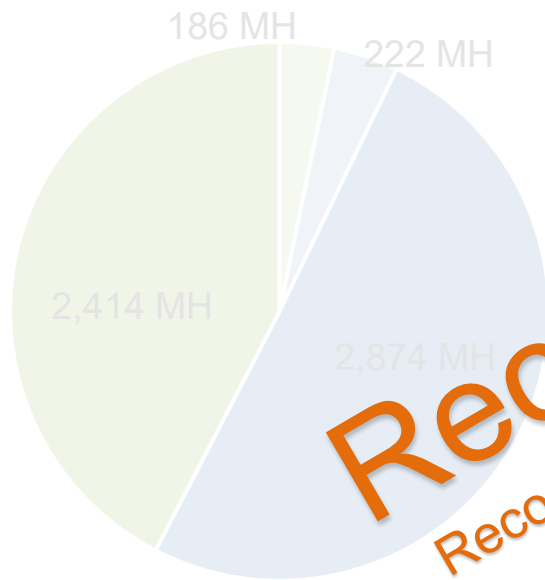
4 Staff



5 Years

# RISK-BASED INSPECTION PROGRAM

## 5,696 Sewer Maintenance Holes



- Pilot Combined
- Pilot Storm
- Remaining Storm
- Remaining Combined

**Recommended**  
Recognized as Industry Best Practice



\$3.5 Million  
4 Staff  
5 Years

# RISK-BASED INSPECTION PROGRAM





# RISK-BASED INSPECTION PROGRAM RESOURCES

Staffing Recommendations  
\$501 K



Vehicles and Equipment  
\$195 K



Camera Inspections  
\$140 K

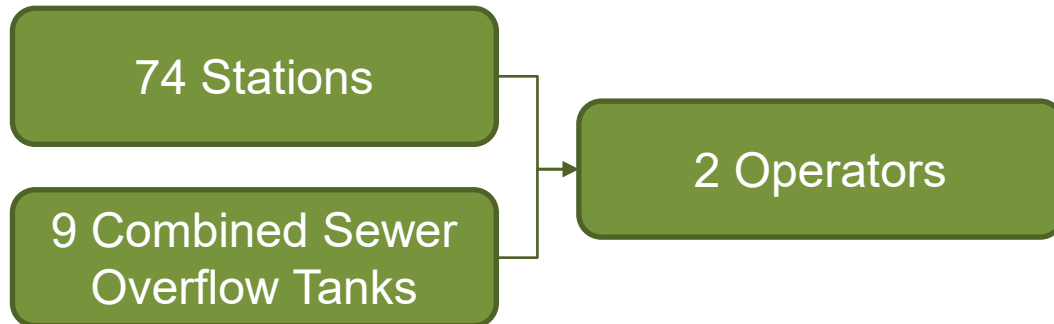
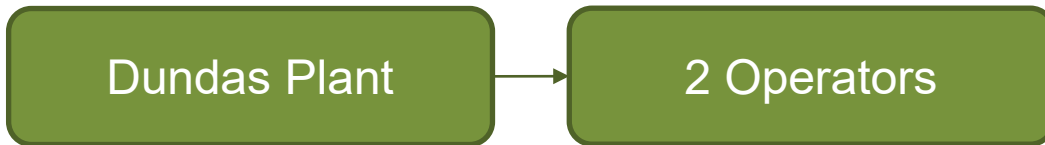


2024 Net Budget  
Impact \$836 K

# OTHER IDENTIFIED RISKS

Non-Order Items

## Wastewater Collection Outstations Team



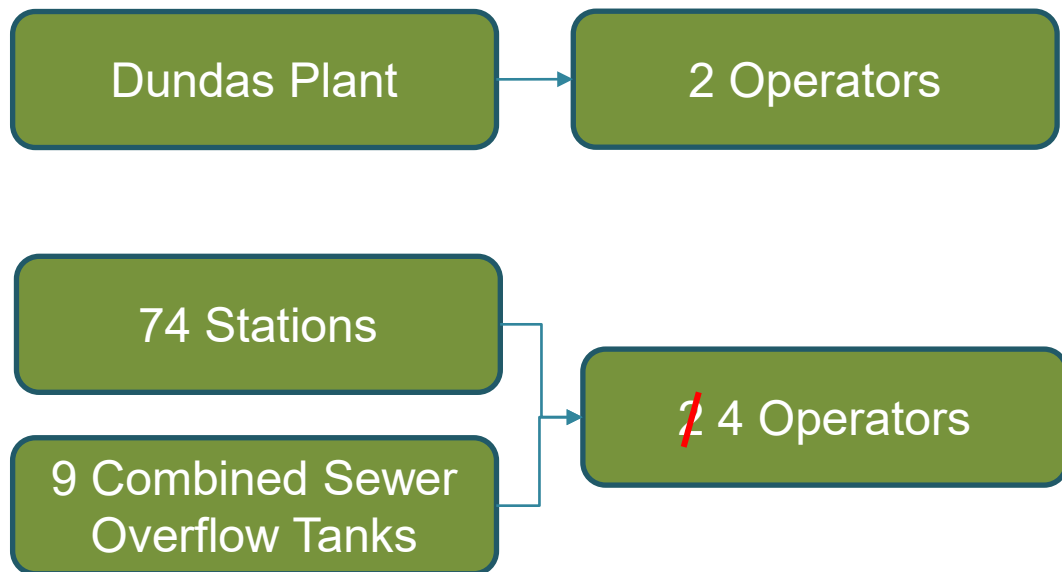
**Risk**



\$60 K Overtime

# OTHER IDENTIFIED RISKS

## Wastewater Collection Outstations Team



Recommendation:

2 Additional Operators

Reduce Associated Overtime



- \$60 K Overtime

# OTHER IDENTIFIED RISKS

## Water Distribution & Wastewater Collection



**Risk**

# OTHER IDENTIFIED RISKS

## Water Distribution & Wastewater Collection

1 / 2 Managers

98 Staff

Water Distribution

\$23 M Operating

Wastewater  
Collection

\$15 M Capital

Stormwater  
Management  
Facilities & Drainage  
Operations

Regulatory  
Requirements

Recommendation:  
1 Additional Manager

# OTHER IDENTIFIED RISKS RESOURCES

Staffing Recommendations  
\$397 K



Vehicles and Equipment  
\$170 K



Overtime Savings  
- \$60 K



2024 Net Budget  
Impact \$507 K

# RECOMMENDATION AND ALTERNATIVE COSTS

Cost/Savings	Recommendation	Alternative 1	Alternative 2
Staffing	\$1.47 M	\$1.29 M	\$1.08 M
Operational	\$200 K	\$200 K	\$180 K
Contractor	- \$100 K	- \$100 K	- \$100 K
Overtime	- \$60 K	- \$60 K	N/A
One-time Capital	\$500 K	\$500 K	\$350 K
<b>Total</b>	<b>\$2.01 M</b>	<b>\$1.83 M</b>	<b>\$1.51 M</b>

12 Staff + 6 Vehicles

11 Staff + 6 Vehicles

9 Staff + 4 Vehicles


# BURLINGTON STREET SEWAGE SPILL UPDATE

## Questions?





## INFORMATION REPORT

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	September 8, 2023
<b>SUBJECT/REPORT NO:</b>	Procedural Changes Resulting from Chedoke Creek and Burlington Street Combined Sewage Discharge Incidents (PW23056) (City Wide) <b>(Outstanding Business List Item)</b>
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Charlene McKay (905) 546-2424 Ext. 2671
<b>SUBMITTED BY:</b>	Nick Winters Director, Hamilton Water Public Works Department
<b>SIGNATURE:</b>	

### COUNCIL DIRECTION

At the November 28, 2022 meeting of the Public Works Committee, staff were directed to report back to the Public Works Committee respecting changes to the Standard Operating Procedures as a result of the lessons learned from the Chedoke Creek and Burlington Street combined sewage discharge incidents.

### INFORMATION

Since the discovery of the Chedoke Creek combined sewage spill in July of 2018, and the subsequent discovery of the Burlington Street combined sewage discharge incident in November of 2022, the Public Works Department and Hamilton Water Division have implemented a number of new operational programs and procedural changes to assist in the prevention of future incidents from occurring. However, should further incidents occur, measures are now in place that allow early detection and mitigation. In addition, new protocols ensure appropriate and timely communication to City Council, the community, and the City's partners. Additional programs have also been implemented to enhance the stewardship of the City's watersheds and natural environment.

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**SUBJECT: Chedoke Creek and Burlington Street Combined Sewage Discharge Incidents (PW23056) (City Wide) (Outstanding Business List)**  
**– Page 2 of 5**

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Below is a list and brief description of new or revised programs or procedures that have been developed as result of the Chedoke Creek and Burlington Street combined sewage discharge incidents.

#### New Programs or Processes

##### Watershed Action Plan

The purpose of the Watershed Action Plan is to reduce the pollution of waterways due to rural and urban runoff, reduce the impact of City infrastructure and operations, increase the retention and infiltration of stormwater into the ground and increase the connectivity of naturalized areas and green infrastructure. The plan also minimizes system capacity risk due to growth, development, and climate change and maximizes the adaptability of investments to manage future uncertainties.

Report PW19008(u) provided the City's General Issues Committee with a thorough update on the Watershed Action Plan at its meeting of June 28, 2023.

##### Surface Water Quality Program

The Surface Water Quality Program builds a baseline understanding of surface water conditions over time and provides processes to respond to and investigate any water quality anomalies that may be due to infrastructure malfunctions or standard operating conditions. The program developed open communication and transparency with various partners. The City has also launched the website [Surface Water Quality Program](#) that enables the City to share the surface water quality data with the public. Report PW23040 provided the Public Works Committee with an update on the progress and successes of the program for 2022.

##### Wastewater Quality Management Program

The Wastewater Quality Management System has established new processes or improved existing processes to effectively collect and treat wastewater in a manner that protects the environment and meets legal and regulatory requirements. The program supports the City's commitment to a high-quality wastewater system. The Wastewater Quality Management System received endorsement from Council on December 16, 2020 (Report PW20076). Report PW23030 and the Wastewater Quality Management System Annual Report informed the Owner (Mayor and Council) and City's Public Works Committee of the performance and major milestones achieved in 2022.

**SUBJECT: Chedoke Creek and Burlington Street Combined Sewage Discharge Incidents (PW23056) (City Wide) (Outstanding Business List)**  
**– Page 3 of 5**

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### Enhanced City of Hamilton Inspections Program

The Enhanced City of Hamilton Outstation Inspection Team was developed in 2020 and consists of one (1) Maintenance Operator, one (1) Millwright, one (1) Electrician, and one (1) Instrumentation Technician. Four (4) of the full-time equivalent staff approved by Council were used to staff the Enhanced City of Hamilton Outstation Inspection Team, who are tasked with completing thorough inspections and preventative maintenance at the City's water and wastewater treatment plants, pumping stations, reservoirs, water towers, well systems and combined sewer overflow tanks. The team is also responsible for looking at a facility or process area as a whole to verify its operational functionality instead of focusing on preventative maintenance of individual components. This includes reviewing the process control narratives, Supervisory Control and Data Acquisition set points, Environmental Compliance Approval requirements, asset information, and the facility/process standard operating procedures. Report PW21019 provided Council with an update on the status of the Enhanced City of Hamilton Outstation Inspection Team's accomplishments.

### Council and Public Transparency

The details surrounding the Chedoke Creek combined sewage spill have been widely reported within the community and to City Council and all associated reports and materials can be found on the City's website [Chedoke Creek Spill & Remediation Activities](#). The details surrounding the Burlington Street combined sewage discharge incident have been similarly reported and associated reports and materials can be found on the City's website [Burlington Street Sewage Spill & Response](#). In addition, all materials related to Ministry Orders can be found on the City's website [Ministry Orders](#).

Another example of enhanced public transparency regarding sewage discharges is the public facing website [Monitoring Wastewater Overflows and Bypasses](#). Developed in 2020, this website includes a live map of overflows and bypasses, the Wastewater Treatment Bypass Log and the Combined Sewer Overflow Log. Report PW19091(a) provided the City's Public Works Committee with an update on processes related to reporting wastewater treatment plant bypasses and combined sewer overflows, processes related to the new website and notification of signage at combined sewer overflows.

The City has also developed a public facing website [Sewer Inspection Program](#) which informs the community about cross-connections and provides links to the City's [Sewer Systems](#) and [Wastewater Quality Management System](#) websites. The Sewer Inspection Program website also includes a live map to sewage spills from Hamilton Water infrastructure. The [Sewer Inspection Program](#) website was reported to Council

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**SUBJECT: Chedoke Creek and Burlington Street Combined Sewage Discharge Incidents (PW23056) (City Wide) (Outstanding Business List)**  
**– Page 4 of 5**

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through Communication Update HW.23.03 - Spills from Hamilton Water Infrastructure Webpage.

**New and Updated Procedures - Chedoke Creek Combined Sewage Spill**

In response to the Chedoke Creek combined sewage spill, in 2019, Hatch Consulting completed a comprehensive review and update of combined sewer overflow operations and maintenance plans. The report entitled “City of Hamilton CSO Facilities O&M Plan - MECF Order Item 6” (Hatch, January 31, 2019) provided a summary of the Operations and Maintenance Plan for the City’s combined sewer overflow facilities. The Operations and Maintenance Plan report included updated standard operating procedures for the combined sewer overflow facilities which are reviewed every three years or sooner if required. The Operations and Maintenance Plan report also included an updated process control narrative for the Main/King combined sewer overflow tank. Process control narratives for the remaining facilities were not changed and therefore not included in the Operations and Maintenance Plan however they are maintained as key operational documents for the facilities.

Appendix “A” to Report PW23056 summarizes the standard operating procedures that were updated or created in response to the Chedoke Creek combined sewage spill.

**New and Updated Procedures - Burlington Street Combined Sewage Discharge Incident**

In addition to the programs and procedures above, Hamilton Water has also developed additional procedures or improved existing procedures to identify, respond to and communicate spills and unauthorized discharges of untreated combined sewage from the City’s sewer system.

Appendix “B” to Report PW23056 summarizes the standard operating procedures that were updated or created in response to the Burlington Street combined sewage discharge incident.

All the procedures summarized in Appendix B to Report PW23056, along with the City’s Surface Water Quality Program Framework were submitted to the Ministry of Environment, Conservation and Parks on Thursday June 29<sup>th</sup>, 2023, in response to Items No. 7 and 8 of the Provincial Officer’s Order Number 1-142403769 issued to the City on January 18, 2023.

**APPENDICES AND SCHEDULES ATTACHED**

**Appendix “A” to Report PW23056 – Procedures to Address the Chedoke Creek Combined Sewage Spill**

**SUBJECT: Chedoke Creek and Burlington Street Combined Sewage Discharge  
Incidents (PW23056) (City Wide) (Outstanding Business List)  
– Page 5 of 5**

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Appendix “B” to Report PW23056 – Procedures to Address the Burlington Street  
Combined Sewage Discharge Incident

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Engaged Empowered Employees.

## Procedures to Address the Chedoke Creek Combined Sewage Spill

### Operations and Maintenance Manual:

In response to the Chedoke Creek combined sewage spill, process control narratives, drawings and standard operating procedures were reviewed and updated for all combined sewer overflow facilities to ensure that critical equipment and environmental discharge points were identified and the requirements relating to annual manual valve position checks, monthly visual inspections and annual flow meter calibrations were included in the updated Operations and Maintenance Plan documents.

The report entitled "City of Hamilton CSO Facilities O&M Plan – MECP Order Item 6" (Hatch, January 31, 2019) is a summary of the updated Operations & Maintenance Plan for the City's combined sewer overflow facilities. The Operations and Maintenance Plan includes an updated standard operating procedure for each of the combined sewer overflow facilities which are reviewed every three years or sooner if required. The standard operating procedures document responsibilities of Hamilton Water staff, detailed operations information, safety procedural information, technical description of the equipment at the facility, Supervisory Control and Data Acquisition screen drawings, dry and wet weather operations processes, and inspection processes.

The following is a list of the standard operating procedures included in the Operations and Maintenance Plan:

- Detailed Sewer System Operation – Greenhill CSO Tank #1 (HCS01) (PW-WW-PO-P-011-HCS01-1004-001)
- Detailed Sewer System Operation – Bayfront Park CSO Tank (HCS02) (PW-WW-PO-P-011-HCS02-1004-002)
- Detailed Sewer System Operation – James Street CSO Tank (HCS03), Ferrie/Mary Sluice Gates (HCG08) (PW-WW-PO-P-011-HCS03-1004-003)
- Detailed Sewer System Operation – Main/King CSO Tank (HCS04) (PW-WW-PO-P-011-HCS04-1004-004)
- Detailed Sewer System Operation – Eastwood Park CSO Tank (HCS05), Burlington/Ferguson Sluice Gate (HCG06), Ferrie/Ferguson Sluice Gate (HCG07) (PW-WW-PO-P-011-HSC05-1004-005)
- Detailed Sewer System Operation – Greenhill CSO Tank #2 (HCS06) (PW-WW-PO-P-011-HCS06-1004-001)
- Detailed Sewer System Operation - Red Hill CSO Pipe Facility (HCS07) (PW-WW-PO-P-011-HCS07-1004-001)
- Detailed Sewer System Operation – Royal Avenue CSO Tank (HCS08) (PW-WW-PO-P-011-HCS08-1004-001)
- Detailed Sewer System Operation – McMaster CSO Tank (HCS09) (PW-WW-PO-P-011-HCS08-1004-001)
- Detailed Sewer System Operation – Wentworth/Rosemary Sluice Gate (HCG03) (PW-WW-PO-P-011-HCG03-1004-053)

- Detailed Sewer System Operation - Brampton/Strathearne Sluice Gate (HCG04) (PW-WW-PO-P-011-HCG04-1004-054)
- Detailed Sewer System Operation – Wellington/Burlington Sluice Gates (HCG14) (PW-WW-PO-P-011-HCG14-1004-056)
- Detailed Sewer System Operation - Parkdale Burlington Wastewater Collection Station (HC001) (PW-WW-PO-P-011-HC051-1001-051)

The Operations and Maintenance Plan also includes an updated process control narrative for the Main / King combined sewer overflow tank. The process control narrative includes an overview of the facility, a reference to facility drawings, detailed descriptions of equipment and instrumentation, as description of control modes, dry and wet weather operational processes, sampling requirements and equipment control logic. Process control narratives for the remaining facilities were reviewed however no revisions were required. As a result, they were not included in the Operations and Maintenance Plan report however they are maintained as key operational documents for the facilities.

### **Sewage Discharge Response and Notification Procedure:**

The following procedures were developed or updated in response to the Chedoke Creek combined sewage spill:

- Overflow Response Plan for Wastewater Pumping Stations and CSO Tanks (PW-WW-PO-P-1000-011-001)
- Distribution and Posting of Federal and Provincial Orders (PW-P-008-002).

The Overflow Response Plan for Wastewater Pumping Stations and CSO Tanks (PW-WW-PO-P-1000-011-001) procedure provides instructions on how to respond to a wet well surcharge and overflows at wastewater pumping stations and combined sewer overflow tanks. The procedure was updated to describe the process to update the public facing website [Monitoring Wastewater Overflows and Bypasses](#) developed in 2020 to provide further transparency on wastewater treatment bypasses and combined sewage overflows.

The Distribution and Posting of Federal and Provincial Orders (PW-P-008-002) procedure documents the process to ensure that Council receives notification of all Federal and Provincial Orders, ensure all Orders are posted and made available to the public on the City website and, distributed, if required, as specified by the Order. Specifically, Directors are required to ensure all Orders received by a Division are made available to the public on the website [Ministry Orders](#).

## Procedures to Address the Burlington Street Combined Sewage Discharge Incident

The following are programs and processes for identifying potential spill(s) and unauthorized discharges of untreated sewage within the City’s sewer system, including program enhancements. The following procedures were submitted to the Ministry on Thursday June 29<sup>th</sup>, 2023 in response to Items No. 7 and 8 of the Provincial Officer’s Order Number 1-142403769 issued to the City on January 18, 2023:

Scope of Process / Procedure	Name of Process / Procedure
Sampling & Monitoring	<ul style="list-style-type: none"> <li>• Unauthorized Discharges of Untreated Sewage – Identification, Monitoring and Control Framework (PW-WW-L-013-009)</li> <li>• Dry Weather Sampling (PW-WW-P-013-012) Note: Release of procedure is pending council approval for resources</li> </ul>
Maintenance	<ul style="list-style-type: none"> <li>• Infrastructure Maintenance, Rehabilitation and Renewal (PW-WW-P-026-001)</li> <li>• Updating Asset Information Using WIMS Red Lining (PW-WW-P-011-014) Spill Response</li> <li>• Spills Response Notification, Coordination and Corrective Actions (PW-WW-P-12-003)</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• External Regulatory and Other Communications (PW-WW-P-008-002)</li> <li>• Process for Issuing External Communications with the Public (PW-WW-P-008-10)</li> <li>• Sewage Spills Communication Plan (PW-WW-P-012-018)</li> </ul>

Communication Update HW.23.05 - Provincial Officer’s Order #1-142403769 notified Public Works Committee that the above requested procedures and guidance documents were submitted to the Ministry prior to the June 30, 2023 deadline.

### Sampling & Monitoring Procedure:

The new list entitled Unauthorized Discharges of Untreated Sewage – Identification, Monitoring and Control Framework (PW-WW-L-013-009) describes programs and processes for identifying spill(s) and unauthorized discharges of untreated sewage within the City’s sewer system. The list includes program enhancements identified by addressing the items in Provincial Officers' Order Number 1-142403769 dated January 18, 2023.

The new procedure entitled Dry Weather Sampling (PW-WW-P-013-012) was released in draft for review by Hamilton Water management in June 2023 and is pending Council approval for resources. The procedure describes how stormwater collection system dry



weather sampling testing and monitoring will be undertaken. The procedure also describes how the results of the sampling testing will be communicated to stakeholders. Report PW22088(b)) provides recommendations on additional full-time staff required to support the in-pipe sewage inspection and sampling programs.

The sampling schedule and locations for the In-Pipe Storm Program will be developed once Hamilton Water receives confirmation on the resources available to conduct the work. Staff from the Environmental Monitoring & Enforcement Unit be responsible for the In-Pipe Storm Sewer Inspection and Sampling Program.

The proposed approach is to begin inspections at the visible outfalls move upstream to maintenance holes until a maintenance hole is not influenced by Lake levels can be identified and sampled. If flow is observed during Dry Weather in a maintenance hole not influenced by Lake levels, it will be sampled along with upstream maintenance holes. This sampling continues systematically within the storm sewer outfall catchment area. Sample analytes and their triggers will evolve and change over time. Initial analytes include metals, total mercury, caffeine, biological oxygen demand, E.coli, pH, O-Phosphate, chloride and temperature. The City's Environmental Laboratory staff will manage the analysis of the samples

#### **Maintenance Procedure:**

The Infrastructure Maintenance, Rehabilitation and Renewal (PW-WW-P-026-001) procedure describes how Hamilton Water implements infrastructure maintenance, rehabilitation, and renewal programs. Infrastructure maintenance, rehabilitation and renewal depends on the condition of infrastructure, the life-cycle costs of various rehabilitation options, redundancy of equipment and the related operational risk.

The procedure entitled Asset Information Using Water Information Management System Red Lining (PW-WW-P-011-014) outlines the process for Hamilton Water staff to use the redline function in the Water Information Management System to indicate changes to water, stormwater and sewer assets. The redline edits are reviewed by the Water Information Management System Unit who updated the Hansen software. The redline process ensures Hamilton Water staff have current information regarding water, stormwater and sewer assets.

The Spill Response Notification, Coordination and Corrective Actions (PW-WW-P-12-003) procedure describes the protocol for notification and coordination of spill response among Hamilton Water staff. The spill response procedure ensures that immediate and sufficient corrective actions are implemented in a consistent and effective manner. The procedure applies to spills originating from Hamilton Water infrastructure or spills that could have an impact on Hamilton Water infrastructure. The procedure was updated to include a link to the new Sewage Spills Communication Plan (PW-WW-P-012-018) which is under development.

## Communications Procedure:

The External Regulatory and Other Communications (PW-WW-P-008-002) procedure outlines Hamilton Water's communication processes related to water, stormwater and wastewater programs or processes with external regulatory and other external stakeholders. The external regulatory stakeholders include MECP. The procedure defines the responsibilities for the Director, Hamilton Water, other Hamilton Water Directors and Managers and Manager of Compliance and Regulations who is the System Management Representative for the Wastewater Quality Management System and Drinking Water Quality Management System. The scope of the procedure includes regulatory orders, inspections, approvals, and other legal instruments. The procedure was updated to reference the Distribution of Federal and Provincial Orders (PW-WW-P-008-002) procedure which is in development and Sewage Spills Communication Plan (PW-WW-P-012-018) which is pending release.

The procedure entitled Process for Issuing External Communications with the Public (PW-WW-P-008-10) is a generic communications procedure outlining the roles and responsibilities of Hamilton Water staff with regards to external communications of multiple types of external communications including public notices, direct mail, advertisements, brochures, policies and reports to residents or industrial, commercial or institutional customers. The procedure was updated to identify the Wastewater Quality Management System web page and annual drinking water systems reports.

In June 2023, Hamilton Water developed the new procedure entitled Sewage Spills Communication Plan (PW-WW-P-012-018) which is currently under review by Hamilton Water management. The purpose of the Communications Plan ([included as Appendix "F" to Report PW22088\(a\)](#)) is to assist in keeping Council, Senior Leadership, the community, media and other stakeholders informed in an open and transparent manner, including publishing a webpage dedicated to providing information relating to sewage spills originating from City wastewater infrastructure that have been identified through Hamilton Water's risk-based inspection pilot program, or through other means. The Communications Plan was outlined in Communication Update HW.23.03 - Spills from Hamilton Water Infrastructure Webpage. In addition, the Communications Plan was presented to [Public Works Committee on February 13, 2023](#).


In the event of a spill from Hamilton Water infrastructure, staff notify MECP of the potential spill through the Spills Action Centre and the City's Spills Reporting Line. Hamilton Water staff will then investigate the incident to confirm if there is a spill from Hamilton Water infrastructure or from a private cross-connection. If the investigation determines that there is a private sewer lateral cross-connection the staff will follow established processes of the Sewer Lateral Cross-Connection Program to address the incident. The procedure identifies different response protocols for different levels of cross-connections and/or the estimated volume of the sewage spill.

As the severity of the incident increases the types of communication channels also increase. Examples of communication channels include notification to Public Health Services, resident notifications, posting on the City's website, notification to the Senior Leadership Team and Council, media notes and releases, press conferences and others. The procedure also identifies additional stakeholders who will be identified the higher severity cross-connections and/or sewage spills.

The Communication Update HW.23.03 - Spills from Hamilton Water Infrastructure Webpage also announced the dedicated [Sewer Inspection Program](#) webpage which provides an overview of the pilot program's approach and progress to date, as well as a mapping tool that allows users to view a registry of all sewage spills originating from City of Hamilton wastewater infrastructure. Using the interactive map, web users can view the location of a spill, date of discovery, cause, corrective actions, spill volume and more.



**CITY OF HAMILTON**  
**PUBLIC WORKS DEPARTMENT**  
**Engineering Services Division**

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	September 8, 2023
<b>SUBJECT/REPORT NO:</b>	Proposed Permanent Closure and Sale of a Portion of Concession 6 Road West, Flamborough (PW23054) (Ward 12)
<b>WARD(S) AFFECTED:</b>	Ward 12
<b>PREPARED BY:</b>	Cetina Farruggia (905) 546-2424 Ext. 5803
<b>SUBMITTED BY:</b>	Jackie Kennedy Director, Engineering Services Public Works Department
<b>SIGNATURE:</b>	

## RECOMMENDATION

That the application of the owner of 1165 Highway 8, Flamborough, to permanently close and purchase a portion of Concession 6 Road West, Flamborough ("Subject Lands"), as shown on Appendix "A", attached to Report PW23054, be approved, subject to the following conditions:

- (i) That the City Solicitor be authorized and directed to prepare all necessary by-laws to permanently close and sell the highway, for enactment by Council;
- (ii) The Corporate Real Estate Office of the Planning and Economic Development Department be authorized and directed to enter into any requisite easement agreements, right of way agreements, and/or other agreements deemed necessary to affect the orderly disposition of the Subject Lands and to proceed to sell the Subject Lands to the owners of 1165 Highway 8, Flamborough, as described in Report PW23054, in accordance with the City of Hamilton Sale of Land Policy By-law 14-204;
- (iii) The City Solicitor be authorized to complete the transfer of the Subject Lands to 1165 Highway 8, Flamborough pursuant to an Agreement of

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**SUBJECT: Proposed Permanent Closure and Sale of a Portion of Concession 6 Road West, Flamborough (PW23054) (Ward 12) - Page 2 of 4**

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Purchase and Sale or Offer to Purchase as negotiated by the Corporate Real Estate Office of the Planning and Economic Development Department;

- (iv) That the City Solicitor be authorized and directed to register a certified copy of the by-law(s) permanently closing and selling the highway in the proper land registry office;
- (v) That the City Solicitor be authorized to amend and waive such terms as they consider reasonable to give effect to this authorization and direction;
- (vi) That the Public Works Department publish any required notice of the City's intention to pass the by-laws and/or permanently sell the closed highway pursuant to the City of Hamilton Sale of Land Policy By-law 14-204;
- (vii) That the applicant be fully responsible for the deposit of a reference plan in the proper land registry office, and that said plan be prepared by an Ontario Land Surveyor to the satisfaction of the Manager, Geomatics and Corridor Management Section, and that the applicant also deposit a reproducible copy of said plan with the Manager, Geomatics and Corridor Management Section.

## **EXECUTIVE SUMMARY**

The owner of 1165 Highway 8, Flamborough has made an application to permanently close and purchase a portion of Concession 6 Road West, Flamborough abutting the south side of the property. The applicant proposes this closure in order to clean up title to lands currently being used by the owner of 1165 Highway 8, Flamborough. As there were no objections from internal staff or public utilities, and only one objection from an abutting landowner which has been addressed, staff support the closure and sale of the Subject Lands to the owner of 1165 Highway 8, Flamborough.

## **Alternatives for Consideration – Not Applicable**

## **FINANCIAL – STAFFING – LEGAL IMPLICATIONS**

Financial: The applicant has paid the Council approved user fee of \$4773.02. The Subject Lands will be sold to the owners of 1165 Highway 8, Flamborough, as determined by the Corporate Real Estate Office of the Planning and Economic Development Department, in accordance with the City of Hamilton Sale of Land Policy By-law 14-204.

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**SUBJECT: Proposed Permanent Closure and Sale of a Portion of Concession 6 Road West, Flamborough (PW23054) (Ward 12) - Page 3 of 4**

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**Staffing:** An agreement to purchase the Subject Lands will be negotiated by the Corporate Real Estate Office of the Planning and Economic Development Department.

**Legal:** The City Solicitor will prepare all necessary by-laws to permanently close and sell the Subject Lands and will register such by-laws in the Land Registry Office once Council has approved the by-law. The by-law does not take effect until the certified copy of the by-law is registered in the proper land registry office. The City Solicitor will complete the transfer of the Subject Lands to the owners of 1165 Highway 8, Flamborough, pursuant to an agreement negotiated by the Corporate Real Estate Office of the Planning and Economic Development Department.

## **HISTORICAL BACKGROUND**

The Subject Lands form part of the original road allowance between Concessions 5 and 6 in the geographic township of Beverly. A portion of road allowance lands abutting the Subject Lands, being Part 1 on Plan 62R-13354, as shown on Appendix "A" attached to report PW23054, was closed by By-Law 95-65-R registered as Registered Instrument VM215791 in 1995 and transferred to the owner of 2124 Concession 6 Road West, Flamborough on October 25, 2019 via Registered Instrument WE1389869. On June 3, 2020, staff received an application from the owner of 1165 Highway 8, Flamborough to close and purchase the Subject Lands. There were no objections received from any City department, division, or public utility. We received an objection from one abutting landowner looking to protect future access over a portion of the Subject Lands. The applicant has agreed to allowing an easement over the southern portion of the Subject Lands as shown as Part 'B' on Appendix "C" to Report PW23054 which addresses the abutting landowners future access concern.

## **POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS**

A by-law must be passed to permanently close the lands in accordance with the *Municipal Act, 2001*.

## **RELEVANT CONSULTATION**

The following public utilities, City departments and divisions were provided with a copy of the application and were invited to provide comments:

- Planning and Economic Development Department: Development Engineering, Building, Economic Development, Real Estate, and Planning
- Public Works Department: Engineering Services, Hamilton Water, Transportation Division, and Environmental Services

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**SUBJECT: Proposed Permanent Closure and Sale of a Portion of Concession 6 Road West, Flamborough (PW23054) (Ward 12) - Page 4 of 4**

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- Hamilton Emergency Services
- Corporate Services Department: Financial Planning, Administration and Policy
- Mayor and Ward Councillor
- Bell, Alectra Utilities, Hydro One, and Enbridge Gas

There were no objections received from any public utilities, City departments and divisions.

The owner of 2124 Concession 6 Road West, Flamborough has advised that they will require easement protection over the southern portion of the Subject Lands as shown on Appendix “C” attached to Report PW23054, to maintain future access rights.

Notice of the proposal was sent to all abutting property owners of the Subject Lands, as shown on Appendix “B”, attached to Report PW23054 for comment. In this instance, there were 3 notices mailed, and the results are as follows:

In favour: 2

Opposed: 1

No comment: 0

We received an objection from the abutting landowner looking to gain access over a portion of the Subject Lands. The applicant agreed to allowing an easement over the southern portion of the Subject Lands as shown on Appendix “C” to Report PW23054 which addressed the abutting landowner’s future access concern.

### **ANALYSIS AND RATIONALE FOR RECOMMENDATION**

As there were no objections from any City department, division, or public utility, and the objection from an abutting landowner has been addressed, staff are supportive of the closure and sale of the Subject Lands to the owner of 1165 Highway 8, Flamborough.

### **ALTERNATIVES FOR CONSIDERATION**

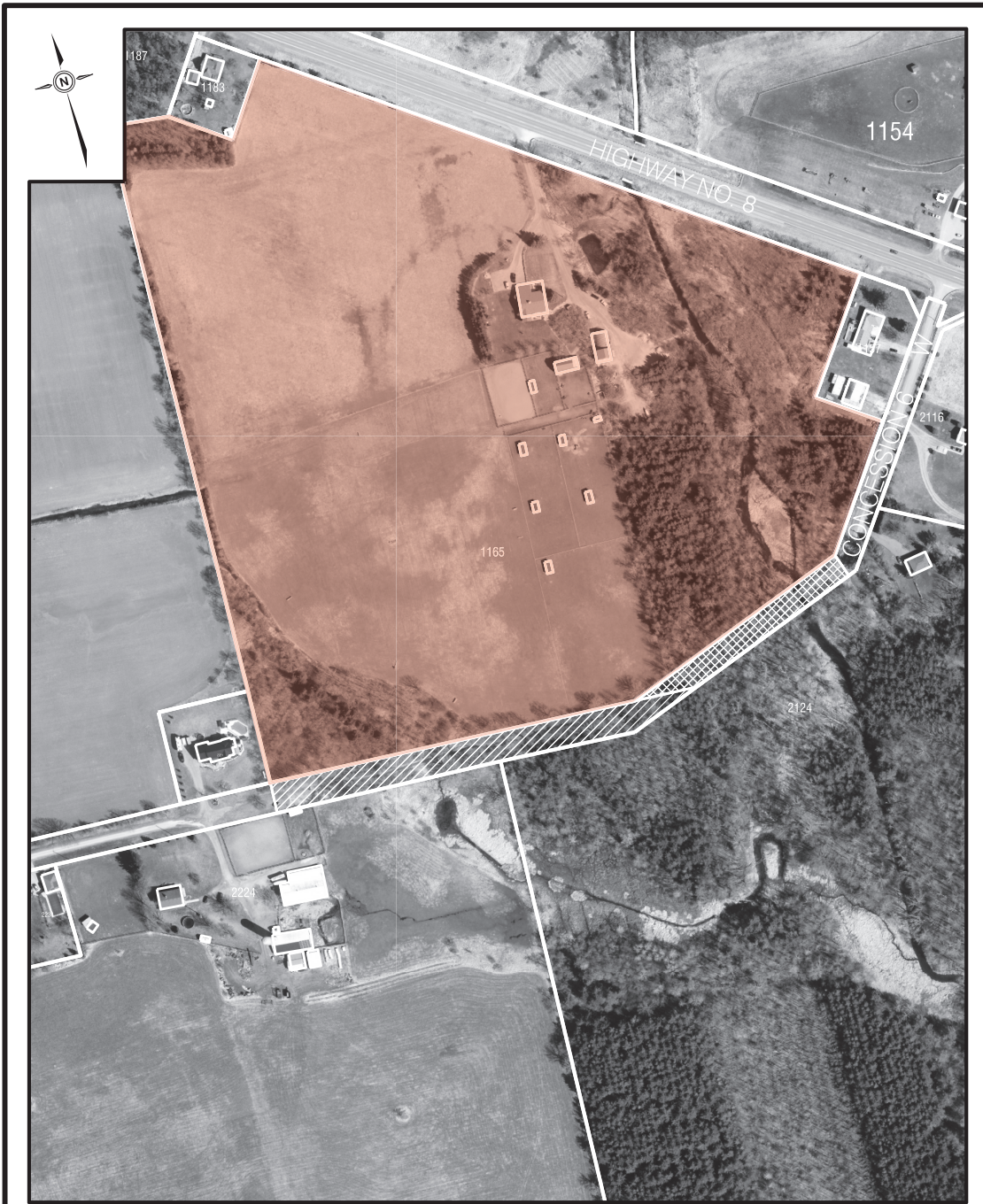
N/A

### **APPENDICES AND SCHEDULES ATTACHED**

Appendix “A” to Report PW23054 – Aerial Drawing

Appendix “B” to Report PW23054 – Location Plan

Appendix “C” to Report PW23054 – Easement Location



PROPOSED CLOSURE OF PORTION OF CONCESSION ROAD 6 WEST, FLAMBOROUGH

Geomatics & Corridor Management Section  
Public Works Department

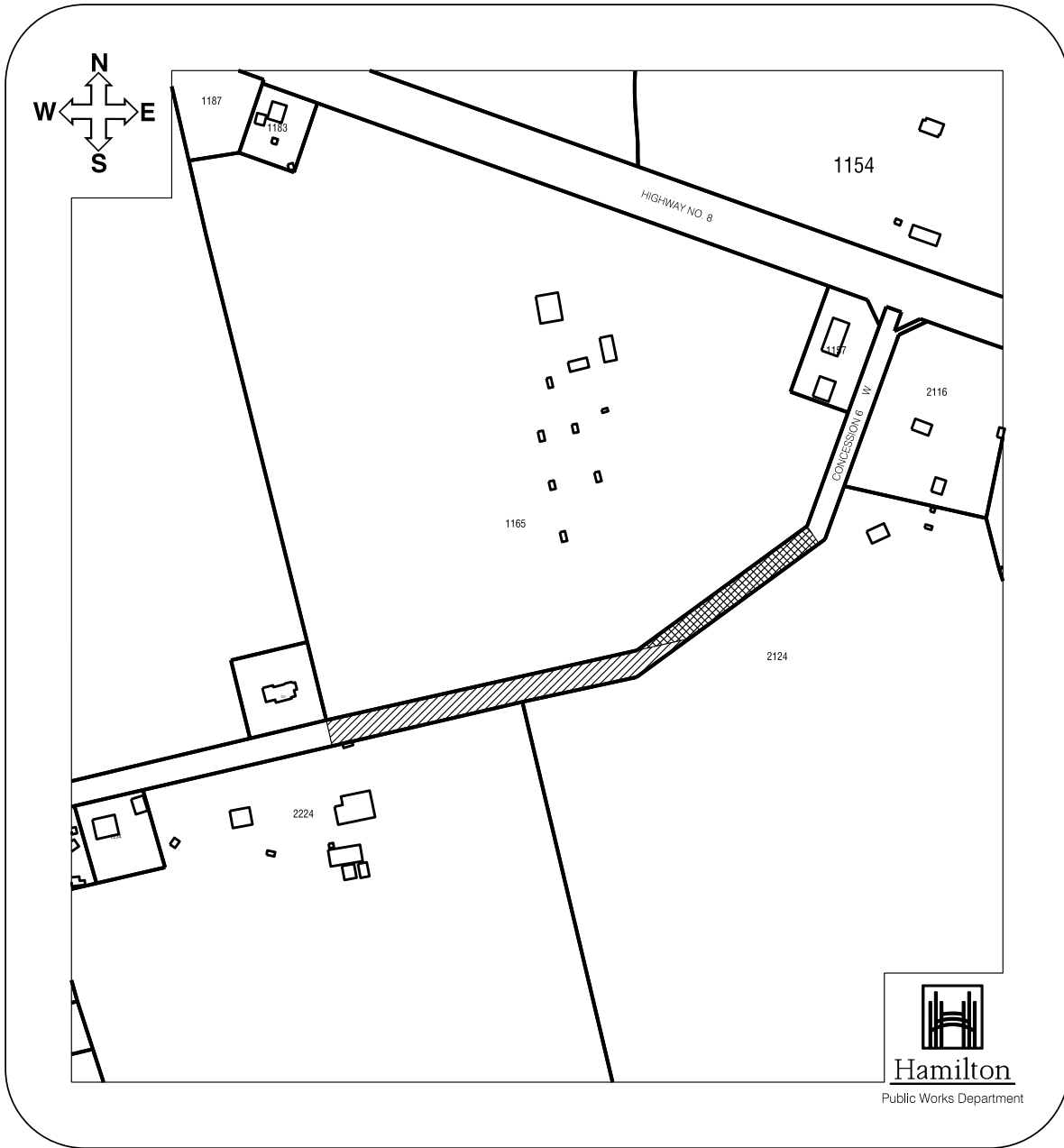
LEGEND

 Lands to be Closed

 Lands Closed by ByLaw Registered As VM215791

NTS | 19/06/2020 | Sketch by: CF







**LOCATION PLAN**

PROPOSED CLOSURE OF PORTION OF  
**CONCESSION ROAD 6 W,  
 FLAMBOROUGH**

CITY OF HAMILTON  
 PUBLIC WORKS DEPARTMENT

**LEGEND**

-  **SUBJECT LANDS**
-  **LANDS CLOSED BY BYLAW  
 REGISTERED AS VM215791**

DATE: June 19, 2020

Not to Scale | Sketch By: CF



REFERENCE FILE NO : PW20\_\_



**PROPOSED CLOSURE OF PORTION OF CONCESSION ROAD 6 WEST, FLAMBOROUGH**

Geomatics & Corridor Management Section  
 Public Works Department


**LEGEND**

-  PARTS A & B - Closed and Sold to the owner of 1165 Highway 8, Flamborough, Subject to an Easement over Part B in favour of 2124 Concession 6 Road West, Flamborough
-  Lands Closed by ByLaw Registered As VM215791 transferred to the owner of 2124 Concession 6 Road West, Flamborough through WE1385869

NTS | 28/06/2023 | Sketch by: CF



**CITY OF HAMILTON**  
**PUBLIC WORKS DEPARTMENT**  
**Engineering Services Division**

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	September 8, 2023
<b>SUBJECT/REPORT NO:</b>	Proposed Permanent Closure and Sale of Crescent Road, Hamilton (PW23053) (Ward 14)
<b>WARD(S) AFFECTED:</b>	Ward 14
<b>PREPARED BY:</b>	Cetina Farruggia (905) 546-2424 Ext. 5803
<b>SUBMITTED BY:</b>	Jackie Kennedy Director, Engineering Services Public Works Department
<b>SIGNATURE:</b>	

## RECOMMENDATION

That the applications of the owners of 921 Scenic Drive, Hamilton (Part A), 931 Scenic Drive, Hamilton (Part B), and 939 Scenic Drive, Hamilton (Part C), to permanently close and purchase a portion of Crescent Road, Hamilton abutting the rear of 921, 931, and 939 Scenic Drive, Hamilton ("Subject Lands"), as shown on Appendix "A" and "B", attached to Report PW23053, be approved, subject to the following conditions:

- (i) That the City Solicitor be authorized and directed to prepare all necessary by-laws to permanently close and sell the highway, for enactment by Council;
- (ii) The Corporate Real Estate Office of the Planning and Economic Development Department be authorized and directed to enter into any requisite easement agreements, right of way agreements, and/or other agreements deemed necessary to affect the orderly disposition of the Subject Lands and to proceed to sell the Subject Lands to the owners of 921 Scenic Drive, Hamilton (Part A), 931 Scenic Drive, Hamilton (Part B), and 939 Scenic Drive, Hamilton (Part C), as shown on Appendix "A" and Appendix "B" in Report PW23053, in accordance with the City of Hamilton Sale of Land Policy By-law 14-204;

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**SUBJECT: Proposed Permanent Closure and Sale of a Portion of Crescent Road, Hamilton (PW23053) (Ward 14) - Page 2 of 4**

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- (iii) The City Solicitor be authorized to complete the transfer of the Subject Lands to the owners of 921, 931, and 939 Scenic Drive, Hamilton (Parts A, B and C respectively) pursuant to an Agreement of Purchase and Sale or Offer to Purchase as negotiated by the Corporate Real Estate Office of the Planning and Economic Development Department;
- (iv) That the City Solicitor be authorized and directed to register a certified copy of the by-law(s) permanently closing and selling the highway in the proper land registry office;
- (v) That the City Solicitor be authorized to amend and waive such terms as they consider reasonable to give effect to this authorization and direction;
- (vi) That the Public Works Department publish any required notice of the City's intention to pass the by-laws and/or permanently sell the closed highway pursuant to the City of Hamilton Sale of Land Policy By-law 14-204;
- (vii) That the applicant be fully responsible for the deposit of a reference plan in the proper land registry office, and that said plan be prepared by an Ontario Land Surveyor to the satisfaction of the Manager, Geomatics and Corridor Management Section, and that the applicant also deposit a reproducible copy of said plan with the Manager, Geomatics and Corridor Management Section; and
- (viii) That the net proceeds of the sale of the Subject Lands be transferred to a new ProjectID for the purpose to fund trees, beautification, park improvements and other open space improvements within Ward 14 to the satisfaction of the Manager, Parks and Cemeteries in consultation with the Ward Councillor.

**EXECUTIVE SUMMARY**

The owners of 921, 931, and 939 Scenic Drive, Hamilton, have made an application to permanently close and purchase a portion of Crescent Road, Hamilton abutting the rear side of their properties. The applicant proposes this closure in order to extend their rear yards. As there were no objections from internal staff or public utilities, and the applicants are the only abutting landowners, staff support the application.

**Alternatives for Consideration – Not Applicable**

**SUBJECT: Proposed Permanent Closure and Sale of a Portion of Crescent Road, Hamilton (PW23053) (Ward 14) - Page 3 of 4**

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**FINANCIAL – STAFFING – LEGAL IMPLICATIONS**

- Financial:** The applicant has paid the Council approved user fee of \$4868.50. The Subject Lands will be sold to the owners of 921, 931, and 939 Scenic Drive, Hamilton, as determined by the Corporate Real Estate Office of the Planning and Economic Development Department, in accordance with the City of Hamilton Sale of Land Policy By-law 14-204.
- Staffing:** An agreement to purchase the Subject Lands will be negotiated by the Corporate Real Estate Office of the Planning and Economic Development Department.
- Legal:** The City Solicitor will prepare all necessary by-laws to permanently close and sell the Subject Lands and will register such by-laws in the Land Registry Office once Council has approved the by-law. The by-law does not take effect until the certified copy of the by-law is registered in the proper land registry office. The City Solicitor will complete the transfer of the Subject Lands to the owners of 921, 931, and 939 Scenic Drive, Hamilton, pursuant to an agreement negotiated by the Corporate Real Estate Office of the Planning and Economic Development Department.

**HISTORICAL BACKGROUND**

The Subject Lands were created by Registered Plan 699 in 1935. The southern portion of Crescent Road, Hamilton is currently used as a pedestrian trail. On June 23, 2022 the owners of 921 and 931 Scenic Drive, Hamilton submitted a joint application to close and purchase a portion of Crescent Road, Hamilton. The application received no objections from any City department, division, or public utility. On January 19, 2023 the owner of 939 Scenic Drive, Hamilton also expressed interest in purchasing a portion of the Subject Lands abutting the rear of their property. As there are no other abutting land owners, and no objections received, staff support the closure and sale of the Subject Lands to the owners of 921, 931 and 939 Scenic Drive, Hamilton as shown as Parts A, B, and C, on Appendix “A” and Appendix “B” attached to report PW23053.

**POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS**

A by-law must be passed to permanently close the lands in accordance with the *Municipal Act, 2001*.

**SUBJECT: Proposed Permanent Closure and Sale of a Portion of Crescent Road, Hamilton (PW23053) (Ward 14) - Page 4 of 4**

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**RELEVANT CONSULTATION**

The following public utilities, City departments and divisions were provided with a copy of the application and were invited to provide comments:

- Planning and Economic Development Department: Development Engineering, Building, Economic Development, Real Estate, and Planning
- Public Works Department: Engineering Services, Hamilton Water, Transportation Division, and Environmental Services
- Hamilton Emergency Services
- Corporate Services Department: Financial Planning, Administration and Policy
- Mayor and Ward Councillor
- Bell, Alectra Utilities, Hydro One, and Enbridge Gas

There were no objections received from any public utilities, City departments and divisions.

Hamilton Water, Alectra and Bell have advised that they will require easement protection.

As the applicants are the only abutting landowners there was no external circulation.

**ANALYSIS AND RATIONALE FOR RECOMMENDATION**

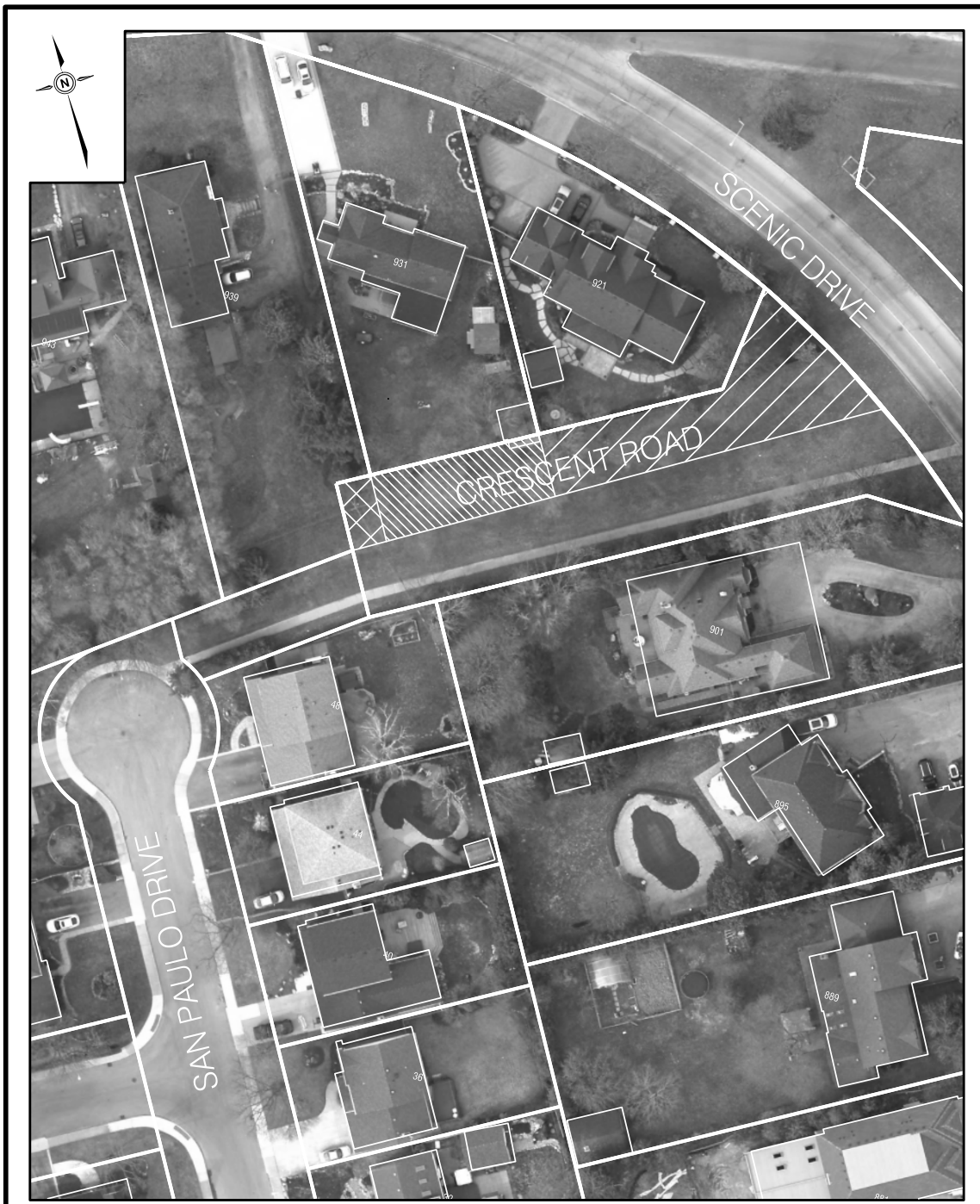
As there were no objections from any City department, division, or public utilities, and the applicants are the only abutting land owners, staff are in support of the closure and sale of the Subject Lands to the owners of 921, 931, and 939 Scenic Drive, Hamilton as shown on Appendix "A" & "B" attached to report PW23053.

**ALTERNATIVES FOR CONSIDERATION**

N/A

**APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Report PW23053 – Aerial Drawing  
Appendix "B" to Report PW23053 – Location Plan




Hamilton


PROPOSED CLOSURE OF PORTION OF CRESCENT ROAD, HAMILTON ABUTTING 921 SCENIC DRIVE, HAMILTON (PART A), 931 SCENIC DRIVE, HAMILTON (PART B), AND 939 SCENIC DRIVE, HAMILTON (PART C)

Geomatics & Corridor Management Section  
Public Works Department

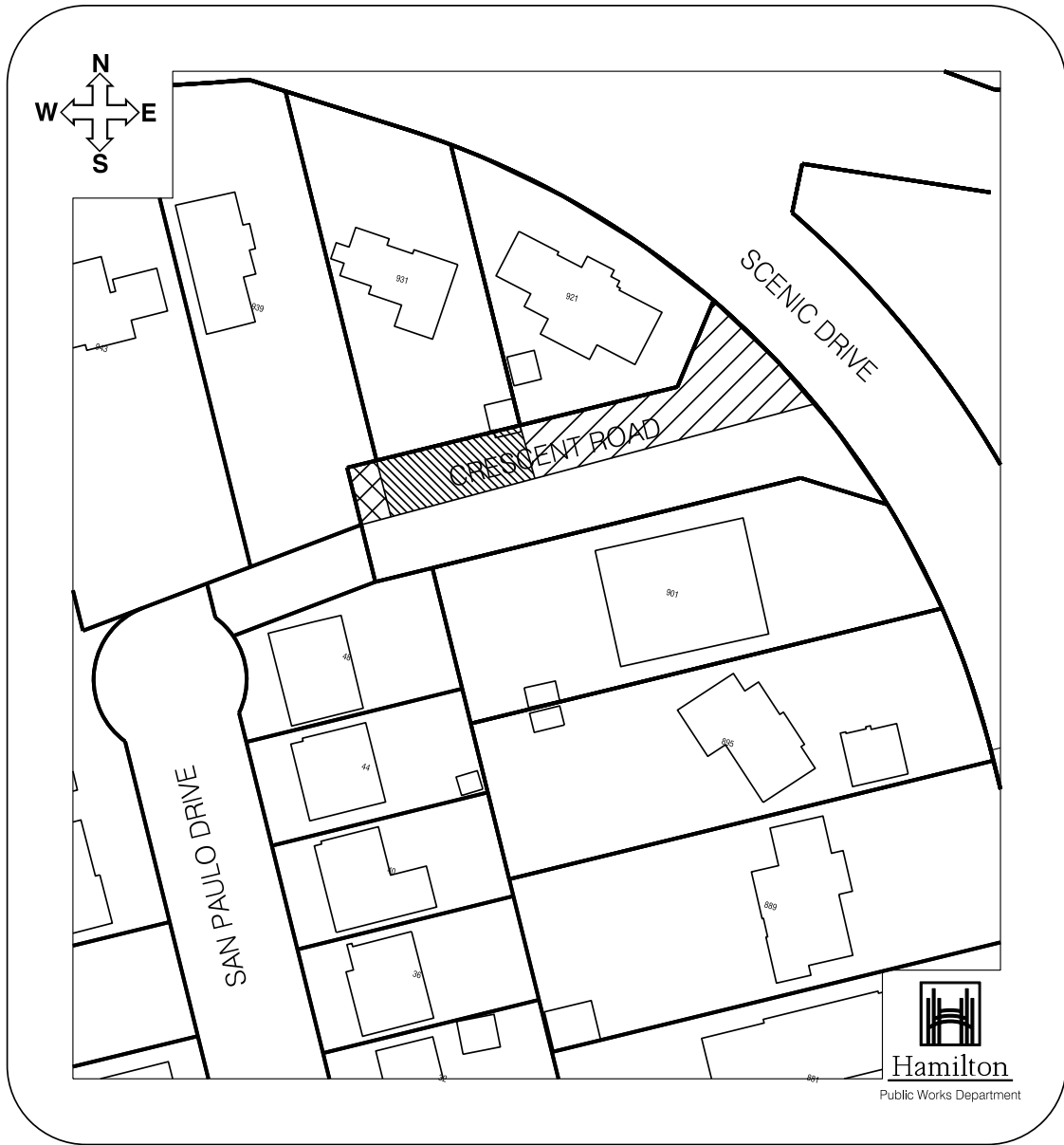
**LEGEND**

 PART A - 921 SCENIC DRIVE, HAMILTON

 PART B - 931 SCENIC DRIVE, HAMILTON

 PART C - 939 SCENIC DRIVE, HAMILTON

NTS | 1/02/2023 | Sketch By: CF






**LOCATION PLAN**

PROPOSED CLOSURE OF  
 PORTION OF  
**CRESCENT ROAD,  
 HAMILTON**

CITY OF HAMILTON  
 PUBLIC WORKS DEPARTMENT

**LEGEND**

-  **Part A - 921 Scenic Drive, Hamilton**
-  **Part B - 931 Scenic Drive, Hamilton**
-  **Part C - 939 Scenic Drive, Hamilton**


DATE: February 1, 2023 | Not to Scale | Sketch By: CF

REFERENCE FILE NO : PW22\_\_





**CITY OF HAMILTON**  
**PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT**  
**Transportation Planning and Parking Division**

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	September 8, 2023
<b>SUBJECT/REPORT NO:</b>	Free-Floating Carshare Program (PED20168(b)) (City Wide) <b>(Outstanding Business List Item)</b>
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Alison Carlyle (905) 546-2424 Ext. 1473 Peter Topalovic (905) 546-2424 Ext. 5129
<b>SUBMITTED BY:</b>	Brian Hollingworth Director, Transportation Planning and Parking Planning and Economic Development Department
<b>SIGNATURE:</b>	

### RECOMMENDATION

- (a) That the City of Hamilton continue the free-floating carshare permit program on a permanent basis in Wards 1, 2, and 3;
- (b) That the City of Hamilton expand the free-floating carshare permit program to the entire City;
- (c) That the draft Amending By-law for On-Street Parking By-law 01-218 attached as Appendix "A" to Report PED20168(b), and the draft Administrative Penalties By-law 17-225 attached as Appendix "B" to Report PED20168(b), which have been prepared in a form satisfactory to the City Solicitor, be approved;
- (d) That staff be directed to explore opportunities to make available a limited supply of parking spaces on residential streets with Parking by Permit Only restrictions for free-floating carshare parking;
- (e) That the matter respecting Item ABW, that the City of Hamilton implement a pilot permit program to allow for free-floating carshare parking in Wards 1, 2, and 3 for an 18-month period and report back to the Public Works Committee prior to the end of the pilot be identified as complete and removed from the Public Works Committee Outstanding Business List.

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**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 2 of 8**

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**EXECUTIVE SUMMARY**

The purpose of this Report is to provide an update on the Free-Floating Carshare Pilot and make recommendations for the future of this Program. Free-Floating, or one-way carsharing, is a carsharing model where carshare vehicles holding a valid permit can park in designated on-street locations. This contrasts with the two-way carshare model, where a vehicle is picked up and dropped off at a specific spot in an off-street parking facility.

An 18-month pilot began in June 2022 and will end in December 2023. As part of this 18-month pilot, permits were distributed by the City of Hamilton that allow free-floating carshare to operate in Wards 1,2, and 3. The vehicles can travel anywhere, however, they must start or end their trip within these wards. The permit fee of \$270.78 plus HST per carshare vehicle is outlined in the User Fees and Charges By-law effective September 1, 2021. This permit fee represents three times the 2020 on-street permit parking and time-limit parking permit. This rate is subject to change annually. Communauto FLEX has been the only company to operate free-floating carsharing as part of this pilot.

Based on the analysis of the operating data provided by Communauto FLEX, consultation with stakeholders involved in the program, and the lack of complaints by residents, staff have concluded that the pilot has been successful. Based on these findings, staff is recommending that the program be made permanent. The following changes will need to be implemented to make it a permanent program:

- Expansion of the geographic extent of the program from Wards 1, 2, and 3, to the entire City of Hamilton, and associated changes to offences and penalties; and,
- New offence created to prevent clustering of vehicles, and a requirement to provide related data.

In addition, the original conditions of the pilot will remain, such as the requirement to provide monthly car-share data related to their membership information, fleet usage, and complaint information as a condition of their permits.

**Alternatives for Consideration – See Page 8**

**FINANCIAL – STAFFING – LEGAL IMPLICATIONS**

Financial: Each vehicle participating in this program is required to have a permit to operate. The current annual fee per vehicle, per year, is \$270.78 plus HST. This fee is subject to change annually. The levy will be impacted by an increase in revenue; it is estimated that in the next few years, the City will continue to issue approximately 25 permits per year.

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**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 3 of 8**

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**Staffing:** Hamilton Municipal Parking System staff would continue to be required to issue permits to carshare vehicles. Parking enforcement of free-floating vehicles will also continue to be required, the same as other vehicles in Hamilton.

**Legal:** An Amendment to the On-Street Parking By-law 01-218, as shown in Appendix "A" attached to Report PED20168(b), will permit free-floating carshare vehicles to park in all unregulated and time-limit parking locations on City streets across Hamilton. An Amendment to the Administrative Penalties By-law 17-255 as shown in Appendix "B" attached to Report PED20168(b), would update the infractions and penalties related to free-floating carshare vehicle permit provisions, specifically to enable the expansion to all Wards and to allow parking at designated meters.

## **HISTORICAL BACKGROUND**

The first carshare program began in Hamilton in 2009. This program was operated by Community CarShare, an organization based in Waterloo, as a station-based, two-way carshare system. In 2018, Community CarShare became part of Communauto. In Hamilton, car share has grown to have over 40 station based carshare vehicles, the majority managed by Communauto.

A permit to allow carshare vehicles to park in designated on-street spaces was approved at the Public Works Committee meeting on May 31, 2021, Report PED20168(a). This enabled the introduction of one-way carsharing in Hamilton. The Hamilton framework was developed using lessons from existing free-floating carshare programs in Halifax, Toronto, Edmonton, and Calgary.

Hamilton's first one-way carshare program, Communauto FLEX, was launched in June 2022 with 25 vehicles. Communauto is the only operator to offer free-floating carshare in Hamilton. In the first year of operations, no complaints have been received by City staff or by Communauto regarding the FLEX program. Additionally, no tickets for offences that relate specifically to the free-floating carshare program have been issued.

Earlier this year, Hamilton Municipal Parking System staff launched a free carshare parking program with 12 spots in the downtown area. Previously, one-way carshare vehicles were prohibited from ending their trip in metered parking spaces. Feedback from users show that this has made it particularly difficult to travel to the downtown core. This program now allows car share users to park downtown for free and allows one-way carshare users to end their trips in the downtown core. These parking spaces are not

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**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 4 of 8**

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held exclusively for carshare users. The fee for parking in these spaces remain the same for all other road users.

**POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS**

Hamilton's, City Council approved, Transportation Master Plan supports a free-floating carshare through policy actions 46, 62, 63, and 64:

- Policy 46 - Identify opportunities for and run pilot projects to assess the applicability and/or feasibility of implementing new technological opportunities, such as mobility as a service;
- Policy 62 - Adopt off-street and on-street parking policies and designs that ensure an adequate parking supply to support growth and economic development, contribute to the achievement of the mode share targets of the Transportation Master Plan, and implement the Complete Liveable Better streets, and Vision Zero objectives of the Transportation Master Plan;
- Policy 63 - Evolve the Hamilton Municipal Parking System to support the increasing use of shared mobility such as carshare and other shared mobility options and, where applicable, park and ride, is supportive of a free-floating carshare; and,
- Policy 64 - Provide multi-modal access to/from and within employment lands, is also supportive of a free-floating carshare.

**RELEVANT CONSULTATION**

As part of the review of this program, consultation was conducted with Communauto, staff at Hamilton Municipal Parking System, and Parking Enforcement. All groups consulted support the continuation of the free-floating carshare program.

There are no complaints recorded by City staff or Communauto related to the free-floating carshare program. Additionally, Parking Enforcement has issued no tickets for the infractions related to the free-floating carshare program.

The potential for geographic expansion was also discussed with Communauto. Though they have no plans to expand the FLEX zone at this time, any expansion in the future would likely take place in Ward 4 or Ward 13. Expansion beyond that range is not likely by Communauto in the medium-term.

**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 5 of 8**

**ANALYSIS AND RATIONALE FOR RECOMMENDATION**

As a condition of the permit during the pilot, carshare operators were required to provide monthly data pertaining to vehicle usage. The table below summarizes relevant data for the first year of the pilot from Communauto FLEX.

	2022						2023						
	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Number. of Cars</b>	26	25	25	25	25	25	25	25	25	24	24	23	24
<b>Number of Trips</b>	618	971	967	1,025	1,063	1,110	1,052	1,116	1,112	1,206	1,253	1,274	1,174
<b>Active Members</b>	106	171	203	211	229	228	239	231	231	252	274	283	255
<b>Average Trip Duration (hours)</b>	5.1	2.9	5.5	3.4	5.3	4.2	4.1	3.3	3.8	4.2	4.1	4.7	7.0
<b>Average Trip Length (kms)</b>	27	31	49	32	44	30	32	29	29	30	36	42	44
<b>Percentage of trips after which the Car was parked for 72-hours or greater</b>	1.4%	0.8%	0.5%	0.3%	0.1%	0.0%	0.5%	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%
<b>Average Length of Time between two usages (night time included) (hours)</b>	13.7	14.3	13.1	12.6	11.4	11.1	12.2	11.7	9.7	10.0	9.0	8.0	7.3

Since the launch of the pilot on June 13, 2022, the number of trips has steadily increased. The average trip length and duration has fluctuated over the last year, with a steady increase since February. The percentage of trips after which the car was parked for 72-hours or greater has substantially dropped since inception, from 1.4% in June 2022 to 0% in June 2023. The average length of time between two usages has also been steadily declining, with the latest 7.3 hours being nearly half of the 13.7 hours between usages in the first month of operation. The data is comparable to data from the pilot conducted in the City of Toronto, which launched in November 2018.

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**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 6 of 8**

• **Permitted Free-Floating Carshare Areas**

The pilot program permitted operations of a free-floating carshare program in Wards 1, 2, and 3. This corresponds to the area where the majority of existing two-way carshare vehicles are based. Currently, the operating area that Communauto has chosen for the FLEX program covers almost the entirety of Wards 1 and 2, and most of Ward 3. The area north of Barton Street East and east of Wellington Street North is not part of the FLEX area. The FLEX area also ends at Gage Avenue North, rather than extending to the edge of Ward 3 at Ottawa Street North.

Communauto does not currently have geographic expansion plans for the FLEX program in Hamilton. On the success of the program, and the benefits to residents of a free-floating carshare system, staff are recommending an expansion to the entire City of Hamilton. This will allow any carshare company to bring this service to residents across Hamilton, if they choose.

The full list of parking permissions for free-floating carshare vehicles can be seen in Exhibit 1. Free-floating carshare vehicles that hold a valid permit will be exempt from the 12-hour time limit restriction imposed with on-street residential parking spaces. The permit will allow vehicles to occupy a designated parking space for a maximum of 72-hours.

Exhibit 1: Comparison of Parking Permissions between Private Passenger Vehicle and Free-Floating Carshare Vehicle

<b>Parking Space Type</b>	<b>Private Passenger Vehicle</b>	<b>Free-Floating Carshare Vehicle</b>
<b>On-Street</b>		
Revenue generating spaces (e.g. meters)	Required to pay the parking fee and must abide by any posted maximum durations and time limits.	Same as private passenger vehicles. Vehicles cannot end a trip in these spaces.
Carshare Friendly Parking Spaces	Required to pay the parking fee and must abide by any posted maximum durations and time limits.	Carshare vehicles can park for free in these spaces (identified with green parking and a sticker). Vehicles can also end trips in these spaces.
Non-Revenue Time Limited Parking Zone	Must abide by posted maximum durations and time limits. Eligible residents can obtain a Time Limit Exemption Permit from Hamilton Municipal Parking System. They are still required to adhere to the 12-hour limit.	Vehicles can end a trip in these areas and remain parked for up to 72-hours. Carshare operators will be required to move their car out of the zone within 24-hours if there is a complaint.
Non-Revenue Zone with No Posted Time Limit	Must abide by the 12-hour limit.	Vehicles can end a trip in these areas and remain parked for up to 72-hours. Carshare operators will be required to move their car out of the zone within 24-hours if there is a complaint.

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**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 7 of 8**

Parking Space Type	Private Passenger Vehicle	Free-Floating Carshare Vehicle
<b>On-Street</b>		
Parking by Permit Only Area	Eligible residents may be able to obtain a permit from Hamilton Municipal Parking System. Otherwise, parking is prohibited in these areas.	Parking is prohibited in these areas at all times.
<b>Off-Street</b>		
Municipal Car Parks	Required to pay the parking fee and must abide by hours of operation.	Same as private passenger vehicles. Vehicles cannot end their trip in these spaces.

- **Managing Distribution of Vehicles**

Operators will now be required to proactively manage vehicles to avoid clustering of vehicles in one area. Clustering occurs when more than three carshare vehicles from the same company park on a street block for any length of time. The carshare company will be required to move its vehicle(s) within two-hours of a complaint. While clustering has not been an issue during the pilot program, this new requirement will help to manage any future growth of the program, including the introduction of new operators.

- **Benefits of Free-Floating Carsharing to Residents**

A free-floating carshare program helps to expand sustainable, affordable, and convenient mobility options in Hamilton. Carshare has been proven to reduce car ownership among members, a typical carshare vehicle replacing 6-23 vehicles from the road<sup>1</sup>. Research on the impact of free-floating carsharing found a 5% reduction in vehicle kilometers travelled in Canadian urban areas that implemented free-floating carsharing<sup>2</sup>. By reducing vehicle miles, and discouraging vehicle ownership, free-floating carshare can have a significant impact on reducing greenhouse gas emissions in Hamilton and reducing household transportation costs.

<sup>1</sup> Lane, C., 2005. PhillyCar-share: first-year social and mobility impacts of carsharing in Philadelphia, Pennsylvania. *Transp. Res. Rec.* 1927, 158–166.

Martin, E., Shaheen, S., Lidicker, J., 2010. Impact of carsharing on household vehicle holdings. *Transp. Res. Rec.* 2143, 150–158.

Zipcar, 2005a. Zipcar Customer Survey Shows Car-Sharing Leads to Car Shedding. Available at <https://www.autorentalnews.com/75124/zipcar-releases-survey-on-car-sharingimpact>.

<sup>2</sup> Martin, E., Shaheen, S., 2016. Impacts of car2go on Vehicle Ownership, Modal Shift, Vehicle Miles Traveled, and Greenhouse Gas Emissions: An Analysis of Five North American Cities. Transportation Sustainability Research Center, Berkeley, CA.

**SUBJECT: Free-Floating Carshare Program (PED20168(b)) (City Wide) - Page 8 of 8**

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- **Enforcement and Management**

Carshare operators are required to move free-floating vehicles out of the zone within 24-hours of a complaint being submitted from Transportation Planning staff or a local resident, even if the 72-hour period has not elapsed. For notifications and complaints related to clustering, operators are required to move free-floating vehicles out of the zone within 2-hours.

- **Parking on Permit Only Streets**

At present, free-floating carshare vehicles are not permitted to park on streets with Permit Only Parking. For these streets, a fixed number of permits are sold to residents based on spaces available. Currently, permits are only available to residents of one, two, and three-family dwellings.

There is merit in considering options to allocate a limited number of permits on some, or all of these streets for carshare vehicles, specifically since carshare vehicles could replace one or more single owner vehicles. However, changing this policy will require a review of the delegated authority by-law for residential permits, and should be implemented in a phased manner. Staff are proposing to review this matter and bring forth options for consideration. The review will be completed in parallel with a review of the residential permit parking policy and eligibility requirements.

## **ALTERNATIVES FOR CONSIDERATION**

Council could choose to expand the program only to Wards 4 and 13 instead of an expansion to all Wards. Communauto has not expressed interest in geographic expansion in the near future, though Wards 4 and 13 have been identified as the most likely for future expansion. Given the success of the program to date, and the update to the by-laws to prevent clustering, staff are confident that an expansion to all Wards in Hamilton is appropriate.

Council could also choose not to extend the pilot. This approach is not recommended based on the success of the pilot program to date, and the benefits of the program to residents.

## **APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Report PED20168(b) - Amending By-law to City of Hamilton By-law 01-218

Appendix "B" to Report PED20168(b) - Amending By-law to City of Hamilton By-law 17-225



Appendix "A" to Report PED20168(b)  
Page 1 of 5

Authority: [Item 2, Public Works Committee Report 21-008 \(PED20168\(ba\)\)](#)  
[Item: \)Report: PED20168\(b\)](#)  
CM: [June 9, 2021](#)  
Ward: City Wide

Bill No. [097](#)

CITY OF HAMILTON

BY-LAW NO. [21-09423-XX](#)

To Amend By-law No 01-218, as amended, being a By-law to Regulate On-Street Parking Respecting Free-Floating Carshare Vehicles

**WHEREAS** *Section 11(1)1 of the Municipal Act, S.O. 2001, Chapter 25*, as amended, confers upon the councils of all municipalities the power to enact by-laws for regulating parking and traffic on highways subject to the *Highway Traffic Act*;

**WHEREAS** on the 18th day of September, 2001, the Council of the City of Hamilton enacted By-law No. 01-218 to regulate on-street parking;

**WHEREAS** this By-law amends By-law No. 01-218, [as amended](#), with respect to free-floating carshare vehicles;

**NOW THEREFORE** the Council of the City of Hamilton enacts as follows:

1. The amendments in this By-law include any necessary grammatical, numbering and letter changes.
2. That By-law No. 01-218 is hereby amended by [deleting section 11.1 and replacing it with adding](#) the following:

**Free-floating Carshare Permit Regulations**

11.1 (1) In this section:

- [\(a\) "clustering" means more than three \(3\) free-floating carshare vehicles from the same free-floating car-share operator within a street block for any length of time.](#)
- [\(b\) "end of trip" means the user has ended their trip and has returned the vehicle keys. The vehicle is now released to be booked by the next user.](#)

## Appendix "A" to Report PED20168(b)

## Page 2 of 5

~~(a) "free floating carshare vehicle" means a vehicle owned by a free-floating carshare operator which is shared among the operator's members and has no fixed or dedicated public parking space.~~

~~(b)~~(c) "free-floating carshare operator" means an organization that provides a model of mobility in which its members can pick up and drop off a free-floating carshare vehicle in any authorized on-street parking space within ~~Wards 1, 2 and 3~~ of the City of Hamilton.

~~(c)~~(d) "free-floating carshare permit" means a permit issued by Hamilton Municipal Parking System to a free-floating carshare operator for a free-floating carshare vehicle, allowing that vehicle to end its trip by using on-street parking spaces within ~~the City of Hamilton Wards 1, 2 and 3~~ in accordance with the provisions of this By-law.

~~(e) "free-floating carshare vehicle" means a vehicle owned by a free-floating carshare operator which is shared among the operator's members and has no fixed or dedicated public parking space.~~

~~(d)~~(f) "HMPS" means Hamilton Municipal Parking System.

~~(e)~~(a) "end of trip" means ~~the user has ended their trip and has returned the vehicle keys. The vehicle is now released to be booked by the next user.~~

- (2) HMPS may issue a free-floating carshare permit to a free-floating carshare operator for a free-floating carshare vehicle for a fee.
- (3) Except where the free-floating carshare permit is not in force, every free-floating carshare permit shall commence on the day on which the permit is issued and shall expire on the last day of the term for which the permit was issued.
- (4) The fee for each free-floating carshare permit shall be an amount approved by Council from time to time and as set out in the City of Hamilton's User Fees and Charges By-law. The fee shall be payable in advance and shall be pro-rated for the balance of the first year, and thereafter shall be renewable on a calendar year basis, on or before the first day of January of each year but not earlier than November 1 of the current year.
- (5) HMPS shall not issue more than one (1) free-floating carshare permit per free-floating carshare vehicle.

## Appendix "A" to Report PED20168(b)

## Page 3 of 5

- (6) An application for a free-floating carshare permit shall provide the following information:
- (a) Name, phone number, address and email address of the free-floating carshare operator;
  - (b) Name, phone number and email address for referring complaints related to free-floating carshare vehicle parking;
  - (c) Licence number, make and colour of the vehicle for which the application is being made;
  - (d) Proof of insurance and registration for the vehicle for which the application is being made; and
  - (e) Such further and other information as HMPS may require for the purpose of the application.
- (7) No free-floating carshare operator shall operate a free-floating carshare vehicle within the City of Hamilton without a valid free-floating carshare permit in the form of a mirror hang tag, facing the exterior of the vehicle, such that the permit is entirely and clearly in view from the exterior of the subject vehicle.
- (8) Every free-floating carshare operator shall equip each free-floating carshare vehicle for which a permit under this section is sought, with geofencing technology to prevent it from ending a trip:

~~Outside of Wards 1, 2 and 3; and~~

~~— (b) — Within a Municipal Car Park.~~

- (9) Subject to the restrictions set out in Section 11.1(10) herein, a free-floating carshare vehicle displaying a current and valid free-floating carshare permit, may park in a space on an unregulated highway or time limited street so designated by Council and set out in Schedule 6 to this By-law within the City of Hamilton ~~Wards 1, 2 or 3~~ for up to a maximum of 72 hours at a time at the end of trip.
- (10) Notwithstanding Section 11.1 (9) above, and for greater certainty, a free-floating carshare vehicle shall not park in any of the following locations at the end of trip:
- (a) Through highways;

## Appendix "A" to Report PED20168(b)

Page 4 of 5

- (b) Metered parking spaces except where designated for the use of carshare vehicles;
  - (c) Parking by Permit Only Areas;
  - (d) Municipal Car Parks; or
  - ~~(d)~~(e) Any location if clustering would result.
  - ~~(e)~~ Outside of Wards 1, 2 or 3 of the City of Hamilton.
- (11) Notwithstanding Section 11.1 (9) above, a free-floating carshare vehicle shall not be parked contrary to:
- (a) The direction of a Police Officer, a member of the Hamilton Fire Department; or an agent of the City; or
  - (b) The direction of the operator of an authorized emergency vehicle.
- (12) Notwithstanding Section 11.1(9) above, a free-floating carshare operator shall, within 24 hours of receiving notice of a complaint relating to a free-floating carshare vehicle from the City of Hamilton or the public, relocate the free-floating carshare vehicle out of the zone to another permitted location.
- (13) Notwithstanding Section 11.1(9) and 11.1(12) above, a free-floating carshare operator shall, within 2 hours of receiving notification of clustering of free-floating carshare vehicles from the City of Hamilton or the public, relocate the free-floating carshare vehicle out of the zone to another permitted location.
- (143) Notwithstanding all other provisions of this By-law and notwithstanding the display of authorized signs to the contrary, a free-floating carshare vehicle properly displaying a current and valid free-floating carshare permit, is exempt from the following provisions of said By-law:
- (a) Section 9(1);
- however, nothing in this section shall be deemed to annul or waive any other provision of this By-law.
- (154) Free-floating carshare permits remain the property of the City of Hamilton and the HMPS may, with 24 hours notice, and at their absolute discretion, recall, void, cancel or otherwise revoke any free-floating carshare permit,

**Appendix “A” to Report PED20168(b)**  
**Page 5 of 5**

and the unexpended portion of the fee paid by the permit holder shall be refunded at the convenience of the City.

- (165) Notwithstanding that an application has been made for a free-floating carshare permit, or that a free-floating carshare permit has been issued and is in force or is not in force, no provision of this by-law shall oblige HMPS to issue, renew or reinstate a free-floating carshare permit and no person shall enjoy a vested right in the issuance or continuance of a free-floating carshare permit.
- (176) Each free-floating carshare operator shall, on a monthly basis, provide to HMPS anonymous trip-related data including:
- (a) number of vehicles;
  - (b) number of active members;
  - (c) number of free-floating vehicle trips;
  - (d) average trip duration;
  - (e) average trip length;
  - (f) percentage of trips after which the vehicle was parked for greater than 72 hours;
  - (g) average length of time between two usages;
  - ~~(g)(h)~~ number of time clustering was observed and location; and
  - ~~(h)(i)~~ other key information to aid in assessing the success of the program and future expansion opportunities.

3. That in all other respects By-law 01-218 is confirmed.

4. That the provisions of this by-law shall become effective when ratified by Council.

**PASSED** this 9<sup>th</sup> day of June, 20213.

\_\_\_\_\_  
A. ~~Horwath~~ F. Eisenberger  
Mayor

\_\_\_\_\_  
- A. Holland  
City Clerk

**Appendix “B” to Report PED20168(b)**  
**Page 1 of 2**

Authority: [Item:](#)  
[Report:](#)  
[PED20168\(b\)](#)  
 CM:  
 Ward:

**Bill No. 98**

**CITY OF HAMILTON**

**BY-LAW NO. 23-XX1-098**

**To Amend By-law 17-225, as amended, being a By-law  
 to Establish a System of Administrative Penalties**

**WHEREAS** Council enacted a By-law to Establish a System of Administrative Penalties, being By-law 17-225;

**AND WHEREAS** this amending by-law amends By-law 17-225, as amended, to add infractions relating to free-floating carshare permits;

**NOW THEREFORE** the Council of the City of Hamilton enacts as follows:

1. The amendments in this By-law include any necessary grammatical, numbering and letter changes.
2. By-law 17-255, as amended is further amended by deleting Item 95 and Item 98 within Table 3 and substituting the following Item 95 -is amended by adding the following items:

Item	Column 1 Designated By-law & Section		Column 2 Short Form Wording	Column 3 Set Penalty
95	01-218	11.1(10)(b)	Free-floating carshare vehicle- end trip in metered parking space <u>except where designated</u>	\$25.00
<del>98</del>	<del>01-218</del>	<del>11.1(10)(e)</del>	<del>Free-floating carshare vehicle- end trip outside of Wards 1, 2, or 3.</del>	<del>\$100.00</del>

3. That in all other respects By-law 17-225 is confirmed.
4. That the provisions of this by-law shall become effective when ratified by Council.

**Appendix "B" to Report PED20168(b)**  
**Page 2 of 2**

**PASSED** this 9<sup>th</sup>-day of June, 20231.

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A. Horwath~~F. Eisenberger~~  
Mayor

---

A. Holland  
City Clerk



**CITY OF HAMILTON**  
**PUBLIC WORKS DEPARTMENT**  
**Hamilton Water Division**

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	September 8, 2023
<b>SUBJECT/REPORT NO:</b>	Hamilton Water Financial Plan (PW23055) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	George Giovinazzo (905) 546-2424 Ext. 1192
<b>SUBMITTED BY:</b>	Mark Bainbridge Director, Water and Wastewater Planning and Capital Public Works Department
<b>SIGNATURE:</b>	

### RECOMMENDATION

- (a) That the Hamilton Water Financial Plan for the City of Hamilton drinking water systems, attached as Appendix "A" to Report PW23055, and as prescribed by Ontario Regulation 453/07, be approved by a resolution that the City of Hamilton drinking water systems have the resources necessary to operate successfully over the next ten years based on current projections.
- (b) That the Hamilton Water Financial Plan, attached as Appendix "A" to Report PW23055, be released for public review and submitted to the Ontario Ministry of Municipal Affairs and Housing as required by Ontario Regulation 453/07 under the *Safe Drinking Water Act*, 2002.

### EXECUTIVE SUMMARY

The Hamilton Water Division of Public Works has developed a Hamilton Water Financial Plan (Financial Plan) for the City of Hamilton (City) drinking water systems as required by Ontario Regulation (O.Reg.) 453/07 (Financial Plans) under the *Safe Drinking Water Act*, 2002. This requirement is also referenced in the City drinking water system licenses issued under O.Reg. 188/07 (Licensing of Municipal Drinking Water Systems). The first Financial Plan was created in 2009 in response to new legislation. Additional Financial Plans were created in 2013 and 2018 for the purpose of drinking water system license renewals. An updated Financial Plan is required as part of the re-occurring

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**SUBJECT: Hamilton Water Financial Plan (PW23055) (City Wide) - Page 2 of 6**

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drinking water system licensing renewal process and is required for all five (5) drinking water system licenses.

The Financial Plan update, required by legislation, is aimed to provide a forward-looking fiscal view of the City's drinking water systems for a minimum period of six years. The Hamilton Water Financial Plan exceeds this minimum requirement and is based on the standard City budgeting practice of a 10-year forecast. The details of the Financial Plan, however, are different than financial budgets as it reflects a full accrual perspective. The Financial Plan conforms to accounting standards and principles applied to municipal governments effective as of 2009. The full accrual basis of accounting reports tangible capital assets and the amortization expense of these assets over their useful life.

The completed Financial Plan must be approved by a Council resolution. This statement of agreement reflects an acknowledgement that the City's water systems are being provided with the appropriate financial resources to successfully continue operation over the next 10-year time frame. Submission of the Financial Plan to the Provincial Ministry of Municipal Affairs and Housing will take place in 2023 after Council endorsement is received.

Data produced from this work reflects available information generated through existing City processes, as well as calculated future projections based on an understanding of water system assets and their lifecycles. Council is presented with the following three financial statements:

1. Statement of Financial Position (Balance Sheet)
2. Statement of Operations (Income Statement)
3. Statement of Cash Flow

Each statement noted above is provided in Appendix "A" to Report PW23055 detailing the relevant financial figures. Together these statements meet the provincial requirement to develop a financial plan under O.Reg. 453/07.

The resulting financial statements produced through this process indicates that there are suitable financial resources allocated to our drinking water systems over the 10-year time period based on planned capital expenditures and the cost to operate and maintain the system.

**Alternatives for Consideration – See Page 5**

**SUBJECT: Hamilton Water Financial Plan (PW23055) (City Wide) - Page 3 of 6**

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**FINANCIAL – STAFFING – LEGAL IMPLICATIONS**

**Financial:** Appendix “A” to Report PW23055 provides information on the current status of the City’s water infrastructure financial position. The information provided should be used as the basis for future planning and decision making in terms of guiding the collection of revenue reflecting the true cost of ownership and operation. Data can also be used to more effectively plan the pace of necessary expenditures at a strategic level.

**Staffing:** N/A

**Legal:** Appendix “A” to Report PW23055 outlines the financial planning requirements described in O.Reg. 453/07 under the *Safe Drinking Water Act, 2002*. Approval of Appendix “A” to Report PW23055 is required prior to filing applications with Provincial authorities in order for the City to successfully retain its drinking water licences under the legislation.

**HISTORICAL BACKGROUND**

The recommendations contained within this report have City wide implications. After the release of Ontario Regulation (O.Reg.) 453/07 (Financial Plans) in 2007, the City created the first Financial Plan for its drinking water systems in 2009. Additional Financial Plans were created in 2013 and 2018 for the purpose of drinking water system license renewals. An updated Financial Plan is required as part of the re-occurring drinking water system licensing renewal process and is required for all five drinking water system licenses.

The update in 2023 includes data reflecting the capital and operating status of all piping and facility assets, which make up the water treatment and distribution systems in the City. The work undertaken includes a series of regulated financial statements for the City’s water system infrastructure.

The Financial Plan has been created using previously Council approved budget information that is aligned with the intentions of O.Reg. 588/17 Asset Management Planning for Municipal Infrastructure under the *Ontario Infrastructure for Jobs and Prosperity Act, 2015* and the City of Hamilton’s Strategic Asset Management Policy dated May 28, 2019.

Additional historical background is contained in Appendix “A” to Report PW23055.

**SUBJECT: Hamilton Water Financial Plan (PW23055) (City Wide) - Page 4 of 6**

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**POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS**

Legislative requirements and policies affecting or impacting this Report include:

- *Ontario Safe Drinking Water Act, 2002*
- *Ontario Infrastructure for Jobs and Prosperity Act, 2015*
- O. Reg. 588/17 Asset Management Planning for Municipal Infrastructure
- City of Hamilton Strategic Asset Management Policy (PW23044)

The updated Financial Plan will be provided to the Provincial Ministry of Municipal Affairs and Housing and will also be made available to the public. A notice will be posted to make residents aware that a Financial Plan is available, documentation will be provided without charge, and posted on the City's website <https://www.hamilton.ca/>.

**RELEVANT CONSULTATION**

In 2022 and 2023 staff undertook a process of engaging internal groups within the Public Works and Corporate Services Departments to identify existing resources and limitations that would impact the development of the Hamilton Water Financial Plan. A process of coordinating several meetings to engage staff in the Financial Services Division, Financial Planning Administration and Policy Division, Engineering Services Division, Corporate Asset Management Division, and the Hamilton Water Division was launched to collect information and leverage staff knowledge and expertise throughout the process.

During these consultations, two matters that will have a future impact to this process were discussed at a high level. These matters are the difference between how assets are valued, and the impact of *Bill 23 More Homes Built Faster Act, 2022*.

Assets have been valued on a historical basis using the conventional and Public Sector Accounting Board (PSAB) approved treatment of fixed assets in municipal accounting. Looking forward, the valuation of assets will need to be reviewed through the perspective of asset management. It is common for organizations to have differences between valuations determined through the asset management process and the financial accounting process. This difference is rooted in using the generally accepted accounting principles of historical asset valuations as opposed to calculated future replacement costs for assets.

*Bill 23 More Homes Built Faster Act, 2022* made several changes to the *Development Charges Act, 1997* which impacts all municipalities' ability to finance planned growth infrastructure. Since the City was assessing the impact of these changes at the same time that the Financial Plan was being prepared, they have not been accounted for in the preparation of the financial statements.

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**SUBJECT: Hamilton Water Financial Plan (PW23055) (City Wide) - Page 5 of 6****ANALYSIS AND RATIONALE FOR RECOMMENDATION**

The Financial Plan created for City of Hamilton water infrastructure includes three key statements described below:

1. Statement of Financial Position

This statement highlights four key figures that describe the financial position of the City of Hamilton at the reporting date:

- (a) The cash resources of the government include its cash and cash equivalents.
- (b) The net debt position of the government is calculated as the difference between its liabilities and financial assets.
- (c) The non-financial assets of the government are assets that are, by nature, normally for use in service provision and include purchased, constructed, developed, or leased tangible capital assets, inventories of supplies, and prepaid expenses.
- (d) The accumulated surplus or deficit of the government is calculated as the sum of the net debt of the government and its non-financial assets. This indicator represents the net assets of the government.

2. Statement of Operations

This statement reports the surplus or deficit from operations in the accounting period. The statement displays the cost of City services provided in the period, the revenues recognized in the period and the difference between them. It measures, in monetary terms, the extent to which a government has maintained its net assets in the period.

3. Statement of Cash Flow

The statement of cash flow reports the change in cash and cash equivalents in the accounting period, and how the City of Hamilton financed its activities in the period and met its cash requirements.

Financial Plan Conclusions

The three financial statements created under this project meet the legislated requirement of O.Reg. 453/07 and indicate there are the necessary financial resources allocated to the drinking water systems over the next 10-year time period based on the planned capital expenditures and the predicted cost to operate. The City of Hamilton will be required to submit the content of Appendix "A" to Report PW23055 to the Ministry of Municipal Affairs and Housing in 2023 and release for public access when approval by Council is given.

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**SUBJECT: Hamilton Water Financial Plan (PW23055) (City Wide) - Page 6 of 6**

The production of this Financial Plan was carried out with the intent to build and assemble the information and data required to allow financial analysis to be carried out for longer planning horizons.

**ALTERNATIVES FOR CONSIDERATION**

The approval of this Financial Plan by a Council resolution, and subsequent submission to the Ministry of Municipal Affairs and Housing is a legislated requirement under the *Safe Drinking Water Act, 2002* and the related O.Reg. 453/07 titled Financial Plans. If Council elects not to approve this Financial Plan, the City of Hamilton risks non-compliance with the regulations.

**APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Report PW23055 – Hamilton Water Financial Plan

Prepared By:



City of Hamilton

Hamilton Water Financial Plan:  
Water Financial Plan and Financial Statements

GMBP File: 622141

July 14, 2023



Hamilton



July 14, 2023  
Our File: 622141

City of Hamilton  
Hamilton Water  
120 King Street West, 9th Floor  
Hamilton, Ontario L8P 4V2

Attn: Mr. George Giovinazzo

Re: City of Hamilton – Water Financial Plan Development – Category 32

Dear Mr. Giovinazzo

GM BluePlan Engineering Limited is pleased to present the our interim report for the project in question. The enclosed report outlines the water system Financial Plan and Financial Statements as mandated by Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002.

Yours truly,

**GM BLUEPLAN ENGINEERING LIMITED**

A handwritten signature in blue ink, appearing to read 'Andy Dalziel', with a long horizontal flourish extending to the right.

Andy Dalziel, B.Eng.  
Asset Management



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## 1.0 Introduction

The City of Hamilton retained GM BluePlan (GMBP) in 2022 to prepare a 10-year Financial Plan with associated Financial Statements to comply with regulatory requirements defined within the Drinking Water Quality Management System (DWQMS) and specifically outlined in Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002 (SDWA).

This interim report provides a Financial Plan and Financial Statements for the water system to support the City's application for updated drinking water licenses as per Regulation 453/07 and documents the approach and sources of information used to generate the Financial Statements.

## 2.0 Background

*Regulation 453/07 - Financial Plans made under the Safe Drinking Water Act, 2002* mandates that a Financial Plan be prepared to obtain a municipal drinking water license. The Financial Plan required as part of Regulation 453/07 is represented as a series of financial statements for a minimum period of 6 years.

*Regulation 588/17 – Asset Management Planning for Municipal Infrastructure* made under the Infrastructure for Jobs and Prosperity Act, 2015 was implemented on January 1, 2018. The regulation required municipalities to develop a strategic asset management plan for core municipal assets which were defined as water, wastewater, stormwater, roads, engineered structures (bridges & culverts); in addition, asset management plans must be developed for all other municipal assets by 2024.

The City's Corporate Asset Management (CAM) office released the first iteration of the Corporate Asset Management Plan, in June 2022. This Asset Management Plan complies with O.Reg. 588/17 by setting out the current levels of service for the City's core asset portfolio and establishing a benchmark for these assets against which opportunities for continuous improvement can be identified for future iterations of the plan. The asset management plan for the City's water assets

(water, wastewater and stormwater) can be found on the City's website ([Waterworks Asset Management Plan](#)). The asset management plan includes a 10-year financial plan which outlines the costs associated with the operation, maintenance, and renewal of the City's water assets; the assumptions used in the development of this plan were incorporated within the analysis for this report.

The most significant practical differences between the Financial Plan mandated through Regulation 453/07 and the financial planning that is required to support Regulation 588/17 are summarized as follows:

- Regulation 453/07 Financial Plans are not required to align with the current or desired level of service (LOS).
- Regulation 453/07 requires that Financial Plans are presented as three financial statements. Regulation 588/17 does not prescribe the specific financial statements that must be used, instead, it allows for a more flexible approach in utilizing financial planning processes to support the creation of an asset management plan that attains the targeted LOS.

### 3.0 Regulatory Requirement Overview

The approach to completing the 10-year financial plan and the development of financial statements for water and wastewater systems aligns with the requirements of O.Reg. 453/07 - Financial Plans. The following summarizes the requirements of O.Reg. 453/07 as they apply to the City's existing water system.

- The preparation and approval of a financial plan is required in order to make an application for the renewal of a municipal drinking water license.
- The financial plan must be approved by a resolution that is passed by City council.
- The financial plan must apply to a period of at least six (6) years.



- The first year to which the financial plans must apply must be the year in which the drinking water system's existing municipal drinking water license would otherwise expire.
- The financial plan must include details of the proposed or projected financial position of the drinking water system itemized by:
  - Total financial assets;
  - Total liabilities;
  - Net financial assets;
  - Non-financial assets that are tangible capital assets, tangible capital assets under construction, inventories of supplies and prepaid expenses; and,
  - Changes in tangible capital assets that are additions, donations, write downs and disposals.
- The financial plan must include details of the proposed or projected financial position of the drinking water system itemized by:
  - Total revenues, further itemized by water rates, user charges and other revenues;
  - Total expenses, further itemized by amortization expenses, interest expenses and other expenses;
  - Annual surplus or deficit; and,
  - Accumulated surplus or deficit.
- The financial plan must include details of the drinking water system's proposed or projected gross cash receipts and gross cash payments itemized by:
  - Operating transactions that are cash received from revenues, cash paid for operating expenses and finance charges;
  - Capital transactions that are proceeds on the sale of tangible capital assets and cash used to acquire capital assets;



- Investing transactions that are acquisitions and disposal of investments;
  - Financing transactions that are proceeds from the issuance of debt and debt repayment;
  - Changes in cash and cash equivalents during the year; and,
  - Cash and cash equivalents at the beginning and end of the year.
- The financial plan must include details of the extent to which the information described above relates directly to the replacement of lead service pipes.
  - Financial plans must be made available to members of the public on the City's website or by request at no charge.
  - Notice must be provided advising the public of the availability of the financial plans.
  - A copy of the financial plan must be provided to the Ministry of Municipal Affairs and Housing.

In accordance with SDWA regulations, the Financial Plan will be represented in the following Financial Statements:

1. Statement of Financial Position (Balance Sheet)

This statement highlights four key figures that describe the financial position of the City's water system at the reporting date, including the cash resources, liabilities, non-financial assets and accumulated surplus or deficit.

In support of this Statement of Financial Position, two additional statements were prepared. The financial statements listed below illustrate the change in one of these four key aspects of the water system's financial position.

2. Statement of Operations (Income Statement)

3. Statement of Cash Flow



These statements coincide with the Financial Plan requirements for water systems licensing based on the specific requirements of Section 4(iii) of Regulation 453/07. Further descriptions of these statements are included in Section 5 - Financial Statements of this report.

As noted above, a minimum reporting period of 6 years is required for the statements under the regulation. The information developed in this plan includes these financial statements covering a period of 10 years. This is consistent with and supports the City's budget process which covers a 10-year period.

#### 4.0 Sources of Information

The City's financial data and business processes were reviewed by members of the consulting team to determine the availability of information required to develop the 10-year Financial Plan and the Financial Statements. City staff were engaged throughout the project to inform any assumptions or interpretation of data required to develop the 10-year Financial Plan and Financial Statements. Table 1 lists the assumptions used in the model to develop the financial statements.



Table 1: Assumptions

Assumption	Source
Fixed and variable water rate increases proposed in the 2023 budget were used, provided in Table 2. It should be noted that these are for water assets only and the combined water and wastewater rates are slightly different.	<ul style="list-style-type: none"> <li>2023 Rate Budget Book</li> </ul>
Operating expenditures increases of 4% per annum until 2025 were used and then 3% per annum was used onward.	<ul style="list-style-type: none"> <li>2023 Rate Budget Book</li> <li>Agreed during workshops</li> </ul>
The residential and ICI demands of 16.2m <sup>3</sup> /connection/month and 216.7m <sup>3</sup> /connection/month were used respectively.	<ul style="list-style-type: none"> <li>Consumption data and forecasted revenues</li> </ul>
Residential demand was declining at -0.870% per year with a growth factor of 1.371% to meet 2031 population targets.	<ul style="list-style-type: none"> <li>Consumption data and forecasted revenues for demand</li> <li>Master Plan and A Place to Grow for growth targets</li> </ul>
ICI demand was declining at -1.717% per year with a growth factor of 1.371% to meet 2031 population targets.	<ul style="list-style-type: none"> <li>Consumption data and 2023 Rate Budget Book for demand</li> <li>Master Plan and A Place to Grow for growth targets</li> </ul>
The City provided the long-term debt repayment schedule on existing long-term debt. New loans followed the same rules regarding serviceability of debt.	<ul style="list-style-type: none"> <li>2023 Rate Budget Book</li> <li>Debt Repayment Schedule</li> </ul>



Table 2: 2023 Budgeted Rate Increases

	2024	2025	2026	2027	2028	2029	2030	2031	2032
Rate Increase	9.9%	9.9%	9.8%	9.7%	10.2%	9.5%	9.7%	10.6%	10.2%

Table 3 summarizes the information that was used to generate the 10-year Financial Plan for the water system.

Table 3: Information sources used to develop the financial statements.

Input	Source of Data
Base Financial Data	<ul style="list-style-type: none"> <li>2023 Rate Budget Book</li> </ul>
Current Demands and Future Demand Estimates	<ul style="list-style-type: none"> <li>DC Report and Bylaws for dwelling and ICI forecast</li> <li>A Place to Grow: Growth plan for the Greater Golden Horseshoe report was used for 2051 population target</li> <li>2023 Rate Budget Book for water consumption demand</li> </ul>
Water Rates	<ul style="list-style-type: none"> <li>2023 Rate Budget Book for the fixed and volumetric rates</li> </ul>
Revenues	<ul style="list-style-type: none"> <li>2023 Rate Budget Book for the non-metered revenues</li> </ul>
Operations and Maintenance Costs	<ul style="list-style-type: none"> <li>2023 Rate Budget Book for the operating expenses</li> </ul>
Development Charges Information	<ul style="list-style-type: none"> <li>DC Report and Bylaws</li> <li>2023 Rates DC Reserve Forecast spreadsheet</li> </ul>
Capital Plan	<ul style="list-style-type: none"> <li>2023 Rate Budget Book</li> </ul>
Amortization Data	<ul style="list-style-type: none"> <li>2022-2051 Amortization for Water, Wastewater &amp; Stormwater spreadsheet</li> </ul>
Project Funding Sources	<ul style="list-style-type: none"> <li>2023 Rate Budget Book</li> </ul>
Debt Service Information	<ul style="list-style-type: none"> <li>Rate Existing Debt spreadsheet</li> </ul>

## 5.0 Financial Statements

This section describes and presents the three Financial Statements that comprise the 10-year Financial Plan for the water system.

The Financial Position Statement (Balance Sheet) highlights four key figures that describe the financial position of the water system at the reporting date. These are:

- The cash resources are cash and cash equivalents.
- The net financial assets are calculated as the difference between financial assets and liabilities.
- The non-financial assets are assets that are, by nature, normally for use in service provision and include purchased, constructed, developed or leased tangible capital assets, inventories of supplies and prepaid expenses.
- The accumulated surplus or deficit is calculated as the sum of the net financial assets and non-financial assets. This indicator represents the equity in the water system.

The two remaining statements illustrates the change in one of these aspects of the water system's financial position.

- The *statement of operations* reports the surplus or deficit from operations in the accounting period. The statement displays the cost of water services provided in the period, the revenues recognized in the period and the difference between them. It measures, in monetary terms, the extent to which an organization has maintained its net assets in the period.
- The *statement of cash flow* reports the change in cash and cash equivalents in the accounting period, and how the water system financed its activities in the period and met its cash requirements.





The following financial statements representing the 10-year Financial Plan for the Water System are included below:

- 1) Statement of Financial Position
- 2) Statement of Operations
- 3) Statement of Cash Flow

In addition, a Glossary of Terms follows the Financial Statements providing further explanations of the meaning and interpretation of specific categories or line-item terms in the statements. These should be read in conjunction with the respective statements.

It should be noted that the estimate of total fixed assets in these financial statements are based on historical costs, i.e. the actual project expenditures that were made in previous years. This approach is the conventional and PSAB-approved treatment of fixed assets in municipal accounting. It differs markedly from how the costs of investments in fixed assets are estimated in asset management plans. The Asset Management Plan (AMP) costs must reflect the value of existing fixed assets based on how much it will cost to replace them in the future in order to provide accurate information for planning of future capital budgets, in other words these costs account for inflation. For this reason, the estimate of fixed assets owned by the City that is reported in the AMP will be greater than the value of fixed assets reported on the City's balance sheet; the former accounts for inflating construction costs while the later does not.



### 1. Statement of Financial Position for the Water System

**City of Hamilton - Water Infrastructure Statement of Financial Position**  
 As at December 31 (in thousands of dollars)

	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>
<b>Financial assets</b>										
Cash and cash equivalents	\$ 123,045	\$ 94,978	\$ 106,103	\$ 123,111	\$ 93,932	\$ 102,026	\$ 137,215	\$ 211,059	\$ 315,167	\$ 448,882
Accounts receivable - rate revenues	\$ 10,412	\$ 11,467	\$ 12,629	\$ 13,892	\$ 15,276	\$ 16,870	\$ 18,515	\$ 20,356	\$ 22,559	\$ 24,877
Accounts receivable - other revenue sources	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Investments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 133,457</b>	<b>\$ 106,444</b>	<b>\$ 118,731</b>	<b>\$ 137,003</b>	<b>\$ 109,207</b>	<b>\$ 118,895</b>	<b>\$ 155,729</b>	<b>\$ 231,414</b>	<b>\$ 337,726</b>	<b>\$ 473,759</b>
<b>Liabilities</b>										
Accounts payable - wages	\$ 234	\$ 244	\$ 253	\$ 264	\$ 269	\$ 278	\$ 286	\$ 295	\$ 304	\$ 313
Accounts payable - other payables	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
DC reserve (Deferred revenue)	\$ 39,223	\$ 34,088	\$ 37,352	\$ 24,523	\$ 5,270	\$ -	\$ -	\$ -	\$ -	\$ -
Short term debt	\$ 9,486	\$ 10,789	\$ 12,146	\$ 11,353	\$ 10,570	\$ 10,811	\$ 9,700	\$ 9,961	\$ 8,663	\$ 8,946
Long term debt	\$ 65,761	\$ 78,866	\$ 90,613	\$ 103,154	\$ 92,584	\$ 81,773	\$ 72,074	\$ 62,113	\$ 53,449	\$ 44,503
Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 114,704</b>	<b>\$ 123,986</b>	<b>\$ 140,365</b>	<b>\$ 139,293</b>	<b>\$ 108,693</b>	<b>\$ 92,862</b>	<b>\$ 82,059</b>	<b>\$ 72,369</b>	<b>\$ 62,417</b>	<b>\$ 53,762</b>
<b>Net Financial Assets (Liabilities)</b>	<b>\$ 18,754</b>	<b>\$ (17,542)</b>	<b>\$ (21,633)</b>	<b>\$ (2,290)</b>	<b>\$ 514</b>	<b>\$ 26,034</b>	<b>\$ 73,670</b>	<b>\$ 159,046</b>	<b>\$ 275,309</b>	<b>\$ 419,997</b>
<b>Non-financial assets</b>										
Tangible capital assets										
TCA used in production	\$ 1,314,211	\$ 1,440,260	\$ 1,575,786	\$ 1,724,317	\$ 1,824,028	\$ 1,933,878	\$ 2,072,722	\$ 2,142,526	\$ 2,206,755	\$ 2,590,618
Work in progress	\$ 67,404	\$ 99,276	\$ 88,209	\$ 69,566	\$ 139,066	\$ 194,711	\$ 208,112	\$ 262,421	\$ 316,753	\$ 49,759
Less accumulated amortization	\$ (448,032)	\$ (479,485)	\$ (515,726)	\$ (554,483)	\$ (594,758)	\$ (635,817)	\$ (679,028)	\$ (719,803)	\$ (759,786)	\$ (806,581)
<b>Total TCA</b>	<b>\$ 933,582</b>	<b>\$ 1,060,050</b>	<b>\$ 1,148,268</b>	<b>\$ 1,239,400</b>	<b>\$ 1,368,337</b>	<b>\$ 1,492,772</b>	<b>\$ 1,601,805</b>	<b>\$ 1,685,143</b>	<b>\$ 1,763,721</b>	<b>\$ 1,833,797</b>
Inventories of supplies	\$ 235	\$ 245	\$ 254	\$ 265	\$ 271	\$ 279	\$ 287	\$ 296	\$ 305	\$ 314
Prepaid expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 933,817</b>	<b>\$ 1,060,295</b>	<b>\$ 1,148,523</b>	<b>\$ 1,239,665</b>	<b>\$ 1,368,607</b>	<b>\$ 1,493,051</b>	<b>\$ 1,602,093</b>	<b>\$ 1,685,440</b>	<b>\$ 1,764,027</b>	<b>\$ 1,834,111</b>
<b>Accumulated surplus</b>	<b>\$ 952,571</b>	<b>\$ 1,042,753</b>	<b>\$ 1,126,890</b>	<b>\$ 1,237,375</b>	<b>\$ 1,369,121</b>	<b>\$ 1,519,084</b>	<b>\$ 1,675,763</b>	<b>\$ 1,844,486</b>	<b>\$ 2,039,335</b>	<b>\$ 2,254,108</b>



## 2. Statement of Operations for the Water System

City of Hamilton - Water Infrastructure Statement  
 of Financial Position  
 As at December 31 (in thousands of dollars)

	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>
<b>Revenues</b>										
Rate revenues	\$ 124,948	\$ 137,598	\$ 151,545	\$ 166,710	\$ 183,307	\$ 202,436	\$ 222,179	\$ 244,270	\$ 270,710	\$ 298,525
Capital levy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Earned DC revenue	\$ 30,248	\$ 31,514	\$ 23,114	\$ 39,208	\$ 45,631	\$ 46,287	\$ 36,277	\$ 24,671	\$ 24,392	\$ 23,939
Other revenues	\$ 11,928	\$ 14,672	\$ 10,896	\$ 11,575	\$ 12,286	\$ 13,131	\$ 13,962	\$ 14,846	\$ 15,857	\$ 17,002
<b>Total Revenues</b>	<b>\$ 167,124</b>	<b>\$ 183,784</b>	<b>\$ 185,555</b>	<b>\$ 217,492</b>	<b>\$ 241,225</b>	<b>\$ 261,854</b>	<b>\$ 272,418</b>	<b>\$ 283,787</b>	<b>\$ 310,959</b>	<b>\$ 339,466</b>
<b>Operating Expenses</b>										
Divisional Administration & Support	\$ 5,623	\$ 5,848	\$ 6,081	\$ 6,325	\$ 6,467	\$ 6,665	\$ 6,869	\$ 7,080	\$ 7,297	\$ 7,507
Woodward Upgrades	\$ 941	\$ 979	\$ 1,018	\$ 1,059	\$ 1,082	\$ 1,116	\$ 1,150	\$ 1,185	\$ 1,221	\$ 1,257
Customer Service & Community Outreach	\$ 3,504	\$ 3,653	\$ 3,800	\$ 3,952	\$ 4,031	\$ 4,154	\$ 4,282	\$ 4,413	\$ 4,548	\$ 4,679
Compliance & Regulations	\$ 1,809	\$ 1,890	\$ 1,966	\$ 2,045	\$ 2,081	\$ 2,145	\$ 2,210	\$ 2,278	\$ 2,348	\$ 2,416
Water Distribution & Wastewater Collection	\$ 15,394	\$ 16,049	\$ 16,691	\$ 17,359	\$ 17,705	\$ 18,248	\$ 18,807	\$ 19,385	\$ 19,977	\$ 20,553
Plant Operations	\$ 17,284	\$ 17,988	\$ 18,708	\$ 19,456	\$ 19,879	\$ 20,488	\$ 21,117	\$ 21,765	\$ 22,430	\$ 23,077
Plant Maintenance	\$ 6,282	\$ 6,533	\$ 6,794	\$ 7,066	\$ 7,225	\$ 7,446	\$ 7,674	\$ 7,910	\$ 8,152	\$ 8,387
Capital Planning & Delivery	\$ 2,388	\$ 2,484	\$ 2,583	\$ 2,686	\$ 2,747	\$ 2,831	\$ 2,918	\$ 3,007	\$ 3,099	\$ 3,188
Watershed Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Wastewater Abatement Program	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Operating Expenses</b>	<b>\$ 56,481</b>	<b>\$ 58,810</b>	<b>\$ 61,162</b>	<b>\$ 63,608</b>	<b>\$ 64,960</b>	<b>\$ 66,950</b>	<b>\$ 69,004</b>	<b>\$ 71,122</b>	<b>\$ 73,297</b>	<b>\$ 75,410</b>
<b>Net Operating Revenue</b>	<b>\$ 110,643</b>	<b>\$ 124,974</b>	<b>\$ 124,393</b>	<b>\$ 153,884</b>	<b>\$ 176,264</b>	<b>\$ 194,904</b>	<b>\$ 203,414</b>	<b>\$ 212,664</b>	<b>\$ 237,662</b>	<b>\$ 264,055</b>
Less amortisation of tangible assets	\$ (29,932)	\$ (31,453)	\$ (36,241)	\$ (38,757)	\$ (40,275)	\$ (41,059)	\$ (43,211)	\$ (40,775)	\$ (39,983)	\$ (46,794)
<b>Earnings Before Interest</b>	<b>\$ 80,711</b>	<b>\$ 93,521</b>	<b>\$ 88,153</b>	<b>\$ 115,127</b>	<b>\$ 135,989</b>	<b>\$ 153,845</b>	<b>\$ 160,203</b>	<b>\$ 171,889</b>	<b>\$ 197,679</b>	<b>\$ 217,261</b>
Less interest on short term loans	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Less interest on long term debt	\$ (2,608)	\$ (3,339)	\$ (4,016)	\$ (4,642)	\$ (4,243)	\$ (3,882)	\$ (3,524)	\$ (3,167)	\$ (2,829)	\$ (2,489)
<b>Annual Surplus (Deficit)</b>	<b>\$ 78,103</b>	<b>\$ 90,182</b>	<b>\$ 84,137</b>	<b>\$ 110,485</b>	<b>\$ 131,747</b>	<b>\$ 149,963</b>	<b>\$ 156,679</b>	<b>\$ 168,723</b>	<b>\$ 194,850</b>	<b>\$ 214,772</b>
<b>Accumulated Surplus at beginning of year</b>	<b>\$ 874,468</b>	<b>\$ 952,571</b>	<b>\$ 1,042,753</b>	<b>\$ 1,126,890</b>	<b>\$ 1,237,375</b>	<b>\$ 1,369,121</b>	<b>\$ 1,519,084</b>	<b>\$ 1,675,763</b>	<b>\$ 1,844,486</b>	<b>\$ 2,039,335</b>
<b>Accumulated Surplus at end of year</b>	<b>\$ 952,571</b>	<b>\$ 1,042,753</b>	<b>\$ 1,126,890</b>	<b>\$ 1,237,375</b>	<b>\$ 1,369,121</b>	<b>\$ 1,519,084</b>	<b>\$ 1,675,763</b>	<b>\$ 1,844,486</b>	<b>\$ 2,039,335</b>	<b>\$ 2,254,108</b>



### 3. Statement of Cash Flow for the Water System

#### City of Hamilton - Water Infrastructure Statement of Financial Position

As at December 31 (in thousands of dollars)

	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>
<b>Cash from operations</b>										
Earnings before interest expenses	\$ 80,711	\$ 93,521	\$ 88,153	\$ 115,127	\$ 135,989	\$ 153,845	\$ 160,203	\$ 171,889	\$ 197,679	\$ 217,261
Plus amortisation of tangible capital assets	\$ 29,932	\$ 31,453	\$ 36,241	\$ 38,757	\$ 40,275	\$ 41,059	\$ 43,211	\$ 40,775	\$ 39,983	\$ 46,794
Total	\$ 110,643	\$ 124,974	\$ 124,393	\$ 153,884	\$ 176,264	\$ 194,904	\$ 203,414	\$ 212,664	\$ 237,662	\$ 264,055
<b>Cash from the Movement of Balance Sheet Account</b>										
Accounts payable - increase/(decrease)	\$ -	\$ 9	\$ 10	\$ 10	\$ 6	\$ 8	\$ 9	\$ 9	\$ 9	\$ 9
Pensions and other employee benefits - increase/(decrease)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Accounts receivable - (increase)/decrease	\$ (1,644)	\$ (1,054)	\$ (1,162)	\$ (1,264)	\$ (1,383)	\$ (1,594)	\$ (1,645)	\$ (1,841)	\$ (2,203)	\$ (2,318)
Inventory - (increase)/decrease	\$ -	\$ (9)	\$ (10)	\$ (10)	\$ (6)	\$ (8)	\$ (9)	\$ (9)	\$ (9)	\$ (9)
Prepaid expenses - (increase)/decrease	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
DC reserve	\$ (3,869)	\$ (5,135)	\$ 3,264	\$ (12,829)	\$ (19,253)	\$ (5,270)	\$ -	\$ -	\$ -	\$ -
Total	\$ (5,514)	\$ (6,189)	\$ 2,102	\$ (14,093)	\$ (20,636)	\$ (6,864)	\$ (1,645)	\$ (1,841)	\$ (2,203)	\$ (2,318)
<b>Proceeds of New Debt</b>										
Short term loans	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long term loans	\$ 31,894	\$ 23,894	\$ 23,894	\$ 23,894	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 31,894	\$ 23,894	\$ 23,894	\$ 23,894	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Capital Finance</b>										
Interest costs	\$ (2,608)	\$ (3,339)	\$ (4,016)	\$ (4,642)	\$ (4,243)	\$ (3,882)	\$ (3,524)	\$ (3,167)	\$ (2,829)	\$ (2,489)
Repayment of short-term debt	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Repayment of long-term debt	\$ (8,244)	\$ (9,486)	\$ (10,789)	\$ (12,146)	\$ (11,353)	\$ (10,570)	\$ (10,811)	\$ (9,700)	\$ (9,961)	\$ (8,663)
Total	\$ (10,852)	\$ (12,825)	\$ (14,806)	\$ (16,788)	\$ (15,596)	\$ (14,452)	\$ (14,335)	\$ (12,866)	\$ (12,789)	\$ (11,152)
<b>Cash used to finance tangible asset investments</b>										
New project investments	\$ (116,724)	\$ (157,922)	\$ (124,459)	\$ (129,889)	\$ (169,212)	\$ (165,494)	\$ (152,245)	\$ (124,113)	\$ (118,561)	\$ (116,870)
Total	\$ (116,724)	\$ (157,922)	\$ (124,459)	\$ (129,889)	\$ (169,212)	\$ (165,494)	\$ (152,245)	\$ (124,113)	\$ (118,561)	\$ (116,870)
Cash Surplus (Deficit)	\$ 9,447	\$ (28,067)	\$ 11,125	\$ 17,008	\$ (29,179)	\$ 8,094	\$ 35,189	\$ 73,844	\$ 104,108	\$ 133,715
Cash and cash equivalents, start of year	\$ 113,598	\$ 123,045	\$ 94,978	\$ 106,103	\$ 123,111	\$ 93,932	\$ 102,026	\$ 137,215	\$ 211,059	\$ 315,167
Cash and cash equivalents, end of year	\$ 123,045	\$ 94,978	\$ 106,103	\$ 123,111	\$ 93,932	\$ 102,026	\$ 137,215	\$ 211,059	\$ 315,167	\$ 448,882



## 6.0 Summary and Conclusions

The intent of this interim report was to provide a Financial Plan for the City's water system to meet the regulatory requirement under the Safe Drinking Water Act, Regulation 453/07 - Financial Plans. The Financial Statements in this report have been developed using readily available information. Where information was not available reasonable assumptions were made to fill any gaps.

The Financial Statements indicate that suitable financial resources are allocated to the system over the next 10 years based on the planned capital expenditures and the cost to operate the system.

## 7.0 Glossary of Terms

### 7.1 Statement of Financial Position

**Financial Assets** - assets that could be used to discharge existing liabilities or finance future operations and are not for consumption in the normal course of operations. Financial assets include cash, investments, accounts receivable, etc.

Physical assets (such as inventories of supplies, tangible capital assets), and leased assets are not financial assets. Control of such assets creates an opportunity to produce or supply goods and services, rent to others, use for administrative purposes or for the development, construction or repair of other tangible capital assets. Control of such assets does not give rise to a present right to receive cash or another financial asset.

Assets, such as prepaid expenses, for which the future economic benefit is the receipt of goods or services rather than the right to receive cash or another financial asset, are not financial assets. Similarly, certain deferred liabilities are not financial liabilities when the outflow of economic benefits associated with them is in the nature of goods or services rather than a contractual obligation to pay cash or another financial asset.



**Liabilities** - present obligations of a local government to others arising from past transactions or events, the settlement of which is expected to result in the future sacrifice of economic benefits. Liabilities have three essential characteristics:

- They embody a duty or responsibility to others, leaving a local government little or no discretion to avoid settlement of the obligation;
- The duty or responsibility to others entails settlement by future transfer or use of assets, provision of goods or services, or other form of economic settlement at a specified or determinable date, on occurrence of a specified event, or on demand;
- The transactions or events obligating the local government have already occurred.

**Net Financial Assets** - a term used to describe the first indicator of a government's financial position. The net financial assets of a government represent the net financial resources available to the government. The two dimensions of the government's financial position are combined to calculate this second indicator of a government's financial position, called its accumulated surplus.

Net financial assets are measured as the difference between a government's financial assets and its liabilities. This difference bears directly on the government's ability to finance its activities and meet its liabilities and contractual obligations. Net debt, representing a situation where net financial assets are negative, provides a measure of the future revenues required to pay for past transactions and events. The extent of a government's net financial assets and the financial ability of the government to service its debt is an important test of the sustainability of that government.

A government's net financial assets is an important indicator of a government's financial position, highlighting the financial affordability of future government service provision. A net debt position represents a "lien" on the ability of the government to apply financial resources and future revenues to provide services. Non-financial assets are added to net financial assets to calculate the other indicator of a government's financial position — its accumulated surplus or deficit. Non-financial assets are "prepaid service potential". Reporting a government's



recognized non-financial resources as part of its financial position provides information necessary for a more complete understanding of a government's debt position, financial position and future operating requirements.

**Non-financial Assets** - tangible capital assets and other assets such as prepaid expenses and inventories of supplies. Non-financial assets are acquired, constructed or developed assets that are normally employed to deliver local government services, may be consumed in the normal course of operations and are not for sale in the normal course of operations.

Certain non-financial resources are, however, not given accounting recognition in government financial statements. For example, all government intangibles, and all natural resources and Crown lands that have not been purchased by the government, are not given accounting recognition in government financial statements.

**Accumulated Surplus or Deficit** - calculated as the sum of the net financial assets of the government and its non-financial assets. This indicator represents the net assets, or equity, of the government. The accumulated surplus or deficit of a government, or its net assets, is the residual interest in its assets after deducting its liabilities.

## 7.2 Statement of Operations

**Revenues** - including gains, can arise from: taxation; the sale of goods; the rendering of services; the use by others of local government economic resources yielding rent, interest, royalties or dividends; or receipt of contributions such as grants, donations and bequests. Revenues do not include borrowings, such as proceeds from debt issues or transfers from other local governmental units in a local government reporting entity.

**Expenses** - including losses, are decreases in economic resources, either by way of outflows or reductions of assets or incurrence of liabilities, resulting from the operations, transactions and events of the accounting period. Expenses include transfer payments due where no value is received directly in return. Expenses include the cost of economic resources consumed in, and identifiable with, the operations of the accounting period. For example, the cost of tangible



capital assets is amortized to expenses as the assets are used in delivering local government programs. Expenses do not include debt repayments or transfers to other local governmental units in a local government reporting entity.

**Surplus** - a term used to describe the difference between the revenues and expenses in the period.

### 7.3 Statement of Cash Flows

The statement of cash flow should report how a government generated and used cash and cash equivalents in the accounting period and the change in cash and cash equivalents in the period.

The statement of cash flow should report the cash and cash equivalents at both the beginning and end of the accounting period.

The statement of cash flow should report cash flows during the period classified by:

- Operating
- Capital
- Investing
- Financing activities



# 12.1

## CITY OF HAMILTON

### MOTION

Public Works Committee: September 8, 2023

**MOVED BY COUNCILLOR M. WILSON .....**

**SECONDED BY COUNCILLOR .....**

**Investment in Victoria Park Pool, 100 Strathcona Avenue North, Hamilton (Ward 1)**

WHEREAS, the City of Hamilton owned outdoor pool facilities in Ward 1 are maintained by Corporate Facilities & Energy Management Division, Public Works, and programmed through the Recreation Division, Healthy and Safe Communities;

WHEREAS, along with spray pads and wading pools, outdoor pools offer an important opportunity for cooling during heat alerts, and should continue to be supported in areas that need them most;

WHEREAS, the Recreation Master Plan (2022) provision model considers investment in outdoor pool locations in higher needs areas that are under-served, have growing child/youth populations and few backyard pool opportunities;

WHEREAS, the current Victoria Park outdoor pool and changeroom building are approaching the end of their respective lifecycles and are in need of major renewal;

WHEREAS, a redevelopment of the Victoria Park outdoor pool facility to accommodate accessible entries, shallower water for younger children, accessible change spaces and washrooms will draw more users to the site;

WHEREAS, the Recreation Master Plan (2022) identifies Victoria Park outdoor pool redevelopment as an outstanding recommendation of the Use, Renovation and Replacement Study for Hamilton Recreation and Public-Use Facilities (2008) and has prioritized this outdoor pool as the only site recommended for short term investment; and

WHEREAS, a feasibility study was previously conducted for the renewal of the Victoria Park outdoor pool and established three possible renovation options, one of which has been recommended by Recreation and Facility Staff and;

WHEREAS, the design phase will utilize 2024 capital budget funds with partial funding

from the Ward 1 Capital Re-Investment Reserve.

THEREFORE, BE IT RESOLVED:

- (a) That the funding for the detailed design phase of the outdoor pool renewal and accessibility upgrades at Victoria Park, 100 Strathcona Avenue North, Hamilton, at a cost, including contingency, not to exceed \$750,000 (including partial financing from the Ward 1 Capital Re-Investment Reserve (108051)), be referred to the 2024 capital budget process for consideration; and
- (b) That Public Works staff be authorized and directed to retain a Prime Design Consultant in 2024, in accordance with Procurement By-Law 21-255, to undertake detailed design of the renewal and accessible upgrades of the outdoor pool and changeroom building at Victoria Park, 100 Strathcona Avenue North, Hamilton.

**13.1**

**CITY OF HAMILTON**

**NOTICE OF MOTION**

**Public Works Committee: September 8, 2023**

**MOVED BY COUNCILLOR J. BEATTIE.....**

**Corman Park Basketball Court Replacement (Ward 10)**

WHEREAS, the basketball court at Corman Park, located at 23 Teak Street, Hamilton, is in poor condition and has been closed due to health and safety risk;

WHEREAS, there is no capital funding to support the full replacement of this park asset and additional funding is needed to support the full replacement of the basketball court;

WHEREAS, this work will be undertaken by the Parks Section capital team and completed in addition to the existing work plan and ongoing projects; and

WHEREAS, resources are limited and this work will be initiated in 2023, scheduled to be completed within 12-24 months, subject to unforeseen challenges such as procurement timing, supply chain issues, weather, etc.

THEREFORE, BE IT RESOLVED:

- (a) That the replacement of the Corman Park basketball court, located at 23 Teak Street, Hamilton, to be funded from the Ward 10 Minor Maintenance Account [4031911610] at an upset limit, including contingency, not to exceed \$110,000, be approved; and,
- (b) That the General Manager of Public Works be authorized and directed to approve and execute any and all required agreements and ancillary documents, in a form satisfactory to the City Solicitor.