

FACILITY BUILDINGS

OUTDOOR DIVERSION AREA

PAVED ROAD (ASPHALT)

GRAVEL ROAD

PROPERTY BOUNDARY

EXISTING VEGETATION SCREENING

CONSTRUCTED SCREENING FEATURE

PERIMETER BERM CONTOURS (Interval 1 m)

STORMWATER MANAGEMENT PONDS

203

SUB-CATCHMENT AREA NUMBER

120000120240

SCALE 1:6,000METRES

<div><div><div></div><div>Golder Associates</div><div>Ottawa, Ontario, Canada</div></div></div> <div><div>FILE No. 1211250045-V4-Storm-Fig 4.dwg</div><div>PROJECT No. 12-1125-0045</div><div>REV.</div></div>	<table><tr><td>SCALE</td><td>AS SHOWN</td></tr><tr><td>DATE</td><td>Nov. 2013</td></tr><tr><td>DESIGN</td><td>M.L.F.</td></tr><tr><td>CAD</td><td>M.L.F.</td></tr><tr><td>CHECK</td><td>D.V.K.</td></tr><tr><td>REVIEW</td><td>P.A.S.</td></tr></table>	SCALE	AS SHOWN	DATE	Nov. 2013	DESIGN	M.L.F.	CAD	M.L.F.	CHECK	D.V.K.	REVIEW	P.A.S.	<table><tr><td>TITLE</td><td>SUB-CATCHMENT PLAN</td></tr><tr><td></td><td>CAPITAL REGION RESOURCE RECOVERY CENTRE</td></tr></table> <div>FIGURE 4</div>	TITLE	SUB-CATCHMENT PLAN		CAPITAL REGION RESOURCE RECOVERY CENTRE
SCALE	AS SHOWN																	
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	CAPITAL REGION RESOURCE RECOVERY CENTRE																	



# **ATTACHMENT A.1**

## **SWM Model Development**



## **A.1 Hydrologic Model Input Summary Tables**

### ***Hydrological Parameter Selection***

The existing Site conditions were determined to have five significant land use types: Scrubland; Woods; Pavement; Gravel; and Grasslands. The Manning's n coefficient, depression storage depth and SCS Curve Number values assigned for each of these land use types are summarized in Table A.1.2.

In addition to the five significant land use types identified for the pre-development scenario, Vegetated Slope, and Gravel land use types have also been incorporated into the post-development hydrologic parameter selection for the Site sub-catchment Municipal Drain areas and recommended stormwater conveyance channels, respectively, in SWMM5. Table A.1.3 identifies post-development input parameters identified for each land use type.

Tables A1.2 to A.1.5 summarize the pre-development and post development hydrological input parameters for representing the Site conditions. Subsurface investigations performed by Golder were also utilized to identify the general silty sand soil type for the Site. The Site visit, aerial photography and GIS topography were also utilized to define the hydrological parameters such as the curve number, depression storage, Manning's n coefficient and the land use. These parameters were defined based on published literature values and Site investigations.

### ***Hydrologic Model Input Summary Tables***

**Table A.1. 1: 24-Hour Rainfall at City of Ottawa, CDA RCS Weather Station**

<b>Return Period (yrs)</b>	<b>Rainfall Depth (mm)</b>
2	33.0
5	72.1
25	103.9
100	115.8

**Note:** The total depths were distributed over a 24-hour time period using 15-minute intensity intervals and a SCS Type II rainfall distribution.

**Table A.1. 2: Pre-Development Land Use Hydrologic Input Parameters**

	<b>Scrubland</b>	<b>Woods</b>	<b>Paved Road</b>	<b>Gravel</b>	<b>Grassland</b>
<b>Manning's n</b>	0.15	0.4	0.012	0.024	0.035
<b>Depression Storage (mm)</b>	5	8	2	2	4
<b>SCS Curve Number</b>	77	70	98	89	71



## ATTACHMENT A.1

### SWM Model Development

Table A.1. 3: Post-Development Land Use Hydrologic Input Parameters

	Scrubland	Woods	Paved Road	Gravel	Grassland	Landfill Slope
Manning's n	0.15	0.4	0.012	0.024	0.035	0.013
Depression Storage (mm)	5	8	2	2	4	5
Curve Number	77	70	98	89	71	82

Table A.1. 4: Pre-Development Sub-Catchment Hydrologic Input Parameters

Sub Catchment	Area (ha)	Width (m)	Slope (%)	Impervious (%)	N Pervious	Dep. Stor. Pervious (mm)	Curve Number
E101	21.0	200	0.1	10	0.133	4	86.8
E201	42.3	330	0.125	7.5	0.165	4	85.1
E202	33.3	150	0.343	0	0.213	6	76.7
E301	95.1	250	0.167	7.5	0.184	5	80.6

Table A.1. 5: Post-Development Sub-Catchment Hydrologic Input Parameters

Sub Catchment	Area (ha)	Width (m)	Slope (%)	Impervious (%)	N Pervious	Dep. Stor. Pervious (mm)	Curve Number
P101	14.74	125	0.05	70	0.012	5	88.9
P102	9.51	125	0.076	70	0.012	5	88.9
P201	12.6	250	0.4	75	0.012	4	91.9
P202	4.2	100	0.5	90	0.012	4	95.3
P203 <sup>1</sup>	16.34	250	0.4	75	0.012	4	91.9
P204	48.2	640	4.3	0	0.012	5	72.6
P301	41.8	670	4.2	0	0.012	5	72.6
P302	27.9	430	4.2	0	0.012	5	72.6
P303	13.94	300	5.4	0	0.012	5	72.6

**Note:** Leachate Treatment Ponds (1.9 ha Equalization Pond and 0.66 ha Effluent Pond) are not included in the P203 Drainage Area.

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# **ATTACHMENT A.2**

## **Existing and Proposed SWMM5 Schematics**

Figures:

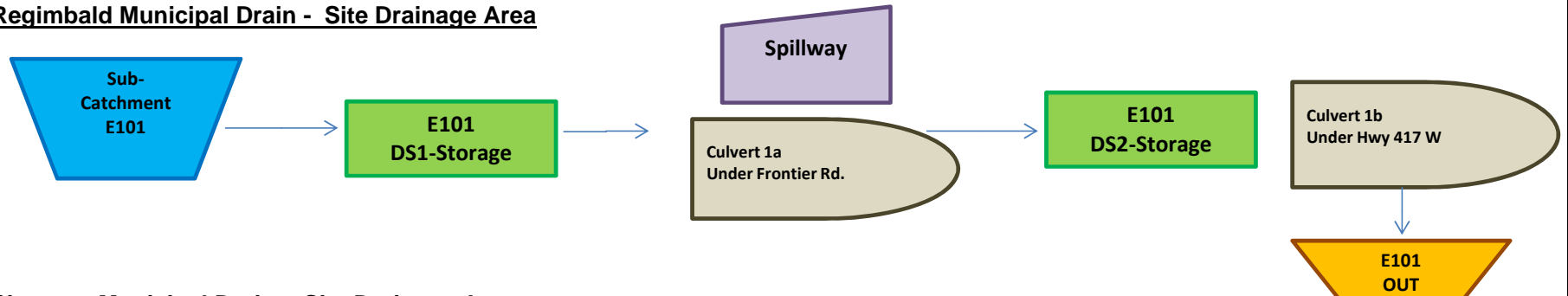
Figure A-1 – Existing Scenario SWMM5 Schematic

Figure A-2 – Proposed Scenario SWMM5 Schematic

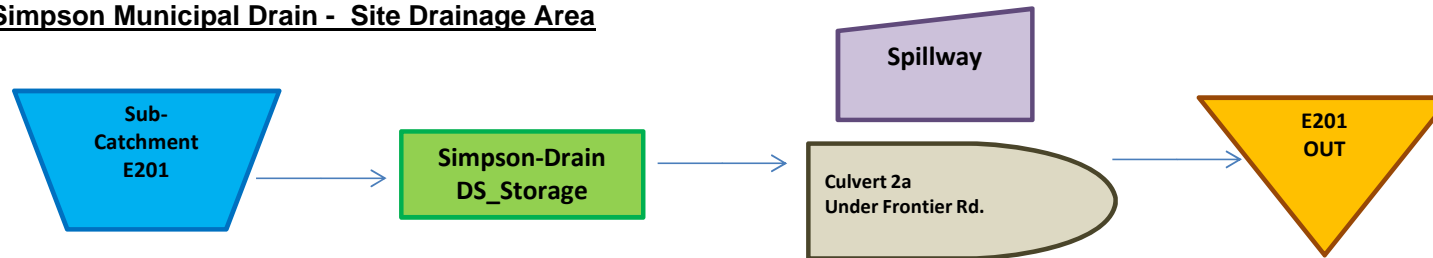


**Figure A-1: Existing Scenario SWMM5 Schematic**

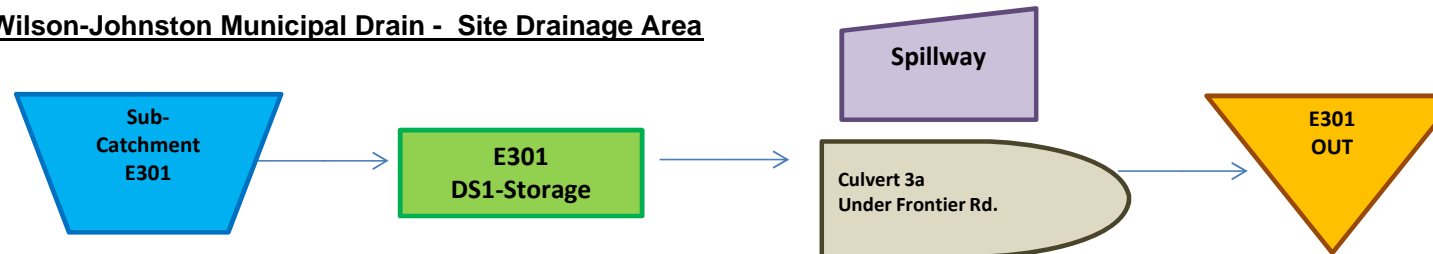
**Regimbald Municipal Drain - Site Drainage Area**



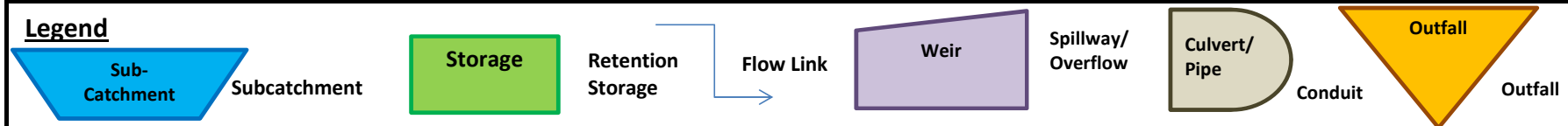
**Simpson Municipal Drain - Site Drainage Area**



**Wilson-Johnston Municipal Drain - Site Drainage Area**



**Legend**

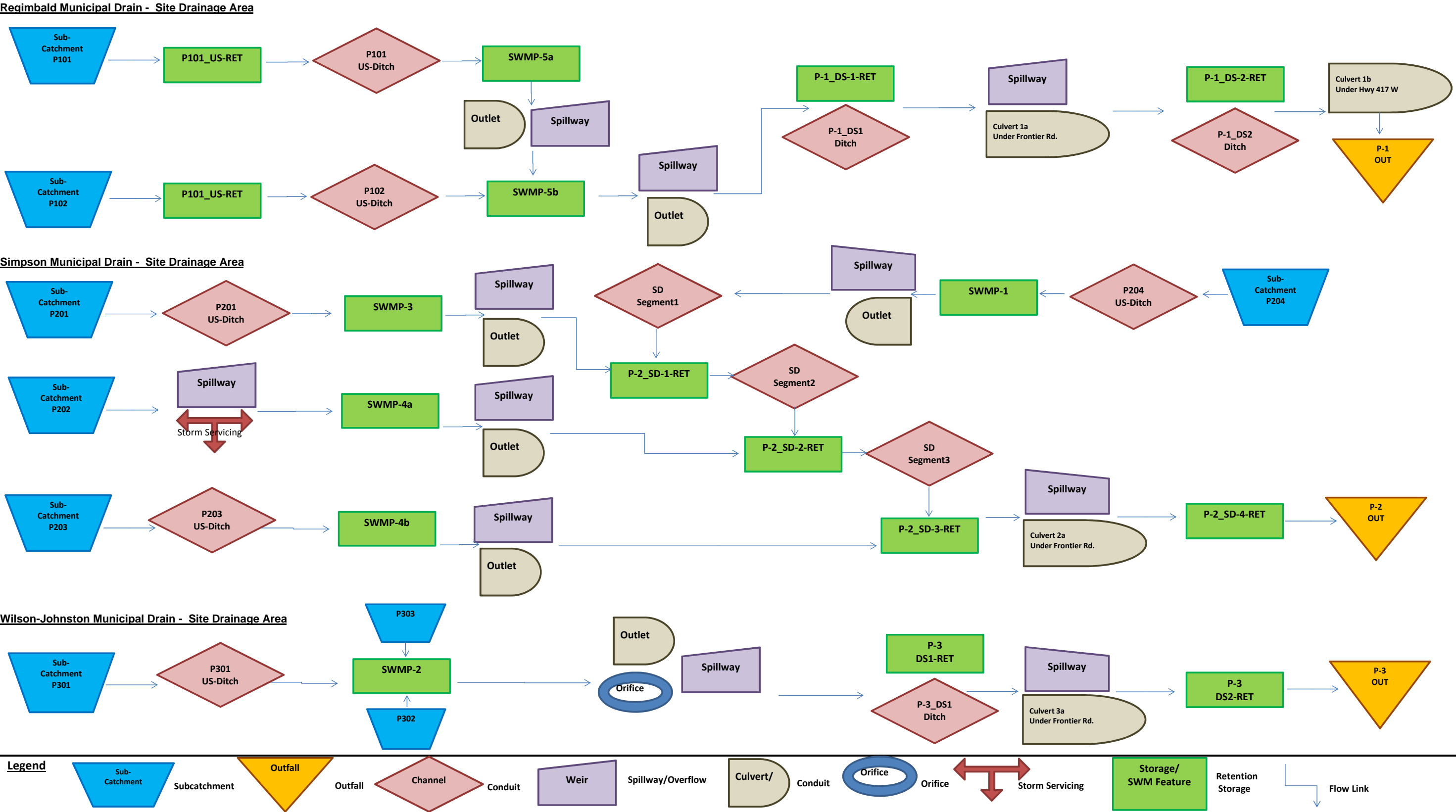


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CHECK: DVK

Figure A-2: Proposed Scenario SWMM5 Schematic





# **ATTACHMENT A.3**

## **Proposed CRRRC SWMPs Hydrographs**

Figures:

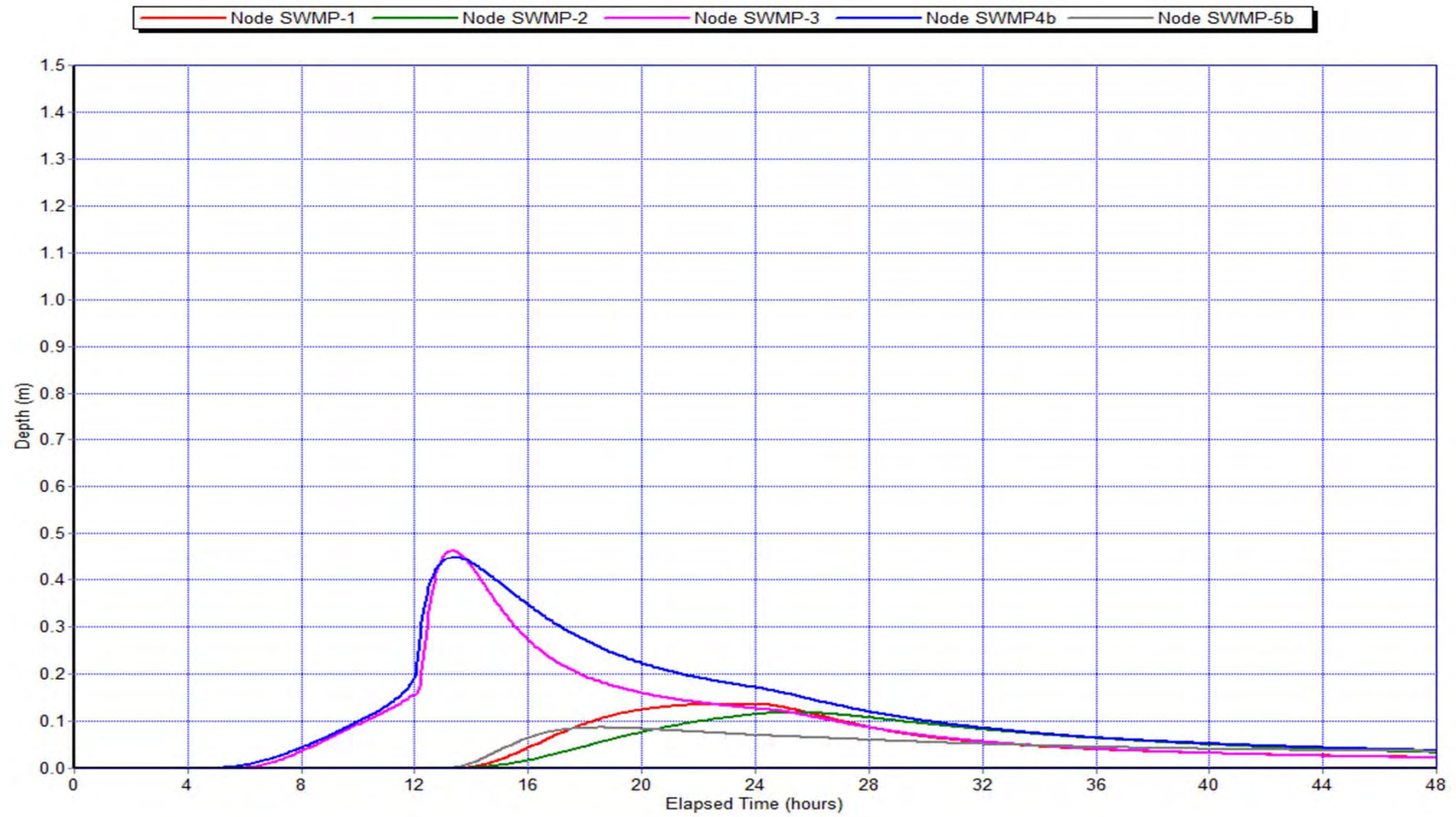
Figure A-3 – 1 in 2 yr, City of Ottawa Design Storm Hydrographs for CRRRC SWMPs

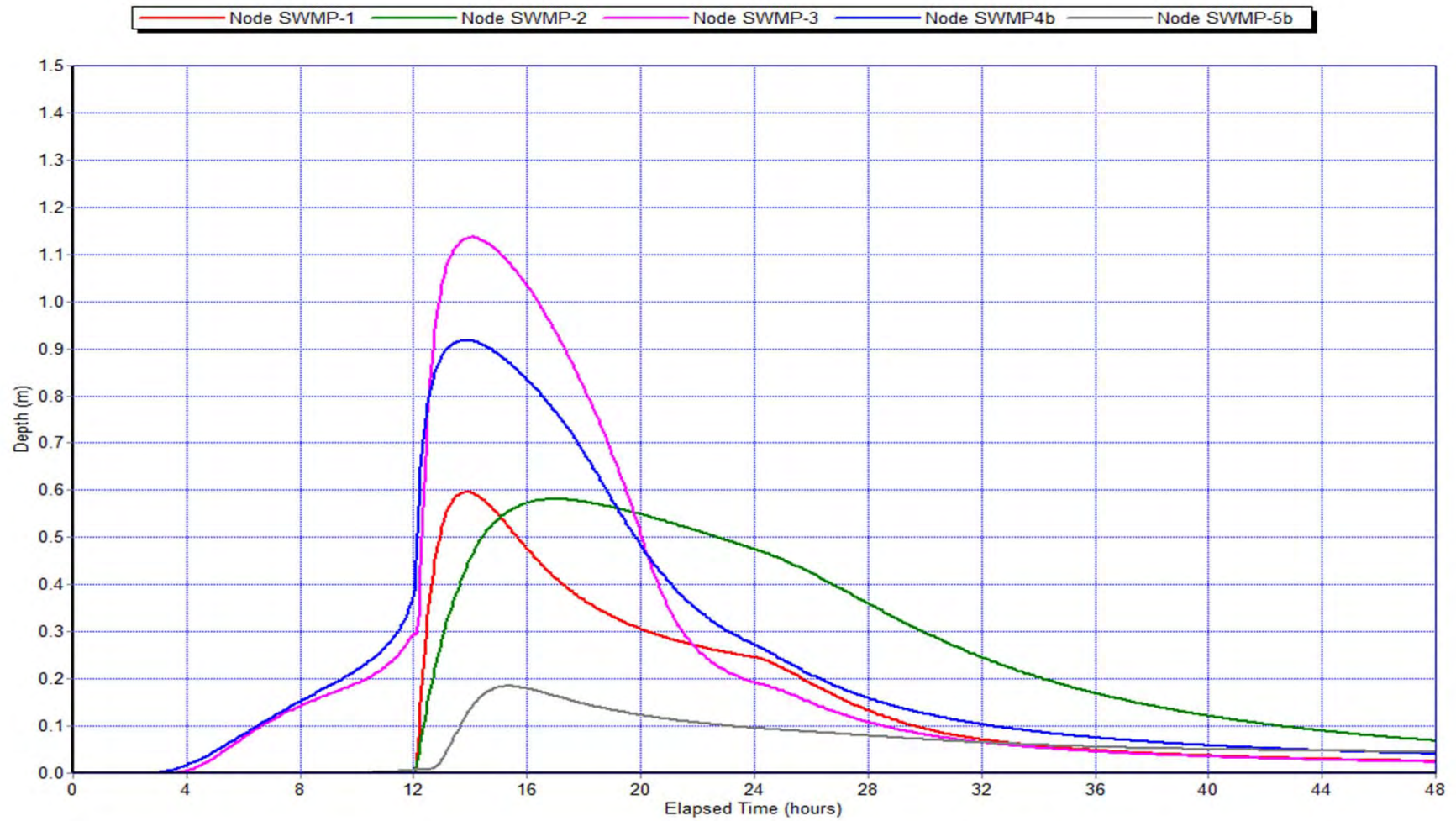
Figure A-4 – 1 in 5 yr, City of Ottawa Design Storm Hydrographs for CRRRC SWMPs

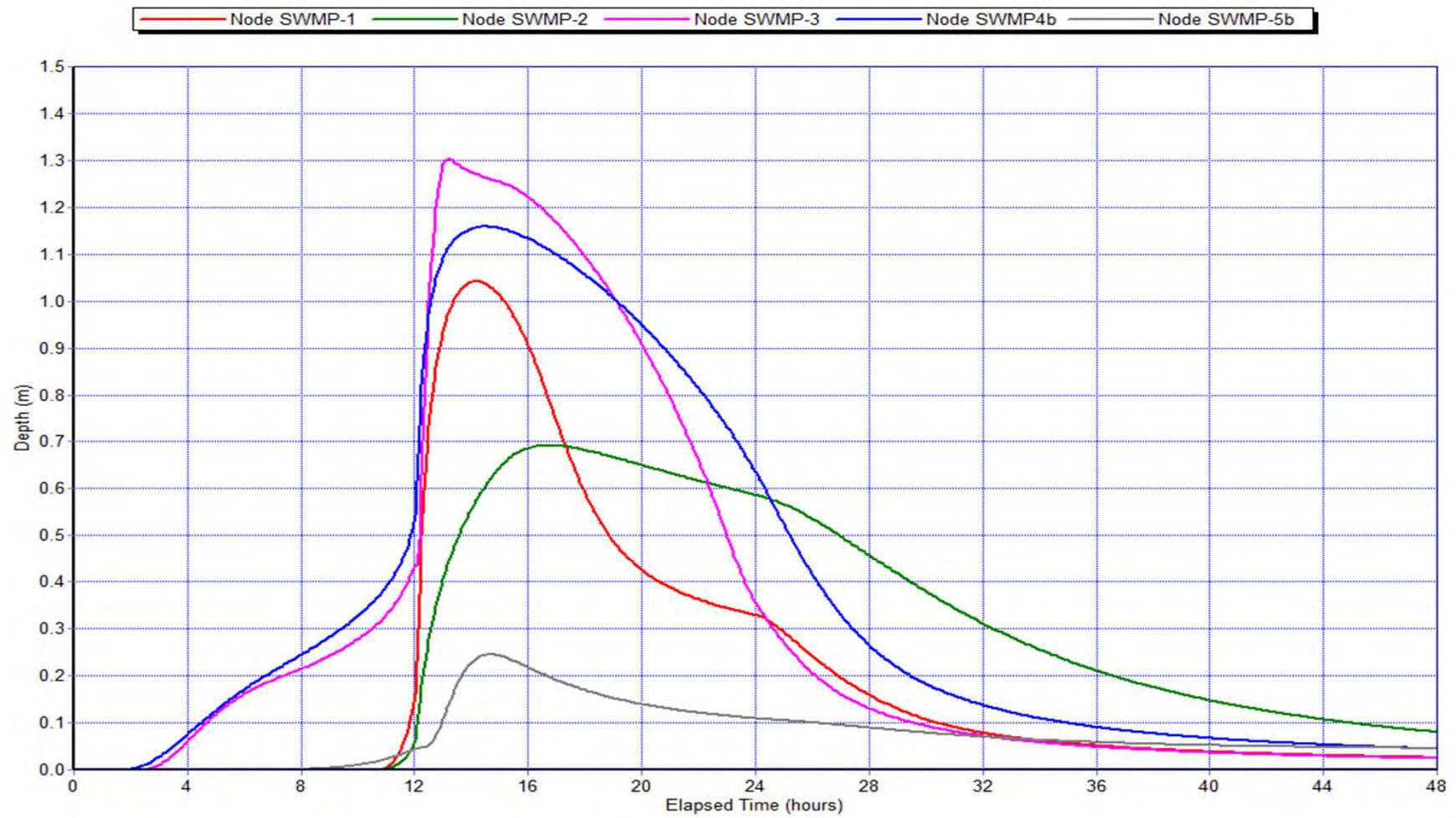
Figure A-5 – 1 in 25 yr, City of Ottawa Design Storm Hydrographs for CRRRC SWMPs

Figure A-6 – 1 in 100 yr, City of Ottawa Design Storm Hydrographs for CRRRC SWMPs

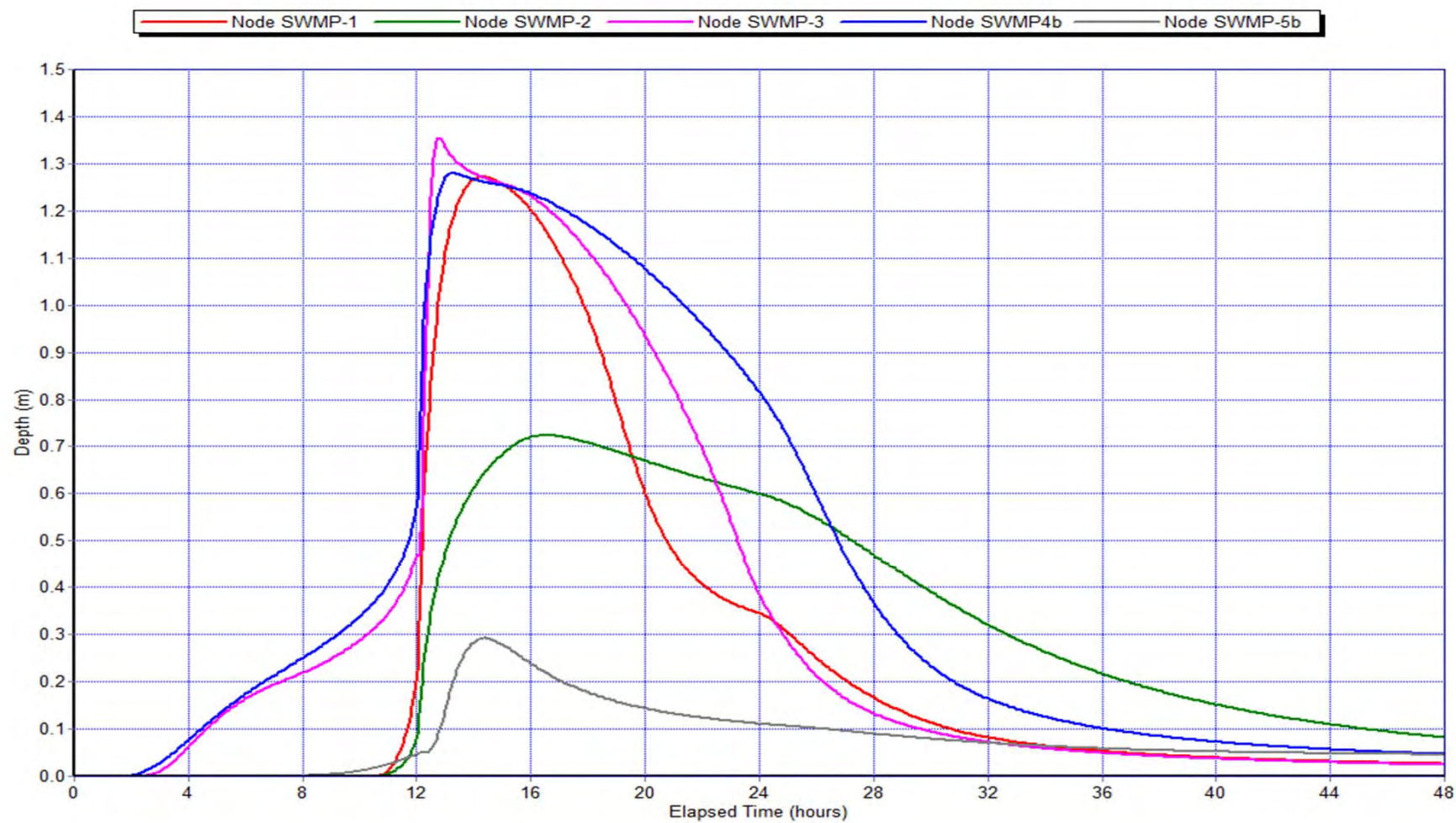














# **ATTACHMENT A.4**

## **24 hr Detention Time Assessment / Verification Hydrographs**

Figure:

Figure A-7 – 25mm – 4 hr, City of Ottawa Design Storm Hydrographs for CRRRC SWMPs

