Ontario

ENVIRONMENTAL COMPLIANCE APPROVAL
For a Municipal Stormwater Management System

ECA Number: 112-S701
Issue Number: 2

Pursuant to the *Environmental Protection Act*, R.S.O 1990, c. E. 19 (EPA*),* and the regulations made thereunder and subject to the limitations thereof, this environmental compliance approval is issued under section 20.3 of Part II.1 of the EPA to:

Waterloo, The Corporation of the City of

100 Regina Street South PO Box 337, Stn Waterloo
Waterloo, ON N2J 4A8

For the following Sewage Works:

Waterloo Stormwater Management System

This Environmental Compliance Approval (ECA) includes the following:

Schedule	Description
Schedule A	System Information
Schedule B	Municipal Stormwater Management System Description
Schedule C	List of Notices of Amendment to this ECA: Additional Approved Works
Schedule D	General
Schedule E	Operating Conditions
Schedule F	Residue Management
Appendix A	Stormwater Management Criteria

Except where specified otherwise, all prior ECAs, or portions thereof, issued by the Director for Sewage Works described in section 1 of Schedule B are revoked and replaced by this Approval.

DATED at TORONTO this 8th day of February, 2023

Signature

Aziz Ahmed, P.Eng.
Director, Part II.1, *Environmental Protection Act*

Schedule A: System Information

System Owner	**Waterloo, The Corporation of the City of**
ECA Number	**112-S701**
System Name	**Waterloo Stormwater Management System**
ECA Issue Date	**February 8th, 2023**

1.0 ECA Information and Mandatory Review Date

ECA Issue Date	February 8th, 2023
Application for ECA Review Due Date	August 15, 2027

1.1 Pursuant to section 20.12 of the EPA, the Owner shall submit an application for review of the Approval no later than the Application for ECA Review Date indicated above.

2.0 Related Documents

2.1 Other Documents

Document Title	Version
Design Criteria for Sanitary Sewers, Storm Sewers, and Forcemains for Alterations Authorized under Environmental Compliance Approval	v.1.1 (Jul 28, 2022)

3.0 Stormwater Master Plan and Asset Management Plan

Document Title	Version
2020 Asset Management Plan	v.1 (Nov. 2, 2020)
Stormwater Management Master Plan	v.1 (Dec. 2019)
Grand River Water Management Plan	v.1 (Sept. 2014)

4.0 Operating Authority

System	Operating Authority
Waterloo Stormwater Management System	The Corporation of the City of Waterloo

Schedule B: Municipal Stormwater Management System Description

System Owner	**Waterloo, The Corporation of the City of**
ECA Number	**112-S701**
System Name	**Waterloo Stormwater Management System**
ECA Issue Date	**February 8th, 2023**

1.0 System Description

1.1 The following is a summary description of the Sewage Works comprising the Municipal Stormwater Management System:

Overview

The Municipal Stormwater Management (SWM) System serving the City of Waterloo's drainage area, is a separate system for stormwater (i.e. designed not to convey sanitary sewage or combined sewage) within the Grand River Conservation Authority watershed. The Municipal SWM System consists of storm sewers, culverts, ditches, Stormwater Management Facilities, outlets and third pipe collection systems.

This ECA covers the entire Municipal SWM System owned and operated by the City of Waterloo. This ECA does not cover municipally or privately owned stormwater works on industrial or commercial land.

This Municipal SWM System is not connected to another Municipal SWM system

Sewage Collection System

1.2 The Authorized System comprises:

1.2.1 The Sewage Works described and depicted in each document or file identified in column 1 of Table B1.

Table B1: Infrastructure Map

Column 1 Document or File Name	Column 2 Date
Storm_4-1 to 9-4	January 17 2022 January 18, 2022
Storm_10-1 to 15-2	January 17, 2022
Storm_22-1 to 29-4	January 17, 2022
Storm_30-1 to 33-4	January 17, 2022

Storm_40-1 to 45-4	January 17, 2022
Storm_59-1 to 66-7	January 17, 2022
Storm_124 to 125	January 17, 2022
Storm_Third Pipes	January 17, 2022

1.2.2 Storm Sewers, Stormwater Management Facilities, stormwater pumping stations and Sewage Works associated with a Third Pipe Collection System that have been added, modified, replaced, or extended through authorization provided in a Schedule C Notice respecting this Approval, where Completion occurs on or after the date identified in column 2 of Table B1 for each document or file identified in column 1.

1.2.3 Storm Sewers, Stormwater Management Facilities and Sewage Works associated with a Third Pipe Collection System that have been added, modified, replaced, or extended through authorization provided by Schedule D of this Approval, where Completion occurs on or after the date identified in column 2 of Table B1 for each document or file identified in column 1.

1.2.4 Any Sewage Works described in conditions 1.3 through 1.8 below.

Stormwater Collection System

1.3 Categorization of the Authorized System at the date of issue of this Approval is as follows:

Table B2. Stormwater Collection System by Diameter

System Type	Pipe Diameter (mm)	Length (km)	System Totals (km)
Storm Sewers	Up to 250	12.74	--
Storm Sewers	> 250 - 500	187.23	--
Storm Sewers	> 500 - 1050	115.11	--
Storm Sewers	> 1050	19.98	--
Storm Sewers	Unknown	3.97	--
Total Storm Sewers	--	--	339.03
Ditches / Swales	--	--	N/A
Total System Length (km)	--	--	339.03

Table B3. Summary of Stormwater Management Facilities by Type and Pumping Stations							
Facility Type	Basic Treatment for Suspended Solids*	Normal Treatment for Suspended Solids *	Enhanced Treatment for Suspended Solids *	Other Treatment Level for Suspended Solids**	Total Quality Control	Total Quantity Control	Total Number of Facilities
LID Facilities - Retention (infiltration, evapotranspiration, harvest)	--	--	--	--	--	--	218
LID (Infiltration and filtration)	--	--	--	--	--	--	52
Low Impact Development (LID) Facilities – Filtration	--	--	--	--	--	--	326
Stormwater Management Ponds – Wet (includes wetlands, hybrids)	--	51	8	--	3	5	59
Stormwater Management Ponds - Dry	16			--	--	--	16
Super Pipe / Storage Facility							4
Filtration MTD - Filter Unit							N/A
Sedimentation MTD - OGS							62
Pumping Stations							N/A
Other							
Total Number of Facilities	16	51	8	--	3	5	736

* Basic, normal, and enhanced treatment correspond to 60%, 70% and 80% suspended solids removal on an annual average long-term basis, respectively.

** Treatment levels below 60% suspended solids removal on an annual average long-term basis.

Table B4. Third Pipe Collection System				
Description	Pipe Diameter (mm)	Length (km)	Quantity	System Totals
Third Pipe Sewer	Up to 250	11.23	270	11.23
Third Pipe Sewer	> 250 - 500	N/A	N/A	--
Third Pipe Sewer	> 500	N/A	N/A	--
Total	--	--		11.23 km
Other Infrastructure Components (e.g., storage tank)	N/A	N/A		

Table B5. Sewage Works on Private Land that are part of the Municipal Stormwater Treatment Train*		
Description	Location	ECA # (if applicable)
N/A		

* Identifies privately owned Sewage Works that are not part of the Authorized System, but are part of a Stormwater Treatment Train

Stormwater Management Facilities

1.4 The following are Stormwater Management Facilities in the Authorized System:

10081118: 1 - Baker Stormwater Management Area Wet Pond

Location	229 BAKER ST, -80.5591, 43.4378
Watershed/Subwatershed	Grand River/SCHNEIDER CREEK
Receiver of discharge	City of Kitchener
Outlet location	City of Kitchener
Catchment Area	9.70 ha
Level of Treatment for suspended solids	Level 2 (Normal) protection based on 30m3/ha of permanent pool storage, extended detention storage (24 hours)
Treatment for other contaminants, as required	N/A
Level of Volume control	300 m3 of permanent pool storage at a depth of 0.3m
Design Storm	Quantity: 1 in 5-yr and 1 in100-yr storm
Reference ECA(s)	3-0068-90-006
Reference Works as part of treatment train	N/A
Brief Description	Installation of a subdrain system across the bottom of the pond (at a depth of 0.3m approx.) to provided extended detention for the first 12.5mm of runoff. ***Retrofit:*** relocation of existing outlet structure and construction of a 1.0m high earth berm separating the outlet from the Baker St inlet, eliminating the existing “short circuiting’ at the bottom of the pond. Creation of sediment forebays at each of the two pond inlets. Installation of a 60mm orifice restriction to provided extended detention storage of the first 390m3 of live storage, based on Level 2 protection.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Retrofitted early 2000 to conform with MOEE standards. We do not have the amended ECA.

10081185: 2 - Red River Park Stormwater Management Area Dry Pond

Location	500 RED RIVER DR, -80.5532, 43.4439
Watershed/Subwatershed	Grand River/MAPLE HILL CREEK
Receiver of discharge	Discharge to Maple Hill Creek
Outlet location	43.449, -80.552 (Into Pond ID: 4 – Westvale Stormwater Management Area)
Catchment Area	37.9 ha
Level of Treatment for suspended solids	Level 3 (Basic)
Treatment for other contaminants, as required	No
Level of Volume control	Dry Pond. Storage capacity of 3000m3 of detention storage for 5-yr storm and 8000m3 and 361.5m ponding level for 100-yr storm with a controlled discharged of 3.53m3/sec.
Design Storm	Quantity: 5-yr and 100-yr storm based on a 32.1ha contributing drainage area
Reference ECA(s)	3-1824-87-006
Reference Works as part of treatment train	--
Brief Description	5-year storm is controlled by a 600mm storm sewer. Any storm exceeding the storage capacity (2600m3) is controlled by a raised inlet discharging to a second control (750mm diameter storm pipe).
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The basin will remain dry until the capacity of the receiving storm sewer is exceeded. Short duration, high frequency rainfall events are not captured by the facility.

10081154: 3 - Westvale Park Stormwater Management Area Wet Pond

Location	-80.5568,43.4473
Watershed/Subwatershed	Grand River/318
Receiver of discharge	Discharge to Maple Hill Creek
Outlet location	-80.5558,43.4479
Catchment Area	49.8 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	A permanent pool - volume of 972 cubic metres, an active storage volume of 3,314 cubic metres, and a total storage volume of approximately 19,984 cubic metres,
Design Storm	--
Reference ECA(s)	7872-B8WTM8
Reference Works as part of treatment train	OGS (asset ID 10265289) and a dry pond (pond #3) downstream.
Brief Description	Two sediment forebays at the south and northwest inlet, A permanent wet pond, with a 900 millimeters pipe inlet at the

	south end of the pond, a 1200 millimeters pipe inlet at the northwest end of the pond, and 450 millimeters pipe inlet at the north end of the pond, with the pond outlet at the northeast end through a perforated riser pipe outlet.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

10265289 OGS to SWM Wet Pond 3 - Westvale Park SWM Area

Location	Located south of an existing pedestrian pathway -80.5562,43.448
Watershed/Subwatershed	Grand River/318
Receiver of discharge	Discharging to the north inlet of SWM Pond 3
Outlet location	-80.5562,43.4479
Catchment Area	3.4 ha
Level of Treatment for suspended solids	Normal level of treatment
Treatment for other contaminants, as required	Oil, pollutants
Level of Volume control	Sediment storage capacity = 2,402 litres; oil storage capacity = 696 litres; total holding capacity = 4,646 litres.
Design Storm	--
Reference ECA(s)	7872-B8WTM8
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: OGS	Stormceptor CDS Model PMSU30_20m (Ceptor ID 285) receiving discharge from Valley Ridge Cres. and Ridgegate Dr. discharging to the north inlet of swm wet pond # 3.
Brief Description of each component of treatment train: SWM Wet Pond (Pond ID 3) and SWM Dry Pond (Pond ID 4) downstream.	SWM wet pond, serving a catchment area of approx. 49.8 hectares, complete 3 inlets and an outlet at the northeast end through a perforated riser pipe outlet. SWM dry pond (pond #4) located approx. 400m downstream of pond #3. The pond inlet consists of the culvert under Westvale Dr and includes storm sewer outlets from Westvale Dr., a concrete weir to control outflow, and a Hickenbottom outlet structure discharging to Maple Hill Creek.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Maximum treatment flow rate of 57 litres per second.

10081148 - 4 - Westvale Stormwater Management Area Dry Pond

Location	103 WESTVALE DR, -80.5511, 43.4487
Watershed/Subwatershed	Grand River/MAPLE HILL CREEK
Receiver of discharge	Discharge to Maple Hill Creek
Outlet location	-80.5491,43.4506
Catchment Area	52.9 ha
Level of Treatment for	Basic Level (assumed)

suspended solids	
Treatment for other contaminants, as required	--
Level of Volume control	Maximum storage volume of approximately 5,363 cubic metres
Design Storm	--
Reference ECA(s)	7872-B8WTM8
Reference Works as part of treatment train	SWM Dry Pond (Pond ID 4) downstream of SWM Wet Pond (Pond ID 3) – under same ECA.
Brief Description	Pond inlet consists of the existing culvert under Westvale Drive and includes storm sewer outlets from Westvale Drive, a concrete weir structure to control outflow from larger storm events, and a 450 millimetres diameter re-designing the Hickenbottom outlet structure to attenuate smaller storm events.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Approximately 400 metres downstream of Pond ID 3 - Westvale Park SWM Area Wet Pond (Asset ID: 10081154)

10081159- Winchester Stormwater Management Area Wet Pond

Location	25 FISCHER-HALLMAN RD N, -80.556, 43.4543
Watershed/Subwatershed	Grand River/MAPLE HILL CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5556,43.4554
Catchment Area	80.2 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	Minimum liquid retention volume (permanent pool and sediment forebay) of approx. 4,229 cubic metres (m3), a minimum 24 hour extended detention volume of 4,144 m3
Design Storm	Quantity: 100-yr storm; Quality: 100-yr storm
Reference ECA(s)	4129-6Q9L7H
Reference Works as part of treatment train	A two-cell system comprised of a wet pond and a wetland separated by an earth berm and functioning independently. The wetland cell, receive runoff from a 12.7 ha area, with a permanent pool and extended detention volume. The total combined quantity volume provided by the facility is approx. 29,624 m3.
Brief Description	Two sediment forebays at the wet pond inlets. Outlet control double orifice quality/quantity is a CSP manhole for the wet pond.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Outlet pipe equipped with an orifice plate that restricts the maximum discharge rate during the 1:100-year design storm event to 2.89 m3/s.

Two Cell System: Wet Pond to Wetland

Location	25 FISCHER-HALLMAN RD N, 43.4543,-80.556
Watershed/Subwatershed	Grand River/317
Receiver of discharge	Discharge to Clair Creek
Outlet location	43.454, -80.556
Catchment Area	12.7 ha
Level of Treatment for suspended solids	Normal water quality protection
Treatment for other contaminants, as required	--
Level of Volume control	The wetland cell has a permanent pool = 450 m3 and a minimum 24 hour extended detention volume = 526 m3.
Design Storm	Quantity: 100-yr storm; Quality: 100-yr storm
Reference ECA(s)	4129-6Q9L7H
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: Wet Pond	A two-cell system comprised of a wet pond and a wetland separated by an earth berm and functioning independently. The extended detention wet pond cell, receive runoff from a 67.5 ha area. The total combined quantity volume provided by the facility is approx. 29,624 m3.
Brief Description of each component of treatment train: Wetland cell	One sediment forebay at the wetland cell inlet. Outlet control double orifice quality/quantity is a Hickenbottom structure with a flow restrictor plate regulating quality control for the wetland cell and a fully perforated CSP manhole with the first row of perforations starting at the extended detention elevation, regulating quantity control through a. orifice plate.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Outlet pipe restricting maximum discharge rate during the 1:100 year design storm event to 0.97 m3/s.

10199940- 6 - McCrae Park Stormwater Management Area Dry Pond

Location	137 SANDFORD FLEMING DR, -80.5628, 43.4522
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5619,43.4522
Catchment Area	23.7
Level of Treatment for suspended solids	Basic Level
Treatment for other contaminants, as required	--
Level of Volume control	Minimum retention volume of 4,215 m3.
Design Storm	Quantity: 10-yr storm; Quality: 10-yr storm
Reference ECA(s)	3187-9TVQJC
Reference Works as part of treatment train	--
Brief Description	--

Receive Emergency Sanitary Overflows	No
Notes / Additional Information	SWM subsurface gravel wetland consisting of two inlet structures, with a 1,325 m3 retention volume sediment forebay and an emergency overflow spillway to McCrae Park; and two cells interconnected by a perforated subdrain and a box culvert, with a total retention volume of 2,890 m3. Each cell completes with a surface drainage system located below the bottom of the cell and an underdrain system of perforated distribution lines installed within the crushed stone layer. Maximum discharge of 1.154 m3/s via a concrete headwall and a rip-rap apron to the Clair Creek South Branch.

10081178- 7 - Royal Beech Park Stormwater Management Area Wet Pond

Location	74 ERBSVILLE RD, -80.5711, 43.4516
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5781,43.4529
Catchment Area	18.43 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	Combined available storage = 2,939.2 m3 for permanent pool storage plus a combined active available detention storage of approx. 9,367.7 m3 including 2,318.4 m3 of extended detention storage.
Design Storm	Quantity: 2-, 5-, and 100-year storm; Quality: 25 mm storm
Reference ECA(s)	1092-5YVPCL
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Quality control provided via an inlet forebay with vegetative lining prior to discharge over a berm to the wet pond. Outlet control pipe with orifice plate to provide quality control; peak flow release rate of 0.024 m3/s over a duration of 49 hrs. into the storm sewer. Discharge areas include an inlet splitter manhole structure, outlet piping and control structure, overflow weir, emergency spillway and fencing.

10081156: 8 - Regency Park Stormwater Management Area Dry Pond

Location	211 Roxton Dr, -80.5617, 43.4595
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5609,43.4626
Catchment Area	78.4 ha

Level of Treatment for suspended solids	Basic Level
Treatment for other contaminants, as required	--
Level of Volume control	Total storage volume = 13,900 m3
Design Storm	Quantity: 5 and 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	3-1042-85-006
Reference Works as part of treatment train	--
Brief Description	On-line detention pond with stage-storage discharge. Minor flows controlled by a 675 mm dia. orifice installed in the storm manhole and major flows alternated by 1200 mm dia. Concrete sewer (56m length).
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Quality control drainage area – 29.7 ha (contributing flows entering the pond on the south side of the facility only)

10081161- 9 - Roxton Park Stormwater Management Area Dry Pond

Location	285 Roxton Dr, -80.5646, 43.4651
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5639, 43.465
Catchment Area	13.27 ha
Level of Treatment for suspended solids	Basic Level - enhanced level at end of treatment train.
Treatment for other contaminants, as required	--
Level of Volume control	Storage volume for 100-yr storm = 48,000 m3. Storage available = 48,500 m3
Design Storm	Quantity: 100-yr storm;
Reference ECA(s)	---
Reference Works as part of treatment train	OGS (asset ID 10217398) OGS (asset ID 10217397) OGS (asset ID 10080693)
Brief Description	OGS (STC-3000 - Ceptor ID 281), OGS (STC-6000 -Ceptor ID 282) and OGS (STC-6000 - Ceptor ID 145) all providing pre-treatment and discharging into SWM Dry Pond 9.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Low flow channel running through the middle of the pond. Pond construction date 1985. We do not have a copy of the ECA or the SWM Report.

Asset ID 10217397 - OGS to SWM Dry Pond

Location	470 COLUMBIA ST. W, -80.5717,43.4656
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5716,43.4654
Catchment Area	--
Level of Treatment for suspended solids	Enhanced level at end of treatment train.
Treatment for other contaminants, as required	Remove 95% of all free oil.
Level of Volume control	--
Design Storm	--
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	Installed between 2019-2020 (STC-3000 - (Ceptor ID 281) receives runoff generated from Columbia Street between Fischer-Hallman Rd. N and Gatestone Blvd. and discharges to the SWM dry pond described below.
Brief Description of each component of treatment train: **SWM Dry Pond**	SWM Dry Pond, storage capacity = 48,500 m3, including 7 inlets, 1 outlet, emergency overflow route
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

Asset ID 10217398 - OGS to SWM Dry Pond

Location	534 CLAIR CREEK BLVD, -80.5723,43.4654
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5719,43.4654
Catchment Area	--
Level of Treatment for suspended solids	Enhanced level at end of treatment train.
Treatment for other contaminants, as required	Remove 95% of all free oil.
Level of Volume control	--
Design Storm	--
Reference ECA(s)	
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	Installed between 2019-2020 (STC-6000 - Ceptor ID 282) receives runoff generated from Columbia Street between Cavendish Dr. and Gatestone Blvd. and discharges to the SWM dry pond described below.
Brief Description of each	SWM Dry Pond, storage capacity = 48,500 m3, including 7

component of treatment train: **SWM Dry Pond**	inlets, 1 outlet, emergency overflow route
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

Asset ID 10080693 - OGS to SWM Dry Pond

Location	465 COLUMBIA ST W 4, -80.567,43.4662
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5671,43.4657
Catchment Area	--
Level of Treatment for suspended solids	Enhanced level at end of treatment train.
Treatment for other contaminants, as required	Remove 95% of all free oil.
Level of Volume control	--
Design Storm	--
Reference ECA(s)	
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS (STC-6000 - Ceptor ID 145) receives runoff generated from 461 – 465 Columbia St W (The Village on Clair Creek Multi-Res Condominium) and discharges to the SWM dry pond described below.
Brief Description of each component of treatment train: **SWM Dry Pond**	SWM Dry Pond, storage capacity = 48,500 m3, including 7 inlets, 1 outlet, emergency overflow route
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

10081144 - 10 - Trillium Valley Park Stormwater Management Area B Wet Pond

Location	522 CHANCERY LANE, -80.5752, 43.4658
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	discharge to Clair Creek
Outlet location	-80.5754,43.4659
Catchment Area	6.35 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent storage volume = 333 m3; extended detention volume = 460 m3; total storage volume = 1,893 m3 including the permanent pool.
Design Storm	Quantity: 25mm to 100-yr storm; Quality: up to 5-yr storm

Reference ECA(s)	A-500-1092325840
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Total pool depth of 2.18 metres, includes a 600 mm storm inlet pipe and a concrete headwall, a 300 mm diameter storm outlet pipe equipped with a 90 mm diameter orifice, allowing a max. discharge of 17 lt/sec via outlet structure and 216 lt/sec via spillway under the 5-year storm.

10081145: 11 - Bennington Gate Hydro Corridor Stormwater Management Area Wet Pond

Location	340 ERBSVILLE RD, -80.578, 43.4609
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	--
Catchment Area	6.0 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	Maximum available storage = 132,800 m3 including forebay, permanent pool, spillway channel and designated area.
Design Storm	Quantity: 2, 5 and 100-yr storm Quality: 25 mm storm
Reference ECA(s)	8266-5A5L66
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Include two inlet structures and a diversion structure on either side of the pond. The diversion structure have two outlet sewers one being controlled by a weir for major events. Major flows are conveyed to a spillway channel and designated area.

10081131: 12 - Laurelwood Stormwater Management Area Wet Pond

Location	335 LAURELWOOD DR , -80.5779, 43.4725
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	-80.5782,43.473
Catchment Area	19.3 ha
Level of Treatment for suspended solids	Level 2 (Normal) at end of treatment train.
Treatment for other	Water temperature, phosphorous, bacteria.

contaminants, as required	
Level of Volume control	Water quality extended detention permanent pool = 1,370 m3 at ponding depth of approx. 1.28m. Total storage volume 18,840 m3, from which 13,850 m3 of detention is a combination of water quality extended detention (4,500 m3) and peak flow attenuation control (9,359 m3).
Design Storm	Quantity: 2, 5, 25, 100-yr storm
Reference ECA(s)	3-0906-94-006
Reference Works as part of treatment train	Roadside water quality trenches underlain with 1.00 m wide by 1.00 m deep infiltration galleries for quality improvement.
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The facility includes a 5-year storm inlet and a second inlet from the water quality trench. The outlet consisting of 2m long, 750mm diameter perforated pipe in clear stone trench designed to convey a maximum of 47L\s discharging to an existing 400mm diameter downstream road culvert.

Multiple Asset IDs - Infiltration Trench to SWM Wet Pond

Location	335 LAURELWOOD DR, -80.5779, 43.4725
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	-80.5775,43.4722
Catchment Area	19.3 ha
Level of Treatment for suspended solids	Level 2 (Normal) water quality protection.
Treatment for other contaminants, as required	Water quality/infiltration trench installed below the storm sewer system provide sediment removal and filtration, as well as promote cooling, groundwater infiltration and fecal coliform die-off. The goss traps provide oil and grit removal.
Level of Volume control	25 mm – contributes 2,500 m3 of additional extended detention.
Design Storm	2-hour design storm event
Reference ECA(s)	3-0906-94-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Gallery**	The roadside drainage system was designed to direct the first flush runoff volume to a single infiltration gallery (after pre-treatment in catchbasins equipped with goss traps) located within the road allowance. During events larger than the 25 mm event, a catchbasin lead would direct larger peak flows to the storm sewers which discharge to the stormwater management facility. The Infiltration Gallery receives runoff generated from Beaver Creek Cres, Beaver Creek Rd, Brentcliffe Dr, Dalecroft Pl, Havendale Cres, Havendale Pl, Laurelwood Dr, Pineland Crt, Pineland Pl.
Brief Description of each	SWM Wet Pond with total storage volume =18,840 m3,

component of treatment train: **SWM Wet Pond**	including 2 inlets, 1 outlet.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	A discharge pipe near the bottom of the trench ensures that the trench will have a retention time of approximately 24 hours. The sump pump discharges from individual lots are connected to the trench discharge pipe such that this relatively clean and cool water can bypass the SWM facility. Extended detention storage provided by an artificial wetland area.

10081174 - Pond ID: 13 - Laurelgate Stormwater Management Area Wet Pond

Location	499 LAUREL GATE DR, -80.5745, 43.4741
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	--
Catchment Area	5.5 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	Phosphorus, water temperature, bacteria and dissolved oxygen through extended detention (greater than 24 hours).
Level of Volume control	Extended detention swm pond, combined storage volume = 2500 m3. Quality control provided via an inlet forebay with available storage = 579 m3.
Design Storm	Quantity: 2, 5, 25 and 100 year and Quality: 25mm storm.
Reference ECA(s)	3-1383-95-006
Reference Works as part of treatment train	Infiltration Gallery
Brief Description	Infiltration system consisting of perforated piping within a clear stone trench, installed below the storm sewer.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The vegetation lining the pond provide enhance sediment removal with discharge via a perforated riser pipe structure with orifice control plate, designed to detain the runoff from the 25 mm rainfall design storm event for a 33 hr period, controlled discharge rate = 2.0 L/s into an existing ditch along the side of the road. The SWM facility includes an inlet and outlet piping, control structure and emergency spillway.

Multiple Asset IDs – Infiltration Gallery to SWM Wet Pond

Location	499 LAUREL GATE DR, -80.5745, 43.4741
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	-80.5741,43.4741
Catchment Area	5.5 ha
Level of Treatment for suspended solids	Basic Level
Treatment for other contaminants, as required	Water temperature, DO, phosphorous, bacteria.
Level of Volume control	--
Design Storm	Design storm events up to the 2 hour - 30 mm storm.
Reference ECA(s)	3-1383-95-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Gallery**	Infiltration system consisting of perforated piping within a clear stone trench, installed below the storm sewer on Laurel Gate Drive from Beaver Creek Road to Fischer Hallman Road including Sand Wood Pl., Deacon Wood Pl. and Silver Wood Pl., designed to infiltrate rooftop runoff and discharging into SWM Pond 14.
Brief Description of each component of treatment train: **SWM Wet Pond**	The SWM facility has a storage volume of 2500 m3 and includes an inlet and outlet piping, control structure and emergency spillway.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The design includes a conventional storm sewer sized for the 5-year design storm and an underlying (150 mm) perforated big “O” pipe in a 1 x 1 m clear stone trench for an infiltration capacity (rooftops runoff) for events up to 2 hr – 30 min storm At-source rooftop infiltration (Etobicoke exfiltration system).

10081158 - Pond ID: 14 Conservation Meadows Park Stormwater Management Area Wet Pond

Location	585 COLDSTREAM DR, -80.575, 43.4927
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek Tributary
Outlet location	-80.575,43.4923
Catchment Area	4.8 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	Water temperature
Level of Volume control	Permanent pool storage volume of 207m3; extended detention storage volume of 192 m3.
Design Storm	Quantity and Quality: 2, 5, 25 and 100-yr storm
Reference ECA(s)	3184-5DFJZJ

Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sediment forebay of 23 metres length, overflow/spillway and an inlet and outlet controls for controlled discharge.

10081176 - Pond ID: 15 - Ellesmere Stormwater Management Area Wet Pond

Location	448 SANDBANKS CRES, -80.5737, 43.4979
Watershed/Subwatershed	Grand River/MARTIN CREEK WEST
Receiver of discharge	Discharge to Martin Creek
Outlet location	-80.5734,43.4986
Catchment Area	41.3 ha
Level of Treatment for suspended solids	Level 2 (Normal).
Treatment for other contaminants, as required	Temperature
Level of Volume control	Total storage volume = 16,400 m3; extended detention volume = 7,500 m3.
Design Storm	Quantity and Quality: 2, 5, 25 and 100-yr storm. Water quality control for the 2 hour, 25 mm event.
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sediment forebay, overflow/spillway and an inlet and outlet controls for controlled discharge. We do not have the ECA.

10081160- Pond ID: 16 - Karen Walk Parkette Stormwater Management Area Dry Pond

Location	316 KAREN PL, -80.5452, 43.4588
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5472,43.4603
Catchment Area	5.43 ha
Level of Treatment for suspended solids	Basic Level.
Treatment for other contaminants, as required	--
Level of Volume control	Total available storage volume of 828 m3, including 255 m3 of extended detention. Extended detention storage 24 - 48 hours
Design Storm	e.g. Quantity: 5, 100-yr storm; Quality: 25mm rainfall event
Reference ECA(s)	3-0784-94-006

Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Flow control achieved through a 180mm diameter orifice plate in the MH outlet pipe. Permanent sediment control with a min. 500mm. deep sump. At-source rooftop runoff infiltration in the form of drywells on some of the lots around the SWM facility.

10081123:17 – University Pond Dry Pond

Location	263 PHILLIP ST, -80.5409, 43.4732
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.541, 43.473
Catchment Area	8.36 ha and/or 50.90 ha including indirect relief overflows
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature.
Level of Volume control	Detention pond and a channel with storage capacity = 8,584 m3. Wetland permanent pool volume = 173 m3 and extended detention volume = 353 m3.
Design Storm	Quantity: 5 and 100-yr storm
Reference ECA(s)	8904-8JKL57
Reference Works as part of treatment train	OGS (asset ID 10080650)
Brief Description	OGS (STC-6000 - Ceptor ID 37) discharging into the lower cell of the swm dry pond.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including an engineered wetland located in the upper cell of the pond to service a directly contributing drainage area of approximately 2.96ha. and indirect overflow relief (50.9 ha). The wetland work as forebay and plunge pool of the dry pond.

10080650 OGS to SWM Dry Pond (Pond ID 17)

Location	263 PHILLIP,-80.5406,43.4731
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.5407,43.4731
Catchment Area	5.40 ha
Level of Treatment for suspended solids	Level 2
Treatment for other contaminants, as required	--
Level of Volume control	Sediment storage capacity of 26.945 m3, oil storage capacity of 3,930L and a total volume of 31.285m3

Design Storm	--
Reference ECA(s)	8904-8JKL57
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS model STC-6000 (Ceptor ID 37), receives runoff generated from 263 Phillip St and discharges to the lower cell of the SWM dry pond described below.
Brief Description of each component of treatment train: **SWM Dry Pond**	SWM Dry Pond (Pond ID 17), including two inlets, one outlet, and an upper cell engineered wetland.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Mainly serving parking areas, rated at 70L/s flow without bypassing, discharging via a 675mm diameter storm sewer to the lower cell of an existing dry pond.

10081146: 18 - Benjamin SWM A Dry Pond

Location	165 BENJAMIN RD, -80.5562, 43.5042
Watershed/Subwatershed	Grand River/FORWELL CREEK
Receiver of discharge	Discharge to Forwell Creek
Outlet location	-80.5552,43.5047
Catchment Area	0.96 ha
Level of Treatment for suspended solids	Basic Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	Storage capacity = 233 m3
Design Storm	Quantity: 5 and 100-yr storm
Reference ECA(s)	3-0137-88-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Storage for the controlled runoff provided in the driveway/parking areas (0.013 m in depth), as well some of the adjoining green space between the rows of units. All drainage under the 5-yr event accommodated by the underground pipe network. Runoff for the 5-year event controlled by an 89mm diameter orifice plate.

10081151 – Pond ID:19 - Snyder-Gingrich Stormwater Management Area Wet Pond

Location	190 BATHURST DR, -80.5299, 43.5122
Watershed/Subwatershed	Grand River/MARTIN CREEK EAST
Receiver of discharge	Discharge to Northland Creek
Outlet location	-80.5295,43.5132
Catchment Area	75 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	Permanent storage capacity = 14,200 m3; extended extension volume = 3,000 m3
Design Storm	Quantity: 5, 100-yr storm.
Reference ECA(s)	3-0486-86-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Overflow emergency spillway, controlled discharge structure to a max. = 0.63 m3/s and perforated underdrain and filter area.

10081130- Pond ID - 20 - Northfield Stormwater Management Area Wet Pond

Location	165 FROBISHER DR, -80.5265, 43.5052
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.516, 43.5047
Catchment Area	75 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Phosphorus and water temperature
Level of Volume control	Permanent pool volume = 2,900 m3; total storage volume = 31,107 m^3.
Design Storm	Quantity and quality: 5, 100-yr storm
Reference ECA(s)	2199-AU6NP3
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Max. permanent pool depth = 2.6 m. Including a floating baffle curtain for increasing flow path, receiving inflows from an inlet channel with eight (8) inlet storm sewers along the length of the channel, discharging via a 1,550-millimetre diameter

	perforated outlet riser pipe. Outlet - 90 mm diameter orifice restriction in order to provide extended detention storage (24 hr release) of the first 3000 m^3 of live storage.

10081115 - Pond ID: 21 - Anndale Park Stormwater Management Area 1 Wet Pond

Location	284 GRANT CRES, -80.5167, 43.5002
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.5162, 43.5001
Catchment Area	170 ha
Level of Treatment for suspended solids	Normal Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	Total storage volume = 28,000m^3
Design Storm	Quantity: 5, 100-yr storm
Reference ECA(s)	3-0487-87-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one berm (175 m long and 2.1 m high with a top width of 4 m) to detain runoff as the capacity of the outlet structure is exceeded; a 0.3m freeboard and allowance for a 65 m long and 0.3 m deep emergency spillway; the outlet structure is a 25 m long - 600 mm diameter C.S.P. outlet.

10081149 - Pond ID: 21 - Old Abbey Stormwater Management Area Dry Pond

Location	545A OLD ABBEY CRT, -80.524, 43.4993
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.5207, 43.4999
Catchment Area	1.71 ha
Level of Treatment for suspended solids	Basic Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	Minimum storage volume = 61 m^3
Design Storm	Quantity: 5-yr storm
Reference ECA(s)	3-1124-93-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	A combination of in-ground storm sewer storage and surface detention ponding with orifice discharge control (discharge

	rate 0.13m^3/s) – 5yr. design event.

10081184- Pond ID: 23 - Williamsburg Link Stormwater Management Area Dry Pond

Location	597 PARKRIDGE CRT, -80.5166, 43.5044
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.516,43.5047
Catchment Area	98.3 ha
Level of Treatment for suspended solids	Basic Level
Treatment for other contaminants, as required	--
Level of Volume control	Storage capacity of approx. 7334 m3; total storage = 11,000 m3
Design Storm	Quantity: 5, 100-yr storm
Reference ECA(s)	3-0471-82-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including three inlets, a flow channel and one outlet.

10081179- Pond ID: 24 - Eastbridge Stormwater Management Area Wet Pond

Location	415 EASTBRIDGE BLVD, -80.506, 43.5039
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.506,43.5032
Catchment Area	80 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool volume =1,600m3; extended detention treatment = 3,200m3; for 25mm storm events extended detention treatment approx. 6,400 m3
Design Storm	Quantity: 5, 25, 100-yr storm; Quality: 25 mm 2-hour storm event for erosion control
Reference ECA(s)	3-1017-96-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including inlet energy dissipation, sediment forebay, extended detention storage for the initial 4,242 m3 runoff to be slowly

	released through an orifice control outlet structure over a period of 24 hours for quality control. Runoff events exceeding the 100-year storm volume, and the additional volume provided in the 0.3m freeboard, would discharge down a 0.3m deep 20m wide swale down the berm to the creek.

10081109- Pond ID: 25 - Colonial Creek Link Stormwater Management Area Wet Pond

Location	-80.5012, 43.5047
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.5012, 43.5049
Catchment Area	--
Level of Treatment for suspended solids	Normal Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool volume = 104 m3; total storage volume = 243 m3
Design Storm	Quantity: 100-yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including two inlets, a sediment forebay; a spillway consisting of a 4.3 m diameter riser pipe; and, an emergency spillway consisting of an overflow weir. We do not have a copy of the ECA or the SWM Report.

10081155 - Pond ID: 26 - Wintermeyer Park Stormwater Management Area Dry Pond

Location	-80.498, 43.4991
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.5025,43.502
Catchment Area	17.91 ha
Level of Treatment for suspended solids	Basic Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	Storage capacity = 3,901 m3 at 2.28 m depth.
Design Storm	Quantity: 5, 100-yr storm
Reference ECA(s)	3-2199-88-006
Reference Works as part of treatment train	--

Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a ditch inlet and two outlets: one manhole with 825mm diameter outlet pipe fitted with 250mm diameter orifice plate; second manhole with 750mm diameter outlet pipe fitted with 550mm diameter orifice plate. Under the minor storm events the facility will operate as an off-line surcharge relief pond.

10081175- Pond ID: 27 - RIM Park Stormwater Management Area A Wet Pond

Location	900 ATLANTIC BLVD, -80.504, 43.5173
Watershed/Subwatershed	Grand River/GRAND RIVER TRIBUTARIES NORTH
Receiver of discharge	Discharge to Critter Creek
Outlet location	-80.5024,43.5172
Catchment Area	45.72 ha
Level of Treatment for suspended solids	Level 2
Treatment for other contaminants, as required	--
Level of Volume control	Maximum permanent pool volume of approx. 1,377 m3; extended detention volume of approx. 2,627 m3.
Design Storm	Quantity: 25mm to 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	8127-4M8JT8
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Includes two inlet structures, two forebays, wetland component, and an outlet structure (with perforated riser, rip-rap, three staged orifice plates, discharge pipes, overflow ditch and spillway appurtenances). Flows exceeding the runoff generated from a 5-year storm conveyed along University Ave roadway for discharge at designed low points within the boulevards; major flows (10-yr storm) bypass the forebay via a conveyance swale and discharge directly to the facility.

10081117- Pond ID: 28 - Trilliam Valley Park Stormwater Management Area C Wet Pond

Location	-80.5804, 43.4664
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5802, 43.4662
Catchment Area	3.68 ha
Level of Treatment for suspended solids	Overall Level 1 - 80% average annual TSS removal treatment taking into consideration the upstream oil/grit separator for

	pre-treatment (50% removal). Permanent pool: Level 2 treatment.
Treatment for other contaminants, as required	--
Level of Volume control	Permanent storage volume = 261m3; extended detention volume = 309 m3; total storage volume = 1,141 m3 including the permanent pool
Design Storm	Quantity: 25mm to 100-yr storm; Quality: up to 5-yr storm
Reference ECA(s)	A-500-2091835782
Reference Works as part of treatment train	OGS
Brief Description	Hydroworks HydroStorm HS 6 or Equivalent Equipment
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Permanent pool total depth = 1.8 m. Includes a 600 mm diameter storm inlet pipe and a concrete headwall; a forebay; a 300 mm diameter storm outlet pipe allowing a maximum discharge of 71 l/s via outlet structure and 169 l/s via a spillway under the 5-year storm event to Clair Creek.

10278590 - OGS to SWM Wet Pond

Location	-80.5806,43.4665
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5805,43.4665
Catchment Area	3.68 ha
Level of Treatment for suspended solids	OGS - Level 3 (Basic) - average annual TSS removal of 50.4%
Treatment for other contaminants, as required	--
Level of Volume control	Sediment storage capacity of 3.2 m3; oil storage capacity of 1,041 litres; total storage volume approx. 4.8 m3.
Design Storm	Quality: up to 5-yr storm
Reference ECA(s)	A-500-2091835782
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	Oil and grit separator, Hydroworks HydroStorm HS 6 or Equivalent Equipment (CEPTOR ID 286), located along Trillium Valley Trail (approximately 60 metres east of Honeywood Place).
Brief Description of each component of treatment train: **SWM Wet Pond**	Description of SWM Wet Pond, including [X] inlets, [X] outlets, emergency overflow route
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Maximum treatment rate of 61.1 l/s, receiving inflow from the storm sewer located on Honeywood Place, discharging via a 600 mm diameter outlet pipe to an existing 600 mm diameter

	pipe and into SWM Wet Pond ID 28. Based on the recommendation of the manufacturer, a 600 mm to 825 mm pipe increaser has been implemented upstream of the OGS unit in order to reduce velocities and ensure the long-term functionality of the unit.

10081121- Pond ID: 29 - RIM Park Stormwater Management Area B Wet Pond

Location	2001 UNIVERSITY AVE E G, -80.4998,43.5182
Watershed/Subwatershed	Grand River/GRAND RIVER TRIBUTARIES NORTH
Receiver of discharge	Discharge to Critter Creek
Outlet location	-80.4974, 43.5173
Catchment Area	8.21 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent storage volume of approx. 804 m3, extended detention volume of approx. 384 m3.
Design Storm	Quantity: 25mm to 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	8127-4M8JT8
Reference Works as part of treatment train	Subsurface tile drainage discharging to an infiltration/exfiltration gallery
Brief Description	SWM wet pond combined with subsurface tile drainage discharging to an infiltration/exfiltration gallery discharging treated flows towards the creek system.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Includes an inlet structure, forebay, wetland component, and an outlet structure (with a perforated riser, rip-rap, an orifice plate, manhole, discharge pipe and appurtenances) combined with subsurface tile drainage discharging to an infiltration/exfiltration gallery discharging treated flows towards the creek system. Extended detention storage: 24 hr detention flow for first flush flows.

10145477 to 10145492 and 10065692 - SWM Wet Pond to Infiltration Gallery

Location	2001 UNIVERSITY AVE E G, 43.5182,-80.4998
Watershed/Subwatershed	Grand River/GRAND RIVER TRIBUTARIES NORTH
Receiver of discharge	Discharge to Critter Creek
Outlet location	-80.4974,43.5173
Catchment Area	8.21 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Low flows discharge to the exfiltration/infiltration gallery.
Design Storm	Quality: 25 mm storm
Reference ECA(s)	8127-4M8JT8

Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Exfiltration/Infiltration Gallery**	A linear swale/subsurface perforated pipe system collect surface and subsurface water from the playing fields and a constructed wetland facility for discharge to the creek system via a series of "finger" pipes connected to a header pipe with outlet to linear wetlands on the creek corridor. The system provide controlled flow to the creek without direct point discharge.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM wet pond including one inlet, one outlet, forebay, and a wetland component, discharging in to an infiltration/exfiltration gallery.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Above the extended detention storage, flows bypass the facility via a 15.0 m weir draining to a swale that runs west to east, fronting the north portion of the access road, to SWM Pond ID 62, which provides attenuation storage to satisfy the peak flow targets.

10081147- Pond ID: 30 - Melitzer Woodlot Stormwater Management Area A Wet Pond

Location	378 UNIVERSITY DOWNS CRES, -80.4894, 43.4946
Watershed/Subwatershed	Grand River/MELITZER CREEK
Receiver of discharge	Discharge to Melitzer Creek
Outlet location	-80.4889,43.4944
Catchment Area	44 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature
Level of Volume control	Total storage volume = 10,600 m3; permanent pool = 1,560 m3; extended detention = 4,060 m3.
Design Storm	Quantity and Quantity: 5, 100-yr storm.
Reference ECA(s)	3-0493-96-006
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The SWM divided in two sections, hydraulically connected by a culvert. Extended detention by a perforated CSP riser hickenbottom drain with an orifice plate. Runoff from minor storms in excess of extended detention volume discharged through a CB. Runoff from major events (1:100-year) passed through the basin (20.0 m weir). Discharge from the basin through a perforated riser to an upwelling trench located on the east side of the basin. The upwelling trench act as a flow

	spreader discharging the runoff as sheet flow toward the wetland. Rear yard soak away pits – roof runoff.

10081193- Pond ID: 31 - Melitzer Woodlot Stormwater Management Area B Wet Pond

Location	182 CAVELLETTI CRT, -80.4852, 43.4904
Watershed/Subwatershed	Grand River/MELITZER CREEK
Receiver of discharge	Discharge to Melitzer Creek
Outlet location	-80.4848, 43.4907
Catchment Area	50.66 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool volume = 1,115 m3; extended retention volume = 240 m3 (infiltration trench); maximum available storage = 20,540 m3.
Design Storm	Quantity and Quantity: 5, 100-yr storm.
Reference ECA(s)	3-0736-94-006
Reference Works as part of treatment train	SWM Dry Pond # 32
Brief Description	Receiving outflows from SWM Dry Pond # 32
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including at-source facilities (dry wells) to infiltrate the first 20mm of runoff from roof areas; three inlet and an outlet structure. Outflows controlled by a perforated riser outlet with a restricting orifice to attenuate the peak flows (to discharge basin in within three days); discharging into the wetland along the length of an upwelling trench in a diffuse manner; and, an emergency overflow spillway.

Asset ID 10081157 – SWM Dry Pond to SWM Wet Pond

Location	182 CAVELLETTI CRT, 43.4904, -80.4852
Watershed/Subwatershed	Grand River/MELITZER CREEK
Receiver of discharge	Discharge to Melitzer Creek
Outlet location	43.4907, -80.4848
Catchment Area	4.3 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Maximum utilized storage: 5-yr = 530 m3; 100-yr = 1,780 m3. Maximum available storage = 2,400
Design Storm	Quantity: 5, 100-yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	--

Brief Description of each component of treatment train: **SWM Dry Pond**	Receives runoff generated from the adjacent subdivision (4.3 ha) and discharges overflow to the SWM Wet Pond (Pond ID 31) described below through the storm sewer infrastructure.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including 3 inlets, 1 outlet, discharging into the wetland along the length of an upwelling trench in a diffuse manner; and an emergency overflow spillway.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	We do not have a copy of the ECA.

10081157- Pond ID: 32 - Downsview Stormwater Management Area Dry Pond

Location	125 WOOLWICH ST, -80.4837, 43.4868
Watershed/Subwatershed	Grand River/MELITZER CREEK
Receiver of discharge	Discharge to Melitzer Creek
Outlet location	-80.4848, 43.4907
Catchment Area	4.3 ha
Level of Treatment for suspended solids	Basic Level
Treatment for other contaminants, as required	--
Level of Volume control	Maximum utilized storage: 5-yr = 530 m2; 100-yr = 1,780. Maximum available storage = 2,400
Design Storm	Quantity: 5, 100-yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	Overflow discharged into SWM Wet Pond # 31.
Brief Description	Refer to SWM Wet Pond ID 31(Asset ID: 10081193) for more information.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including 3 inlets and one outlet. We do not have a copy of the ECA.

10081150 - Pond ID: 33 - Yarmouth Stormwater Management Area Wet Pond

Location	551 EASTBRIDGE BLVD, -80.499, 43.5087
Watershed/Subwatershed	Grand River/GRAND RIVER TRIBUTARIES NORTH
Receiver of discharge	Discharge to Grand River
Outlet location	-80.4955,43.5087
Catchment Area	79.5 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool storage = 4,573 m3; extended detention storage = 4,242 m3; total storage = 23,300 m3 (including the permanent pool)

Design Storm	Quantity: including 100-yr storm; Quality: X-yr storm
Reference ECA(s)	5308-ASHPJD
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including sediment forebay; one inlet and one outlet; and a 300 mm diameter maintenance pipe with headwall and grate discharging to catch basin manhole (CBMH) with a gate valve, the CBMH discharges via an existing 1500 mm diameter outlet to a manhole.

10081129 - Pond ID: 34 - Frobisher Stormwater Management Area Wet Pond

Location	2700 UNIVERSITY AVE E, -80.5225, 43.5159
Watershed/Subwatershed	Grand River/MARTIN CREEK EAST
Receiver of discharge	Discharge to Conestoga River
Outlet location	-80.523,43.5165
Catchment Area	29.4 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool dead storage = 3,300 m3; extended detention = 1,100 m3; total live storage volume = 6,600 m3; total storage = 15,800 m3.
Design Storm	Quantity and Quality: 5, 100-yr storm.
Reference ECA(s)	3-2447-89-906
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sediment forbay; one inlet, one outlet; an open outlet channel (5 m wide, trapezoidal shaped, grass lined, and series of armoured drop structures to provide peak flow velocity reduction and energy dissipation), from Country Squire Road to the Conestoga River. A 100 mm orifice provides an approximate 24-hour extended detention of 1,100 m3 of runoff.

10081126 - Pond ID: 35 - Killbear Stormwater Management Area Wet Pond

Location	525 LAKE LOUISE BLVD , -80.5801,43.4908
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek Tributary
Outlet location	-80.5799,43.4905
Catchment Area	8.02 ha
Level of Treatment for	Level 2 (Normal)

suspended solids	
Treatment for other contaminants, as required	Temperature
Level of Volume control	Permanent pool storage volume = 432 m3 (0.30m depth), extended detention storage volume = 1,562 m3.
Design Storm	Quantity and Quality: 2, 5, 25 and 100-yr storm
Reference ECA(s)	3184-5DFJZJ
Reference Works as part of treatment train	OGS
Brief Description	Manhole oil/grit separator (STC-1500) located on Conservation Drive, approximately 105 metres east of Lake Louise Boulevard, to service Conservation Drive improvements only.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sediment forebay (max. 0.5 m sediment storage) of 24 metres length, overflow/spillway and an inlet and outlet controls for controlled discharge. The wetland provides 24 hours. extended detention storage and release the erosion control volume over a period of 50 hours.

10080550 – SWM Wet Pond to OGS

Location	-80.5799,43.4905
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek Tributary
Outlet location	-80.5799,43.4905
Catchment Area	--
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	--
Design Storm	--
Reference ECA(s)	3184-5DFJZJ
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	STC-1500 (Ceptor ID 88) located on Conservation Drive, approximately 105 metres east of Lake Louise Boulevard, *to service Conservation Drive improvements only*. Not connected to SWM Wet Pond 35.
Brief Description of each component of treatment train: **SWM Wet Pond**	Permanent pool storage volume = 432 m3, including one inlet and one outlet.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	OGS does not provide treatment train to SWM Wet Pond 35; however, it does provided treatment to Conservation Dr. overland street runoff discharging into Laurel Creek, same

	outlet as SWM Wet Pond 35.

10081111: Pond ID: 36 - Jacob Lane SWM A Dry Pond

Location	335 BENJAMIN RD, -80.5723, 43.4984
Watershed/Subwatershed	Grand River/MARTIN CREEK WEST
Receiver of discharge	Discharge to Martin Creek West
Outlet location	-80.5734,43.4986
Catchment Area	12.86 ha
Level of Treatment for suspended solids	Basic Level
Treatment for other contaminants, as required	--
Level of Volume control	Total storage volume = 3,800 m3
Design Storm	Quantity: 5, 100-yr storm.
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Max. pool depth = 1.5 m; 3:1 side slope; discharge/storage combine orifice and weir type flows. Initially orifice flow is used to control the 5-yr peak flows, the detention pool provides the required storage. As the flow and volumes increase, and further storage becomes limited, the flows begin to spill over a weir-like structure from the detention area. We do not have a copy of the ECA.

10081135 - Pond ID: 37 - Pinery Stormwater Management Area Wet Pond

Location	552 PINERY TRAIL, -80.5871, 43.4916
Watershed/Subwatershed	Grand River/MARTIN CREEK WEST
Receiver of discharge	Discharge to Martin Creek
Outlet location	-80.5873,43.4917
Catchment Area	4.8 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool storage volume of 207 m3 (depth of 0.25 m).
Design Storm	Quantity and Quality: 2, 5, 25 and 100-yr storm. Drawdown time = 2hr, 25mm storm event.
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No

Notes / Additional Information	The wetland provides sufficient extended detention storage to achieve a 24-hour detention time for first flush flows. Including a two-tiered sediment forebay located at the inlet, with an averaged water depth of 0.88 m to allow for the storage of sediment accumulation; and a 11 m long with a depth of 0.3 m. spreader swale for low flow. We do not have the ECA.

10081143 - Pond ID: 38 - Dorwood Stormwater Management Area Wet Pond

Location	2355 UNIVERSITY AVE E, -80.5143, 43.5186
Watershed/Subwatershed	Grand River/CONESTOGO RIVER - LOWER
Receiver of discharge	Discharge to Creek D
Outlet location	-80.5144,43.5193
Catchment Area	54.9 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool = 7,042 m3; extended detention = 4,799 m3; and total volume = 39,273 m3 (including the permanent pool).
Design Storm	Quantity: 100-yr storm; Quality: X-yr storm
Reference ECA(s)	6231-APGJDY
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sedimentation forebay; two inlet pipes with headwall; and, a 200 mm diameter orifice, spreader swale and weir mechanism outlet. Permanent pool average depth =1.6m in the forebay and 1.0m in the main cell.

10081114 - Pond ID: 39 - Rhineland Stormwater Management Area B Wet Pond

Location	504 RHEINLAND PL, -80.5822, 43.458
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.581, 43.4597
Catchment Area	30.4 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature
Level of Volume control	Combined storage = 5,616 m3 (water quality control); including extended detention (active) storage = 4,769 m3 and permanent pool = 847 m3.
Design Storm	Quantity: 2, 5-yr storm; Quality: 25 mm storm
Reference ECA(s)	8266-5A5L66
Reference Works as part of	Cooling trench gallery

treatment train	
Brief Description	Outlet pipe from SWM Wet Pond 39 discharge to a long subsurface contact cooling trench gallery.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including extended detention; inlet forebay and vegetative lining; and overflow weir. Discharge control provided via a perforated outlet control structure and orifice plate into a horizontal grate ditch inlet manhole structure connected to an outlet pipe with secondary orifice plate to a cooling trench (quality control).

Asset ID 10066289 - SWM Wet Pond to Cooling Trench Gallery

Location	504 RHEINLAND PL, 43.458, -80.5822
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.581,43.4597
Catchment Area	30.4 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature
Level of Volume control	25 mm storm event.
Design Storm	Quantity: 2, 5-yr storm; Quality: 25 mm storm
Reference ECA(s)	8266-5A5L66
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Cooling Trench Gallery**	Subsurface contact cooling trench gallery (receiving runoff from SWM Wet Pond 39) designed to attenuate the peak extended detention release rate of 0.01 m3/s for 1.0 hr prior to discharge to the watercourse.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including one inlet, one outlet, forebay and overflow weir.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Cooling trench gallery dimensions: 60 m long x 2 m wide x 1.2 m deep.

10081127- Pond ID: 40 - Rhineland Stormwater Management Area A Wet Pond

Location	672 BRANDENBURG BLVD, -80.5807, 43.4591
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.581, 43.4597
Catchment Area	19.6 ha
Level of Treatment for suspended solids	Level 2 (Normal)

Treatment for other contaminants, as required	Water temperature
Level of Volume control	Combined storage = 6,715 m3 (water quality control); including extended detention (active) storage = 4,845 m3 and permanent pool = 1,870 m3.
Design Storm	Quantity: 2, 5, 10, 25, 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	8266-5A5L66
Reference Works as part of treatment train	Cooling trench gallery
Brief Description	Outlet pipe from SWM Wet Pond 40 discharge to a subsurface contact cooling trench gallery.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including extended detention; inlet forebay and vegetative lining; and overflow weir. Discharge control provided via a perforated outlet control structure and orifice plate (quality control) into a manhole connected to a pipe which extends into the floodplain of the South Clair Creek and then to a subsurface contact cooling trench gallery.

10279283, 10279313, 10279312- SWM Wet Pond to Cooling Trench Gallery

Location	672 BRANDENBURG BLVD, 43.4591,-80.5807
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5804,43.4606
Catchment Area	19.6 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature
Level of Volume control	25 mm storm event.
Design Storm	Quantity: 2 up to 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	8266-5A5L66
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Cooling Trench Gallery**	Subsurface contact cooling trench gallery (receiving runoff from SWM Wet Pond 40) designed to attenuate the peak extended detention release rate of 0.008 m3/s for 1.0 hr prior to discharge to the watercourse.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including one inlet, one outlet, forebay and overflow weir.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Cooling trench gallery dimensions: 48 m long x 2 m wide x 1.2 m deep.

10081124 - Pond ID: 41 - Columbia Stormwater Management Area Wet Pond

Location	616 SALZBURG DR, -80.5828, 43.4615
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5825,43.4617
Catchment Area	18.1 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature
Level of Volume control	Combined storage = 2,000 m3 (water quality control); including extended detention (active) storage = 1,570 m3 and permanent pool = 430 m3.
Design Storm	Quantity: 2, 5-yr storm; Quality: 25 mm storm
Reference ECA(s)	8430-AJ8UDA
Reference Works as part of treatment train	Cooling trench
Brief Description	Outlet pipe from SWM Wet Pond 41 discharge to a subsurface contact cooling trench.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including extended detention; inlet forebay and vegetative lining; and overflow weir. Discharge control provided via a perforated outlet control structure and orifice plate into a manhole connected to a cooling trench (quality control).

10279320, 10279319, 10279284 - SWM Wet Pond to Cooling Trench

Location	616 SALZBURG DR, 43.4615,-80.5828
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5823,43.4618
Catchment Area	18.1 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature
Level of Volume control	25 mm storm event.
Design Storm	Quantity: 2, 5-yr storm; Quality: 25 mm storm
Reference ECA(s)	8430-AJ8UDA
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Cooling Trench Gallery**	Subsurface contact cooling trench (receiving runoff from SWM Wet Pond 41) designed to attenuate the peak extended detention release rate of 0.009 m3/s for 1.0 hr prior to discharge to the watercourse.
Brief Description of each component of treatment train:	SWM Wet Pond, including one inlet, one outlet, forebay and overflow weir.

SWM Wet Pond	
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Cooling trench gallery dimensions: 22.5 m long x 2 m wide x 1.85 m deep. Including a maintenance hole at the downstream end of the trench with a 200 mm diameter subdrain inlet and a 250 mm diameter pipe outlet to the watercourse.

10081172 - Pond ID: 42 - Beaver Creek Stormwater Management Area Wet Pond

Location	-80.5825, 43.4738
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	-80.5816, 43.4736
Catchment Area	34.9 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature, phosphorous, bacteria.
Level of Volume control	Extended detention (quality) = 4,500 m3; total storage = 18,840
Design Storm	Quantity: 25 mm, 2, 5, 10, 100-yr and regional storm; Quality: 25 mm storm
Reference ECA(s)	3-0379-98-006
Reference Works as part of treatment train	SWM wet pond receive discharge from: - Roadway infiltration galleries (multiple asset IDs) - Two OGSs (asset ID 10080661 and 10080608) SWM wet pond discharge to: - Exfiltrating/filtration galleries
Brief Description	SWM wet pond receive pre-treated runoff from infiltration galleries on the west side and two OGS (STC-750 - Ceptor ID 114 and STC-1500 - Ceptor ID 49) on the east side. Pond discharge via an outlet structure comprising of a perforated pipe system with five exfiltrating/filtration galleries, outletting to a swale within the existing natural wetland area.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Wet pond include emergent and submerged vegetation (wetland); four inlets, one a concrete headwall with energy dissipation blocks discharging to a plunge pool and then to a sediment forebay; outlet control structures; and, emergency overflow spillways.

Multiple Asset IDs - Infiltration Galleries (Roadway) to SWM Wet Pond

Location	43.4738,-80.5825
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	-80.5827,43.4731
Catchment Area	34.9 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature, phosphorous, bacteria, DO, oil
Level of Volume control	Receive discharge from roadway catch basins (and storm connection from sumps) of approx. 2500m3 of storm runoff from a 25mm / 3 hr. duration storm (first flush).
Design Storm	Quantity: 25 mm, 2, 5, 10, 100-yr and regional storm; Quality: 25 mm storm
Reference ECA(s)	3-0379-98-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Galleries**	Infiltration galleries (under roadway) receive runoff generated from Brookmill Cres., Beaverwood St. and Brookmill Pl. discharge to SWM Wet Pond 42 described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond 42, including 4 inlets, one outlet structure (exfiltration galleries), and emergency overflow.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Infiltration galleries comprising of a perforated 200 mm diameter pipe in sand/gravel trench approx. 2.7m wide by 0.8m long (min.) and approx. 1 m deep, located within the roadway, with overflow from catch basins directed to the storm sewers. Major storm runoff (over 25 mm / 3 hr. storm) bypassed to SWM wet pond.

10080661 and 10080608 - OGS (2 units) to SWM Wet Pond

Location	-80.5809,43.4744 & -80.5806,43.4735
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	OGS (Ceptor ID 114): 501 Beaver Creek Rd - 80.5809,43.4744 OGS (Ceptor ID 49): 439 Beaver Creek Rd - 80.5804,43.4736
Catchment Area	34.9 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Oil, pollutants

Level of Volume control	OGS (Ceptor ID 114) capacity = 3,410 L OGS (Ceptor ID 49) capacity = 6,820 L
Design Storm	Quality: 25 mm storm
Reference ECA(s)	3-0379-98-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS - STC-750 (Ceptor ID 114) OGS – STC-1500 (Ceptor ID 49) Both discharge to SWM wet pond (ID 42) described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond 42, including 4 inlets, one outlet structure (exfiltration galleries), and emergency overflow.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

10279315, 10279316, 10279317, 10279318 - SWM Wet Pond to Infiltration Galleries (Exfiltration/Filtration Galleries)

Location	43.4738,-80.5825
Watershed/Subwatershed	Grand River/LAUREL CREEK RESERVOIR
Receiver of discharge	Discharge to Laurel Creek Reservoir
Outlet location	-80.5817,43.4738
Catchment Area	34.9 ha
Level of Treatment for suspended solids	Level 2
Treatment for other contaminants, as required	Water temperature, phosphorous, bacteria.
Level of Volume control	--
Design Storm	Quantity: 25 mm, 2, 5, 10, 100-yr and regional storm; Quality: 25 mm storm
Reference ECA(s)	3-0379-98-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Galleries**	Pond discharge via an outlet structure comprising of a perforated pipe system with five exfiltrating galleries, each gallery consisting of a perforated pipe wrapped in geotextile fabric and embedded in a sand trench, outletting to a swale within the existing natural wetland area.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond 42, including 3 inlets, one outlet structure (exfiltration galleries), and emergency overflow.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Four of the galleries consist of a 200 mm perforated pipe wrapped in geotextile fabric and embedded in a sand trench.

	Water that does not infiltrate discharge to a clear stone mound/contact area which provides erosion protection and cooling opportunity. The perforated pipe in the fifth gallery is configured such that it outlets at the permanent pond. Peak flow discharge from the facility to the infiltration galleries is controlled by the outlet structure of the SWM facility. The design outflow from the 25 mm storm exfiltrate into the sand filter. Flows in excess of the 25 mm storm outflow outlet via the free flowing fifth gallery pipe.

10081169 - Pond ID: 43 - Brandenburg Stormwater Management Area Wet Pond

Location	570 AVIGNON PL, -80.5775, 43.4523
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5781,43.4529
Catchment Area	57.62 ha (and an additional area of 3.56 ha with contributing drainage of storm sewerage only)
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature, DO, phosphorous and bacteria.
Level of Volume control	Permanent pool = 1,824 m3; extended detention active storage = 4,783 m3; maximum active storage = 19,393 m3
Design Storm	Quantity: 100-yr and Regional storm; Quality: 25 mm storm up to the 2 year storm.
Reference ECA(s)	4444-4VVL2S
Reference Works as part of treatment train	Cooling contact trench with an outfall.
Brief Description	A cooling and partial exfiltration gallery and an overland channel including a rip-rap check dam to enhance infiltration.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including extended detention: two inlet structures (an additional proposed inlet structure future installation); an overland inlet channel, three deeper forebay micro pools within a main basin including two dividing berms with a defined low flow path, and an outlet structure with outlet sedimentation micro pool. Detention times in excess of six days; over controlled by the orifice in conjunction with an outflow pipe. Excess flow released via an overflow weir; discharging to or by-passing.

Asset ID 10065552 - SWM Wet Pond to Cooling Contact Trench with an Outfall

Location	570 AVIGNON PL, 43.4523,-80.5775
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5783,43.453
Catchment Area	57.62 ha (and an additional area of 3.56 ha with contributing

	drainage of storm sewerage only)
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature, DO, phosphorous and bacteria.
Level of Volume control	Trench storage capacity approx. 68.4 cubic meters
Design Storm	Quality: 25 mm storm up to the 2 year storm
Reference ECA(s)	4444-4VVL2S
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Cooling Contact Trench with an Outfall**	A cooling and partial exfiltration gallery including two catch basin structures and perforated pipes; and an overland channel including a rip-rap check dam to enhance infiltration.
Brief Description of each component of treatment train: **SWM Wet Pond**	Description of SWM Wet Pond, including [X] inlets, [X] outlets, emergency overflow route
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The trench provides for the 25 mm storm design event, a storage capacity of approx. 68.4 m3, retention time of approx. one hour and a peak release rate of 0.019 m3/s and for conveyance of excess runoff via an outlet structure.

10081140 - Pond ID: 45 - Columbia Forest Stormwater Management Area Wet Pond

Location	641 COLUMBIA FOREST BLVD, -80.5854, 43.4635
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek Tributary
Outlet location	-80.5849, 43.4631
Catchment Area	54.81 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Phosphorus, water temperature, bacteria, oil.
Level of Volume control	Permanent pool = 6,925 m3; extended detention storage = 880 m3.; 100-yr detention storage in excess of other conditions = 9,500 m3. Total extended detention = 12,450 m3; Regional Storage = 15,000 m3
Design Storm	Quantity: 2, 5, 10, 25 100-yr storm; Quality: 20 mm, 100-yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	OGS (asset ID 10080639) to Infiltration Gallery (asset ID 102211-12,14,17, 18, 20, 21 and 25) to SWM Pond 45; and a second OGS (asset ID 1080646 - Ceptor ID 44) to SWM Pond 45.
Brief Description	Additional infiltration galleries to infiltrate the first 20 mm of

	runoff to meet infiltration targets. An oil/grit separator pre-treat all storm flows prior to infiltration galleries and another A second OGS pre-treat runoff prior to SWM pond.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including two inlets and one outlet, forebay and an emergency overflow spillway. Permanent pool area is 0.3 m deep. Excess detention storage (100-yr) releases over a 48 hr period. On-line Regional Storm control provided via two facilities this one and one upstream. We do not have a copy of the ECA.

Asset ID 10080646 OGS to SWM Wet Pond

Location	641 COLUMBIA FOREST BLVD, 43.4635,-80.5854
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek Tributary
Outlet location	-80.587,43.4631
Catchment Area	--
Level of Treatment for suspended solids	Level 2 (Normal at end of treatment train.
Treatment for other contaminants, as required	Oil, pollutants.
Level of Volume control	--
Design Storm	--
Reference ECA(s)	
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS (STC-1500, Ceptor ID 44): receives runoff generated from 776 Butternut Ave to 871 Butternut Ave and discharges to the SWM wet pond described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including two inlets and one outlet, forebay and an emergency overflow spillway. Permanent pool area is 0.3 m deep.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	We do not have a copy of the ECA.

Asset ID 10080639 - OGS to Infiltration Gallery

Location	641 COLUMBIA FOREST BLVD, -80.5897,43.4631
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek Tributary
Outlet location	-80.5892, 43.4630
Catchment Area	--
Level of Treatment for suspended solids	Level 2 at the end of treatment train.

Treatment for other contaminants, as required	Oil, pollutants.
Level of Volume control	--
Design Storm	--
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS (STC-4000, Ceptor ID 45): receives runoff generated from Columbia Forrest Blvd from Columbia Forrest Crt. to Mountain Maple Ave (no runoff contribution) including runoff from Grey Alder Crt. and Black Cherry St. and discharges to the Infiltration Gallery described below.
Brief Description of each component of treatment train: **Infiltration Gallery**	Receives treated runoff from OGS (STC-1500, Ceptor ID 44) and discharges to SWM wet pond 42.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	We do not have a copy of the ECA.

10221112, 10221114, 10221117, 10221118, 10221120, 10221121 and 10221125 - Infiltration Gallery to SWM Wet Pond

Location	641 COLUMBIA FOREST BLVD, 43.4635, -80.5854
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek Tributary
Outlet location	-80.5892, 43.4630
Catchment Area	1.5 ha
Level of Treatment for suspended solids	Level 2 (Normal) at the end of treatment train.
Treatment for other contaminants, as required	Phosphorus, water temperature, bacteria.
Level of Volume control	Total trench volume = 560 m3
Design Storm	Quality: 20mm storm.
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Gallery**	Receives treated runoff from OGS (STC-1500, Ceptor ID 44) and discharges to the SWM wet pond described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including two inlets and one outlet, forebay and an emergency overflow spillway. Permanent pool area is 0.3 m deep.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Gallery dimensions 1.5 m high x 35 m long x 11 m wide with seven 150 mm dia. lateral perforated pipes with a 1.5 m spacing distribute runoff through the gallery.

	We do not have a copy of the ECA.

10081116: Pond ID: 48 - Trillium Valley Park Stormwater Management Area A Wet Pond

Location	369 GATESTONE BLVD, -80.5733, 43.4657
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5719,43.4654
Catchment Area	76.7 ha
Level of Treatment for suspended solids	Normal Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	--
Design Storm	Quantity: 5, 100-yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	We do not have a copy of the ECA or the SWM Report.

10081134: 49 - Waterloo Service Centre Stormwater Management Area Wet Pond

Location	265 LEXINGTON CRT, -80.5114, 43.4892
Watershed/Subwatershed	Grand River/LOWER LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.5116,43.4889
Catchment Area	6.3 ha
Level of Treatment for suspended solids	Normal Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool = 1,750 m3
Design Storm	Quantity: 5, 100-yr storm.
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	We do not have a copy of the ECA.

10081136 - Pond ID: 50 - Forwell Park Stormwater Management Area a Wet Pond

Location	50 FORWELL CREEK RD, -80.5217, 43.4864
Watershed/Subwatershed	Grand River/FORWELL CREEK
Receiver of discharge	Discharge to Forwell Creek
Outlet location	-80.5217, 43.4861
Catchment Area	76.7 ha
Level of Treatment for suspended solids	Normal Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	--
Design Storm	Quantity: X-yr storm; Quality: X-yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Pond shape area = 6,262.07 m2. We do not have a copy of the ECA or the SWM Report.

10081120 - Pond ID: 51 - Rosewood Stormwater Management Area Wet Pond

Location	698 SALZBURG DR, -80.5871, 43.4623
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5864,43.4626
Catchment Area	17.40 ha
Level of Treatment for suspended solids	Level 3 (Enhanced) at end of treatment train.
Treatment for other contaminants, as required	Water temperature, oil, pollutants.
Level of Volume control	Total storage volume = 7,892 m3; permanent storage (quality) = 689 m3 and extended detention storage (quality) = 2,588 m3
Design Storm	Quantity: 2, 5, 25,100-yr storm; Quality: 100-yr storm
Reference ECA(s)	5528-4KWNLW
Reference Works as part of treatment train	- OGS to SWM Wet Pond. - SWM Wet Pond to Upwelling Trench.
Brief Description	- A Stormceptor STC-750 (asset ID 10080570 – Ceptor ID 24) at the inlet pipe to the swm facility. - An upwelling trench (asset ID 10250145) on the eastern side of the facility to enhance infiltration.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one inlet; a 30m long x 1m depth sediment forebay; an infiltration gallery below the swm wet pond (25m long, 7m wide, 0.5m deep), consisting of a dual vertical perforated riser

	connected to two perforated pipes fitted with gate valves and installed within the stone gallery; two hickenbottom structures at the outlet; an upwelling trench; and a 10 m wide emergency overflow weir convey flows exceeding 100-yr storm over 48 hrs. At-source rooftop runoff (25mm) infiltration (soakaway pits).

10080570 – OGS to SWM Wet Pond

Location	698 SALZBURG DR, 43.4623,-80.5871
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5878,43.4623
Catchment Area	13.75 ha
Level of Treatment for suspended solids	Level 1; Level 3 at end of treatment train.
Treatment for other contaminants, as required	Oil, pollutants.
Level of Volume control	--
Design Storm	Quantity: up to 100-yr storm; Quality: -- -yr storm
Reference ECA(s)	5528-4KWNLW
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: OGS	Stormceptor STC-750 (asset ID 10080570 – Ceptor ID 24) receives runoff generated from 636 Salzburg Dr. to 732 Salzburg Dr. and discharges to the SWM wet pond described below.
Brief Description of each component of treatment train: SWM Wet Pond	SWM Wet Pond, including one inlets, two outlets, a permanent pool subsurface infiltration gallery and an emergency overflow. Discharging to a upwelling trench before final discharge into the watercourse.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

Asset ID 10250145 – SWM Wet Pond to Upwelling Trench

Location	698 SALZBURG DR, 43.4623,-80.5871
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5864,43.4626
Catchment Area	9.73 ha
Level of Treatment for suspended solids	Level 3 (Enhanced) at end of treatment train.
Treatment for other contaminants, as required	Water temperature, oil, pollutants.
Level of Volume control	--
Design Storm	Quantity: up to 100-yr storm; Quality: -- -yr storm
Reference ECA(s)	5528-4KWNLW
Reference Works as part of	--

treatment train	
Brief Description of each component of treatment train: **Upwelling Trench**	Upwelling Trench at the swm facility outlet to minimize erosion due to point discharges.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond 51, including one inlets, two outlets, a permanent pool subsurface infiltration gallery and an emergency overflow. Discharging to a upwelling trench before final discharge into the watercourse.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	A 450 mm diameter storm pipe outlet extends 15m from swm wet pond outlet structure to a 6m - 450 mm diameter PVC perforated pipe within the stone upwelling trench. Including a 10 m overflow weir, a maintenance access and a valve box.

10081112 - Pond ID: 52 - Cedar Bend Stormwater Management Area Wet Pond

Location	764 CEDAR BEND DR, -80.5917, 43.4772
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Monastery Creek
Outlet location	-80.5924, 43.4784
Catchment Area	6.1 ha
Level of Treatment for suspended solids	Enhanced Level
Treatment for other contaminants, as required	Water Temperature
Level of Volume control	Total extended detention = 2,239 m3; extended detention (quality) = 305 m3.
Design Storm	Quantity: 2 through 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	3647-4J6JMN
Reference Works as part of treatment train	Infiltration Galleries (multiple asset IDs under Cedar Bend Dr. roadway and asset IDs 10065929, 10066307,10066308 adjacent to pond)
Brief Description	Infiltration gallery system under Cedar Bend Dr. roadway and adjacent to swm facility discharging into SWM wet pond 52.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sediment forebay; infiltration galleries; one inlet; one outlet with controlled discharge via an outlet and spreader swale. Sediment accumulation capacity = 7 years. Discharge to an outlet swale, which terminates at a 15.0 m long spreader swale. At-source rooftop runoff infiltrated through soakaway pits.

Asset IDs 10065929, 10066307,10066308 (adjacent to pond) - Infiltration Galleries to SWM Wet Pond

Location	764 CEDAR BEND DR, 43.4772,-80.5917
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Monastery Creek
Outlet location	-80.5921,43.4767
Catchment Area	6.1 ha
Level of Treatment for suspended solids	Level 2; enhance level (level 3) at end of treatment train.
Treatment for other contaminants, as required	Water temperature
Level of Volume control	25 mm storm
Design Storm	Quantity: 2 through 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	3647-4J6JMN
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Galleries**	Infiltration Galleries located under Cedar Bend Dr. roadway and adjacent to SWM facility discharges to the SWM wet pond described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including sediment forebay; infiltration galleries; one inlet; and, one outlet with controlled discharge.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	A perforated pipe (with geotextile sock) located near the bottom of the gallery to convey stormwater downstream through the system, outletting near the outlet for the SWM basins. Throughout the development, clean-outs connected to the infiltration gallery pipe to allow for flushing.

10081113 - Pond ID: 53 - Creekside Stormwater Management Area 1 Wet Pond

Location	550 LAURELWOOD DR, -80.592, 43.4745
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Monastery Creek
Outlet location	-80.5942,43.4758
Catchment Area	15 ha
Level of Treatment for suspended solids	Enhanced Level
Treatment for other contaminants, as required	Phosphorus, water temperature, COD, Sodium, Aluminum, Sulphur and Sulphate.
Level of Volume control	Permanent pool storage = 1,000 m3; extended detention = 990 m3; total storage = 17,325 m3 during regional storm event.
Design Storm	Quantity and Quality: 2 through 100-yr storm.
Reference ECA(s)	7100-AUWVQ7 and 2393-7H4LUA
Reference Works as part of	Infiltration Galleries (multiple asset IDs) Werni Crt., Creekside

treatment train	Dr., and Birtchmount Dr.
Brief Description	Infiltration gallery system under Werni Crt., Creekside Dr. and Birchmount Dr. roadways discharging into SWM wet pond 53.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including sediment forebay; a main wet stormwater detention cell; 3 inlets channels; one outlet structure with an additional outlet for flows greater than the 100-yr storm; and perimeter infiltration from the east side inlet up to the outlet and down to the west side inlet (200mm solid infiltration pipes). Coagulant addition: Water Lynx blocks (linked in series) positioned at each of the three inlet structures in the manholes upstream to aid in settling out sediment particles. Addition of Soil Lynx 398 (chemical) on the pond sediment during pond cleaned out. At-source rooftop runoff infiltrated through soakaway pits.

Multiple Asset IDs – Infiltration Galleries to SWM Wet Pond

Location	550 LAURELWOOD DR, 43.4745,-80.592
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Monastery Creek
Outlet location	-80.5934,43.4752 -80.5933,43.4756
Catchment Area	Approx. 3.4 ha
Level of Treatment for suspended solids	Enhance Level
Treatment for other contaminants, as required	Water temperature
Level of Volume control	25mm storm event
Design Storm	Quality: 25 mm storm
Reference ECA(s)	2393-7H4LUA
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Galleries**	Infiltration Galleries located under Werni Crt., Creekside Dr. and Birchmount Dr. and discharges to the SWM wet pond described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	A main wet stormwater detention cell; detention forebay; 3 inlets channels; one outlet.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Infiltration gallery system approx. 270m long, 2.5m wide under Werni Crt. and Creekside Drive with 200mm to 525mm dia.; and infiltration gallery under Birchmount Dr. All with overflow pipe networks within the infiltration trench under the roadways to intercept and discharge stormwater into manholes discharging into SWM wet pond.

10081152 - Pond ID:54 - Lion's Gate Stormwater Management Area Wet Pond

Location	200 THE LION'S GATE, -80.5497, 43.4685
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.5942,43.4758
Catchment Area	8.13 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Total storage = 3,900 m3.
Design Storm	Quantity: 2 to 100-yr storm; Quality: 20 mm storm
Reference ECA(s)	1014-4S5PMJ
Reference Works as part of treatment train	OGS (asset ID 10080508 – Ceptor ID 61) to SWM Wet Pond 54.
Brief Description	OGS (STC 3000) to serve all the property except the rear area of lots with rear infiltration trench.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one inlet; one outlet with controls for low and high outflows; and, an emergency overflow. The runoff from the 1:5 year storm event conveyed by local storm sewer system to the end-of-pipe facility. At-source rooftop runoff infiltration: soakaway pits at the front and infiltration trenches (shallow grassed swales) at the back of the properties.

Asset ID 10080508 – OGS to SWM Wet Pond

Location	200 THE LION'S GATE, 43.4685,-80.5497
Watershed/Subwatershed	Grand River/MIDDLE LAUREL CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.5499,43.4684
Catchment Area	7.5 ha (approx.)
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Oil, pollutants.
Level of Volume control	--
Design Storm	Quality: 25 mm storm
Reference ECA(s)	1014-4S5PMJ
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS (STC 3000 – Ceptor ID 61) receives runoff generated from The Lion’s Gate and Lion’s Crt. and discharges to the SWM wet pond described below.
Brief Description of each	SWM Wet Pond, including one inlet, one outlet, and emergency overflow.

component of treatment train: **SWM Wet Pond**	
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	OGS to serve to serve all the property except the rear area of lots with rear infiltration trench. Remove suspended solids and provide end-of-pipe quality control.

10081180 - Pond ID: 55 - Churchill Stormwater Management Area Wet Pond)

Location	26 FISCHER-HALLMAN RD N 24B, -80.5543, 43.4555
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	43.4558, -80.5539
Catchment Area	5.15 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool (quality) =180 m3; extended detention = 181 m3; total storage = 785 m3
Design Storm	Quantity: 2, 5, 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	7757-4L4JAX
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including two inlets; one outlet; extended detention storage with a 600 mm dia. nested CSP riser with a 50 mm dia. orifice plate (to provide over 100 hrs. of extended detention for the 25 mm storm); and an overflow structure, providing water quantity control through a1800 mm diameter manhole fitted with a 225 mm orifice plate. Runoff from over 5-yr storms travel overland a low point on Reiber Crt. where flows are captured by 2 sets of double catch basins and routed to the SWM pond through a 750 mm dia. pipe.

10081125 - Pond ID: 56 - Tealby Stormwater Management Area Wet Pond

Location	312 TEALBY CRES, -80.5228, 43.4894
Watershed/Subwatershed	Grand River/FORWELL CREEK
Receiver of discharge	Discharge to Forwell Creek
Outlet location	-80.5231,43.4884
Catchment Area	25.55 ha
Level of Treatment for suspended solids	Level 2 (Normal)

Treatment for other contaminants, as required	Water temperature, DO, phosphorous and bacteria.
Level of Volume control	Detention pond = 3,640 m3.
Design Storm	Quantity and Quality: 2-yr storm.
Reference ECA(s)	3-0368-99-006
Reference Works as part of treatment train	OGS (asset ID 10080651) to SWM Wet Pond 56
Brief Description	Flows to the pond pass trough an OGS STC-6000 (Ceptor ID 206) before entering the pond.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one inlet; one outlet, permanent pool; an extended detention consisting of a 0.45 m infiltration zone above the permanent pool depth (1.5m from the pool's bottom) built into the sideslopes around the swm pond; and, an emergency spillway. Outflows discharged through an infiltration gallery placed around the northern half perimeter of the pond. Flows greater than 2-yr storm directed through an outlet sewer into the watercourse.

10080651 – OGS to SWM Wet Pond

Location	312 TEALBY CRES, 43.4894,-80.5228
Watershed/Subwatershed	Grand River/FORWELL CREEK
Receiver of discharge	Discharge to Forwell Creek
Outlet location	-80.5225,43.4893
Catchment Area	25.55 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Oil, pollutants.
Level of Volume control	2-yr storm
Design Storm	Quantity and Quality: 2-yr storm.
Reference ECA(s)	3-0368-99-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS (STC-6000 – Ceptor ID 206) receives runoff generated from 339 to 231 Dearborn Blvd., including Tealby Cres., Sleaford ST., Tealby Pl. and, 232 to 236 Holbeach Cres.; discharging to the SWM wet pond described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, including one inlet; one outlet, permanent pool; emergency spillway.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

10081188 - Pond ID: 57 - Forwell Park Stormwater Management Area B Wet Pond

Location	210B DEARBORN BLVD, -80.5191, 43.4864
Watershed/Subwatershed	Grand River/FORWELL CREEK
Receiver of discharge	Discharge to Forwell Creek
Outlet location	-80.5184, 43.4855
Catchment Area	5.18 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Water temperature, DO, phosphorous and bacteria.
Level of Volume control	Extended detention = 1,590; permanent pool = 400m3; total storage = 1,990 m3.
Design Storm	Quantity and Quality: 2-yr storm.
Reference ECA(s)	3-0368-99-006
Reference Works as part of treatment train	OGS (asset ID 10080551) to SWM Wet Pond 57.
Brief Description	Flows to the pond pass trough an OGS STC-6000 (Ceptor ID 52) before entering the pond.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one inlet: one outlet. Outflows go through a seepage outlet system consisting of clear stone encased 900mm perforated riser. Flows greater than 2-yr storm (above permanent pool) directed onto a grouted rip-rap open channel then into the watercourse. At-source rooftop infiltration (soakaway pit).

10080551 – OGS to SWM Wet Pond

Location	210B DEARBORN BLVD, 43.4864,-80.5191
Watershed/Subwatershed	Grand River/FORWELL CREEK
Receiver of discharge	Discharge to Forwell Creek
Outlet location	-80.5195,43.4866
Catchment Area	5.18 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	Oil, pollutants.
Level of Volume control	--
Design Storm	Quantity and Quality: 2-yr storm.
Reference ECA(s)	3-0368-99-006
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **OGS**	OGS (STC-6000 – Ceptor ID 52) receives runoff generated from 236 to 212 Dearborn Blv., including 223 to 230 Holbeach Cres, Holbeach Crt., Casswell Crt., and discharges to the SWM wet pond described below.
Brief Description of each	SWM Wet Pond, including one inlet, one outlet; a seepage and emergency overflow seepage system (2-yr storm).

component of treatment train: **SWM Wet Pond**	
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	--

10081128 - Pond ID:58 - Forest Gate Stormwater Management Area Wet Pond

Location	575 FOREST GATE CRES, -80.5974, 43.4775
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.5969, 43.4777
Catchment Area	5.9 ha
Level of Treatment for suspended solids	Enhanced Level
Treatment for other contaminants, as required	Water temperature, phosphorous, oil grit, bacteria.
Level of Volume control	Total capacity = 2,680 m3; permanent pool = 381 m3; extended detention = 980 m3
Design Storm	Quantity: 25 mm, 2 through 100-yr storm, Regional storm; Quality: 25 mm storm
Reference ECA(s)	2272-5R2H3W
Reference Works as part of treatment train	Infiltration trenches (multiple asset IDs) under Forest Gate Cres. Roadway.
Brief Description	First flush runoff (including lot sump pumps) discharge to dedicated infiltration trenches below the storm sewer system and to SWM Wet Pond 58.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one inlet; one outlet with capacity to provide extended detention; sediment forebay; and, emergency overflow structure. All foundation drainage collected and discharged to the infiltration system constructed below the storm sewer system. Surface runoff collected through a network of interconnected catchbasins equipped with goss traps discharging into the infiltration trenches.

Multiple Asset ID (Forest Gate Cres.) – Infiltration Trenches (roadway) to SWM Wet Pond

Location	575 FOREST GATE CRES, 43.4775,-80.5974
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Laurel Creek
Outlet location	-80.5978,43.4772
Catchment Area	5.9 ha
Level of Treatment for suspended solids	Enhanced Level
Treatment for other	Water temperature, phosphorous, oil grit, bacteria.

contaminants, as required	
Level of Volume control	2 hr., 25 mm storm.
Design Storm	Quantity: 25 mm, 2 through 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	2272-5R2H3W
Reference Works as part of treatment train	--
Brief Description of each component of treatment train: **Infiltration Trenches**	Infiltration trenches under roadway receives runoff collected from foundation drainage (sump pumps) and roadway from 500 to 573 Forest Gate Cres.; discharging to the SWM wet pond described below.
Brief Description of each component of treatment train: **SWM Wet Pond**	SWM Wet Pond, Including one inlet; one outlet with capacity to provide extended detention; sediment forebay; and, emergency overflow structure.
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	The road drainage systems direct the first flush runoff volume to a single infiltration gallery in each drainage area (after pre-treatment in catchbasins equipped with goss traps) located within the road allowance. During events larger than the 25 mm storm, a catchbasin lead direct larger peak flows to the storm sewers that discharge to the swm wet pond. The infiltration trenches, are comprised of an upper layer of clear stone wrapped in geotextile fabric to provide initial cooling and storage prior to percolation through the lower layer of coarse sand for further cooling and sediment removal.

10081189: Pond ID: 59 - Creekside Stormwater Management Area 2 Wet Pond

Location	625 WIDEMAN RD, -80.5988, 43.4736
Watershed/Subwatershed	Grand River/MONASTERY CREEK
Receiver of discharge	Discharge to Wideman Creek
Outlet location	-80.5986,43.4749
Catchment Area	47.6 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent storage = 8,825 m3; active storage = 12,027 m3 (at an elevation of 0.7 metres for quality control)
Design Storm	Quantity and Quality: 2 through100-yr storm.
Reference ECA(s)	8103-5G4K9T
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Conveyance of stormwater to the swm pond by a system of storm sewers (5-yr event) and overland flows from the road

	network (major storm). Including 2 inlets, sediment forebay, a wet pond, a micropool, emergency spillway; one outlet with a bottom draw pipe discharging to a ditch on Wideman Road and then to the watercourse. At-source rooftop (11.50 ha) and road runoff (1.80ha) infiltration galleries (lot soakaway pits) – part of treatment train but not tributary to the swm facility.

10081122 - Pond ID: 62 - RIM Park Stormwater Management Area C Wet Pond

Location	680 WOOLWICH ST N, -80.4969, 43.5176
Watershed/Subwatershed	Grand River/GRAND RIVER TRIBUTARIES NORTH
Receiver of discharge	Discharge to Critter Creek
Outlet location	-80.4974,43.5173
Catchment Area	13.3 ha
Level of Treatment for suspended solids	Level 2 (Normal)
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool volume of approx. 380 m3; extended detention volume of approx. 1,085 m3.
Design Storm	Quantity: 25mm to 100-yr storm; Quality: 25 mm storm
Reference ECA(s)	8127-4M8JT8
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Includes an inlet structure, forebay, wetland component and an outlet structure (with a perforated riser, rip-rap, orifice plate, discharge pipes and overflow weir). Receive flow from SWM Pond ID 29 via a drainage swale that hydraulically connects the two facilities.

10081142: Pond ID: 64 - Anndale Park Stormwater Management Area 2 Wet Pond

Location	582 HALLMARK DR, -80.5243, 43.501
Watershed/Subwatershed	Grand River/COLONIAL CREEK
Receiver of discharge	Discharge to Colonial Creek
Outlet location	-80.5241, 43.501
Catchment Area	-- ha
Level of Treatment for suspended solids	Normal Level (assumed)
Treatment for other contaminants, as required	--
Level of Volume control	--
Design Storm	Quantity: 5, 100-yr storm; Quality: ---yr storm
Reference ECA(s)	--
Reference Works as part of treatment train	--

Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including one inlet; one outlet with infiltration system before discharging into the watercourse (perforated pipe surrounded by clear crushed stone wrapped with filter cloth); and, an emergency spillway. We do not have a copy of the ECA or the SWM Report

10081192: Pond ID - 65 - Westcroft Stormwater Management Area Wet Pond

Location	451 WESTHAVEN ST, -80.5655, 43.4457
Watershed/Subwatershed	Grand River/MAPLE HILL CREEK
Receiver of discharge	Discharge to Maple Hill
Outlet location	-80.5558,43.4479
Catchment Area	23.6 ha
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--
Level of Volume control	Permanent pool = 2,080 m3; extended detention = 1,667 m3; peak pool volume = 18,914 m3
Design Storm	Quantity and Quality: 2 through 100-yr storm.
Reference ECA(s)	7951-6GERAM
Reference Works as part of treatment train	--
Brief Description	---
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Including a sediment forebay; one grated inlet catchbasin complete with one 350mm diameter high-flow orifice to finally discharge into to a 525mm diameter storm outlet connected to the storm sewer. One outlet: perforated CSP riser to discharge into a one vertical and one horizontal orifices fitted with a 450mm diameter outlet pipe; and, a overflow spillway ischarge onto a 4m wide asphalt lined overland flow/maintenance access easement and to watercourse.

10278903: Pond ID: 104 – SWM Area Wet Pond

Location	ERB ST W, -80.583, 43.448
Watershed/Subwatershed	Grand River/CLAIR CREEK
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5784,43.4531
Catchment Area	76.7
Level of Treatment for suspended solids	Normal Level
Treatment for other contaminants, as required	--

Level of Volume control	Permanent pool = 8,599 m3; extended detention = 2,896 m3 (required volume); total storage = 87,915 m3 (includes dead and active storage)
Design Storm	Quantity: 2 to 100-yr storm; Quality: 25mm storm
Reference ECA(s)	3208-BMTHT4
Reference Works as part of treatment train	--
Brief Description	--
Receive Emergency Sanitary Overflows	No
Notes / Additional Information	Include a sediment forebay, one inlet, and three outlets discharging to a manhole. Permanent pool total depth = 7.0m. Maximum discharge of 0.686 cubic metres per second for the 100-yr storm.

Stormwater Pumping Stations

1.5 The following are identified Stormwater pumping stations in the Authorized System:

N/A

Asset ID and Name	N/A
Site Location	
Watershed/Subwatershed	
Latitude and Longitude	
Coordinates (optional)	
Description	
Pumping Station Capacity	
Equipment	
Emergency Storage	
Equipment: Associated controls and Appurtenances	
Overflow	
Standby Power	
Notes	

Third Pipe Collection System

1.6 The following are identified third pipe systems in the Authorized System.

Sundew Stormwater Management Area 1 B (Vista Hills Subdivision)

Asset ID and Name	Multiple asset IDs - Sundew Stormwater Management Area 1 B (Vista Hills Subdivision)
Location	Lady Slipper Dr from Buttonbush St. up to the pond, Lady Slipper Pl., Bullrush Crt., Mountain Holly Crt., Dewdrop Cres., Ginseng St., Sweet Gale St., and Buttonbush St.
Watershed/Subwatershed	Grand River/Clair Creek
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5939,43.4591
Catchment Area	29.74 ha
Treatment, if applicable	--
Reference ECA(s), if applicable	1914-AB8HNX
Brief Description	CWC System receives runoff generated from locations listed above and discharging into SWM Wet Pond ID 71
Notes	Installed in the road right-of-way. Consisting of 200 mm dia. perforated pipe with geotextile sock, bedded in 19 mm size clear stone having dimensions as 1.0 m x 1.0 m, wrapped in filter fabric, for collecting, infiltrating and/or conveying clean runoff from roofs and foundations drains

Sundew Stormwater Management Area 1 A (Vista Hills Subdivision)

Asset ID and Name	Multiple asset IDs - Sundew Stormwater Management Area 1 A (Vista Hills Subdivision)
Location	Wild Calla St., Twinleaf St., Avens St., Autum Willow Dr. Balsam Poplar St., Sundew Dr. from Balsam Poplar St., Canada Plum St., Walking Fern Crt., Mayapple St. Wood Lily ST., Waild Rye St., Indian Grass St., Rock Elm St., Pasture Rose St., Snowberry Crt., and Sundrops Crt.
Watershed/Subwatershed	Grand River/ Clair Creek
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5968, 43.4597
Catchment Area	56.81 ha
Treatment, if applicable	--
Reference ECA(s), if applicable	1914-AB8HNX
Brief Description	CWC System receives runoff generated from locations listed above and discharging into SWM Wet Pond ID 80.
Notes	Installed in the road right-of-way. Consisting of 200 mm dia. perforated pipe with geotextile sock, bedded in 19 mm size clearstone having dimensions as 1.0 m x 1.0 m, wrapped in filter fabric, for collecting, infiltrating and/or conveying clean runoff from roofs and foundations drains

Raspberry SWM A (Greyerbiehl Subdivision)

Asset ID and Name	Multiple asset IDs - Raspberry SWM A (Greyerbiehl Subdivision)
Location	Raspberry Pl. and Foamflower Pl.
Watershed/Subwatershed	Grand River/ Clair Creek & Monastery Creek
Receiver of discharge	Discharge to Clair Creek
Outlet location	-80.5854,43.4513
Catchment Area	11.23 ha
Treatment, if applicable	--
Reference ECA(s), if applicable	5718-8GQLXW
Brief Description	CWC System receives runoff generated from locations listed above and discharging into SWM Wet Pond ID 84.
Notes	Installed in the road right-of-way. Consisting of 200 mm diameter perforated pipe with geotextile sock, bedded in 19 mm size clearstone having dimensions as 1.0 m x 1.0 m, wrapped in filter fabric, for collecting, infiltrating and/or conveying clean runoff from roofs (up to 25mm rainfall event) and foundations drains.

Sundew Stormwater Management Area 2 (Clair Meadows Subdivision)

Asset ID and Name	Multiple asset IDs - Sundew Stormwater Management Area 2 (Clair Meadows Subdivision)
Location	Cinnamon Fern St., Beeachdrops Dr., and Chocecherry Cres.
Watershed/Subwatershed	Grand River/ Clair Creek
Receiver of discharge	Discharge to Clair Creek Tributary
Outlet location	-80.5937, 43.4553
Catchment Area	11.77 ha
Treatment, if applicable	--
Reference ECA(s), if applicable	7290-AAVKLC
Brief Description	CWC System receives runoff generated from locations listed above and discharging into SWM Wet Pond ID 78.
Notes	Installed in the road right-of-way. Consisting of 200 mm diameter perforated pipe with geotextile sock, bedded in 19 mm size clearstone having dimensions as 1.0 m x 1.0 m, wrapped in filter fabric, for collecting, infiltrating and/or conveying clean runoff from roofs (up to 25mm rainfall event) and foundations drains.

Other Works:

1.7 The following works are part of Authorized System:

Table B6: Other Works			
Column 1 Asset ID / Name	Column 2 Site Location (Latitude & Longitude)	Column 3 Component	Column 4 Description
N/A			

Developer-Operated Facilities:

1.8 The following facilities are part of the Authorized System, have been constructed, and are being operated by the developer under the authority of an agreement entered into with the Owner of the system.

Table B7: Developer-Operated Facilities			
Asset ID	Type of Facility	Location	Developer Name
N/A			

1.9 The Owner shall notify the Director, using the Director Notification Form, within thirty (30) days where the operation of any Facility identified in Table B7 has been:

1.9.1 Incorporated into the overall Stormwater Management System and assumed by an Operating Authority identified in Schedule B of this Approval.

1.9.2 Has been transferred from the developer identified in Table B7 to another party.

Transitional – Facilities with Individual ECAs

1.10 The following Facilities are connected to the Authorized System, but ownership has not been assumed by the Owner. These Sewage Works are not part of the Authorized System and will continue to have separate ECAs until the Facilities are assumed by the Owner.

Table B8: Facilities with Individual ECAs				
Asset ID	Type of Facility	Location	ECA Number	Developer Name
Pond ID 46	SWM Pond	628 Regal Pl, -80.6048, 43.4765	5029-9ARL32	Sunvest Development Corp.
Pond ID 71	SWM Pond	519 Walking Fern CRT, -80.5942, 43.4593	1914-AB8HNX	Activa Holdings Inc.

Table B8: Facilities with Individual ECAs				
Asset ID	Type of Facility	Location	ECA Number	Developer Name
Pond ID 72	SWM Pond	259 Sweet Gale St, -80.5942, 43.4492	5718-8GQLXW	Activa Holdings Inc.
Pond ID 77	SWM Pond	632 Regal Pl, -80.605, 43.4773	5029-9ARL32	Sunvest Development Corp.
Pond ID 78	SWM Pond	474 Twinleaf St, -80.5947, 43.4555	7290-AAVKLC	WM. J. Gies Construction Limited
Pond ID 79	SWM Pond	678 Meadowsweet Ave, -80.6054, 43.4721	0415-8A7NTQ	Doug Owen Construction Limited
Pond ID 80	SWM Pond	596 Sundew Dr, -80.5955, 43.4604	1914-AB8HNX	Activa Holdings Inc.
Pond ID 84	SWM Pond	551 St Moritz Ave, -80.5848, 43.4511	5718-8GQLXW	Activa Holdings Inc.
Pond ID 86	SWM Pond	410 Rideau River Pl, -80.5899, 43.4923	2259-6HLJZS	Activa Holdings Inc.
Pond ID 87	SWM Pond	410 Rideau River Pl, -80.5899, 43.4923	2259-6HLJZS	Activa Holdings Inc.
Pond ID 88	SWM Pond	410 Rideau River Pl, -80.5899, 43.4923	2259-6HLJZS	Activa Holdings Inc.
Pond ID 89	SWM Pond	217 Spring Garden Dr, -80.4907, 43.5235	0982-8FEP8Q	Activa Holdings Inc.
Pond ID 91	SWM Pond	-80.4893, 43.5213	0982-8FEP8Q	Activa Holdings Inc.
Pond ID 93	SWM Pond	219 Woolwich St, -80.4824, 43.4914	0207-8UQAU	Woolwich Estates Limited
Pond ID 94	SWM Pond	111 Steeplechase Way, -80.4848, 43.4979	2301-A4MKUY	1353843 Ontario Limited

1.11 The Owner shall notify the Director, using the Director Notification Form, within thirty (30) days where the ownership of any Facility identified in Table B8 has been assumed by the Owner.

1.12 The Director Notification required in condition 1.11 shall include:

1.12.1 A request from the developer to revoke the ECA identified in Table B8; or

1.12.2 A copy of an agreement or other documentation that demonstrates that the municipality has assumed ownership of the Facility and that the ECA identified in Table B8 should be revoked.

Schedule C: List of Notices of Amendment to this ECA: Additional Approved Sewage Works

System Owner	**Waterloo, The Corporation of the City of**
ECA Number	**112-S701**
System Name	**Waterloo Stormwater Management System**
ECA Issue Date	**February 8th, 2023**

1.0 General

1.1 Table C1 provides a list of all notices of amendment to this Approval that have been issued pursuant to clause 20.3(1) of the EPA that impose terms and conditions in respect of the Authorized System after consideration of an application by the Director (Schedule C Notices).

Table C1: Schedule C Notices

Column 1 Issue #	Column 2 Issue Date	Column 3 Description	Column 4 Status	Column 5 DN#
N/A	N/A	N/A	N/A	N/A

Schedule D: General

System Owner	**Waterloo, The Corporation of the City of**
ECA Number	**112-S701**
System Name	**Waterloo Stormwater Management System**
ECA Issue Date	**February 8th, 2023**

1.0 Definitions

1.1 For the purpose of this Approval, the following definitions apply:

"Adverse Effect(s)" has the same meaning as defined in section 1 of the EPA.

"Alteration(s)" includes the following, in respect of the Authorized System, but does not include repairs to the system:

a) An extension of the system,

b) A replacement or retirement of part of the system, or

c) A modification of, addition to, or enlargement of the system.

"Appendix A" means Appendix A of this Approval.

"Approval" means this Environmental Compliance Approval including any Schedules attached to it.

"Appurtenance(s)" has the same meaning as defined in O. Reg. 525/98 (Approval Exemptions) made under the OWRA.

"Authorized System" means the Sewage Works comprising the Municipal Stormwater Management System authorized under this Approval".

"Class Environmental Assessment Project" means an Undertaking that does not require any further approval under the EAA if the proponent complies with the process set out in the Municipal Engineers Association Class Environmental Assessment document, (Municipal Class Environmental Assessment approved by the Lieutenant Governor in Council on October 4, 2000 under Order in Council 1923/2000), as amended from time to time.

"Combined Sewer(s)" means pipes that collect and transmit both sanitary Sewage and other Sewage from residential, commercial, institutional, and industrial buildings and facilities and Stormwater through a single-pipe system, but does not include Nominally Separate Sewers.

“Completion” means substantial performance as described in s.2 (1) of the *Construction Act*, R.S.O. 1990, c. C.30.

“Compound of Concern” means a Contaminant that is discharged from the Facility in an amount that is not negligible.

“Contaminant” has the same meaning as defined in section 1 of the EPA.

“CSO” means a combined sewer overflow which is a discharge to the environment at designated location(s) from a Combined Sewer or Partially Separated Sewer that usually occurs as a result of precipitation when the capacity of the Sewer is exceeded. An intervening time of twelve hours or greater separating a CSO from the last prior CSO at the same location is considered to separate one overflow Event from another.

"CWA" means the *Clean Water Act*, R.S.O. 2006, c.22.

“Design Criteria” means the design criteria set out in the Ministry’s publication “Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval”, (as amended from time to time).

“Design Guidelines for Sewage Works” means the Ministry document titled “Design Guidelines for Sewage Works”, 2008 (as amended from time to time).

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of EPA (Environmental Compliance Approvals).

“Director Notification Form” means the most recent version of the Ministry form titled Director Notification – Alterations to a Municipal Stormwater Management System, as obtained directly from the Ministry or from the Ministry’s website.

"District Manager" means the district manager or a designated representative of the Local Ministry Office.

"EAA" means the *Environmental Assessment Act*, R.S.O. 1990, c. E.18.

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

“ESC” means erosion and sediment control.

“Facility” means the entire operation located on the property where the Sewage Works or equipment is located.

“Form SW1” means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Storm Sewers/Ditches/Culverts as obtained directly from the Ministry or from the Ministry’s website.

“Form SW2” means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Stormwater Management Facilities as obtained directly from the Ministry or from the Ministry’s website.

“Form SW3” means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Third Pipe Collection Systems as obtained directly from the Ministry or from the Ministry’s website.

"Licensed Engineering Practitioner” means a person who holds a licence, limited licence, or temporary licence under the *Ontario Professional Engineers Act* R.S.O. 1990, c. P.28.

"LID" means “low impact development” a Stormwater management strategy that seeks to mitigate the impacts of increased runoff and Stormwater pollution by managing runoff as close to its source as possible. LID comprises a set of site design strategies that minimize runoff and distributed, small scale structural practices that mimic natural or predevelopment hydrology through the processes of infiltration, evapotranspiration, harvesting, filtration, and detention of Stormwater.

“Local Ministry Office” means the local office of the Ministry responsible for the geographic area where the Authorized System is located.

"Minister" means the Minister of the Ministry or such other member of the Executive Council as may be assigned the administration of the EPA and OWRA under the *Executive Council Act*, R.S.O. 1990, c. E.25.

"Ministry" means the Ministry of the Minister and includes all employees or other persons acting on its behalf.

“Monitoring Plan” means the monitoring plan prepared and maintained by the Owner under condition 4.1 in Schedule E of this Approval.

“MTD” means manufactured treatment device.

“Municipal Drain” has the same meaning as drainage works as defined in section 1 of the *Drainage Act* R.S.O. 1990, c. D.17.

“Municipal Drainage Engineer’s Report” means a report signed by a drainage engineer employed or contracted by a municipality and approved in writing by municipal council or equivalent.

“Municipal Sewage Collection System” means all Sewage Works, located in the geographical area of a municipality, that collect and transmit sanitary Sewage and are owned, or may be owned pursuant to an agreement with a municipality entered into under the *Planning Act* or *Development Charges Act*, 1997, by:

a) A municipality, a municipal service board established under the *Municipal Act*, 2001 or a city board established under the *City of Toronto Act*, 2006; or

b) A corporation established under sections 9, 10, and 11 of the *Municipal Act*, 2001 in accordance with section 203 of that Act or under sections 7 and 8 of the *City of Toronto Act*, 2006 in accordance with sections 148 and 154 of that Act.

“**Municipal Stormwater Management System”** means all Sewage Works, located in the geographical area of a municipality, that collect, transmit, or treat Stormwater and are owned, or may be owned pursuant to an agreement entered into under the *Planning Act* or *Development Charges Act*, 1997, by:

a) A municipality, a municipal service board established under the *Municipal Act*, 2001 or a city board established under the *City of Toronto Act*, 2006; or

b) A corporation established under sections 9, 10, and 11 of the *Municipal Act*, 2001 in accordance with section 203 of that Act or under sections 7 and 8 of the *City of Toronto Act*, 2006 in accordance with sections 148 and 154 of that Act.

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

"Nominally Separate Sewer(s)" mean Separate Sewers that also have connections from roof leaders and foundation drains, and are not considered to be Combined Sewers.

“OGS” means Oil and Grit Separator(s);

“Operating Authority” means, in respect of the Authorized System, the person, entity, or assignee that is given responsibility by the Owner for the operation, management, maintenance, or Alteration of the Authorized System, or a portion of the Authorized System.

"Owner" for the purposes of this Approval means the Corporation of the City of Waterloo, and includes its successors and assigns.

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

“O&M Manual” means the operation and maintenance manual prepared and maintained by the Owner under condition 3.2 in Schedule E of this Approval.

"Partially Separated Sewer(s)" means Combined Sewers that have been retrofitted to transmit sanitary Sewage but in which roof leaders or foundation drains still contribute Stormwater inflow to the Partially Separated Sewer.

“Pre-development” means the more stringent of a site’s:

a) Existing condition prior to proposed development or construction activities; or

b) Condition as defined by the local municipality.

"Prescribed Person” means a person prescribed in O. Reg. 208/19 (Environmental Compliance Approval in Respect of Sewage Works) for the purpose of ss. 20.6 (1) of the EPA, and where the alteration, extension, enlargement, or replacement is carried out under an agreement with the Owner.

“**Privately Owned Stormwater Works”** means Stormwater Sewage Works on private land that are privately owned and, while not part of the Authorized System, are considered part of a Stormwater Treatment Train.

“Qualified Person (QP)” means persons who have obtained the relevant education and training and have demonstrated experience and expertise in the areas relating to the work required to be carried out by this Approval.

“Schedule C Notice(s)” means a notice(s) of amendment to this Approval issued pursuant to clause 20.3(1) of the EPA that imposes terms and conditions in respect of the Authorized System after consideration of an application by the Director.

“Separate Sewer(s)” means pipes that collect and transmit sanitary Sewage and other Sewage from residential, commercial, institutional, and industrial buildings.

“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.

“Sewer” has the same meaning as defined in section 1 of O. Reg. 525/98 under the OWRA.

"Significant Drinking Water Threat" has the same meaning as defined in section 2 of the CWA.

“Significant Snowmelt Event(s)” means the melting of snow at a rate which adversely affects the performance and function of the Authorized System and/or the Sewage Treatment Plant(s) identified in Schedule A of this Approval.

“Significant Storm Event(s)” means a minimum of 25 mm of rain in any 24 hours period.

“Source Protection Authority” has the same meaning as defined in section 2 of the CWA.

"Source Protection Plan" means a drinking water source protection plan prepared under the CWA.

“SSO” means a sanitary sewer overflow which is a discharge of Sewage from a Separate Sewer or Nominally Separate Sewer to the environment from designated location(s) in the Authorized System.

“Standard Operating Policy for Sewage Works” means the standard operating policy developed by the Ministry to assist in the implementation of Source Protection Plan policies related to Sewage Works and providing minimum design and operational standards and considerations to mitigate risks to sources of drinking water, as amended from time to time.

“Storm Sewer” means Sewers that collect and transmit, but not exfiltrate or lose by design, Stormwater resulting from precipitation and snowmelt.

“Stormwater” means rainwater runoff, water runoff from roofs, snowmelt, and surface runoff.

“Stormwater Management Facility(ies)” means a Facility for the treatment, retention, infiltration, or control of Stormwater.

“Stormwater Management Planning and Design Manual” means the Ministry document titled “Stormwater Management Planning and Design Manual”, 2003 (as amended from time to time).

“Stormwater Treatment Train” means a series of Stormwater Management Facilities designed to meet Stormwater management objectives (e.g., Appendix A) for a given area, and can consist of a combination of MTDs, LIDs and end-of-pipe controls.

“TRCA” means the Toronto Region Conservation Authority.

“Third Pipe Collection System” means Sewage Works designed to collect and transmit foundation drainage and/or groundwater to a receiving surface water or dry well;

"Undertaking" has the same meaning as in the EAA.

“Vulnerable Area(s)” has the same meaning as in the CWA.

2.0 General Conditions

2.1 The works comprising the Authorized System shall be constructed, installed, used, operated, maintained, replaced, or retired in accordance with the conditions of this Approval, which includes the following Schedules:

Schedule A – System Information

Schedule B – Municipal Stormwater Management System Description

Schedule C – List of Notices of Amendment to this ECA

Schedule D – General

Schedule E – Operating Conditions

Schedule F – Residue Management

Appendix A – Stormwater Management Criteria

2.2 The issuance of this Approval does not negate the requirements of other regulatory bodies, which includes but is not limited to, the Ministry of Northern Development, Mines, Natural Resources and Forestry and the local Conservation Authority.

2.3 Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence. Where there is a conflict between the information in a Schedule C Notice and another section of this Approval, the document bearing the most recent date shall prevail.

2.4 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Authorized System is provided with a print or electronic copy of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2.5 The conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

3.0 Alterations to the Municipal Stormwater Management System

3.1 For greater certainty, the Alterations authorized under this Approval are limited to Sewage Works comprising the Authorized System which does not include municipally or Privately Owned Stormwater Works:

3.1.1 On industrial, commercial, or institutional land;

3.1.2 Serving a single parcel of land, unless the stormwater management facility is located on a municipally owned park or community center;

3.1.3 That are operated as waste disposal sites defined under the EPA or snow dump / melt facilities; or,

3.1.4 That propose to collect, store, treat, or discharge stormwater containing substances or pollutants (other than Total Suspended Solids, or oil and grease) detrimental to the environment or human health.

3.2 Any Schedule C Notice shall provide authority to alter the Authorized System in accordance with the conditions of this Approval.

3.3 All Schedule C Notices issued by the Director for the Municipal Stormwater Management System shall form part of this Approval.

3.4 The Owner and a Prescribed Person shall ensure that the documentation required through conditions in this Approval and the documentation required in the Design Criteria are prepared for any Alteration of the Authorized System.

3.5 The Owner shall notify the Director within thirty (30) calendar days of placing into service or Completion of any Alteration of the Authorized System which had been authorized:

3.5.1 Under Schedule D to this Approval where the Alteration results in a change to Sewage Works specifically described in Schedule B of this Approval;

3.5.2 Through a Schedule C Notice respecting Sewage Works other than Storm Sewers; or

3.5.3 Through another approval that was issued under the EPA prior to the issue date of this Approval.

3.6 The notification requirements set out in condition 3.5 do not apply to any Alteration in respect of the Authorized System which:

3.6.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98;

3.6.2 Constitutes maintenance or repair of the Authorized System; or

3.6.3 Is a Storm Sewer, ditch, or culvert authorized by condition 4.1 of Schedule D of this Approval.

3.7 The Owner shall notify the Director within ninety (90) calendar days of:

3.7.1 The discovery of existing Sewage Works not described or depicted in Schedule B, or

3.7.2 Additional or revised information becoming available for any Sewage Works described in Schedule B of this Approval.

3.8 The notifications required in condition 3.5 and 3.7 shall be submitted to the Director using the Director Notification Form.

3.9 The Owner shall ensure that any chemicals, coagulants, or polymers used in the stormwater management system have obtained written approval from the Director prior to use, unless required for spill control or spill clean-up.

3.10 The Owner shall ensure that an ESC plan is prepared, and temporary ESC measures are installed in advance of and maintained during any construction activity on the Authorized System, subject to the following conditions:

3.10.1 Inspections of ESC measures are to be conducted at a frequency specified per the ESC plan, for dry weather periods (active and inactive construction phases), after Significant Storm Events and Significant Snowmelt Events, and after any extreme weather events.

3.10.2 Any deficiencies shall be addressed, and any required maintenance actions(s) shall be undertaken as soon as practicable once they have been identified.

3.10.3 Inspections and maintenance of the temporary ESC measures shall continue until they are no longer required.

3.11 The Owner shall ensure that records of inspections required by this Approval during any construction activity, including those required under condition 3.10:

3.11.1 Include the name of the inspector, date of inspection, visual observations, and the remedial measures, if any, undertaken to maintain the temporary ESC measures.

3.11.2 Be retained with records relating to the Alteration that the construction relates to, such as the form required in conditions 4.4.1, 5.5.1, and 6.2.1 of Schedule D, or the Schedule C Notice.

3.11.3 Be retrievable and made available to the Ministry upon request.

3.12 The document(s) or file(s) referenced in Table B1 of Schedule B of this Approval shall:

3.12.1 Be retained by the Owner;

3.12.2 Include at a minimum:

a) Identification of Storm Sewers, which shall include the following information:

i Location relative to street names or easements; and

ii Sewer diameters.

b) Identification of existing municipally owned Stormwater Sewage Works, including but not limited to ditches, swales, culverts, outlets, Stormwater Management Facilities, sedimentation MTD (for example oil grit separators), filtration MTD, LID, end of pipe controls, Third Pipe Collection Systems, and pumping stations, including any applicable Asset IDs.

c) Identification of the main tributaries and receiving water bodies to that the Sewage Works discharge to.

d) Delineation of municipal, watershed, and subwatershed boundaries, as available.

e) Identification of the storm sewersheds for each outlet.

f) Identification of any source protection Vulnerable Areas.

g) Identification of any Sewage Works that receive SSOs or CSOs.

3.12.3 Be updated to include:

a) Alterations authorized under Schedule D of this Approval or through a Schedule C Notice within twelve (12) months of the Alteration being placed into service.

b) Updates to information contained in the document(s) or files(s) not associated with an Alteration within twelve (12) months of becoming aware of the updated information.

3.13 An Alteration is not authorized under Schedule D of this ECA for projects that impact Indigenous treaty rights or asserted rights where:

3.13.1 The project is on Crown land or would alter access to Crown land;

3.13.2 The project is in an open or forested area where hunting, trapping or plant gathering occur;

3.13.3 The project involves the clearing of forested land unless the clearing has been authorized by relevant municipal, provincial, or federal authorities, where applicable;

3.13.4 The project alters access to a water body;

3.13.5 The proponent is aware of any concerns from Indigenous communities about the proposed project and these concerns have not been resolved; or,

3.13.6 Conditions respecting Indigenous consultation in relation to the project were placed in another permit or approval and have not been met.

3.14 No less than 60 days prior to construction associated with an Alteration the Director may notify the Owner in writing that a project is not authorized through Schedule D of this ECA where:

3.14.1 Concerns regarding treaty rights or asserted rights have been raised by one or more Indigenous communities that may be impacted by the Alteration; or

3.14.2 The Director believes that it is in the public interest due to site specific, system specific, or project specific considerations.

3.15 Where an Alteration is not authorized under condition 3.13 or 3.14 above:

3.15.1 An application respecting the Alteration shall be submitted to the Ministry; and,

3.15.2 The Alteration shall not proceed unless:

a) Approval for the Alteration is granted by the Ministry (i.e., a Schedule C Notice); or,

b) The Director provides written notice that the Alteration may proceed in accordance with conditions in Schedule D of this ECA.

4.0 Authorizations of Future Alterations to Storm Sewers, Ditches, or Culverts - Additions, Modifications, Replacements and Extensions

4.1 The Owner or a Prescribed Person may alter the Authorized System by adding, modifying, replacing, or extending a Storm Sewer, ditch, or culvert within the Authorized System subject to the following conditions and conditions 4.2 and 4.3 below:

4.1.1 The design of the addition, modification, replacement, or extension:

a) Has been prepared by a Licensed Engineering Practitioner;

b) Has been designed only to collect and transmit Stormwater;

c) Has not been designed to collect or treat any sanitary Sewage;

d) Has not been designed to collect, store, treat, control, or manage groundwater, unless for the purpose of foundation drains, road subdrains, or LIDs;

e) Satisfies the Design Criteria or any municipal criteria that have been established that exceed the minimum requirements set out in the Design Criteria;

f) Satisfies the standards set out in Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD), as applicable to ditches and culverts;

g) Is consistent with or otherwise addresses the design objectives contained within the Design Guidelines for Sewage Works;

h) Is planned, designed, and built to be consistent with the Stormwater Management Planning and Design Guidance Manual. If there is a conflict with Appendix A of this Approval, then Appendix A shall prevail; and

i) Includes design considerations to protect sources of drinking water, including those set out in the Standard Operating Policy for Sewage Works, and any applicable local Source Protection Plan policies.

4.1.2 The addition, modification, replacement, or extension shall be designed so that it will:

a) Not adversely affect the ability to maintain a gravity flow in the Authorized System without overflowing or increase surcharging any maintenance holes as per design; and

b) Provide smooth flow transition to existing gravity Storm Sewers;

4.1.3 The Alteration shall not result in:

a) Adverse Effects; or

b) A deterioration of the approved effluent quality or quantity of downstream Stormwater Management Facilities which results in not being able to achieve the overall Stormwater performance criteria per Appendix A.

4.1.4 The Storm Sewer, ditch or culvert addition, modification, replacement, or extension is wholly located within the municipal boundary over which the Owner has jurisdiction or there is a written agreement in place with the adjacent property owner respecting the Alteration and resulting Sewage Works.

4.1.5 The Owner consents in writing to the addition, modification, replacement, or extension.

4.1.6 A Licensed Engineering Practitioner has verified in writing that the addition, modification, replacement, or extension meets the requirements of conditions 4.1.1 a) to h), 4.3.9, and 4.3.10.

4.1.7 The Owner has verified in writing that the addition, modification, replacement, or extension has complied with inspection and testing requirements in the Design Criteria.

4.1.8 The Owner has verified in writing that the addition, modification, replacement, or extension meets the requirements of conditions 4.1.1 i), 4.1.2 to 4.1.6, 4.3.7, and 7.2.

4.2 The addition of Storm Sewers or ditches can be constructed but not operated until the Stormwater Management Facilities required to service the new Storm Sewers or ditches are in operation.

4.3 The Owner or a Prescribed Person is not authorized to undertake an Alteration described above in condition 4.1 where the Alteration relates to the addition, modification, replacement, or extension of a Storm Sewer that:

4.3.1 Passes under or through a body of surface water, unless trenchless construction methods are used or the local Conservation Authority has authorized an alternative construction method.

4.3.2 Has a nominal diameter greater than 2,400 mm, or equivalent sizing.

4.3.3 Is a Combined Sewer.

4.3.4 Is a concrete channel.

4.3.5 Is designed to, at any time, transmit, store, or control sanitary Sewage.

4.3.6 Converts rural road cross section ditches to curb, gutter, and Storm Sewers if the Stormwater volume and/or peak flow is increased and no water quality treatment is planned or demonstrated to be achieved, in accordance with this Approval and Appendix A, to offset the increase in Stormwater.

4.3.7 Results in new discharges or increased discharges to a Municipal Drain without written approval by the Owner and a signed Municipal Drainage Engineer's Report in accordance with the *Drainage Act* R.S.O. 1990, c. D.17.

4.3.8 Establishes a new outlet with direct discharge into the Natural Environment without monitoring in accordance with this Approval and without achieving the requirements set in Appendix A.

4.3.9 Increases Stormwater flow of an existing Storm Sewer or ditch without achieving water quality criteria set in Appendix A in accordance with this Approval unless the existing downstream Municipal Stormwater Management System has sufficient residual transmission and treatment capacity to accommodate the additional Stormwater.

4.3.10 Increases local hydraulic capacity of an existing Storm Sewer or ditch to accommodate new Stormwater flows unless the existing downstream Municipal Stormwater Management System has sufficient residual hydraulic capacity to accommodate the additional Stormwater.

4.3.11 Connects to another Municipal Stormwater Management System, unless:

a) Prior to construction, the Owner of the Authorized System obtains written consent from the Owner or Owner's delegate of the Municipal Stormwater System being connected to; and

b) The Owner of the Authorized System retains a copy of the written consent from the Owner or Owner's delegate of the Municipal Stormwater Management System being connected to as part of the record that is recorded and retained under condition 4.4.

4.3.12 Is part of an Undertaking in respect of which:

a) A request under s.16(6) of the EAA has been made, namely a request that the Minister make an order under s.16;

b) The Minister has made an order under s.16; or

c) The Director under that EAA has given notice under s.16.1 (2) that the Minister is considering making an order under s.16.

4.4 The consents and verifications required in conditions 4.1 and 4.3, if applicable, shall be:

4.4.1 Recorded on SW1, prior to the Storm Sewer, ditch, or culvert addition, modification, replacement, or extension being placed into service; and

4.4.2 Retained for a period of at least ten (10) years by the Owner.

4.5 For greater certainty, the verification requirements set out in condition 4.4 do not apply to any Alteration in respect of the Authorized System which:

4.5.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98; or

4.5.2 Constitutes maintenance or repair of the Authorized System.

5.0 Authorizations of Future Alterations to Stormwater Management Facilities - Additions, Modifications, Replacement, and Extensions

5.1 Subject to conditions 5.2 and 5.3, the Owner or a Prescribed Person may alter the Stormwater Management Facilities in the Authorized System by adding, modifying, replacing, or extending the following components:

5.1.1 Rooftop storage

5.1.2 Parking lot storage

5.1.3 Superpipe storage

5.1.4 Reduced lot grading

5.1.5 Roof leader to ponding area

5.1.6 Roof leader to soakaway pit

5.1.7 Infiltration trench

5.1.8 Engineered grassed swales / bioswale

5.1.9 Pervious pipes

5.1.10 Pervious catchbasins

5.1.11 Vegetated filter strips

5.1.12 Natural buffer strips

5.1.13 Green roofs/Rooftop gardens

5.1.14 Wet pond

5.1.15 Engineered wetland

5.1.16 Dry pond

5.1.17 Hybrid Facility

5.1.18 Infiltration basin

5.1.19 Filtration MTD

5.1.20 Sedimentation MTD - OGS

5.1.21 LID that relies on one or more of the following mechanisms to achieve treatment and control:

a) Evapotranspiration;

b) Infiltration into the ground; or

c) Filtration.

5.1.22 Any other Stormwater Management Facilities where the Director has provided authorization in writing to proceed with the Alteration.

5.2 Any Alteration to the Authorized System authorized under condition 5.1 is subject to the following conditions:

5.2.1 The design of the Alteration shall:

a) Be prepared by a Licensed Engineering Practitioner;

b) Be designed only to collect, receive, treat, or control only Stormwater and has not been designed to collect, receive, treat, or control sanitary Sewage;

c) Is planned, designed, and built to be consistent with the Stormwater Management Planning and Design Guidance

Manual. If there is a conflict with Appendix A of this Approval, then Appendix A shall prevail;

d) Satisfy the Design Criteria or any municipal criteria that have been established that exceed the minimum requirements set out in the Design Criteria;

e) Be part of a Stormwater Treatment Train approach that satisfies the requirements outlined in Appendix A, or transmits Stormwater to a Stormwater Management Facility that satisfies the requirements outlined in Appendix A;

f) Includes an outlet or an emergency overflow for the Sewage Works, with the verification of the location, route, and capacity of the receiving major system to accommodate overflows; and

g) Include design considerations to protect sources of drinking water, including those set out in the Standard Operating Policy for Sewage Works and any applicable local Source Protection Plan policies.

5.2.2 The Alteration shall not result in:

a) Adverse Effects; or

b) A deterioration on the approved effluent quality or quantity of downstream Stormwater Management Facilities which results in not being able to achieve the overall Stormwater performance criteria per Appendix A.

5.2.3 The Alteration may incorporate co-benefits, but in doing so shall not diminish functionality or efficiency of any Stormwater Management Facility(ies) that may be impacted by the Alteration.

5.2.4 Any new sedimentation MTD that is part of the Alteration shall meet the following requirements:

a) Tested in accordance with the TRCA protocol Procedure for Laboratory Testing of OGSs and testing data verified in accordance with the ISO 14034 Environmental Technology Verification (ETV) protocol. The suspended solids removal claimed for the sedimentation MTD in achieving the water quality criteria in Appendix A, and the sizing methodology used to determine the appropriate sedimentation MTD dimensions for the particular site, shall be based on the verified removal efficiency for all particle size fractions comprising the particle size distribution specified within the

testing protocol or a particle size distribution approved by the Director.

b) Using the verified sediment removal efficiencies for the respective surface loading rates specified in the testing protocol, the sedimentation MTD sizing methodology shall use linear interpolation to calculate sediment removal efficiencies for surface loading rates that lie between the specified surface loading rates. For surface loading rates less than the lowest specified and tested surface loading rate, the sediment removal efficiency shall be assumed to be identical to the verified removal efficiency for the lowest specified and tested surface loading rate. Where available, 15 min rainfall stations shall be used for sizing the sedimentation MTD.

c) When two or more sedimentation MTD are installed in series, no additional sediment removal credit shall be applied beyond the sediment removal credit of the largest device in the series.

d) The sediment removal rate at the specified surface loading rates determined for the tested full scale, commercially available MTD may be applied to similar MTDs of smaller or larger size by proper scaling. Scaling the performance results of the tested MTD to other model sizes without completing additional testing is acceptable provided that:

   i The claimed sediment removal efficiencies for the similar MTD are the same or lower than the tested MTD at identical surface loading rates; and

   ii The similar MTD is scaled geometrically proportional to the tested unit in all inside dimensions of length and width and a minimum of 85% proportional in depth.

e) The units must be installed in an off-line configuration if the unit had an effluent concentration greater than 25 mg/L at any of the surface loading rates conducted during the sediment scour and resuspension test as part of the ISO 14034 verification.

f) The sedimentation MTD should be sized for the highest suspended solids percent removal physically and economically practicable, and used as a pre-treatment device in a treatment train designed to achieve the water quality criteria in Appendix A.

5.2.5 Any new filtration MTD that is part of the Alteration shall meet the following requirements:

a) Field tested and verified in accordance with a minimum of one of the following protocols:

   i Washington State Technology Assessment Protocol - Ecology (TAPE) General Use Level Designation (GULD); and

      1. Has ISO 14034 ETV verification to satisfy ETV Canada requirements;

      2. The field monitoring data set used to obtain GULD certification should include a minimum of three (3) events that exceed 75th percentile rainfall event with at least one hour with an intensity of 6 mm/h or greater.

   ii Another testing and verification method, where the Director has communicated acceptability in writing.

b) Where available, 15 min rainfall stations shall be used for sizing the filtration MTD using the rainfall intensity corresponding to 90% of annual runoff volume;

c) The SS removal rate determined for the tested full scale, commercially available filtration MTD, or single full-scale commercially available cartridge or filtration module, may be applied to other model sizes of that filtration MTD provided that appropriate scaling principles are applied. Scaling the tested filtration MTD or single full-scale commercially available cartridge or filtration module, to determine other model sizes and performance without completing additional testing is acceptable provided that:

   i Depth of media, composition of media, and gradation of media remain constant.

   ii The ratio of the maximum treatment flow rate to effective filtration treatment area (filter surface area) is the same or less than the tested filtration MTD;

   iii The ratio of effective sedimentation treatment area to effective filtration treatment area is the same or greater than the tested filtration MTD; and

   iv The ratio of wet volume to effective filtration treatment area is the same or greater than the tested filtration MTD.

5.2.6 When it is necessary to use Privately Owned Stormwater Works in the Stormwater Treatment Train to achieve Appendix A criteria as part of or as a result of an Alteration, the following conditions apply:

a) The Owner shall, through legal instruments or binding agreements, obtain the right to access, operate, and maintain the Privately Owned Sewage Works;

b) The Owner shall ensure that the right to access, operate and maintain the Privately Owned Sewage Works described in condition 5.2.6 a) above is maintained at all times that the works are in service and used to achieve Appendix A criteria.

c) The Owner shall ensure on-going operation and maintenance of the Privately Owned Stormwater Works;

d) The Owner ensures on-going operation and maintenance of the Privately Owned Stormwater Works; and

e) The Owner shall ensure that the Privately Owned Stormwater Works have obtained separate approval(s) under the EPA, as required.

5.2.7 The Alteration is wholly located within the municipal boundary over which the Owner has jurisdiction or there is a written agreement in place with the adjacent municipality respecting the Alteration and resulting Sewage Works.

5.2.8 The Owner consents in writing to the Alteration authorized under condition 5.1.

5.2.9 A Licensed Engineering Practitioner has verified in writing that the Alteration authorized under condition 5.1 meets the design requirements of conditions 5.2.1 a) to f), 5.2.4 and 5.2.5.

5.2.10 The Owner has verified in writing that the Alteration authorized under condition 5.1 meets the requirements of conditions 5.2.1 g), 5.2.2, 5.2.6 to 5.2.9, 5.3, 5.4, and 7.2.

5.3 The authorization in condition 5.1 does not apply:

5.3.1 To the establishment of a regional end-of-pipe flood control Facility;

5.3.2 Where the Alteration will result in new or increased discharges to a Municipal Drain without written approval by the Owner and a signed Municipal Drainage Engineer's Report in accordance with the *Drainage Act* R.S.O. 1990, c. D.17;

5.3.3 To the establishment of a new outlet with direct discharge into the Natural Environment without treatment and monitoring in accordance with this Approval;

5.3.4 Where the Alteration will service a drainage area greater than 65 ha;

5.3.5 Where the Alteration will result in conversion of an existing Stormwater Management Facility into another type of Stormwater Management Facility;

5.4 Any Alteration to LID or end-of-pipe Stormwater Management Facilities shall be inspected before operation of the Alteration to confirm construction as per specifications (including depth, as applicable).

5.5 The consents and verifications required in conditions 5.2.8 to 5.2.10 if applicable, shall be:

5.5.1 Recorded on Form SW2, prior to undertaking the Alteration; and

5.5.2 Retained for a period of at least ten (10) years by the Owner.

5.6 For greater certainty, the verification requirements set out in condition 5.5 do not apply to any Alteration in respect of the Authorized System which:

5.6.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98; or

5.6.2 Constitutes maintenance or repair of the Authorized System.

6.0 Authorizations of Future Alterations for Third Pipe Collection System Additions, Modifications, Replacements and Extensions

6.1 The Owner or a Prescribed Person may alter the Authorized System by adding, modifying, replacing, or extending, and operating works comprising a municipal Third Pipe Collection System to collect foundation drainage and groundwater where:

6.1.1 The design of the Alteration:

a) Has been prepared by a Licensed Engineering Practitioner;

b) Is limited to collection, transmission, reuse and/or treatment of only foundation drainage and groundwater, and is not designed to collect or treat sanitary Sewage;

c) Satisfies the Design Criteria or any municipal criteria that have been established that exceed the minimum requirements set out in the Design Criteria; and

d) Is scoped so that the resulting Sewage Works are intended to:

i Primarily function for the non-potable reuse, as deemed acceptable by the Owner and the local health unit, of foundation drainage and/or groundwater, and no discharge to a Storm Sewer or Separate Sewer if there is excess volume that cannot be reused; and/or

ii Provide wetland recharge, in which case, collection of rooftop runoff will also be acceptable.

6.1.2 The Alteration is not located on a contaminated site, or where natural occurring conditions result in contaminated discharge, or where the site receives contaminated groundwater or foundation drainage from another site, unless the discharge being received has been remediated or treated prior to acceptance by the Third Pipe Collection System.

6.1.3 The Owner has undertaken a site assessment for water quantity, water quality, and hydrogeological site conditions regarding the Alteration.

6.1.4 The Alteration will not result in Adverse Effects.

6.1.5 The Alteration is wholly located within the municipal boundary over which the Owner has jurisdiction or there is a written agreement in place with the adjacent property owner respecting the Alteration and resulting Sewage Works.

6.1.6 The Owner consents in writing to the Alteration.

6.1.7 A Licensed Engineering Practitioner has verified in writing that the Alteration meets the requirements of condition 6.1.1.

6.1.8 The Owner has verified in writing that the Alteration meets the requirements of conditions 6.1.2 to 6.1.7.

6.2 The consents, verifications and documentation required in conditions 6.1.7 and 6.1.8 shall be:

6.2.1 Recorded on Form SW3 prior to undertaking the Alteration; and

6.2.2 Retained for a period of at least ten (10) years by the Owner.

6.3 For greater certainty, the verification requirements set out in condition 6.2 do not apply to any Alteration in respect of the Authorized System which:

6.3.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98; or

6.3.2 Constitutes maintenance or repair of the Authorized System, including changes to software for an existing SCADA system resulting from Alterations authorized in condition 6.1.

6.4 The Owner shall update, within twelve (12) months of the Alteration of the Sewage Works being placed into service, any drawings maintained for the Municipal Stormwater Management System to reflect the Alterations of the Sewage Works, where applicable.

7.0 Outlets

7.1 Any outlet established or altered as part of an Alteration authorized through conditions 4, 5, or 6 of Schedule D in this Approval shall have regard to the 2012 TRCA Stormwater Management Criteria document, Appendix E, for outlets.

7.2 Any outlet established as part of an Alteration authorized through conditions 4, 5, or 6 of Schedule D in this Approval shall not:

7.2.1 Increase discharge or create a new point source discharge to privately owned land unless there is express written consent of the owner(s) of such private land(s).

7.2.2 Result in Adverse Effects.

8.0 Previously Approved Sewage Works

8.1 If approval for an Alteration to the Authorized System was issued under the EPA and is revoked by this Approval, the Owner may make the Alteration in accordance with:

8.1.1 The terms of this Approval; or

8.1.2 The terms and conditions of the revoked approval as of the date this approval was issued, provided that the Alteration is commenced within five (5) years of the date that the revoked approval was issued.

9.0 Transition

9.1 An Alteration of the Authorized System is exempt from the requirements in Schedule D condition 4.1.7, clause (e) of condition 4.1.1, clause (d) of condition 5.2.1, and clause (c) of condition 6.1.1 where:

9.1.1 Effort to undertake the Alteration, such as tendering or commencement of construction of the Sewage Works associated with the Alteration, begins on or before September 21, 2023.

9.1.2 The design of the Alteration conforms to the Stormwater Management Planning and Design Manual, and where applicable, Design Guidelines for Sewage Works;

9.1.3 The design of the Alteration was completed on or before the issue date of this Approval or a Class Environmental Assessment was completed for the Alteration and changes to the design result in significant cost increase or significant project delays; and

9.1.4 The Alteration would be otherwise authorized under this Approval.

Schedule E: Operating Conditions

System Owner	**Waterloo, The Corporation of the City of**
ECA Number	**112-S701**
System Name	**Waterloo Stormwater Management System**
ECA Issue Date	**February 8th, 2023**

1.0 General Operations

1.1 The Owner shall ensure that, at all times, the Sewage Works comprising the Authorized System and the related equipment and Appurtenances used to achieve compliance with this Approval are properly operated and maintained.

1.2 Prescribed Persons and Operating Authorities shall ensure that, at all times, the Sewage Works under their care and control and the related equipment and Appurtenances used to achieve compliance with this Approval are properly operated and maintained.

1.3 In conditions 1.1 and 1.2 “properly operated and maintained” includes effective performance, adequate funding, adequate operator staffing and training, including training in applicable procedures and other requirements of this Approval and the EPA, OWRA, CWA, and regulations, adequate laboratory services, process controls and alarms and the use of process chemicals and other substances used in the Authorized System.

1.4 The Owner ensure that Sewage Works are operated with the objective that the effluent from the Sewage Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen, foam, or discoloration on the receiving waters, and shall evaluate the need for maintenance if the objective is not being met.

1.5 The Owner shall ensure that any Storm Sewers or ditches authorized under Schedule D of this approval are not placed into operation until the associated Stormwater Management Facilities to provide treatment are constructed and operated.

2.0 Duties of Owners and Operating Authorities

2.1 The Owner, Prescribed Persons, and any Operating Authority shall ensure the following:

2.1.1 At all times that the Sewage Works within the Authorized System are in service, the Sewage Works are:

a) Operated in accordance with the requirements under the EPA and OWRA, and

b) Maintained in a state of good repair.

2.1.2 The Authorized System is operated by persons that are familiar with the requirements of this Approval.

2.1.3 All sampling, testing, monitoring, and reporting requirements under the EPA and this Approval that relate to the Authorized System are complied with.

2.1.4 All necessary steps are taken to ensure that operations of the Sewage Works and any associated physical structures do not constitute a safety or health hazard to the general public.

2.1.5 Where a Stormwater Management Facility ceases to function as a Stormwater Management Facility, whether by intent, accident, or otherwise (e.g., a CSO or an SSO), a workplan shall be developed that includes local community notification, plans for rehabilitating the Stormwater Management Facility to proper function in a reasonable time, identification of actions that will be taken to prevent reoccurrences, and timelines for implementing the workplan.

2.1.6 That operations and maintenance activities are undertaken at the frequency and in conformance with the procedures set out in the O&M Manual.

a) A Prescribed Person or Operating Authority shall only undertake operations and maintenance activities where they have been delegated the authority to undertake such activities by the Owner or the Owner has expressly approved the activity(ies).

2.2 For clarity, the requirements outlined in the above conditions 2.1 for Prescribed Persons and any Operating Authority only apply to Sewage Works within the Authorized System where they are responsible for the operation.

2.3 The Owner, Prescribed Persons, and Operating Authority shall take all reasonable steps to minimize and ameliorate any Adverse Effect on the Natural Environment or impairment of the quality of water of any waters resulting from the operation of the Authorized System, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

3.0 Operations and Maintenance

3.1 Inspection

3.1.1 The Owner shall ensure that all Sewage Works within the Authorized System are inspected at the frequency and in accordance with procedures set out in their O&M Manual.

3.1.2 The owner shall ensure that:

a) Any Stormwater Management Facilities, pumping stations, and any outlets that discharge to a receiver, are inspected at least once before December 31, 2026, if these have not been inspected since January 1, 2018 and thereafter as required by the O&M Manual; and

b) Any Stormwater Management Facilities, pumping stations, and any outlets that discharge to a receiver, established, or replaced within the Authorized System after the date of issuance of this Approval, are inspected within one year of being placed into service and thereafter as required by the O&M Manual.

3.1.3 The Owner shall clean and maintain Sewage Works within the Authorized System to ensure the Sewage Works perform as designed.

3.1.4 The Owner shall inspect the Stormwater Management Facilities in the Authorized System after significant flooding events as defined in, and in accordance with procedures documented in, the O&M Manual.

3.1.5 The Owner shall maintain records of the results of the inspections required in condition 3.1.1, 3.1.2 and 3.1.4 and any cleaning and maintenance operations undertaken, and shall make available the records for inspection by the Ministry upon request. The records shall include the following:

a) Asset ID and name of the Sewage Works;

b) Date and results of each inspection, maintenance, or cleaning;

c) Name of person who conducted the inspection, maintenance, or the name of the inspecting official, where applicable, and

d) As applicable to the type of works, observations resulting from the inspection including, at a minimum:

i Hydraulic operation of the works (e.g., length of occurrence since the last rainfall event, evidence or occurrence of overflows).

ii Condition of vegetation in and around the works.

iii Occurrence of obstructions at the inlet and outlet of the works.

iv Evidence of spills and/or oil/grease contamination.

v Presence of trash build-up, and

vi Measurements of other parameters as required in the Monitoring Plan.

3.2 Operations & Maintenance (O&M) Manual

3.2.1 The Owner shall prepare and implement an operations and maintenance manual for Sewage Works within the Authorized System on or before November 21, 2023, that includes or references, but is not necessarily limited to, the following information:

a) Procedures for the routine operation of the Sewage Works;

b) Inspection programs, including the frequency of inspection, and the methods or tests employed to detect when maintenance is necessary, including:

i Presence of algae and/or invasive species impairing the Works (e.g., phragmites, goldfish);

ii Measurements of sediment depth, manual water levels (staff gauge) and/or visual observations, as appropriate to the Stormwater Management Facilities.

c) Maintenance and repair programs, including:

i The frequency of maintenance and repair for the Sewage Works;

ii Stormwater pond sediment cleanout, dewatering, and management;

iii Excavation, modification, replacement of LID soil/media/aggregate/geotextile, such as bioretention cells, green roof, permeable pavement; and

iv The frequency of maintenance for any other Stormwater Management Facilities identified in Schedule B that collect sediment.

d) Operational and maintenance requirements to protect sources of drinking water, such as those included in the Standard Operating Policy for Sewage Works, and any applicable local Source Protection Plan policies;

e) Procedures for routine physical inspection and calibration of monitoring equipment or components in accordance with the Monitoring Plan;

f) Emergency Response, Spill Reporting and Contingency Plans and Procedures for dealing with equipment breakdowns, potential Spills, and any other abnormal situations, including notification to the Spills Action Centre, the Medical Officer of Health, and the District Manager, as applicable;

g) Procedures for receiving, responding, and recording public complaints, including recording any follow-up actions taken; and

h) As-built drawings or record drawings of the Sewage Works for stormwater works constructed after 2010 and where available, for stormwater works constructed before 2010.

3.2.2 The Owner shall review and update the O&M Manual and ensure that access to a copy is readily available for each Stormwater Management Facility for the operational life of the works.

3.2.3 The Owner shall provide a copy of the O&M Manual to Ministry staff, upon request.

3.2.4 The Owner shall revise the O&M Manual to include procedures necessary for the operation and maintenance of any Sewage Works within the Authorized System that are established, altered, extended, replaced, or enlarged after the date of issuance of this approval prior to placing into service those Sewage Works.

3.2.5 For greater certainty, the O&M Manual may be a single document or a collection of documents that, when considered together, apply to all parts of the Authorized System.

3.3 On or before November 21, 2025, the Owner shall establish signage to notify the public at any Stormwater Management Facility identified in Schedule B that is a wet pond, dry pond, hybrid Facility, or engineered wetland. The signage shall include the following minimum information:

3.3.1 Identification that the site contains a Stormwater Management Facility;

3.3.2 Identification of potential hazards and limitations of water use, as applicable;

3.3.3 Identification of the purpose of the Facility;

3.3.4 ECA approval number and/or asset ID; and

3.3.5 Owner's contact information.

3.4 Prior to any maintenance of Sewage Works comprising the Authorized System, the Owner shall ensure that all applicable permits or authorizations have been obtained from Federal or Provincial agencies having legislative mandates relating to species at risk or water resources.

4.0 Monitoring Plan

4.1 On or before November 21, 2024 or within twenty-four (24) months of the date of the publication of the Ministry's monitoring guidance, whichever is later, the Owner shall develop and implement a monitoring plan for the Authorized System. The monitoring plan shall be:

4.1.1 Signed and approved by management with the authority delegated by the Owner to do so;

4.1.2 Peer-reviewed by a third-party Qualified Person (QP), external to the development of the Monitoring Plan, to verify the adequacy of the Monitoring Plan in complying with conditions 4.4 and 4.5 of Schedule E. The results of the peer review shall include:

a) Written confirmation from the QP that they have the experience and qualifications to carry out the work; and

b) Written confirmation from the QP of the adequacy of the Monitoring Plan.

4.2 The Owner, or a QP designated by the Owner, may jointly develop the Monitoring Plan in partnership with Owner(s) of other Municipal Stormwater Management Systems as long as the Municipal Stormwater Management Systems are within the same watershed.

4.3 The Owner shall ensure the Monitoring Plan is implemented and any resulting monitoring data is recorded in an electronic database.

4.4 The Monitoring Plan shall include:

4.4.1 Procedures to verify that the operational performance of the Authorized System is as designed/planned;

4.4.2 Procedures to assess the environmental impact of the Municipal Stormwater Management System; and

4.4.3 Procedures for any corrective action that may be required to address any performance deficiencies or environmental impacts identified from above conditions 4.4.1 or 4.4.2.

4.5 The Monitoring Plan shall also include, but not be limited to:

4.5.1 Identification of the Sewage Works to be monitored, including outlets and any works that provide quality and/or quantity control;

4.5.2 Identification of the key receivers to be monitored within the Owner's municipal boundaries and the monitoring locations;

4.5.3 Consideration of relevant municipal land use and environmental planning documents (e.g., Stormwater Management Master Plan, Class Environmental Assessment Project, asset management plan, subwatershed studies, and planned development);

4.5.4 Characterization of water quality and quantity conditions and identification of water users to be protected, based on conditions 4.5.2 and 4.5.3;

4.5.5 Identification of water quality and quantity goals, as it relates to Stormwater management, using the information collected in condition 4.5.4;

4.5.6 Identification of locations of rainfall gauges to be used;

4.5.7 Identification of inspections, measurements, sampling, analysis and/or other monitoring activities that were used as the basis for or will inform future updates to the procedures identified in condition 4.4.

4.5.8 Details respecting a monitoring program for the works and the receivers, that includes, at a minimum:

a) Hydrological, chemical, physical, and biological parameters, as appropriate, in alignment with the goals;

b) Ensures water level of the Stormwater Measurement Facilities, excluding MTDs, are measured at regular intervals with a water level gauge;

c) Monitoring methodology, including the frequency and protocols for sampling, analysis, and recording, with consideration of dry and wet weather events and timing of sampling during wet weather events.

d) Ensures that the time of all samples or measurements are recorded.

4.5.9 An implementation plan for the monitoring program that identifies timelines and, if the monitoring occurs on a rotational basis, provides a description of the rotational schedule and associated works.

4.5.10 Includes a summary of all monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations, and

4.5.11 Consideration of adaptive management practices (e.g., evidence-based decision making).

4.6 The Owner shall ensure that the Monitoring Plan is updated where necessary within twelve (12) months of any Alteration to the Authorized System, or more frequently as required by the Monitoring Plan.

4.7 The Owner shall, on request and without charge, provide a copy of the Monitoring Plan and any resulting monitoring data to members of the public.

5.0 Reporting

5.1 The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

5.2 The Owner shall prepare an annual performance report for the Authorized System that:

5.2.1 Is submitted to the Director on or before April 30th of each year and covers the period from January 1st to December 31st of the preceding calendar year.

a) For clarity, the first report shall cover the period of January 1, 2023 to December 31st, 2023 and be submitted to the Director on or before April 30th, 2024.

5.2.2 Includes a summary of all monitoring data along with an interpretation of the data and an overview of the condition and operational performance of the Authorized System and any Adverse Effects on the Natural Environment;

5.2.3 Includes a summary and interpretation of environmental trends based on all monitoring information and data for the previous five (5) years;

5.2.4 Includes a summary of any operating problems encountered and corrective actions taken;

5.2.5 Includes a summary of all inspections, maintenance, and repairs carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Authorized System;

5.2.6 Includes a summary of the calibration and maintenance carried out on all monitoring equipment;

5.2.7 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints;

5.2.8 Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat;

5.2.9 Includes a summary of all spills or abnormal discharge events;

5.2.10 Includes a summary of actions taken, including timelines, to improve or correct performance of any aspect of the Authorized System; and

5.2.11 Includes a summary of the status of actions for the previous reporting year.

5.3 The report described in condition 5.2 shall be:

5.3.1 Made available, on request and without charge, to members of the public who are served by the Authorized System; and

5.3.2 Made available, by June 1st of the same reporting year, to members of the public without charge by publishing the report on the Internet, if the Owner maintains a website on the Internet.

6.0 Record Keeping

6.1 The Owner shall retain for a minimum of ten (10) years from the date of their creation:

6.1.1 All records, reports and information required by this Approval and related to or resulting Alterations to the Authorized System, and

6.1.2 All records, report and information related to the operation, maintenance and monitoring activities required by this Approval.

6.2 The Owner shall update, within twelve (12) months of any Alteration to the Authorized System being placed into service, any drawings maintained for the Municipal Stormwater Management System to reflect the Alteration of the Sewage Works, where applicable.

7.0 Review of this Approval

7.1 No later than the date specified in Condition 1 of Schedule A of this Approval, the Owner shall submit to the Director an application to have the Approval reviewed. The application shall, at minimum:

7.1.1 Include an updated description of the Sewage Works within the Authorized System, including any Alterations to the Sewage Works that were made since the Approval was last issued; and

7.1.2 Be submitted in the manner specified by Director and include any other information requested by the Director.

8.0 Source Water Protection

8.1 The Owner shall ensure that any Alteration in the Authorized System is designed, constructed, and operated in such a way as to be protective of sources of drinking water in Vulnerable Areas as identified in the Source Protection Plan, if available.

8.2 The Owner shall prepare a “Significant Drinking Water Threat Assessment Report for Proposed Alterations” for the Authorized System on or before November 21, 2023 that includes, but is not necessarily limited to:

8.2.1 An outline of the circumstances under which proposed Alterations could pose a Significant Drinking Water Threat based on the Director’s Technical Rules established under the CWA.

8.2.2 An outline of how the Owner assesses the proposed Alterations to identify drinking water threats under the CWA.

8.2.3 For any proposed Alteration a list of components, equipment, or Sewage Works that are being altered and have been identified as a Significant Drinking Water Threat.

8.2.4 A summary of design considerations and other measures that have been put into place to mitigate risks resulting from construction or operation of the components, equipment, or Sewage Works identified in condition 8.2.3, such as those included in the Standard Operating Policy for Sewage Works.

8.3 The Owner shall make any necessary updates to the report required in condition 8.2 at least once every twelve (12) months.

8.4 Any components, equipment, or Sewage Works added to the report required in condition 8.2 shall be include in the report for the operational life of the Sewage Works.

8.5 Upon request, the Owner shall make a copy of the report required in condition 8.2 available to the Ministry or Source Protection Authority staff.

9.0 Storm Sewer Catchment Asset Inventory

9.1 The Owner shall prepare and submit to the Director an inventory of the storm sewersheds and classify in accordance with Tables E1 and E2, on or before May 21, 2025. Minimum classification of the level of Stormwater management is as follows:

9.1.1 Level A – Stormwater receives treatment for water quality and quantity prior to discharge to the environment;

9.1.2 Level B – Stormwater receives treatment for water quality but no water quantity prior to discharge to the environment; and

9.1.3 Level C – Stormwater receives no treatment for water quality prior to discharge to the environment.

Table E1. Storm Sewershed and Associated Treatment

Outlet Asset ID	Sewershed Catchment Area (ha)	Tributary or Receiver	Subwatershed/ Watershed	Stormwater Management Level (A, B or C)	Treatment provided by other municipality (if applicable)

Table E2. Summary of Storm Sewersheds

Stormwater Management Level	Total Number of Outlets to Environment	Total Sewershed Catchment Area (ha)
Level A		
Level B		
Level C		

9.2 Within 12 (twelve) months of the date that the inventory required in condition 9.1 is submitted to the Director, the document(s) or file(s) referenced in Table B1 of Schedule B of this Approval shall be updated to identify the storm sewersheds for each outlet and their level of Stormwater management.

Schedule F: Residue Management

System Owner	**Waterloo, The Corporation of the City of**
ECA Number	**112-S701**
System Name	**Waterloo Stormwater Management System**
ECA Issue Date	**February 8th, 2023**

1.0 Residue Management System

1.1 Not Applicable.

Appendix A – Stormwater Management Criteria

1.0 Applicability of Criteria

1.1 The criteria listed under Table A1 of this Appendix applies to all drainage areas greater than 0.1 ha, with the construction erosion and sediment control criteria applying also to sites <0.1 ha;

1.2 Despite condition 1.1 of Appendix A, if some or all of the criteria listed under Table A1 of this Appendix have been assessed for and addressed in other adjacent developed lands to the project site through a subwatershed plan or equivalent study, then those criteria may not be applicable to the project site.

Table A1. Performance Criteria

Water Balance [1]	**FOR DEVELOPMENT SCENARIOS** [2] **Assessment Studies:** i) Control [3] as per the criteria identified in the water balance assessment completed in one or more of the following studies [15], if undertaken: a watershed/subwatershed plan; Source Protection Plan (Assessment Report component); Master Stormwater Management Plan, Master Environmental Servicing Plan; Class EA, or similar approach that transparently considers social, environmental and financial impacts; or local site study including natural heritage, Ecologically significant Groundwater Recharge Areas (EGRA), inflow and infiltration strategies. The assessment should include sufficient detail to be used at a local site level and consistent with the various level of studies; OR **IF Assessment Studies in i) NOT completed:** ii) Control [3] the recharge [4] to meet Pre-development [5] conditions on property; **OR** iii) Control [3] the runoff from the 90th percentile storm event. **Lake Simcoe Watershed Municipalities:** iv) Control [3] as per the evaluation of anticipated changes in water balance between Pre-development and post-development assessed through a Stormwater management plan in support of an application for Major Development [6]. The assessment should include sufficient detail to be used at a local site level. If it is demonstrated, using the approved water balance estimation methods [7], that the site's post to Pre-development water balance cannot be met, and Maximum Extent Possible [8] has been attained, the proponent may use Lake Simcoe and Region Conservation Authority's (LSRCA) Recharge Compensation Program [9]. **FOR RETROFIT SCENARIOS** [10] **Assessment Studies:** i) Control as per criteria identified in the water balance assessment completed in one or more of the following studies: a watershed/subwatershed

	plan, Source Protection Plan (Assessment Report component), Master Stormwater Management Plan, Master Environmental Servicing Plan, Class EA, or local site study including natural heritage, EGRA, inflow and infiltration strategies, if undertaken. The assessment should include sufficient detail to be used at a local site level and consistent with the various level of studies; **OR** ii) If constraints [11] identified in i), then control [3] as per Maximum Extent Possible [8] based on environmental site feasibility studies or address local needs[14]. **IF Assessment Studies in i) NOT completed:** iii) Control [3] the recharge [4] to meet Pre-development [5] conditions on property; **OR** iv) Control [3] the runoff from the 90th percentile storm event.
Water Quality [1]	**FOR DEVELOPMENT SCENARIOS** [2] All of the following criteria must be met for development scenarios: **General:** i) Characterize the water quality to be protected and Stormwater Contaminants (e.g., suspended solids, nutrients, bacteria, water temperature) for potential impact on the Natural Environment, and control as necessary, **OR** ii) As per the watershed/subwatershed plan, similar area-wide Stormwater study, or Stormwater management plan to minimize, or where possible, prevent increases in Contaminant loads and impacts to receiving waters. **Suspended Solids:** i) Control [3] 90th percentile storm event and if conventional methods are necessary, then enhanced, normal, or basic levels of protection (80%, 70%, or 60% respectively) for suspended solids removal (based on the receiver). **Phosphorus:** i) Minimize existing phosphorus loadings to Lake Erie and its tributaries, as compared to 2018 or conditions prior to the proposed development, **OR** ii) Minimize phosphorus loadings to Lake Simcoe and its tributaries. Proponents with development sites located in the Lake Simcoe watershed shall evaluate anticipated changes in phosphorus loadings between Pre-development and post-development through a Stormwater management plan in support of an application for Major Development [6]. The assessment should include sufficient detail to be used at a local site level. If, using the approved phosphorus budget tool [12], it is demonstrated that the site's post to Pre-development phosphorus budget cannot be met, and Maximum Extent Possible [8] has been attained, the proponent may use LSRCA's Phosphorus Offsetting Policy [9]. **FOR RETROFIT SCENARIOS** [10] i) Improve the level of water quality control currently provided on site; **AND** ii) As per the 'Development' criteria for Suspended Solids, **OR** iii) **If 'Development' criteria for Suspended Solids cannot be met**, Works are designed as a multi-year retrofit project, in accordance with a

	rehabilitation study or similar area-wide Stormwater study, such that the completed treatment train will achieve the 'Development' criteria for Suspended Solids or local needs[14], within ten (10) years; **OR** iv) If constraints [11] identified in ii) and iii), then control [3] as per Maximum Extent Possible [8] based on environmental site feasibility studies.
Erosion Control (Watershed) [1]	**FOR DEVELOPMENT SCENARIOS** [8] i) As per erosion assessment completed in watershed/subwatershed plan, Master Stormwater Management Plan, Master Environmental Servicing Plan, Drainage Plan, Class EA, local site study, geomorphologic study, or erosion analysis; **OR** ii) As per the Detailed Design Approach or Simplified Design Approach methods described in the Stormwater Management Planning and Design Manual: a. The Detailed Design Approach may be selected by the proponent for any development regardless of size and location within the watershed provided technical specialists are available for the completion of the technical assessments; or considered more appropriate than the simplified approach given the size and location of the development within the watershed and the sensitivity of the receiving waters in terms of morphology and habitat function. b. The Simplified Design Approach may be adopted for watersheds whose development area is generally less than twenty hectares AND either one of the following two conditions apply: 1) The catchment area of the receiving channel at the point-of-entry of Stormwater drainage from the development is equal to or greater than twenty-five square kilometres; or 2) Meets the following conditions: • The channel bankfull depth is less than three quarters of a metre; • The channel is a headwater stream; • The receiving channel is not designated as an Environmentally Sensitive Area (ESA) or Area of Natural or Scientific Interest (ANSI) and does not provide habitat for a sensitive aquatic species; • The channel is stable to transitional; and • The channel is slightly entrenched; **OR** iii) In the absence of a guiding study, detain at minimum, the runoff volume generated from a 25 mm storm event over 24 to 48 hours. **FOR RETROFIT SCENARIOS** [10] i) If approaches i-iii) under 'Development Scenarios' are not feasible as per identified constraints [11], then improve the level of erosion control [3] currently provided on site to Maximum Extent Possible [8] based on environmental site feasibility studies or address local needs[14].
Water Quantity (Minor and Major System) [1]	i) As per municipal standards, Master Stormwater Management Plan, Class EA, Individual EA and/or ECA, as appropriate for the type of project [13]
Flood Control	**FOR DEVELOPMENT SCENARIOS** [2]

(Watershed Hydrology) [1]	i) Manage peak flow control as per watershed/subwatershed plans, municipal criteria being a minimum 100 year return storm (except for site-specific considerations and proximity to receiving water bodies), municipal guidelines and standards, Individual/Class EA, ECA, Master Plan, as appropriate for the type of project [13]. **FOR RETROFIT SCENARIOS** [10] i) If approaches i) under 'Development Scenarios' are not feasible as per identified constraints [11], then improve the level of flood control [3] currently provided on site to Maximum Extent Possible [8] based on environmental site feasibility studies.
Construction Erosion and Sediment Control	i) Manage construction erosion and sediment control through development and implementation of an erosion and sediment control (ESC) plan. The ESC plan shall: a. Have regard to Canadian Standards Association (CSA) W202 Erosion and Sediment Control Inspection and Monitoring Standard (as amended); OR b. Have regard to Erosion and Sediment Control Guideline for Urban Construction 2019 by TRCA (as amended). ii) Be prepared by a QP for sites with drainage areas greater than 5 ha or if specified by the Owner for a drainage lower than 5 ha. iii) Installation and maintenance of the ESC measures specified in the ESC plan shall have regard to CSA W208:20 Erosion and Sediment Control Installation and Maintenance (as amended). iv) For sites with drainage areas greater than 5 ha, a QP shall inspect the construction ESC measures, as specified in the ESC plan.
Footnote	1. Where the opportunity exists on your project site or the same subwatershed, reallocation of development elements may be optimal for management as described in footnote [3]. 2. Development includes new development, redevelopment, infill development, or conversion of a rural cross-section into an urban cross-section. 3. Stormwater volumes generated from the geographically specific 90th percentile rainfall event on an annual average basis from all surfaces on the entire site are targeted for control. Control is in the following hierarchical order, with each step exhausted before proceeding to the next: 1) retention (infiltration, reuse, or evapotranspiration), 2) LID filtration, and 3) conventional Stormwater management. Step 3, conventional Stormwater management, should proceed only once Maximum Extent Possible [8] has been attained for Steps 1 and 2 for retention and filtration. 4. Recharge is the infiltration and movement of surface water into the soil, past the vegetation root zone, to the zone of saturation, or water table. 5. Pre-development is defined as the more stringent of the two following scenarios: 1) a site's existing condition, or 2) as defined by the local municipality. 6. Major Development has the same meaning as in the Lake Simcoe Protection Plan, 2009. 7. Currently, the approved tool by LSRCA for calculating the water balance is the Thornthwaite-Mather Method. Other tools agreed upon by relevant approval agencies (e.g., LSRCA, municipality, or Ministry) may also be acceptable, subject to written acceptance by the Director. 8. Maximum Extent Possible means maximum achievable Stormwater volume control through retention and LID filtration engineered/landscaped/technical Stormwater practices, given the site constraints [11]. 9. Information pertaining to LSRCA's Recharge Compensation Program and Phosphorus Offsetting Policy is available on LSRCA's website

	(lsrca.on.ca), or in “Water Balance Recharge Policy for the Lake Simcoe Protection Plan”, dated July 2021, and prepared by Lake Simcoe Region Conservation Authority and “Phosphorus Offsetting Policy”, dated July 2021, and prepared by Lake Simcoe Region Conservation Authority. 10. Retrofit means: 1) a modification to the management of the existing infrastructure, 2) changes to major and minor systems, or 3) adding Stormwater infrastructure, in an existing area on municipal right-of-way, municipal block, or easement. It does not include conversion of a rural cross-section into an urban cross-section. 11. Site constraints must be documented. A list of site constraints can be found in Table A2. 12. Tools for calculating phosphorus budgets may include the Ministry’s Phosphorus Tool, the Low Impact Development Treatment Train Tool developed in partnership by TRCA, LSRCA, and Credit Valley Conservation (CVC), or other tools agreed upon by the LSRCA and other relevant approval agencies including the municipality. 13. Possible to look at combined grey infrastructure and LID system capacity jointly. 14. Local needs include requirements for water quality, erosion, and/or water balance retrofits identified by the owner through ongoing operation and maintenance of the stormwater system, including inspection of local receiving systems and the characterization of issues requiring remediation through retrofit controls. 15. All studies shall conform with Ministry policies. If any conclusions in the studies negate policy, then the project will require a direct submission to the Ministry for review through an application pertaining to a Schedule C Notice.

Table A2. Stormwater Management Practices Site Constraints

	Site Constraints
a)	Shallow bedrock [1], areas of blasted bedrock [2], and Karst;
b)	High groundwater [1] or areas where increased infiltration will result in elevated groundwater levels which can be shown through an appropriate area specific study to impact critical utilities or property (e.g., susceptible to flooding);
c)	Swelling clays [3] or unstable sub-soils;
d)	Contaminated soils (e.g., brownfields);
e)	High Risk Site Activities including spill prone areas;
f)	Prohibitions and or restrictions per the approved Source Protection Plans and where impacts to private drinking water wells and /or Vulnerable Domestic Well Supply Areas cannot be appropriately mitigated;
g)	Flood risk prone areas or structures and/ or areas of high inflow and infiltration (I/I) where wastewater systems (storm and sanitary) have been shown through technical studies to be sensitive to groundwater conditions that contribute to extraneous flow rates that cause property flooding / Sewer back-ups;
h)	For existing municipal rights-of-way infrastructure (e.g., roads, sidewalks, utility corridor, Sewers, LID, and trails) where reconstruction is proposed and where surface and subsurface areas are not available based on a site-specific assessment completed by a QP;

i) For developments within partially separated wastewater systems where reconstruction is proposed and where, based on a site-specific assessment completed by a QP, can be shown to:
   i Increase private property flood risk liabilities that cannot be mitigated through design;
   ii Impact pumping and treatment cost that cannot be mitigated through design; or
   iii Increase risks of structural collapse of Sewer and ground systems due to infiltration and the loss of pipe and/or pavement support that cannot be mitigated through design.

j) Surface water dominated or dependent features including but not limited to marshes and/or riparian forest wetlands which derive all or a majority of their water from surface water, including streams, runoff, and overbank flooding. Surface water dominated or dependent features which are identified through approved site specific hydrologic or hydrogeologic studies, and/or Environmental Impact Statements (EIS) may be considered for a reduced volume control target. Pre-consultation with the MECP and local agencies is encouraged;

k) Existing urban areas where risk to water distribution systems has been identified through assessments to meet applicable drinking water requirements, including Procedures F-6 and F-6-1, and substantiated by a QP through an appropriate area specific study and where the risk cannot be reasonably mitigated per the relevant design guidelines;

l) Existing urban areas where risk to life, human health, property, or infrastructure has been is identified and substantiated by a QP through an appropriate area specific study and where the risk cannot be reasonably mitigated per the relevant design guidelines;

m) Water reuse feasibility study has been completed to determine non-potable reuse of Stormwater for onsite or shared use;

n) Economic considerations set by infrastructure feasibility and prioritization studies undertaken at either the local/site or municipal/system level [4].

Footnote:

1. May limit infiltration capabilities if bedrock and groundwater is within 1m of the proposed Facility invert per Table 3.4.1 of the LID Stormwater Planning and Design Guide (2010, V1.0 or most recent by TRCA/CVC). Detailed assessment or studies are required to demonstrate infiltration effects and results may permit relaxation of the minimum 1m offset.
2. Where blasting is more localized, this constraint may not be an issue elsewhere on the property. While infiltration-based practices may be limited in blasted rock areas, other forms of LID, such as filtration, evapotranspiration, etc., are still viable options that should be pursued.
3. Swelling clays are clay soils that is prone to large volume changes (swelling and shrinking) that are directly related to changes in water content.
4. Infrastructure feasibility and prioritization studies should comprehensively assess Stormwater site opportunities and constraints to improve cost effectiveness, environmental performance, and overall benefit to the receivers and the community. The studies include assessing and prioritizing municipal infrastructure for upgrades in a prudent and economically feasible manner.