Excellence Reliance Innovation

Mr. Sam Fayaz - 911 Lockhart Road Development

Servicing & Stormwater Management Report

June 2020

The Jones Consulting Group Ltd.
#1-229 Mapleview Drive East, Barrie ON L4N 0W5

FAY-19035 (70)

DISCLAIMER

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List of Appendices

1. Introduction

1.1. Appointment

The Jones Consulting Group Ltd. (TJCG) was retained by Mr. Sam Fayaz (Client) to provide engineering services for a proposed residential development located at 911 Lockhart Road in the Town of Innisfil (Town).

This design brief has been prepared to summarize how the site will be serviced by the surrounding municipal infrastructure and describe the pre to post-development stormwater management modeling and design completed to date.

In particular, this report examines the properties servicing in relation to:

- Stormwater Management
- Water Servicing
- Sanitary Servicing
- Transportation

2. Stormwater Management

The Town of Innisfil, Lake Simcoe Region Conservation Authority (LSRCA), and Ministry of the Environment, Conservation and Parks (MOE) require the installation of 'Enhanced' quality control measures to treat all post-development stormwater runoff from any development site. Quantity control measures are also required for the development. These measures typically include the detention of post-development stormwater runoff peak flows to match pre-development rates. These measures must conform to the requirements outlined in the Town of Innisfil Engineering Design Standards and Specifications Manual (2019), the LSRCA *Technical Guidelines for Stormwater Management Submissions* (2016) and the MOE *Stormwater Management Planning and Design Manual (*2003).

2.1. Property Description & Existing Drainage Conditions

The site is located along the south side of Lockhart Road opposite to the Sandy Cove Acres Community Office. The property's total area is approximately 2.23 hectares (ha).

The property at 911 Lockhart Road contains one (1) residential dwelling including a detached garage and gravel driveway. The remainder of the site is mostly forested with some pasture land.

The site has a high point at its south-west corner and currently directs runoff toward Lockhart Road in a north-easterly direction. The site's existing slopes are 2.5% on average from an elevation of 246 meters down to 240 meters. The location of the site is shown in **Figure1**.

Figure 1: Site Location

2.2. Stormwater Management Quantity Control

Peak flows were determined for pre-development and post-development conditions using Visual OTTHYMO modeling software (version 5.1). The site was modelled to estimate peak flows for the 2 to 100 year storm events for the SCS 12 hour, SCS 24 hour, and Chicago 4 hour rainfall distributions, in accordance with the Town of Innisfil Engineering Design Standards and Specifications Manual (2019). The preliminary design of a stormwater management facility (dry pond) was undertaken to estimate the storage volume required to attenuate post-development peak flows to the allowable pre-development rates. The proposed location for the stormwater management facility is 0.21 hectares (ha) in size and is shown in **SWM-2** located in **Appendix A**. A dry pond design was

determined necessary to provide the required quantity control for the site. SWM facility design information can be found in **Appendix B**, including but not limited to the stage-storage discharge table, a summary of pre-to-post peak flows, and OTTHYMO output.

2.3. Stormwater Management Quality Control

In terms of the quality control requirements for stormwater runoff, the "Enhanced" level of protection as stipulated by the Ministry of Environment is to be provided, i.e. 80% removal of Total Suspended Solids (TSS) from 90% of the annual runoff volume. These requirements are achieved through the proposed stormwater management treatment train approach. Furthermore, erosion control is required to ensure that the 25mm post development peak flow is released over a 24-hour period. The pond's primary orifice has been sized to provide the required drawdown time at the extended detention elevation. Pond sizing calculations and stage-storage-discharge details can be found in **Appendix B**.

A dry pond has been proposed to work in conjunction with an appropriately sized oil-grit separator (Stormceptor or approved equivalent) to provide the required "Enhanced" level of treatment for the site. Refer to **Appendix B** for the Stormceptor sizing.

Water balance and phosphorus mitigation will be required, which is typically achieved via infiltration-based SWM facilities. Once the groundwater monitoring program and geotechnical investigations are completed, water balance and phosphorous mitigation will be examined as part of the detailed design for the site.

2.4. External Drainage Conveyance

The site conveys external drainage from a portion of the Sandy Cove Acres development south of the subject lands toward Lockhart Road. After further investigation was conducted, including topographic survey, it was determined that the site only conveys external drainage from the area north of Flora Road. This road utilizes a reverse crown design and directs stormwater runoff from the south away from the subject site.

It is currently being proposed to incorporate a drainage easement and a 100-year storm pipe in the design to convey the external flows. This external drainage will ultimately bypass the proposed stormwater management facility and continue toward Lockhart Rd. Detailed stormwater management sizing calculations can be found in **Appendix B** for reference.

3. Water Servicing

3.1. Proposed Water Services

The site is intended to have a watermain looping through the site with two (2) connections at Lockhart Road located at the site entrances. The water service locations have been coordinated with the Town of Innisfil to be installed as part of the Lockhart Road Reconstruction Project. The proposed watermain will consist of 150mm diameter PVC pipe. A 25mm diameter (PE or Copper) domestic water service will be provided to each of the proposed lots. Refer to **G-1** in **Appendix A** for a conceptual layout of the site servicing.

4. Sanitary Servicing

4.1. Proposed Sanitary Services and Peak Flows

The site will include an internal 200mm diameter gravity sanitary sewer system that will connect the proposed development to the existing 375mm diameter PVC sanitary sewer within Lockhart Road. It has been coordinated with the Town of Innisfil that a 200mm diameter sanitary connection at the north east corner of the site be installed as part of the Lockhart Road Reconstruction Project prior to development in order to accommodate the site's sanitary drainage. Refer to **G-1** in **Appendix A** for a conceptual layout of the site servicing.

The total peak sanitary flow (including extraneous flows) produced by the site was calculated to be **1.2 L/s** using a population density of 3.0 people per unit in accordance with Section 5.5 of the *Town of Innisfil Engineering Design Standards and Specifications Manual*. The internal sanitary sewers will be constructed in accordance with the Town's engineering standards and MOE guidelines.

5. Transportation

5.1. Proposed Site Entrance and External Road Network

The *Town of Innisfil's 2018 Transportation Master Plan* identifies Lockhart Road as a major collector. The *Conceptual Site Plan* specifies that the development will have two (2) entrances off of Lockhart Road. The proposed internal road will be designed in accordance with TOISD 201 for a 20 meter municipal right-of-way.

6. Conclusion

The above Report summarizes the preliminary design of the proposed residential development of 911 Lockhart Road. The main challenges and recommendations arising from our preliminary investigation are summarized below:

- Due to grading constraints encountered in the preliminary design stage, the current SWM plan does not match pre to post-development peak flows modelled for some of the rainfall events. This is due to the amount of uncontrolled flow associated with the site entrances. After discussion with the Town, the SWM plan will be approved under the condition that best efforts are undertaken to mitigate the post-development peak flows.

- Water balance and phosphorous mitigation measures will need to be explored in further detail. Two (2) years of groundwater monitoring data must be established before evaluating the site's potential to utilize infiltration-based LID's to achieve the appropriate targets outlined by the MOE and the LSRCA.

If there are any questions or concerns with the content of this Technical Memorandum, or if further information is required, please contact the undersigned.

Respectfully Submitted,

THE JONES CONSULTING GROUP LTD.

Kyle Ransom
Engineering Technologist/Designer

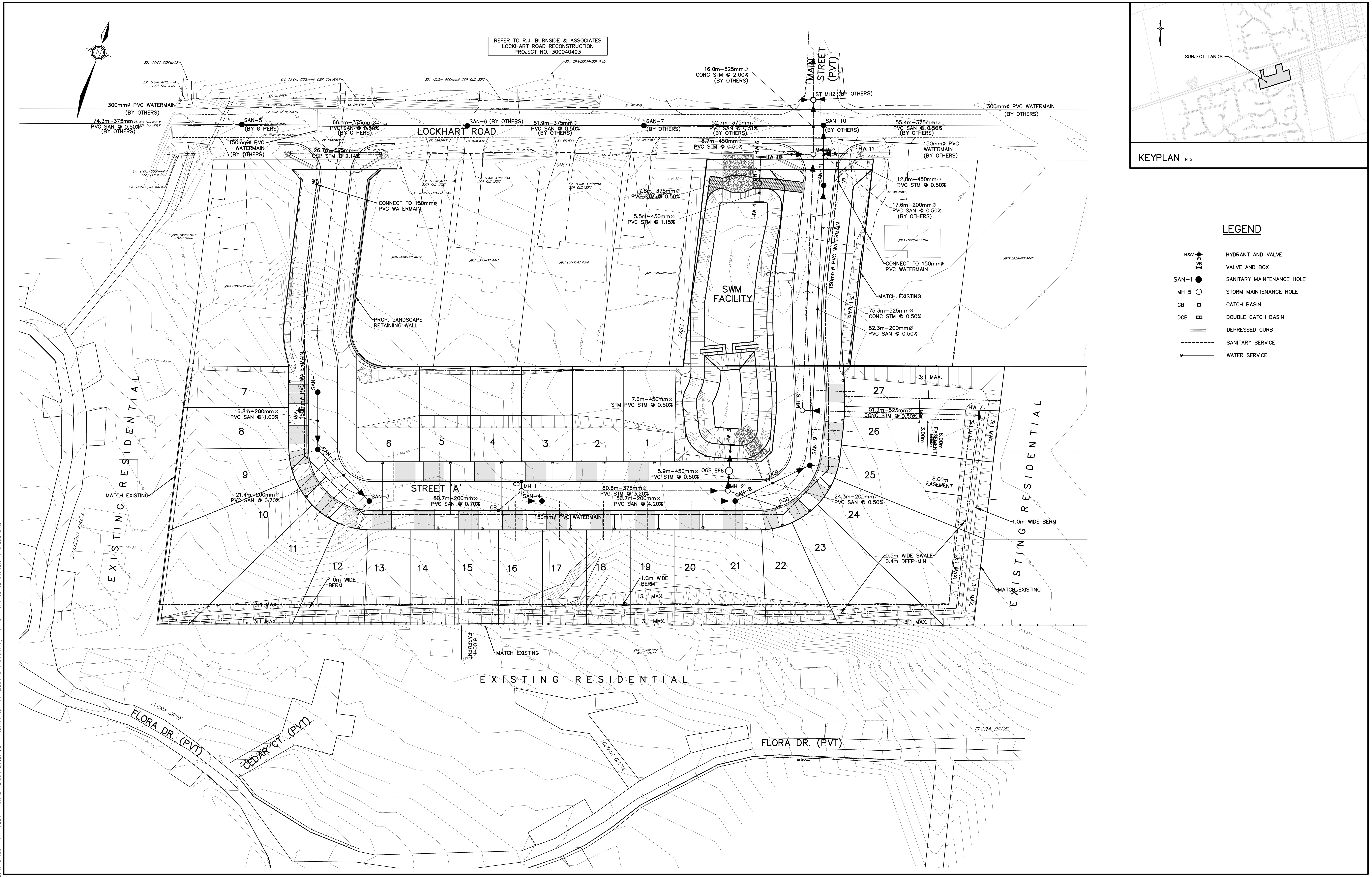
Michael Flis, P. Eng.
Project Engineer

APPENDIX A

ENGINEERING DRAWINGS & FIGURES

List of Items

- G-1 – General Servicing Plan
- LG-1 – Lot Grading Plan
- PP-1 – Plan & Profile Street A Sta 0+000 to 0+220
- PP-2 – Plan & Profile Street A Sta 0+220 to 0+367.95
- SWM-1 – Stormwater Management Pre-Development Catchment Area Plan
- SWM-2 - Stormwater Management Post-Development Catchment Area Plan



BENCHMARK:

NO.	REVISIONS	DATE	INITIAL
1.	Submission in support of ZBLA	JUNE 2020	MF

LICENSED PROFESSIONAL ENGINEER M. G. FLIS 100149153 06-09-2020 PROVINCE OF ONTARIO

MMS LOCKHART HOLDINGS INC.
911 LOCKHART SUBDIVISION
TOWN OF INNISFIL

GENERAL SERVICING PLAN

JONES CONSULTING GROUP LTD.
PLANNERS & ENGINEERS
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DESIGN JJH	SCALE: 1:500	DATE MAY 2020
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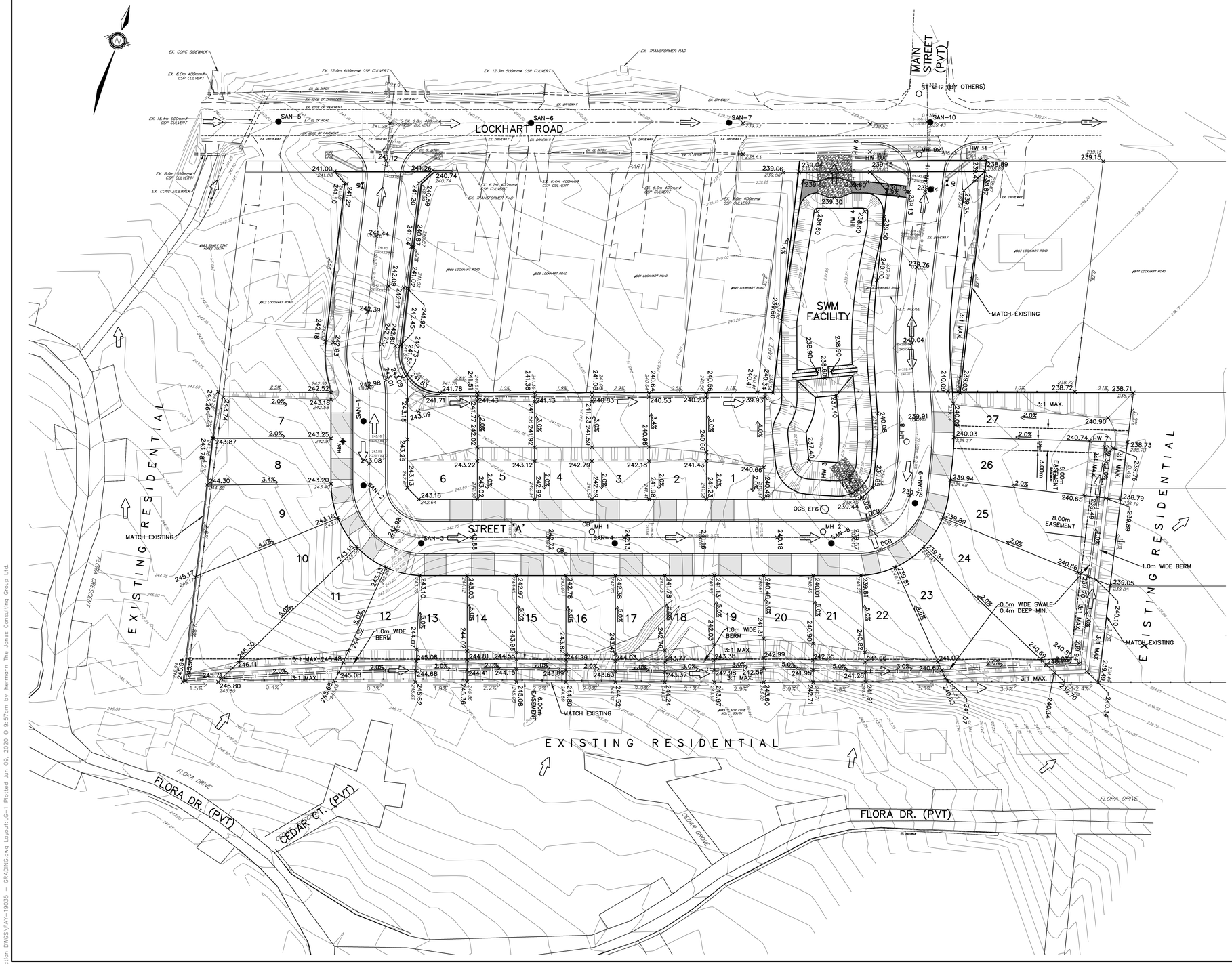
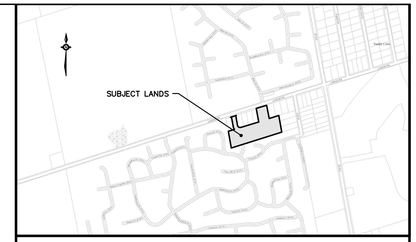
CHECKED MF		



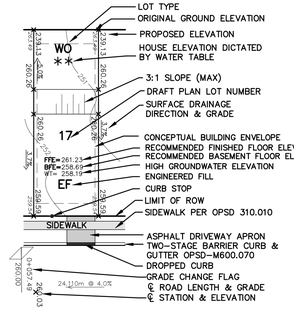


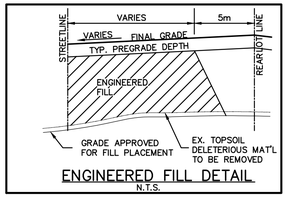
KEYPLAN NTS

LEGEND

- LIMIT OF SUBDIVISION
- EX. CONTOUR
- EX. VEGETATION
- EX. DITCH
- SANITARY MANHOLE — SAN MH (100)
- STORM MANHOLE — STM MH (200)
- CATCHBASIN MANHOLE — CBMH1
- CATCHBASIN — CB
- DOUBLE CATCHBASIN — DCB
- TREE PRESERVATION FENCE
- SLOPE (3:1 MAX.)
- HYDRANT AND VALVE — H&V
- VALVE — BV
- CURB STOP
- EX. BOREHOLE LOCATION ID# & GROUNDWATER ELEVATION — BH7 254.60
- TRANSFORMER — T
- SWITCHGEAR — S
- LIGHT STANDARD
- BELL/ROGERS — BPED
- MAJOR OVERLAND FLOW ROUTE

SPLIT DRAINAGE LOT	SD
WALK OUT LOT	WO
LOOK OUT LOT	LO
FRONT DRAINING LOT	FD
TRANSITION LOT	TR





ENGINEERED FILL DETAIL
N.T.S.

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MMS LOCKHART HOLDINGS INC.
911 LOCKHART SUBDIVISION
TOWN OF INNISFIL

LOT GRADING PLAN

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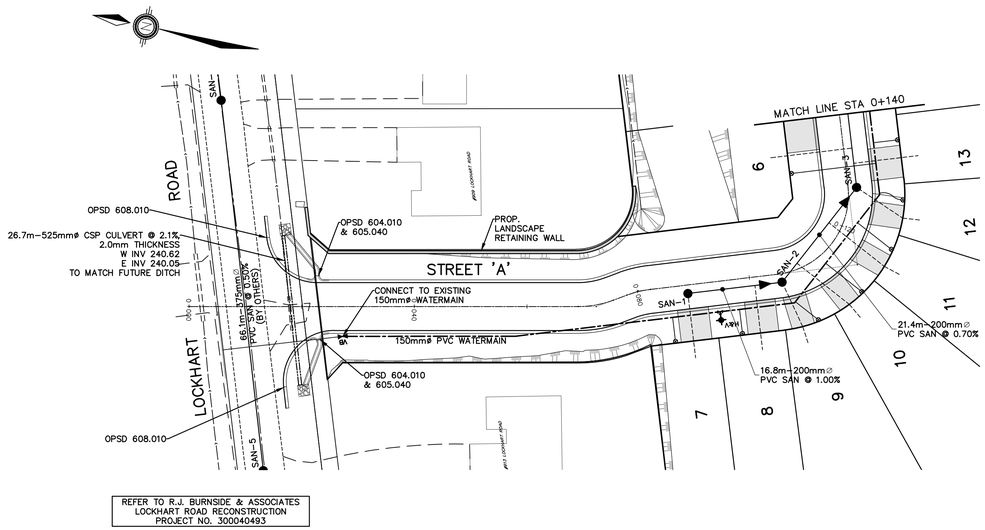
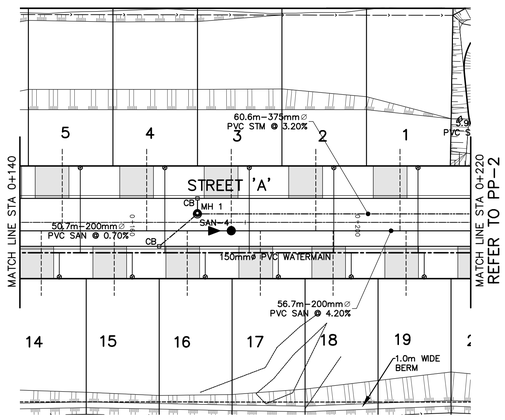
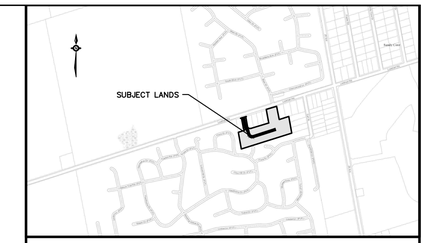


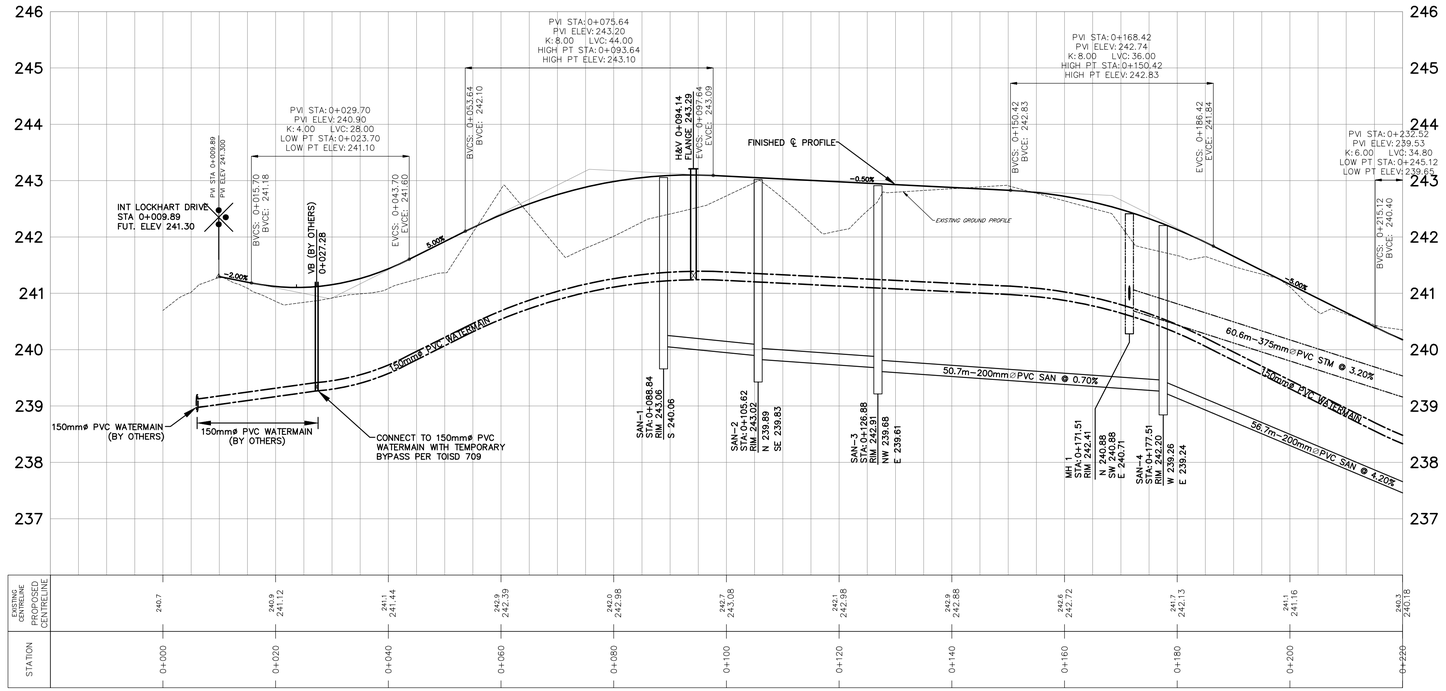




KEYPLAN NTS

LEGEND

- EXISTING LIGHT STANDARD
- EXISTING HYDRANT AND VALVE — H.3767 / V7254
- EXISTING VALVE
- EXISTING SANITARY MANHOLE — EX. SAC09130
- EXISTING STORM MANHOLE — EX. DDLT01728
- EXISTING CATCHBASIN — EX. CB
- BOREHOLE — BH1
- PROPOSED LIGHT STANDARD
- PROPOSED HYDRO TRANSFORMER
- PROPOSED HYDRANT AND VALVE — H.3767
- PROPOSED VALVE — V.8
- PROPOSED SANITARY MANHOLE — SAN MH (100)
- PROPOSED STORM MANHOLE — STM MH (200)
- PROPOSED CATCHBASIN MANHOLE — CBMH1
- PROPOSED CATCHBASIN — CB1
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING SANITARY SEWER AND DIRECTION OF FLOW
- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- PROPOSED SANITARY SEWER AND DIRECTION OF FLOW
- PROPOSED STORM SEWER AND DIRECTION OF FLOW



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100149153
06-07-2020
PROVINCE OF ONTARIO

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PLAN AND PROFILE
STREET A
STA. 0+000 TO 0+220

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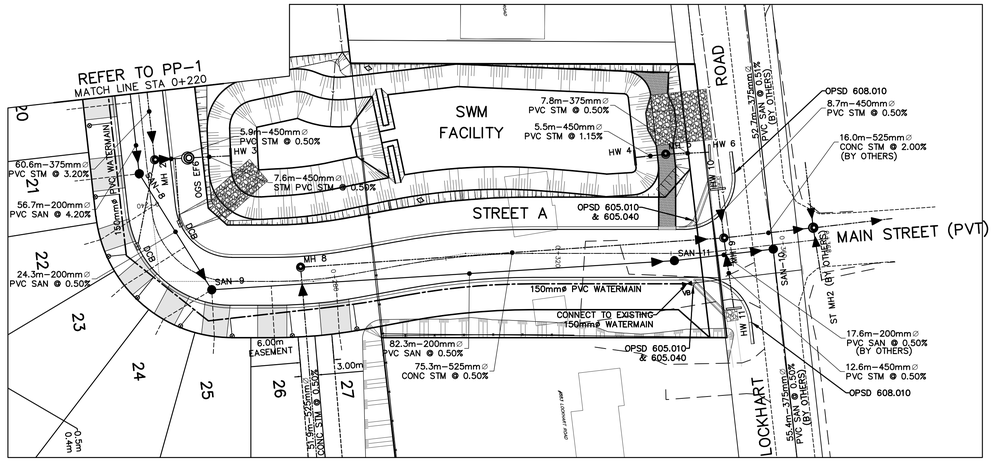
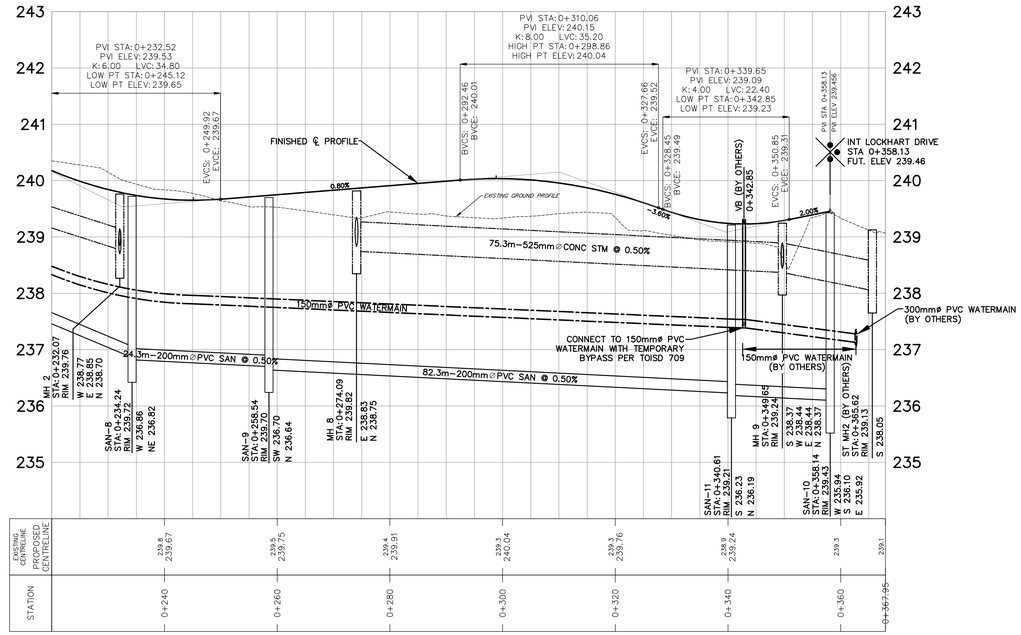
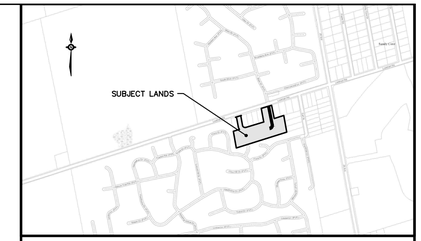


REFER TO R.J. BURNSIDE & ASSOCIATES
LOCKHART ROAD RECONSTRUCTION
PROJECT NO. 300040493





KEYPLAN NTS

LEGEND

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EXISTING HYDRANT AND VALVE	H1767
EXISTING VALVE	V1254
EXISTING SANITARY MANHOLE	EX. SAC09130
EXISTING STORM MANHOLE	EX. DDLT01728
EXISTING CATCHBASIN	EX. CB
BOREHOLE	BH1
PROPOSED LIGHT STANDARD	
PROPOSED HYDRO TRANSFORMER	
PROPOSED HYDRANT AND VALVE	H3767
PROPOSED VALVE	V8
PROPOSED SANITARY MANHOLE	SAN MH (100)
PROPOSED STORM MANHOLE	STM MH (200)
PROPOSED CATCHBASIN MANHOLE	CBMH1
PROPOSED CATCHBASIN	CB1
EXISTING WATERMAIN	
PROPOSED WATERMAIN	
EXISTING SANITARY SEWER AND DIRECTION OF FLOW	
PROPOSED STORM SEWER AND DIRECTION OF FLOW	
PROPOSED SANITARY SEWER AND DIRECTION OF FLOW	
PROPOSED STORM SEWER AND DIRECTION OF FLOW	

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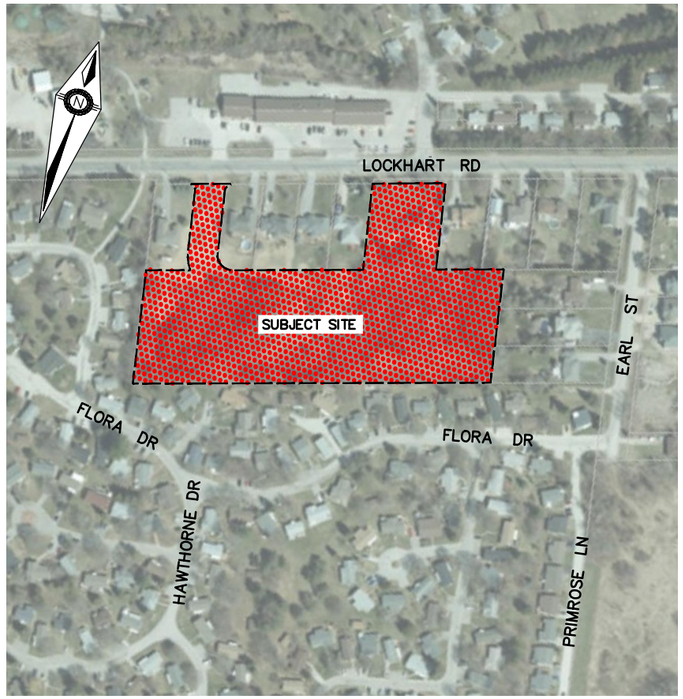
911 LOCKHART ROAD DEVELOPMENT



KEY MAP
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PRE-DEVELOPMENT CATCHMENT AREA
SCALE 1:1250

LEGEND

- CATCHMENT AREA BOUNDARY
- CATCHMENT AREA ID NUMBER
- 206 | 58 / 1.559 — CN VALUE / AREA (ha.)
- DIRECTION OF PRE-DEVELOPMENT OVERLAND FLOW
- 253.00 — EXISTING CONTOUR AND ELEVATION

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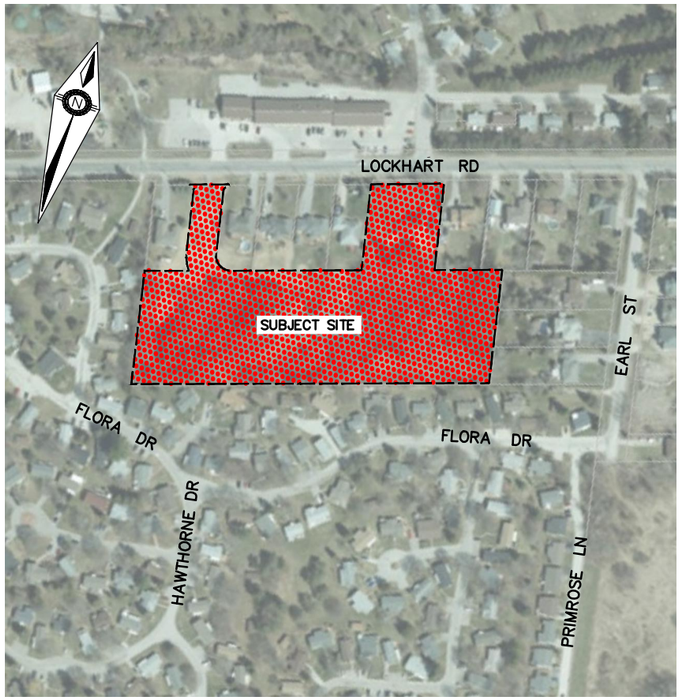
STORMWATER MANAGEMENT PRE-DEVELOPMENT CATCHMENT AREA PLAN

DRAWN BY: KR	CHECKED BY: MF
SCALE: AS NOTED	DATE: 2020/05/22
PROJECT No. FAY-19035	FIG No. SWM-1

911 LOCKHART ROAD DEVELOPMENT



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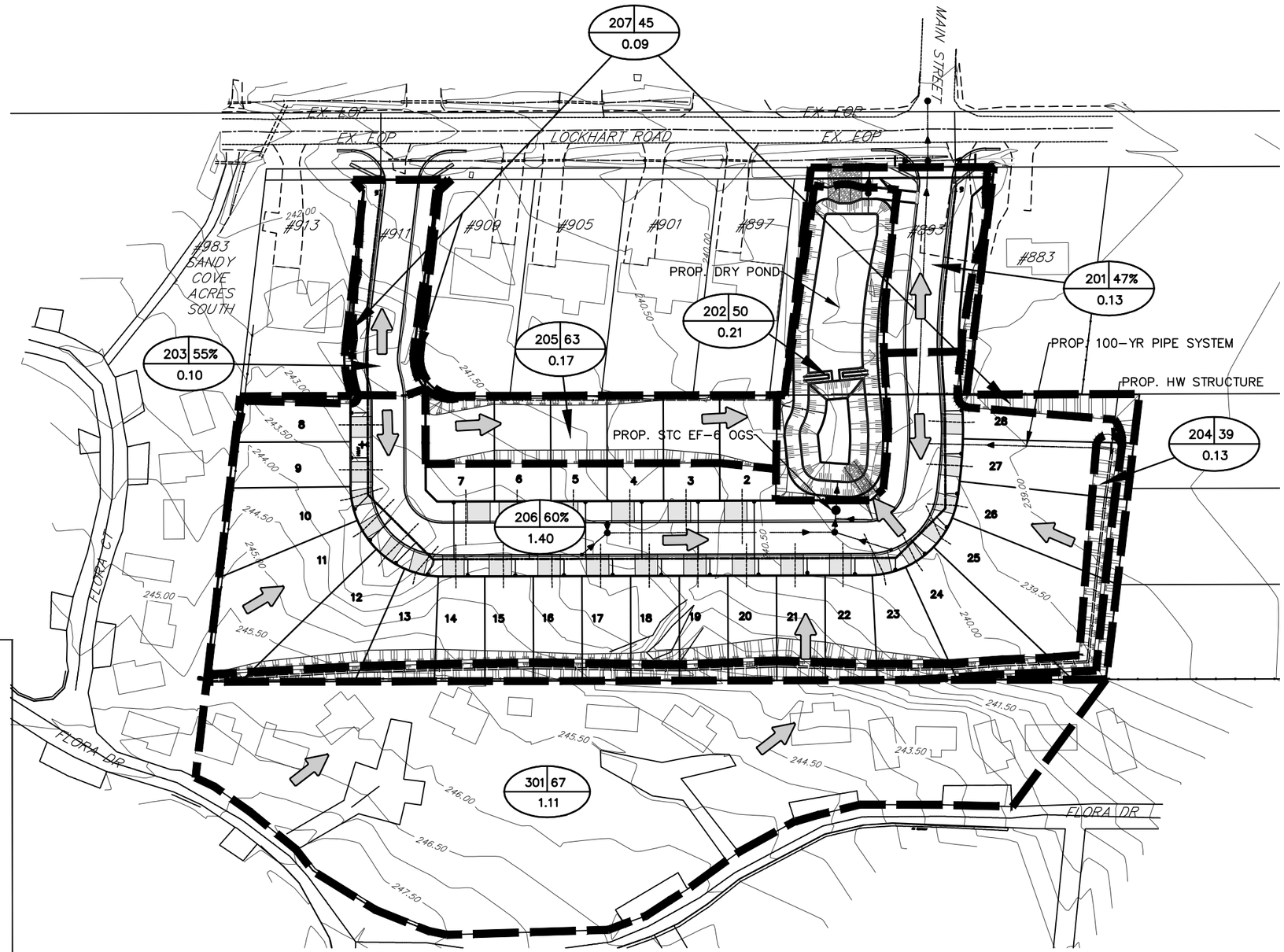

PROPOSED POST-DEVELOPMENT CATCHMENT AREAS
SCALE 1:1250

LEGEND

- CATCHMENT AREA BOUNDARY
- CATCHMENT AREA ID NUMBER
- 206 | 58 / 1.56 — CN VALUE OR % IMPERVIOUS; AREA (ha.)
- DIRECTION OF POST DEVELOPMENT OVERLAND FLOW
- 253.00 — EXISTING CONTOUR AND ELEVATION
- PROPOSED STORM SEWER SYSTEM

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STORMWATER MANAGEMENT POST-DEVELOPMENT CATCHMENT AREA PLAN

DRAWN BY: KR	CHECKED BY: MF
SCALE: AS NOTED	DATE: 2020/05/22
PROJECT No. FAY-19035	FIG No. SWM-2

APPENDIX B

SUPPORTING CALCULATIONS

List of Items

- Pre To Post Development Peak Flow Analysis
- Visual OTTHYMO Input Parameters
- Dry Pond Facility Volume Table
- Dry Pond Facility Water Quality Calculations
- Dry Pond Facility Stage-Storage Discharge Table
- Stormceptor EF Sizing Report
- Visual OTTHYMO Model Schematics & Outputs
- Bypass Channel Conveyance Calculations

Storm Peak Event Flow (m^3/s) – Site Total				
Rainfall Distribution	Model Run	Return Period (years)	Pre-Development Condition	Post-Development Condition
Chicago 4 Hour	2	2	0.012	0.026
	3	5	0.027	0.036
	4	10	0.04	0.043
	5	25	0.058	0.052
	6	50	0.073	0.058
	7	100	0.091	0.065
SCS Type 2 - 12 Hour	9	2	0.023	0.023
	10	5	0.049	0.033
	11	10	0.07	0.04
	12	25	0.101	0.05
	13	50	0.127	0.059
	14	100	0.155	0.068
SCS Type 2 - 24 hour	15	2	0.029	0.023
	16	5	0.059	0.034
	17	10	0.083	0.041
	18	25	0.118	0.053
	19	50	0.148	0.062
	20	100	0.179	0.072
25 mm Chicago Event	1	-	0.003	0.016
Hazel Event	8	-	0.176	0.151

Weighted Curve Number Calculator

Input:

Catchment ID	101		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.650000	36.0	0.10
Pasture/Lawn Area(ha)/CN	1.5145710	49.0	0.22
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.07	98.0	0.95

Calculated:

Area	2.232
Average CN	47
Average Pervious CN	45
Average Runoff 'C'	0.21

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	8	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	8.40	mm
Average Pervious IA	8.60	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	100	m

Calculated:

Catchment Ave. Slope	2.5	%
Imperviousness	3%	
Directly Connected Imperviousness	2%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.21

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.23
50YR Rational 'C'	0.25
100YR Rational 'C'	0.26

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	21.51	min
Time of Concentration	0.36	hr
Time to Peak	0.24	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	4.38	min
Time of Concentration	0.07	hr
Time to Peak	0.05	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.36**	**hr**
Time to Peak	**0.24**	**hr**

Catchment Area Summary (101)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	6500	36	234000	0.08	520
Pasture/Lawn "A"	15145.71	49	742139.8	0.1	1514.571
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	342	98	33516	0.95	324.9
Impervious "A" (Dis-Connected)	331	98	32438	0.95	314.45
Total Area "A"	22318.71				
Weighted Coefficient "A"			46.69149		0.119806

Weighted Curve Number Calculator

Input:

Catchment ID	201		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.000000	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.0688900	39.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.06	98.0	0.95

Calculated:

Area	0.1289
Average CN	66
Average Pervious CN	39
Average Runoff 'C'	0.50

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	3.60	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	50	m

Calculated:

Catchment Ave. Slope	2.0	%
Imperviousness	47%	
Directly Connected Imperviousness	40%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.50

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.55	
50YR Rational 'C'	0.60	
100YR Rational 'C'	0.62	

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	11.08	min
Time of Concentration	0.18	hr
Time to Peak	0.12	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	3.05	min
Time of Concentration	0.05	hr
Time to Peak	0.03	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.05**	**hr**
Time to Peak	**0.03**	**hr**

Catchment Area Summary (201)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	688.9	39	26867.1	0.1	68.89
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	518.6395	98	50826.67	0.95	492.7075
Impervious "A" (Dis-Connected)	81.88045	98	8024.284	0.95	77.78643
Total Area "A"	1289.41995				
Weighted Coefficient "A"			66.478		0.495869

Weighted Curve Number Calculator

Input:

Catchment ID	202		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.21	50.0	0.05
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.00	N/A	N/A
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.00	N/A	N/A

Calculated:

Area	0.2124
Average CN	50
Average Pervious CN	50
Average Runoff 'C'	0.05

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	16.00	mm
Average Pervious IA	16.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	80	m

Calculated:

Catchment Ave. Slope	0.5	%
Imperviousness	0%	
Directly Connected Imperviousness	0%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.05

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.06
50YR Rational 'C'	0.06
100YR Rational 'C'	0.06

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	38.49	min
Time of Concentration	0.64	hr
Time to Peak	0.43	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	6.12	min
Time of Concentration	0.10	hr
Time to Peak	0.07	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.64**	**hr**
Time to Peak	**0.43**	**hr**

Catchment Area Summary (202)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	2123.65	50	106182.5	0.05	106.1825
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	0	39	0	0.1	0
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	0	98	0	0.95	0
Impervious "A" (Dis-Connected)	0	98	0	0.95	0
Total Area "A"	2124				
Weighted Coefficient "A"			50		0.05

Weighted Curve Number Calculator

Input:

Catchment ID	203		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.05	39.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.06	98.0	0.95

Calculated:

Area	0.1040
Average CN	71
Average Pervious CN	39
Average Runoff 'C'	0.57

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	3.35	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	35	m

Calculated:

Catchment Ave. Slope	2.0	%
Imperviousness	55%	
Directly Connected Imperviousness	48%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.57

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.62	
50YR Rational 'C'	0.68	
100YR Rational 'C'	0.71	

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	8.17	min
Time of Concentration	0.14	hr
Time to Peak	0.09	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	2.18	min
Time of Concentration	0.04	hr
Time to Peak	0.02	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.04**	**hr**
Time to Peak	**0.02**	**hr**

Catchment Area Summary (203)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	468.08	39	18255.12	0.1	46.808
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	494.08636	98	48420.46	0.95	469.382
Impervious "A" (Dis-Connected)	78.01364	98	7645.337	0.95	74.11296
Total Area "A"	1040.18				
Weighted Coefficient "A"			71.45006		0.567501

Weighted Curve Number Calculator

Input:

Catchment ID	204		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.13	39.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.00	N/A	N/A

Calculated:

Area	0.1338
Average CN	39
Average Pervious CN	39
Average Runoff 'C'	0.10

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	5.00	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	297	m

Calculated:

Catchment Ave. Slope	2.0	%
Imperviousness	0%	
Directly Connected Imperviousness	0%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.10

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.11
50YR Rational 'C'	0.12
100YR Rational 'C'	0.13

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	44.69	min
Time of Concentration	0.74	hr
Time to Peak	0.50	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	18.02	min
Time of Concentration	0.30	hr
Time to Peak	0.20	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.74**	**hr**
Time to Peak	**0.50**	**hr**

Catchment Area Summary (204)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	1337.763	39	52172.76	0.1	133.7763
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	0	98	0	0.95	0
Impervious "A" (Dis-Connected)	0	98	0	0.95	0
Total Area "A"	1338				
Weighted Coefficient "A"			39		0.1

Weighted Curve Number Calculator

Input:

Catchment ID	205		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.10	39.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.07	98.0	0.95

Calculated:

Area	0.1701
Average CN	63
Average Pervious CN	39
Average Runoff 'C'	0.44

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	3.80	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	20	m

Calculated:

Catchment Ave. Slope	3.0	%
Imperviousness	40%	
Directly Connected Imperviousness	0%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.44

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.48	
50YR Rational 'C'	0.53	
100YR Rational 'C'	0.55	

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	6.70	min
Time of Concentration	0.11	hr
Time to Peak	0.07	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	1.09	min
Time of Concentration	0.02	hr
Time to Peak	0.01	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.02**	**hr**
Time to Peak	**0.01**	**hr**

Catchment Area Summary (205)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	1020.789	39	39810.77	0.1	102.0789
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	0	98	0	0.95	0
Impervious "A" (Dis-Connected)	680	98	66640	0.95	646
Total Area "A"	1700.789				
Weighted Coefficient "A"			62.58905		0.439842

Weighted Curve Number Calculator

Input:

Catchment ID	206		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.56	39.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.84	98.0	0.95

Calculated:

Area	1.39773
Average CN	74
Average Pervious CN	39
Average Runoff 'C'	0.61

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	3.21	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	35	m

Calculated:

Catchment Ave. Slope	2.0	%
Imperviousness	60%	
Directly Connected Imperviousness	29%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.61

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.67
50YR Rational 'C'	0.73
100YR Rational 'C'	0.76

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	7.54	min
Time of Concentration	0.13	hr
Time to Peak	0.08	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	1.68	min
Time of Concentration	0.03	hr
Time to Peak	0.02	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.03**	**hr**
Time to Peak	**0.02**	**hr**

Catchment Area Summary (206)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	5617.94	39	219099.7	0.1	561.794
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	4026.16	98	394563.7	0.95	3824.852
Impervious "A" (Dis-Connected)	4333.228	98	424656.3	0.95	4116.567
Total Area "A"	13977.3				
Weighted Coefficient "A"			74.28599		0.608358

Weighted Curve Number Calculator

Input:

Catchment ID	207		
Hydrologic Soil Group	A		
Soil Texture	Tiago Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.08	39.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.01	98.0	0.95

Calculated:

Area	0.0850
Average CN	45
Average Pervious CN	39
Average Runoff 'C'	0.19

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	4.69	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	1	m

Calculated:

Catchment Ave. Slope	30.0	%
Imperviousness	10%	
Directly Connected Imperviousness	10%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.19

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.21	
50YR Rational 'C'	0.23	
100YR Rational 'C'	0.24	

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	0.97	min
Time of Concentration	0.02	hr
Time to Peak	0.01	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	0.04	min
Time of Concentration	0.00	hr
Time to Peak	0.00	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.02**	**hr**
Time to Peak	**0.01**	**hr**

Catchment Area Summary (207)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	761	39	29679	0.1	76.1
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	88.5	98	8673	0.95	84.075
Impervious "A" (Dis-Connected)	0	98	0	0.95	0
Total Area "A"	850				
Weighted Coefficient "A"			45.14656		0.188552

Weighted Curve Number Calculator

Input:

Catchment ID	301		
Hydrologic Soil Group	A & B		
Soil Texture	Tiago Sandy Loam and Bondhead Sandy Loam	Weighted Curve Number	Weighted Runoff 'C'
Wetland(ha)/CN	0.00	N/A	N/A
Woods(ha)/CN	0.00	N/A	N/A
Pasture/Lawn Area(ha)/CN	0.70	49.0	0.10
Cultivated(ha)/CN	0.00	N/A	N/A
Impervious Area(ha)/CN	0.41	98.0	0.95

Calculated:

Area	1.110
Average CN	67
Average Pervious CN	49
Average Runoff 'C'	0.41

Initial Abstraction Calculator

Input:

Wetland	16	mm
Woods	10	mm
Pasture/Lawns	5	mm
Cultivated	7	mm
Impervious Areas	2	mm

Calculated:

Total Average IA	3.89	mm
Average Pervious IA	5.00	mm

Time of Concentration Calculator

Input:

Catchment Flow Length	100	m

Calculated:

Catchment Ave. Slope	2.0	%
Imperviousness	37%	
Directly Connected Imperviousness	9%	

Calculated: RATIONAL COEFFICIENT

5YR Rational 'C'	0.41	

Calculated: MTO DRAINAGE MANUAL

25YR Rational 'C'	0.46	
50YR Rational 'C'	0.50	
100YR Rational 'C'	0.52	

Calculated: AIRPORT METHOD (Runoff Coef <0.4)

Time of Concentration	17.79	min
Time of Concentration	0.30	hr
Time to Peak	0.20	hr

$Tc=3.26*(1.1-C)*L^{0.5}*S^{-0.33}$

Calculated: BRANSBY-WILLIAMS METHOD (Runoff Coef >=0.4)

Time of Concentration	4.91	min
Time of Concentration	0.08	hr
Time to Peak	0.05	hr

$Tc=0.057*L*S^{-0.2}*A^{-0.1}$

Use:

Time of Concentration	**0.08**	**hr**
Time to Peak	**0.05**	**hr**

Catchment Area Summary (301)

	Areas	CN	CN*A	Rational "C"	C*A
Wetlands "A"	0	50	0	0.05	0
Woods "A"	0	36	0	0.08	0
Pasture/Lawn "A"	7000	49	343000	0.1	700
Cultivated "A"	0	66	0	0.22	0
Impervious "A" (Connected)	1000	98	98000	0.95	950
Impervious "A" (Dis-Connected)	3100	98	303800	0.95	2945
Total Area "A"	11100				
Weighted Coefficient "A"			67.0991		0.413964

Stormwater Management Facility
Volume Table

CLIENT: Mr. Sam Fayaz

DATE: May 2020

PROJECT: 911 Lockhart Road Development

FILE: FAY-19035

DESIGN: KR

Bottom Elev.	237.40 m	280m3	Extended Detention
Static Water Level	238.60 m		
Stage	0.05 m	323m3	Permanent Pool

Elev. (m)	Depth (m)	Total Area (m^2)	Average Area (m^2)	Dead (m^3)	Live (m^3)	Accum. Dead (m^3)	Accum. Live (m^3)	Accum. Total (m^3)
238.60	0.00	916.00	916.00	322.72	0.00	322.72	0.00	322.72
238.65	0.05	1073.00	994.50	0.00	49.73	322.72	49.73	372.45
238.70	0.10	1111.00	1092.00	0.00	54.60	322.72	104.32	427.04
238.75	0.15	1149.00	1130.00	0.00	56.50	322.72	160.83	483.55
238.80	0.20	1188.00	1168.50	0.00	58.43	322.72	219.25	541.97
238.85	0.25	1226.00	1207.00	0.00	60.35	322.72	279.60	602.32
238.90	0.30	1266.00	1246.00	0.00	62.30	322.72	341.90	664.62
238.95	0.35	1315.00	1290.50	0.00	64.52	322.72	406.42	729.14
239.00	0.40	1350.00	1332.50	0.00	66.63	322.72	473.05	795.77
239.05	0.45	1387.00	1368.50	0.00	68.43	322.72	541.48	864.20
239.10	0.50	1423.00	1405.00	0.00	70.25	322.72	611.72	934.44
239.15	0.55	1460.00	1441.50	0.00	72.08	322.72	683.80	1006.52
239.20	0.60	1496.00	1478.00	0.00	73.90	322.72	757.70	1080.42
239.25	0.65	1534.00	1515.00	0.00	75.75	322.72	833.45	1156.17
239.30	0.70	1571.00	1552.50	0.00	77.63	322.72	911.08	1233.80
239.35	0.75	1609.00	1590.00	0.00	79.50	322.72	990.57	1313.30
239.40	0.80	1647.00	1628.00	0.00	81.40	322.72	1071.98	1394.70
239.45	0.85	1685.00	1666.00	0.00	83.30	322.72	1155.27	1477.99
239.50	0.90	1723.00	1704.00	0.00	85.20	322.72	1240.48	1563.20
239.55	0.95	1762.00	1742.50	0.00	87.13	322.72	1327.60	1650.32
239.60	1.00	1801.00	1781.50	0.00	89.07	322.72	1416.67	1739.39

Live Volume

Stormwater Management Facility
Dry Pond Quality Details

CLIENT: Mr. Sam Fayaz **DATE:** May 2020

PROJECT: 911 Lockhart Road Development

FILE: FAY-19035 **DESIGN:** KR

	Area (ha)	XIMP (%)	TIMP(%)
Area 202	**0.212365**	**0**	**0.00%**
Area 205	**0.170079**	**0**	**40.00%**
Area 206	**1.397733**	**30**	**60.00%**
Post Development Drainage Area	**1.780**		**50.93%**

Extended Detention Volumes:

Drainage Area 1.780 ha

Imperviousness 50.93%

MOE Table 3.2, March 2003

Dry Pond	35.00%	90 m^3/ha
	55.00%	150 m^3/ha
	70.00%	200 m^3/ha
	85.00%	240 m^3/ha

Basic Protection Required Volume: 137.8 m^3/ha

Volume Req'd inc. Extend. Det. 245.3 m^3

Forebay Calculations:

MOE Equation 4.5 - Forebay Settling Length

Dist = SQRT((r*Q_p)/V_s)

Forebay length	Dist	**4.5**	m
Length-to-width ratio of forebay	r	2	
Peak flow rate from the pond during design quality storm	Q_p	0.003	m^3/s
Settling velocity	V_s	0.0003	m/s

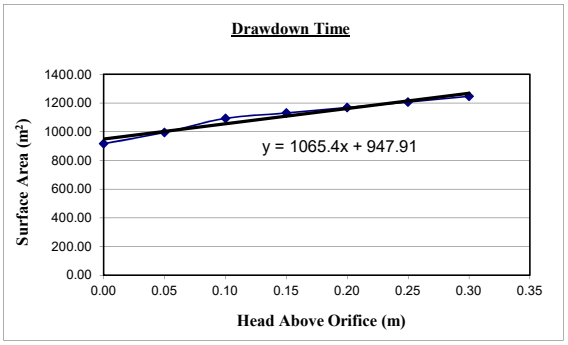
MOE Equation 4.6 - Dispersion Length

Dist = (8*Q)/(d*V_r)

Length of dispersion	Dist	**1.8**	m
Inlet flowrate-5 yr	Q	0.132	m^3/s
Depth of the permanent pool in the forebay	d	1.2	m
Desired velocity in the forebay	V_r	0.5	m/s

Based on Eqn. 4.11 MOE SWM Planning and Design Manual

25mm Event Runoff - Detention Time		
Intercept of Regression, C3	947.9	
Slope of Regression, C2	1065.4	
Ultimate Ponding Elevation	238.90	m
Depth over Orifice	0.300	m
Orifice Area	0.0044	m2
Drawdown Time	94,980	Sec
	26.4	Hours



Stormwater Management Facility
Dry Pond Stage Storage Discharge Details

CLIENT: Mr. Sam Fayaz

DATE: May 2020

PROJECT: 911 Lockhart Road Development

FILE: FAY-19035

DESIGN: KR

Elevation (m)	Depth Above Permanent Pool (m)	Orifice No. 1 Flow (m^3/s)	Orifice No. 2 Flow (m^3/s)	Depth Above Overflow Weir (m)	Overflow Weir Flow (m^3/s)	Total Storage (m^3)	Total Flow (m^3/s)	
238.60	0.00	0.000	0.000	0.00	0.000	0	0.000	Active Storage
238.65	0.05	0.001	0.000	0.00	0.000	50	0.001	
238.70	0.10	0.003	0.000	0.00	0.000	104	0.003	25mm
238.75	0.15	0.004	0.000	0.00	0.000	161	0.004	
238.80	0.20	0.005	0.000	0.00	0.000	219	0.005	2 Year
238.85	0.25	0.006	0.000	0.00	0.000	280	0.006	5 Year
238.90	0.30	0.006	0.000	0.00	0.000	342	0.006	
238.95	0.35	0.007	0.001	0.00	0.000	406	0.008	10 Year
239.00	0.40	0.007	0.007	0.00	0.000	473	0.014	25 Year
239.05	0.45	0.008	0.016	0.00	0.000	541	0.024	50 Year
239.10	0.50	0.008	0.034	0.00	0.000	612	0.043	100 Year
239.15	0.55	0.009	0.077	0.00	0.000	684	0.086	
239.20	0.60	0.009	0.103	0.00	0.000	758	0.113	
239.25	0.65	0.010	0.124	0.00	0.000	833	0.134	Hazel
239.30	0.70	0.010	0.142	0.00	0.000	911	0.152	
239.35	0.75	0.010	0.158	0.05	0.041	991	0.209	
239.40	0.80	0.011	0.172	0.10	0.156	1072	0.339	
239.45	0.85	0.011	0.185	0.15	0.336	1155	0.532	
239.50	0.90	0.011	0.198	0.20	0.582	1240	0.792	
239.55	0.95	0.012	0.209	0.25	0.900	1328	1.122	
239.60	1.00	0.012	0.221	0.30	1.294	1417	1.527	

CONTROL
ORIFICE CONTROL

Orifice No. 1

- Diameter (mm)= 75.000
- Radius (m) = 0.0375
- Area (m^2) = 0.004418
- Orifice C = 0.63
- Invert (m)= 238.60
- Height (m)= 0.00

Orifice No. 2

- Diameter (mm)= 375.000
- Radius (m) = 0.1875
- Area (m^2) = 0.110447
- Orifice C = 0.63
- Invert (m)= 238.90
- Height (m)= 0.30

EMERGENCY OVERFLOW WEIR

- Length of Weir(m) 3
- Weir Sill(m) 239.30
- Downstream Length of 'Overflow' Weir (m) 5.1 @239.3m
- Weir Side Slopes (H:V) 10

Submerged Orifice Equation:
$Q = CxAx(2gH)^{0.5}$

where;
Q = flow rate (m^3)
C = constant
A = area of opening(m^2)
H = net head on the orifice
g = Acceleration due to gravity

- Broad Crested Weir Equation: $Q = (C\ L\ (H^{3/2})) + (C(H^{5/2})Tan\ (\alpha/2))$

where ; Q = flow rate (cms)
C = constant (refer to Triangular and Rectangular 'C' Equations)
L = length (m)
H = head on the weir (m)
α = angle at apex of triangle (radians)

Rectangular 'C' Equation
$y=(a+bx)/(1+cx+dx^2)$
a -10383.48985
b 3418997.012
c 2131595.078
d -235014.2466

Triangular 'C' Equation
$y=(a+bx)/(1+cx+dx^2)$
a -1.0071E-05
b 143.5986704
c 114.5046511
d -4.768574216

*x = head divided by downstream Length of Weir (H/L)

Stormceptor®

FORTERRA

Stormceptor® EF Sizing Report

ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION STORMCEPTOR®

05/27/2020

Province:	Ontario
City:	Innisfil
Nearest Rainfall Station:	BARRIE WPCC
NCDC Rainfall Station Id:	0557
Years of Rainfall Data:	36

Project Name:	911 Lockhart Road
Project Number:	FAY-19035
Designer Name:	Cole Shakell
Designer Company:	Jones Consulting Group Ltd
Designer Email/Phone:	cshakell@jonesconsulting.com
EOR Name:	
EOR Company:	
EOR Email/Phone:	

Site Name:	911 Lockhart Road
Drainage Area (ha):	1.397
% Imperviousness:	60.00

Runoff Coefficient 'c': 0.66

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0
Require Hydrocarbon Spill Capture?	No
Upstream Flow Control?	No
Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	31.92
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	52
EF6	60
EF8	63
EF10	65
EF12	66

Recommended Stormceptor EF Model: EF6

Estimated Net Annual Sediment (TSS) Load Reduction (%): 60

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

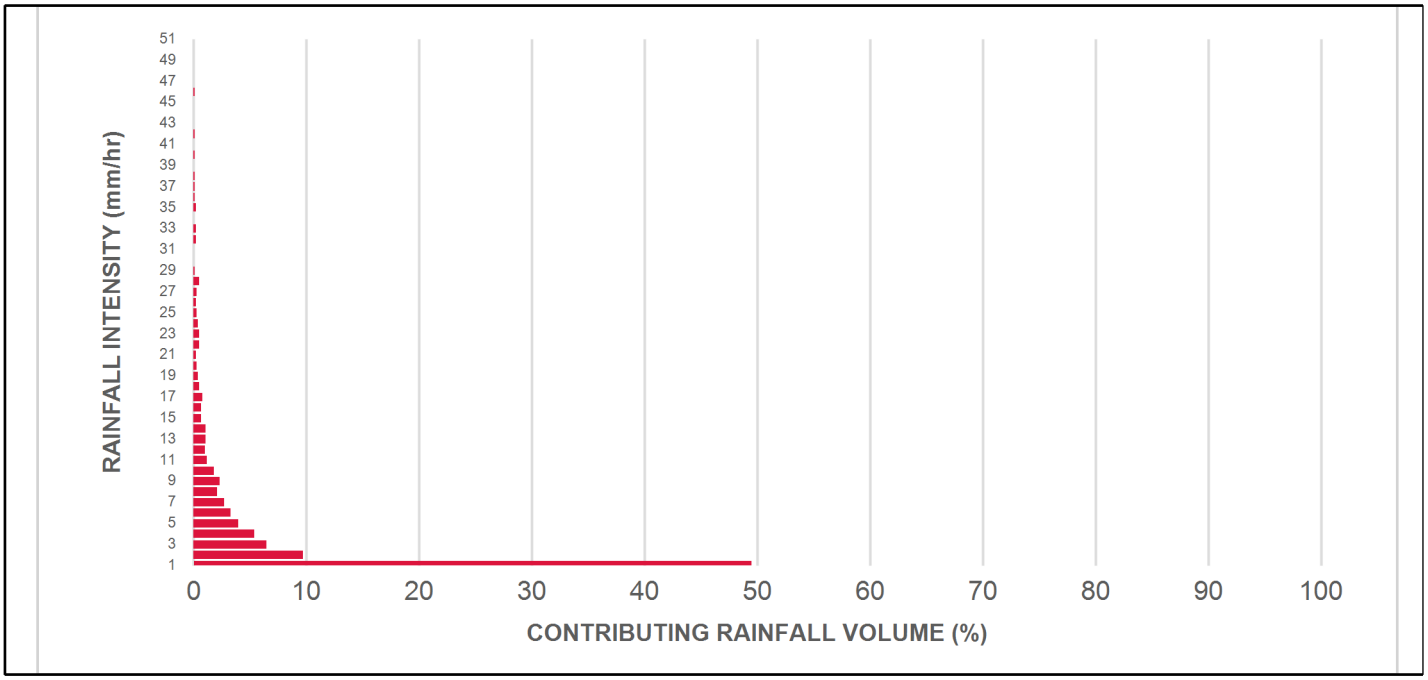
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

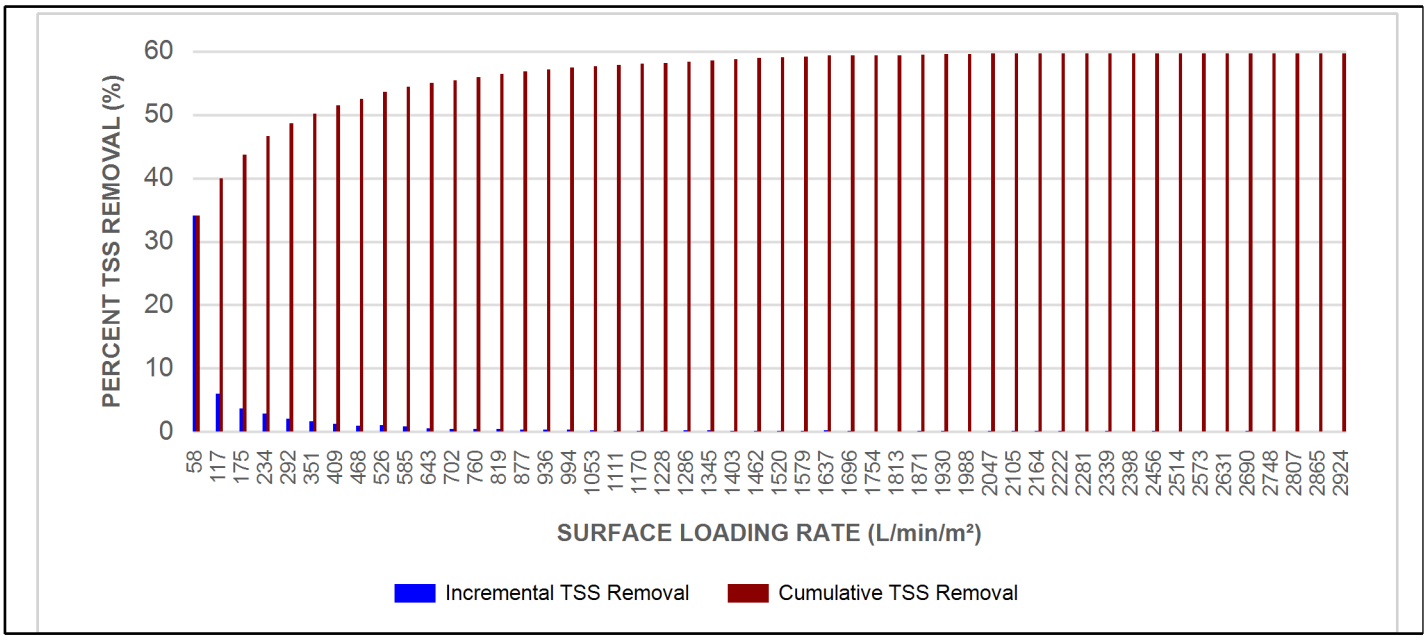
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	49.5	49.5	2.56	154.0	58.0	69	34.1	34.1
2	9.7	59.2	5.13	308.0	117.0	62	6.0	40.0
3	6.5	65.7	7.69	461.0	175.0	57	3.7	43.7
4	5.4	71.1	10.25	615.0	234.0	53	2.9	46.6
5	4.0	75.1	12.82	769.0	292.0	51	2.1	48.6
6	3.3	78.4	15.38	923.0	351.0	50	1.6	50.2
7	2.7	81.1	17.94	1077.0	409.0	48	1.3	51.5
8	2.1	83.2	20.51	1230.0	468.0	47	1.0	52.5
9	2.3	85.5	23.07	1384.0	526.0	47	1.1	53.6
10	1.8	87.3	25.63	1538.0	585.0	46	0.8	54.4
11	1.2	88.5	28.20	1692.0	643.0	46	0.6	55.0
12	1.0	89.5	30.76	1846.0	702.0	46	0.5	55.4
13	1.1	90.6	33.32	1999.0	760.0	45	0.5	55.9
14	1.1	91.7	35.89	2153.0	819.0	45	0.5	56.4
15	0.7	92.4	38.45	2307.0	877.0	45	0.3	56.8
16	0.7	93.1	41.01	2461.0	936.0	44	0.3	57.1
17	0.8	93.9	43.57	2614.0	994.0	44	0.4	57.4
18	0.5	94.4	46.14	2768.0	1053.0	45	0.2	57.6
19	0.4	94.8	48.70	2922.0	1111.0	45	0.2	57.8
20	0.3	95.1	51.26	3076.0	1170.0	46	0.1	58.0
21	0.2	95.3	53.83	3230.0	1228.0	47	0.1	58.1
22	0.5	95.8	56.39	3383.0	1286.0	48	0.2	58.3
23	0.5	96.3	58.95	3537.0	1345.0	48	0.2	58.5
24	0.4	96.7	61.52	3691.0	1403.0	49	0.2	58.7
25	0.3	97.0	64.08	3845.0	1462.0	47	0.1	58.9

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
26	0.2	97.2	66.64	3999.0	1520.0	45	0.1	59.0
27	0.3	97.5	69.21	4152.0	1579.0	44	0.1	59.1
28	0.5	98.0	71.77	4306.0	1637.0	42	0.2	59.3
29	0.1	98.1	74.33	4460.0	1696.0	41	0.0	59.3
30	0.0	98.1	76.90	4614.0	1754.0	39	0.0	59.3
31	0.0	98.1	79.46	4768.0	1813.0	38	0.0	59.3
32	0.2	98.3	82.02	4921.0	1871.0	37	0.1	59.4
33	0.2	98.5	84.59	5075.0	1930.0	36	0.1	59.5
34	0.0	98.5	87.15	5229.0	1988.0	35	0.0	59.5
35	0.2	98.7	89.71	5383.0	2047.0	34	0.1	59.6
36	0.1	98.8	92.28	5537.0	2105.0	33	0.0	59.6
37	0.1	98.9	94.84	5690.0	2164.0	32	0.0	59.6
38	0.1	99.0	97.40	5844.0	2222.0	31	0.0	59.6
39	0.0	99.0	99.97	5998.0	2281.0	30	0.0	59.6
40	0.1	99.1	102.53	6152.0	2339.0	29	0.0	59.7
41	0.0	99.1	105.09	6306.0	2398.0	29	0.0	59.7
42	0.1	99.2	107.66	6459.0	2456.0	28	0.0	59.7
43	0.0	99.2	110.22	6613.0	2514.0	27	0.0	59.7
44	0.0	99.2	112.78	6767.0	2573.0	27	0.0	59.7
45	0.0	99.2	115.34	6921.0	2631.0	26	0.0	59.7
46	0.1	99.3	117.91	7074.0	2690.0	26	0.0	59.7
47	0.0	99.3	120.47	7228.0	2748.0	25	0.0	59.7
48	0.0	99.3	123.03	7382.0	2807.0	25	0.0	59.7
49	0.0	99.3	125.60	7536.0	2865.0	25	0.0	59.7
50	0.0	99.3	128.16	7690.0	2924.0	24	0.0	59.7
Estimated Net Annual Sediment (TSS) Load Reduction =								**60 %**

RAINFALL DATA FROM BARRIE WPCC RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

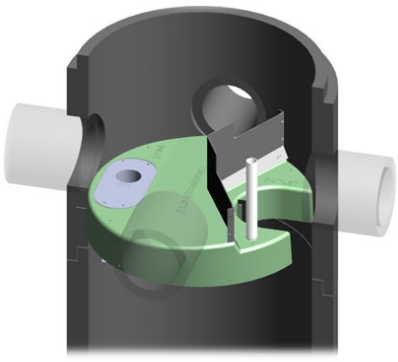
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

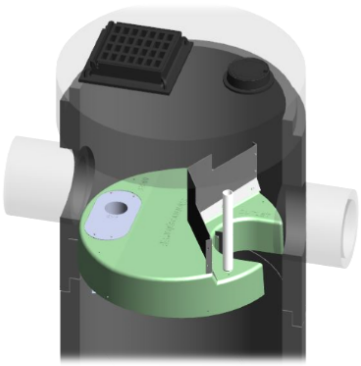
DESIGN FLEXIBILITY

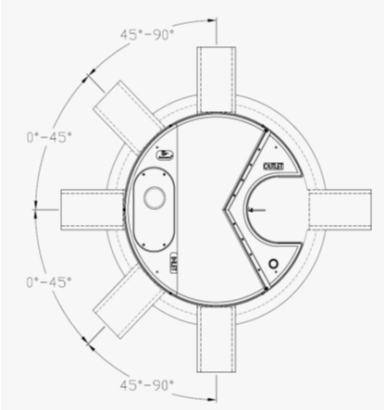
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	197	52	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	348	92	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	545	144	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	874	231	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	1219	322	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EF

SLR (L/min/m^2)	TSS % REMOVAL	SLR (L/min/m^2)	TSS % REMOVAL	SLR (L/min/m^2)	TSS % REMOVAL	SLR (L/min/m^2)	TSS % REMOVAL
1	70	660	46	1320	48	1980	35
30	70	690	46	1350	48	2010	34

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60	67	720	45	1380	49	2040	34
90	63	750	45	1410	49	2070	33
120	61	780	45	1440	48	2100	33
150	58	810	45	1470	47	2130	32
180	56	840	45	1500	46	2160	32
210	54	870	45	1530	45	2190	31
240	53	900	45	1560	44	2220	31
270	52	930	44	1590	43	2250	30
300	51	960	44	1620	42	2280	30
330	50	990	44	1650	42	2310	30
360	49	1020	44	1680	41	2340	29
390	48	1050	45	1710	40	2370	29
420	48	1080	45	1740	39	2400	29
450	48	1110	45	1770	39	2430	28
480	47	1140	46	1800	38	2460	28
510	47	1170	46	1830	37	2490	28
540	47	1200	47	1860	37	2520	27
570	46	1230	47	1890	36	2550	27
600	46	1260	47	1920	36	2580	27
630	46	1290	48	1950	35		

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

Pre Development Visual OTTHYMO Schematic

101

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** SIMULATION:Run 01           **
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|    READ STORM    |    Filename: C:\Users\kransom\AppD
|                  |              ata\Local\Temp\
|                  |              eb52af71-e295-4b6e-83bf-3a41a018d6a5\5771c209
| Ptotal= 25.00 mm |    Comments: COB_CHI_4H_25mm
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.07	1.17	5.70	2.17	5.19	3.17	2.80
0.33	2.27	1.33	10.78	2.33	4.47	3.33	2.62
0.50	2.52	1.50	50.21	2.50	3.95	3.50	2.48
0.67	2.88	1.67	13.37	2.67	3.56	3.67	2.35
0.83	3.38	1.83	8.29	2.83	3.25	3.83	2.23
1.00	4.18	2.00	6.30	3.00	3.01	4.00	2.14

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| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.23   Curve Number   (CN)= 47.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   8.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.24

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.17	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.29	3.000	3.01	4.00	2.14

```
     Unit Hyd Qpeak  (cms)=   0.355

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   1.917
     RUNOFF VOLUME    (mm)=   0.887
     TOTAL RAINFALL   (mm)=  24.996
     RUNOFF COEFFICIENT   =   0.035

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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********************************
** SIMULATION:Run 02           **
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--------------------
|    READ STORM    |    Filename: C:\Users\kransom\AppD
|                  |              ata\Local\Temp\
|                  |              eb52af71-e295-4b6e-83bf-3a41a018d6a5\0f4bbbf5
| Ptotal= 36.95 mm |    Comments: COB_CHI2YR
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.47	1.17	18.78	2.17	5.73	3.17	2.93
0.33	2.82	1.33	83.11	2.33	4.89	3.33	2.72
0.50	3.31	1.50	24.57	2.50	4.28	3.50	2.55
0.67	4.05	1.67	13.01	2.67	3.82	3.67	2.39
0.83	5.30	1.83	9.01	2.83	3.46	3.83	2.26
1.00	7.98	2.00	6.97	3.00	3.17	4.00	2.15

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--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.23   Curve Number   (CN)= 47.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   8.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.24
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.47	1.083	18.78	2.083	5.73	3.08	2.93
0.167	2.47	1.167	18.78	2.167	5.73	3.17	2.93
0.250	2.82	1.250	83.11	2.250	4.89	3.25	2.72
0.333	2.82	1.333	83.11	2.333	4.89	3.33	2.72
0.417	3.31	1.417	24.57	2.417	4.28	3.42	2.55
0.500	3.31	1.500	24.57	2.500	4.28	3.50	2.55
0.583	4.05	1.583	13.01	2.583	3.82	3.58	2.39
0.667	4.05	1.667	13.01	2.667	3.82	3.67	2.39
0.750	5.30	1.750	9.01	2.750	3.46	3.75	2.26
0.833	5.30	1.833	9.01	2.833	3.46	3.83	2.26
0.917	7.98	1.917	6.97	2.917	3.17	3.92	2.15
1.000	7.98	2.000	6.97	3.000	3.17	4.00	2.15

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.012 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 2.552
TOTAL RAINFALL (mm)= 36.955
RUNOFF COEFFICIENT = 0.069

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 03 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\ef7316a4
Ptotal= 50.52 mm	Comments: COB_CHI5YR

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.57	1.17	25.64	2.17	8.12	3.17	4.22
0.33	4.07	1.33	108.92	2.33	6.96	3.33	3.93
0.50	4.76	1.50	33.31	2.50	6.12	3.50	3.68
0.67	5.79	1.67	17.99	2.67	5.48	3.67	3.47
0.83	7.53	1.83	12.60	2.83	4.97	3.83	3.28
1.00	11.20	2.00	9.82	3.00	4.56	4.00	3.12

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.23	Curve Number (CN)= 47.0
	Ia (mm)= 8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.57	1.083	25.64	2.083	8.12	3.08	4.22
0.167	3.57	1.167	25.64	2.167	8.12	3.17	4.22
0.250	4.07	1.250	108.92	2.250	6.96	3.25	3.93
0.333	4.07	1.333	108.92	2.333	6.96	3.33	3.93
0.417	4.76	1.417	33.31	2.417	6.12	3.42	3.68
0.500	4.76	1.500	33.31	2.500	6.12	3.50	3.68
0.583	5.79	1.583	17.99	2.583	5.48	3.58	3.47
0.667	5.79	1.667	17.99	2.667	5.48	3.67	3.47
0.750	7.53	1.750	12.60	2.750	4.97	3.75	3.28
0.833	7.53	1.833	12.60	2.833	4.97	3.83	3.28
0.917	11.20	1.917	9.82	2.917	4.56	3.92	3.12
1.000	11.20	2.000	9.82	3.000	4.56	4.00	3.12

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.027 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 5.346
TOTAL RAINFALL (mm)= 50.518
RUNOFF COEFFICIENT = 0.106

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 04 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\22f31c78
Ptotal= 59.69 mm	Comments: COB_CHI10YR

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.32	1.17	30.27	2.17	9.72	3.17	5.09
0.33	4.91	1.33	126.55	2.33	8.35	3.33	4.74
0.50	5.73	1.50	39.22	2.50	7.35	3.50	4.45
0.67	6.96	1.67	21.35	2.67	6.59	3.67	4.19
0.83	9.03	1.83	15.01	2.83	5.99	3.83	3.97
1.00	13.36	2.00	11.74	3.00	5.50	4.00	3.77

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.23	Curve Number (CN)= 47.0
	Ia (mm)= 8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.32	1.083	30.27	2.083	9.72	3.08	5.09
0.167	4.32	1.167	30.27	2.167	9.72	3.17	5.09
0.250	4.91	1.250	126.55	2.250	8.35	3.25	4.74
0.333	4.91	1.333	126.55	2.333	8.35	3.33	4.74
0.417	5.73	1.417	39.22	2.417	7.35	3.42	4.45
0.500	5.73	1.500	39.22	2.500	7.35	3.50	4.45
0.583	6.96	1.583	21.35	2.583	6.59	3.58	4.19
0.667	6.96	1.667	21.35	2.667	6.59	3.67	4.19
0.750	9.03	1.750	15.01	2.750	5.99	3.75	3.97
0.833	9.03	1.833	15.01	2.833	5.99	3.83	3.97
0.917	13.36	1.917	11.74	2.917	5.50	3.92	3.77
1.000	13.36	2.000	11.74	3.000	5.50	4.00	3.77

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.040 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 7.727
TOTAL RAINFALL (mm)= 59.693
RUNOFF COEFFICIENT = 0.129

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 05 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\f84ab9de
Ptotal= 71.24 mm	Comments: COB_CHI25YR

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	5.22	1.17	36.37	2.17	11.74	3.17	6.15
0.33	5.94	1.33	148.15	2.33	10.09	3.33	5.74
0.50	6.93	1.50	47.06	2.50	8.89	3.50	5.38
0.67	8.42	1.67	25.72	2.67	7.96	3.67	5.08
0.83	10.91	1.83	18.11	2.83	7.24	3.83	4.80
1.00	16.13	2.00	14.17	3.00	6.65	4.00	4.57

CALIB NASHYD (0101)	Area (ha)= 2.23	Curve Number (CN)= 47.0

|ID= 1 DT= 5.0 min | Ia (mm)= 8.60 # of Linear Res.(N)= 3.00

U.H. Tp(hrs)= 0.24

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.22	1.083	36.37	2.083	11.74	3.08	6.15
0.167	5.22	1.167	36.37	2.167	11.74	3.17	6.15
0.250	5.94	1.250	148.15	2.250	10.09	3.25	5.74
0.333	5.94	1.333	148.15	2.333	10.09	3.33	5.74
0.417	6.93	1.417	47.06	2.417	8.89	3.42	5.38
0.500	6.93	1.500	47.06	2.500	8.89	3.50	5.38
0.583	8.42	1.583	25.72	2.583	7.96	3.58	5.08
0.667	8.42	1.667	25.72	2.667	7.96	3.67	5.08
0.750	10.91	1.750	18.11	2.750	7.24	3.75	4.80
0.833	10.91	1.833	18.11	2.833	7.24	3.83	4.80
0.917	16.13	1.917	14.17	2.917	6.65	3.92	4.57
1.000	16.13	2.000	14.17	3.000	6.65	4.00	4.57

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.058 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 11.229
TOTAL RAINFALL (mm)= 71.237
RUNOFF COEFFICIENT = 0.158

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 06 **
****

| READ STORM | Filename: C:\Users\kransom\AppD
| | ata\Local\Temp\
| | eb52af71-e295-4b6e-83bf-3a41a018d6a5\fec5600b
| Ptotal= 79.45 mm | Comments: COB_CHI50YR

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	5.93	1.17	40.22	2.17	13.20	3.17	6.98
0.33	6.74	1.33	164.22	2.33	11.37	3.33	6.51
0.50	7.85	1.50	51.92	2.50	10.03	3.50	6.11
0.67	9.50	1.67	28.58	2.67	9.00	3.67	5.77
0.83	12.27	1.83	20.23	2.83	8.19	3.83	5.46
1.00	18.04	2.00	15.88	3.00	7.53	4.00	5.19

| CALIB |
| NASHYD (0101)| Area (ha)= 2.23 Curve Number (CN)= 47.0
|ID= 1 DT= 5.0 min | Ia (mm)= 8.60 # of Linear Res.(N)= 3.00

U.H. Tp(hrs)= 0.24

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.93	1.083	40.22	2.083	13.20	3.08	6.98
0.167	5.93	1.167	40.22	2.167	13.20	3.17	6.98
0.250	6.74	1.250	164.22	2.250	11.37	3.25	6.51
0.333	6.74	1.333	164.22	2.333	11.37	3.33	6.51
0.417	7.85	1.417	51.92	2.417	10.03	3.42	6.11
0.500	7.85	1.500	51.92	2.500	10.03	3.50	6.11
0.583	9.50	1.583	28.58	2.583	9.00	3.58	5.77
0.667	9.50	1.667	28.58	2.667	9.00	3.67	5.77
0.750	12.27	1.750	20.23	2.750	8.19	3.75	5.46
0.833	12.27	1.833	20.23	2.833	8.19	3.83	5.46
0.917	18.04	1.917	15.88	2.917	7.53	3.92	5.19
1.000	18.04	2.000	15.88	3.000	7.53	4.00	5.19

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.073 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 14.038

TOTAL RAINFALL (mm)= 79.453
RUNOFF COEFFICIENT = 0.177

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 07 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\748321e3
Ptotal= 87.58 mm	Comments: COB_CHI100YR

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.41	1.17	45.22	2.17	14.50	3.17	7.56
0.33	7.29	1.33	180.15	2.33	12.44	3.33	7.04
0.50	8.52	1.50	58.54	2.50	10.94	3.50	6.60
0.67	10.36	1.67	31.96	2.67	9.80	3.67	6.22
0.83	13.45	1.83	22.45	2.83	8.90	3.83	5.89
1.00	19.96	2.00	17.52	3.00	8.16	4.00	5.59

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.23	Curve Number (CN)= 47.0
	Ia (mm)= 8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.41	1.083	45.22	2.083	14.50	3.08	7.56
0.167	6.41	1.167	45.22	2.167	14.50	3.17	7.56
0.250	7.29	1.250	180.15	2.250	12.44	3.25	7.04
0.333	7.29	1.333	180.15	2.333	12.44	3.33	7.04
0.417	8.52	1.417	58.54	2.417	10.94	3.42	6.60
0.500	8.52	1.500	58.54	2.500	10.94	3.50	6.60
0.583	10.36	1.583	31.96	2.583	9.80	3.58	6.22
0.667	10.36	1.667	31.96	2.667	9.80	3.67	6.22
0.750	13.45	1.750	22.45	2.750	8.90	3.75	5.89
0.833	13.45	1.833	22.45	2.833	8.90	3.83	5.89
0.917	19.96	1.917	17.52	2.917	8.16	3.92	5.59
1.000	19.96	2.000	17.52	3.000	8.16	4.00	5.59

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.091 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 17.054
TOTAL RAINFALL (mm)= 87.578
RUNOFF COEFFICIENT = 0.195

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 08 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\2e798bfe
Ptotal=212.00 mm	Comments: HAZEL

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.20	6.00	3.20	13.00	6.20	23.00	9.20	53.00
0.40	6.00	3.40	13.00	6.40	23.00	9.40	53.00
0.60	6.00	3.60	13.00	6.60	23.00	9.60	53.00
0.80	6.00	3.80	13.00	6.80	23.00	9.80	53.00
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
1.20	4.00	4.20	17.00	7.20	13.00	10.20	38.00
1.40	4.00	4.40	17.00	7.40	13.00	10.40	38.00
1.60	4.00	4.60	17.00	7.60	13.00	10.60	38.00
1.80	4.00	4.80	17.00	7.80	13.00	10.80	38.00

2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
2.20	6.00	5.20	13.00	8.20	13.00	11.20	13.00
2.40	6.00	5.40	13.00	8.40	13.00	11.40	13.00
2.60	6.00	5.60	13.00	8.60	13.00	11.60	13.00
2.80	6.00	5.80	13.00	8.80	13.00	11.80	13.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB			
NASHYD (0101)	Area (ha)=	2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)=	8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.176 (i)
TIME TO PEAK (hrs)= 10.000
RUNOFF VOLUME (mm)= 84.383
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.398

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 09 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\9909b177
Ptotal= 46.69 mm	Comments: COB_SCS_2Y12H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	1.87	6.75	8.41	10.00	1.63
0.50	1.17	3.75	1.87	7.00	3.74	10.25	1.63
0.75	1.17	4.00	1.87	7.25	3.74	10.50	0.93

1.00	1.17	4.25	1.87	7.50	2.80	10.75	0.93
1.25	1.17	4.50	2.80	7.75	2.80	11.00	0.93
1.50	1.17	4.75	2.80	8.00	2.80	11.25	0.93
1.75	1.17	5.00	3.74	8.25	2.80	11.50	0.93
2.00	1.17	5.25	3.74	8.50	1.63	11.75	0.93
2.25	1.17	5.50	5.60	8.75	1.63	12.00	0.93
2.50	1.40	5.75	5.60	9.00	1.63	12.25	0.93
2.75	1.40	6.00	22.42	9.25	1.63		
3.00	1.40	6.25	61.64	9.50	1.63		
3.25	1.40	6.50	8.41	9.75	1.63		

CALIB			
NASHYD (0101)	Area (ha)=	2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)=	8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	1.40	6.250	61.64	9.33	1.63
0.167	0.00	3.250	1.40	6.333	8.41	9.42	1.63
0.250	0.00	3.333	1.87	6.417	8.41	9.50	1.63
0.333	1.17	3.417	1.87	6.500	8.41	9.58	1.63
0.417	1.17	3.500	1.87	6.583	8.41	9.67	1.63
0.500	1.17	3.583	1.87	6.667	8.41	9.75	1.63
0.583	1.17	3.667	1.87	6.750	8.41	9.83	1.63
0.667	1.17	3.750	1.87	6.833	3.74	9.92	1.63
0.750	1.17	3.833	1.87	6.917	3.74	10.00	1.63
0.833	1.17	3.917	1.87	7.000	3.74	10.08	1.63
0.917	1.17	4.000	1.87	7.083	3.74	10.17	1.63
1.000	1.17	4.083	1.87	7.167	3.74	10.25	1.63
1.083	1.17	4.167	1.87	7.250	3.74	10.33	0.93
1.167	1.17	4.250	1.87	7.333	2.80	10.42	0.93
1.250	1.17	4.333	2.80	7.417	2.80	10.50	0.93
1.333	1.17	4.417	2.80	7.500	2.80	10.58	0.93
1.417	1.17	4.500	2.80	7.583	2.80	10.67	0.93
1.500	1.17	4.583	2.80	7.667	2.80	10.75	0.93
1.583	1.17	4.667	2.80	7.750	2.80	10.83	0.93
1.667	1.17	4.750	2.80	7.833	2.80	10.92	0.93
1.750	1.17	4.833	3.74	7.917	2.80	11.00	0.93
1.833	1.17	4.917	3.74	8.000	2.80	11.08	0.93
1.917	1.17	5.000	3.74	8.083	2.80	11.17	0.93
2.000	1.17	5.083	3.74	8.167	2.80	11.25	0.93
2.083	1.17	5.167	3.74	8.250	2.80	11.33	0.93
2.167	1.17	5.250	3.74	8.333	1.63	11.42	0.93
2.250	1.17	5.333	5.60	8.417	1.63	11.50	0.93
2.333	1.40	5.417	5.60	8.500	1.63	11.58	0.93
2.417	1.40	5.500	5.60	8.583	1.63	11.67	0.93
2.500	1.40	5.583	5.60	8.667	1.63	11.75	0.93
2.583	1.40	5.667	5.60	8.750	1.63	11.83	0.93
2.667	1.40	5.750	5.60	8.833	1.63	11.92	0.93
2.750	1.40	5.833	22.42	8.917	1.63	12.00	0.93
2.833	1.40	5.917	22.42	9.000	1.63	12.08	0.93
2.917	1.40	6.000	22.42	9.083	1.63	12.17	0.93
3.000	1.40	6.083	61.64	9.167	1.63	12.25	0.93
3.083	1.40	6.167	61.64	9.250	1.63		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.023 (i)
TIME TO PEAK (hrs)= 6.333
RUNOFF VOLUME (mm)= 4.466
TOTAL RAINFALL (mm)= 46.690
RUNOFF COEFFICIENT = 0.096

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 10 **
****

READ STORM	Filename: C:\Users\kransom\AppD ata\Local\Temp\ eb52af71-e295-4b6e-83bf-3a41a018d6a5\4be5fa1d
Ptotal= 64.31 mm	Comments: COB_SCS_5Y12H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	2.57	6.75	11.57	10.00	2.25
0.50	1.61	3.75	2.57	7.00	5.14	10.25	2.25
0.75	1.61	4.00	2.57	7.25	5.14	10.50	1.29
1.00	1.61	4.25	2.57	7.50	3.86	10.75	1.29
1.25	1.61	4.50	3.86	7.75	3.86	11.00	1.29
1.50	1.61	4.75	3.86	8.00	3.86	11.25	1.29
1.75	1.61	5.00	5.14	8.25	3.86	11.50	1.29
2.00	1.61	5.25	5.14	8.50	2.25	11.75	1.29
2.25	1.61	5.50	7.72	8.75	2.25	12.00	1.29
2.50	1.93	5.75	7.72	9.00	2.25	12.25	1.29
2.75	1.93	6.00	30.86	9.25	2.25		
3.00	1.93	6.25	84.88	9.50	2.25		
3.25	1.93	6.50	11.57	9.75	2.25		

CALIB NASHYD (0101)	Area (ha)= 2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)= 8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	1.93	6.250	84.88	9.33	2.25
0.167	0.00	3.250	1.93	6.333	11.57	9.42	2.25
0.250	0.00	3.333	2.57	6.417	11.57	9.50	2.25
0.333	1.61	3.417	2.57	6.500	11.57	9.58	2.25
0.417	1.61	3.500	2.57	6.583	11.57	9.67	2.25
0.500	1.61	3.583	2.57	6.667	11.57	9.75	2.25
0.583	1.61	3.667	2.57	6.750	11.57	9.83	2.25
0.667	1.61	3.750	2.57	6.833	5.14	9.92	2.25
0.750	1.61	3.833	2.57	6.917	5.14	10.00	2.25
0.833	1.61	3.917	2.57	7.000	5.14	10.08	2.25
0.917	1.61	4.000	2.57	7.083	5.14	10.17	2.25
1.000	1.61	4.083	2.57	7.167	5.14	10.25	2.25
1.083	1.61	4.167	2.57	7.250	5.14	10.33	1.29
1.167	1.61	4.250	2.57	7.333	3.86	10.42	1.29
1.250	1.61	4.333	3.86	7.417	3.86	10.50	1.29
1.333	1.61	4.417	3.86	7.500	3.86	10.58	1.29
1.417	1.61	4.500	3.86	7.583	3.86	10.67	1.29
1.500	1.61	4.583	3.86	7.667	3.86	10.75	1.29
1.583	1.61	4.667	3.86	7.750	3.86	10.83	1.29
1.667	1.61	4.750	3.86	7.833	3.86	10.92	1.29
1.750	1.61	4.833	5.14	7.917	3.86	11.00	1.29
1.833	1.61	4.917	5.14	8.000	3.86	11.08	1.29
1.917	1.61	5.000	5.14	8.083	3.86	11.17	1.29
2.000	1.61	5.083	5.14	8.167	3.86	11.25	1.29
2.083	1.61	5.167	5.14	8.250	3.86	11.33	1.29
2.167	1.61	5.250	5.14	8.333	2.25	11.42	1.29
2.250	1.61	5.333	7.72	8.417	2.25	11.50	1.29
2.333	1.93	5.417	7.72	8.500	2.25	11.58	1.29
2.417	1.93	5.500	7.72	8.583	2.25	11.67	1.29
2.500	1.93	5.583	7.72	8.667	2.25	11.75	1.29
2.583	1.93	5.667	7.72	8.750	2.25	11.83	1.29
2.667	1.93	5.750	7.72	8.833	2.25	11.92	1.29
2.750	1.93	5.833	30.86	8.917	2.25	12.00	1.29
2.833	1.93	5.917	30.86	9.000	2.25	12.08	1.29
2.917	1.93	6.000	30.86	9.083	2.25	12.17	1.29
3.000	1.93	6.083	84.88	9.167	2.25	12.25	1.29
3.083	1.93	6.167	84.88	9.250	2.25		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.049 (i)
TIME TO PEAK (hrs)= 6.333
RUNOFF VOLUME (mm)= 9.063
TOTAL RAINFALL (mm)= 64.310
RUNOFF COEFFICIENT = 0.141

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 11 **
****

| READ STORM | Filename: C:\Users\kransom\AppD
| | ata\Local\Temp\
| | eb52af71-e295-4b6e-83bf-3a41a018d6a5\3e9127d9
| Ptotal= 76.00 mm | Comments: COB_SCS_10Y12H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	3.04	6.75	13.68	10.00	2.66
0.50	1.90	3.75	3.04	7.00	6.08	10.25	2.66
0.75	1.90	4.00	3.04	7.25	6.08	10.50	1.52
1.00	1.90	4.25	3.04	7.50	4.56	10.75	1.52
1.25	1.90	4.50	4.56	7.75	4.56	11.00	1.52
1.50	1.90	4.75	4.56	8.00	4.56	11.25	1.52
1.75	1.90	5.00	6.08	8.25	4.56	11.50	1.52
2.00	1.90	5.25	6.08	8.50	2.66	11.75	1.52
2.25	1.90	5.50	9.12	8.75	2.66	12.00	1.52
2.50	2.28	5.75	9.12	9.00	2.66	12.25	1.52
2.75	2.28	6.00	36.48	9.25	2.66		
3.00	2.28	6.25	100.32	9.50	2.66		
3.25	2.28	6.50	13.68	9.75	2.66		

CALIB			
NASHYD (0101)	Area (ha)=	2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)=	8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	2.28	6.250	100.32	9.33	2.66
0.167	0.00	3.250	2.28	6.333	13.68	9.42	2.66
0.250	0.00	3.333	3.04	6.417	13.68	9.50	2.66
0.333	1.90	3.417	3.04	6.500	13.68	9.58	2.66
0.417	1.90	3.500	3.04	6.583	13.68	9.67	2.66
0.500	1.90	3.583	3.04	6.667	13.68	9.75	2.66
0.583	1.90	3.667	3.04	6.750	13.68	9.83	2.66
0.667	1.90	3.750	3.04	6.833	6.08	9.92	2.66
0.750	1.90	3.833	3.04	6.917	6.08	10.00	2.66
0.833	1.90	3.917	3.04	7.000	6.08	10.08	2.66
0.917	1.90	4.000	3.04	7.083	6.08	10.17	2.66
1.000	1.90	4.083	3.04	7.167	6.08	10.25	2.66
1.083	1.90	4.167	3.04	7.250	6.08	10.33	1.52
1.167	1.90	4.250	3.04	7.333	4.56	10.42	1.52
1.250	1.90	4.333	4.56	7.417	4.56	10.50	1.52
1.333	1.90	4.417	4.56	7.500	4.56	10.58	1.52
1.417	1.90	4.500	4.56	7.583	4.56	10.67	1.52
1.500	1.90	4.583	4.56	7.667	4.56	10.75	1.52
1.583	1.90	4.667	4.56	7.750	4.56	10.83	1.52
1.667	1.90	4.750	4.56	7.833	4.56	10.92	1.52
1.750	1.90	4.833	6.08	7.917	4.56	11.00	1.52
1.833	1.90	4.917	6.08	8.000	4.56	11.08	1.52
1.917	1.90	5.000	6.08	8.083	4.56	11.17	1.52
2.000	1.90	5.083	6.08	8.167	4.56	11.25	1.52
2.083	1.90	5.167	6.08	8.250	4.56	11.33	1.52
2.167	1.90	5.250	6.08	8.333	2.66	11.42	1.52
2.250	1.90	5.333	9.12	8.417	2.66	11.50	1.52
2.333	2.28	5.417	9.12	8.500	2.66	11.58	1.52
2.417	2.28	5.500	9.12	8.583	2.66	11.67	1.52
2.500	2.28	5.583	9.12	8.667	2.66	11.75	1.52
2.583	2.28	5.667	9.12	8.750	2.66	11.83	1.52
2.667	2.28	5.750	9.12	8.833	2.66	11.92	1.52
2.750	2.28	5.833	36.48	8.917	2.66	12.00	1.52
2.833	2.28	5.917	36.48	9.000	2.66	12.08	1.52
2.917	2.28	6.000	36.48	9.083	2.66	12.17	1.52
3.000	2.28	6.083	100.32	9.167	2.66	12.25	1.52
3.083	2.28	6.167	100.32	9.250	2.66		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.070 (i)
TIME TO PEAK (hrs)= 6.333
RUNOFF VOLUME (mm)= 12.827
TOTAL RAINFALL (mm)= 76.000
RUNOFF COEFFICIENT = 0.169

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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********************************
** SIMULATION:Run 12           **
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|    READ STORM    |    Filename: C:\Users\kransom\AppD
|                  |              ata\Local\Temp\
|                  |              eb52af71-e295-4b6e-83bf-3a41a018d6a5\d8c05e85
| Ptotal= 90.69 mm |    Comments: COB_SCS_25Y12H
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	3.63	6.75	16.33	10.00	3.17
0.50	2.27	3.75	3.63	7.00	7.26	10.25	3.17
0.75	2.27	4.00	3.63	7.25	7.26	10.50	1.81
1.00	2.27	4.25	3.63	7.50	5.44	10.75	1.81
1.25	2.27	4.50	5.44	7.75	5.44	11.00	1.81
1.50	2.27	4.75	5.44	8.00	5.44	11.25	1.81
1.75	2.27	5.00	7.26	8.25	5.44	11.50	1.81
2.00	2.27	5.25	7.26	8.50	3.17	11.75	1.81
2.25	2.27	5.50	10.88	8.75	3.17	12.00	1.81
2.50	2.72	5.75	10.88	9.00	3.17	12.25	1.81
2.75	2.72	6.00	43.54	9.25	3.17		
3.00	2.72	6.25	119.72	9.50	3.17		
3.25	2.72	6.50	16.33	9.75	3.17		

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| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.23   Curve Number   (CN)= 47.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   8.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.24

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	2.72	6.250	119.72	9.33	3.17
0.167	0.00	3.250	2.72	6.333	16.33	9.42	3.17
0.250	0.00	3.333	3.63	6.417	16.33	9.50	3.17
0.333	2.27	3.417	3.63	6.500	16.33	9.58	3.17
0.417	2.27	3.500	3.63	6.583	16.33	9.67	3.17
0.500	2.27	3.583	3.63	6.667	16.33	9.75	3.17
0.583	2.27	3.667	3.63	6.750	16.33	9.83	3.17
0.667	2.27	3.750	3.63	6.833	7.26	9.92	3.17
0.750	2.27	3.833	3.63	6.917	7.26	10.00	3.17
0.833	2.27	3.917	3.63	7.000	7.26	10.08	3.17
0.917	2.27	4.000	3.63	7.083	7.26	10.17	3.17
1.000	2.27	4.083	3.63	7.167	7.26	10.25	3.17
1.083	2.27	4.167	3.63	7.250	7.26	10.33	1.81
1.167	2.27	4.250	3.63	7.333	5.44	10.42	1.81
1.250	2.27	4.333	5.44	7.417	5.44	10.50	1.81
1.333	2.27	4.417	5.44	7.500	5.44	10.58	1.81
1.417	2.27	4.500	5.44	7.583	5.44	10.67	1.81
1.500	2.27	4.583	5.44	7.667	5.44	10.75	1.81
1.583	2.27	4.667	5.44	7.750	5.44	10.83	1.81
1.667	2.27	4.750	5.44	7.833	5.44	10.92	1.81
1.750	2.27	4.833	7.26	7.917	5.44	11.00	1.81
1.833	2.27	4.917	7.26	8.000	5.44	11.08	1.81
1.917	2.27	5.000	7.26	8.083	5.44	11.17	1.81
2.000	2.27	5.083	7.26	8.167	5.44	11.25	1.81
2.083	2.27	5.167	7.26	8.250	5.44	11.33	1.81
2.167	2.27	5.250	7.26	8.333	3.17	11.42	1.81
2.250	2.27	5.333	10.88	8.417	3.17	11.50	1.81
2.333	2.72	5.417	10.88	8.500	3.17	11.58	1.81
2.417	2.72	5.500	10.88	8.583	3.17	11.67	1.81
2.500	2.72	5.583	10.88	8.667	3.17	11.75	1.81
2.583	2.72	5.667	10.88	8.750	3.17	11.83	1.81
2.667	2.72	5.750	10.88	8.833	3.17	11.92	1.81
2.750	2.72	5.833	43.54	8.917	3.17	12.00	1.81
2.833	2.72	5.917	43.54	9.000	3.17	12.08	1.81
2.917	2.72	6.000	43.54	9.083	3.17	12.17	1.81
3.000	2.72	6.083	119.72	9.167	3.17	12.25	1.81
3.083	2.72	6.167	119.72	9.250	3.17		

```
    Unit Hyd Qpeak  (cms)=   0.355

    PEAK FLOW       (cms)=   0.101 (i)
    TIME TO PEAK    (hrs)=   6.333
    RUNOFF VOLUME    (mm)=  18.269
    TOTAL RAINFALL   (mm)=  90.690
```

RUNOFF COEFFICIENT = 0.201

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 13 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\0db8fdd3
Ptotal=101.69 mm	Comments: COB_SCS_50Y12H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	4.07	6.75	18.31	10.00	3.56
0.50	2.54	3.75	4.07	7.00	8.14	10.25	3.56
0.75	2.54	4.00	4.07	7.25	8.14	10.50	2.03
1.00	2.54	4.25	4.07	7.50	6.10	10.75	2.03
1.25	2.54	4.50	6.10	7.75	6.10	11.00	2.03
1.50	2.54	4.75	6.10	8.00	6.10	11.25	2.03
1.75	2.54	5.00	8.14	8.25	6.10	11.50	2.03
2.00	2.54	5.25	8.14	8.50	3.56	11.75	2.03
2.25	2.54	5.50	12.20	8.75	3.56	12.00	2.03
2.50	3.05	5.75	12.20	9.00	3.56	12.25	2.03
2.75	3.05	6.00	48.82	9.25	3.56		
3.00	3.05	6.25	134.24	9.50	3.56		
3.25	3.05	6.50	18.31	9.75	3.56		

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.23 Curve Number (CN)= 47.0 Ia (mm)= 8.60 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.24

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	3.05	6.250	134.24	9.33	3.56
0.167	0.00	3.250	3.05	6.333	18.31	9.42	3.56
0.250	0.00	3.333	4.07	6.417	18.31	9.50	3.56
0.333	2.54	3.417	4.07	6.500	18.31	9.58	3.56
0.417	2.54	3.500	4.07	6.583	18.31	9.67	3.56
0.500	2.54	3.583	4.07	6.667	18.31	9.75	3.56
0.583	2.54	3.667	4.07	6.750	18.31	9.83	3.56
0.667	2.54	3.750	4.07	6.833	8.14	9.92	3.56
0.750	2.54	3.833	4.07	6.917	8.14	10.00	3.56
0.833	2.54	3.917	4.07	7.000	8.14	10.08	3.56
0.917	2.54	4.000	4.07	7.083	8.14	10.17	3.56
1.000	2.54	4.083	4.07	7.167	8.14	10.25	3.56
1.083	2.54	4.167	4.07	7.250	8.14	10.33	2.03
1.167	2.54	4.250	4.07	7.333	6.10	10.42	2.03
1.250	2.54	4.333	6.10	7.417	6.10	10.50	2.03
1.333	2.54	4.417	6.10	7.500	6.10	10.58	2.03
1.417	2.54	4.500	6.10	7.583	6.10	10.67	2.03
1.500	2.54	4.583	6.10	7.667	6.10	10.75	2.03
1.583	2.54	4.667	6.10	7.750	6.10	10.83	2.03
1.667	2.54	4.750	6.10	7.833	6.10	10.92	2.03
1.750	2.54	4.833	8.14	7.917	6.10	11.00	2.03
1.833	2.54	4.917	8.14	8.000	6.10	11.08	2.03
1.917	2.54	5.000	8.14	8.083	6.10	11.17	2.03
2.000	2.54	5.083	8.14	8.167	6.10	11.25	2.03
2.083	2.54	5.167	8.14	8.250	6.10	11.33	2.03
2.167	2.54	5.250	8.14	8.333	3.56	11.42	2.03
2.250	2.54	5.333	12.20	8.417	3.56	11.50	2.03
2.333	3.05	5.417	12.20	8.500	3.56	11.58	2.03
2.417	3.05	5.500	12.20	8.583	3.56	11.67	2.03
2.500	3.05	5.583	12.20	8.667	3.56	11.75	2.03
2.583	3.05	5.667	12.20	8.750	3.56	11.83	2.03
2.667	3.05	5.750	12.20	8.833	3.56	11.92	2.03
2.750	3.05	5.833	48.82	8.917	3.56	12.00	2.03
2.833	3.05	5.917	48.82	9.000	3.56	12.08	2.03
2.917	3.05	6.000	48.82	9.083	3.56	12.17	2.03
3.000	3.05	6.083	134.24	9.167	3.56	12.25	2.03
3.083	3.05	6.167	134.24	9.250	3.56		

Unit Hyd Qpeak (cms)= 0.355

```
     PEAK FLOW       (cms)=   0.127 (i)
     TIME TO PEAK    (hrs)=   6.333
     RUNOFF VOLUME    (mm)=  22.812
     TOTAL RAINFALL   (mm)= 101.690
     RUNOFF COEFFICIENT   =   0.224

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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*********************************
** SIMULATION:Run 14           **
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|    READ STORM    |    Filename: C:\Users\kransom\AppD
|                  |              ata\Local\Temp\
|                  |              eb52af71-e295-4b6e-83bf-3a41a018d6a5\342ed2b7
| Ptotal=112.51 mm |    Comments: COB_SCS_100Y12H
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	4.50	6.75	20.25	10.00	3.94
0.50	2.81	3.75	4.50	7.00	9.00	10.25	3.94
0.75	2.81	4.00	4.50	7.25	9.00	10.50	2.25
1.00	2.81	4.25	4.50	7.50	6.75	10.75	2.25
1.25	2.81	4.50	6.75	7.75	6.75	11.00	2.25
1.50	2.81	4.75	6.75	8.00	6.75	11.25	2.25
1.75	2.81	5.00	9.00	8.25	6.75	11.50	2.25
2.00	2.81	5.25	9.00	8.50	3.94	11.75	2.25
2.25	2.81	5.50	13.50	8.75	3.94	12.00	2.25
2.50	3.38	5.75	13.50	9.00	3.94	12.25	2.25
2.75	3.38	6.00	54.00	9.25	3.94		
3.00	3.38	6.25	148.50	9.50	3.94		
3.25	3.38	6.50	20.25	9.75	3.94		

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| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.23   Curve Number   (CN)= 47.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   8.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.24

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	3.38	6.250	148.50	9.33	3.94
0.167	0.00	3.250	3.38	6.333	20.25	9.42	3.94
0.250	0.00	3.333	4.50	6.417	20.25	9.50	3.94
0.333	2.81	3.417	4.50	6.500	20.25	9.58	3.94
0.417	2.81	3.500	4.50	6.583	20.25	9.67	3.94
0.500	2.81	3.583	4.50	6.667	20.25	9.75	3.94
0.583	2.81	3.667	4.50	6.750	20.25	9.83	3.94
0.667	2.81	3.750	4.50	6.833	9.00	9.92	3.94
0.750	2.81	3.833	4.50	6.917	9.00	10.00	3.94
0.833	2.81	3.917	4.50	7.000	9.00	10.08	3.94
0.917	2.81	4.000	4.50	7.083	9.00	10.17	3.94
1.000	2.81	4.083	4.50	7.167	9.00	10.25	3.94
1.083	2.81	4.167	4.50	7.250	9.00	10.33	2.25
1.167	2.81	4.250	4.50	7.333	6.75	10.42	2.25
1.250	2.81	4.333	6.75	7.417	6.75	10.50	2.25
1.333	2.81	4.417	6.75	7.500	6.75	10.58	2.25
1.417	2.81	4.500	6.75	7.583	6.75	10.67	2.25
1.500	2.81	4.583	6.75	7.667	6.75	10.75	2.25
1.583	2.81	4.667	6.75	7.750	6.75	10.83	2.25
1.667	2.81	4.750	6.75	7.833	6.75	10.92	2.25
1.750	2.81	4.833	9.00	7.917	6.75	11.00	2.25
1.833	2.81	4.917	9.00	8.000	6.75	11.08	2.25
1.917	2.81	5.000	9.00	8.083	6.75	11.17	2.25
2.000	2.81	5.083	9.00	8.167	6.75	11.25	2.25
2.083	2.81	5.167	9.00	8.250	6.75	11.33	2.25
2.167	2.81	5.250	9.00	8.333	3.94	11.42	2.25
2.250	2.81	5.333	13.50	8.417	3.94	11.50	2.25
2.333	3.38	5.417	13.50	8.500	3.94	11.58	2.25
2.417	3.38	5.500	13.50	8.583	3.94	11.67	2.25
2.500	3.38	5.583	13.50	8.667	3.94	11.75	2.25
2.583	3.38	5.667	13.50	8.750	3.94	11.83	2.25
2.667	3.38	5.750	13.50	8.833	3.94	11.92	2.25
2.750	3.38	5.833	54.00	8.917	3.94	12.00	2.25
2.833	3.38	5.917	54.00	9.000	3.94	12.08	2.25

2.917	3.38	6.000	54.00	9.083	3.94	12.17	2.25
3.000	3.38	6.083	148.50	9.167	3.94	12.25	2.25
3.083	3.38	6.167	148.50	9.250	3.94		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.155 (i)
TIME TO PEAK (hrs)= 6.333
RUNOFF VOLUME (mm)= 27.633
TOTAL RAINFALL (mm)= 112.505
RUNOFF COEFFICIENT = 0.246

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 15 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\870ad77f
Ptotal= 55.00 mm	Comments: COB_SCS_2Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	1.10	12.75	7.92	19.00	0.99
0.50	0.55	6.75	1.10	13.00	4.07	19.25	0.99
0.75	0.55	7.00	1.10	13.25	4.07	19.50	0.99
1.00	0.55	7.25	1.10	13.50	0.77	19.75	0.99
1.25	0.55	7.50	1.10	13.75	0.77	20.00	0.99
1.50	0.55	7.75	1.10	14.00	4.51	20.25	0.99
1.75	0.55	8.00	1.10	14.25	4.51	20.50	0.66
2.00	0.55	8.25	1.10	14.50	1.65	20.75	0.66
2.25	0.99	8.50	1.48	14.75	1.65	21.00	0.66
2.50	0.72	8.75	1.48	15.00	1.65	21.25	0.66
2.75	0.72	9.00	1.48	15.25	1.65	21.50	0.66
3.00	0.72	9.25	1.48	15.50	1.65	21.75	0.66
3.25	0.72	9.50	1.76	15.75	1.65	22.00	0.66
3.50	0.72	9.75	1.76	16.00	1.65	22.25	0.66
3.75	0.72	10.00	1.98	16.25	1.65	22.50	0.66
4.00	0.72	10.25	1.98	16.50	0.99	22.75	0.66
4.25	0.72	10.50	2.53	16.75	0.99	23.00	0.66
4.50	0.88	10.75	2.53	17.00	0.99	23.25	0.66
4.75	0.88	11.00	3.41	17.25	0.99	23.50	0.66
5.00	0.88	11.25	3.41	17.50	0.99	23.75	0.66
5.25	0.88	11.50	5.28	17.75	0.99	24.00	0.66
5.50	0.88	11.75	5.28	18.00	0.99	24.25	0.66
5.75	0.88	12.00	22.88	18.25	0.99		
6.00	0.88	12.25	60.72	18.50	0.99		
6.25	0.88	12.50	7.92	18.75	0.99		

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.23 Curve Number (CN)= 47.0 Ia (mm)= 8.60 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.24

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	0.88	12.250	60.72	18.33	0.99
0.167	0.00	6.250	0.88	12.333	7.93	18.42	0.99
0.250	0.00	6.333	1.10	12.417	7.92	18.50	0.99
0.333	0.55	6.417	1.10	12.500	7.92	18.58	0.99
0.417	0.55	6.500	1.10	12.583	7.92	18.67	0.99
0.500	0.55	6.583	1.10	12.667	7.92	18.75	0.99
0.583	0.55	6.667	1.10	12.750	7.92	18.83	0.99
0.667	0.55	6.750	1.10	12.833	4.07	18.92	0.99
0.750	0.55	6.833	1.10	12.917	4.07	19.00	0.99
0.833	0.55	6.917	1.10	13.000	4.07	19.08	0.99
0.917	0.55	7.000	1.10	13.083	4.07	19.17	0.99
1.000	0.55	7.083	1.10	13.167	4.07	19.25	0.99
1.083	0.55	7.167	1.10	13.250	4.07	19.33	0.99
1.167	0.55	7.250	1.10	13.333	0.77	19.42	0.99
1.250	0.55	7.333	1.10	13.417	0.77	19.50	0.99
1.333	0.55	7.417	1.10	13.500	0.77	19.58	0.99
1.417	0.55	7.500	1.10	13.583	0.77	19.67	0.99

1.500	0.55	7.583	1.10	13.667	0.77	19.75	0.99
1.583	0.55	7.667	1.10	13.750	0.77	19.83	0.99
1.667	0.55	7.750	1.10	13.833	4.51	19.92	0.99
1.750	0.55	7.833	1.10	13.917	4.51	20.00	0.99
1.833	0.55	7.917	1.10	14.000	4.51	20.08	0.99
1.917	0.55	8.000	1.10	14.083	4.51	20.17	0.99
2.000	0.55	8.083	1.10	14.167	4.51	20.25	0.99
2.083	0.99	8.167	1.10	14.250	4.51	20.33	0.66
2.167	0.99	8.250	1.10	14.333	1.65	20.42	0.66
2.250	0.99	8.333	1.48	14.417	1.65	20.50	0.66
2.333	0.72	8.417	1.48	14.500	1.65	20.58	0.66
2.417	0.72	8.500	1.48	14.583	1.65	20.67	0.66
2.500	0.72	8.583	1.48	14.667	1.65	20.75	0.66
2.583	0.72	8.667	1.48	14.750	1.65	20.83	0.66
2.667	0.72	8.750	1.48	14.833	1.65	20.92	0.66
2.750	0.72	8.833	1.48	14.917	1.65	21.00	0.66
2.833	0.72	8.917	1.48	15.000	1.65	21.08	0.66
2.917	0.72	9.000	1.48	15.083	1.65	21.17	0.66
3.000	0.72	9.083	1.48	15.167	1.65	21.25	0.66
3.083	0.72	9.167	1.48	15.250	1.65	21.33	0.66
3.167	0.72	9.250	1.48	15.333	1.65	21.42	0.66
3.250	0.72	9.333	1.76	15.417	1.65	21.50	0.66
3.333	0.72	9.417	1.76	15.500	1.65	21.58	0.66
3.417	0.72	9.500	1.76	15.583	1.65	21.67	0.66
3.500	0.72	9.583	1.76	15.667	1.65	21.75	0.66
3.583	0.72	9.667	1.76	15.750	1.65	21.83	0.66
3.667	0.72	9.750	1.76	15.833	1.65	21.92	0.66
3.750	0.72	9.833	1.98	15.917	1.65	22.00	0.66
3.833	0.72	9.917	1.98	16.000	1.65	22.08	0.66
3.917	0.72	10.000	1.98	16.083	1.65	22.17	0.66
4.000	0.72	10.083	1.98	16.167	1.65	22.25	0.66
4.083	0.72	10.167	1.98	16.250	1.65	22.33	0.66
4.167	0.72	10.250	1.98	16.333	0.99	22.42	0.66
4.250	0.72	10.333	2.53	16.417	0.99	22.50	0.66
4.333	0.88	10.417	2.53	16.500	0.99	22.58	0.66
4.417	0.88	10.500	2.53	16.583	0.99	22.67	0.66
4.500	0.88	10.583	2.53	16.667	0.99	22.75	0.66
4.583	0.88	10.667	2.53	16.750	0.99	22.83	0.66
4.667	0.88	10.750	2.53	16.833	0.99	22.92	0.66
4.750	0.88	10.833	3.41	16.917	0.99	23.00	0.66
4.833	0.88	10.917	3.41	17.000	0.99	23.08	0.66
4.917	0.88	11.000	3.41	17.083	0.99	23.17	0.66
5.000	0.88	11.083	3.41	17.167	0.99	23.25	0.66
5.083	0.88	11.167	3.41	17.250	0.99	23.33	0.66
5.167	0.88	11.250	3.41	17.333	0.99	23.42	0.66
5.250	0.88	11.333	5.28	17.417	0.99	23.50	0.66
5.333	0.88	11.417	5.28	17.500	0.99	23.58	0.66
5.417	0.88	11.500	5.28	17.583	0.99	23.67	0.66
5.500	0.88	11.583	5.28	17.667	0.99	23.75	0.66
5.583	0.88	11.667	5.28	17.750	0.99	23.83	0.66
5.667	0.88	11.750	5.28	17.833	0.99	23.92	0.66
5.750	0.88	11.833	22.88	17.917	0.99	24.00	0.66
5.833	0.88	11.917	22.88	18.000	0.99	24.08	0.66
5.917	0.88	12.000	22.88	18.083	0.99	24.17	0.66
6.000	0.88	12.083	60.72	18.167	0.99	24.25	0.66
6.083	0.88	12.167	60.72	18.250	0.99		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.029 (i)
TIME TO PEAK (hrs)= 12.333
RUNOFF VOLUME (mm)= 6.464
TOTAL RAINFALL (mm)= 55.005
RUNOFF COEFFICIENT = 0.118

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 16 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\435c8212
Ptotal= 76.01 mm	Comments: COB_SCS_5Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	1.52	12.75	10.94	19.00	1.37
0.50	0.76	6.75	1.52	13.00	5.62	19.25	1.37
0.75	0.76	7.00	1.52	13.25	5.62	19.50	1.37
1.00	0.76	7.25	1.52	13.50	1.06	19.75	1.37

1.25	0.76	7.50	1.52	13.75	1.06	20.00	1.37
1.50	0.76	7.75	1.52	14.00	6.23	20.25	1.37
1.75	0.76	8.00	1.52	14.25	6.23	20.50	0.91
2.00	0.76	8.25	1.52	14.50	2.28	20.75	0.91
2.25	1.37	8.50	2.05	14.75	2.28	21.00	0.91
2.50	0.99	8.75	2.05	15.00	2.28	21.25	0.91
2.75	0.99	9.00	2.05	15.25	2.28	21.50	0.91
3.00	0.99	9.25	2.05	15.50	2.28	21.75	0.91
3.25	0.99	9.50	2.43	15.75	2.28	22.00	0.91
3.50	0.99	9.75	2.43	16.00	2.28	22.25	0.91
3.75	0.99	10.00	2.74	16.25	2.28	22.50	0.91
4.00	0.99	10.25	2.74	16.50	1.37	22.75	0.91
4.25	0.99	10.50	3.50	16.75	1.37	23.00	0.91
4.50	1.22	10.75	3.50	17.00	1.37	23.25	0.91
4.75	1.22	11.00	4.71	17.25	1.37	23.50	0.91
5.00	1.22	11.25	4.71	17.50	1.37	23.75	0.91
5.25	1.22	11.50	7.30	17.75	1.37	24.00	0.91
5.50	1.22	11.75	7.30	18.00	1.37	24.25	0.91
5.75	1.22	12.00	31.62	18.25	1.37		
6.00	1.22	12.25	83.90	18.50	1.37		
6.25	1.22	12.50	10.94	18.75	1.37		

CALIB NASHYD (0101)	Area (ha)= 2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)= 8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	1.22	12.250	83.90	18.33	1.37
0.167	0.00	6.250	1.22	12.333	10.95	18.42	1.37
0.250	0.00	6.333	1.52	12.417	10.94	18.50	1.37
0.333	0.76	6.417	1.52	12.500	10.94	18.58	1.37
0.417	0.76	6.500	1.52	12.583	10.94	18.67	1.37
0.500	0.76	6.583	1.52	12.667	10.94	18.75	1.37
0.583	0.76	6.667	1.52	12.750	10.94	18.83	1.37
0.667	0.76	6.750	1.52	12.833	5.62	18.92	1.37
0.750	0.76	6.833	1.52	12.917	5.62	19.00	1.37
0.833	0.76	6.917	1.52	13.000	5.62	19.08	1.37
0.917	0.76	7.000	1.52	13.083	5.62	19.17	1.37
1.000	0.76	7.083	1.52	13.167	5.62	19.25	1.37
1.083	0.76	7.167	1.52	13.250	5.62	19.33	1.37
1.167	0.76	7.250	1.52	13.333	1.06	19.42	1.37
1.250	0.76	7.333	1.52	13.417	1.06	19.50	1.37
1.333	0.76	7.417	1.52	13.500	1.06	19.58	1.37
1.417	0.76	7.500	1.52	13.583	1.06	19.67	1.37
1.500	0.76	7.583	1.52	13.667	1.06	19.75	1.37
1.583	0.76	7.667	1.52	13.750	1.06	19.83	1.37
1.667	0.76	7.750	1.52	13.833	6.23	19.92	1.37
1.750	0.76	7.833	1.52	13.917	6.23	20.00	1.37
1.833	0.76	7.917	1.52	14.000	6.23	20.08	1.37
1.917	0.76	8.000	1.52	14.083	6.23	20.17	1.37
2.000	0.76	8.083	1.52	14.167	6.23	20.25	1.37
2.083	1.37	8.167	1.52	14.250	6.23	20.33	0.91
2.167	1.37	8.250	1.52	14.333	2.28	20.42	0.91
2.250	1.37	8.333	2.05	14.417	2.28	20.50	0.91
2.333	0.99	8.417	2.05	14.500	2.28	20.58	0.91
2.417	0.99	8.500	2.05	14.583	2.28	20.67	0.91
2.500	0.99	8.583	2.05	14.667	2.28	20.75	0.91
2.583	0.99	8.667	2.05	14.750	2.28	20.83	0.91
2.667	0.99	8.750	2.05	14.833	2.28	20.92	0.91
2.750	0.99	8.833	2.05	14.917	2.28	21.00	0.91
2.833	0.99	8.917	2.05	15.000	2.28	21.08	0.91
2.917	0.99	9.000	2.05	15.083	2.28	21.17	0.91
3.000	0.99	9.083	2.05	15.167	2.28	21.25	0.91
3.083	0.99	9.167	2.05	15.250	2.28	21.33	0.91
3.167	0.99	9.250	2.05	15.333	2.28	21.42	0.91
3.250	0.99	9.333	2.43	15.417	2.28	21.50	0.91
3.333	0.99	9.417	2.43	15.500	2.28	21.58	0.91
3.417	0.99	9.500	2.43	15.583	2.28	21.67	0.91
3.500	0.99	9.583	2.43	15.667	2.28	21.75	0.91
3.583	0.99	9.667	2.43	15.750	2.28	21.83	0.91
3.667	0.99	9.750	2.43	15.833	2.28	21.92	0.91
3.750	0.99	9.833	2.74	15.917	2.28	22.00	0.91
3.833	0.99	9.917	2.74	16.000	2.28	22.08	0.91
3.917	0.99	10.000	2.74	16.083	2.28	22.17	0.91
4.000	0.99	10.083	2.74	16.167	2.28	22.25	0.91

4.083	0.99	10.167	2.74	16.250	2.28	22.33	0.91
4.167	0.99	10.250	2.74	16.333	1.37	22.42	0.91
4.250	0.99	10.333	3.50	16.417	1.37	22.50	0.91
4.333	1.22	10.417	3.50	16.500	1.37	22.58	0.91
4.417	1.22	10.500	3.50	16.583	1.37	22.67	0.91
4.500	1.22	10.583	3.50	16.667	1.37	22.75	0.91
4.583	1.22	10.667	3.50	16.750	1.37	22.83	0.91
4.667	1.22	10.750	3.50	16.833	1.37	22.92	0.91
4.750	1.22	10.833	4.71	16.917	1.37	23.00	0.91
4.833	1.22	10.917	4.71	17.000	1.37	23.08	0.91
4.917	1.22	11.000	4.71	17.083	1.37	23.17	0.91
5.000	1.22	11.083	4.71	17.167	1.37	23.25	0.91
5.083	1.22	11.167	4.71	17.250	1.37	23.33	0.91
5.167	1.22	11.250	4.71	17.333	1.37	23.42	0.91
5.250	1.22	11.333	7.30	17.417	1.37	23.50	0.91
5.333	1.22	11.417	7.30	17.500	1.37	23.58	0.91
5.417	1.22	11.500	7.30	17.583	1.37	23.67	0.91
5.500	1.22	11.583	7.30	17.667	1.37	23.75	0.91
5.583	1.22	11.667	7.30	17.750	1.37	23.83	0.91
5.667	1.22	11.750	7.30	17.833	1.37	23.92	0.91
5.750	1.22	11.833	31.62	17.917	1.37	24.00	0.91
5.833	1.22	11.917	31.62	18.000	1.37	24.08	0.91
5.917	1.22	12.000	31.62	18.083	1.37	24.17	0.91
6.000	1.22	12.083	83.89	18.167	1.37	24.25	0.91
6.083	1.22	12.167	83.90	18.250	1.37		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.059 (i)
TIME TO PEAK (hrs)= 12.333
RUNOFF VOLUME (mm)= 12.829
TOTAL RAINFALL (mm)= 76.008
RUNOFF COEFFICIENT = 0.169

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 17 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\9c073cea
Ptotal= 89.94 mm	Comments: COB_SCS_10Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	1.80	12.75	12.95	19.00	1.62
0.50	0.90	6.75	1.80	13.00	6.65	19.25	1.62
0.75	0.90	7.00	1.80	13.25	6.65	19.50	1.62
1.00	0.90	7.25	1.80	13.50	1.26	19.75	1.62
1.25	0.90	7.50	1.80	13.75	1.26	20.00	1.62
1.50	0.90	7.75	1.80	14.00	7.37	20.25	1.62
1.75	0.90	8.00	1.80	14.25	7.37	20.50	1.08
2.00	0.90	8.25	1.80	14.50	2.70	20.75	1.08
2.25	1.62	8.50	2.43	14.75	2.70	21.00	1.08
2.50	1.17	8.75	2.43	15.00	2.70	21.25	1.08
2.75	1.17	9.00	2.43	15.25	2.70	21.50	1.08
3.00	1.17	9.25	2.43	15.50	2.70	21.75	1.08
3.25	1.17	9.50	2.88	15.75	2.70	22.00	1.08
3.50	1.17	9.75	2.88	16.00	2.70	22.25	1.08
3.75	1.17	10.00	3.24	16.25	2.70	22.50	1.08
4.00	1.17	10.25	3.24	16.50	1.62	22.75	1.08
4.25	1.17	10.50	4.14	16.75	1.62	23.00	1.08
4.50	1.44	10.75	4.14	17.00	1.62	23.25	1.08
4.75	1.44	11.00	5.57	17.25	1.62	23.50	1.08
5.00	1.44	11.25	5.57	17.50	1.62	23.75	1.08
5.25	1.44	11.50	8.63	17.75	1.62	24.00	1.08
5.50	1.44	11.75	8.63	18.00	1.62	24.25	1.08
5.75	1.44	12.00	37.40	18.25	1.62		
6.00	1.44	12.25	99.25	18.50	1.62		
6.25	1.44	12.50	12.95	18.75	1.62		

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 2.23	Curve Number (CN)= 47.0
	Ia (mm)= 8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	1.44	12.250	99.25	18.33	1.62
0.167	0.00	6.250	1.44	12.333	12.96	18.42	1.62
0.250	0.00	6.333	1.80	12.417	12.95	18.50	1.62
0.333	0.90	6.417	1.80	12.500	12.95	18.58	1.62
0.417	0.90	6.500	1.80	12.583	12.95	18.67	1.62
0.500	0.90	6.583	1.80	12.667	12.95	18.75	1.62
0.583	0.90	6.667	1.80	12.750	12.95	18.83	1.62
0.667	0.90	6.750	1.80	12.833	6.65	18.92	1.62
0.750	0.90	6.833	1.80	12.917	6.65	19.00	1.62
0.833	0.90	6.917	1.80	13.000	6.65	19.08	1.62
0.917	0.90	7.000	1.80	13.083	6.65	19.17	1.62
1.000	0.90	7.083	1.80	13.167	6.65	19.25	1.62
1.083	0.90	7.167	1.80	13.250	6.65	19.33	1.62
1.167	0.90	7.250	1.80	13.333	1.26	19.42	1.62
1.250	0.90	7.333	1.80	13.417	1.26	19.50	1.62
1.333	0.90	7.417	1.80	13.500	1.26	19.58	1.62
1.417	0.90	7.500	1.80	13.583	1.26	19.67	1.62
1.500	0.90	7.583	1.80	13.667	1.26	19.75	1.62
1.583	0.90	7.667	1.80	13.750	1.26	19.83	1.62
1.667	0.90	7.750	1.80	13.833	7.37	19.92	1.62
1.750	0.90	7.833	1.80	13.917	7.37	20.00	1.62
1.833	0.90	7.917	1.80	14.000	7.37	20.08	1.62
1.917	0.90	8.000	1.80	14.083	7.37	20.17	1.62
2.000	0.90	8.083	1.80	14.167	7.37	20.25	1.62
2.083	1.62	8.167	1.80	14.250	7.37	20.33	1.08
2.167	1.62	8.250	1.80	14.333	2.70	20.42	1.08
2.250	1.62	8.333	2.43	14.417	2.70	20.50	1.08
2.333	1.17	8.417	2.43	14.500	2.70	20.58	1.08
2.417	1.17	8.500	2.43	14.583	2.70	20.67	1.08
2.500	1.17	8.583	2.43	14.667	2.70	20.75	1.08
2.583	1.17	8.667	2.43	14.750	2.70	20.83	1.08
2.667	1.17	8.750	2.43	14.833	2.70	20.92	1.08
2.750	1.17	8.833	2.43	14.917	2.70	21.00	1.08
2.833	1.17	8.917	2.43	15.000	2.70	21.08	1.08
2.917	1.17	9.000	2.43	15.083	2.70	21.17	1.08
3.000	1.17	9.083	2.43	15.167	2.70	21.25	1.08
3.083	1.17	9.167	2.43	15.250	2.70	21.33	1.08
3.167	1.17	9.250	2.43	15.333	2.70	21.42	1.08
3.250	1.17	9.333	2.88	15.417	2.70	21.50	1.08
3.333	1.17	9.417	2.88	15.500	2.70	21.58	1.08
3.417	1.17	9.500	2.88	15.583	2.70	21.67	1.08
3.500	1.17	9.583	2.88	15.667	2.70	21.75	1.08
3.583	1.17	9.667	2.88	15.750	2.70	21.83	1.08
3.667	1.17	9.750	2.88	15.833	2.70	21.92	1.08
3.750	1.17	9.833	3.24	15.917	2.70	22.00	1.08
3.833	1.17	9.917	3.24	16.000	2.70	22.08	1.08
3.917	1.17	10.000	3.24	16.083	2.70	22.17	1.08
4.000	1.17	10.083	3.24	16.167	2.70	22.25	1.08
4.083	1.17	10.167	3.24	16.250	2.70	22.33	1.08
4.167	1.17	10.250	3.24	16.333	1.62	22.42	1.08
4.250	1.17	10.333	4.14	16.417	1.62	22.50	1.08
4.333	1.44	10.417	4.14	16.500	1.62	22.58	1.08
4.417	1.44	10.500	4.14	16.583	1.62	22.67	1.08
4.500	1.44	10.583	4.14	16.667	1.62	22.75	1.08
4.583	1.44	10.667	4.14	16.750	1.62	22.83	1.08
4.667	1.44	10.750	4.14	16.833	1.62	22.92	1.08
4.750	1.44	10.833	5.57	16.917	1.62	23.00	1.08
4.833	1.44	10.917	5.57	17.000	1.62	23.08	1.08
4.917	1.44	11.000	5.57	17.083	1.62	23.17	1.08
5.000	1.44	11.083	5.57	17.167	1.62	23.25	1.08
5.083	1.44	11.167	5.57	17.250	1.62	23.33	1.08
5.167	1.44	11.250	5.57	17.333	1.62	23.42	1.08
5.250	1.44	11.333	8.63	17.417	1.62	23.50	1.08
5.333	1.44	11.417	8.63	17.500	1.62	23.58	1.08
5.417	1.44	11.500	8.63	17.583	1.62	23.67	1.08
5.500	1.44	11.583	8.63	17.667	1.62	23.75	1.08
5.583	1.44	11.667	8.63	17.750	1.62	23.83	1.08
5.667	1.44	11.750	8.63	17.833	1.62	23.92	1.08
5.750	1.44	11.833	37.40	17.917	1.62	24.00	1.08
5.833	1.44	11.917	37.40	18.000	1.62	24.08	1.08
5.917	1.44	12.000	37.40	18.083	1.62	24.17	1.08
6.000	1.44	12.083	99.24	18.167	1.62	24.25	1.08
6.083	1.44	12.167	99.25	18.250	1.62		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.083 (i)
TIME TO PEAK (hrs)= 12.333
RUNOFF VOLUME (mm)= 17.972

TOTAL RAINFALL (mm)= 89.938
RUNOFF COEFFICIENT = 0.200

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 18 **
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READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\f1ed38d8
Ptotal=107.47 mm	Comments: COB_SCS_25Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.15	12.75	15.48	19.00	1.93
0.50	1.08	6.75	2.15	13.00	7.95	19.25	1.93
0.75	1.08	7.00	2.15	13.25	7.95	19.50	1.93
1.00	1.08	7.25	2.15	13.50	1.50	19.75	1.93
1.25	1.08	7.50	2.15	13.75	1.50	20.00	1.93
1.50	1.08	7.75	2.15	14.00	8.82	20.25	1.93
1.75	1.08	8.00	2.15	14.25	8.82	20.50	1.29
2.00	1.08	8.25	2.15	14.50	3.22	20.75	1.29
2.25	1.93	8.50	2.90	14.75	3.22	21.00	1.29
2.50	1.40	8.75	2.90	15.00	3.22	21.25	1.29
2.75	1.40	9.00	2.90	15.25	3.22	21.50	1.29
3.00	1.40	9.25	2.90	15.50	3.22	21.75	1.29
3.25	1.40	9.50	3.44	15.75	3.22	22.00	1.29
3.50	1.40	9.75	3.44	16.00	3.22	22.25	1.29
3.75	1.40	10.00	3.87	16.25	3.22	22.50	1.29
4.00	1.40	10.25	3.87	16.50	1.93	22.75	1.29
4.25	1.40	10.50	4.94	16.75	1.93	23.00	1.29
4.50	1.72	10.75	4.94	17.00	1.93	23.25	1.29
4.75	1.72	11.00	6.66	17.25	1.93	23.50	1.29
5.00	1.72	11.25	6.66	17.50	1.93	23.75	1.29
5.25	1.72	11.50	10.32	17.75	1.93	24.00	1.29
5.50	1.72	11.75	10.32	18.00	1.93	24.25	1.29
5.75	1.72	12.00	44.72	18.25	1.93		
6.00	1.72	12.25	118.68	18.50	1.93		
6.25	1.72	12.50	15.48	18.75	1.93		

CALIB			
NASHYD (0101)	Area (ha)=	2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)=	8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	1.72	12.250	118.68	18.33	1.93
0.167	0.00	6.250	1.72	12.333	15.49	18.42	1.93
0.250	0.00	6.333	2.15	12.417	15.48	18.50	1.93
0.333	1.08	6.417	2.15	12.500	15.48	18.58	1.93
0.417	1.08	6.500	2.15	12.583	15.48	18.67	1.93
0.500	1.08	6.583	2.15	12.667	15.48	18.75	1.93
0.583	1.08	6.667	2.15	12.750	15.48	18.83	1.93
0.667	1.08	6.750	2.15	12.833	7.95	18.92	1.93
0.750	1.08	6.833	2.15	12.917	7.95	19.00	1.93
0.833	1.08	6.917	2.15	13.000	7.95	19.08	1.93
0.917	1.08	7.000	2.15	13.083	7.95	19.17	1.93
1.000	1.08	7.083	2.15	13.167	7.95	19.25	1.93
1.083	1.08	7.167	2.15	13.250	7.95	19.33	1.93
1.167	1.08	7.250	2.15	13.333	1.50	19.42	1.93
1.250	1.08	7.333	2.15	13.417	1.50	19.50	1.93
1.333	1.08	7.417	2.15	13.500	1.50	19.58	1.93
1.417	1.08	7.500	2.15	13.583	1.50	19.67	1.93
1.500	1.08	7.583	2.15	13.667	1.50	19.75	1.93
1.583	1.08	7.667	2.15	13.750	1.50	19.83	1.93
1.667	1.08	7.750	2.15	13.833	8.82	19.92	1.93
1.750	1.08	7.833	2.15	13.917	8.82	20.00	1.93
1.833	1.08	7.917	2.15	14.000	8.82	20.08	1.93
1.917	1.08	8.000	2.15	14.083	8.82	20.17	1.93
2.000	1.08	8.083	2.15	14.167	8.82	20.25	1.93
2.083	1.93	8.167	2.15	14.250	8.82	20.33	1.29
2.167	1.93	8.250	2.15	14.333	3.22	20.42	1.29

2.250	1.93	8.333	2.90	14.417	3.22	20.50	1.29
2.333	1.40	8.417	2.90	14.500	3.22	20.58	1.29
2.417	1.40	8.500	2.90	14.583	3.22	20.67	1.29
2.500	1.40	8.583	2.90	14.667	3.22	20.75	1.29
2.583	1.40	8.667	2.90	14.750	3.22	20.83	1.29
2.667	1.40	8.750	2.90	14.833	3.22	20.92	1.29
2.750	1.40	8.833	2.90	14.917	3.22	21.00	1.29
2.833	1.40	8.917	2.90	15.000	3.22	21.08	1.29
2.917	1.40	9.000	2.90	15.083	3.22	21.17	1.29
3.000	1.40	9.083	2.90	15.167	3.22	21.25	1.29
3.083	1.40	9.167	2.90	15.250	3.22	21.33	1.29
3.167	1.40	9.250	2.90	15.333	3.22	21.42	1.29
3.250	1.40	9.333	3.44	15.417	3.22	21.50	1.29
3.333	1.40	9.417	3.44	15.500	3.22	21.58	1.29
3.417	1.40	9.500	3.44	15.583	3.22	21.67	1.29
3.500	1.40	9.583	3.44	15.667	3.22	21.75	1.29
3.583	1.40	9.667	3.44	15.750	3.22	21.83	1.29
3.667	1.40	9.750	3.44	15.833	3.22	21.92	1.29
3.750	1.40	9.833	3.87	15.917	3.22	22.00	1.29
3.833	1.40	9.917	3.87	16.000	3.22	22.08	1.29
3.917	1.40	10.000	3.87	16.083	3.22	22.17	1.29
4.000	1.40	10.083	3.87	16.167	3.22	22.25	1.29
4.083	1.40	10.167	3.87	16.250	3.22	22.33	1.29
4.167	1.40	10.250	3.87	16.333	1.93	22.42	1.29
4.250	1.40	10.333	4.94	16.417	1.93	22.50	1.29
4.333	1.72	10.417	4.94	16.500	1.93	22.58	1.29
4.417	1.72	10.500	4.94	16.583	1.93	22.67	1.29
4.500	1.72	10.583	4.94	16.667	1.93	22.75	1.29
4.583	1.72	10.667	4.94	16.750	1.93	22.83	1.29
4.667	1.72	10.750	4.94	16.833	1.93	22.92	1.29
4.750	1.72	10.833	6.66	16.917	1.93	23.00	1.29
4.833	1.72	10.917	6.66	17.000	1.93	23.08	1.29
4.917	1.72	11.000	6.66	17.083	1.93	23.17	1.29
5.000	1.72	11.083	6.66	17.167	1.93	23.25	1.29
5.083	1.72	11.167	6.66	17.250	1.93	23.33	1.29
5.167	1.72	11.250	6.66	17.333	1.93	23.42	1.29
5.250	1.72	11.333	10.32	17.417	1.93	23.50	1.29
5.333	1.72	11.417	10.32	17.500	1.93	23.58	1.29
5.417	1.72	11.500	10.32	17.583	1.93	23.67	1.29
5.500	1.72	11.583	10.32	17.667	1.93	23.75	1.29
5.583	1.72	11.667	10.32	17.750	1.93	23.83	1.29
5.667	1.72	11.750	10.32	17.833	1.93	23.92	1.29
5.750	1.72	11.833	44.72	17.917	1.93	24.00	1.29
5.833	1.72	11.917	44.72	18.000	1.93	24.08	1.29
5.917	1.72	12.000	44.72	18.083	1.93	24.17	1.29
6.000	1.72	12.083	118.67	18.167	1.93	24.25	1.29
6.083	1.72	12.167	118.68	18.250	1.93		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.118 (i)
TIME TO PEAK (hrs)= 12.333
RUNOFF VOLUME (mm)= 25.348
TOTAL RAINFALL (mm)= 107.473
RUNOFF COEFFICIENT = 0.236

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 19 **
****

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\37a2d5cd
Ptotal=120.63 mm	Comments: COB_SCS_50Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.41	12.75	17.37	19.00	2.17
0.50	1.21	6.75	2.41	13.00	8.92	19.25	2.17
0.75	1.21	7.00	2.41	13.25	8.92	19.50	2.17
1.00	1.21	7.25	2.41	13.50	1.69	19.75	2.17
1.25	1.21	7.50	2.41	13.75	1.69	20.00	2.17
1.50	1.21	7.75	2.41	14.00	9.89	20.25	2.17
1.75	1.21	8.00	2.41	14.25	9.89	20.50	1.45
2.00	1.21	8.25	2.41	14.50	3.62	20.75	1.45
2.25	2.17	8.50	3.26	14.75	3.62	21.00	1.45
2.50	1.57	8.75	3.26	15.00	3.62	21.25	1.45
2.75	1.57	9.00	3.26	15.25	3.62	21.50	1.45
3.00	1.57	9.25	3.26	15.50	3.62	21.75	1.45
3.25	1.57	9.50	3.86	15.75	3.62	22.00	1.45

3.50	1.57	9.75	3.86	16.00	3.62	22.25	1.45
3.75	1.57	10.00	4.34	16.25	3.62	22.50	1.45
4.00	1.57	10.25	4.34	16.50	2.17	22.75	1.45
4.25	1.57	10.50	5.55	16.75	2.17	23.00	1.45
4.50	1.93	10.75	5.55	17.00	2.17	23.25	1.45
4.75	1.93	11.00	7.48	17.25	2.17	23.50	1.45
5.00	1.93	11.25	7.48	17.50	2.17	23.75	1.45
5.25	1.93	11.50	11.58	17.75	2.17	24.00	1.45
5.50	1.93	11.75	11.58	18.00	2.17	24.25	1.45
5.75	1.93	12.00	50.17	18.25	2.17		
6.00	1.93	12.25	133.14	18.50	2.17		
6.25	1.93	12.50	17.37	18.75	2.17		

CALIB			
NASHYD (0101)	Area (ha)=	2.23	Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min	Ia (mm)=	8.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.24	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	1.93	12.250	133.14	18.33	2.17
0.167	0.00	6.250	1.93	12.333	17.38	18.42	2.17
0.250	0.00	6.333	2.41	12.417	17.37	18.50	2.17
0.333	1.21	6.417	2.41	12.500	17.37	18.58	2.17
0.417	1.21	6.500	2.41	12.583	17.37	18.67	2.17
0.500	1.21	6.583	2.41	12.667	17.37	18.75	2.17
0.583	1.21	6.667	2.41	12.750	17.37	18.83	2.17
0.667	1.21	6.750	2.41	12.833	8.92	18.92	2.17
0.750	1.21	6.833	2.41	12.917	8.92	19.00	2.17
0.833	1.21	6.917	2.41	13.000	8.92	19.08	2.17
0.917	1.21	7.000	2.41	13.083	8.92	19.17	2.17
1.000	1.21	7.083	2.41	13.167	8.92	19.25	2.17
1.083	1.21	7.167	2.41	13.250	8.92	19.33	2.17
1.167	1.21	7.250	2.41	13.333	1.69	19.42	2.17
1.250	1.21	7.333	2.41	13.417	1.69	19.50	2.17
1.333	1.21	7.417	2.41	13.500	1.69	19.58	2.17
1.417	1.21	7.500	2.41	13.583	1.69	19.67	2.17
1.500	1.21	7.583	2.41	13.667	1.69	19.75	2.17
1.583	1.21	7.667	2.41	13.750	1.69	19.83	2.17
1.667	1.21	7.750	2.41	13.833	9.89	19.92	2.17
1.750	1.21	7.833	2.41	13.917	9.89	20.00	2.17
1.833	1.21	7.917	2.41	14.000	9.89	20.08	2.17
1.917	1.21	8.000	2.41	14.083	9.89	20.17	2.17
2.000	1.21	8.083	2.41	14.167	9.89	20.25	2.17
2.083	2.17	8.167	2.41	14.250	9.89	20.33	1.45
2.167	2.17	8.250	2.41	14.333	3.62	20.42	1.45
2.250	2.17	8.333	3.26	14.417	3.62	20.50	1.45
2.333	1.57	8.417	3.26	14.500	3.62	20.58	1.45
2.417	1.57	8.500	3.26	14.583	3.62	20.67	1.45
2.500	1.57	8.583	3.26	14.667	3.62	20.75	1.45
2.583	1.57	8.667	3.26	14.750	3.62	20.83	1.45
2.667	1.57	8.750	3.26	14.833	3.62	20.92	1.45
2.750	1.57	8.833	3.26	14.917	3.62	21.00	1.45
2.833	1.57	8.917	3.26	15.000	3.62	21.08	1.45
2.917	1.57	9.000	3.26	15.083	3.62	21.17	1.45
3.000	1.57	9.083	3.26	15.167	3.62	21.25	1.45
3.083	1.57	9.167	3.26	15.250	3.62	21.33	1.45
3.167	1.57	9.250	3.26	15.333	3.62	21.42	1.45
3.250	1.57	9.333	3.86	15.417	3.62	21.50	1.45
3.333	1.57	9.417	3.86	15.500	3.62	21.58	1.45
3.417	1.57	9.500	3.86	15.583	3.62	21.67	1.45
3.500	1.57	9.583	3.86	15.667	3.62	21.75	1.45
3.583	1.57	9.667	3.86	15.750	3.62	21.83	1.45
3.667	1.57	9.750	3.86	15.833	3.62	21.92	1.45
3.750	1.57	9.833	4.34	15.917	3.62	22.00	1.45
3.833	1.57	9.917	4.34	16.000	3.62	22.08	1.45
3.917	1.57	10.000	4.34	16.083	3.62	22.17	1.45
4.000	1.57	10.083	4.34	16.167	3.62	22.25	1.45
4.083	1.57	10.167	4.34	16.250	3.62	22.33	1.45
4.167	1.57	10.250	4.34	16.333	2.17	22.42	1.45
4.250	1.57	10.333	5.55	16.417	2.17	22.50	1.45
4.333	1.93	10.417	5.55	16.500	2.17	22.58	1.45
4.417	1.93	10.500	5.55	16.583	2.17	22.67	1.45
4.500	1.93	10.583	5.55	16.667	2.17	22.75	1.45
4.583	1.93	10.667	5.55	16.750	2.17	22.83	1.45
4.667	1.93	10.750	5.55	16.833	2.17	22.92	1.45
4.750	1.93	10.833	7.48	16.917	2.17	23.00	1.45

4.833	1.93	10.917	7.48	17.000	2.17	23.08	1.45
4.917	1.93	11.000	7.48	17.083	2.17	23.17	1.45
5.000	1.93	11.083	7.48	17.167	2.17	23.25	1.45
5.083	1.93	11.167	7.48	17.250	2.17	23.33	1.45
5.167	1.93	11.250	7.48	17.333	2.17	23.42	1.45
5.250	1.93	11.333	11.58	17.417	2.17	23.50	1.45
5.333	1.93	11.417	11.58	17.500	2.17	23.58	1.45
5.417	1.93	11.500	11.58	17.583	2.17	23.67	1.45
5.500	1.93	11.583	11.58	17.667	2.17	23.75	1.45
5.583	1.93	11.667	11.58	17.750	2.17	23.83	1.45
5.667	1.93	11.750	11.58	17.833	2.17	23.92	1.45
5.750	1.93	11.833	50.17	17.917	2.17	24.00	1.45
5.833	1.93	11.917	50.17	18.000	2.17	24.08	1.45
5.917	1.93	12.000	50.17	18.083	2.17	24.17	1.45
6.000	1.93	12.083	133.13	18.167	2.17	24.25	1.45
6.083	1.93	12.167	133.14	18.250	2.17		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.148 (i)
TIME TO PEAK (hrs)= 12.333
RUNOFF VOLUME (mm)= 31.468
TOTAL RAINFALL (mm)= 120.628
RUNOFF COEFFICIENT = 0.261

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

****
** SIMULATION:Run 20 **
****

READ STORM | Filename: C:\Users\kransom\AppData\Local\Temp\eb52af71-e295-4b6e-83bf-3a41a018d6a5\5f6f4d98
Ptotal=133.60 mm | Comments: COB_SCS_100Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.67	12.75	19.24	19.00	2.40
0.50	1.34	6.75	2.67	13.00	9.89	19.25	2.40
0.75	1.34	7.00	2.67	13.25	9.89	19.50	2.40
1.00	1.34	7.25	2.67	13.50	1.87	19.75	2.40
1.25	1.34	7.50	2.67	13.75	1.87	20.00	2.40
1.50	1.34	7.75	2.67	14.00	10.96	20.25	2.40
1.75	1.34	8.00	2.67	14.25	10.96	20.50	1.60
2.00	1.34	8.25	2.67	14.50	4.01	20.75	1.60
2.25	2.40	8.50	3.61	14.75	4.01	21.00	1.60
2.50	1.74	8.75	3.61	15.00	4.01	21.25	1.60
2.75	1.74	9.00	3.61	15.25	4.01	21.50	1.60
3.00	1.74	9.25	3.61	15.50	4.01	21.75	1.60
3.25	1.74	9.50	4.28	15.75	4.01	22.00	1.60
3.50	1.74	9.75	4.28	16.00	4.01	22.25	1.60
3.75	1.74	10.00	4.81	16.25	4.01	22.50	1.60
4.00	1.74	10.25	4.81	16.50	2.40	22.75	1.60
4.25	1.74	10.50	6.15	16.75	2.40	23.00	1.60
4.50	2.14	10.75	6.15	17.00	2.40	23.25	1.60
4.75	2.14	11.00	8.28	17.25	2.40	23.50	1.60
5.00	2.14	11.25	8.28	17.50	2.40	23.75	1.60
5.25	2.14	11.50	12.83	17.75	2.40	24.00	1.60
5.50	2.14	11.75	12.83	18.00	2.40	24.25	1.60
5.75	2.14	12.00	55.58	18.25	2.40		
6.00	2.14	12.25	147.49	18.50	2.40		
6.25	2.14	12.50	19.24	18.75	2.40		

CALIB
NASHYD (0101) | Area (ha)= 2.23 Curve Number (CN)= 47.0
ID= 1 DT= 5.0 min | Ia (mm)= 8.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.24

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	2.14	12.250	147.49	18.33	2.40
0.167	0.00	6.250	2.14	12.333	19.26	18.42	2.40
0.250	0.00	6.333	2.67	12.417	19.24	18.50	2.40
0.333	1.34	6.417	2.67	12.500	19.24	18.58	2.40

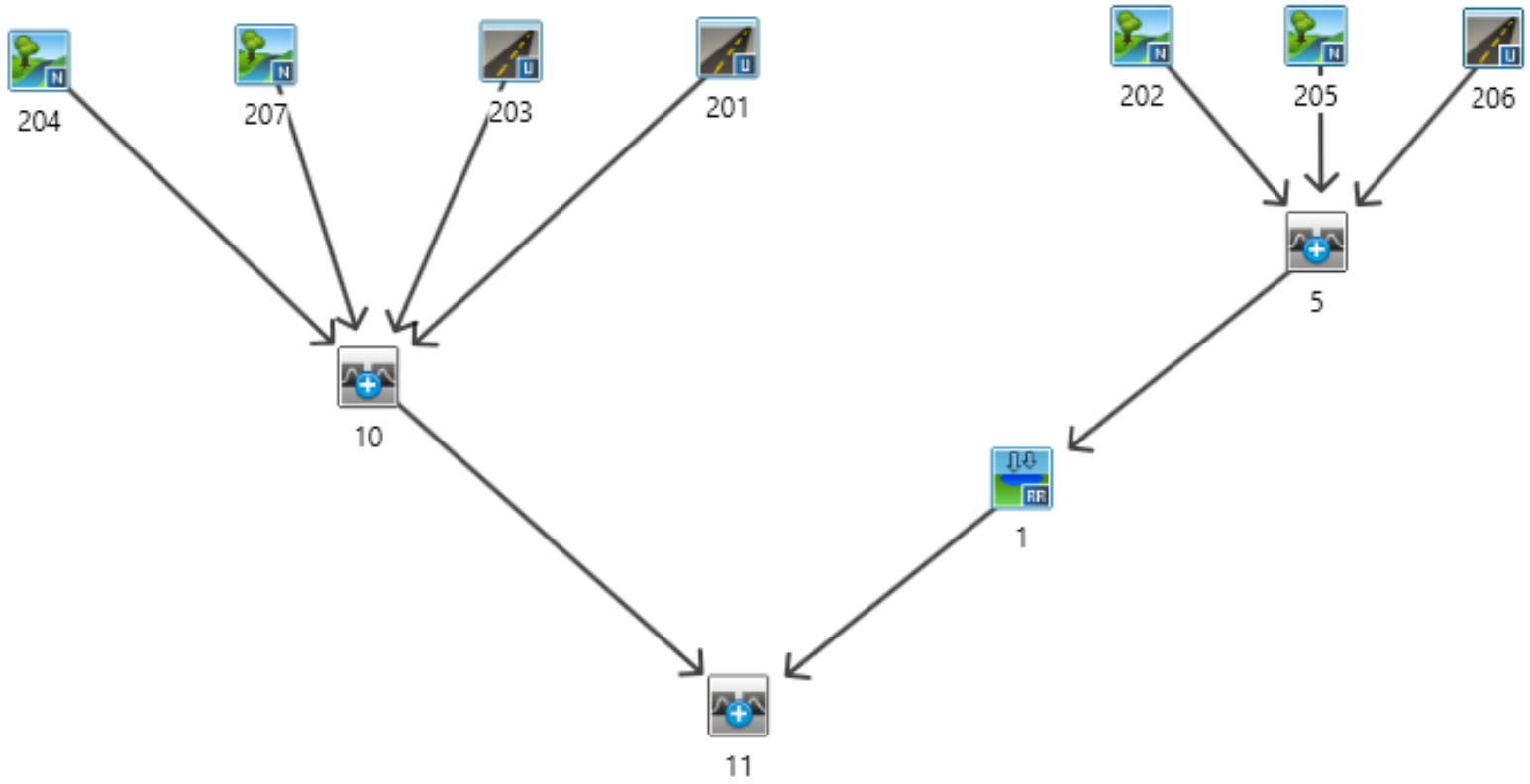
0.417	1.34	6.500	2.67	12.583	19.24	18.67	2.40
0.500	1.34	6.583	2.67	12.667	19.24	18.75	2.40
0.583	1.34	6.667	2.67	12.750	19.24	18.83	2.40
0.667	1.34	6.750	2.67	12.833	9.89	18.92	2.40
0.750	1.34	6.833	2.67	12.917	9.89	19.00	2.40
0.833	1.34	6.917	2.67	13.000	9.89	19.08	2.40
0.917	1.34	7.000	2.67	13.083	9.89	19.17	2.40
1.000	1.34	7.083	2.67	13.167	9.89	19.25	2.40
1.083	1.34	7.167	2.67	13.250	9.89	19.33	2.40
1.167	1.34	7.250	2.67	13.333	1.87	19.42	2.40
1.250	1.34	7.333	2.67	13.417	1.87	19.50	2.40
1.333	1.34	7.417	2.67	13.500	1.87	19.58	2.40
1.417	1.34	7.500	2.67	13.583	1.87	19.67	2.40
1.500	1.34	7.583	2.67	13.667	1.87	19.75	2.40
1.583	1.34	7.667	2.67	13.750	1.87	19.83	2.40
1.667	1.34	7.750	2.67	13.833	10.96	19.92	2.40
1.750	1.34	7.833	2.67	13.917	10.96	20.00	2.40
1.833	1.34	7.917	2.67	14.000	10.96	20.08	2.40
1.917	1.34	8.000	2.67	14.083	10.96	20.17	2.40
2.000	1.34	8.083	2.67	14.167	10.96	20.25	2.40
2.083	2.40	8.167	2.67	14.250	10.96	20.33	1.60
2.167	2.40	8.250	2.67	14.333	4.01	20.42	1.60
2.250	2.40	8.333	3.61	14.417	4.01	20.50	1.60
2.333	1.74	8.417	3.61	14.500	4.01	20.58	1.60
2.417	1.74	8.500	3.61	14.583	4.01	20.67	1.60
2.500	1.74	8.583	3.61	14.667	4.01	20.75	1.60
2.583	1.74	8.667	3.61	14.750	4.01	20.83	1.60
2.667	1.74	8.750	3.61	14.833	4.01	20.92	1.60
2.750	1.74	8.833	3.61	14.917	4.01	21.00	1.60
2.833	1.74	8.917	3.61	15.000	4.01	21.08	1.60
2.917	1.74	9.000	3.61	15.083	4.01	21.17	1.60
3.000	1.74	9.083	3.61	15.167	4.01	21.25	1.60
3.083	1.74	9.167	3.61	15.250	4.01	21.33	1.60
3.167	1.74	9.250	3.61	15.333	4.01	21.42	1.60
3.250	1.74	9.333	4.28	15.417	4.01	21.50	1.60
3.333	1.74	9.417	4.28	15.500	4.01	21.58	1.60
3.417	1.74	9.500	4.28	15.583	4.01	21.67	1.60
3.500	1.74	9.583	4.28	15.667	4.01	21.75	1.60
3.583	1.74	9.667	4.28	15.750	4.01	21.83	1.60
3.667	1.74	9.750	4.28	15.833	4.01	21.92	1.60
3.750	1.74	9.833	4.81	15.917	4.01	22.00	1.60
3.833	1.74	9.917	4.81	16.000	4.01	22.08	1.60
3.917	1.74	10.000	4.81	16.083	4.01	22.17	1.60
4.000	1.74	10.083	4.81	16.167	4.01	22.25	1.60
4.083	1.74	10.167	4.81	16.250	4.01	22.33	1.60
4.167	1.74	10.250	4.81	16.333	2.40	22.42	1.60
4.250	1.74	10.333	6.15	16.417	2.40	22.50	1.60
4.333	2.14	10.417	6.15	16.500	2.40	22.58	1.60
4.417	2.14	10.500	6.15	16.583	2.40	22.67	1.60
4.500	2.14	10.583	6.15	16.667	2.40	22.75	1.60
4.583	2.14	10.667	6.15	16.750	2.40	22.83	1.60
4.667	2.14	10.750	6.15	16.833	2.40	22.92	1.60
4.750	2.14	10.833	8.28	16.917	2.40	23.00	1.60
4.833	2.14	10.917	8.28	17.000	2.40	23.08	1.60
4.917	2.14	11.000	8.28	17.083	2.40	23.17	1.60
5.000	2.14	11.083	8.28	17.167	2.40	23.25	1.60
5.083	2.14	11.167	8.28	17.250	2.40	23.33	1.60
5.167	2.14	11.250	8.28	17.333	2.40	23.42	1.60
5.250	2.14	11.333	12.83	17.417	2.40	23.50	1.60
5.333	2.14	11.417	12.83	17.500	2.40	23.58	1.60
5.417	2.14	11.500	12.83	17.583	2.40	23.67	1.60
5.500	2.14	11.583	12.83	17.667	2.40	23.75	1.60
5.583	2.14	11.667	12.83	17.750	2.40	23.83	1.60
5.667	2.14	11.750	12.83	17.833	2.40	23.92	1.60
5.750	2.14	11.833	55.58	17.917	2.40	24.00	1.60
5.833	2.14	11.917	55.58	18.000	2.40	24.08	1.60
5.917	2.14	12.000	55.58	18.083	2.40	24.17	1.60
6.000	2.14	12.083	147.48	18.167	2.40	24.25	1.60
6.083	2.14	12.167	147.49	18.250	2.40		

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.179 (i)
TIME TO PEAK (hrs)= 12.333
RUNOFF VOLUME (mm)= 37.941
TOTAL RAINFALL (mm)= 133.598
RUNOFF COEFFICIENT = 0.284

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

Post Development Visual OTTHYMO Schematic



```
*********************************
** SIMULATION:Run 01           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.003     4.08     5.90
      + ID2= 2 (  0010):     0.45   0.014     1.50     5.75
        ================================================
        ID = 3 (  0011):     2.23   0.016     1.50     5.87

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 02           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.004     4.00    10.18
      + ID2= 2 (  0010):     0.45   0.025     1.33     9.34
        ================================================
        ID = 3 (  0011):     2.23   0.026     1.33    10.01

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 03           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.005     4.08    15.73
      + ID2= 2 (  0010):     0.45   0.033     1.33    13.83
        ================================================
        ID = 3 (  0011):     2.23   0.036     1.33    15.34

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 04           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.007     4.08    19.84
      + ID2= 2 (  0010):     0.45   0.040     1.33    17.12
        ================================================
        ID = 3 (  0011):     2.23   0.043     1.33    19.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 05           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.010     4.00    25.39
      + ID2= 2 (  0010):     0.45   0.048     1.33    21.48
        ================================================
        ID = 3 (  0011):     2.23   0.052     1.33    24.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 06           **
*********************************
```

```
--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.78   0.012     4.00    29.56
     + ID2= 2 (  0010):     0.45   0.054     1.33    24.74
       ================================================
       ID = 3 (  0011):     2.23   0.058     1.33    28.59

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 07           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.78   0.016     3.83    33.86
     + ID2= 2 (  0010):     0.45   0.061     1.33    28.09
       ================================================
       ID = 3 (  0011):     2.23   0.065     1.33    32.69

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 08           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.78   0.125    11.00   113.85
     + ID2= 2 (  0010):     0.45   0.032    10.00    90.73
       ================================================
       ID = 3 (  0011):     2.23   0.151    11.00   109.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 09           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.78   0.004     8.42    14.09
     + ID2= 2 (  0010):     0.45   0.020     6.25    12.53
       ================================================
       ID = 3 (  0011):     2.23   0.023     6.25    13.78

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 10           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.78   0.006     8.50    22.01
     + ID2= 2 (  0010):     0.45   0.029     6.25    18.83
       ================================================
       ID = 3 (  0011):     2.23   0.033     6.25    21.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 11           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
        ID1= 1 (  0001):     1.78   0.009     8.33    27.78
      + ID2= 2 (  0010):     0.45   0.035     6.25    23.35
        ================================================
        ID = 3 (  0011):     2.23   0.040     6.25    26.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
*********************************
** SIMULATION:Run 12           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.013     8.25    35.55
      + ID2= 2 (  0010):     0.45   0.045     6.25    29.40
        ================================================
        ID = 3 (  0011):     2.23   0.050     6.25    34.30

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
*********************************
** SIMULATION:Run 13           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.020     7.33    41.68
      + ID2= 2 (  0010):     0.45   0.052     6.25    34.17
        ================================================
        ID = 3 (  0011):     2.23   0.059     6.25    40.16

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
*********************************
** SIMULATION:Run 14           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.034     7.00    47.96
      + ID2= 2 (  0010):     0.45   0.059     6.25    39.05
        ================================================
        ID = 3 (  0011):     2.23   0.068     6.25    46.16

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
*********************************
** SIMULATION:Run 15           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.004    14.58    17.70
      + ID2= 2 (  0010):     0.45   0.020    12.25    15.42
        ================================================
        ID = 3 (  0011):     2.23   0.023    12.25    17.24

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
*********************************
** SIMULATION:Run 16           **
*********************************

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.78   0.007    14.58    27.79
      + ID2= 2 (  0010):     0.45   0.029    12.25    23.36
        ================================================
        ID = 3 (  0011):     2.23   0.034    12.25    26.89
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 17 **
****

ADD HYD (0011)|	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		1.78	0.010	14.50	35.13
+ ID2= 2 (0010):		0.45	0.036	12.25	29.08
ID = 3 (0011):		2.23	0.041	12.25	33.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 18 **
****

ADD HYD (0011)|	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		1.78	0.014	14.33	45.01
+ ID2= 2 (0010):		0.45	0.046	12.25	36.76
ID = 3 (0011):		2.23	0.053	12.25	43.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 19 **
****

ADD HYD (0011)|	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		1.78	0.030	13.08	52.82
+ ID2= 2 (0010):		0.45	0.053	12.25	42.83
ID = 3 (0011):		2.23	0.062	12.25	50.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 20 **
****

ADD HYD (0011)|	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		1.78	0.046	12.83	60.81
+ ID2= 2 (0010):		0.45	0.060	12.25	49.04
ID = 3 (0011):		2.23	0.072	12.25	58.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
*******************************
** SIMULATION:Run 01          **
*******************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.056      1.50       6.38
   OUTFLOW: ID= 1 (  0001)      1.780      0.003      4.08       5.90

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.71
                  TIME SHIFT OF PEAK FLOW         (min)=155.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0089

--------------------------------------------------------------------------------
*******************************
** SIMULATION:Run 02          **
*******************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.096      1.33      10.66
   OUTFLOW: ID= 1 (  0001)      1.780      0.004      4.00      10.18

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.95
                  TIME SHIFT OF PEAK FLOW         (min)=160.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0152

--------------------------------------------------------------------------------
*******************************
** SIMULATION:Run 03          **
*******************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.132      1.33      16.21
   OUTFLOW: ID= 1 (  0001)      1.780      0.005      4.08      15.73

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.83
                  TIME SHIFT OF PEAK FLOW         (min)=165.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0238

--------------------------------------------------------------------------------
*******************************
** SIMULATION:Run 04          **
*******************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
```

```
                          0.0858     0.0684   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.158      1.33      20.32
   OUTFLOW: ID= 1 (  0001)      1.780      0.007      4.08      19.84

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.20
                   TIME SHIFT OF PEAK FLOW         (min)=165.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0301

--------------------------------------------------------------------------------
********************************
** SIMULATION:Run 05           **
********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.190      1.33      25.87
   OUTFLOW: ID= 1 (  0001)      1.780      0.010      4.00      25.39

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.21
                   TIME SHIFT OF PEAK FLOW         (min)=160.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0373

--------------------------------------------------------------------------------
********************************
** SIMULATION:Run 06           **
********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.232      1.33      30.04
   OUTFLOW: ID= 1 (  0001)      1.780      0.012      4.00      29.56

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.31
                   TIME SHIFT OF PEAK FLOW         (min)=160.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0427

--------------------------------------------------------------------------------
********************************
** SIMULATION:Run 07           **
********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.262      1.33      34.34
   OUTFLOW: ID= 1 (  0001)      1.780      0.016      3.83      33.86

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.10
                   TIME SHIFT OF PEAK FLOW         (min)=150.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0478

--------------------------------------------------------------------------------
```

```
*********************************
** SIMULATION:Run 08           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.166     10.00     114.33
   OUTFLOW: ID= 1 (  0001)      1.780      0.125     11.00     113.85

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 75.26
                  TIME SHIFT OF PEAK FLOW         (min)= 60.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0819

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 09           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.081      6.25      14.57
   OUTFLOW: ID= 1 (  0001)      1.780      0.004      8.42      14.09

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.23
                  TIME SHIFT OF PEAK FLOW         (min)=130.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0181

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 10           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.127      6.25      22.49
   OUTFLOW: ID= 1 (  0001)      1.780      0.006      8.50      22.01

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.66
                  TIME SHIFT OF PEAK FLOW         (min)=135.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0285

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 11           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
```

```
                        0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.159      6.25      28.27
   OUTFLOW: ID= 1 (  0001)      1.780      0.009      8.33      27.78

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.59
                  TIME SHIFT OF PEAK FLOW         (min)=125.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0350

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 12           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   0.1520      0.0911
                        0.0031     0.0104   |   0.5324      0.1155
                        0.0057     0.0280   |   1.1218      0.1328
                        0.0144     0.0473   |   1.5268      0.1417
                        0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.216      6.25      36.02
   OUTFLOW: ID= 1 (  0001)      1.780      0.013      8.25      35.55

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.91
                  TIME SHIFT OF PEAK FLOW         (min)=120.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0436

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 13           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   0.1520      0.0911
                        0.0031     0.0104   |   0.5324      0.1155
                        0.0057     0.0280   |   1.1218      0.1328
                        0.0144     0.0473   |   1.5268      0.1417
                        0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.254      6.25      42.16
   OUTFLOW: ID= 1 (  0001)      1.780      0.020      7.33      41.68

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.04
                  TIME SHIFT OF PEAK FLOW         (min)= 65.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0491

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 14           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   0.1520      0.0911
                        0.0031     0.0104   |   0.5324      0.1155
                        0.0057     0.0280   |   1.1218      0.1328
                        0.0144     0.0473   |   1.5268      0.1417
                        0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.293      6.25      48.44
   OUTFLOW: ID= 1 (  0001)      1.780      0.034      7.00      47.96

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.72
                  TIME SHIFT OF PEAK FLOW         (min)= 45.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0532

--------------------------------------------------------------------------------
```

```
*********************************
** SIMULATION:Run 15           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.086     12.25      18.18
   OUTFLOW: ID= 1 (  0001)      1.780      0.004     14.58      17.70

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.16
                  TIME SHIFT OF PEAK FLOW         (min)=140.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0196

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 16           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.132     12.25      28.27
   OUTFLOW: ID= 1 (  0001)      1.780      0.007     14.58      27.79

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.23
                  TIME SHIFT OF PEAK FLOW         (min)=140.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0307

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 17           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.166     12.25      35.61
   OUTFLOW: ID= 1 (  0001)      1.780      0.010     14.50      35.13

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.05
                  TIME SHIFT OF PEAK FLOW         (min)=135.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0376

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 18           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
```

```
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.227     12.25      45.49
   OUTFLOW: ID= 1 (  0001)      1.780      0.014     14.33      45.01

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.29
                   TIME SHIFT OF PEAK FLOW         (min)=125.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0469

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 19           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.267     12.25      53.30
   OUTFLOW: ID= 1 (  0001)      1.780      0.030     13.08      52.82

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.16
                   TIME SHIFT OF PEAK FLOW         (min)= 50.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0518

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 20           **
*********************************
--------------------
| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1520      0.0911
                          0.0031     0.0104   |   0.5324      0.1155
                          0.0057     0.0280   |   1.1218      0.1328
                          0.0144     0.0473   |   1.5268      0.1417
                          0.0858     0.0684   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.309     12.25      61.29
   OUTFLOW: ID= 1 (  0001)      1.780      0.046     12.83      60.81

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.80
                   TIME SHIFT OF PEAK FLOW         (min)= 35.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0566

--------------------------------------------------------------------------------
```

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================================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 5.1.2004)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
  Output  filename: C:\Users\kransom\AppData\Local\Civica\VH5\b80d737f-0571-466c-99a6-d6e8668e9ad9\62541f0b-ad
  Summary filename: C:\Users\kransom\AppData\Local\Civica\VH5\b80d737f-0571-466c-99a6-d6e8668e9ad9\62541f0b-ad


DATE: 05-26-2020                          TIME: 03:18:07

USER:


COMMENTS: _____________________________________________________________

----------------------------------------------------------------------------------------------------------------
  ***********************************************
  ** SIMULATION : Run 08                       **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\kransom\AppD
|                  |              ata\Local\Temp\
|                  |              db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
| Ptotal=212.00 mm |    Comments: HAZEL
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.20    6.00 |  3.20   13.00 |  6.20   23.00 |  9.20   53.00
                0.40    6.00 |  3.40   13.00 |  6.40   23.00 |  9.40   53.00
                0.60    6.00 |  3.60   13.00 |  6.60   23.00 |  9.60   53.00
                0.80    6.00 |  3.80   13.00 |  6.80   23.00 |  9.80   53.00
                1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                1.20    4.00 |  4.20   17.00 |  7.20   13.00 | 10.20   38.00
                1.40    4.00 |  4.40   17.00 |  7.40   13.00 | 10.40   38.00
                1.60    4.00 |  4.60   17.00 |  7.60   13.00 | 10.60   38.00
                1.80    4.00 |  4.80   17.00 |  7.80   13.00 | 10.80   38.00
                2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                2.20    6.00 |  5.20   13.00 |  8.20   13.00 | 11.20   13.00
                2.40    6.00 |  5.40   13.00 |  8.40   13.00 | 11.40   13.00
                2.60    6.00 |  5.60   13.00 |  8.60   13.00 | 11.60   13.00
                2.80    6.00 |  5.80   13.00 |  8.80   13.00 | 11.80   13.00
                3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0205)|   Area    (ha)=   0.17   Curve Number   (CN)= 63.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.01

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
```

0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.650

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 0.000
RUNOFF VOLUME (mm)= 0.000
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.000

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
Ptotal=212.00 mm	Comments: HAZEL

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.20	6.00	3.20	13.00	6.20	23.00	9.20	53.00
0.40	6.00	3.40	13.00	6.40	23.00	9.40	53.00
0.60	6.00	3.60	13.00	6.60	23.00	9.60	53.00
0.80	6.00	3.80	13.00	6.80	23.00	9.80	53.00
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
1.20	4.00	4.20	17.00	7.20	13.00	10.20	38.00
1.40	4.00	4.40	17.00	7.40	13.00	10.40	38.00
1.60	4.00	4.60	17.00	7.60	13.00	10.60	38.00
1.80	4.00	4.80	17.00	7.80	13.00	10.80	38.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
2.20	6.00	5.20	13.00	8.20	13.00	11.20	13.00
2.40	6.00	5.40	13.00	8.40	13.00	11.40	13.00
2.60	6.00	5.60	13.00	8.60	13.00	11.60	13.00
2.80	6.00	5.80	13.00	8.80	13.00	11.80	13.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB NASHYD (0202) ID= 1 DT= 5.0 min	Area (ha)= 0.21	Curve Number (CN)= 50.0
	Ia (mm)= 16.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.43	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00

0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.019

PEAK FLOW (cms)= 0.016 (i)
TIME TO PEAK (hrs)= 10.250
RUNOFF VOLUME (mm)= 85.356
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.403

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\kransom\AppData\Local\Temp\db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
Ptotal=212.00 mm | Comments: HAZEL

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.20	6.00	3.20	13.00	6.20	23.00	9.20	53.00
0.40	6.00	3.40	13.00	6.40	23.00	9.40	53.00
0.60	6.00	3.60	13.00	6.60	23.00	9.60	53.00
0.80	6.00	3.80	13.00	6.80	23.00	9.80	53.00
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
1.20	4.00	4.20	17.00	7.20	13.00	10.20	38.00
1.40	4.00	4.40	17.00	7.40	13.00	10.40	38.00
1.60	4.00	4.60	17.00	7.60	13.00	10.60	38.00
1.80	4.00	4.80	17.00	7.80	13.00	10.80	38.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
2.20	6.00	5.20	13.00	8.20	13.00	11.20	13.00
2.40	6.00	5.40	13.00	8.40	13.00	11.40	13.00
2.60	6.00	5.60	13.00	8.60	13.00	11.60	13.00
2.80	6.00	5.80	13.00	8.80	13.00	11.80	13.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB
STANDHYD (0206) | Area (ha)= 1.40
ID= 1 DT= 5.0 min | Total Imp(%)= 60.00 Dir. Conn.(%)= 29.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.84	0.56
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	96.53	35.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	61.02		
over (min)	5.00	15.00		
Storage Coeff. (min)=	2.62 (ii)	10.56 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.29	0.09		
			TOTALS	
PEAK FLOW (cms)=	0.06	0.09	0.151 (iii)	
TIME TO PEAK (hrs)=	10.00	10.00	10.00	
RUNOFF VOLUME (mm)=	210.00	101.06	132.65	
TOTAL RAINFALL (mm)=	212.00	212.00	212.00	
RUNOFF COEFFICIENT =	0.99	0.48	0.63	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 39.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0005)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0202):	0.21	0.016	10.25	85.36
	+ ID2= 2 (0205):	0.17	0.000	0.00	0.00
	ID = 3 (0005):	0.38	0.016	10.25	47.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0005)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0005):	0.38	0.016	10.25	47.40
	+ ID2= 2 (0206):	1.40	0.151	10.00	132.65

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      ==================================================
      ID = 1 (  0005):     1.78   0.166    10.00   114.33

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| RESERVOIR(  0001)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000    |   0.1520      0.0911
                         0.0031     0.0104    |   0.5324      0.1155
                         0.0057     0.0280    |   1.1218      0.1328
                         0.0144     0.0473    |   1.5268      0.1417
                         0.0858     0.0684    |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      1.780      0.166     10.00     114.33
   OUTFLOW: ID= 1 (  0001)      1.780      0.125     11.00     113.85

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 75.26
                  TIME SHIFT OF PEAK FLOW         (min)= 60.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0819

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|    READ STORM    |    Filename: C:\Users\kransom\AppD
|                  |              ata\Local\Temp\
|                  |              db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
| Ptotal=212.00 mm |    Comments: HAZEL
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.20    6.00 |  3.20   13.00 |  6.20   23.00 |  9.20   53.00
                0.40    6.00 |  3.40   13.00 |  6.40   23.00 |  9.40   53.00
                0.60    6.00 |  3.60   13.00 |  6.60   23.00 |  9.60   53.00
                0.80    6.00 |  3.80   13.00 |  6.80   23.00 |  9.80   53.00
                1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                1.20    4.00 |  4.20   17.00 |  7.20   13.00 | 10.20   38.00
                1.40    4.00 |  4.40   17.00 |  7.40   13.00 | 10.40   38.00
                1.60    4.00 |  4.60   17.00 |  7.60   13.00 | 10.60   38.00
                1.80    4.00 |  4.80   17.00 |  7.80   13.00 | 10.80   38.00
                2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                2.20    6.00 |  5.20   13.00 |  8.20   13.00 | 11.20   13.00
                2.40    6.00 |  5.40   13.00 |  8.40   13.00 | 11.40   13.00
                2.60    6.00 |  5.60   13.00 |  8.60   13.00 | 11.60   13.00
                2.80    6.00 |  5.80   13.00 |  8.80   13.00 | 11.80   13.00
                3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=   0.09   Curve Number   (CN)= 45.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.01

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
```

1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.325

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 0.000
RUNOFF VOLUME (mm)= 0.000
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.000

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
Ptotal=212.00 mm	Comments: HAZEL

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.20	6.00	3.20	13.00	6.20	23.00	9.20	53.00
0.40	6.00	3.40	13.00	6.40	23.00	9.40	53.00
0.60	6.00	3.60	13.00	6.60	23.00	9.60	53.00
0.80	6.00	3.80	13.00	6.80	23.00	9.80	53.00
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
1.20	4.00	4.20	17.00	7.20	13.00	10.20	38.00
1.40	4.00	4.40	17.00	7.40	13.00	10.40	38.00
1.60	4.00	4.60	17.00	7.60	13.00	10.60	38.00
1.80	4.00	4.80	17.00	7.80	13.00	10.80	38.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
2.20	6.00	5.20	13.00	8.20	13.00	11.20	13.00
2.40	6.00	5.40	13.00	8.40	13.00	11.40	13.00
2.60	6.00	5.60	13.00	8.60	13.00	11.60	13.00
2.80	6.00	5.80	13.00	8.80	13.00	11.80	13.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB NASHYD (0204) ID= 1 DT= 5.0 min	Area (ha)= 0.13	Curve Number (CN)= 39.0
	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.50	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00

1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.010

PEAK FLOW (cms)= 0.008 (i)
TIME TO PEAK (hrs)= 10.417
RUNOFF VOLUME (mm)= 70.894
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.334

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\kransom\AppD ata\Local\Temp\ db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
Ptotal=212.00 mm	Comments: HAZEL

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.20	6.00	3.20	13.00	6.20	23.00	9.20	53.00
0.40	6.00	3.40	13.00	6.40	23.00	9.40	53.00
0.60	6.00	3.60	13.00	6.60	23.00	9.60	53.00
0.80	6.00	3.80	13.00	6.80	23.00	9.80	53.00
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
1.20	4.00	4.20	17.00	7.20	13.00	10.20	38.00
1.40	4.00	4.40	17.00	7.40	13.00	10.40	38.00
1.60	4.00	4.60	17.00	7.60	13.00	10.60	38.00
1.80	4.00	4.80	17.00	7.80	13.00	10.80	38.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
2.20	6.00	5.20	13.00	8.20	13.00	11.20	13.00
2.40	6.00	5.40	13.00	8.40	13.00	11.40	13.00
2.60	6.00	5.60	13.00	8.60	13.00	11.60	13.00
2.80	6.00	5.80	13.00	8.80	13.00	11.80	13.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB STANDHYD (0201) ID= 1 DT= 5.0 min	Area (ha)= 0.13 Total Imp(%)= 47.00 Dir. Conn.(%)= 40.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.07
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	40.00	5.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00

0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	30.80	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.54 (ii)	4.47 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.23	
			TOTALS
PEAK FLOW (cms)=	0.01	0.01	0.013 (iii)
TIME TO PEAK (hrs)=	9.58	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	77.15	130.27
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.36	0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 39.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\db5bd9ef-13d1-4d4c-a0da-4e57ccee08ce\2e798bfe
Ptotal=212.00 mm	Comments: HAZEL

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.20	6.00	3.20	13.00	6.20	23.00	9.20	53.00
0.40	6.00	3.40	13.00	6.40	23.00	9.40	53.00
0.60	6.00	3.60	13.00	6.60	23.00	9.60	53.00
0.80	6.00	3.80	13.00	6.80	23.00	9.80	53.00
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
1.20	4.00	4.20	17.00	7.20	13.00	10.20	38.00
1.40	4.00	4.40	17.00	7.40	13.00	10.40	38.00
1.60	4.00	4.60	17.00	7.60	13.00	10.60	38.00
1.80	4.00	4.80	17.00	7.80	13.00	10.80	38.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
2.20	6.00	5.20	13.00	8.20	13.00	11.20	13.00
2.40	6.00	5.40	13.00	8.40	13.00	11.40	13.00
2.60	6.00	5.60	13.00	8.60	13.00	11.60	13.00
2.80	6.00	5.80	13.00	8.80	13.00	11.80	13.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB STANDHYD (0203) ID= 1 DT= 5.0 min	Area (ha)= 0.10 Total Imp(%)= 55.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.06	0.05
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	48.00	25.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=		53.00	31.82	
over (min)		5.00	15.00	
Storage Coeff. (min)=		1.72 (ii)	10.14 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.32	0.10	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.00	0.011 (iii)
TIME TO PEAK	(hrs)=	9.58	10.00	10.00
RUNOFF VOLUME	(mm)=	210.00	78.21	141.41
TOTAL RAINFALL	(mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT	=	0.99	0.37	0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 39.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0010) | 1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0201):		0.13	0.013	10.00	130.27
+ ID2= 2 (0203):		0.10	0.011	10.00	141.41
ID = 3 (0010):		0.23	0.025	10.00	135.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     0.23   0.025    10.00   135.25
     + ID2= 2 (  0204):     0.13   0.008    10.42    70.89
       ================================================
       ID = 1 (  0010):     0.37   0.032    10.00   111.77

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.37   0.032    10.00   111.77
     + ID2= 2 (  0207):     0.09   0.000     0.00     0.00
       ================================================
       ID = 3 (  0010):     0.45   0.032    10.00    90.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0011)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.78   0.125    11.00   113.85
     + ID2= 2 (  0010):     0.45   0.032    10.00    90.73
       ================================================
       ID = 3 (  0011):     2.23   0.151    11.00   109.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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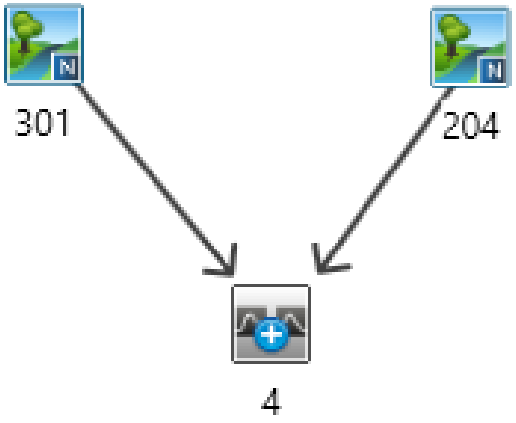
External Flow Visual OTTHYMO Schematic



```
*********************************
** SIMULATION:Run 01           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.000     2.25     0.95
      + ID2= 2 (  0301):     1.11   0.014     1.50     2.62
        ==================================================
        ID = 3 (  0004):     1.24   0.014     1.50     2.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 02           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.000     2.00     2.37
      + ID2= 2 (  0301):     1.11   0.036     1.35     6.18
        ==================================================
        ID = 3 (  0004):     1.24   0.036     1.35     5.77

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 03           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.001     2.00     4.67
      + ID2= 2 (  0301):     1.11   0.067     1.35    11.54
        ==================================================
        ID = 3 (  0004):     1.24   0.067     1.35    10.80

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 04           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.001     2.00     6.61
      + ID2= 2 (  0301):     1.11   0.091     1.35    15.82
        ==================================================
        ID = 3 (  0004):     1.24   0.091     1.35    14.83

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 05           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.002     1.92     9.45
      + ID2= 2 (  0301):     1.11   0.124     1.35    21.80
        ==================================================
        ID = 3 (  0004):     1.24   0.124     1.35    20.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 06           **
*********************************
```

```
--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.13   0.002     1.92    11.74
     + ID2= 2 (  0301):     1.11   0.150     1.35    26.41
       ================================================
       ID = 3 (  0004):     1.24   0.151     1.35    24.83

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 07           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.13   0.003     1.92    14.20
     + ID2= 2 (  0301):     1.11   0.178     1.35    31.22
       ================================================
       ID = 3 (  0004):     1.24   0.179     1.35    29.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 08           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.13   0.008    10.42    70.89
     + ID2= 2 (  0301):     1.11   0.124    10.00   122.66
       ================================================
       ID = 3 (  0004):     1.24   0.131    10.00   117.09

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 09           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.13   0.001     6.67     3.95
     + ID2= 2 (  0301):     1.11   0.054     6.25     9.91
       ================================================
       ID = 3 (  0004):     1.24   0.054     6.25     9.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 10           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0204):     0.13   0.002     6.67     7.69
     + ID2= 2 (  0301):     1.11   0.097     6.25    18.13
       ================================================
       ID = 3 (  0004):     1.24   0.098     6.25    17.01

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 11           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
        ID1= 1 (  0204):     0.13   0.002     6.67    10.75
      + ID2= 2 (  0301):     1.11   0.130     6.25    24.44
        ================================================
        ID = 3 (  0004):     1.24   0.131     6.25    22.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 12           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.003     6.67    15.19
      + ID2= 2 (  0301):     1.11   0.175     6.25    33.12
        ================================================
        ID = 3 (  0004):     1.24   0.177     6.25    31.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 13           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.004     6.67    18.92
      + ID2= 2 (  0301):     1.11   0.211     6.25    40.07
        ================================================
        ID = 3 (  0004):     1.24   0.213     6.25    37.80

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 14           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.005     6.67    22.89
      + ID2= 2 (  0301):     1.11   0.247     6.25    47.24
        ================================================
        ID = 3 (  0004):     1.24   0.250     6.25    44.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 15           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.001    12.67     5.58
      + ID2= 2 (  0301):     1.11   0.059    12.25    13.58
        ================================================
        ID = 3 (  0004):     1.24   0.060    12.25    12.72

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 16           **
*********************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.13   0.002    12.67    10.76
      + ID2= 2 (  0301):     1.11   0.106    12.25    24.44
        ================================================
        ID = 3 (  0004):     1.24   0.107    12.25    22.97
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 17 **
****

ADD HYD (0004)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0204):	0.13	0.002	12.67	14.95
+ ID2= 2 (0301):	1.11	0.141	12.25	32.65
ID = 3 (0004):	1.24	0.142	12.25	30.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 18 **
****

ADD HYD (0004)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0204):	0.13	0.003	12.67	21.00
+ ID2= 2 (0301):	1.11	0.188	12.25	43.87
ID = 3 (0004):	1.24	0.190	12.25	41.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 19 **
****

ADD HYD (0004)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0204):	0.13	0.004	12.67	26.06
+ ID2= 2 (0301):	1.11	0.225	12.25	52.80
ID = 3 (0004):	1.24	0.228	12.25	49.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Run 20 **
****

ADD HYD (0004)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0204):	0.13	0.005	12.67	31.44
+ ID2= 2 (0301):	1.11	0.264	12.25	61.97
ID = 3 (0004):	1.24	0.266	12.25	58.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L             (v 5.1.2004)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```


***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.1\VO2\voin.dat
Output filename: C:\Users\kransom\AppData\Local\Civica\VH5\b80d737f-0571-466c-99a6-d6e8668e9ad9\ba8c8372-2a
Summary filename: C:\Users\kransom\AppData\Local\Civica\VH5\b80d737f-0571-466c-99a6-d6e8668e9ad9\ba8c8372-2a

DATE: 05-27-2020 TIME: 09:31:02

USER:

COMMENTS: _____

****
** SIMULATION : Run 20 **
****

READ STORM	Ptotal=133.60 mm
Filename:	C:\Users\kransom\AppData\Local\Temp\592dc195-625f-4270-806b-4f74d4838d84\5f6f4d98
Comments:	COB_SCS_100Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.67	12.75	19.24	19.00	2.40
0.50	1.34	6.75	2.67	13.00	9.89	19.25	2.40
0.75	1.34	7.00	2.67	13.25	9.89	19.50	2.40
1.00	1.34	7.25	2.67	13.50	1.87	19.75	2.40
1.25	1.34	7.50	2.67	13.75	1.87	20.00	2.40
1.50	1.34	7.75	2.67	14.00	10.96	20.25	2.40
1.75	1.34	8.00	2.67	14.25	10.96	20.50	1.60
2.00	1.34	8.25	2.67	14.50	4.01	20.75	1.60
2.25	2.40	8.50	3.61	14.75	4.01	21.00	1.60
2.50	1.74	8.75	3.61	15.00	4.01	21.25	1.60
2.75	1.74	9.00	3.61	15.25	4.01	21.50	1.60
3.00	1.74	9.25	3.61	15.50	4.01	21.75	1.60
3.25	1.74	9.50	4.28	15.75	4.01	22.00	1.60
3.50	1.74	9.75	4.28	16.00	4.01	22.25	1.60
3.75	1.74	10.00	4.81	16.25	4.01	22.50	1.60
4.00	1.74	10.25	4.81	16.50	2.40	22.75	1.60
4.25	1.74	10.50	6.15	16.75	2.40	23.00	1.60
4.50	2.14	10.75	6.15	17.00	2.40	23.25	1.60
4.75	2.14	11.00	8.28	17.25	2.40	23.50	1.60
5.00	2.14	11.25	8.28	17.50	2.40	23.75	1.60
5.25	2.14	11.50	12.83	17.75	2.40	24.00	1.60
5.50	2.14	11.75	12.83	18.00	2.40	24.25	1.60
5.75	2.14	12.00	55.58	18.25	2.40		
6.00	2.14	12.25	147.49	18.50	2.40		
6.25	2.14	12.50	19.24	18.75	2.40		

CALIB NASHYD (0301) ID= 1 DT= 3.0 min			
	Area (ha)=	1.11	Curve Number (CN)= 67.0
	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.05	

NOTE: RAINFALL WAS TRANSFORMED TO 3.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.050	0.00	6.150	2.14	12.250	147.42	18.35	2.40
0.100	0.00	6.200	2.14	12.300	19.24	18.40	2.40
0.150	0.00	6.250	2.14	12.350	19.24	18.45	2.40
0.200	0.00	6.300	2.67	12.400	19.24	18.50	2.40
0.250	0.00	6.350	2.67	12.450	19.24	18.55	2.40
0.300	1.34	6.400	2.67	12.500	19.24	18.60	2.40
0.350	1.34	6.450	2.67	12.550	19.24	18.65	2.40
0.400	1.34	6.500	2.67	12.600	19.24	18.70	2.40
0.450	1.34	6.550	2.67	12.650	19.24	18.75	2.40
0.500	1.34	6.600	2.67	12.700	19.24	18.80	2.40
0.550	1.34	6.650	2.67	12.750	19.23	18.85	2.40
0.600	1.34	6.700	2.67	12.800	9.89	18.90	2.40
0.650	1.34	6.750	2.67	12.850	9.89	18.95	2.40
0.700	1.34	6.800	2.67	12.900	9.89	19.00	2.40
0.750	1.34	6.850	2.67	12.950	9.89	19.05	2.40
0.800	1.34	6.900	2.67	13.000	9.89	19.10	2.40
0.850	1.34	6.950	2.67	13.050	9.89	19.15	2.40
0.900	1.34	7.000	2.67	13.100	9.89	19.20	2.40
0.950	1.34	7.050	2.67	13.150	9.89	19.25	2.40
1.000	1.34	7.100	2.67	13.200	9.89	19.30	2.40
1.050	1.34	7.150	2.67	13.250	9.88	19.35	2.40
1.100	1.34	7.200	2.67	13.300	1.87	19.40	2.40
1.150	1.34	7.250	2.67	13.350	1.87	19.45	2.40
1.200	1.34	7.300	2.67	13.400	1.87	19.50	2.40
1.250	1.34	7.350	2.67	13.450	1.87	19.55	2.40
1.300	1.34	7.400	2.67	13.500	1.87	19.60	2.40
1.350	1.34	7.450	2.67	13.550	1.87	19.65	2.40
1.400	1.34	7.500	2.67	13.600	1.87	19.70	2.40
1.450	1.34	7.550	2.67	13.650	1.87	19.75	2.40
1.500	1.34	7.600	2.67	13.700	1.87	19.80	2.40
1.550	1.34	7.650	2.67	13.750	1.88	19.85	2.40
1.600	1.34	7.700	2.67	13.800	10.96	19.90	2.40
1.650	1.34	7.750	2.67	13.850	10.96	19.95	2.40
1.700	1.34	7.800	2.67	13.900	10.96	20.00	2.40
1.750	1.34	7.850	2.67	13.950	10.96	20.05	2.40
1.800	1.34	7.900	2.67	14.000	10.96	20.10	2.40
1.850	1.34	7.950	2.67	14.050	10.96	20.15	2.40
1.900	1.34	8.000	2.67	14.100	10.96	20.20	2.40
1.950	1.34	8.050	2.67	14.150	10.96	20.25	2.40
2.000	1.34	8.100	2.67	14.200	10.96	20.30	1.60
2.050	2.40	8.150	2.67	14.250	10.96	20.35	1.60
2.100	2.40	8.200	2.67	14.300	4.01	20.40	1.60
2.150	2.40	8.250	2.67	14.350	4.01	20.45	1.60
2.200	2.40	8.300	3.61	14.400	4.01	20.50	1.60
2.250	2.40	8.350	3.61	14.450	4.01	20.55	1.60
2.300	1.74	8.400	3.61	14.500	4.01	20.60	1.60
2.350	1.74	8.450	3.61	14.550	4.01	20.65	1.60
2.400	1.74	8.500	3.61	14.600	4.01	20.70	1.60
2.450	1.74	8.550	3.61	14.650	4.01	20.75	1.60
2.500	1.74	8.600	3.61	14.700	4.01	20.80	1.60
2.550	1.74	8.650	3.61	14.750	4.01	20.85	1.60
2.600	1.74	8.700	3.61	14.800	4.01	20.90	1.60
2.650	1.74	8.750	3.61	14.850	4.01	20.95	1.60
2.700	1.74	8.800	3.61	14.900	4.01	21.00	1.60
2.750	1.74	8.850	3.61	14.950	4.01	21.05	1.60
2.800	1.74	8.900	3.61	15.000	4.01	21.10	1.60
2.850	1.74	8.950	3.61	15.050	4.01	21.15	1.60
2.900	1.74	9.000	3.61	15.100	4.01	21.20	1.60
2.950	1.74	9.050	3.61	15.150	4.01	21.25	1.60
3.000	1.74	9.100	3.61	15.200	4.01	21.30	1.60
3.050	1.74	9.150	3.61	15.250	4.01	21.35	1.60
3.100	1.74	9.200	3.61	15.300	4.01	21.40	1.60
3.150	1.74	9.250	3.61	15.350	4.01	21.45	1.60
3.200	1.74	9.300	4.28	15.400	4.01	21.50	1.60
3.250	1.74	9.350	4.28	15.450	4.01	21.55	1.60
3.300	1.74	9.400	4.28	15.500	4.01	21.60	1.60
3.350	1.74	9.450	4.28	15.550	4.01	21.65	1.60
3.400	1.74	9.500	4.28	15.600	4.01	21.70	1.60
3.450	1.74	9.550	4.28	15.650	4.01	21.75	1.60
3.500	1.74	9.600	4.28	15.700	4.01	21.80	1.60
3.550	1.74	9.650	4.28	15.750	4.01	21.85	1.60
3.600	1.74	9.700	4.28	15.800	4.01	21.90	1.60
3.650	1.74	9.750	4.28	15.850	4.01	21.95	1.60
3.700	1.74	9.800	4.81	15.900	4.01	22.00	1.60
3.750	1.74	9.850	4.81	15.950	4.01	22.05	1.60
3.800	1.74	9.900	4.81	16.000	4.01	22.10	1.60
3.850	1.74	9.950	4.81	16.050	4.01	22.15	1.60
3.900	1.74	10.000	4.81	16.100	4.01	22.20	1.60
3.950	1.74	10.050	4.81	16.150	4.01	22.25	1.60
4.000	1.74	10.100	4.81	16.200	4.01	22.30	1.60

4.050	1.74	10.150	4.81	16.250	4.01	22.35	1.60
4.100	1.74	10.200	4.81	16.300	2.40	22.40	1.60
4.150	1.74	10.250	4.81	16.350	2.40	22.45	1.60
4.200	1.74	10.300	6.15	16.400	2.40	22.50	1.60
4.250	1.74	10.350	6.15	16.450	2.40	22.55	1.60
4.300	2.14	10.400	6.15	16.500	2.40	22.60	1.60
4.350	2.14	10.450	6.15	16.550	2.40	22.65	1.60
4.400	2.14	10.500	6.15	16.600	2.40	22.70	1.60
4.450	2.14	10.550	6.15	16.650	2.40	22.75	1.60
4.500	2.14	10.600	6.15	16.700	2.40	22.80	1.60
4.550	2.14	10.650	6.15	16.750	2.40	22.85	1.60
4.600	2.14	10.700	6.15	16.800	2.40	22.90	1.60
4.650	2.14	10.750	6.15	16.850	2.40	22.95	1.60
4.700	2.14	10.800	8.28	16.900	2.40	23.00	1.60
4.750	2.14	10.850	8.28	16.950	2.40	23.05	1.60
4.800	2.14	10.900	8.28	17.000	2.40	23.10	1.60
4.850	2.14	10.950	8.28	17.050	2.40	23.15	1.60
4.900	2.14	11.000	8.28	17.100	2.40	23.20	1.60
4.950	2.14	11.050	8.28	17.150	2.40	23.25	1.60
5.000	2.14	11.100	8.28	17.200	2.40	23.30	1.60
5.050	2.14	11.150	8.28	17.250	2.40	23.35	1.60
5.100	2.14	11.200	8.28	17.300	2.40	23.40	1.60
5.150	2.14	11.250	8.28	17.350	2.40	23.45	1.60
5.200	2.14	11.300	12.83	17.400	2.40	23.50	1.60
5.250	2.14	11.350	12.83	17.450	2.40	23.55	1.60
5.300	2.14	11.400	12.83	17.500	2.40	23.60	1.60
5.350	2.14	11.450	12.83	17.550	2.40	23.65	1.60
5.400	2.14	11.500	12.83	17.600	2.40	23.70	1.60
5.450	2.14	11.550	12.83	17.650	2.40	23.75	1.60
5.500	2.14	11.600	12.83	17.700	2.40	23.80	1.60
5.550	2.14	11.650	12.83	17.750	2.40	23.85	1.60
5.600	2.14	11.700	12.83	17.800	2.40	23.90	1.60
5.650	2.14	11.750	12.85	17.850	2.40	23.95	1.60
5.700	2.14	11.800	55.58	17.900	2.40	24.00	1.60
5.750	2.14	11.850	55.58	17.950	2.40	24.05	1.60
5.800	2.14	11.900	55.58	18.000	2.40	24.10	1.60
5.850	2.14	11.950	55.58	18.050	2.40	24.15	1.60
5.900	2.14	12.000	55.63	18.100	2.40	24.20	1.60
5.950	2.14	12.050	147.49	18.150	2.40	24.25	1.60
6.000	2.14	12.100	147.49	18.200	2.40		
6.050	2.14	12.150	147.49	18.250	2.40		
6.100	2.14	12.200	147.49	18.300	2.40		

Unit Hyd Qpeak (cms)= 0.848

PEAK FLOW (cms)= 0.264 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 61.971
TOTAL RAINFALL (mm)= 133.597
RUNOFF COEFFICIENT = 0.464

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\kransom\AppData\Local\Temp\592dc195-625f-4270-806b-4f74d4838d84\5f6f4d98
Ptotal=133.60 mm	Comments: COB_SCS_100Y24H

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.67	12.75	19.24	19.00	2.40
0.50	1.34	6.75	2.67	13.00	9.89	19.25	2.40
0.75	1.34	7.00	2.67	13.25	9.89	19.50	2.40
1.00	1.34	7.25	2.67	13.50	1.87	19.75	2.40
1.25	1.34	7.50	2.67	13.75	1.87	20.00	2.40
1.50	1.34	7.75	2.67	14.00	10.96	20.25	2.40
1.75	1.34	8.00	2.67	14.25	10.96	20.50	1.60
2.00	1.34	8.25	2.67	14.50	4.01	20.75	1.60
2.25	2.40	8.50	3.61	14.75	4.01	21.00	1.60
2.50	1.74	8.75	3.61	15.00	4.01	21.25	1.60
2.75	1.74	9.00	3.61	15.25	4.01	21.50	1.60
3.00	1.74	9.25	3.61	15.50	4.01	21.75	1.60
3.25	1.74	9.50	4.28	15.75	4.01	22.00	1.60
3.50	1.74	9.75	4.28	16.00	4.01	22.25	1.60
3.75	1.74	10.00	4.81	16.25	4.01	22.50	1.60
4.00	1.74	10.25	4.81	16.50	2.40	22.75	1.60
4.25	1.74	10.50	6.15	16.75	2.40	23.00	1.60
4.50	2.14	10.75	6.15	17.00	2.40	23.25	1.60
4.75	2.14	11.00	8.28	17.25	2.40	23.50	1.60
5.00	2.14	11.25	8.28	17.50	2.40	23.75	1.60
5.25	2.14	11.50	12.83	17.75	2.40	24.00	1.60

5.50	2.14	11.75	12.83	18.00	2.40	24.25	1.60
5.75	2.14	12.00	55.58	18.25	2.40		
6.00	2.14	12.25	147.49	18.50	2.40		
6.25	2.14	12.50	19.24	18.75	2.40		

CALIB			
NASHYD (0204)	Area (ha)= 0.13	Curve Number (CN)= 39.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.50		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	2.14	12.250	147.49	18.33	2.40
0.167	0.00	6.250	2.14	12.333	19.26	18.42	2.40
0.250	0.00	6.333	2.67	12.417	19.24	18.50	2.40
0.333	1.34	6.417	2.67	12.500	19.24	18.58	2.40
0.417	1.34	6.500	2.67	12.583	19.24	18.67	2.40
0.500	1.34	6.583	2.67	12.667	19.24	18.75	2.40
0.583	1.34	6.667	2.67	12.750	19.24	18.83	2.40
0.667	1.34	6.750	2.67	12.833	9.89	18.92	2.40
0.750	1.34	6.833	2.67	12.917	9.89	19.00	2.40
0.833	1.34	6.917	2.67	13.000	9.89	19.08	2.40
0.917	1.34	7.000	2.67	13.083	9.89	19.17	2.40
1.000	1.34	7.083	2.67	13.167	9.89	19.25	2.40
1.083	1.34	7.167	2.67	13.250	9.89	19.33	2.40
1.167	1.34	7.250	2.67	13.333	1.87	19.42	2.40
1.250	1.34	7.333	2.67	13.417	1.87	19.50	2.40
1.333	1.34	7.417	2.67	13.500	1.87	19.58	2.40
1.417	1.34	7.500	2.67	13.583	1.87	19.67	2.40
1.500	1.34	7.583	2.67	13.667	1.87	19.75	2.40
1.583	1.34	7.667	2.67	13.750	1.87	19.83	2.40
1.667	1.34	7.750	2.67	13.833	10.96	19.92	2.40
1.750	1.34	7.833	2.67	13.917	10.96	20.00	2.40
1.833	1.34	7.917	2.67	14.000	10.96	20.08	2.40
1.917	1.34	8.000	2.67	14.083	10.96	20.17	2.40
2.000	1.34	8.083	2.67	14.167	10.96	20.25	2.40
2.083	2.40	8.167	2.67	14.250	10.96	20.33	1.60
2.167	2.40	8.250	2.67	14.333	4.01	20.42	1.60
2.250	2.40	8.333	3.61	14.417	4.01	20.50	1.60
2.333	1.74	8.417	3.61	14.500	4.01	20.58	1.60
2.417	1.74	8.500	3.61	14.583	4.01	20.67	1.60
2.500	1.74	8.583	3.61	14.667	4.01	20.75	1.60
2.583	1.74	8.667	3.61	14.750	4.01	20.83	1.60
2.667	1.74	8.750	3.61	14.833	4.01	20.92	1.60
2.750	1.74	8.833	3.61	14.917	4.01	21.00	1.60
2.833	1.74	8.917	3.61	15.000	4.01	21.08	1.60
2.917	1.74	9.000	3.61	15.083	4.01	21.17	1.60
3.000	1.74	9.083	3.61	15.167	4.01	21.25	1.60
3.083	1.74	9.167	3.61	15.250	4.01	21.33	1.60
3.167	1.74	9.250	3.61	15.333	4.01	21.42	1.60
3.250	1.74	9.333	4.28	15.417	4.01	21.50	1.60
3.333	1.74	9.417	4.28	15.500	4.01	21.58	1.60
3.417	1.74	9.500	4.28	15.583	4.01	21.67	1.60
3.500	1.74	9.583	4.28	15.667	4.01	21.75	1.60
3.583	1.74	9.667	4.28	15.750	4.01	21.83	1.60
3.667	1.74	9.750	4.28	15.833	4.01	21.92	1.60
3.750	1.74	9.833	4.81	15.917	4.01	22.00	1.60
3.833	1.74	9.917	4.81	16.000	4.01	22.08	1.60
3.917	1.74	10.000	4.81	16.083	4.01	22.17	1.60
4.000	1.74	10.083	4.81	16.167	4.01	22.25	1.60
4.083	1.74	10.167	4.81	16.250	4.01	22.33	1.60
4.167	1.74	10.250	4.81	16.333	2.40	22.42	1.60
4.250	1.74	10.333	6.15	16.417	2.40	22.50	1.60
4.333	2.14	10.417	6.15	16.500	2.40	22.58	1.60
4.417	2.14	10.500	6.15	16.583	2.40	22.67	1.60
4.500	2.14	10.583	6.15	16.667	2.40	22.75	1.60
4.583	2.14	10.667	6.15	16.750	2.40	22.83	1.60
4.667	2.14	10.750	6.15	16.833	2.40	22.92	1.60
4.750	2.14	10.833	8.28	16.917	2.40	23.00	1.60
4.833	2.14	10.917	8.28	17.000	2.40	23.08	1.60
4.917	2.14	11.000	8.28	17.083	2.40	23.17	1.60
5.000	2.14	11.083	8.28	17.167	2.40	23.25	1.60
5.083	2.14	11.167	8.28	17.250	2.40	23.33	1.60
5.167	2.14	11.250	8.28	17.333	2.40	23.42	1.60
5.250	2.14	11.333	12.83	17.417	2.40	23.50	1.60
5.333	2.14	11.417	12.83	17.500	2.40	23.58	1.60
5.417	2.14	11.500	12.83	17.583	2.40	23.67	1.60

5.500	2.14	11.583	12.83	17.667	2.40	23.75	1.60
5.583	2.14	11.667	12.83	17.750	2.40	23.83	1.60
5.667	2.14	11.750	12.83	17.833	2.40	23.92	1.60
5.750	2.14	11.833	55.58	17.917	2.40	24.00	1.60
5.833	2.14	11.917	55.58	18.000	2.40	24.08	1.60
5.917	2.14	12.000	55.58	18.083	2.40	24.17	1.60
6.000	2.14	12.083	147.48	18.167	2.40	24.25	1.60
6.083	2.14	12.167	147.49	18.250	2.40		

Unit Hyd Qpeak (cms)= 0.010

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 31.437
TOTAL RAINFALL (mm)= 133.598
RUNOFF COEFFICIENT = 0.235

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0204):	0.13	0.005	12.67	31.44
	+ ID2= 2 (0301):	1.11	0.264	12.25	61.97
	ID = 3 (0004):	1.24	0.266	12.25	58.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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Bypass Channel Conveyance Calculations - 911 Lockhart Road Development

CLIENT: Mr. Sam Fayaz

DATE: May 2020

PROJECT: 911 Lockhart Road Development

FILE: FAY-19035

Trapezoidal Channel Capacity Calculator

Input:

Channel Bottom Width	0.5	m
Channel Side Slopes	3	:1 (H:V)
Channel Depth	0.16	m
Channel Manning n	0.03	
Channel Slope	0.05	m/m

Calculated:

Wetted Area	0.160	m^2
Wetted Perimeter	1.526	m
Rh	0.105	m
Channel Flow	**0.27**	m^3/s
Channel Ave Velocity	**1.66**	m/s

Chezy Eq. $Q=1/n*A*R^{2/3}*S^{1/2}$

Trapezoidal Channel Capacity Calculator

Input:

Channel Bottom Width	0.5	m
Channel Side Slopes	3	:1 (H:V)
Channel Depth	0.24	m
Channel Manning n	0.03	
Channel Slope	0.01	m/m

Calculated:

Wetted Area	0.290	m^2
Wetted Perimeter	2.009	m
Rh	0.144	m
Channel Flow	**0.27**	m^3/s
Channel Ave Velocity	**0.92**	m/s

Chezy Eq. $Q=1/n*A*R^{2/3}*S^{1/2}$