



STORMWATER MANAGEMENT SYSTEM

Annual Performance Report **2024**

THE CITY OF CORNWALL

DEPARTMENT OF INFRASTRUCTURE AND MUNICIPAL WORKS

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CLI-ECA Approval 176-S701

Table of Contents

1. Introduction	1
1.1. Background	1
1.2. Reporting Details.....	2
2. Monitoring Data Analysis	3
2.1. Historic ECA Monitoring.....	3
3. Collection System Operating Issues, Maintenance and Calibrations	4
3.1. Storm Sewers, Catch Basins and Maintenance Holes	4
3.1.1. Linear Infrastructure and MH/ CB Issues and Repairs	4
3.2. Ditches and Drains.....	5
3.2.1. Ditches and Drain Maintenance	5
3.2.2. Ditches and Drains Issues.....	6
3.3. Culverts.....	6
3.3.1. Culvert Maintenance	6
3.3.2. Culvert Issues	7
3.4. Stormwater Management Ponds (SWMP)	7
3.4.1. SWMP Maintenance Activities	7
3.4.2. SWMP Issues	7
3.4.3. Sediment Cleanout Forecasts	7
3.5. Oil Grit Separators (OGS)	8
3.5.1. OGS Maintenance	8
3.5.2. OGS Issues	8
4. Monitoring Equipment Calibrations	9
5. Complaint Summary.....	10
6. Collection System Alterations	11
6.1. Reconstruction & Rehabilitation Projects.....	11
6.2. Additions and New Developments.....	12
6.3. Significant Drinking Water Threats	12
7. Spill Summary & Abnormal Discharges.....	13
8. Future Initiatives to Improve the Authorized System	14
Appendix A: Pond Sediment Monitoring Data (2022)	15

Appendix B: Collection System Operating Issues and Maintenance Records	16
Appendix C: Authorized System Map.....	17

List of Tables

Table 1: Ditch and Drain Cleaning 2024	5
Table 2: Ditches and Drains Issues 2024.....	6
Table 3: Culvert Maintenance 2024	6
Table 4: Culvert Issues 2024	7
Table 5: Breakdown of Collection System Complaints 2024	10
Table 6: Reconstruction & Rehabilitation Projects 2024	11
Table 7: Additions to the Authorized System 2024.....	12
Table 8: CSO Events 2024	13

1. Introduction

In accordance with Schedule E, section 5.2 of City of Cornwall ECA Approval 176-S701, the owner of the authorized system shall prepare an annual report to evaluate the performance and operation of the municipal Stormwater Management System. This report aims to give an overview

of the Stormwater Management System and to meet the new reporting requirements of the Ministry of Environment, Conservation and Parks (MECP) relating to stormwater collection infrastructure, and covers the period between January 1st, 2024, to Dec. 31st, 2024.

1.1. Background

The City of Cornwall (City) owns and operates its own Stormwater Management System that serves a community of approximately 48,000. The system collects surface runoff and precipitation from City roadways, right-of-way, and surrounding urban and rural areas throughout the municipality. Consisting of storm sewers, catch basins, maintenance holes, ditches, municipal drains, and stormwater management facilities (SMFs) and manufactured treatment devices (MTDs) including Stormwater Ponds (Wet, Dry & Hybrid Wetlands) and Oil/ Grit Separators.

The City of Cornwall's authorized Stormwater Management System consists of:

- 157.9 km of storm sewer
- 2216 storm sewer maintenance holes
- 5211 CBs/ ditch inlets
- 226.3 km of ditches, swales and drains
- 12 municipal drains
- 9 Oil/ Grit Separators (+5 other OGS units serving municipal properties, excluded from this ECA)
 - Riverdale (Sugarstick Easement) OGS (STC 750)
 - Brookdale-Boals Drain OGS (STC 9000)
 - Brookdale and Alma OGS (STC 5000)
 - Gail Elizabeth Crt. OGS (STC 750)
 - Kirkman Crt. OGS (STC 4000)
 - Pitt and Tollgate OGS (STC 750)
 - Brookdale and Water St. OGS #1 (DSD 12')
 - Brookdale and Water St. OGS #2 (DSD 12')
 - Pinewood Forest Subdivision OGS (VS60)
- 10 stormwater management ponds (8 Wet/ Hybrid, 2 Dry)
 - East Ridge Subdivision Linear Facility (Wet)

- Brookgate Subdivision Pond (Wet)
- Industrial Park Dr. Subdivision Pond (Detention)
- Northdale Terrace Subdivision Pond (Wet)
- Northwoods Glen Subdivision Ph.1 Pond (Dry)
- Northwoods Glen Subdivision Ph. 9 Pond (Wet)
- Snow Management Facility Pond (Wet)
- Northwoods Forest Subdivision Pond (Wet/Wetlands)
- Pinewood Forest Subdivision Pond (Dry)
- Tenth St. East Pond (Old Loblaws) (Wet)

1.2. Reporting Details

As per the requirements of section 5.2 of Schedule E, the annual report of the Stormwater Management System shall be an overview of the following reporting criterium:

- Summary of all required monitoring data of the collection system, along with any interpretations and conclusions that can be drawn from evaluation of the monitoring data or any future modifications needed of the authorized system, if applicable.
- Summary and interpretation of environmental trends based on all monitoring information and data for the previous five (5) years, if applicable.
- Summary of any system operating problems encountered, and the corrective actions taken
- Summary of all calibrations, maintenance and repairs carried out on any major structures, equipment, or anything forming part of the municipal Stormwater Management System.
- Summary of all complaints received, and the actions taken to address them.
- Summary of all alterations made to the authorized system within the reporting period, including a list that poses a significant drinking water threat.
- Summary of spills and abnormal discharge events
- Summary of the efforts made to reduce collection system overflows, spills, sewage treatment plant overflows and/or bypasses.

2. Monitoring Data Analysis

As per Schedule E, sections 5.2.2 and 5.2.3 of the CLI-ECA, the City is to implement a monitoring plan for the authorized system. This section is meant to summarize any monitoring data and interpret the operational performance of the authorized system and any adverse effects on the environment.

Currently, the MECP has not yet released its publication for the monitoring guidelines. Upon release, the City will have 24 Months to implement the Monitoring Plan.

2.1. Historic ECA Monitoring

Prior to the development of the new CLI-ECA, the City carried out historic monitoring of storm water infrastructure as required by historical ECAs. Records of historic monitoring can be produced upon request by the Ministry.

Monitoring programs previously required by historic ECAs will be updated upon the publication of the MECP's new monitoring guidelines.

3. Collection System Operating Issues, Maintenance and Calibrations

As per Schedule E, sections 5.2.5 and 5.2.6 of the CLI-ECA, this section includes a summary of all operating issues, calibrations and any maintenance or corrective actions implemented to ensure proper function of the authorized system.

3.1. Storm Sewers, Catch Basins and Maintenance Holes

The City of Cornwall owns, operates and maintains 155.6 km of linear sewer infrastructure and 6.6 km of force-main sewer. Maintenance programs for 2024 included CCTV inspection, sewer flushing, Biennial CB inspection and cleaning, sewer spot repairs, annual pond and OGS inspections and maintenance.

Linear infrastructure maintenance program totals in 2024 included:

- Contracted Sewer CCTV Inspection: 9 km
 - Contract 23-T47 (Carry Over 2023)
 - Contract 24-Y49
- Contracted Sewer Line Flushing and Cleaning: 9 km
 - Contract 23-T47 (Carry Over 2023)
 - Contract 24-Y49
- Contracted CB Cleaning (biennial): 1650 CBs
 - Contract 24-Q11
- Culvert Replacements (Internal): 4 Culverts
- CB Repairs (Internal): 29 CBs
- Ditch and Drain Cleanouts: 3.1 km

Maps showing contracted service maintenance areas are included in **Appendix A.1: Contracted Services Maps**.

3.1.1. Linear Infrastructure and MH/ CB Issues and Repairs

No issues or repairs occurred in 2024 regarding linear infrastructure or MHs.

29 CB issues were observed and repaired in 2024

Operating issues and repairs that occurred can be found in **Appendix A.2: Stormwater Management System Operating Issues & Maintenance**.

3.2. Ditches and Drains

Roadway ditches and Municipal drains are cleaned out on a complaint basis or where it is observed that water conveyance is impeded or where flooding has occurred.

3.2.1. Ditches and Drain Maintenance

Ditches and Drains Cleaned in 2024 include:

Table 1: Ditch and Drain Cleaning 2024

Location	Extent/ Civic Address	Type	Distance
Richmond Rd.	East side	Ditch Cleanout	191 m
Tollgate Rd. W	South side	Ditch Cleanout	170 m
Pitt St.	East side, 2173 to 2125 Pitt St.	Ditch Cleanout	328 m
South Branch Rd.	North side, 420 South Branch Rd.	Ditch Cleanout	115 m
South Branch Rd.	South side , 1360-1550 South Branch Rd.	Ditch Cleanout	360 m
South Branch Rd.	North side, 1850-1960 South Branch Rd.	Ditch Cleanout	265 m
Service Rd.	North side, 1201–1501 Service Rd.	Ditch Cleanout	465 m
Boundary Rd.	West side, north of Service Rd. to Gray's Creek drain	Ditch Cleanout	180 m
Gerald St.	east and west side ditch, South of St. Antoine St.	Ditch Cleanout	430 m
Old McConnell Av. and St. Antoine St.	east and south side ditch	Ditch Cleanout	145 m
Charles-Laplanche Drain	2590-2598 South Branch Road, West of Boundary Rd.	Municipal Drain Cleanout	525 m
Total			3.1 km

3.2.2. Ditches and Drains Issues

Issues with ditches and drains and the remedial actions taken in 2024 include:

Table 2: Ditches and Drains Issues 2024

Location	Type	Issue	Actions Taken
Donihee Drain (Peanut Line Culvert)	Municipal Drain	Beaver Dam Blockage of Culvert, impeding drain flow upstream	Beavers removed from location; Culvert unblocked
Upper Fly Creek (Wallrich Av.)	Municipal Drain	Beaver Dam Blockage of Culvert, impeding drain flow upstream	Beavers removed from location; Culvert unblocked
Fly Creek (Snow Management Facility)	Municipal Drain	Beaver Dam Blockage of Culvert, impeding drain flow upstream	Beavers removed from location; Culvert unblocked
Robertson Drain (Saunders Dr.)	Municipal Drain	Beaver Dam Blockage of Culvert, impeding drain flow upstream	Beavers removed from location; Culvert unblocked

3.3. Culverts

Culverts are categorized as linear sewer infrastructure and can be broken into 2 types, driveway culverts and arterial crossing culverts. Arterial culverts are inspected biennially and maintained by the City, driveway culverts are to be inspected and maintained by the property owner. If it is observed that a driveway culvert located in City Right-Of-Way is impeding Roadway drainage and water conveyance, pending inspection, the City may replace the deficient culvert.

3.3.1. Culvert Maintenance

Culvert maintenance for 2024 included:

Table 3: Culvert Maintenance 2024

Location	Type of Maintenance	Actions Taken
Pitt St. (2173 to 2125)	Flushing/ Cleaning	Flushing and cleaned out driveway culverts in prep. for ditch cleanout operations
Gerald St. (South of St. Antoine St.)	Flushing/ Cleaning	Flushing and cleaned out driveway culverts in prep. for ditch cleanout operations

3.3.2. Culvert Issues

Culvert Issues and remedial actions taken in 2024 included:

Table 4: Culvert Issues 2024

Location	Type of Maintenance	Issue	Actions Taken
Pitt St. (2129)	Culvert Replacement	Driveway Culvert Collapsed	Inspection, replacement of culvert, restoration of driveway
Pitt St. (2161)	Culvert Regrading	Culvert installed at wrong grade, impeding flow	Inspection, excavation to re-grade culvert, restoration of driveway
South Branch Rd. (17451)	Culvert Replacement	Driveway Culvert Collapsed	Inspection, replacement of culvert, restoration of driveway
Boundary Rd. (950)	Culvert Replacement	Replace and Re-grade Driveway Culvert	Inspection, replacement and re-grading of culvert to work with downstream culvert, restoration

3.4. Stormwater Management Ponds (SWMP)

The City operates and maintains 10 SWMPs as part of the authorized system. Inspections of the facilities are conducted annually or after large rain events.

3.4.1. SWMP Maintenance Activities

No maintenance activities were required in 2024

Vegetation is allowed to grow around ponds in accordance with naturalization policies. Vegetation that impedes the function of the pond (inlets, outlets, etc.) will be removed when necessary.

3.4.2. SWMP Issues

No issues occurred with the SWMPs in 2024.

3.4.3. Sediment Cleanout Forecasts

The City carries out Sediment Measurements of active stormwater ponds every 3-5 years to forecast maintenance schedule. Based on sediment measurement data acquired in 2022-2024, an annual loading rate was estimated. With this loading rate, and through observations during the annual inspections, the maintenance frequency and forecasted cleanout schedule can be estimated:

- Sediment removal maintenance for the Snow Management Facility has been forecasted to be required in 2026-2027.
- All other ponds forecasted to need cleanout within the next 10+ years.
- Another sediment measurement for all ponds is planned to be carried out in 2025-2026 in order to better establish accurate loading rates and improve maintenance forecasting.

SWMP forecasting data can be found in **Appendix A: SWMP Sediment Forecasting**

3.5. Oil Grit Separators (OGS)

The authorized system currently utilizes 8 OGS units (5 additional units serving Municipal properties excluded from this ECA) for stormwater quality treatment prior to being released downstream of the collection system or into receiving natural watercourse. Inspections of OGS units are carried out annually.

3.5.1. OGS Maintenance

No maintenance was required in 2024

During annual inspections it was observed that:

- Pinewood Subdivision OGS should be cleaned in 2025
- Gail Elizabeth Cres. OGS should be cleaned in 2025
- All other OGSs should have sediment measured in 2025 to determine whether cleaning out is necessary

3.5.2. OGS Issues

No issues with the OGS units occurred in 2024

4. Monitoring Equipment Calibrations

As per Schedule E, section 5.2.6 of the CLI-ECA, this section provides an overview and summary of any calibration or maintenance carried out on any monitoring equipment utilized on the authorized system

Currently, no monitoring equipment is utilized on the authorized system that requires formal calibration or maintenance and the keeping of records.

A Sludge Judge manual sampling stick is used to check sediment levels and collect samples from Stormwater infrastructure during inspections. The device is cleaned of residue after each use.

5. Complaint Summary

As per Schedule E, section 5.2.7 of the CLI-ECA, this section summarizes any complaints received by the City regarding the Stormwater Management System through either the Cornwall Connect Request system or via phone/ in person complaint.

The City received 7 complaints regarding the Stormwater Management System sewer in 2024. Below is a breakdown of the issues reported, and remedial actions taken:

Table 5: Breakdown of Collection System Complaints 2024

Issue Type	# of Complaints	Typical Corrective Actions
CB Maintenance	1	Replaced catch basin cover
Beaver Dam Removal	1	Removed beavers from area, unblocked drain
Drain Condition and Vegetation	1	Inspected, no action required
Contamination from Property Runoff	1	Inspected, no sign of contamination
Ditching	1	Cleanout of ditch
Street Flooding	1	CBs uncovered; sewer cover replaced with grate to allow stormwater flow
Total	7	

6. Collection System Alterations

As per section 5.2.8 of Schedule E of CLI-ECA, this section summarizes any alterations to the Stormwater Management System that were initiated or completed in 2024. Including sewer reconstruction, sewer separation, new development additions and any alterations to existing pump stations or other collection system components.

6.1. Reconstruction & Rehabilitation Projects

Reconstruction and sewer separation involve replacing existing combined sewers with new storm and sanitary sewers, reducing the amount of flooding, CSO events, STP bypass overflows and sewer surcharges, and updates the Sewer Collection Systems to ensure efficiency, capacity, proper function and operation.

The projects listed are associated with an appropriate SS1 and/or SS2 record for pre-authorized alteration of the Stormwater Management System.

The City separated and replaced 722 m of combined sewer with new storm sewer infrastructure.

Table 6: Reconstruction & Rehabilitation Projects 2024

Location	Project Type	Benefits to Collection System.	Status	Source/ Drinking Water Risk
First St. – Marlborough St. to Lawrence Av.	Reconstruction	120 m of sewer separation, install new storm sewer and CBs, remove existing combined sewer	Complete	No
Lawrence Av. – Montreal Rd. to Second St.	Reconstruction	214 m of sewer separation, install new storm sewer and CBs, remove existing combined sewer	Ongoing	No
Fifth St. – Marlborough S. to McConnell Av.	Reconstruction	256 m of sewer separation, install new storm sewer and CBs, remove existing combined sewer	Complete	No
Guy St. – Walton St. to Easton	Reconstruction	80 m of sewer separation, install new storm sewer and CBs,	Complete	No

		remove existing combined sewer		
Walton St. – Alice St. to Guy St.	Reconstruction	85 m of sewer separation, install new storm sewer and CBs, remove existing combined sewer.	Complete	No

6.2. Additions and New Developments

Additions to the authorized system include infrastructure expansion (to accommodate new roadway expansion and site/ zoning development) or assumption of completed development projects. The projects listed below are associated with an appropriate SS1 and/or SS2 record for pre-authorized alteration of the Stormwater Management System.

In 2024, the City added over 1.75 km of new storm sewer to the authorized system through development assumptions.

Table 7: Additions to the Authorized System 2024

Project Names/ Developments	Type of Addition	Components added to Authorized System	Source/ Drinking Water Risk
Bellwood Subdivision Ph. 4	Assumption	473 m of storm sewer	No
Eastridge Subdivision Ph. 7	Assumption	648 m of storm sewer	No
Eastridge Subdivision Ph. 8	Assumption	584 m of storm sewer	No
Baldwin Avenue Subdivision	Assumption	60 m of storm sewer	No

6.3. Significant Drinking Water Threats

No significant drinking water threats were identified with any 2024 alterations or additions to the authorized system.

7. Spill Summary & Abnormal Discharges

As per section 5.2.9 of Schedule E of the CLI-ECA, this section summarizes any accidental spills or abnormal discharges affecting the Stormwater Management System or natural environment (ditches , drains etc.) that occurred in 2024.

3 non-city incidents were observed, with the spiller filing a report to the Spills Action Center(SAC) pursuant to *O.Reg 675/98* and part X of the *Environmental Protection Act*.

Table 8: CSO Events 2024

#	Agency	SAC REF #	Date	Location	Volume	Incident	Actions Taken
1	Private	1-577UE4	March 25 th	820 Campbell St.	75 L	Discharge of PFA substances to Fly Creek during a fire incident.	Control and abatement of substance entering the drain until cleanup by discharger.
2	Private	1-9CY2AR	July 26 th	540 Wallrich St.	900 gal.	Spill of CIP fluid to ditch	Inspection, oversight of cleanup by discharger
3	Private	1-DBGBN9	Nov. 13 th	10 th St. East	Unk.	Discharge of untreated sewage into storm ditch	Reported to SAC and Ministry, Inspection, disconnection of discharge source,

8. Future Initiatives to Improve the Authorized System

The City continues to pursue initiatives and practices that reduce flooding and improve water quality and treatment of surface runoff before discharging into the natural environment. Future initiatives and improvements for 2025+ include:

- Continuation sewer reconstruction project and combined sewer separation
- Ongoing inspection and maintenance programs for stormwater infrastructure
- Bathymetric sediment survey of SWM Ponds to forecast future maintenance and pond cleanouts.
- Implement new CLI-ECA requirements regarding new development applications to ensure the latest regulations and best management practices are met.

Appendix A: Pond Sediment Monitoring Data (2022)

Sediment Maintenance Forecast Report

Pond Location : Eastridge Subdivision SWMF
ECA/COA # : _____

Date: 2024
Inspector: Jesse Coleman

POND PROPERTIES

Protection Type:	Normal - 70%		
Actual Permanent Pool Volume Design (m3):	5,200	Needed Design PP. Vol. (m3)	5200 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):		Years of Operation:	7 Last cleanout
Hectares Served (ha):	138	Total Ext. Storage (m3):	(For Dry Ponds)
Imperviousness %:	40%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	24.5	(Table 4.1)	Min. PP Volume (m ³)	3380.0	(@ 35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	37.8	(Table 3.2, ~40 m ³ /ha)	Est. Sed. Level (m ³):	1224	From Sed. Monitoring
Actual Design PP. (m3/ha)	37.7	(PP. Volume/ha)	Est. Forebay Sed. (m ³):		
Assumed Annual Loading Rate (m ³ /ha):	2.8	(Table 4.3)	386.4	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	13.2	(Table 4.2)	13.2	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)	

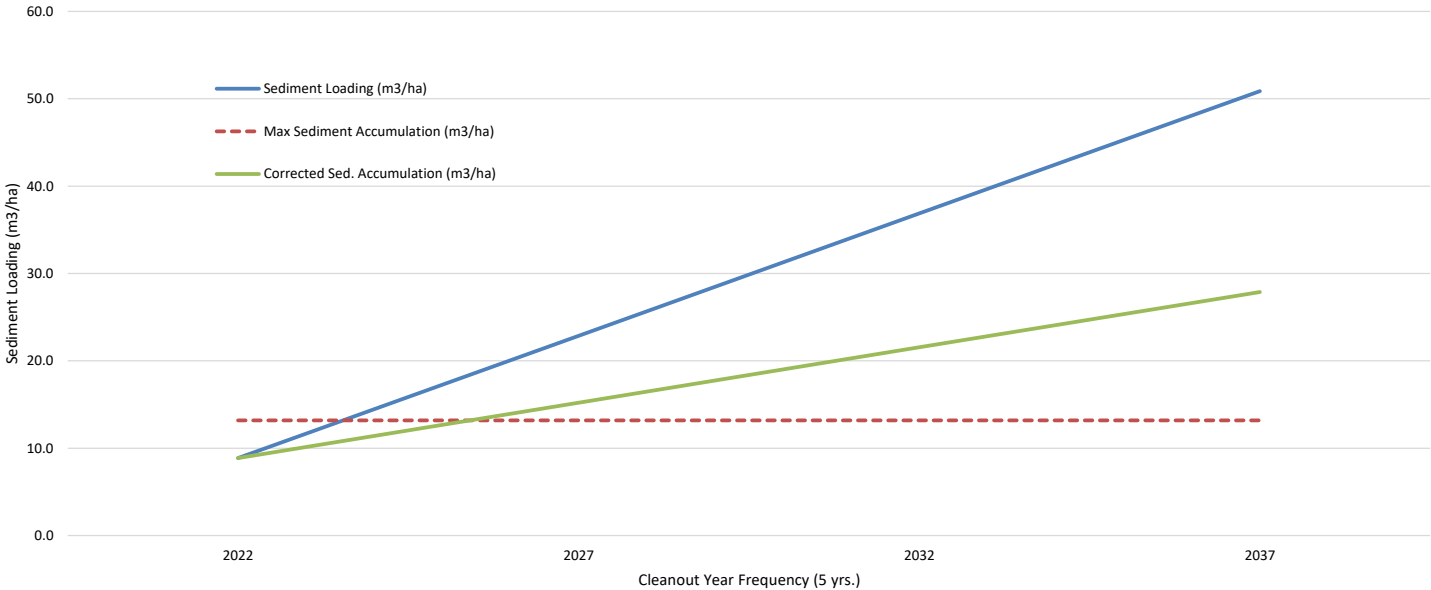
ANALYSIS

Est. Current PP. Storage Available (m ³):	3976.0	If higher than	3380.0	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	28.8	If higher than	24.5	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	4.3	Until cleanout	596.0	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	8.9	If lower than	13.2	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	2.8	Corrected Loading Rate:	1.3		
Forebay Accumulation Method:	#DIV/0!	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	#DIV/0!	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	#DIV/0!	Estimated Years till clean out*2			

NOTES

*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)
*2 -Forebay Method based on 35%-50% storage volume reduction within forebay
(Toronto and Region Conservation Authority and CH2M, 2016)
(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:	1.5	Estimated years until cleanout needed *1	3.4	Corrected years until cleanout
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Sediment Maintenance Forecast Report

Pond Location : Brookgate Pond	Date: Feb. 23/22
ECA/COA # : 1016-65-ANYK	Inspector: Jesse Coleman

POND PROPERTIES

Protection Type: Normal - 70%			
Actual Permanent Pool Volume Design (m3):	799	Needed Design PP. Vol. (m3)	507 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):	67	Years of Operation:	17
Hectares Served (ha):	9.06	Total Ext. Storage (m3):	 (For Dry Ponds)
Imperviousness %:	40%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	37.3	(Table 4.1)	Min. PP Volume (m ³)	337.5	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	55	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	26	From Sed. Monitoring
Actual Design PP. (m3/ha)	88.2	(PP. Volume/ha)	Est. Forebay Sed. (m ³):	8	
Assumed Annual Loading Rate (m ³ /ha):	0.93	(Table 4.3)	8.4258	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	17.8	(Table 4.2)	50.9	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)	

ANALYSIS

Est. Current PP. Storage Available (m ³):	773.0	If higher than	337.5	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	85.3	If higher than	37.3	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	48.1	Until cleanout	435.5	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	2.9	If lower than	50.9	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	0.9	Corrected Loading Rate:	0.2		
Forebay Accumulation Method:	12%	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	31.6	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	52.5	Estimated Years till clean out*2			

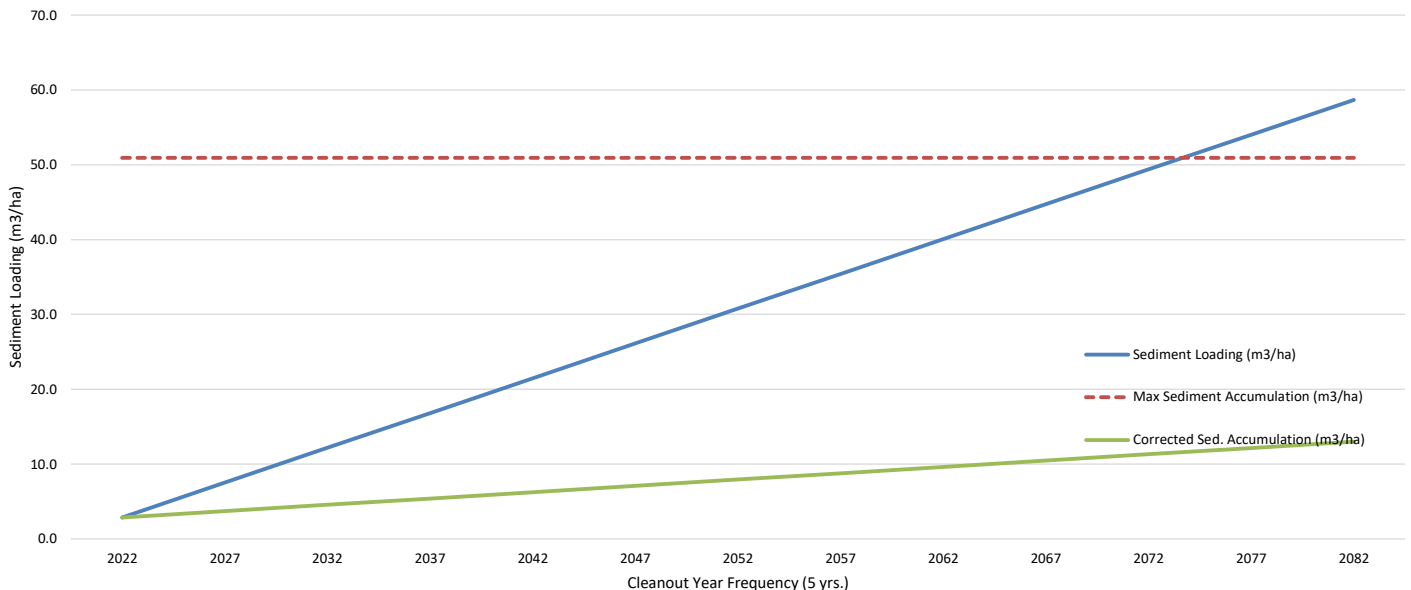
NOTES

*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)

*2 -Forebay Method based on 35%-50% storage volume reduction within forebay (Toronto and Region Conservation Authority and CH2M, 2016)

(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:	51.7	Estimated years until cleanout needed *1	284.8	Corrected years until cleanout
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Sediment Maintenance Forecast Report

Pond Location : Northdale Pond	Date: Feb 9/22
ECA/COA # : 8474-8DELFF	Inspector: Jesse Coleman

POND PROPERTIES

Protection Type: Normal - 70%			
Actual Permanent Pool Volume Design (m3):	860	Needed Design PP. Vol. (m3)	525 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):	0	Years of Operation:	11
Hectares Served (ha):	10.5	Total Ext. Storage (m3):	 (For Dry Ponds)
Imperviousness %:	35%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	33.0	(Table 4.1)	Min. PP Volume (m ³)	346.5	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	50	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	211	From Sed. Monitoring
Actual Design PP. (m3/ha)	81.9	(PP. Volume/ha)	Est. Forebay Sed. (m ³):		
Assumed Annual Loading Rate (m ³ /ha):	0.6	(Table 4.3)	6.3	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	17.0	(Table 4.2)	48.9	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)	

ANALYSIS

Est. Current PP. Storage Available (m ³):	649.0	If higher than	346.5	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	61.8	If higher than	33.0	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	28.8	Until cleanout	302.5	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	20.1	If lower than	48.9	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	0.6	Corrected Loading Rate:	1.8		
Forebay Accumulation Method: #DIV/0! If lower than 35%, no Cleanout needed					
Forecast based on 35% Forebay Method (yrs) #DIV/0! Estimated Years till clean out*2					
Forecast based on 50% Forebay Method (yrs) #DIV/0! Estimated Years till clean out*2					

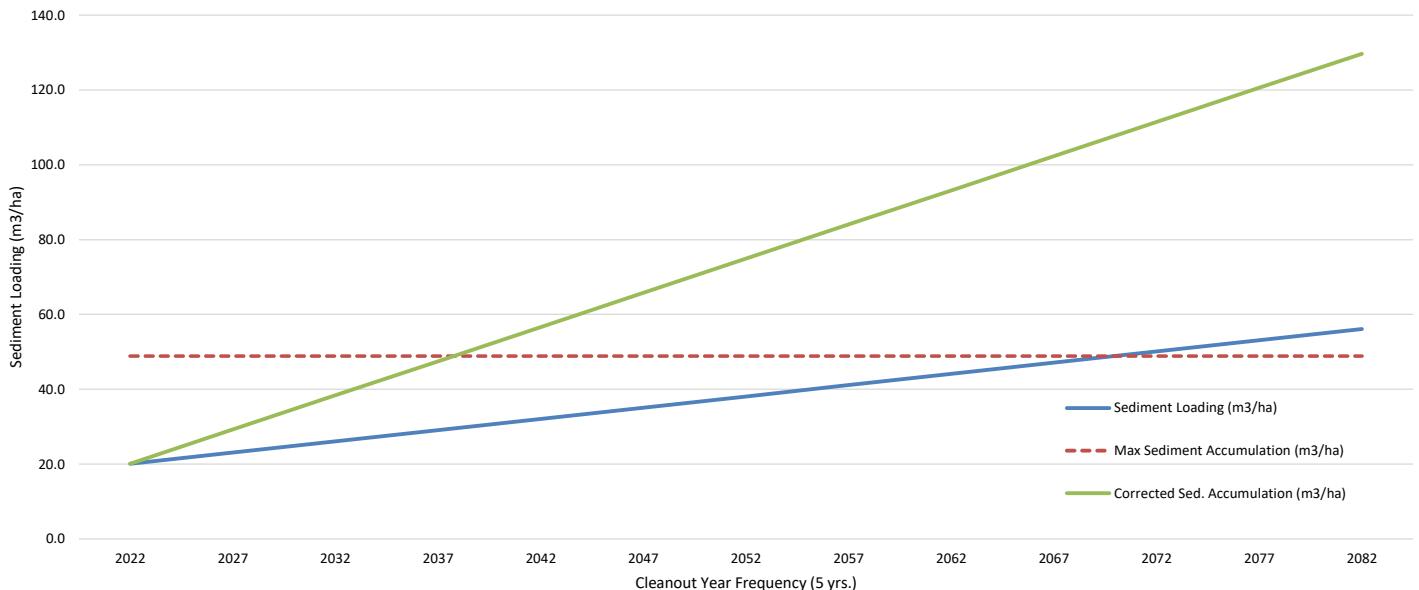
NOTES

*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)

*2 -Forebay Method based on 35%-50% storage volume reduction within forebay (Toronto and Region Conservation Authority and CH2M, 2016)

(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:	48.0	Estimated years until cleanout needed *1	15.8	Corrected years until cleanout
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Sediment Maintenance Forecast Report

Pond Location : Northwoods Glen Ph. 1 (Dry)	Date: 2022
ECA/COA # : 3-1083-86-006	Inspector: Jesse Coleman

POND PROPERTIES

Protection Type: Enhanced - 80%			
Actual Permanent Pool Volume Design (m3):	2,000	Needed Design PP. Vol. (m3)	2,000 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):		Years of Operation:	9
Hectares Served (ha):	15.38	Total Ext. Storage (m3):	2,000 (For Dry Ponds)
Imperviousness %:	48%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	69.4	(Table 4.1)	Min. PP Volume (m ³)	1067.4	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	127.5	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	150	From Sed. Monitoring
Actual Design PP. (m3/ha)	130.0	(PP. Volume/ha)	Est. Forebay Sed. (m ³):	21.532	Assumed Annual Sed. Vol. (m ³)
Assumed Annual Loading Rate (m ³ /ha):	1.4	(Table 4.3)		60.6	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)
Max. Allowable Sed. Accumulation (m ³ /ha):	58.1	(Table 4.2)			

ANALYSIS

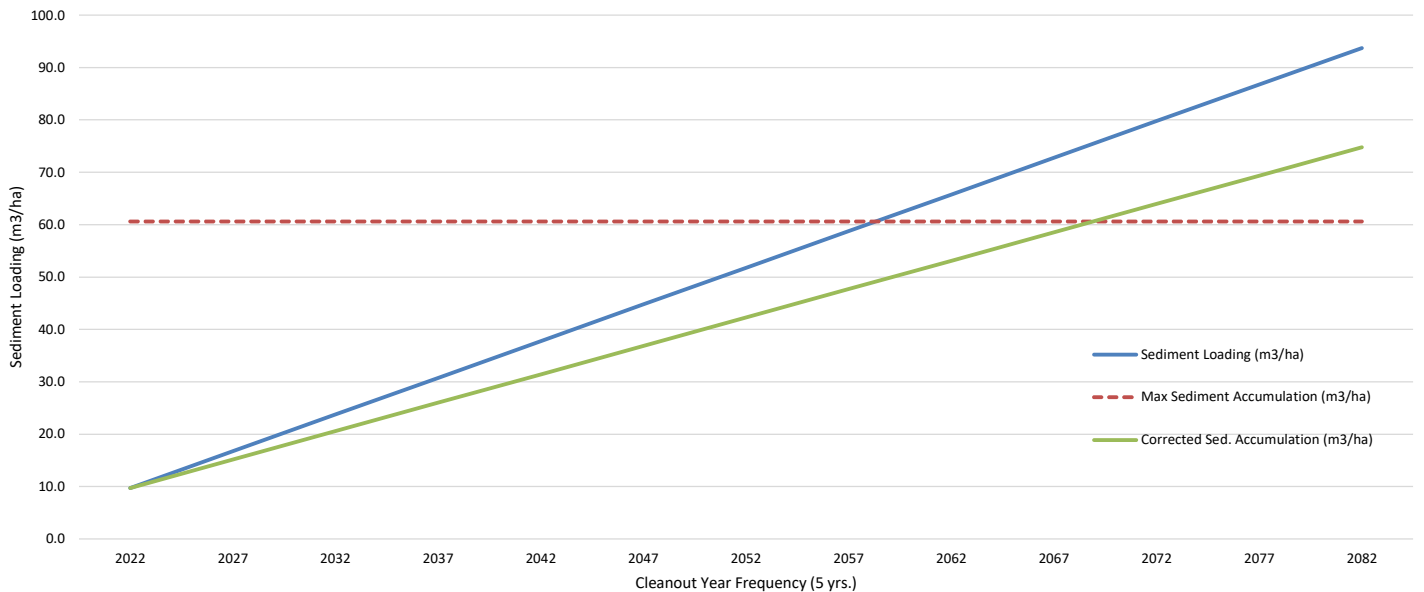
Est. Current PP. Storage Available (m ³):	1850.0	If higher than	1067.4	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	120.3	If higher than	69.4	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	50.9	Until cleanout	782.6	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	9.8	If lower than	60.6	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	1.4	Corrected Loading Rate:	1.1		
Forebay Accumulation Method:	#DIV/0!	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	#DIV/0!	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	#DIV/0!	Estimated Years till clean out*2			

NOTES

*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)

*2 -Forebay Method based on 35%-50% storage volume reduction within forebay
(Toronto and Region Conservation Authority and CH2M, 2016)
(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:	36.3	Estimated years until cleanout needed *1	47.0	Corrected years until cleanout
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Sediment Maintenance Forecast Report

Pond Location : Northwoods Glen Ph.9
 ECA/COA # : 1214-8BFPWU

Date: _____
 Inspector: Jesse Coleman

POND PROPERTIES

Protection Type:	Enhanced - 80%		
Actual Permanent Pool Volume Design (m3):	111	Needed Design PP. Vol. (m3)	110 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):	33.8	Years of Operation:	15
Hectares Served (ha):	2.1	Total Ext. Storage (m3):	305 (For Dry Ponds)
Imperviousness %:	45%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	36.5	(Table 4.1)	Min. PP Volume (m ³)	76.7	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	52.5	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	13	From Sed. Monitoring
Actual Design PP. (m3/ha)	52.9	(PP. Volume/ha)	Est. Forebay Sed. (m ³):	5	
Assumed Annual Loading Rate (m ³ /ha):	1.3	(Table 4.3)	2.625	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	16.0	(Table 4.2)	16.4	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)	

ANALYSIS

Est. Current PP. Storage Available (m ³):	98.0	If higher than	76.7	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	46.7	If higher than	36.5	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	10.2	Until cleanout	21.4	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	6.2	If lower than	16.4	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	1.3	Corrected Loading Rate:	0.4		
Forebay Accumulation Method:	15%	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	20.5	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	35.7	Estimated Years till clean out*2			

NOTES

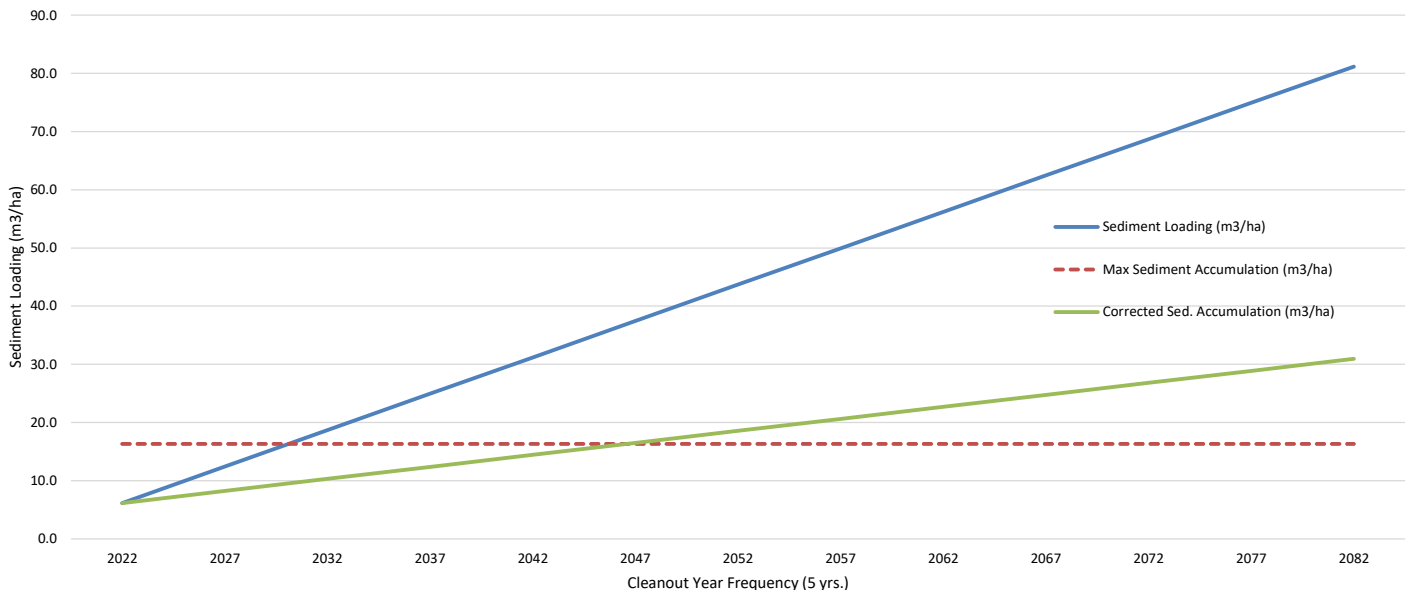
*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)

*2 -Forebay Method based on 35%-50% storage volume reduction within forebay

(Toronto and Region Conservation Authority and CH2M, 2016)

(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:	8.1	Estimated years until cleanout needed *1	24.6	Corrected years until cleanout
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Sediment Maintenance Forecast Report

Pond Location : Virgina Dr. SMF
 ECA/COA # : 6176-9CDH5P

Date: Feb. 8/22
 Inspector: Jesse Coleman

POND PROPERTIES

Protection Type:	Normal - 70%		
Actual Permanent Pool Volume Design (m3):	780	Needed Design PP. Vol. (m3)	770 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):	210	Years of Operation:	10
Hectares Served (ha):	7	Total Ext. Storage (m3):	(For Dry Ponds)
Imperviousness %:	85%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	74.0	(Table 4.1)	Min. PP Volume (m ³)	518.0	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	110	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	198	From Sed. Monitoring
Actual Design PP. (m3/ha)	111.4	(PP. Volume/ha)	Est. Forebay Sed. (m ³):	44	
Assumed Annual Loading Rate (m ³ /ha):	3.8	(Table 4.3)	26.6	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	36.0	(Table 4.2)	37.4	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)	

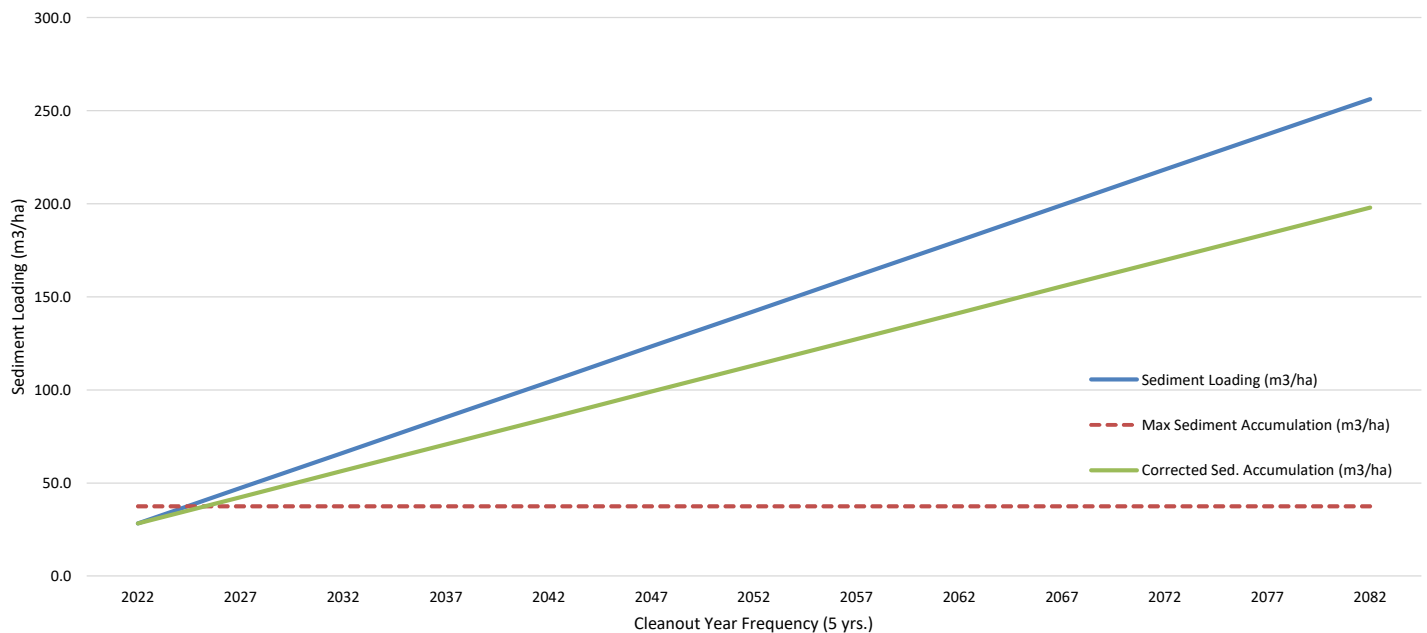
ANALYSIS

Est. Current PP. Storage Volume (m ³):	582.0	If higher than	518.0	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	83.1	If higher than	74.0	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	9.1	Until cleanout	64.0	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	28.3	If lower than	37.4	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	3.8	Corrected Loading Rate:	2.8		
Forebay Accumulation Method:	21%	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	6.7	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	13.9	Estimated Years till clean out*2			

NOTES

*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)
 *2 -Forebay Method based on 35%-50% storage volume reduction within forebay
 (Toronto and Region Conservation Authority and CH2M, 2016)
 (MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:

2.4 Estimated years until cleanout needed *1

3.2 Corrected years until cleanout

Sediment Maintenance Forecast Report

Pond Location : NW Forest Sub.	Date: March 2/22
ECA/COA # : 5556-9ZRPVN	Inspector: Jesse Coleman

POND PROPERTIES

Protection Type: Normal - 70%			
Actual Permanent Pool Volume Design (m3):	901	Needed Design PP. Vol. (m3)	830 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m3):	497	Years of Operation:	6
Hectares Served (ha):	21.72	Total Ext. Storage (m3):	 (For Dry Ponds)
Imperviousness %:	39%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	16.0	(Table 4.1)	Min. PP Volume (m ³)	347.5	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	38.2	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	104	From Sed. Monitoring
Actual Design PP. (m3/ha)	41.5	(PP. Volume/ha)	Est. Forebay Sed. (m ³):	27	
Assumed Annual Loading Rate (m ³ /ha):	0.9	(Table 4.3)	19.1	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	22.2	(Table 4.2)	25.5	Actual Max. Allowable Sed. w/ Oversized PP (m3/ha)	

ANALYSIS

Est. Current PP. Storage Available (m ³):	797.0	If higher than	347.5	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	36.7	If higher than	16.0	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	20.7	Until cleanout	449.5	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	4.8	If lower than	25.5	Oversized Max. Allowable Sed. (m3/ha)	
Assumed Annual Loading (m ³ /ha):	0.9	Corrected Loading Rate:	0.8		
Forebay Accumulation Method:	5%	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	32.7	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	49.2	Estimated Years till clean out*2			

NOTES

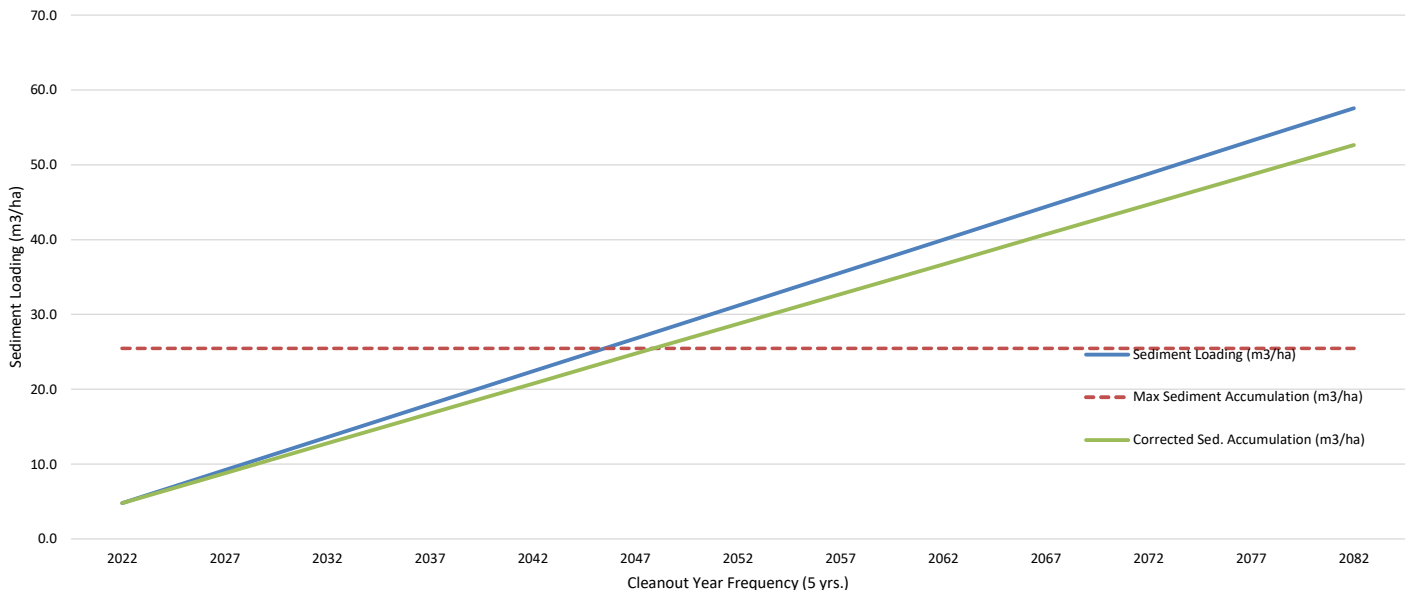
*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)

*2 -Forebay Method based on 35%-50% storage volume reduction within forebay

(Toronto and Region Conservation Authority and CH2M, 2016)

(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast



Forecasted Maintenance in:	23.5	Estimated years until cleanout needed *1	25.9	Corrected years until cleanout
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Sediment Maintenance Forecast Report

Pond Location : Loblaws	Date: 7/14/2022
ECA/COA # : 176-S701	Inspector: Jesse Coleman

POND PROPERTIES

Protection Type: Enhanced - 80%			
Actual Permanent Pool Volume Design (m ³):	19,203	Needed Design PP. Vol. (m ³)	11187 (Table 3.2 - 40 x ha. Served)
Forebay Volume (m ³):	4377	Years of Operation:	13
Hectares Served (ha):	56.5	Total Ext. Storage (m ³):	(For Dry Ponds)
Imperviousness %:	70%		

DESIGN & SEDIMENT LEVEL

Min. PP Volume (m ³ /ha):	124.0	(Table 4.1)	Min. PP Volume (m ³)	7006.0	(@ 30-35% in PP. Vol. Reduct)
Required Design PP. (m ³ /ha)	185	(Table 3.2, -40 m ³ /ha)	Est. Sed. Level (m ³):	3318	From Sed. Monitoring
Actual Design PP. (m ³ /ha)	339.9	(PP. Volume/ha)	Est. Forebay Sed. (m ³):	417	
Assumed Annual Loading Rate (m ³ /ha):	2.8	(Table 4.3)	158.2	Assumed Annual Sed. Vol. (m ³)	
Max. Allowable Sed. Accumulation (m ³ /ha):	61.0	(Table 4.2)	215.9	Actual Max. Allowable Sed. w/ Oversized PP (m³/ha)	

ANALYSIS

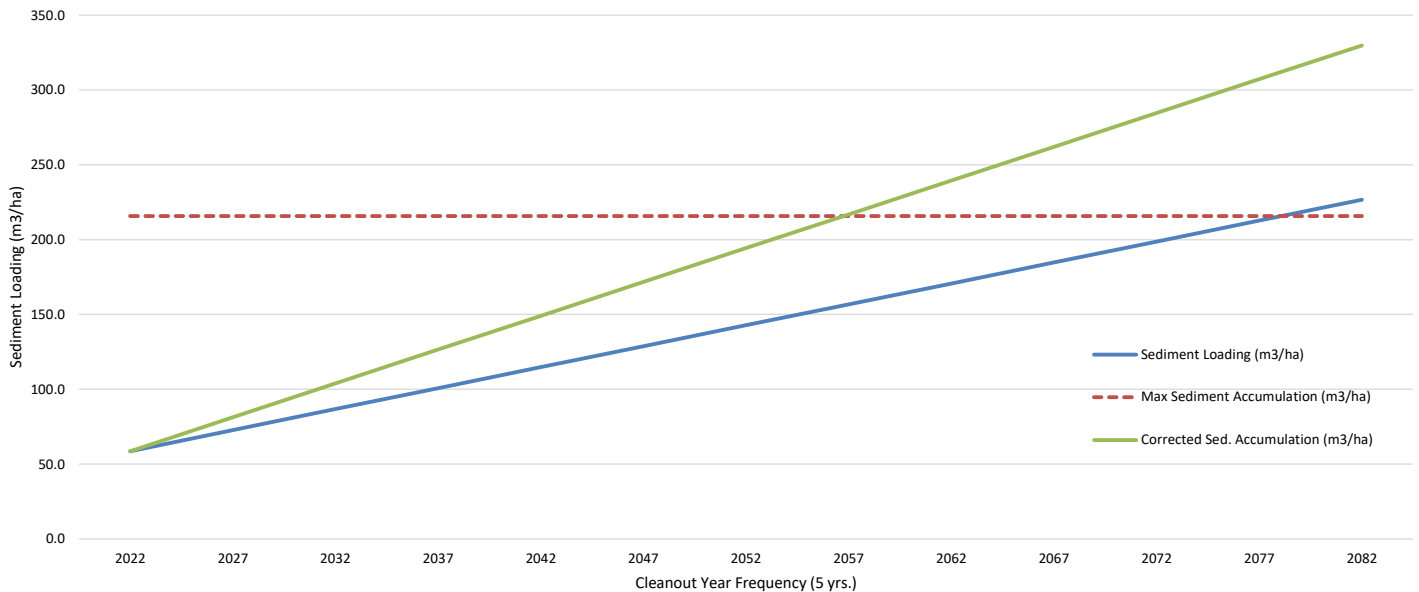
Est. Current PP. Storage Volume (m ³):	15885.0	If higher than	7006.0	Min. PP Volume (m ³)	No cleanout needed
Est. Current PP. Storage Available (m ³ /ha):	281.2	If higher than	124.0	Min. PP Volume (m ³ /ha):	No cleanout needed
Est. PP Capacity Remaining (m ³ /ha):	157.2	Until cleanout	8879.0	Sediment required (m ³)	
Est. Current Sed. Level (m ³ /ha):	58.7	If lower than	215.9	Oversized Max. Allowable Sed. (m ³ /ha)	
Assumed Annual Loading (m ³ /ha):	2.8	Corrected Loading Rate:	4.5		
Forebay Accumulation Method:	10%	If lower than 35%, no Cleanout needed			
Forecast based on 35% Forebay Method (yrs)	34.8	Estimated Years till clean out*2			
Forecast based on 50% Forebay Method (yrs)	55.2	Estimated Years till clean out*2			

NOTES

*1 - Based on MECPs maintenance criteria, which recommends cleanout at a 5% of TSS removal performance reduction (PP. Volume Reduction of approx. 30-35%)

*2 -Forebay Method based on 35%-50% storage volume reduction within forebay
(Toronto and Region Conservation Authority and CH2M, 2016)
(MECP, Stormwater Management Planning and Design Manual – Operation, Maintenance and Monitoring, Chapter 6.4, 2003)

Current Sediment Forecast

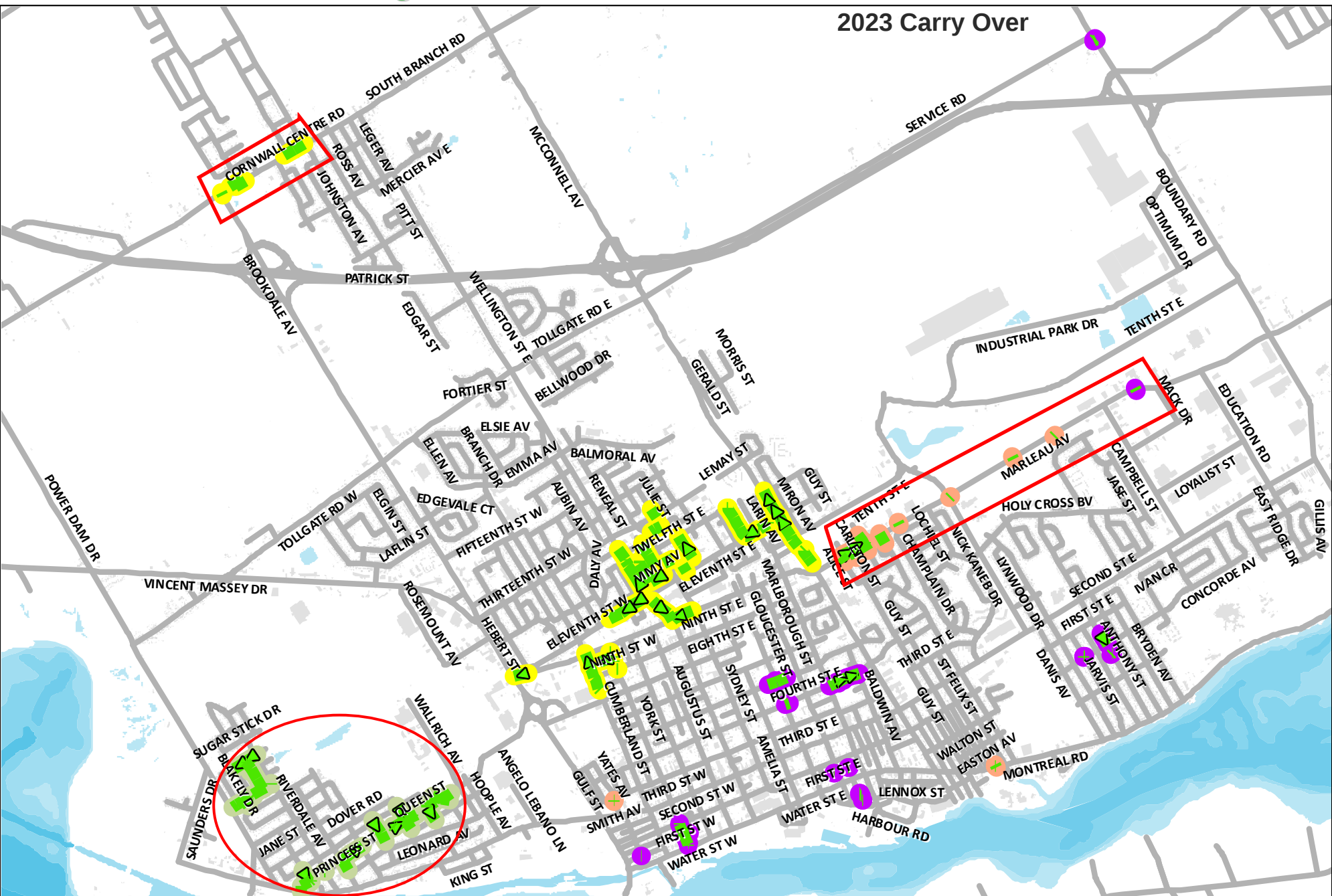


Forecasted Maintenance in:	56.1	Estimated years until cleanout needed *1	34.8	Corrected years until cleanout
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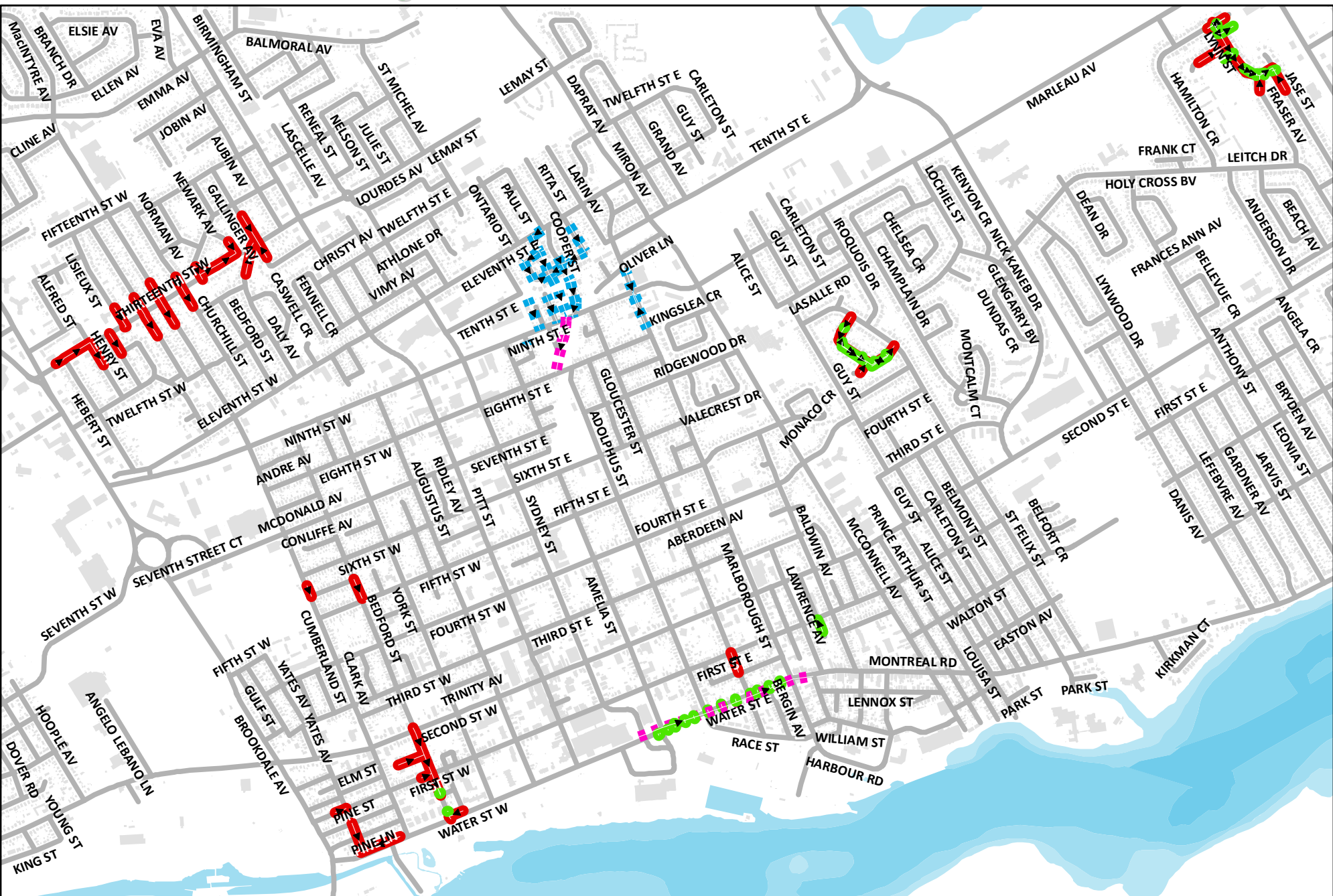
Appendix B: Collection System Operating Issues and Maintenance Records

23-T47 Sewer Cleaning & CCTV - Storm Areas Appendix B.1: Contracted Maintenance

2023 Carry Over



24-T49 Sewer Cleaning & CCTV



2024 Contracted CB Cleaning

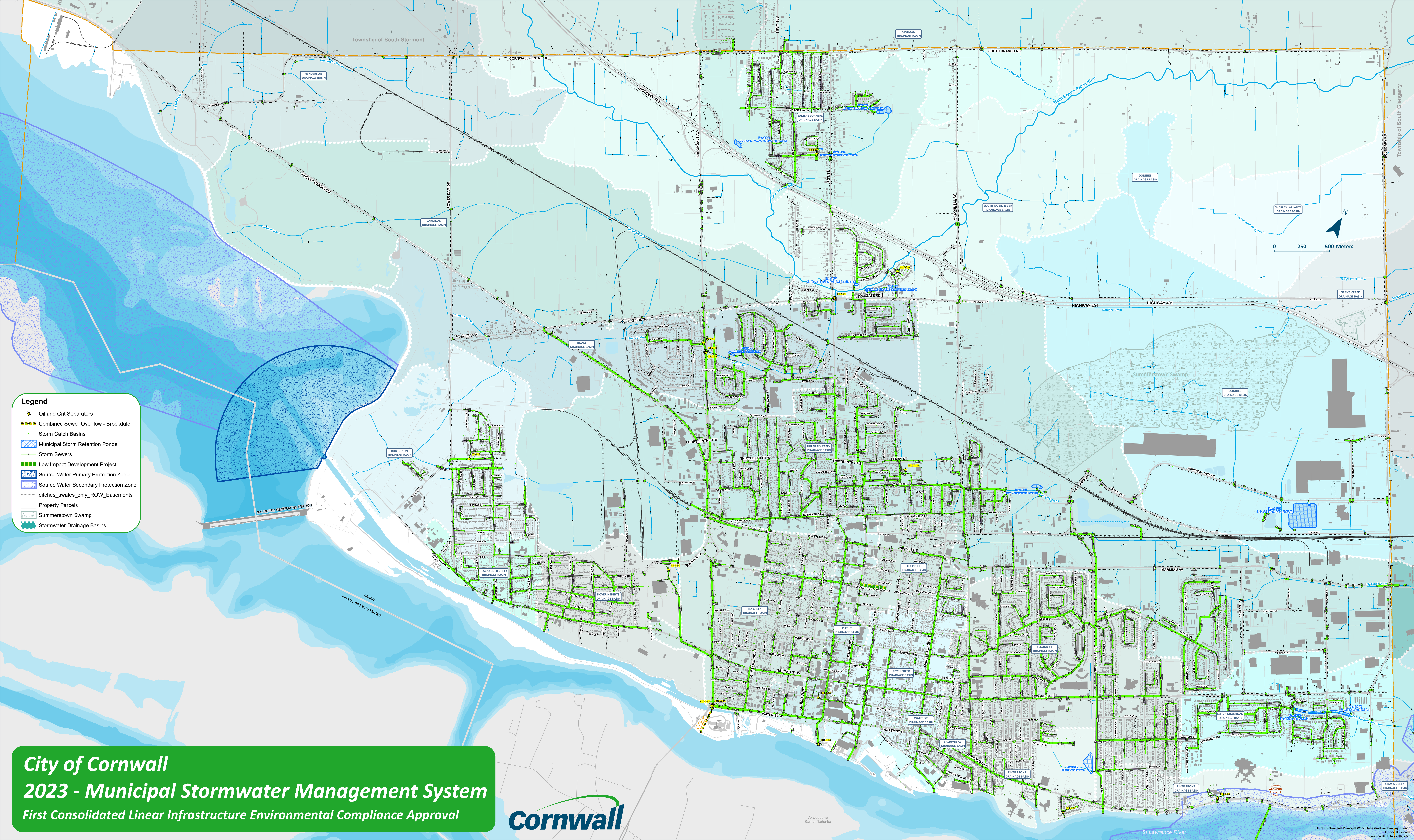


Appendix B.2: Stormwater Management System Operating Issues and Maintenance

gid	date	address number	address street	type	work replacement	work newinstall	work cover	work frame	work benching	work risers	work other	is rycb	comments
3018	2024-04-25	62	leonia st	cb					yes	yes	yes		
3897	2024-10-17	1010	abbot st	cb			yes	yes		yes			
2871	2024-10-17	233	carleton st	cb			yes	yes		yes			
1646	2024-10-17	639	burton av	cb			yes	yes		yes			
1647	2024-10-17	639	burton av	cb			yes	yes		yes			
5536	2024-10-17	10	fourth st w	cb			yes			yes			rough pour behind firehall 1
4132	2024-10-17	861	second st w	cb			yes	yes		yes			
1648	2024-10-17	631	burton av	cb			yes	yes	yes	yes			
3200	2024-10-17	1900	concorde av	cb			yes	yes		yes			
3686	2024-10-17	350	ninth st w	cb			yes	yes		yes			
2235	2024-10-17	237	water st e	cb			yes	yes		yes			
2233	2024-10-17	237	water st e	cb			yes	yes		yes			
1425	2024-10-17	331	water st w	cb			yes			yes			
9999	2024-10-17	230	sydney st	cb			yes	yes		yes			in city parking lot at rear of #.
1598	2024-10-17	802	augustus st	cb			yes	yes		yes			
1597	2024-10-17	802	augustus st	cb			yes	yes		yes			
2226	2024-10-17	111	water st e	cb			yes	yes		yes			interlock, curb
4878	2024-10-17	220	eleventh st e	cb			yes	yes		yes			
5485	2024-10-17	501	brookdale av	cb			yes	yes		yes			
5510	2024-10-17	514	brookdale av	cb			yes	yes		yes			
5508	2024-10-17	514	brookdale av	cb			yes	yes		yes			
5503	2024-10-17	327	brookdale av	cb			yes	yes		yes			
5501	2024-10-17	215	brookdale av	cb			yes	yes		yes			
5499	2024-10-17	215	brookdale av	cb			yes	yes		yes			
5504	2024-10-17	335	brookdale av	cb			yes	yes		yes			
5506	2024-10-17	347	brookdale av	cb			yes	yes		yes			
1648	2024-10-17	628	burton av	cb			yes	yes		yes			added to gis , new cb #
5996	2024-11-28	1225	ontario st	cb							yes		abandoned cb at old garage shop that connected to sanitary.
4598	2024-10-17	2227	heron ct	rycb						yes	yes		grading

Storm Water Retention Pond Condition Data								0-100		Measured Sed. Acc. (m3/ha)	Forecasted Sed. Acc. (m3/ha)
No.	Pond	Construction Year	Permanent Pond Volume (m3)	Extended Detention Volume (m3)	Total Storage Volume (m3)	Drainage Area Served (ha)	Maintenance Sediment Accumulation (m3/ha)	Current Maintance Rating	Year last inspected (Sediment)	2022	2024
1	Eastridge Subdivision SWMF	1998	5,200	-	6,000	138.0	13.2	32.6	2022	8.9	11.5
2	Brookgate Subdivision Pond	2005	799	371	1,846	9.1	50.9	94.3	2022	2.9	3.3
3	Industrial Park Storage Pond	2011	-	-	102,500	603.0	250	100	2022	0	0
4	Northdale Terrace Estates Sub Division	2011	860	-	6,200	10.5	48.9	58.9	2022	20.1	23.7
5	Northwood's Glen Subdivision Phase 1	1986	DRY	DRY	2,000	15.4	60.6	83.8	2022	9.8	12.6
6	Northwood's Glen Subdivision Phase 9	2010	111	188	305	2.1	16.4	62.2	2022	6.2	7.0
7	Snow Management Facility	2013	780	1,070	2,330	7.0	37.4	24	2022	28.3	33.9
8	Pinewood Forest Subdivision Pond	2013	DRY	DRY	376	4.3	27.7	100	2022	0	0
9	Northwoods Forest Subdivision Pond	2015	901	1,783	4,036	21.7	25.5	81.2	2022	4.8	6.4
10	Tenth St. Pond	2012	19,203	17,000	36,203	56.5	216	72.8	2022	58.7	67.7
11	Saunders Dr. Subdivision Pond	2020	389	113	797	2.8	58.0	78.3	2022	12.6	22.2

Appendix C: Authorized System Map



Legend

- Oil and Grit Separators
- Combined Sewer Overflow - Brookdale
- Storm Catch Basins
- Municipal Storm Retention Ponds
- Storm Sewers
- Low Impact Development Project
- Source Water Primary Protection Zone
- Source Water Secondary Protection Zone
- ditches_swales_only_ROW_Easements
- Property Parcels
- Summerstown Swamp
- Stormwater Drainage Basins

City of Cornwall
2023 - Municipal Stormwater Management System
First Consolidated Linear Infrastructure Environmental Compliance Approval

