Ontario

ENVIRONMENTAL COMPLIANCE APPROVAL
For a Municipal Stormwater Management System

ECA Number: 014-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:

Barrie, Corporation of the City of

20 Royal Parkside Dr
Barrie, ON L4M 0C4

For the following Sewage Works:

City of Barrie 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 19th day of June, 2024

Signature

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

Schedule A: System Information

System Owner	**Barrie, Corporation of the City of**
ECA Number	**014-S701**
System Name	**City of Barrie Stormwater Management System**
ECA Issue Date	**June 19th, 2024**

1.0 ECA Information and Mandatory Review Date

ECA Issue Date	June 19th, 2024
Application for ECA Review Due Date	February 15, 2026

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.2.0 (May 31, 2023)

3.0 Stormwater Master Plan and Asset Management Plan

Document Title	Version
City of Barrie Stormwater Asset Management Plan	v.1 (January 2021)
Drainage Master Plan	v.1 (March 29, 2019)
Barrie Creeks, Lovers Creek and Hewitt's Creek Subwatershed Plan	v.1 (2012)

4.0 Operating Authority

System	Operating Authority
City of Barrie Stormwater Management System	Corporation of the City of Barrie

Schedule B: Municipal Stormwater Management System Description

System Owner	**Barrie, Corporation of the City of**
ECA Number	**014-S701**
System Name	**City of Barrie Stormwater Management System**
ECA Issue Date	**June 19th, 2024**

1.0 System Description

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

Overview

The City of Barrie (COB) Stormwater Management (SWM) System serving the Lake Simcoe and the Nottawasaga Watersheds; consists of approximately 676 kilometres (km) of storm sewer mains, culverts, ditches, and watercourses. The system includes 82 stormwater management facilities which consist of 41 dry facilities and 41 wet facilities, with a Level of Treatment ranging from enhanced 80% long-term T.S.S. removal to only quantity control. The system also has 65 Oil Grit Devices and 7 functioning LID sites with additional devices and sites planned in the future. The Drainage System serves the urban area of the City of Barrie. The current population of 156,593 reside across a drainage area of approximately 10,100 ha, with a mix of residential, commercial, and institutional and industrial land uses for the planning horizon 2031. The Drainage System has two distinct areas: the Lake Simcoe Watershed covering 7,100 ha and the Nottawasaga Valley watershed covering 3,000 ha. Both watersheds include lands that fall within the City's downtown core and the annexation lands. Future growth for both watersheds will be focused on undeveloped annexation lands to the southwest for the Nottawasaga Valley watershed and to the southeast for Lake Simcoe watershed.

This Municipal Stormwater Management System connects to the Township of Essa via the Bear Creek subwatershed and to Township of Springwater via Little Lake subwatershed.

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
Barrie Storm Infrastructure Map	2021

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	7	--
Storm Sewers	> 250 - 500	204	--
Storm Sewers	> 500 - 1050	189	--
Storm Sewers	> 1050	42	--
Total Storm Sewers	--	--	442
Ditches / Swales	--	--	131
Total System Length (km)	--	--	676

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			7				7

(infiltration, evapotranspiration, harvest)							
LID Facilities - Filtration	--	--	--	--	--	--	N/A
Stormwater Management Ponds – Wet (includes wetlands, hybrids)	5	1	34		40	40	40
Stormwater Management Ponds - Dry	42					42	42
Super Pipe / Storage Facility	--	--	--	--	--	--	N/A
Filtration MTD - Filter Unit	--	--	--	--	--		N/A
Sedimentation MTD - OGS	65				65		65
Pumping Stations							N/A
Other	--	--	--	--	--	--	N/A
Total Number of Facilities							154

* 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		N/A	
Third Pipe Sewer	> 250 - 500		N/A	
Third Pipe Sewer	> 500		N/A	
Total				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)	

* 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:

BK08 SWM Wet Pond Facility

Location	165 Ferndale Drive North, Barrie, Ontario	City Owned Facility - Lot 23, Concession 6
Watershed/Subwatershed	Lake Simcoe/Bunkers Creek	
Receiver of discharge	Bunkers Creek Watershed	
Outlet location	79°42'53.723"W 44°22'52.044"N	
Catchment Area	74.19 Hectares	
Level of Treatment for suspended solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for other Contaminants, as required		
Level of Volume control	31,800 m^3	
Design Storm	Quantity – 100 year	
Reference ECA(s)	ECA No. 7796-82XTFM issued March 11, 2010, 1977, 8130-ACUPHF issued October 5, 2016	
Reference Sewage Works as part of treatment train		
Brief Description	A stormwater management system that services approximately 74.19 ha of the City's Operations Centre and residential areas located north of Dunlop Street West and South of Edgehill Drive in the City of Barrie, relying on an extended detention wet pond having a permanent pool storage volume of 10,200 m^3, an extended detention storage volume of 8,000 m^3 and a total active storage volume of 31,800 m^3 during the 100-year storm event, complete with three inlets consisting of a 126 m long 1,350 mm diameter concrete storm sewer (including a 24 m long 750 mm diameter and a 26 m long 900 mm diameter concrete storm sewers connected to the 1,350 mm inlet pipe), a 16 m long 450 mm diameter CSP culvert and a 20 m long 900 mm diameter concrete culvert, forebay, a 13 m wide emergency overflow spillway and an outlet control structure consisting of two 300 mm hickenbottom perforated pipes, 375 mm diameter outlet pipe complete with a 307 mm diameter orifice plate (bolted to the inside of a 1,800 mm outlet control maintenance hole) allowing for a maximum discharge rate of 0.13 m^3/s to provide erosion and quality control by detaining the extended detention storage over a duration of 29 hours and two 1.8 m x 0.9 m ditch inlet catchbasins complete with a 660 mm orifice plate and a 750 mm diameter outlet pipe to the 1,800 mm outlet control maintenance hole allowing for a maximum combined two orifices discharge rate of 1.579 m^3/s from the 1,800 mm outlet control maintenance hole during the 100-year storm event, discharging via a 750 mm diameter outlet pipe into river run stones to an existing ditch along the south boundary which discharges to Bunkers Creek and ultimately to Lake Simcoe.	
Receive Emergency Sanitary Overflows	No	

Notes	NA
Location	NA

BR01 SWM Dry Pond Facility

Location	10 Lougheed Road, Barrie, Ontario	Plan M540, Block 673 and 674
Watershed/Subwatershed	Nottawasaga/Bear Creek Watershed	
Receiver of discharge	Bear Creek Watershed	
Outlet location	079°44'04"W 44°19'14"N	
Catchment Area	543.04 Hectares	
Level of Treatment for suspended solids	Uknown	
Treatment for other Contaminants, as required		
Level of Volume control	256,008 m^3	
Design Storm	Quantity - Unknown	
Reference ECA(s)	ECA No. 3-1264-94-006 issued October 3, 1994, ECA No. 8130-ACUPHF issued October 5, 2016.	
Reference Sewage Works as part of treatment train		
Brief Description	A natural feature within the Bear Creek subwatershed located approximately 30 m from the Town Line (Simcoe County Rd 27). The pond recieves flows from a local drainage area of 534.04 ha, consisting of residential and commercial land use. The natural feature conveys flows into the pond via a wetland/stream corridor in Bear Creek valley between pond BR03 and Simco County Rd 27. The stormwater facility includes two (2) inlets with headwall, one (1) north conveying flow from Logan Crt, and one (1) south conveying flow from Lougheed Rd/Selkirk Cres. The creek outlets at the west end of the pond towards Simcoe County Rd 27 via a 2000 mm corrugated steel culvert (DPBR00071) and eventually discharges into the Nottawasaga River.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR03 SWM Dry Pond Facility

Location	123 Lougheed Road, Barrie, Ontario	Subdivision 240 - Lots 1 and 2, Concession 11
Watershed/Subwatershed	Nottawasaga/Bear Creek Watershed	
Receiver of discharge	Bear Creek Watershed	
Outlet location	79°43'42.224"W 44°19'25.701"N	
Catchment Area	252.88 Hectares	
Level of Treatment for suspended solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for other Contaminants, as required		
Level of Volume control	4,500 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1264-94-006 issued October 3, 1994, 1977, 8130-ACUPHF issued October 5, 2016	
Reference Sewage Works as part of treatment train		
Brief Description	The stormwater management system utilizes the natural valley storage (maximum 42,668 m^2 at an elevation of 293.5 m) in the north tributary upstream of Lougheed Road (east side). The crossing of the north tributary by Lougheed Road, approximately 160 m south of Mapleview Drive, retains storm flows within the valley in order to mitigate peak storm flows. The road embankment was designed as a small dam to obtain approvals under the Lakes and Rivers Improvement Act. The dam has 4:1 side slopes and a minimum road elevation of 294.7 m. The outlet structure is designed to provide the required level of controls for the range of storms from the 1:2 year storm to the regional timmins storm. Two culverts are located under the road crossing. The first culvert is a 1,500 mm diameter concrete pipe which has been designed to provide stormwater attenuation for flows up to the 100-year storm. Stormwater ouletting to the 1,500 mm diameter culvert is controlled via three inlets which are at different elevations. A 600 mm diameter orifice is set at 287.5 m which corresponds to the pond invert. The orifice is installed at the inlet end of a 1,000 mm diameter CSP and conveys storm flows to the outlet for water elevations above 289 m. At an elevation greater than 291.5 m the water flows into the top of the 2,400 mm diameter drop structure to the oulet. The second culvert (3,890 mm x 2,690 mm CSP Arch) is located at approximately 292.0 m and provides a dual function. This culvert provides a pedestriam and wildlife passage through the road embankment and conveys part of the 1:100 year storm and the regional Timmins Storm peak flows.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR05 SWM Dry Pond Facility

Location	355 Harvie Road, Barrie, Ontario	Subdivision 226 - Lots 3 and 4, Concession 13
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of discharge	Bear Creek Watershed	
Outlet location	79°43'2.469"W 44°20'29.571"N	
Catchment Area	18.46 Hectares	
Level of Treatment for suspended solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for other Contaminants, as required		
Level of Volume control	8,900 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0752-96-006 issued August 29, 1996, 1977, 8130-ACUPHF issued October 5, 2016	
Reference Sewage Works as part of treatment train		
Brief Description	A stormwater mangement pond with a storage volume of 8,900 m^3 and maximum side slopes of 3:1, constructed approximately 150 m west of the intersection of Harvie Road and Emms Drive to control post-development stormwater flows to pre-development levels up to a 1:100 year storm event with the an inlet consisting of a 900/1,500 mm storm sewer constructed and extended from Harvie Road west of Emms Drive to the south-east corner of the pond. An outlet flow structure is constructed at the south-west corner of the pond including maintenance hole MH 35 having two (2) inlet pipes connected from the pond to the maintenance hole and one (1) outlet pipe, the 450 mm diameter lower inlet pipe equipped with a 273 mm diameter orifice at the inlet of the inlet pipe (with an invert elevation of orifice at 293.60 m) allowing detained stormwater to be discharged at a maximum rate of 279.0 L/s through the 600 mm diameter downstream outlet pipe to a tributary of Bear Creek, the 600 mm diameter upper inlet pipe equipped with a 400 mm diameter orifice at the outlet of the inlet pipe (with an invert elevation of orifice at 294.90 m) allowing detained stormwater to be discharged at a maximum rate of 442.0 L/s through the 600 mm diameter downstream outlet pipe to a tributary of Bear Creek. The stormwater facility is equipped with a 13.0 m long overflow weir having a weir crest elevation of 296.95 m, constructed near the middle of the west berm of the pond allowing excess stormwater at a water level greater than the weir crest elevation to overflow to a tributary of Bear Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR06 SWM Wet Pond Facility

Location	134 Cumming Drive, Barrie, Ontario	Subdivision 281 - Lots 3 and 4, Concession 13
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°42'58.913"W 44°20'52.123"N	
Pond Catchment Area	25.47 Hectares	
Level of Treatment for Suspended Solids	Level 1 Enhanced (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	Water temperature	
Level of Volume Control	9,100 m3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-1316-99-006 issued November 19, 1999, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility consisting of one (1) sediment forebay for the sedimentation of heavier suspended solids in flows below 2.23 m3/s and in excess of 2.23 m3/s discharging directly to a wet pond via a swale; one (1) stormwater extended detention pond with a permanent pool volume of 2,800 m3 and extended detention storage volume of 9,100 m3 for quantity and quality control of the storm water runoff from the site; one (1) quality control structure with a 300 mm diameter bottom-draw fitted with a 160 mm diameter orifice plug for control of flow at a maximum of 44 L/s with a draw down time of 24 hours; one (1) quantity control structure consisting of a ditch inlet catch basin with a 45°V-notch weir handle storm flow up to a 5 year return period and a 500 mm diameter outlet pipe equipped with a 475 mm diameter orifice, restricting the maximum discharge during a 100- year storm to 0.71 m2 to an outlet swale; one (1) 46 m long bio-engineered rip-rap outlet swale for receiving all discharges from the storm water management facility prior to discharging into an existing water course.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR07 SWM Dry Pond Facility

Location	22 Hawthorne Crescent, Barrie, Ontario	Subdivision 162 - Lot 2,3 and 4, Concession 13
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°42'55.498"W 44°21'6.962"N	
Pond Catchment Area	19.68 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	4,341 m^3	
Design Storm	Quantity - Not Specified	
Reference ECA(s)	ECA No. 3-0316-96-006 issued May 23, 1996 & 7215-5V2JPY issued January 13, 2004, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater detention pond located within the East Tributary Valley of Bear Creek and approximately 110 m west of Ferndale Drive South/Wildwood Trail. Up to 4,341 m^3 of stormwater, to a depth of 3.7 m, can be detained at an elevation of 269 m. Up to top water elevation 267 m, stormwater will discharge through an inlet control orifice, with invert elevation of 265.15 m, which will limit the maximum flows to 125 L/s. Above top water elevation 267 m, stormwater will discharge through the orifice as well as through a 250 mm storm sewer outlet. The discharged stormwater then flows through a 600 mm diameter storm outfall sewer and a 1.5 m wide overland swale constructed along an easement and discharging to a rip-rap channel leading to an existing 750 mm diameter concrete culvert (emptying into the east tributary of Bear Creek) located under Ardagh Road.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR08a SWM Dry Pond Facility

Location	91 Red Oak Drive, Barrie, Ontario	Subdivision 286 - Lot 1, Concession 12
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°43'59.081"W 44°19'50.41"N	
Pond Catchment Area	93.29 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	42,000 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1361-97-006 issued September 23, 1997, 8130-ACUPHF issued October 5, 2016	
Brief Description	Pond BR08a consists of a 6.5m embankment constructed immediately upstream of pond BR08b. The resulting upstream detention volume is approximately 42,000 m^3. The pond is designed to be a dry detention facility with a 1:100 year storage volume at a ponding elevation of 297.40 m including a sediment forebay with a forebay berm consisting of a 3 m wide overflow weir at an elevation of 297.50 m complete with a 100 mm conveyance pipe and hickenbottom type inlet riser section discharging to a 3 m wide low flow channel through the main section of the pond and its outlet control berm, including a 600 mm diameter concrete pipe with a 500 mm diameter discharge orifice plate with a release rate of 1.160 m^3/s. The pond discharges to the existing adjacent pond, BR08b, complete with a 100 mm diameter conveyance pipe and hickenbottom type inlet riser section. Storm flows that exceed the control structure capacity will by-pass the pond via the 1,390 mm x 970 mm overflow corrugated arch steel pipe at the inlet elevation of 298.00 m installed in the control berm. The facility design includes all permanent erosion control facilities, access roadways, fencing, pond vegetation and any associated appurtenances.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR08b SWM Wet Pond Facility

Location	90 Red Oak Drive, Barrie, Ontario	Subdivision 286 - Lot 1, Concession 12
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°44'10.686"W 44°19'49.411"N	
Pond Catchment Area	137.54 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	25,600 m^3	
Design Storm	Quantity 100 Year	
Reference ECA(s)	ECA No. 3-0176-97-006 issued March 11, 1997, 8130-ACUPHF issued October 5, 2016	
Brief Description	This facility is designed with a of 25,600 m^3 of storage volume to provide water quantity control for 137.54 ha of upstream watershed. The pond is designed to restrict the 100 year post development peak flow runoff to a peak flow of 1.06 m^3/s. This stormwater management facility is located adjacent to Highway 131, 600 m north of Mapleview Drive West in the City of Barrie. This stormwater management facility discharges to an existing 1400 mm diameter CSP culvert under Highway 131 and is part of the Bear Creek Watershed. This stormwater management facility has an inlet structure and an outlet control structure to attenuate peak post development flows as follows: **Storm Event** / **Flow (m^3)** / **Storage (m^3)** 1:2 Year / 0.452 / 7,200 5 Year / 0.550 / 14,900 100 Year / 1.064 / 25,600 This facility includes a 375 mm drainage pipe, 100 mm low flow pipe complete with gate valve, an overflow wier for the 100-year storm and gabion baskets and concrete headwalls at the inlet and outlet of the facility.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR09 SWM Wet Pond Facility

Location	95 Summerset Drive, Barrie, Ontario	Subdivision 269 – on part of the South Half of Lot 3 Concession 14
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°43'31.672"W 44°21'34.317"N	
Pond Catchment Area	39.56 Hectares	
Level of Treatment for Suspended Solids	Level 1 Enhanced (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	15,011 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0431-99-006 issued July 23, 1999, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management system that services the Parkland Chase Subdivision (43T-95508), the Fanshore/Gailcrest Property, the 998817 Ontario Inc. property and the Van Gastel property located on Part of the South Half of Lot 3, Concession 14, in the City of Barrie, as follows: An extended detention/erosion control wet pond collecting up to a 100-year storm event from an area of approximately 39.62 ha having an overall storage volume of 15,011 m^3 including an active extended detention storage of 2,300 m^3 and a permanent wet pool storage volume of 6,513 m^3 complete with inlet structure, sediment forebay, forebay outlet, gabion mat, gabion basket, pond outlet and control structure including a 300 mm diameter pipe complete with 200 mm diameter orifice and a secondary 400 mm diameter orifice, an outlet grate control, a 750 mm diameter outlet pipe and an overflow weir allowing a maximum combined discharge of 2.08 m^3/s to the City owned lands leading through overland drainage to the Bear Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR10 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>591 Ardagh Road, Barrie, Ontario</td><td>Subdivision 312 - Lot 1, Concession 13</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Nottawasaga/Bear Creek</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Bear Creek Watershed</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°44'27.526"W 44°20'55.686"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">90.27 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">8,410 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity – 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 6001-5TFMV8 issued February 9, 2004, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">A stormwater management facility that serves the Forest Hill residential subdivision in the City of Barrie comprising of a extended detention wet pond having a sediment forebay area for removal of sediment, a permanent pool storage volume of approximately 8,410 m^3 and an extended detention volume of 6,880 m^3 which is slowly released over a minimum 24 hour period with discharge via a bottom draw reverse slope outlet pipe from a hickenbottom type of outlet structure and pond storage to attenuate the peak post-development flows to levels less than the peak pre-development levels during major storm events as follows:

<table>
<tr><th>Storm Event</th><th>Flow (m^3)</th></tr>
<tr><td>2 Year</td><td>0.74</td></tr>
<tr><td>5 Year</td><td>2.37</td></tr>
<tr><td>25 Year</td><td>4.72</td></tr>
<tr><td>100 Year</td><td>8.51</td></tr>
</table>

Discharging via twin outfall sewers (750 mm and 875 mm storm sewers along Ardagh Road) into a twin box culvert located under County Road 27. Including an emergency overflow spillway discharging to culverts located under County Road 27 and eventually to the west tributary of Bear Creek.</td></tr>
<tr><td>Receive Emergency Sanitary Overflows</td><td colspan="2">No</td></tr>
<tr><td>Notes</td><td colspan="2">NA</td></tr>
<tr><td>Location</td><td colspan="2">NA</td></tr>
</table>

BR13 SWM Dry Pond Facility

Location	38 Wildwood Trail, Barrie, Ontario	Subdivision 137 - Lot 5, Concession 13
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°42'42"W 44°21'46"N	
Pond Catchment Area	78.75 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	9,000 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1457-90-006 issued September 5, 1990, 8130-ACUPHF issued October 5, 2016	
Brief Description	A storm detention pond constructed approximately 110 m north of Wildwood Trail and 150 m west of Hounds Street. The pond is designed for a 100-year storm with a minimum storage volume of 9,000 m^3 to retain surface run off from a total area of approximately 78.75 ha within the Bear Creek drainage basin. Discharge is controlled at a rate of 3.38 m^3/s into an existing 1,000 mm diameter culvert on Ardagh Road, which discharges into a stream on the south side of the culvert via an outlet system. The outlet system consisting of a 1.2 m x 0.6 m x 3.0 m concrete outlet structure fitted with a 10 m of 750 mm diameter storm sewer on the upstream side; a 22.5 m of 900 diameter storm sewer on the downstream side; followed with a 93 m of 1,050 mm diameter storm sewer up to Ardagh Road. Low flow channels, a 4 m wide access road, erosion and silt control facilities and regrading of the surrounding areas.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR14 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>121 Ferndale Drive South, Barrie, Ontario</td><td>Subdivision 190 - Part of Lots 4 and 5, Concession 14</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Nottawasaga/Bear Creek</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Bear Creek Watershed</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°42'42.205"W 44°21'45.619"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">127.95 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">4,190 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity – 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 9276-6MEM2P issued March 3, 2006, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">A stormwater retention facility located approximately 50 m east of Ferndale Drive and approximately 75 m north of Bishop Drive. It is comprised of an extended detention pond serving a total tributary area of approximately 127.95 ha and providing an Enhanced Level of habitat protection, with two inlets storm sewers (the eastern inlet and the western inlet) discharging via concrete headwalls to sediment forebay areas for the removal of sediment, together with a permanent pool storage volume of approximately 4,190 m^3 and an extended detention storage volume of approximately 3,700 m^3 for quality control, and an outlet control structure equipped with flow restricting orifice and weir to slowly release the runoff from a 25 mm rainfall event over a minimum period of 32.5 hours and providing storage to attenuate the peak post-development flows to target flow rates during major storm events as follows:
<table>
<tr><th>Storm Event</th><th>Target Flow Rates</th><th>Attenuated Pond Post-Development Flow</th><th>Approximately Storage</th></tr>
<tr><td>2 Year</td><td><1.3 m^3/s</td><td>0.5 m^3/s</td><td>4,500 m^3</td></tr>
<tr><td>5 Year</td><td>2.6 m^3/s</td><td>1.20 m^3/s</td><td>5,900 m^3</td></tr>
<tr><td>25 Year</td><td>4.7 m^3/s</td><td>2.83 m^3/s</td><td>9,300 m^3</td></tr>
<tr><td>100 Year</td><td>7.0 m^3/s</td><td>4.28 m^3/s</td><td>11,360 m^3</td></tr>
<tr><td>Regional Storm</td><td>n/a</td><td>4.74 m^3/s</td><td>12,000 m^3</td></tr>
</table>
Including an emergency overflow spillway, discharging to the</td></tr>
</table>

	existing adjacent Bear Creek wetland that conveys flows to Bear Creek and ultimately to the Nottawasaga River.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

BR15 SWM Dry Pond Facility

Location	Cityview Circle, Barrie, Ontario	Subdivision 189 - Lot 5, Concession 13
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°42'16.365"W 44°20'59.73"N	
Pond Catchment Area	31.91 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	8,900 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0417-91-006 issued July 16, 1991, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater detention pond located approminately 120 m west of Essa Road and North of Cityview Circle, with a dry capacity of approximately 12,000 m^3, with an outlet structure consisting of 2 orifice plates 200 mm and 450 mm diameters respectively and a 5 m wide weir and emergency spillway with a depth of 0.3 m and bottom width of 15.0 m, a low flow channel with filter fabric, a 450 mm clay lining, inflow and outflow headwall structures with sewers to control outflow rates for post-development storm events from 1:5 development rates of 320 L/s and 950 L/s respectively.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR16 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>110 Reid Drive, Barrie, Ontario</td><td>Subdivision 345 - Lots 4 and 5, Concession 11</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Nottawasaga/Bear Creek</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Bear Creek Watershed</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°42'20.201"W 44°19'45.812"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">37.97 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">16,134 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity - 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 3227-4XTQ6W & 5706-6Y5HY7 issued July 3, 2001 & February 8, 2007, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">An extended wet detention pond to serve a total drainage area of approximately 37.97 ha, providing an Enhanced Level of Protection of downstream habitat, with inlet sewers discharging to two independent sediment forebay areas for removal of sediment, and a main cell providing approximately 16,134 m^3 of permanent pool storage volume and an extended detention storage volume of approximately 9,150 m^3 with slow release over a period of 48 hours, and providing storage during major storms, outletting via a hickenbottom structure and a flow control structure equipped with a restricting orifice to attenuate peak post-development levels as follows:

<table>
<tr><th>Storm Event</th><th>Allowable Flow</th><th>Post-Development Flow (Attenuated)</th><th>Storage Volume</th></tr>
<tr><td>2 Year</td><td>0.22 m^3/s</td><td>0.21 m^3/s</td><td>25,680 m^3/s</td></tr>
<tr><td>5 Year</td><td>0.300 m^3/s</td><td>0.260 m^3/s</td><td>33,937 m^3/s</td></tr>
<tr><td>25 Year</td><td>0.626 m^3/s</td><td>0.591 m^3/s</td><td>37,835 m^3/s</td></tr>
<tr><td>100 Year</td><td>1.07 m^3/s</td><td>0.807 m^3/s</td><td>40,727 m^3/s</td></tr>
</table>

With controlled discharge outletting to the existing 975 mm storm sewer which is connected to an exisitng 1,050 mm diameter concrete culvert which crosses Mapleview Drive West, outletting to the Redfern Channel, together with maintenance drain with valve, perimeter fencing, and</td></tr>
</table>

	emergency overflow weir for dissipating Regional Storm flows overland.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

BR20 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>60 Reid Drive, Barrie, Ontario</td><td>Subdivision 195 - Lot 5, Concession 12</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Nottawasaga/Bear Creek</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Bear Creek Watershed</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°42'22.916"W 44°19'55.708"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">73.45 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">6,400 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity - 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 3-0528-91-926 & 0816-5YQNSZ issued April 2, 1992 & May 10, 2004, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">A stormwater management facility located in part of Lot 5, Concession 12 within Registered Plan 51M-495 in the City of Barrie, located north of Mapleview Drive West and west of Veterans Drive to serve the Mapleview West Industrial Park – Phase II comprising of the following:

An extended detention pond having five inlet sewers to the pond, four of which discharge to two sediment forebay areas providing a total permanent pool storage volume of approximately 6,400 m^3 and an extended detention storage of 12,650 m^3 with slow release of pond contents over a 48 hour period, together with a flow restricting orifice located within an outlet control structure to attenuate the peak post development flows to levels less than the peak pre-development flow during major storm events as follows:

<table>
<tr><th>Storm Event</th><th>Post Development Flow</th><th>Storage Volume</th></tr>
<tr><td>5 year</td><td>0.26 m^3/s</td><td>29,837 m^3/s</td></tr>
<tr><td>100 Year</td><td>1.41 m^3/s</td><td>41,137 m^3/s</td></tr>
<tr><td>Regional Storm</td><td>3.65 m^3/s</td><td>50,513 m^3/s</td></tr>
</table>

Discharge occurs via a drainage channel that conveys flows to Bear Creek and ultimately to the Nottawasaga River.</td></tr>
<tr><td>Receive Emergency Sanitary Overflows</td><td colspan="2">No</td></tr>
<tr><td>Notes</td><td colspan="2">NA</td></tr>
<tr><td>Location</td><td colspan="2">NA</td></tr>
</table>

BR22 SWM Wet Pond Facility

Location	84 Graihawk Drive, Barrie, Ontario	Subdivision 316 - Lot 2 and 3, Concession 14
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°43'45.963"W 44°21'29.452"N	
Pond Catchment Area	75.95 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	31,402 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3446-6J7QBF issued December 7, 2005, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and appurtenances including major sewers and channels conveying the run-off to the Stormwater Management Pond. The stormwater management facility includes two (2) inlets, one (1) east and one (1) south with head wall, a sediment forebay 38 m long by 27 m wide by 1.5 m deep. A a storage pond consisting of a permanent pool with a capacity of approximately 9,002 m^3 and an active storage of approximately 22,400 m^3. There is an outlet maintenance hole No. 28 (MH28) equipped with a 1,050 mm diameter reverse flow bottom inlet pipe and a 200 mm orifice, a 1.4 m wide weir, a 2 - 750 mm outlet pipes, and a 10 m wide emergency weir. The flow from the outlet eventually enters Bear Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR24 SWM Wet Pond Facility

Location	164 King Street, Barrie, Ontario	Subdivision 364 - Lot 4, Concession 11
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°42'42.562"W 44°19'23.817"N	
Pond Catchment Area	23.62 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	13,805 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 6798-745HYE issued June 18, 2007, 8130-ACUPHF issued October 5, 2016	
Brief Description	The stormwater management pond main cell and forebay has a bottom elevation of 303.70 m and the permament pool elevation of 304.70 m which results in a permanent pool depth of 1.0 m. The pond has a volume of 8,192 m^3, including main cell and forebay, and provides 13,805 m^3 of extended detention volume. The top of the forebay berm is set at 305.00 m, which is 0.30 m above the permanent pool elevation. The pond discharges through a reverse-sloped 300 mm storm pipe with a 150 mm diameter orifice plate bolted to the inside of a concrete maintenance hole at the permanent pool elevation of 304.7 m. A 400 mm diameter secondary orifice has been installed directly in the maintencance hole outlet control structure at an elevation of 305.85 m, which controls the storm events above the 5-year storm up to an including the 100-year storm. An emergency overflow weir, with a channel width of 3.5 m, has been provided to act as an outlet during the Regional storm as an emergency outlet. From the maintenance hole outlet control structure, stormwater will be conveyed via a 675 mm diameter concrete strom sewer to stormwater management pond BR25.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BR25 SWM Wet Pond Facility

Location	760 Essa Road, Barrie, Ontario	Subdivision 253 - Plan 51M−778, Block 3
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°43'5.429"W 44°19'21.28"N	
Pond Catchment Area	105.07 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	9,810 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 5311-5QBNAM issued October 8, 2003, 8130-ACUPHF issued October 5, 2016	
Brief Description	One (1) wet pond facility with a permanent pool volume of 4,805 m^3 (at elevation 303.1 metres), extended detention storage volume of 1,540 m^3 (at elevation 303.37 m) and overall storage volume of 9,810 m^3 (at the overflow elevation of 303.9 m), including a duramat lined sediment forebay, discharging to Essa Road via a hickenbottom structure equipped with a 115 mm diameter flow control orifice (at elevation 303.1 m) and a 2.5 m wide Cipolletti type overflow weir (with overflow elevation of 303.9 m).	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

OGS to BR30 SWM Dry Pond Facility

Location	3 Greenwich Street, Barrie, Ontario	Subdivision 400 - Plan 51M−1089, Block 45
Watershed/Subwatershed	Nottawasaga/Bear Creek	
Receiver of Discharge	Bear Creek Watershed	
Outlet Location	79°43'03.4"W 44°21'45.9"N	
Pond Catchment Area	4.66 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	4000 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 5242-AETKZK issued November 10, 2016	
Brief Description of OGS	One (1) oil and grit separator (Stormceptor STC 6000), located on Greenwich Street, west side of Ferndale Drive South, and receiving inflows from the run-off of the residential subdivision development, having a sediment storage capacity of approximately 26.945 m^3, an oil storage capacity of approximately 3,930 L, a total storage volume of approximately 30.875 m^3, and a maximum treatment flow rate of approximately 0.614 m3 /s, discharging via a 600 mm diameter outflow pipe to the stormwater management facility.	
Brief Description of SWM Pond	A stormwater management facility consisting of one (1) dry pond, located on Block 45, on the north side of Greenwich Street, west of Ferndale Drive South, having a total detention storage volume of approximately 4,000 m^3 at a depth of approximately 2 m, receiving inflows from the oil an grit separator, and run-off from site. The facility consists of a Hickenbottom riser, outlet with 195 mm diameter and 75 mm diameter orifices, 300 and 600 mm diameter Boss 2,000 HDPE storm pipe and 1,500 mm maintenance hole control, discharging to the 150-300 mm diameter rip-rap protection and then to the Bear Creek Provinically Singnificant Wetland.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BY01 SWM Wet Pond Facility

Location	28 Plunkett Court, Barrie, Ontario	Subdivision 298 - Lot 14 and 15, Concession 13.
Watershed/Subwatershed	Lake Simcoe/Bayshore Drainage Area	
Receiver of Discharge	Bayshore Drainage Area	
Outlet Location	79°38'20.035"W 44°22'15.398"N	
Pond Catchment Area	14.03 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	6,250 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 7238-7MDQDF issued January 9, 2009, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management system to service the Melia Property on Kempenfelt Bay, located at 200 & 204 Dock Road in the City of Barrie, relying on a stormwater wet pond, having a design minimum liquid retention volume of 6,250 m^3; equipped with a sediment forebay, an outlet structure to convey flows from the 2 to 100-year events, and an emergency outlet struture to convey flows from the 2 to 100-year events	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

BY03 SWM Wet Pond Facility

Location	33 Bayshore Boulevard, Barrie, Ontario	Subdivision 283 - Lot 13, Consession 13
Watershed/Subwatershed	Lake Simcoe/Bayshore Drainage Area	
Receiver of Discharge	Bayshore Drainage Area	
Outlet Location	79°38'34.264"W 44°22'11.668"N	
Pond Catchment Area	33.32 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-term T.S.S. removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	9,899 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-1551-98-006 issued November 9, 1998, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management system collecting storm runoff up to 100-year storm event from a drainage area of approximately 33.32 ha consisting of a detention pond having an active storage volume of 9,899 m^3 including sediment forebay within the permanent pool, hardened bottom maintenance path, erosion control facilities, access roadways, fencing, pond vegetation, rip rap, outlet swale, maintenance hole outlet control stucture with 150 mm diameter extended detention orifice controlling flows up to 38.6 L/s, a 640 mm diameter secondary orifice controlling flows up to 900 L/s and a 4 m wide overflow weir controlling flows up to 2,570 L/s for a maximum combined discharge of 3,530 L/s from the stormwater management pond outfall to the 1,050 mm diameter storm sewer on Bayshore Boulevard and east to the outlet headwall on Dock Road leading to the Kempenfelt Bay.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

DY02 SWM Dry Pond Facility

Location	395 Cundles Road West, Barrie, Ontario	Subdivision 182 - Plan M409, Block 117 and 118
Watershed/Subwatershed	Lake Simcoe/Dyments Creek	
Receiver of Discharge	Dyments Creek Watershed	
Outlet Location	79°43'57.173"W 44°23'39.857"N	
Pond Catchment Area	17.84 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	11,400 m3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-1182-89-006 issued July 6, 1989, 8130-ACUPHF issued October 5, 2016	
Brief Description	One dry off-line stormwater management pond discharging into an existing storm sewer and eventually into Dyments Creek. This pond has an invert elevation of 296.0 m and the top of the berm set at an elevation of 299.25 m allowing for a maximum storage volume of 11,400 m^3 at a maximum depth of 3.25 m. The storm water management pond is approximately 298. 75 m and the 10 m wide overflow weir has been set at 299.0 m allowing for 1,450 m^3 of extra storage. A 10 m wide overflow weir is located at the pond outlet with a total overflow of 2.18 m^3/s at a water level of 288.25 m. A grate system protects the small orifice opening at the bottom of the weir structure from clogging.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

DY03 SWM Dry Pond Facility

Location	429 Ferndale Drive North, Barrie, Ontario	Subdivision 194 - Part of Lot 6 & 21, Concession 6
Watershed/Subwatershed	Lake Simcoe/Dyments Creek	
Receiver of Discharge	Dyments Creek Watershed	
Outlet Location	79°43'53.729"W 44°23'24.392"N	
Pond Catchment Area	130.09 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	27,000 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-0514-92-006 issued August 26, 1992, 8346-6ZGJR8 issued May 14, 2007, 8130-ACUPHF issued October 5, 2016	
Brief Description	The stormwater pond includes a 27,000 m^3 (dry) stormwater detention pond constructed with a 90 m long by 11 m wide (top berm width) earth berm of 4:1 side slope on both sides extending across the Valley of Dyments Creek to control stormwater flow up to the 100-year storm event including: Three (3) 1,200 mm by 600 mm inclined inlet grates and 3.0 m diameter heavy duty flat capping to the outlet chamber maintenance hole; a 1,050 mm diameter inlet pipe equipped with an inlet headwall and grating, a 1,650 mm diameter outlet pipe and a 650 mm diameter orifice in between inlet and outlet pipes, all located at the bottom and near the middle of the berm; a 4 m wide by 1 m deep emergency spillway constructed with gabion baskets on the top and the downstream slope of the berm and located near the middle of the berm; a 300 mm diameter drain pipe installed on the upstream side of the berm with a 300 mm diameter gate valve and valve stem extension located inside a 3 m diameter maintenance hole, downstream of the orifice; a layer of 600 mm clay covered over the entire upstream face of the berm and a network of galvanized wire mesh with a maximum opening of 6.25 mm buried 100 mm below the entire surface of the berm; approximately 240 m long upper stormwater collection channel constructed along the bottom of the valley of Dyment's Creek with a channel depth of 1.25 m, a channel slope of 0.75%, and a side slope of 3:1 and gabion drop structures; approximately 85 m long middle stormwater collection channel constructed along the bottom of the valley of Dyment's Creek with a channel depth of 1.44 m, a channel slope of 0.7%, a side slope of 3:1, and gabion baskets; a 16 m	

	long by 2 m wide outlet channel with a channel slope of 6.25% and a side slope of 3:1, constructed with gabion baskets downstream of the 1,650 mm diameter outlet pipe; and a sedimentation pond with a storage volume 2,865 m^3 and an overflow outlet structure and appurtenances constructed at the middle stormwater collection channel to control storm run-off during house construction in the subdivision.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

DY04 SWM Wet Pond Facility

Location	159 Pringle Drive, Barrie, Ontario	Subdivision 214 - Lot 23 and 24, Concession 7
Watershed/Subwatershed	Lake Simcoe/Dyments Creek	
Receiver of Discharge	Dyments Creek Watershed	
Outlet Location	79°43'42.102"W 44°22'19.927"N	
Pond Catchment Area	110.84 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS, Phosporous	
Level of Volume Control	19,960 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-0587-94-006 issued June 2, 1994, 8687-4ZTKCK issued August 30, 2001, 8130-ACUPHF issued October 5, 2016	
Brief Description	A detention pond with a forebay and a wet cell having a maximum total volume of approximately 19,960 m^3 to detain surface runoff from a drainage area of approximately 110.84 ha designed to provide extended detention for a duration of approximately 24 hours for a 25 mm one (1) hour duration design storm event and control peak post-development discharge rates to within pre-development levels. With a 180 mm diameter orifice control installed in a hickenbottom device and a 12 m wide weir outletting into the permanent wet pond, with two outflow control structures consisting of a compound weir approximately 2.5 m wide and 40 m wide discharging into a channel and a 600 mm by 300 mm orifice control discharging into a 975 mm diameter storm sewer outletting into the main branch of Dyments Creek. Maintaining the post development peak discharge rates during a 2-year design storm up to and including the Regional design storm event to below or at pre-development levels of 170 L/s and 5,070 L/s respectively.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

GR01 SWM Dry Pond Facility

Location	238 Penetanguishene Road, Barrie, Ontario	Subdivision 70 - Plan M268, Blocks 244 & 245
Watershed/Subwatershed	Lake Simcoe/Georgian Creek	
Receiver of Discharge	Georgian Creek Watershed	
Outlet Location	79°38'50.276"W 44°24'27.797"N	
Pond Catchment Area	137.79 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS, Phosporous	
Level of Volume Control	13,460 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-1191-86-006 issued September 19, 1986, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and associated appurtenances servicing the Ansar Estates Inc. Development (43T-77073), Lots 19 and 20, in the City of Barrie. The stormwater detention pond is located North of Rosenfield Drive and west of Highway No. 11 having a minimum storage volume (total associated with GR02) of 2.1 ha.m to control the post development runoff to the existing watercourse at or near pre-development runoff for design storm events up to and including the one 100-year design storm. Associated appurtenances include outlet control structures and piping, low flow channel, and fencing.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

GR02 SWM Dry Pond Facility

Location	290 Hickling Trail, Barrie, Ontario	Subdivision 70 - Plan M268, Blocks 243
Watershed/Subwatershed	Lake Simcoe/Georgian Creek	
Receiver of Discharge	Georgian Creek Watershed	
Outlet Location	79°39'2.349"W 44°24'27.725"N	
Pond Catchment Area	40.12 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS, Phosporous	
Level of Volume Control	5,819 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-1191-86-006 issued September 20, 1986, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and associated appurtenances servicing the Ansar Estates Inc. Development (43T-77073), Lots 19 and 20, in the City of Barrie. The stormwater detention pond is located West of Hickling Trail having a minimum storage volume (total associated with GR01) of 2.1 ha.m to control the post development runoff to the existing watercourse at or near pre-development runoff for design storm events up to and including the one 100-year design storm. Water enters through the inlet located at the south east area of the pond and flows north through a channel where it is discharged through a box culvert into GR01. Associated appurtenances include outlet control structures and piping, low flow channel, fencing, etc.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

GR03 SWM Dry Pond Facility

Location	210 Johnson Street, Barrie, Ontario	Subdivision 72 - Plan M266, Block 288
Watershed/Subwatershed	Lake Simcoe/Georgian Creek	
Receiver of Discharge	Georgian Creek Watershed	
Outlet Location	79°39'18.096"W 44°24'24.448"N	
Pond Catchment Area	35.17 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	10,300 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-0877-86-006 issued July 21, 1986, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater detention pond where the sewer system flows under the detention pond and excess runoff will flow by overland flow routes into the pond or by pressure onto the surface from specially constructed maintenance hole catchbasins. Outflow from the detention pond will be by means of an orifice installed on the outlet pipe. The incoming pipe is approximately 1.2 m in diameter, therefore its volume was considered as part of the storage volume of the pond. The approximate surface area of the pond is 1.0 ha with a storage capacity of approximately 10,300 m^3 during the 100-year storm event.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

GR04 SWM Dry Pond Facility

Location	166 Johnson Street, Barrie, Ontario	Subdivision 2 - Plan M419, Block 163 & 164
Watershed/Subwatershed	Lake Simcoe/Georgian Creek	
Receiver of Discharge	Georgian Creek Watershed	
Outlet Location	79°39'19.591"W 44°24'14.58"N	
Pond Catchment Area	79.54 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	19,400 m^3	
Design Storm	Quantity - Not Specified	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	The park area adjacent to Johnson Street forms a stormwater detention pond. The approximate surface area is 0.75 ha. The storage capacity of the channel was included as storage area for the detention pond. The estimated storage capacity is 9,800 m^3 during the 100-year storm event. A weir will be used as the outflow structure from the pond.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

GR05 SWM Wet Pond Facility

Location	53 Penetanguishene Road, Barrie, Ontario	Subdivision 211 - Lots 4 and 5, Concession 1
Watershed/Subwatershed	Lake Simcoe/Georgian Creek	
Receiver of Discharge	Georgian Creek Watershed	
Outlet Location	79°38'17.123"W 44°24'41.1"N	
Pond Catchment Area	130.92 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	63,000 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-0807-97-006 issued July 25, 1997, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and associated appurtenances serving a 130.92 ha drainage area located on Lots 4 and 5, Concession 1, to control post-development stormwater flows to pre-development levels up to a 1:100 year storm event on the east side of Penetanguishene Road at Quinlan Road, in the Township of Simcoe. The detention pond has a storage volume of 63,000 m^3 at a maximum ponding depth of 3.42 m and maximum side slopes of 3:1, constructed on the east side of Penetanguishene Road at Quinlan Road with the following inlet and outlet structures: a 200 m open channel having a bottom width of 4.0 m and side slopes of 3:1, constructed and connected to the west end of the pond; a primary outlet flow structure constructed at the east end of the pond including a 2.4 m diameter vertical perforated pipe with 50 mm diameter holes at 150 mm centre to centre (surrounded by a gravel jacket of 150 mm clear stone) to house a 300 mm diameter riser pipe with a full top opening at elevation 250.90 m and a trash guard allowing detained stormwater to be discharged at a maximum flow rate of 0.29 m^3/s through a 375 mm diameter downstream pipe to the existing channel leading to the Shanty Bay Wetland; a 1.8 m x 0.9 m secondary outlet flow structure constructed at the east end of the detention pond and immediately east of the primary outlet structure, the secondary outlet structure equipped with a 500 mm diameter orifice at an invert elevation of 251.20 m and at the mid-width of the flow structure wall and a 0.7 m long rectangular weir with weir crest elevation of 252.167 m located right above the orifice allowing detained stormwater to be discharged at a maximum combined flow	

	rate of 2.05 m^3/s through a 1.2 m diameter downstream pipe to the existing channel leading to the Shanty Bay Wetland; a 11.0 m long emergency spillway constructed at the east end of the detention pond and east of the secondary outlet flow structure to allow excess stormwater at a water level greater than elevation 253.50 m to be discharged to the existing channel leading to the Shanty Bay Wetland.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

HR01 SWM Dry Pond Facility

Location	South of Lakeshore Drive & North of Burton Avenue (279 Yonge Street)	Subdivision 108 - Lot 10, Concession 14
Watershed/Subwatershed	Lake Simcoe/Huronia Creek	
Receiver of Discharge	Huronia Creek Watershed	
Outlet Location	79°40'31.788"W 44°22'20.131"N	
Pond Catchment Area	84.69 Hectares	
Level of Treatment for Suspended Solids	Level 3 Enhanced 60% Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	28,136 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-0869-97-006 issued July 11, 1997, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and appurtenances serving residential and commercial development in the City of Barrie as set out in the Huronia Creek Watershed and part of Holgate Creek Watershed Stormwater Management Report. This facility is designed with a total of 28,136 m^3 of storage volume to provide water quantity control for 82.09 ha of upstream watershed. The pond is designed to restrict the 100 year post development peak flow runoff to a peak flow of 2.21 m^3/s. This stormwater management facility is located between the CNR main line and the CNR spur line approximately 150 m north of Burton Avenue in the City of Barrie. This stormwater management facility is designed to discharge to a proposed 1,050 mm storm pipe under the CNR main line to an existing storm maintenance hole on Lakeshore Drive (2.28 m^3/s) and discharge to Kempenfelt Bay. This stormwater management facility is constructed with an inlet structure and an outlet control structure to attenuate peak post development flows as follows:	

Storm Event	**Post Development Flow (m^3/s)**	**Storage (m^3)**
1 in 2 Year	1.10	4,940
5 Year	1.40	10,290

	100 Year | 2.03 | 27,350 This facility includes a control structure with a headwall and a 675 mm orifice plate, a 400 mm layer of rip rap and filter fabric on the pond basin, two inlet headwalls and gabion baskets.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

HR02 SWM Dry Pond Facility

Location	20 Woodcrest Road, Barrie, Ontario	Plan 1483, Block A & B
Watershed/Subwatershed	Lake Simcoe/Huronia Creek	
Receiver of Discharge	Huronia Creek Watershed	
Outlet Location	79°40'51.823"W 44°22'8.034" N	
Pond Catchment Area	40.17 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	12,980 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 3-0830-98-006 issued July 2, 1998, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and appurtenances to serve existing residential and commercial development in the City of Barrie to be constructed as set out in the Huronia Creek Watershed and part of Holgate Creek Watershed Stormwater Management Report. This facility is designed with a total of 12,980 m^3 of storage volume to provide water quantity control for 36.36 ha of upstream watershed. The pond is designed to restrict the 100-year post development peak flow runoff to a peak flow of 1.99 m^3/s. This stormwater management facility is located north of Glen Court, west of Woodcrest Road, south of Kelly Place in the City of Barrie. This stormwater management facility is designed to discharge to an existing 975 mm storm sewer located at the north end of Woodcrest Ravine Park. This stormwater management facility includes an outlet control structure to attenuate peak post development flows as follows:	

Storm Event	**Post Development Flow (m^3/s)**	**Storage (m^3)**
1 in 2 Year	1.12	760
5 Year	1.50	3,020
100 Year	1.99	10,550

This facility includes a control structure with a headwall and a 650 mm orifice plate, channel works and a connection to an existing storm sewer outlet.

Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

HT03a SWM Dry Pond Facility

Location	35 Mayfair Dr, Barrie, Ontario	Site Plan 583 and 751 - Part Lots 25 to 30 and 36, Reg. Plan 67
Watershed/Subwatershed	Lake Simcoe/Hotchkiss Creek	
Receiver of Discharge	Hotchkiss Creek Watershed	
Outlet Location	79°42'3.18"W 44°21'21.537"N	
Pond Catchment Area	6.56 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,300 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0662-88-006 issued May 30, 1988	
Brief Description	A stormwater detention pond north of Loggers Run and approximately 130m west of Essa Road having a minimum storage volume of approximately 1,300 m^3 to control the post development runoff to near predevelopment levels during design storms up to and including the 100-year design storm, and all associated works including outlet flow control piping and trash rack.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HT06 SWM Dry Pond Facility

Location	40 Bryne Drive, Barrie, Ontario	Development 144 - Block 26, Lot 7, Concession 13
Watershed/Subwatershed	Lake Simcoe/Hotchkiss Creek	
Receiver of Discharge	Hotchkiss Creek Watershed	
Outlet Location	79°41'47.287"W 44°21'20.279"N	
Pond Catchment Area	32.33 Hectares	
Level of Treatment for Suspended Solids	Unknown	
Treatment for Other Contaminants, as Required		
Level of Volume Control	11,370 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0807-88-997 issued March 19, 1999, 8130-ACUPHF issued October 5, 2016	
Brief Description	A Stormwater Management Facility consisting of a stormwater detention/recharge area located on Block 26 approximately 180 m west of Ardagh Road. The SWM facility has a minimum detention storage volume of approximately 11,370 m^3 and a recharge volume of 2,400 m^3 to control the post development runoff to predevelopment levels during design storms up to and including the 100-year storm. The outlet structure consist of two orifices. The primary extended detention orifice is a 200 mm diameter orifice plate bolted to a concrete wall. The top of the wall elevation is equal to the extended detention elevation of 272.40 m. Once the ponding elevation exceeds 272.40 m, stormwater would spill over the wall and outflow from the pond is then governed by a 265 mm diameter orifice plate bolted to the outlet pipe.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HT17 SWM Dry Pond Facility

Location	240 Bradford Street, Barrie, Ontario	Lot 26, Concession 5 (Old Vespra)
Watershed/Subwatershed	Lake Simcoe/Hotchkiss Creek	
Receiver of Discharge	Hotchkiss Creek Watershed	
Outlet Location	79°41'30.237"W 44°22'31.338"N	
Pond Catchment Area	400.32 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	6,482 m^3	
Design Storm	Quantity - 100 Year	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	A stormwater detention facility which ensures fish habitat protection by designing on-line structures to allow free passage of the 15 mm event flows while detaining flows from larger events. The pond utilizes a 9.76 x 1.83 m Hy-Span open bottom box culvert (1.65 m clear flow height) to provide flow conveyance under Bradford Street for the Regional Storm event, estimated assuming no flow attenuation upstream (approximating a Dam Break). The design flow under this scenario is 43.23 m^3/s. With berming to an elevation of 222.00 m compared to an upstream culvert invert of approximately 219.00 m, this structure is sufficient to carry the design flow with a maximum theoretical flood elevation of 222.02 m at the west end of the Bradford Street Pond.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HW01 SWM Wet Pond Facility

Location	66 Edwards Drive, Barrie, Ontario	Subdivision 205 - Part Lot 16, Concession 12
Watershed/Subwatershed	Lake Simcoe/Hewitts Creek	
Receiver of Discharge	Hewitts Creek Watershed	
Outlet Location	79°37'47.453"W 44°21'40.758"N	
Pond Catchment Area	10.73 Hectares	
Level of Treatment for Suspended Solids	Level 2 (70%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	3,979 m^3	
Design Storm	Quantity – 2 Year	
Reference ECA(s)	ECA No. 3-0815-95-006 issued November 2, 1995, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management facilities serving the south half of Lance Gate Subdivision (Phase I), constructed on the south half of Lot 15, Concession 13 in the City of Barrie. The stormwater management pond has a storage volume of 3,979 m^3 at a maximum water depth of 1.15 m and maximum side slopes of 3:1, constructed north of Big Bay Pond Road and 200 m east of Hurst Drive to control post-development stormwater flows to pre-development levels up to a 1:2 year storm event with the following inlet and outlet structures: a 675 mm diameter pipe constructed and connected from maintenance hole 4 to the north-west corner of the stormwater management pond; maintenance hole 4 equipped with a 4.5 m long weir to allow stormwater greater than a 1:2 year storm event to overflow through a 900 mm diameter downstream pipe at a water level greater than an elevation of 251.3 m to Maintenance hole 60; an outlet flow structure constructed at the south-east end of the pond including a 1.5 m diameter perforated corrugated steel (surrounded by 50 mm clear stone) housing a 150 mm diameter perforated riser pipe equipped with a 75 mm diameter orifice at an elevation of 249.3 m allowing detained stormwater to be discharged at a maximum rate of 23.7 L/s through a 200 mm diameter downstream outlet pipe to Maintenance hole 60; a 250 mm diameter pipe constructed and connected from the pond inlet to maintenance hole 61 allowing detained stormwater greater than a 1:2 year storm event to be discharged at a maximum rate of 87.3 L/s; and a 5.0 m long overflow weir constructed at the south-east end of the pond to discharge excess stormwater at a water level greater than a	

	weir crest elevation of 252.35 m.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

HW04 SWM Wet Pond Facility

Location	115 Crimson Ridge Road, Barrie, Ontario	Subdivision 295 - Part Lot 15, Concession 13
Watershed/Subwatershed	Lake Simcoe/Hewitts Creek	
Receiver of Discharge	Hewitts Creek Watershed	
Outlet Location	79°37'59.405"W 44°22'7.852"N	
Pond Catchment Area	10.13 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,850 m^3	
Design Storm	Quantity – 2 Year	
Reference ECA(s)	ECA No. 3462-4KZPL7 issued June 7, 2000, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility that serves the Simcoe Shores Subdivision (43T-92021) in the City of Barrie, consisting of an extended detention pond, bottom lined with a geosynthetic liner, with a sediment forebay area for removal of sediment, a permanent pool storage of approximately 1,280 m^3, and inlet storm sewer, inlet structure and outlet control structure to attenuate the peak post-development flow during the 2-year storm event to pre-development levels of 0.03m^3/s. The SWM facility provides a total extended detention (active) storage of approximately 1,850 m^3, complete with a perforated piping underdrain system, and submergent and emergent vegetation, with an outfall to Hewitt's Creek, together with storm runoff during major storm events to be conveyed overland along Crimson Ridge Road to an emergency overflow channel (located within an easement at the junction of Capps Drive and Crimson Ridge Road) and with a storm sewer with an online 6,205 L capacity maintenance hole oil/grit separator (Stormceptor STC 2000), discharging via an outfall to Hewitt's Creek, eventually discharging to Kempenfelt Bay.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HW05 SWM Wet Pond Facility

Location	88 Sandringham Drive, Barrie, Ontario	Subdivision 289 - Plan M683, Block 292
Watershed/Subwatershed	Lake Simcoe/Hewitts Creek	
Receiver of Discharge	Hewitts Creek Watershed	
Outlet Location	79°37'21.756"W 44°21'23.501"N	
Pond Catchment Area	60.08 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	21,068 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 6747-4H8HWW issued March 8, 2000, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility serving a residential subdivision (43T-98503) located within Part Lot 16, Concession 12 in the City of Barrie, Ontario. The stormwater management ponds has one (1) extended wet pond with a total storage volume of 21,068 m^3, with permanent pool volume of 7,468 m^3 and extended detention volume of 6,910 m^3, providing a minimum of 24 hours of detention storage during a 25 mm design storm; one (1) sediment forebay with overflow weir, inflow and outflow control devices with peak discharge rate of 3.91 m^3/s corresponding to 1 in 100-year design storm from a drainage area of 60.08 ha to Hewitts Creek via a 100 m long drainage path.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HW06 SWM Wet Pond Facility

Location	23 Camelot Sq, Barrie, Ontario	Subdivision 311 - Plan M728, Block 5
Watershed/Subwatershed	Lake Simcoe/Hewitts Creek	
Receiver of Discharge	Hewitts Creek Watershed	
Outlet Location	79°37'54.154"W 44°22'7.915"N	
Pond Catchment Area	36.83 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	12,162 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 1433-5F9U7A issued October 30, 2002, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management system constructed to serve the Simcoe Shores Phase II development, in the City of Barrie. Stormwater management system collecting up to the 5-year storm event runoff from a total contributing area of 36.83 ha, conveyed to the stormwater management pond by a system of storm sewers to the minor storm inlet to the pond from via a 1050 mm diameter storm pipe, with the pond having a permanent storage volume of 4,647 m^3, an active storage volume of 2,725 m^3, for quality control, and a total available pond volume of 12,162 m^3, complete with one inlet structure, one (1) sediment forebay, a wet pond, plunge pool, emergency spillway and an outlet structure consisting of a reverse grade pipe to a outlet maintenance hole, with a 170 mm diameter orifice restricting flows from 0.19 m^3/s (2-year storm), discharging to the storm sewer and existing drainage channel with stilling pool, and then to Hewitts Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HW08 SWM Wet Pond Facility

Location	107 Prince William Way, Barrie, Ontario	Subdivision 297 - Plan 51M781, Block 499
Watershed/Subwatershed	Lake Simcoe/Hewitts Creek	
Receiver of Discharge	Hewitts Creek Watershed	
Outlet Location	79°36'45.062"W 44°21'25.078"N	
Pond Catchment Area	156.31 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	57,990 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 1178-5Q7V7Y issued September 2, 2003, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management system constructed to serve Maplecort Subdivision, Phase 1, in the City of Barrie, County of Simcoe. One (1) wet pond, collecting runoff from 2-year to 100-year storm events from an area of approximately 156.31 ha, consisting of main wet cell having a permanent storage volume of 14,325 m^3, an extended detention active storage volume of 13,290 m^3, flood attenuation storage volume of 30,735 m^3, equipped with a separate sediment forebay and main cell connected by three 750 mm diameter flow-balancing culverts; an outlet control structure with a 300 mm diameter orifice plate allowing a detention time of 29 hours, 375 mm diameter pipe, 3.0 m wide weir to control the outflow to a 1,200 mm by 1,800 millimetre box culvert discharging to the realigned tributary of Hewitt's Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

HW09 SWM Wet Pond Facility

Location	10 Sun King Crescent, Barrie, Ontario	Subdivision 322 - Block 176, Plan 51M777 (Lot 17, Concession 12)
Watershed/Subwatershed	Lake Simcoe/Hewitts Creek	
Receiver of Discharge	Hewitts Creek Watershed	
Outlet Location	79°37'9.61"W 44°21'15.621"N	
Pond Catchment Area	21.33 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	Water temperature	
Level of Volume Control	8,237 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 1167-5UMWF issued January 27, 2004, 4870-9QXMHT issued February 18, 2015, 8130-ACUPHF issued October 5, 2016	
Brief Description	A wet stormwater management facility located on Block 176, having a permanent pool volume of 2,820 m^3, an extended detention volume of 2,418 m^3, and a maximum storage volume of approximately 8,237 m^3, including the permanent pool volume, at a total depth of approximately 4.17 m, discharging westward through an outlet control structure and a 675 mm diameter outlet pipe and channel to Hewitt's Creek to Lake Simcoe. A reverse sloped outlet pipe, complete with 150mm diameter orifice plate located in the control maintenance hole, will draw cold water from the bottom of the wet cell and release storm runoff from a 25 mm storm event over a 24 hour period at a rate of 0.04m^3/s.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

KD01 SWM Dry Pond Facility

Location	East of Brookdale Dr, Barrie, Ontario	Lot 6, Concession 5 (Old Vespra)
Watershed/Subwatershed	Lake Simcoe/Kidds Creek	
Receiver of Discharge	Kidds Creek Watershed	
Outlet Location	79°42'11.304"W 44°23'39.032"N	
Pond Catchment Area	419.14 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	118,450 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	A stormwater management pond located upstream of Highway 400 to control runoff from all the upper watersheds including the controlled outflow from upstream ponds. Drawings show the location of the detention pond and their contours. The pond has a maximum water level of 251.12 during 1:100 year storm.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

KD03 SWM Dry Pond Facility

Location	400 Sunnidale Road, Barrie, Ontario	Subdivision 180 - Plan CU.M.88, Block 277
Watershed/Subwatershed	Lake Simcoe/Kidds Creek	
Receiver of Discharge	Kidds Creek Watershed	
Outlet Location	79°43'33.974"W 44°24'3.964"N	
Pond Catchment Area	29.64 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	9,900 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	A dry offline stormwater management pond with a maximum storage capcity of 9,900 m^3. The pond discharges into a storm sewer along Sunnidale Rd and eventually into Kidd's Creek. A 10m wide overflow is incorporated into the pond outlet structure to safely convey the Regional storm flow.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

KD05 SWM Dry Pond Facility

Location	217 Livingstone Street West, Barrie, Ontario	Subdivision 156 - Plan CU.M.96, Block 271
Watershed/Subwatershed	Lake Simcoe/Kidds Creek	
Receiver of Discharge	Kidds Creek Watershed	
Outlet Location	79°43'32.93"W 44°24'9.102"N	
Pond Catchment Area	26.72 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	2,558 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	A dry stormwater management pond with a maximum storage capcity of 2,558 m^3. Flows are conveyed south in a storm sewer to Kidds Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

KD06 SWM Dry Pond Facility

Location	130 Livingstone Street West, Barrie, Ontario	Subdivision 174 - Plan M415, Blocks 1, 2, and 3
Watershed/Subwatershed	Lake Simcoe/Kidds Creek	
Receiver of Discharge	Kidds Creek Watershed	
Outlet Location	79°43'9.39"W 44°24'22.041"N	
Pond Catchment Area	60.72 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	26,455 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1522-89-916 issued July 2, 1991, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater detention pond with a maximum depth of 2.65 m and storage volume of 26,455 m^3 at maximum pond elevation of 280.25 m to control post-development runoff from 60.72 ha drainage area, to 1.88 m^3/s, which is less than pre-development peak flow of 6.19 m^3/s for a 1:100 year storm event, an outlet structure with a 900 mm diameter outlet pipe discharging to existing storm sewer system along Ford Street and Lillian Crescent and ultimately into the Kidd's Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LT01 SWM Dry Pond Facility

Location	215 Cardinal Street, Barrie, Ontario	Subdivision 166 - Lot 20, Concession 4
Watershed/Subwatershed	Nottawasaga/Little Lake Drainage Area	
Receiver of Discharge	Little Lake Drainage Area	
Outlet Location	79°41'33.913"W 44°24'56.982"N	
Pond Catchment Area	104.68 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	9,300 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0489-87-006 issued May 11, 1987, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater open channels, a stormwater management facility and associated appurtenances constructed to service the Cundles East Secondary Plan area in the City of Barrie (formerly the Twp. of Vespra). The stormwater detention pond is located west of St. Vincent Street approximately 240 m North of Meadowlark Road having a minimum storage capacity of 9,300 m^3 to control the post development runoff to an existing creek to predevelopment levels during design storm up to and including the 1:100 year return storm event. The facility includes inlet and outlet flow control structures and piping, low flow channel, and chain link fencing.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LT02 SWM Wet Pond Facility

Location	25 Livia Herman Way, Barrie, Ontario	Subdivision 285 - Lot 19, Concession 4
Watershed/Subwatershed	Nottawasaga/Little Lake Drainage Area	
Receiver of Discharge	Little Lake Drainage Area	
Outlet Location	79°41'55.72"W 44°24'51"N	
Pond Catchment Area	40.85 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	28,613 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0545-99-006 issued July 26, 1999, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and appurtenances to serve the residential subdivision located (43T-97504), located within Pt. Lot 19, Concession 4 in the City of Barrie. An extended detention wet pond with a total available storage volume of 28,613 m^3 at the corresponding depth 5.05 m and a corresponding 1:100 year design storm peak discharge rate of 1.41 m^3/s, within the pre-development peak flow rate, from a drainage area of 40.85 ha. The facility has a sediment forebay, overflow weir, inflow and outflow control devices, with a permanent pool storage volume of 4,980 m^3 and extended detention storage volume of 3,980 m^3 at the corresponding water depths of 1.4 m and 2.3 m. The facility provides a minimum 24 hour detention storage during the 25 mm runoff design storm and control the peak post-development discharge rates to within the pre-development levels during the 1:2 year design storm event up to and including the design Regional Storm event, the pond discharges to a storm sewer on Simpson Street with a storage capacity of 6.4 m^3/s.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LT03 SWM Dry Pond Facility

Location	80 Crompton Drive, Barrie, Ontario	Subdivision 230 and 249 - Lot 19, Concession 3
Watershed/Subwatershed	Nottawasaga/Little Lake Drainage Area	
Receiver of Discharge	Little Lake Drainage Area	
Outlet Location	79°41'18.37"W 44°25'18.422"N	
Pond Catchment Area	36.24 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	630 m^3	
Design Storm	Quantity – 2 Year	
Reference ECA(s)	ECA No. 3-1387-98-006 issued September 11, 1998, 8130-ACUPHF issued October 5, 2016	
Brief Description	An extended detention/erosion control dry pond with a pool sediment forebay, overflow weir berm and extended detention outflow device, located within Part of Lot 19, Block 288 of the Subdivision. The facility is designed to detain the first 13 mm of stormwater runoff from a total of 2.80 ha of asphalt surface area, within the right-of-ways of the subdivisions, and the first 13 mm from a total of 3.56 ha of roof top area conveyed to the pond by the subdivision storm sewers. The runoff will be detained for a period of not less than 24 hours to settle out sediments and runoff pollutants. The pond design provides an overall storage volume of 910 m^3 at the over flow maintenance hole weir elevation of 241.75 m. The pond design includes a 600 mm inlet sewer and a hickenbottom type 200 mm perforated PVC riser section, connected to a solid 200 mm outlet pipe with an internal 75mm outflow control orifice, discharging to the municipal storm sewer headwall at a maximum controlled release rate of 14 1/s. Inflows to the pond which exceed the required storage volume of 827 m^3 wi11 be stored up to a volume of 910 m^3 at which time a 4.9 m wide overflow berm weir at an elevation of 241.70 m will provide a by-pass to an adjacent 100-year storm channel.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LT04 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>90 Hanmer Street East, Barrie, Ontario</td><td>Subdivision 296 - Lot 18, Concession 4</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Nottawasaga/Little Lake Drainage Area</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Little Lake Drainage Area</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°42'26.551"W 44°25'11.379"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">117.65 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">40,000 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity – 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 3-0940-99-006 issued October 8, 1999, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">Stormwater management facilities constructed on Part Lot 18, Concession 4 (immediately north of Hammer Street, approximately 650 m east of Bayfield Street) in the City of Barrie serving the East Bayfield Secondary Planning Area, consisting of a wet extended detention pond with a sediment forebay area (with a storage capacity up to 40,000m^3), and with a permanent pool volume of approximately 7,925 m^3 and an extended detention volume of approximately 15,900 m^3, and providing storage during major storm events, and with outlet control structures to attenuate the peak post-development flows to levels less than peak pre-development levels during major storm events as follows:
<table>
<tr><th>Storm Event</th><th>Attenuated Peak Post Development Flow (m^3/s)</th><th>Approximately Storage (m^3)</th></tr>
<tr><td>5 Year</td><td>0.88</td><td>41,000</td></tr>
<tr><td>100 Year</td><td>1.19</td><td>66,000</td></tr>
<tr><td>Regional Storm</td><td>1.27</td><td>70,800</td></tr>
</table>
Discharging to the Willow Creek tributary, together with perimeter fencing, forebay access path, and an emergency overflow structure.</td></tr>
<tr><td>Receive Emergency Sanitary Overflows</td><td colspan="2">No</td></tr>
<tr><td>Notes</td><td colspan="2">NA</td></tr>
<tr><td>Location</td><td colspan="2">NA</td></tr>
</table>

LT05 SWM Dry Pond Facility

Location	80 Osprey Ridge Road, Barrie, Ontario	Subdivision 280 - Lot 19, Concession 3
Watershed/Subwatershed	Nottawasaga/Little Lake Drainage Area	
Receiver of Discharge	Little Lake Drainage Area	
Outlet Location	79°41'8.043"W 44°25'8.911"N	
Pond Catchment Area	20.34 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	800 m^3	
Design Storm	Quantity – 2 Year	
Reference ECA(s)	ECA No. 3-1701-97-006 issued November 26, 1997, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and appurtenances serving the residential developments, J. Stollar Subdivision (43T-91052), located in the south half of the west Part of Lot 19, and Barrie Development Coporation Subdivision (43T-91017), located in the north half of the west Part of Lot 19, Concession 3, in the City of Barrie.An extended detention/erosion control dry pond with a pool sediment forebay, overflow weir berm and extended detention outflow device, located on the centre of the East Limits of the west Part of Lot 19. The facility is designed to detain the first 13 mm of stormwater runoff from a total of 4.92 ha of asphalt surface area, within the right-of-ways of the subdivisions, conveyed to the pond by the subdivisions storm sewers. The runoff will be detained for a period of not less than 24 hours to settle out sediments and runoff pollutants. The pond design provides an overall storage volume of 800 m^3 at the overflow maintenance hole weir elevation of 242.25 m. The pond design includes a 750 mm inlet sewer and a Hickenbottom type 200 mm perforated PVC riser section, connected to a solid 200 mm outlet pipe with an internal 75 mm outflow control orifice, discharging directly into the north watercourse east of Little Lake, at a maximum controlled release rate of 13 L/s. Inflows to the pond that exceed the 800 m^3 storage volume will be stored up to a volume of 1,680 m^3 at which time a 4.9 m wide overflow berm weir at an elevation of 243.25 m will provide a by-pass to an adjacent 100-year storm channel.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LT06 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>86 Lion's Gate Boulevard, Barrie, Ontario</td><td>Subdivision 228 - Lot 21, Concession 3</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Nottawasaga/Little Lake Drainage Area</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Little Lake Drainage Area</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°40'44.831"W 44°25'4.683"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">61.35 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">2,520 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity – 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 7327-56NQQE issued March 1, 2002, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Outlet Coordinates</td><td colspan="2">79°40'45.6"W 44°25'4.3"N</td></tr>
<tr><td>Brief Description</td><td colspan="2">A Stormwater Management Facility for the Lion's Gate Residential Subdivision. The facility consists of an extended detention wet-pond including a forebay with an approximate permanent pool volume of 1,519 m^3 and extended detention volume of 733 m^3 and total peak volume of 2,520 m^3. One (1) 1000 mm diameter outlet pipe connected with a 450 mm diameter Hickenbottom perforated riser pipe located in 'clear stone surround. One (1) 1,200 mm diameter grated control structure connected with one (1) 375 mm diameter outlet pipe, all to discharge into an 8.0 m wide rip-rap dissipater/diffuser outletting to the Willow Creek. The facility also has an eight (8) m wide by 300 mm deep overflow weir located at the west berm discharging to the Little Creek.
<table>
<tr><td>Event</td><td>2-Year</td><td>5-Year</td><td>25-Year</td><td>100-Year</td></tr>
<tr><td>Pre-development Flows, L/s</td><td>160</td><td>300</td><td>570</td><td>580</td></tr>
<tr><td>Post-development Flows, L/s</td><td>870</td><td>1,630</td><td>2,540</td><td>3,340</td></tr>
<tr><td>Pre-development Attenuated, L/s</td><td>820</td><td>1,340</td><td>2,340</td><td>3,150</td></tr>
</table>
</td></tr>
<tr><td>Receive Emergency Sanitary Overflows</td><td colspan="2">No</td></tr>
<tr><td>Notes</td><td colspan="2">NA</td></tr>
<tr><td>Location</td><td colspan="2">NA</td></tr>
</table>

LT14 SWM Wet Pond Facility

Location	500 Duckworth Street, Barrie, Ontario	Road Allowance - Lots 5, 6, 20, and 21, Concessions 1, 2, and 3
Watershed/Subwatershed	Nottawasaga/Little Lake Drainage Area	
Receiver of Discharge	Little Lake Drainage Area	
Outlet Location	79°40'26.826"W 44°25'0.643"N	
Pond Catchment Area	20.53 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS, phosporous	
Level of Volume Control	15,454 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 6928-8QFKYC issued January 27, 2012, 7829-8KJR7B (draft), 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management works on the north side of Cundles Road East, west of Duckworth Street for the collection, transmission, treatment and disposal of stormwater run-off from a catchment area of 20.53 ha, to provide Enhanced Level of water quality control and erosion protection, and to attenuate post-development peak flows to pre-development levels, for all storm events up to and including the 100-year storm The facility consists of a wet pond with a sediment forebay and 300 mm thick clear stone over 6 mm thick geosynthetic clay liner, having a permanent pool volume of 5,021 m^3; an extended detention volume of 3,508 m^3; and a total storage volume of approximately 15,070 m^3 at a total depth of 4.52 m. The pond is complete with one (1) 1,350 mm diameter inlet pipe with concrete headwall and fieldstone protection, discharging to the sediment forebay; four (4) 150 mm diameter perforated subdrains and one (1) 150 mm diameter subdrain collector, all with filter socks contained within 300 mm x 300 mm clear stone filled unwrapped trenches located underneath the bottom of the pond, discharging to control maintenance hole 2; one (1) 300 mm diameter dewatering sump drain with shut off sluice gate, discharging to control maintenance hole 2; one (1) 1,500 mm diameter control maintenance hole 2 outlet structure with one (1) 480 mm diameter inlet orifice; one 180 mm diameter inlet orifice, one (1) 150 mm diameter subdrain collector inlet pipe, one (1) 300 mm diameter dewatering sump inlet pipe, one 750 mm diameter outlet pipe with headwall and rip-rap protection, discharging to a drainage channel; and one (1) 15 m wide emergency spillway, discharging to the drainage channel, identified below;	

	The drainage channel runs from approximately 90 m west of the wet pond to Little Lake, a distance of approximately 572 m, with riprap protected outfall to Little Lake, draining to Willow Creek, the Nottawasaga River, and Georgian Bay.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

LT17 SWM Wet Pond Facility to LID Infiltration Gallery System

Location	Kozlov St & Forsyth Cres, Barrie, Ontario	Subdivision 366 – PLAN 51M975 BLK 104
Watershed/Subwatershed	Nottawasaga/Little Lake Drainage Area	
Receiver of Discharge	Little Lake Drainage Area	
Outlet Location	79°43'16.200"W 44°24'52.000"N	
Pond Catchment Area	16.47 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS, Phosporous	
Level of Volume Control	19,174 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 0379-88XRKZ issued September 17, 2010	
Brief Description	The infiltration type facility is comprised of theree components; the quality control, quantity control cell and the infiltariton gallery. These components act in series to adress the required qaulity and quantity objectives of the stormwater management design. The quality cell acts as a pre-treatment to the quantity cell to ensure the appropriate level of treatment is provided. It ensures the longevity of the infiltation gallery is preserved. The quantity cell provides the required attenuation prior to releasing its controlled flows to the infiltartion gallery. The quanity cell itself is an infiltration basin. Stormwater events less than or qual to the 25mm 4 hour Chicago events are discharged to the quantity cell via the control maintenance hole and the 250 mm diameter outlet pipe. Storm events greater than the 25mm 4 hour Chicago and less than or equal to the 5 year event will flow from the quantity cell to the quality cell to the quantity cell via the weir provided in the earthern berm. The outflow from the quanity cell is controlled by a 100mm diameter orifice plate located in maintenance hole DDLT01757. This orifice restriction is used to ensure that excessive head does not build up on the infiltration gallery which could in turn cause compaction of the soil underlying the infiltration gallery. The quantity cell has been sized to supply the required attenuation during the regulatory storm without any outflo from the pond. The outlet from the quantity control cell to the infiltration gallery is located on the north east portion of the pond and is comprised of a 450mm diameter PVC pipe. The inlet of this pipe utilizes a concrete headwall structure (OPSD 804.030) which is completely surrounded by rip rap. Within this rip rap is a layer of filter fabric that is usec to further reduce sediment transport into the infiltration gallery (4.2 LID Infiltration Gallery System).	
Receive Emergency	No	

Sanitary Overflows	
Notes	NA
Location	NA

LV01 SWM Wet Pond Facility

Location	211 Hurst Drive, Barrie, Ontario	Subdivision 218 - Lot 13, Concession 13
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'7.692"W 44°21'58.525"N	
Pond Catchment Area	67.95 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	14,500 m^3	
Design Storm	Quantity - 2 Year	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	The pond is classified as a wetland facility with a permanent pool volume of 6,100 m^3 and an active attenuation volume of 14,500 m^3. The pond has three inlets, a forebay and is equipped with two plunge pools in the aftbay that are excavated to 1.0 m below the bottom of the permanent pool. The outlet is a 675 mm diameter concrete pipe built into a control structure to ensure 24-hour retention of a two-year (25 mm) storm. The water is conveyed west through the outlet pipe where it enters Lovers Creek. There is an overflow consisting of a weir approximately 5 m wide at a height of 3.1 m over the invert of the outlet orifice. Runoff over the weir flows approximately 50 m to the west along a 15 m wide drainage path to a ditch inlet catch basin on Coxmill Rd.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV02 SWM Dry Pond Facility

Location	455 Welham Road, Barrie, Ontario	Subdivision 139 and Site Plan 1449 - Lot 10, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'1.352"W 44°20'47.781"N	
Pond Catchment Area	207.47 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	77,200 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0294-87-006 issued May 20, 1987, 6244-74QMES issued January 16, 2008, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management facility and associated appurtenances servicing the South Barrie Business, Park Phase 2 (51R-14253), Lots 9 and 10, Concession 12, in the City of Barrie. The stormwater detention pond is located East of Welham Road, approximately 175 m South of Ellis Drive and West of CNR ROW, having a minimum storage capacity of 77,200 m^3, to control post development runoff to an existing watercourse to pre development levels during storms up to and including the regional return storm event. The facility consists of an eathern berm (compacted to a minimum of 95% Standard Proctor Density at a water content of Proctor optimum +/- 2%), approximately 130 m long and a maximum height of 1 m to be constructed on the western side of the railway tracks. An emergency overflow outlet provides an outlet for the stormwater management pond during major storm events in order to prevent storm runoff from overtopping the railway tracks, comprising of a double inlet catchbasin structure, approximately 8.5 m x 3.45 m, connected to a concrete pipe, approximately 33 m long and 2.25 m diameter, located under and across the railway tracks, discharging via a headwall structure to the existing tributary of Lovers Creek, and includes inlet and outlet flow control structures and piping, low flow channels, chain link fencing around outlet structures.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV03 SWM Dry Pond Facility

Location	551 Welham Road, Barrie, Ontario	Subdivision 139 - Lot 10, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'3.767"W 44°20'32.238"N	
Pond Catchment Area	8.49 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	3,600 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0294-87-006 issued May 20, 1987, 6244-74QMES issued January 16, 2008, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management facility and associated appurtenances servicing the South Barrie Business, Park Phase 2 (51R-14253), Lots 9 and 10, Concession 12, in the City of Barrie. The stormwater detention pond is located approximately 150 m East of Welham Road, approximately 250 m North of Mapleview Drive and West of CNR Row, having a minimum storage capacity of 3,600 m^3 to control the post development runoff to an existing watercourse to pre development levels during design storms up to and including the 1:100 year return storm event. The facility includes inlet and outlet flow control structures and piping, low flow channels and chain link fencing around outlet structures.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV04 SWM Dry Pond Facility

Location	629 Bayview Drive, Barrie, Ontario	Subdivision 139 - Lots 8 and 9, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'25.696"W 44°20'15.585"N	
Pond Catchment Area	91.08 Hectares	
Level of Treatment for Suspended Solids	Unknown	
Treatment for Other Contaminants, as Required		
Level of Volume Control	12,760 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1318-95-006 issued October 25, 1995, ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	The stormwater management system is comprised of a dry detention pond and an online tributary. The tributary originates ~600m west of Highway 400 and traverses through an upstream Detention Pond (LV05) before outletting to a roadside culvert under Bayview Drive, which then discharges into the LV4 stormwater system. The SWM system includes two inlets: one at Bayview Drive at the top of pond and a second inlet along Mapleview Drive East within the eastern part of the pond. The online creek enters the top of pond and meanders through the pond as a low flow channel for about ~290m before outletting via a culvert that extends underneath Mapleview Drive. The pond is also equipped with an emergency spillway that outlets to a second outlet structure under Mapleview Drive East.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV05 SWM Dry Pond Facility

Location	630 Bayview Drive, Barrie, Ontario	Subdivision 139 - Lots 8, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'42.032"W 44°20'1.559"N	
Pond Catchment Area	64.02 Hectares	
Level of Treatment for Suspended Solids	Unknown	
Treatment for Other Contaminants, as Required		
Level of Volume Control	9,000 m^3	
Design Storm	Quantity – Not Specified	
Reference ECA(s)	ECA No. 3-0975-83-877 issued June 12, 1987, 8130-ACUPHF issued October 5, 2016	
Brief Description	A dry online stormwater management system located on Block 115 and approximately 330 m south of Mapleview Drive on the west side of Bayview Drive with a storage capacity of 9,000 m^3. The online facility extends for ~450m between Highway 400 and Bayview Drive and is contained within a confined valley. Drainage waters enter the facility through a storm outlet at Highway 400 and three (3) additional storm outfalls within the facility, then flow through an eroding channel into an online pond. Water discharges through a 900 mm culvert under Bayview Dr and into stormwater water management pond LV04.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV06 SWM Dry Pond Facility

Location	739 Bayview Drive, Barrie, Ontario	Subdivision 139 - Lots 8, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'29.175"W 44°19'39.261"N	
Pond Catchment Area	194.37 Hectares	
Level of Treatment for Suspended Solids	Unknown	
Treatment for Other Contaminants, as Required	TSS	
Level of Volume Control	4,460 m^3	
Design Storm	Quantity – Not Specified	
Reference ECA(s)	ECA No. 3-0975-83-877 issued June 12, 1987, 8130-ACUPHF issued October 5, 2016	
Brief Description	A dry stormwater management system located approximately 270 m north of Lockhart Road on the east side of Bayview Drive with a storage capacity of 4,460 m^3 with an outlet controlled/sediment trap structure.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV07 SWM Dry Pond Facility

Location	730 Bayview Drive, Barrie, Ontario	Subdivision 139 - Lots 8, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'36.48"W 44°19'39.05"N	
Pond Catchment Area	189.74 Hectares	
Level of Treatment for Suspended Solids	Unknown	
Treatment for Other Contaminants, as Required		
Level of Volume Control	26,700 m^3	
Design Storm	Quantity – Not Specified	
Reference ECA(s)	ECA No. 3-0975-83-877 issued June 12, 1987, 8130-ACUPHF issued October 5, 2016	
Brief Description	A dry stormwater management system located approximately 320 m north of Lockhart Road on the west side of Bayview Drive with a storage capacity of 26,700 m^3 with an outlet controlled structure.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV08 SWM Dry Pond Facility

Location	29 Mapleview Drive West, Barrie, Ontario	Subdivision 185 - Lot 7, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°41'3.3"W 44°19'49.0"N	
Pond Catchment Area	12.42 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	12,000 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1995-89-906 issued January 12, 1990, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management facility and associated appurtenances constructed to serve the Greenvale Business Park on Part of Lot 7, Concession 17 in the City of Barrie. Three (3) detention ponds namely LV08, LV17, and LV16 were constructed all within the Greenvale Business Park, West of Highway 400 and South of Maple Drive for a 100 year design storm having a total minimum storage volume of 12,000 m^3 to retain surface runoff from a total area of approximately 66 ha within zone 2 (as described in the stormwater management reports which includes an area of 33 ha within the Greenvale Business Park and an external area of 33 ha west of the Park) and to discharge at a controlled rate of 2.7 m^3/s via an existing 1.2 m x 8.9 m concrete culvert located approximately 550 m South of Mapleview Drive Highway No. 400 together with low flow swales, security fences, overflow weirs, silt and sediment control facilities in Ponds LV08, LV17, and LV16. LV08 is a 3,400 m^3 facility designed to service mostly the commercial area (~8.16 ha). The pond is located between lots 5 and 6 and has a maximum depth of 2.9 m with 0.3 m of free board.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV10 SWM Dry Pond Facility

Location	271 Mary Anne Drive, Barrie, Ontario	Subdivision 161 - Lot 13, Concession 13
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'4.95"W 44°21'53.2"N	
Pond Catchment Area	19.12 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,276 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-1667-89-916 issued May 6, 1991, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility and appurtenances constructed at the northern part of Lot 13, Con. 13, located west of the Canadian National Railway Line and east of Coxmill Road, in the City of Barrie. The stormwater detention pond has a maximum depth of 1.0 m and storage volume of 1,276 m^3, to control post development run off from the drainage area, to predevelopment peak flow of 0.338m^3/s for a 1:2 year storm event, an outlet structure consisting of double inlet catchbasin maintenance hole, with a 450 mm diameter inlet pipe at base, controlling post development 2 year storm event and double inlet catchbasin maintenance hole at the top of structure discharging 1:5 year storm directly into 900 diameter outlet pipe, which then discharges into a 975 mm diameter pipe and ultimately into Lovers Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV11 SWM Wet Pond Facility

Location	510 Yonge Street, Barrie, Ontario	Subdivision 191 - Lot 12, Concession 13
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'20.2"W 44°21'38.1"N	
Pond Catchment Area	12.52 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,600 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-1524-90-916 issued February 11, 1991, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management Works for the treatment and disposal of stormwater runoff from a catchment area of 12.52 ha, to provide water quality protection and to attenuate post-development peak flows to predevelopment levels, discharging to Lover's Creek, for all storm events up to and including the 5-year return storm. A stormwater management system servicing the existing Lover's Creek Acres Subdivision, located along D'Ambrosio Drive and Barre Drive, relying on a one (1) cell extended detention wet pond having a permanent pool storage volume of 1,036m^3, an extended detention storage volume of 2,281 m^3 and a total combined passive and active storage volume of 5,800 m^3, complete with an inlet structure consisting of a diversion maintenance hole with a separation wall and weir, an 825 mm diameter inlet pipe, 825 mm outlet pipe and overflow spillway to the maintenance hole's grate and two (2) separate outlet structures, one consisting of a 200 mm diameter reverse slope pipe complete with a 100 mm diameter orifice plate allowing for a maximum discharge rate of 0.03 m^3/s to provide quality control by detaining the extended detention storage over a duration of 37 hours, discharging via a proposed 300 mm diameter pipe to a mechanical water quality device (Vortechs Model 3000) with approximate volumetric capacity of 4.7 m^3, comprising of a sediment capacity of 1.4 m^3 and oil capacity of 0.85m^3, discharging via a proposed 300 mm diameter outlet, and second outlet consisting of the above mentioned diversion maintenance hole complete with the weir allowing for a maximum discharge rate of 0.546m^3/s for the 5-year event, discharging via an existing	

	825 mm diameter outlet, both outlets discharging to an existing storm sewer on Yonge Street that outlets to Lover's Creek and ultimately to Lake Simcoe.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

LV12 SWM Dry Pond Facility

Location	631 Welham Road, Barrie, Ontario	Subdivision 139 - Lot 10, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°40'1.803"W 44°20'13.414"N	
Pond Catchment Area	21.98 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,620 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0311-90-006 issued September 27, 1990, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater detention pond constructed to service part of the South Barrie Business Park, situated approximately 240 m north of Saunders Road and approximately 500 m west of Huronia Road in the City of Barrie, with an accumulated storage volume of approximately 2,530 m^3 for the 100 year storm event from a watershed area of 21.98 ha with inlet and outlet control structures, to limit the post development flows to pre-development levels for storm events up to and including the 100 year design storm.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV13 SWM Dry Pond Facility

Location	11 Brunton Crescent, Barrie, Ontario	Subdivision 171 - Lots 8 and 9, Registered Plan 925
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'19.66"W 44°21'50.41"N	
Pond Catchment Area	12.07 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	990 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1734-95-966 issued July 31, 1996, 8130-ACUPHF issued October 5, 2016	
Brief Description	A Stormwater Management Pond located on Lots 8 and 9, Registered Plan 925 to service also the Karvon Homes Subdivision located southeast of the intersection of Little Avenue and Yonge Street and future Cateron Estates Subdivision on Dixon Court, in the City of Barrie, as follows: Stormwater management system having 990 m^3 storage volume (at elevation 235.90 m) collecting stormwater from a total area of 12.07 ha, complete with outlet structure consisting of a clear stone gravel jacket surrounding a capped 1,500 mm diameter perforated riser pipe with a 200 mm diameter drain pipe and 70 mm diameter orifice attached upstream of an existing 300 mm diameter storm culvert and an existing overflow weir at elevation 235.90 m. Stormwater will be routed through the storm sewer system to maintenance hole No.4 and then to a head wall located at the south end of the stormwater management pond and discharged at a controlled rate of 12.5 L/s (2-year storm event) into Lovers Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV14 SWM Wet Pond Facility

Location	366 Bryne Drive, Barrie, Ontario	Subdivision 160 - Lot 7, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°41'32.252"W 44°20'25.26"N	
Pond Catchment Area	31.56 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	26,273 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 8683-7YJL6B issued December 18, 2009, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management Works for the collection, tansmission, treatment and disposal of stormwater runoff from a catchment area of 31.56 ha, to provide enhanced water quality protection, discharging to a tributary of Lovers Creek and to attenuate post-development peak flows to pre-development level for all storm events up to and including 100-year return storm. The stormwater management pond consists of three (3) inlet locations, one (1) open channel inlet, one (1) 450 mm diameter pipe with concrete headwall, one (1) horizontal elliptical storm sewer, two (2) sediment forebays berms complete with overflow weirs discharging to the main cell; one (1) wet pond having a permanent pool volume of 7,143 m^3, an extended detention storage volume of 4,448 m^3 and a total active storage volume of 26,273 m^3 with an allowable discharge flow rate of 0.62 m^3/s for the 100-year return storm; one (1) outlet structure consisting of ditch inlet catch basin with a horizontal top grate a 280 mm vertical plane orifice and one (1) 600 mm diameter outlet pipe discharging to one (1) 1,800 mm diameter control structure (DDLV03422), one (1) 300 mm diameter reverse slope pipe discharging to the said control structure (DDLV03400), complete with 216 mm diameter orifice plate; all of which allow the maximum discharge flow rate of 0.62 m3/s for 100-year return storm via one (1) 825 mm diameter outlet pipe.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV15 SWM Dry Pond Facility

Location	451 Bryne Dr, Barrie, Ontario	Subdivision 160 - Lot 7, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°41'20.756"W 44°20'5.136"N	
Pond Catchment Area	16.73 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	15,500 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1232-89-916 issued December 6, 1991, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater detention pond constructed and located on the south limit of the site and approximately 420 m west of Highway 400 provides a storage volume of 4,220 m^3 at a corresponding water level of 303.40 m with a freeboard of 0.20 m to elevation 303.60 m, serving16.73 ha. The control structure consists of approximately 19.5 m of 300 mm diameter concrete pipe which serves to limit the flow to the equivalent 2 year pre-development flow with an upstream invert of 301.50 m. Flows above the 2 year storm are controlled through a combination of two rectangular weirs with the lower weir having a dimension of 0.80 m long by 0.25 m high and a corresponding weir elevation of 302.80 m, and the upper weir consists or 1.10 m long by 0.35 m high and a corresponding weir elevation of 303.05 m. The pond is comprised of landscaped strips and treed areas which are part of a tree preservation site. The tree preservation area between the commercial development will remain untouched and water will infiltrate into the ground. The landscaped area adjacent to Bryne Dr along the commercial site drains to the road and is picked up by the storm sewer.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV16 SWM Dry Pond Facility

Location	18 Commerce Park Drive, Barrie, Ontario	Subdivision 185 - Lot 7, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°41'16.2"W 44°19'55.7"N	
Pond Catchment Area	5.90 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	12,000 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1995-89-906 issued January 12, 1990, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management facility and associated appurtenances constructed to serve the Greenvale Business Park on Part of Lot 7, Concession 17 in the City of Barrie. Three (3) detention ponds namely LV08, LV17, and LV16 were constructed all within the Greenvale Business Park, West of Highway 400 and South of Maple Drive for a 100 year design storm having a total minimum storage volume of 12,000 m^3 to retain surface runoff from a total area of approximately 66 ha within zone 2 (as described in the stormwater management reports which includes an area of 33 ha within the Greenvale Business Park and an external area of 33 ha west of the Park) and to discharge at a controlled rate of 2.7 m^3/s via an existing 1.2 m x 8.9 m concrete culvert located approximately 550 m South of Mapleview Drive Highway No. 400 together with low flow swales, security fences, overflow weirs, silt and sediment control facilities in Ponds LV08, LV17, and LV16. A stormwater detention pond with a maximum storage capacity of 1,2000 m^3. The facility receives flow through 37 m of 600 mm diameter concrete culvert inlet to the detention pond approximately 80 m West of Barrieview Drive. The pond is connected in series with LV17, via 130 m of 500 mm diameter concrete discharge pipe, however works independently. The pond has an invert of about 2 m higher than the maximum water elevations of LV17. The pond is a 3,400 m^3 facility and services 7.50 ha. The pond is designed to have 0.3 m of freeboard.	
Receive Emergency Sanitary Overflows	No	

Notes	NA
Location	NA

LV17 SWM Dry Pond Facility

Location	18 Commerce Park Drive, Barrie, Ontario	Subdivision 185 - Lot 7, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°41'9.1"W 44°19'48.4"N	
Pond Catchment Area	46.47 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	12,000 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1995-89-906 issued January 12, 1990, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management facility and associated appurtenances constructed to serve the Greenvale Business Park on Part of Lot 7, Concession 17 in the City of Barrie. Three (3) detention ponds namely LV08, LV17, and LV16 were constructed all within the Greenvale Business Park, West of Highway 400 and South of Maple Drive for a 100 year design storm having a total minimum storage volume of 12,000 m^3 to retain surface runoff from a total area of approximately 66 ha within zone 2 (as described in the stormwater management reports which includes an area of 33 ha within the Greenvale Business Park and an external area of 33 ha west of the Park) and to discharge at a controlled rate of 2.7 m^3/s via an existing 1.2 m x 8.9 m concrete culvert located approximately 550 m South of Mapleview Drive Highway No. 400 together with low flow swales, security fences, overflow weirs, silt and sediment control facilities in Ponds LV08, LV17, and LV16. A stormwater detention pond with a maximum storage capcity of 1,2000 m^3. The facility receives flow through 20 m's of 600 mm diameter concrete culvert across Bryne Drive at approximately 165 m South of Mapleview Drive as well as from a commercial area west of the pond. There is a concrete inlet structure having a dimension of 3.5 m x 2.6 m x 2.4 m high at detention pond LV17. The pond is connected in series with LV16, via 130 m of 500 mm diameter concrete discharge pipe, however works independently. The pond is a 5,700 m^3 facility and services 12.69 ha. The pond is designed to have 0.3 m of freeboard.	
Receive Emergency	No	

Sanitary Overflows	
Notes	NA
Location	NA

LV18 SWM Wet Pond Facility

Location	99 Loon Avenue, Barrie, Ontario	Subdivision 248 - Block 161
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'22.119"W 44°21'0.629"N	
Pond Catchment Area	19.45 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	4,524 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-0273-95-006 issued May 17, 1995, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management pond and appurtenances constructed for the development of the Deer Creek Homes (158 Lot) Subdivision bounded by Big Bay Point on the North, undeveloped land on the west of Lovers Creek on the Southeast, property located on Part of the Norht ½ of Lots 11 and 12, Concession 12, in the City of Barrie, County of Simcoe. A stormwater management pond, located on Block 161, having a storage volume capacity of 4,524 m^3 designed to collect 1:5 year storm event drainage flow from a drainage area of approximately 19.45 ha, including a discharge structure complete with a 460 mm diameter orifice discharging up to 283 L/s (1: 2 year storm event) through a 500 mm diameter outfall pipe into the Lovers Creek and a 6 m wide overflow weir discharging up to 743 L/s (1:5 year storm event) through a gabion channel into the Lovers Creek for a total 1:5-year post-development pond discharge flow rate of 1,026 L/s. Major system flow, 1:100-year storm event site drainage flow, is not routed to the pond but is conveyed to the outfall between Lots 40 and 41, designed for an overflow of 2,350 L/s, to the Lovers Creek.	
Receive Emergency Sanitary Overflows	No	

Notes	NA
Location	NA

LV19 SWM Wet Pond Facility

Location	55 Grace Cres, Barrie, Ontario	Subdivision 207 - Lots 12, 13, 14, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'9.561"W 44°21'6.725"N	
Pond Catchment Area	134.65 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS, water temperature	
Level of Volume Control	24,450 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1048-98-006 issued August 18, 1998, 8130-ACUPHF issued October 5, 2016	
Brief Description	The construction of a quality/quantity control pond (sediment removal) within Block 227, West of Grace Street within the Barrie-Heritage Draft Plan 43T-89017, consisting of a sediment forebay, retention (wet pond) areas, an extended detention (active storage) area, an emergency spillway, access road and landscape implementation for a “natural” outlet of this facility to Lovers Creek. The facility is designed to meet MECP level 1 quality control, extended detention for the first 25 mm of runoff and 2-year quantity control of stormwater flow runoff from 134.65 ha of developed area, conveyed to the pond via the subdivision storm sewers. The "active" sediment forebay comprises of a total storage volume of 7,000 m^3, (1,300 m^3 wet and 5,700 m^3 dry) and contains depressional pocket or micro-pool of 0.5 m in depth, lined with concrete cable mat to facilitate clean-out of accumulated sediments and a 200 mm diameter outlet control culvert. The designed water depth in the forebay will be about 1.2 m before spilling via two cable mat broad crested weirs to the outlying facility basin floor. The outlying basin floor totally 62,000 m^3 of volume comprises of a "wet pond" (storage volume of 15,700 m^3 and 3.2 min depth), a large shallow "wet pocket" (storage volumes of 500m^3 and 0.5 min depth), and a biofilter swale for a connection of the forebay outlet control structure to the wet pond via the wet pocket. The wet pond contains both quality and quantity control structures. The quality control structure consists of a 450 mm diameter bottom-drawn system complete with a 250 mm diameter	

	connected to a maintenance hole and 600 mm diameter outlet pipe (80 L/s at a water level of 239.70 m and drawdown time of ±48 hours). The quantity control structure is designed assuming a full active water quality volume with an extended detention (±24 hour drawdown time of the 25 mm rainfall) controlled by a 2-stage V-notch weir concrete box structure and 375 mm diameter outlet pipe to the maintenance hole (water level of 240.50 m).
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

LV20 SWM Wet Pond Facility

Location	44 Country Lane, Barrie, Ontario	Subdivision 210 - Lot 12, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'15.462"W 44°20'39.638"N	
Pond Catchment Area	33.83 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	5,735 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-0888-99-006 issued July 29, 1999, 8130-ACUPHF issued October 5, 2016	
Brief Description	The dual purpose (water quality and quantity control) stormwater management facility contains many features to achieve the design objectives. These features include: 1) combined quantity and quality control structure within the west perimeter berm, discharging to a common outfall and bio-engineered\armoured outlet channel within the Lovers Creek valley, 2) a sediment forebay with a 1.3 m deep permanent wet pool, 3) a retention (wet pond) cell, covering± 85% of the basin, 4) an independent active storage component above the wet pond, 5) an emergency spillway within the west perimeter berm, and 6) a landscape enhancement strategy to develop an ecologically diverse and sustainable approach for the naturalization of the facility within the Lovers Creek valley.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV21 SWM Wet Pond Facility

Location	99 Loon Ave, Barrie, Ontario	Subdivision 261 - Lot 4, Concession 12
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'22.83"W 44°20'59.299"N	
Pond Catchment Area	19.78 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required	TSS	
Level of Volume Control	8,906 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-0208-97-006 issued April 24, 1997, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management system and associated appurtenances constructed to service the Lover's Creek Estates Residential Development (43T-94506), Part of the East and West Halves of Lot 4, Concession 12, formerly in the Township of Innisfil, now in the City of Barrie, The stormwater management facility is located east of Loon Avenue, approximately 90 m south of Chalmers Drive, consisting of a stormwater extended detention wetland pond designed to provide quality and quantity control functions. The wetland pond has a combined available storage volume of 8,906 m^3 including 6,306 m^3 of extended detention storage and 2,600 m^3 of permanent storage, with inlet forebay and vegetation lining to enhance sediment removal and discharge via an outlet control structure, designed to provide quality control by detaining the runoff from a 4 hr - 25 mm rainfall design storm event, prior to discharge over a 38.9 hr period to Lover's Creek. Quantity control is provided by attenuating the catchment area post development runoff to the predevelopment runoff rate of l.02 m^3 /sec during the 2 year design storm event and including inlet piping and outlet control structure, overflow weir and emergency spillway.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV22 SWM Wet Pond Facility

Location	571 Bryne Drive, Barrie, Ontario	Subdivision 213 - Lots 6, 7, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°41'8.521"W 44°19'33.691"N	
Pond Catchment Area	70.71 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	40,000 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-1505-90-006 issued November 16, 1998, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility consisting of an extended detention pond and associated appurtenances constructed to serve the Argento Industrial Subdivision on the South Half of Lots 6 and 7, Concession 11, in the City of Barrie. The stormwater management facility has an extended detention pond, consisting of a sediment forebay and a permanent detention pond system, located at the northeast comer of Bryne Drive and Barrie View Drive, attenuating post development stormwater runoff from a one in 100 year design storm over a drainage area of 70.71 ha within Lovers Creek Water shed and discharging to an existing watercourse which discharges into Lovers Creek. The sediment forebay is located east of Bryne Drive, collecting storm runoff via two storm sewers (1,650 mm and 1,050 mm diameter) and complete with an inlet structure, baffle wall, weir and rip-rap. The extended detention pond provides a total storage volume of 40,000 m^3, discharging via a perforated riser pipe equipped with a temporary upturned 200 mm diameter "T" drain containing an orifice plate with a 140 mm diameter orifice. The facility includes an outlet structure, a 900 mm diameter outlet pipe, emergency overflow spillway, head wall, rock check dam, and security fence.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV23 SWM Wet Pond Facility

Location	45 Patrick Drive, Barrie, Ontario	Subdivision 314 - Lot 12, Concession 11
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'2.102"W 44°20'19.564"N	
Pond Catchment Area	17.77 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	11,421 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 0485-62PRQX issued July 14, 2004, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management facility in Part of Lot 12, Concession 11, in the City of Barrie, County of Simcoe, to service the LJ Mapleview subdivision development. The stormwater management facility consists of a quality control extended detention wet pond including a forebay, located on the southwestern portion of the site within the subdivision, receiving the minor system flows from a total drainage area of 17.77 ha, and having a water quality control detention volume of 2,200 m^3 (permanent pool), and 3,000 m^3 (extended detention) and 11,421 m^3 for the 100-year event storm. The facility has a100 year flood elevation approximately 245.00 m at a water depth of 4.0 m and a freeboard of 0.6 m from the 100 year flood elevation to the top of the pond. The regional flood elevation is approximately 245.35 m with a freeboard of 0.25 m from the regional flood elevation to the top of the pond. The overflow weir was designed to accommodate peak flows from the regional storm event. The outlet structure consists of a 200 mm diameter perforated Hickenbottom riser pipe located in clear stone surround, provision of connection of 675 mm diameter outlet pipe to discharge into a 10.0 m wide rip rap dissipater to the Willow Creek. A 5.5 m wide overflow weir on the berm is located at the south side of the facility to discharge extra ordinary storm flow from the site to Lovers Creek approximately 10m from the outlet. The 2, 5, 25, and 100 year pre-development rates are: 0.2 m, 0.42, 0.79 and 1.18 m respectively; and the 2, 5, 25, and 100 year post development rates are: 0.15 m, 0.28, 0.69, and 1.10 m, respectively.	

Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

LV25 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>50 Shalom Way, Barrie, Ontario</td><td>Subdivision 223 - Lot 11, Concession 11</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Lake Simcoe/Lovers Creek</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Lovers Creek Watershed</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°39'26.755"W 44°20'5.245"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">21.15 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">3,485 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity – 2 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 4242-6CFGH9 issued May 17, 2005, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">A stormwater management facility constructed to serve the Eighteen residential subdivision (located at the north of Lockhart Road and east of Lovers Creek) in the City of Barrie, comprising of an extended detention wet pond located at the northwest corner of the property and providing an enhanced level of quality control, having a sediment forebay area for removal of sediment; approximately 3,020 m^3 permanent pool storage volume, and an extended detention volume of approximately 1,465 m^3 which is slowly released over a minimum 24 hour period, together with inlet sewers with headwall discharging to the sediment forebay area, and a flow outlet structure (Hickenbottom located within the deepened plunge pool at the outlet area) and maintenance hole outlet control structure equipped with a flow restricting orifice to attenuate the peak post-development flows during the 2 year storm event only to less than the peak pre development levels (using the SCS storm distribution) as follows:

<table>
<tr><td>Storm Event</td><td>Pre-development Flow</td><td>Post-development Flow</td></tr>
<tr><td>2 Year</td><td>0.47 m3/s</td><td>0.43 m3/s</td></tr>
<tr><td>5 Year</td><td>0.96 m3/s</td><td>1.51 m3/s</td></tr>
<tr><td>25 Year</td><td>1.74 m3/s</td><td>2.77 m3/s</td></tr>
<tr><td>100 Year</td><td>2.59 m3/s</td><td>3.89 m3/s</td></tr>
</table>

Complete with a plunge pool at the outlet structure, an 8.0 m wide emergency overflow spillway, with a storm discharge 300 mm diameter storm sewer outletting to a shallow swale leading to Lovers Creek, including temporary sediment and erosion</td></tr>
</table>

	control measures.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

LV27 SWM Wet Pond Facility to LID Infiltration Gallery

Location	239 Hurst Drive, Barrie, Ontario	Road Allowance 31-28112
Watershed/Subwatershed	Lake Simcoe/Lovers Creek	
Receiver of Discharge	Lovers Creek Watershed	
Outlet Location	79°39'13.685"W 44°22'2.77"N	
Pond Catchment Area	2.25 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,738 m^3	
Design Storm	Quantity – 2 Year	
Reference ECA(s)	ECA No. 4822-5QZRVN issued September 22, 2003, 8130-ACUPHF issued October 5, 2016	
Brief Description	A stormwater management system serving Hurst Drive (from Tollendal Mill Road to Cox Mill Road) and Little Avenue (from MacLaren Avenue to Hurst Drive) collecting up to 2-year storm event runoff from an area of 2.2 ha (a 1.5 ha portion of the road and a 0.7 ha external area), in the City of Barrie. The stormwater management pond is located on the south side of Hurst Drive and approximately 150 m east of Little Avenue, having a permanent storage volume of 425 m^3, an extended storage volume of 470 m^3, and a total storage volume of 1,738 m^3 complete with an inlet structure, sediment forebay, clay liner, access road, overflow weir and outlet structure consisting of a perforated riser equipped with a 45 mm diameter orifice plate allowing a maximum discharge of 3 L/s via a 200 mm diameter outlet pipe equipped with a knife gate valve to an infiltration gallery (4.1 LID Infiltration Gallery System). The infiltration gallery is located immediately downstream of the pond on top of the Lover's Creek Valley slope.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LV50 SWM Wet Pond Facility

<table>
<tr><td>Location</td><td>362 King Street, Barrie, Ontario</td><td>Subdivision 197 - Lot 5, Concession 11</td></tr>
<tr><td>Watershed/Subwatershed</td><td colspan="2">Lake Simcoe/Lovers Creek</td></tr>
<tr><td>Receiver of Discharge</td><td colspan="2">Lovers Creek Watershed</td></tr>
<tr><td>Outlet Location</td><td colspan="2">79°41'55.365"W 44°19'33.775"N</td></tr>
<tr><td>Pond Catchment Area</td><td colspan="2">12.27 Hectares</td></tr>
<tr><td>Level of Treatment for Suspended Solids</td><td colspan="2">Level 1 (80%) Long-Term T.S.S. Removal</td></tr>
<tr><td>Treatment for Other Contaminants, as Required</td><td colspan="2"></td></tr>
<tr><td>Level of Volume Control</td><td colspan="2">3,290 m^3</td></tr>
<tr><td>Design Storm</td><td colspan="2">Quantity – 100 Year</td></tr>
<tr><td>Reference ECA(s)</td><td colspan="2">ECA No. 6057-6RZJDV issued July 25, 2006, 8130-ACUPHF issued October 5, 2016</td></tr>
<tr><td>Brief Description</td><td colspan="2">A stormwater management pond for the treament of stormwater runoff from a catchment area of approximately 12.27 ha, to provide an Enhanced Level of water quality protection and to attenuate peak post-development peak flows to pre-development levels for all storm events up to and including the 100 year return storm, discharging to an existing storm sewer system on Veteran’s Drive.

The stormwater management system services the Mapleview Industrial Developments Subdivision, comprising of an extended detention pond with inlet sewer discharging via a headwall to a sediment forebay area, having a permanent pool storage volume of approximately 3,290 m^3 and an extended detention volume of approximately 2,394 m^3, and with outlet control structure to attenuate peak post-development flow to pre-development levels during major storm events as follows:

<table>
<tr><th>Storm Event</th><th>Pre-development Flow</th><th>Attenuated Pond Post-Development Flow</th><th>Approximately Storage</th></tr>
<tr><td>2 Year</td><td>0.24 m^3/s</td><td>0.06 m^3/s</td><td>2,888 m^3</td></tr>
<tr><td>5 Year</td><td>0.51 m^3/s</td><td>0.27 m^3/s</td><td>4,470 m^3</td></tr>
<tr><td>25 Year</td><td>0.96 m^3/s</td><td>0.44 m^3/s</td><td>5,031 m^3</td></tr>
<tr><td>100 Year</td><td>1.06 m^3/s</td><td>0.57 m^3/s</td><td>5,609 m^3</td></tr>
</table>
</td></tr>
<tr><td>Receive Emergency Sanitary Overflows</td><td colspan="2">No</td></tr>
<tr><td>Notes</td><td colspan="2">NA</td></tr>
<tr><td>Location</td><td colspan="2">NA</td></tr>
</table>

SP02 SWM Dry Pond Facility

Location	21 Patricia Avenue, Barrie, Ontario	Subdivision 104 - Plan 51M286, Block 24
Watershed/Subwatershed	Lake Simcoe/Sophia Creek	
Receiver of Discharge	Sophia Creek Watershed	
Outlet Location	79°41'45.814"W 44°24'8.83"N	
Pond Catchment Area	4.10 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	323 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 8130-ACUPHF issued October 5, 2016.	
Brief Description	A stormwater dentention area located within park land for stormwater quantity control. The outlet structure and berm are designed to overtop at approximately elevation 275.00.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

SP03 SWM Dry Pond Facility

Location	68A Ottaway Avenue, Barrie, Ontario	Part Lot 21, Concession 4, East
Watershed/Subwatershed	Lake Simcoe/Sophia Creek	
Receiver of Discharge	Sophia Creek Watershed	
Outlet Location	79°41'16.423"W 44°24'19.59"N	
Pond Catchment Area	84.13 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	8,018 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 2849-5E5N4J issued September 20, 2002, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater detention pond to provide flood control for Sophia Creek, located 100 m north of the intersection of Ottaway Avenue and Currie Street, collecting up to 100-year storm event runoff from an area of 84.13 ha, having a total storage volume of 10,910 m^3, complete with emergency spillway leading to Currie Street and outlet structure including a 3.3 m long, 3.3 m wide and 2.73 m high cast-in-place concrete outlet structure complete with a 600 mm diameter orifice and two (2)-850 mm wide weirs allowing a total maximum discharge of 10.46 m^3/s (100-year storm event) via 2.4 m wide and 1.2 m high storm sewer located on Easement (approximately 48 m north of Ottaway Avenue to Rose Street), Ottaway Avenue and Rose Street to the existing open channel at Laurie Crescent leading to the closed channel at Peel Street.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

WK01 SWM Dry Pond Facility

Location	321 Little Avenue, Barrie, Ontario	Subdivision 167 - Plan 51CU.M.13, Block 299
Watershed/Subwatershed	Lake Simcoe/Whiskey Creek	
Receiver of Discharge	Whiskey Creek Watershed	
Outlet Location	79°39'58.605"W 44°21'56.373"N	
Pond Catchment Area	577.04 Hectares	
Level of Treatment for Suspended Solids	Level 3 (60%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	40,580 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 3-0749-87-006 issued June 9, 1987, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater detention pond to provide flood control for Whiskey Creek with a capacity of 40,580 m^3. The online dry pond was designed to provide control up to 100 year storm event. The pond is equipped with an outflow structure to maximize the storage available while limiting post-development flows to pre-development levels for the two years through 1:100 year storm events while allowing the regional storm to pass. Discharge from the detention pond will pass under Little Avenue via an existing concrete box culvert.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

WK04 SWM Wet Pond Facility

Location	16 Wallwins Way, Barrie, Ontario	Subdivision 255 - Plan M568, Block 60
Watershed/Subwatershed	Lake Simcoe/Whiskey Creek	
Receiver of Discharge	Whiskey Creek Watershed	
Outlet Location	79°40'2.679"W 44°22'18.843"N	
Pond Catchment Area	8.53 Hectares	
Level of Treatment for Suspended Solids	Unknown/Wetland	
Treatment for Other Contaminants, as Required		
Level of Volume Control	1,710 m^3	
Design Storm	Quantity – 5 Year	
Reference ECA(s)	ECA No. 3-1745-95-966 issued April 26, 1996, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater management pond and appurtenances to be constructed for the development of the Tollendale and Bay Lane Subdivision located on Block 60 of the Tollendale and Bay Lane Subdivision, approximately 120 m east from the intersection of Tollendale Mill Road and Minet's Point Road,in the City of Barrie. Stormwater management system from a total area of 8.53 ha consisting of an extended detention wetland pond having a minimum volume of 750 m^3 and an active storage volume of 960 m^3 for a total volume of 1710 m^3 designed for up to the 1:5 year storm events complete with Hickenbottom structure to control the 1:2 year storm event flows up to 21 L/s and a weir to control the 1:5 year storm event flows up to 74 L/s for a total discharge of 95 L/s into Whiskey Creek.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

WK05 SWM Wet Pond Facility

Location	Thrushwood Drive, East of Blueberry Lane	Subdivision 306 and 324 - Concession 12, Part Lot 7, Plan 67, Lots 3-5
Watershed/Subwatershed	Lake Simcoe/Whiskey Creek	
Receiver of Discharge	Whiskey Creek Watershed	
Outlet Location	79°41'29.891"W 44°20'44.418"N	
Pond Catchment Area	114.98 Hectares	
Level of Treatment for Suspended Solids	Level 1 (80%) Long-Term T.S.S. Removal	
Treatment for Other Contaminants, as Required		
Level of Volume Control	53,850 m^3	
Design Storm	Quantity – 100 Year	
Reference ECA(s)	ECA No. 1845-5RANUU issued September 18, 2003, 8130-ACUPHF issued October 5, 2016	
Brief Description	Stormwater Management Facility in Part of 3, 5, 6, 7, R Plan 67 Part of Lot & Concession 12, in the City of Barrie located approximately 200 m south of Harvie Road and approximately 700 m east of Veterans Drive to serve the lands tributary to the Whisky Creek watercourse located west of Highway 400, to attenuate post development peak stormwater runoff from approximately 114.98 ha drainage area to pre-development runoff rates up to the 1:100 year storm event. A stormflow is conveyed to the wet pond with a forebay and permanent storage pool to provide quantity and a quality facility to treat storm runoff from 114.98 ha of contributing drainage area and the facility is c/w a sediment forebay, a total active storage capacity of 7,845 m^3, a permanent storage volume of 2,957 m^3, and an extended storage volume of approximately 6,743 m^3. A second inlet is located on the northeast side of the pond that includes one (1) oil and grit separator (Stormceptor STC 750), located on Megan Crescent and receiving inflows from the run-off of the residential subdivision development. The outflow for the quality facility seepage outlet system consisting of a stone encased 450 mm vertical riser drain and a 450 mm diameter pipe connected to an existing maintenance hole inlet. Quality flows are controlled by an orifice insert within the quality control outlet structure excess runoff from storm events greater than 25 mm storm will overflow into the weir inlet maintenance hole no. 6 that is connected to a 1,200 x 1,800 box culvert. The control structure is also equipped with a 150 mm diameter emergency maintenance draw down pipe located in the pond outlet control structure complete with an operating	

	valve that discharges into the Whiskey Creek watercourse.
Receive Emergency Sanitary Overflows	No
Notes	NA
Location	NA

LID Infiltration Gallery System

Location	239 Hurst Drive, Barrie, Ontario	Lots 12 and 13, Concession 13
Watershed/Subwatershed	Lake Simcoe / Lovers Creek	
Catchment	Lovers Creek	
Catchment Area	2.2 Hectares (Total associated with LV27)	
Level of Treatment for Suspended Solids	Level 1 Enhanced 80% Long-Term T.S.S. Removal	
Level of Volume Control	79 m3	
Design Storm	Quantity - 5 year	
Reference ECA(s)	ECA No. 4822-5QZRVN issued September 22, 2003, 8130-ACUPHF issued October 5, 2016	
Brief Description	An infiltration gallery located immediately downstream of the pond (LV27) on top of the Lover's Creek Valley slope, consisting of eleven (11) – 100 mm diameter and 10 m long perforated pipes spaced a maximum of 1.0 m apart, having a bottom area of 140 m2, a gallery depth of 1.4 m and available storage volume of 79 m3 and an overflow pipe at a flow splitter dispersing overflow stormwater into the floodplain of Lover's Creek, all in accordance with the application dated April 30, 2003, including report entitled "Hurst Drive Extension – Tollendal Mill Road to Coxmill Road Drainage and Stormwater Management Plan" dated April 2, 2003, final plans and specifications prepared by McCormick Rankin Corporation.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LIDLT01 Infiltration Gallery System

Location	300 Kozlov St, Barrie, Ontario	Subvision 366 - Lot 18, Concession 5
Watershed/Subwatershed	Nottawasaga / Little Lake Drainage area	
Catchment	Little Lake	
Catchment Area	20.75 Hectares (Total associated with LT17)	
Level of Treatment for Suspended Solids	Level 1 Enhanced 80% Long-Term T.S.S. Removal	
Level of Volume Control	Approximately 525 m3 (1,500 m2 infiltration area)	
Design Storm	Quantity- 5 year	
Reference ECA(s)	ECA No. 0379-88XRKZ issued September 17, 2010.	
Description	A Infiltration type stormwater management facility (LT17) comprised of three components: a quality control cell, quantity control cell, and infiltration gallery. The LID infiltration gallery is below a park space on the east side of Kozlov Street. The bottom of the infiltration gallery bed has a surface area of 1,500 m2 and is located at an elevation of 277.30 m. Stormwater conveyed to the bed is distributed by a series of 300 mm diameter corrugated slotted P.E. plastic pipe wrapped in filter fabric. These pipes are perpendicular to the 450 mm diameter main header outlet pipe and are placed on 3.0 m centers. The distribution pipes are connected via a 300 mm diameter corrugated slotted P.E. plastic pipe (wrapped in filter fabric) which loops around the outer limits of the bed. The bed is completely surrounded by 19 mm diameter clear stone and filter fabric. Two (2) maintenance holes have been provided at the east and west limit of the gallery to facilitate maintenance and clean out of the infiltration gallery, as required.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LIDSP01 Infiltration Chamber System

Location	15 Bell Farm Road, Barrie, ON	Lot 21, Concession 3
Watershed/Subwatershed	Lake Simcoe / Sophia Creek Drainage Area	
Catchment	Sophia Creek	
Catchment Area	N/A	
Level of Treatment for Suspended Solids	Level 1 Enhanced 80% Long-Term T.S.S. Removal	
Level of Volume Control	471 m3	
Design Storm	Quantity - 5 year	
Reference ECA(s)	N/A	
Description	The LID infiltration chamber system is located east of Fire Hall #12, located at 15 Bell Farm Road. The system receives run off from Bell Farm Road and a drainage swale located in the southern right of way. The infiltration system is downstream of an oil/grit separator (STC 750) and connected to an overflow chamber that discharges into the stormwater management system on the south side of Bell Farm Road during periods of high flows. The infiltration system consists of 95 Stormtech MC-3500 chambers measuring 2.28 x 1.95 m x 1.14 m (l x w x h) with a minimum of 225 mm separation between chamber rows. Top of chambers are set at an elevation of 257.15 masl. The chambers are surrounded by clean granular stone (20 to 50 mm). Total storage capacity of the system is 471 m3. Three (3) observation ports have been installed in the chamber system to facilitate maintenance and clean out, as required.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LIDML01-LIDML06 and LIDSP02-LIDSP10 Soil Cell Infiltration System

Location	Dunlop Street, Barrie, ON	Lot 24, Concession 4
Watershed/Subwatershed	Lake Simcoe / Sophia Creek and Mulcaster Drainage Area	
Catchment	Sophia Creek	
Catchment Area	N/A	
Level of Treatment for Suspended Solids	N/A	
Level of Volume Control	Unknown	
Design Storm	Quantity - 5 year	
Reference ECA(s)	N/A	
Description	Total of 15 Silva Soil Cell systems installed on Dunlop Street between Mulcaster Street and Toronto Street with a total area of surface area of 1230 m2. Silva Cell systems are installed to an approximate depth of 1.5 m below grade and contain an engineered soil mix compacted to 85% SPMDD. 150 mm inlet perforated distribution pipes are connected to upstream catch basin at between 0.3 m and 0.45 m below grade. 150 mm outlet perforated distribution pipes are connected to downstream catch basin at approximately 1.62 m below grade. Perforated pipes are wrapped in 19 mm diameter clear stone and geotextile. Flush mounted cast iron clean up caps are installed at grade and are connected to the perforated pipe systems via 150 mm PVC pipes and Fernco adapters.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LIDKD01 Bio-Retention Cell

Location	114 Lillian Crescent, Barrie, ON	Lot 21, Concession 6
Watershed/Subwatershed	Lake Simcoe / Kidds Creek Drainage Area	
Catchment	Kidds Creek	
Catchment Area	N/A	
Level of Treatment for Suspended Solids	Level 1 Enhanced 80% Long-Term T.S.S. Removal	
Level of Volume Control	397 m3 (216 m2 infiltration area)	
Design Storm	Quantity - 5 year	
Reference ECA(s)	N/A	
Description	The bioretention cell is located on the northeast side of the Victoria Woods parking lot and accepts runoff during rain events and snow melts. The cell measures approximately 216 m2 and is connected a 315 m drainage swale that ultimately discharges to Kidds creek during periods of major rain events. The cell is connected to the Victoria woods parking lot via a 2 m2 rip rap spill way. The top of the limit of planting / top of ponding is approximately 280.60 masl, with the base of the planting media set at approximately 280.17 masl. Planting media consists of Maire's Fescue, Huron Sunrise Maiden Grass and Cardinal Flower. The retention cell consists 75 mm mulch overlying 600 mm sand and gravel filter media with a 725 mm coarse gravel storage media. The designed infiltration rate at the Site is 13 mm/hr.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LIDBR17, LIDBR18, LIDBR19, LIDBR20, LIDBR21, LIDBR23, LIDBR24, Infiltration Gallery System

Location	Bear Creek Ridge Subdivision - Northeast corner of Essa Road and Salem Road	Part of the South Half of Lot 2, Concession 11
Watershed/Subwatershed	Nottawasaga / Bear Creek Water Shed	
Catchment	Bear Creek	
Catchment Area	21.27 ha	
Level of Treatment for Suspended Solids	Level 1 Enhanced 80% Long-Term T.S.S. Removal	
Level of Volume Control	202 mm/hr	
Design Storm	Quantity- 5 year	
Reference ECA(s)	N/A	
Description	The subdivision incorporates right of way LIDs to both mitigate and convey minor and major system flows to an end-op-pipe Stormwater Management Facility located at the northern limit of the development. The stormwater conveyance network connect to 14 subsurface infiltration galleries complete with isolator clean out rows. Flows that exceed the infiltration capacity of the infiltration galleries during >25 mm storm events will by-pass the system. The infiltration galleries are comprised of Brentwood Stormtank Modules which range from 1.22 to 3.67 m wide by 1.31 to 1.74 m in height. 305 mm inlets are connected to the main stormwater conveyance system. Three 254 mm PVC access ports are connected to the infiltration gallery allowing for flushing and vacuum truck maintenance. Volume storage capacity is designed for 202 mm/hr infiltration rates.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

LIDHR02-LDHR07 Infiltration Gallery System

Location	Frank's Way, Barrie, ON	Lot 9, Concession 14
Watershed/Subwatershed	Lake Simcoe / Whiskey Creek Watershed	
Catchment	Whiskey Creek	
Catchment Area	4.01 ha	
Level of Treatment for Suspended Solids	Level 1 Enhanced 80% Long-Term T.S.S. Removal	
Level of Volume Control	88 m3	
Design Storm	Quantity- 5 year	
Reference ECA(s)	N/A	
Description	The stormwater conveyance network within Frank's Way connects to 5 subsurface infiltration galleries. Flows that exceed the infiltration capacity of the infiltration galleries during >25 mm storm events will by-pass the system and discharge to a downstream dry pond. The infiltration galleries are comprised of ACO Stormbrixx Modules which measure approximately 9.0 m in length by 0.6 m wide by 1.2 m high. Base elevation of the systems range between 336.58 masl and 233.85 masl. 250 mm PVC inlets are connected to the main stormwater conveyance system via catch basin. 450 mm access ports are connected to each infiltration gallery allowing for flushing and vacuum truck maintenance. Volume storage capacity is designed for 25 mm/hr infiltration rates with 24-48 hour draw down times.	
Receive Emergency Sanitary Overflows	No	
Notes	NA	
Location	NA	

Oil Grit Separator Devices

#	Location	Model / Size	Date Installed
2.1	Osprey Ridge Road, in sidewalk at end of court.	STC 3000	1/1/2005
2.2	End of Gallie Court, south of parking lot and west of Georgian Wetlands. In rest area.	STC 2000	Unknown
2.3	East of 20 Anne St S, lane 1 (SB)	CDS PMSU40	1/1/2008
2.4	Southwest corner of Touchette Drive at Veterans Drive	STC 750	1/1/2004
2.5	Big Bay Point Road west of Hewitts Creek, EB curb lane	STC 5000	1/1/2002
2.6	Big Bay Point Road east of Hewitts Creek, EB curb lane	STC 4000	1/1/2002
2.7	Mapleview Drive East, east of Bayview Dr. Lane 2 (EB)	STC 4000	1/1/2000
2.8	Big Bay Point Road, east of bridge, EB curb. Catch basin lid	OGER 30000	1/1/1999
2.9	Big Bay Point Road, west of bridge, EB curb. Catch basin lid	OGER 25000	1/1/1999
2.10	At Mapleview Dr E and Stunden Lane. Centre of SB lane	STC 2000	1/1/2003
2.11	Mapleview Drive East, east of Hewitts Creek, bicycle lane (EB)	CDS PSWC56-40	1/1/2006
2.12	Mapleview Drive East west of Hewitts Creek, bicycle lane (EB)	CDS PSWC56-40	1/1/2006
2.13	Northwest area of Tyndale Park (north of volleyball court).	STC 4000	1/1/1999
2.14	Crimson Ridge Rd/Capps Dr, on grassed area by Wilkins sign	STC 2000	1/1/2000
2.15	Coxmill Rd (centerline), south of Jean St.	OGER 15000	1/1/2005
2.16	North of 336 Yonge Street, lane 1 (SB).	STC 3000	1/1/2000
2.17	Big Bay Point Road, west of Yonge St. West island, WB lane	CDS PSWC56-78	1/1/2004
2.18	Yonge St, southeast of D'ambrosio Dr, SB sidewalk	OGER 30000	1/1/2000
2.19	North of 384 Yonge Street, lane 1 (NB)	OGER 20000	1/1/2000
2.20	North of 488 Yonge St, lane 1 (SB)	OGER 20000	1/1/2000
2.21	North of 50 Megan Cres on road shoulder	STC 750	1/1/2007
2.22	West bend on Mayes Crt, south of Trueman Rd	CDS PSWC56-78	1/1/2007
2.23	D'ambrosio Dr and Yonge St, within fenced SWMF	VS 3000	1/1/2007
2.24	East access to Claudio Crescent at Harvie Road	CDS PMSU20	1/1/2007

#	Location	Model / Size	Date Installed
2.25	East of 10 Anne St S, lane 1 (SB)	CDS PMSU30	1/1/2008
2.26	Anne Street S, north of John St and north of Dyments Creek. Lane 1 (SB)	CDS PMSU40	1/1/2008
2.27	Anne Street S and Brock Street, SB turn lane at intersection	CDS PMSU20	1/1/2008
2.28	Anne Street S, north of John St and south of Dyments Creek, lane 1 (SB)	CDS PMSU30	1/1/2008
2.29	At Town Line and Humber Street, on southeast corner	STC 3000	1/1/2004
2.30	West of 277 Coxmill Road (NB)	OGER 30000	1/1/1999
2.31	East of 20 Hawthorne Cres. Middle of road on curve	STC 3000	1/1/1998
2.32	Wildwood Trail and Wildwood Trail, near community mailbox	STC 1500	1/1/1996
2.33	Intersection of Ardagh Road and Ferndale Drive South. Straight EB lane	STC 1500	1/1/1996
2.34	Yonge St, laneway southeast of Lovers Creek and east of bridge. North unit	OGER 30000	1/1/2000
2.35	Yonge St, laneway southeast of Lovers Creek and east of bridge. South unit	OGER 30000	1/1/2000
2.36	Northeast of 362 Yonge St, curb lane (SB)	STC 3000	1/1/2000
2.37	East of 258 Cox Mill Road (SB)	STC 2000	1/1/1994
2.38	North of 661 St. Vincent St at end of guard rail, SB lane by curb	STC 6000	1/1/2000
2.39	Coxmill Rd at Arbour Trail, curb lane	CDS PMSU30	1/1/2005
2.40	East of 134 Anne St S, north of Tiffin St, lane 1 (SB)	CDS PMSU30	1/1/2008
2.41	Edgehill Drive, east of Jagges Dr, west of Dyments Creek	OGER 20000	1/1/2003
2.42	East of 173 Mapleview Dr E, south shoulder, in grass	CDS PMSU30	1/1/2008
2.43	165 Ferndale Street North in Operations Centre yard, north of sand dome, east of wash bay	Aqua-swirl AS-4	1/1/2010
2.44	Between properties 224 & 226 Walnut Crescent (farthest from sidewalk)	STC 14000	3/22/2010
2.45	Between properties 224 & 226 Walnut Crescent (closest to sidewalk)	STC 14000	3/22/2010
2.46	Allandale Waterfront GO Station, north of tracks, near accessible parking	CDS 3030-8F	1/1/2011
2.47	Trotter Crt, on grassed shoulder north of Crew Crt	CDS PMSU20	7/1/2012
2.48	South of Tiffin Boat Launch, north of Lakeshore Dr, on shoulder of walking trail	STC 6000	8/1/2012

#	Location	Model / Size	Date Installed
2.49	Mapleview Dr E, east of Lovers Creek (farthest from bridge). Curb lane	STC 14000	11/16/2017
2.50	Mapleview Dr E, east of Lovers Creek (closest to bridge). Curb lane	STC 14000	11/16/2017
2.51	Mapleview Dr E, west of Lovers Creek (closest to bridge). Lane 2	STC 14000	11/16/2017
2.52	Mapleview Dr E, west of Lovers Creek (farthest from bridge). Lane 2	STC 14000	11/16/2017
2.53	Lakeshore Dr, north of Tiffin St, south of Dyments Creek. West side of SB lane, on grass by sidewalk	STC 4000	12/31/2015
2.54	JC Massie Way, north of stormwater pond. EB lane	STC 2000	7/23/2014
2.55	Heritage Park, east parking lot by accessible parking	STC 750	3/18/2016
2.56	Emms Dr, west of Jackson St., recreation centre entrance under trees	VS 9000	1/1/2005
2.57	Lakeshore Dr, north of Dyments Creek, east side of NB lane on grass. Southeast lid	STC 9000	12/31/2015
2.58	Lakeshore Dr, north of Dyments Creek, east side of NB lane on grass. Northeast lid	STC 9000	12/31/2015
2.59	Between Johnston St and Johnson's Beach parking lot. North side of the Barrie North Shore Trail in grass.	STC 300	10/13/2017
2.60	East of 60 Ferndale Dr N at Dyments Creek, lane 1 (NB)	CDS PSMU20	8/25/2016
2.61	West of 1 Ferndale Dr N, SB left turn lane and NB lane 1 (on the line)	CDS PSMU20	8/25/2016
2.62	Greenwich St, south of SWM pond inlet	STC 60000	11/10/2016
2.63	Frank’s Way, south of Holgate St and Robinson St, on centre line	CDS PMSU 30	10/16/2017
2.64	Innisfil St at Hotchkiss Creek	STC EF10	3/1/2021
2.65	East of 15 Bell Farm Rd, connected to LID	FD-5HC	5/15/2020

Stormwater Pumping Stations

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

[Stormwater Pumping Station Name]

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.

[*Asset ID* (e.g., Third Pipe 10]

Asset ID and Name	N/A
Location	
Watershed/Subwatershed	
Receiver of discharge	
Outlet location	
Catchment Area	
Treatment, if applicable	
Reference ECA(s), if applicable	
Brief Description	
Notes	

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
N/A				

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	**Barrie, Corporation of the City of**
ECA Number	**014-S701**
System Name	**City of Barrie Stormwater Management System**
ECA Issue Date	**June 19th, 2024**

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	**Barrie, Corporation of the City of**
ECA Number	**014-S701**
System Name	**City of Barrie Stormwater Management System**
ECA Issue Date	**June 19th, 2024**

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 Barrie 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 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 Authorized 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 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 Approval 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 Approval 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 Approval.

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 in 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 Form 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) Be 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) Include 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; and,

d) 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 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 November 15, 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	**Barrie, Corporation of the City of**
ECA Number	**014-S701**
System Name	**City of Barrie Stormwater Management System**
ECA Issue Date	**June 19th, 2024**

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 shall 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 15, 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 on or after January 1, 2010 and where available for stormwater works constructed prior to January 1, 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 15, 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 15, 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 June 14th, 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 from 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 15, 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 included 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 November 15, 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	**Barrie, Corporation of the City of**
ECA Number	**014-S701**
System Name	**City of Barrie Stormwater Management System**
ECA Issue Date	**June 19th, 2024**

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 (Watershed Hydrology) [1]	**FOR DEVELOPMENT SCENARIOS** [2] 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.