

Preliminary

# Stormwater Management Report Ospringe Development, Wellington County

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Prepared for Spirit of Pentecost  
by IBI Group

November 9, 2018

# Document Control Page

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<b>ORIGINATOR:</b>	
<b>REVIEWER:</b>	
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<b>CIRCULATION LIST:</b>	
<b>HISTORY:</b>	

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# 1 Introduction

IBI Group was retained to prepare a Preliminary Stormwater Management Report for the Ospringe Development in Wellington County. The subject land is legally described as Part of Lot 13 Concession 2 Erin as in MS126136 (Fourthly) Except Part 1, Plan 61R-6497 Ospringe Settlement Area Wellington County Ontario. The property is 3.62 hectares in area and is located at the northwest intersection of Highway 124 (Wellington County Road 124) and Second Line (Wellington County Road 125) in the Settlement Area of Ospringe (refer to Figure 1). The development is proposed to contain 13 residential lots and a stormwater management facility.

The purpose of this Report is to address the appropriate stormwater quantity and quality requirements, in accordance with the criteria set out and comments provided by Wellington County.

# 2 Existing Conditions

The 3.62ha property is used for agricultural purposes and is bounded by residential lots to the east and west, and agricultural lands to the north. The property is characterized by hilly topography with slopes of approximately four percent.

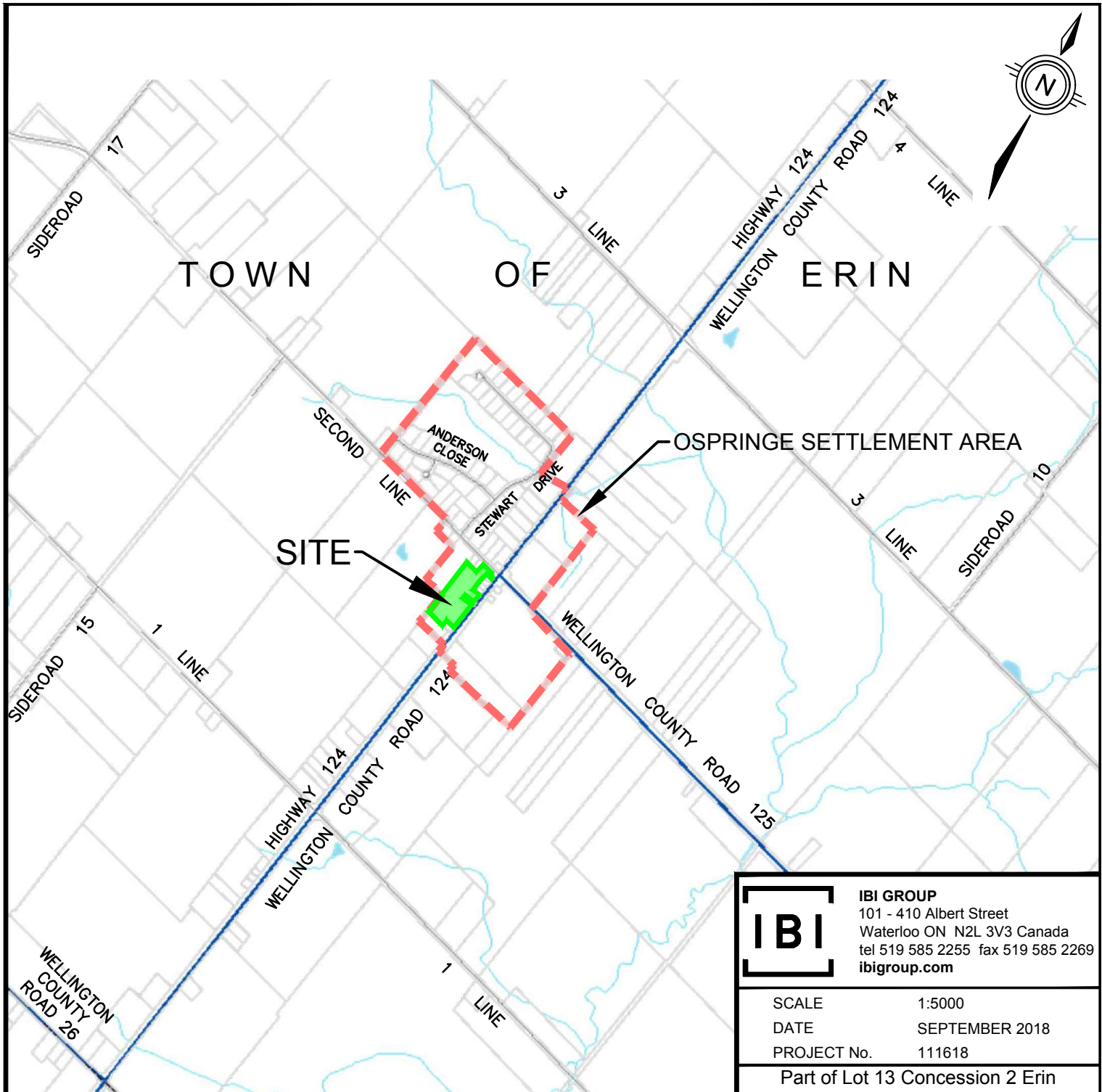
A 0.382 ha area at the northwest corner of the property drains overland toward agricultural lands to the west. The remainder of the site drains overland toward the east to the intersection of Highway 124 and Second Line. Runoff then enters a 375mm diameter storm sewer on Second Line via a road catch basin, which then continues northeast along Highway 124. Existing conditions drainage areas are shown in Figure 2.

Based on the borehole logs provided by CVD Engineering Limited, soils on site are typically silty sand, sand and gravel, and sandy silt. Seasonally high groundwater levels are typically within one metre below the ground surface.

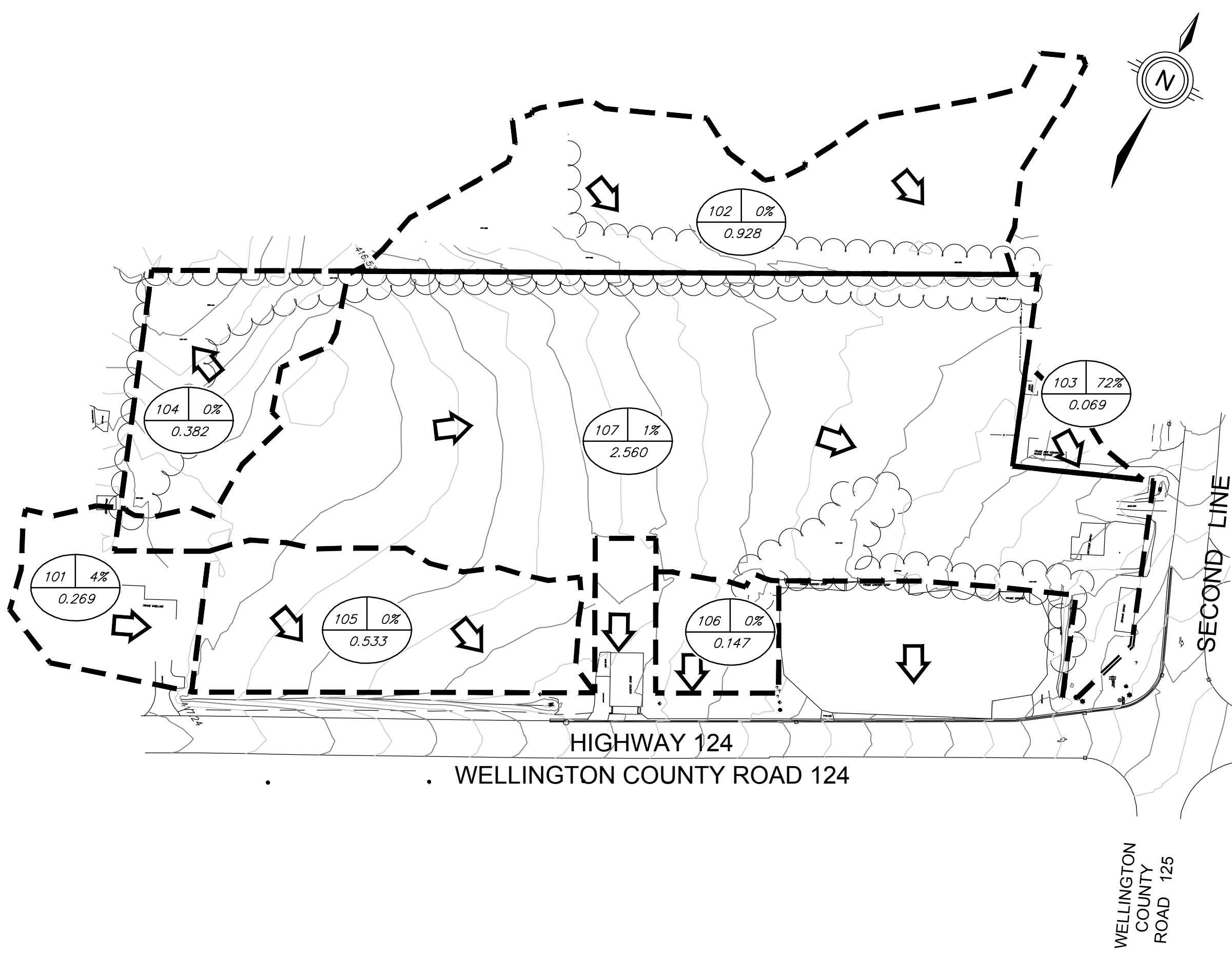
# 3 Proposed Conditions

The subject lands are proposed to contain 13 single-family residential lots. The impervious area of the development includes paved roads, single-detached houses, driveways, and various other hard surfaces. The total impervious coverage of the developing areas was estimated to be 48 percent. The external area to the northwest will continue to drain through the site via swales and ditches. Proposed conditions drainage areas are shown on Figure 3.

The proposed development will drain to a dry pond stormwater management facility to be located at the northeast portion of the site, and then continue to outlet toward the existing storm sewer on Second Line. The pond will provide stormwater quantity and quality control for the developing area. Minor flows will be conveyed to the stormwater management pond via grass ditches, and major flows will be conveyed to the pond via the road network and grass ditches. A 0.368 ha area at the northwest portion of the site consisting of rear lots areas will continue to drain toward the west.



	<b>IBI GROUP</b> 101 - 410 Albert Street Waterloo ON N2L 3V3 Canada tel 519 585 2255 fax 519 585 2269 ibigroup.com
	SCALE 1:5000 DATE SEPTEMBER 2018 PROJECT No. 111618
	Part of Lot 13 Concession 2 Erin as in MS126136 (Fourthly) Except Part 1, Plan 61R-6497 Ospringe Settlement Area Wellington County ON
<b>OSPRINGE DEVELOPMENT WELLINGTON COUNTY</b>	
<b>SITE LOCATION</b>	
<b>FIGURE 1</b>	



**LEGEND**

- EXISTING TREELINE
- - - EXISTING FLOODLINE
- - - EXISTING CATCHMENT BOUNDARIES
- EX. CATCHMENT SYMBOL  
CATCHMENT AREA NUMBER
- EX101 42% — % IMPERVIOUS  
1.234 — AREA (ha)
- ⇨ EXISTING DRAINAGE FLOW PATTERN

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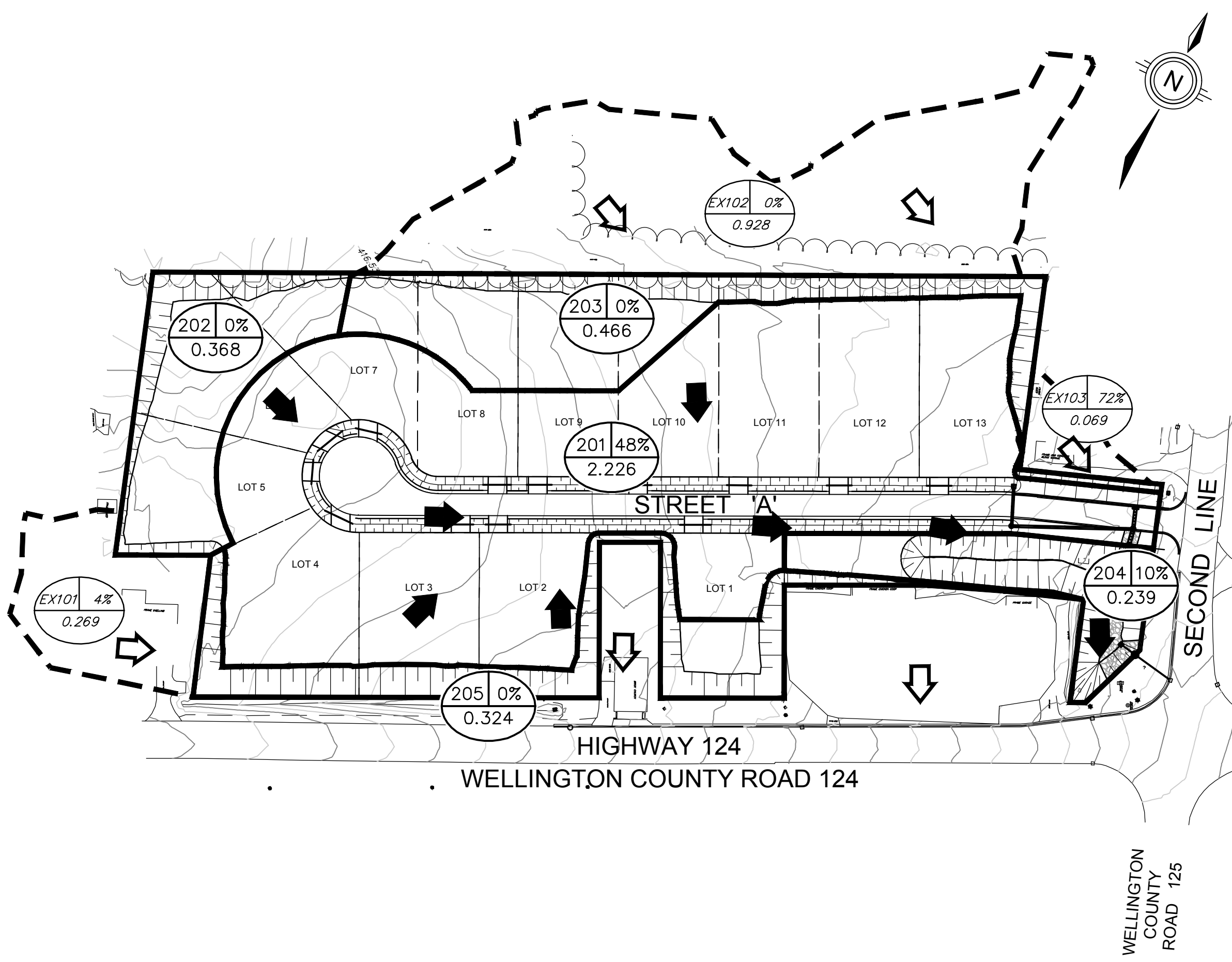
SCALE 1:1250  
 DATE SEPTEMBER 2018  
 PROJECT No. 111618

Part of Lot 13 Concession 2 Erin  
 as in MS126136 (Fourthly)  
 Except Part 1, Plan 61R-6497  
 Ospringe Settlement Area  
 Wellington County ON

OSPRINGE DEVELOPMENT  
 WELLINGTON COUNTY

EXISTING CONDITIONS  
 SWM AREAS

**FIGURE 2**



**LEGEND**

- EXISTING TREELINE
- - - EXISTING FLOODLINE
- - - EXISTING CATCHMENT BOUNDARIES
- PROPOSED CATCHMENT BOUNDARIES
- PROP. CATCHMENT SYMBOL  
CATCHMENT AREA NUMBER
- |       |     |              |
|-------|-----|--------------|
| 201   | 42% | % IMPERVIOUS |
| 1.234 |     | AREA (ha)    |
- EX. CATCHMENT SYMBOL  
CATCHMENT AREA NUMBER
- |       |     |              |
|-------|-----|--------------|
| EX101 | 42% | % IMPERVIOUS |
| 1.234 |     | AREA (ha)    |
- ← PROPOSED DRAINAGE FLOW PATTERN
- ↻ EXISTING DRAINAGE FLOW PATTERN

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**OSPRINGE DEVELOPMENT  
 WELLINGTON COUNTY**

**PROPOSED CONDITIONS  
 SWM AREAS**

**FIGURE 3**



## 4 Stormwater Management

The stormwater management criteria for this development have been set based on requirements of and discussions with Wellington County. The requirements include:

- Stormwater quantity controls are required for the site to control the proposed conditions flows from the site to the existing conditions for events from the 5 year to the 100 year storm; and
- Stormwater quality control is to be provided for the developing area for an Enhanced Protection Level.

### 4.1 Stormwater Quantity Control

Based on the stormwater quantity criteria, proposed development peak flows are to be controlled to existing conditions levels. Quantity control will be provided within a dry stormwater management pond, the location of which is shown in Figure 3. The preliminary stage-storage-discharge relationship of the pond is included in Appendix A.

Modelling was completed for the development using the MIDUSS computer program (refer to Appendix B for model output). Key modelling variables are summarized in Table 1.

**Table 1 – MIDUSS Modelling Variables**

CATCHMENT ID	LAND USE DESCRIPTION	AREA (HA)	LENGTH* (M)	GRADIENT %	IMPERVIOUS %	PERVIOUS CN	MANNING N
<b>Existing Conditions</b>							
101	Residential Lot	0.269	20	2	4	71	0.25
102	Agricultural	0.928	30	4	0	71	0.25
103	Residential Lot	0.069	10	2	72	71	0.25
104	Agricultural	0.382	20	4	0	71	0.25
105	Agricultural	0.533	20	4	0	71	0.25
106	Agricultural	0.147	20	4	0	71	0.25
107	Agricultural	2.560	50	4	1	71	0.25
<b>Total</b>		<b>4.89</b>			<b>1.8</b>		
<b>Proposed Conditions</b>							
101	Residential Lot	0.269	20	2	4	71	0.25
102	Agricultural	0.928	30	4	0	71	0.25
103	Residential Lot	0.069	10	2	72	71	0.25
201	Residential Lots	2.226	20	4	48	71	0.25
202	Residential Lots	0.368	20	4	0	71	0.25
203	Residential Lots	0.466	20	4	0	71	0.25
204	SWM Pond	0.239	10	10	10	71	0.25
205	Residential Lots	0.324	10	10	0	71	0.25
<b>Total</b>		<b>4.89</b>			<b>23.6</b>		

Three-hour duration Chicago storms based on the Fergus Shand Dam intensity-duration-frequency (IDF) curves was used for the hydrologic modelling. The total depth of rainfall for the 5, 10, 25, 50, and 100 year storms are summarized in Table 2.

**Table 2 – Rainfall Depths**

RETURN EVENT	DEPTH (mm)
5 Year	49.0
10 Year	60.1
25 Year	73.6
50 Year	83.4
100 Year	93.5

A 185mm diameter orifice control and a 3.0m wide weir at the pond outlet structure will provide stormwater attenuation. Peak flows for existing and proposed conditions are summarized for the east draining and west draining areas in Table 3, and the characteristics of the stormwater management pond are provided in Table 4.

**Table 3 – Peak Flows**

RETURN EVENT	EXISTING CONDITIONS (m <sup>3</sup> /s)	PROPOSED CONDITIONS (m <sup>3</sup> /s)
<b>Draining East</b>		
5 Year	0.144	0.144
10 Year	0.251	0.206
25 Year	0.413	0.325
50 Year	0.542	0.508
100 Year	0.692	0.661
<b>Draining West</b>		
5 Year	0.015	0.015
10 Year	0.025	0.024
25 Year	0.042	0.040
50 Year	0.055	0.053
100 Year	0.070	0.068

**Table 4 – Pond Characteristics**

RETURN EVENT	STORAGE (m <sup>3</sup> )	ELEVATION (m)	DEPTH* (m)
5 Year	292	407.00	1.10
10 Year	419	407.26	1.36
25 Year	528	407.46	1.56
50 Year	569	407.52	1.62
100 Year	608	407.58	1.68

\* Pond Outlet Invert = 405.90m.

As indicated in Table 3, proposed conditions flows for all storm events have been controlled to below existing levels for the east and west outlets. Additional details will be provided at the final design stage.

## 4.2 Stormwater Quality Control

The criteria require that an Enhanced Protection Level for stormwater quality control be provided as outlined by the Ministry of Environment Stormwater Management Planning and Design Manual (MOE, 2003).

Based on an Enhanced Protection Level for the downstream receiver, stormwater quality control must be provided to achieve 80 percent Total Suspended Solids (TSS) removal efficiency for 90 percent of annual flows. A treatment-train approach will be provided for water quality control using an oil/grit separator (OGS) unit and additional polishing and extended detention within the dry pond facility to achieve the required Enhanced Protection Level.

A Stormceptor OGS unit (STC 2000) will be installed at the outlet from the pond to provide stormwater quality control for flows generated from the developing areas tributary to the SWM pond. The total drainage area to this OGS is 2.46 ha (areas 201 and 204, average 52.4 percent impervious). Based on output from the Stormceptor software, an STC 2000 unit will provide a TSS removal efficiency of 95 percent for 92 percent of annual flows generated by lands tributary to the unit (refer to Appendix A).

The unit meets the Enhanced long-term suspended solids removal requirements (80 percent TSS removal efficiency for 90 percent of annual flows). The unit should be inspected and cleaned regularly (typically once every 12 months) as per the manufacturer's specifications. Although the unit by itself meets an Enhanced Protection Level, the treatment-train approach will provide additional tertiary treatment of runoff before it is discharged off site (polishing, extended detention).

## 4.3 Stormwater Management Pond

The maximum water level fluctuation for active storage is less than 1.8 m and the slopes are moderate (5:1 within the active pond area). The pond outlet invert has been set at elevation 405.90 m, which will be below the seasonally high groundwater elevation. Therefore, a liner will be required.

# 5 Monitoring and Maintenance

Monitoring and maintenance are necessary for stormwater management facilities to ensure their continued operation. These requirements for the stormwater management facilities are based on information provided in MOE 2003.

The stormwater management pond should be inspected on a regular basis to ensure that it is operating as intended. During construction, the pond should be inspected after significant runoff events (i.e., about 3 times per year for rainfalls 13mm or greater). During subsequent years, the pond and the OGS unit should be inspected on an annual basis. The following items should be noted during the inspections:

- Any noticeable damage to the pond structures (e.g., headwalls, outlet structures, maintenance access routes, etc.);
- The condition of the vegetation in and around the pond;

- If there is an oily sheen on the water, or if the water is frothy or is there any other indication of a spill;
- If the pond is draining down over 48 hours;
- Vegetation replanting: If the regular inspections reveal that the vegetation surrounding the pond is dead or dying, then it should be replaced with new material; and
- Trash removal: During the regular inspections, any trash in or around the facility should be collected and disposed of in an appropriate location.

Details will be provided at the final design stage.

## 6 Conclusions and Recommendations

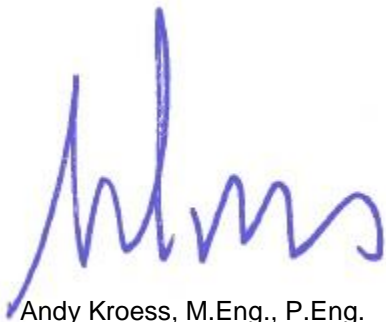
This Preliminary Stormwater Management Report demonstrates that the proposed conditions for this development satisfy the requirements for stormwater management established by the review agencies. It has been demonstrated that both water quantity and quality objectives have been met as follows:

- Stormwater quantity controls will be provided to control proposed conditions peak flows to existing levels; and
- Stormwater quality control will be addressed through the use of a treatment-train utilizing a flow path through the pond and an OGS unit to provide Enhanced Protection Level.

Based on these conclusions, we recommend that this Preliminary Stormwater Management Report be approved by the Review Agencies, and that a Final Stormwater Management Report be prepared at the detailed design stage.

Yours truly

**IBI GROUP**



Andy Kroess, M.Eng., P.Eng.  
Senior Water Resources Engineer

# Appendix A – Preliminary Stormwater Calculations

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**111618 - Ospringle Development, Wellington County  
Preliminary Stormwater Management Pond Stage-Storage-Discharge Relationship**

**Orifice # 1**

Orifice Invert = 405.90 m (@ outlet)  
 Orifice Radius = 0.0925 m  
 Orifice Diameter = 185 mm  
 Orifice Centreline = 405.993 m  
 Orifice Coefficient = 0.6  
 Orifice Area = 0.0268795 m<sup>2</sup>

**Overland Spill**

Weir Crest Elevation = 407.50 m  
 Weir Length = 3.00 m  
 Weir Coefficient = 1.6

Active Depth (m)	Elevation (m)	Description	Orifice # 1 Flow (m <sup>3</sup> /s)	Weir Flow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)	Active Storage (m <sup>3</sup> )
0.00	405.90	Pond Invert	0.00000	0.00000	0.00000	0.0
0.10	406.00		0.02500	0.00000	0.02500	8.7
0.20	406.10		0.02342	0.00000	0.02342	24.9
0.30	406.20		0.03253	0.00000	0.03253	43.6
0.40	406.30		0.03961	0.00000	0.03961	64.9
0.50	406.40		0.04559	0.00000	0.04559	88.8
0.60	406.50		0.05088	0.00000	0.05088	115.5
0.70	406.60		0.05567	0.00000	0.05567	144.9
0.80	406.70		0.06008	0.00000	0.06008	177.3
0.90	406.80		0.06418	0.00000	0.06418	212.6
1.00	406.90		0.06804	0.00000	0.06804	251.0
1.10	407.00		0.07169	0.00000	0.07169	292.6
1.20	407.10		0.07516	0.00000	0.07516	337.3
1.30	407.20		0.07848	0.00000	0.07848	385.5
1.40	407.30		0.08167	0.00000	0.08167	437.6
1.50	407.40	Spill Elevation	0.08473	0.00000	0.08473	493.6
1.60	407.50		0.08769	0.00000	0.08769	553.9
1.70	407.60		0.09055	0.15179	0.24234	618.8
1.80	407.70		0.09333	0.42933	0.52265	688.3

Orifice equation:  $Q = C_o \times A \times (2 \times g \times h)^{0.5}$

Weir equation:  $Q = C_w \times L \times (H)^{3/2}$

where: A = orifice area (m<sup>2</sup>)

g = 9.806 m/s<sup>2</sup>

h = head above c/l of orifice (m)

L = weir length (m)

H = head above weir (m)



## Stormceptor Design Summary

### PCSWMM for Stormceptor

#### Project Information

Date	November 2018
Project Name	Ospringe Subdivision
Project Number	111618
Location	Wellington County

#### Designer Information

Company	IBI Group
Contact	

#### Notes

Areas 201 and 204
-------------------

#### Drainage Area

Total Area (ha)	2.464
Imperviousness (%)	52.4

The Stormceptor System model STC 2000 achieves the water quality objective removing 95% TSS for a Fine (organics, silts and sand) particle size distribution and 92% runoff volume.

#### Rainfall

Name	WATERLOO WELLINGTON A
State	ON
ID	9387
Years of Records	1970 to 2003
Latitude	43°27'N
Longitude	80°23'W

#### Water Quality Objective

TSS Removal (%)	80
Runoff Volume (%)	90

#### Upstream Storage

Storage (ha-m)	Discharge (L/s)
0.000	00.000
0.002	00.026
0.006	00.046
0.012	00.059
Partial Listing	

#### Stormceptor Sizing Summary

Stormceptor Model	TSS Removal	Runoff Volume
	%	%
STC 300	90	83
STC 750	94	89
STC 1000	94	89
STC 1500	94	89
<b>STC 2000</b>	<b>95</b>	<b>92</b>
STC 3000	95	92
STC 4000	96	95
STC 5000	96	95
STC 6000	97	97
STC 9000	98	98
STC 10000	98	98
STC 14000	98	99



### Particle Size Distribution

Removing silt particles from runoff ensures that the majority of the pollutants, such as hydrocarbons and heavy metals that adhere to fine particles, are not discharged into our natural water courses. The table below lists the particle size distribution used to define the annual TSS removal.

Fine (organics, silts and sand)							
Particle Size µm	Distribution %	Specific Gravity	Settling Velocity m/s	Particle Size µm	Distribution %	Specific Gravity	Settling Velocity m/s
20	20	1.3	0.0004				
60	20	1.8	0.0016				
150	20	2.2	0.0108				
400	20	2.65	0.0647				
2000	20	2.65	0.2870				

### Stormceptor Design Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor version 1.0
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal.
- Only the STC 300 is adaptable to function with a catch basin inlet and/or inline pipes.
- Only the Stormceptor models STC 750 to STC 6000 may accommodate multiple inlet pipes.
- Inlet and outlet invert elevation differences are as follows:

#### **Inlet and Outlet Pipe Invert Elevations Differences**

Inlet Pipe Configuration	STC 300	STC 750 to STC 6000	STC 9000 to STC 14000
Single inlet pipe	75 mm	25 mm	75 mm
Multiple inlet pipes	75 mm	75 mm	Only one inlet pipe.

- Design estimates are based on stable site conditions only, after construction is completed.
- Design estimates assume that the storm drain is not submerged during zero flows. For submerged applications, please contact your local Stormceptor representative.
- Design estimates may be modified for specific spills controls. Please contact your local Stormceptor representative for further assistance.
- For pricing inquiries or assistance, please contact Imbrium Systems Inc., 1-800-565-4801.



# Appendix B – Preliminary MIDUSS Model Output

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```

                                111618P.OUT
Output File (4.7) 111618P.OUT opened 2018-11-02 15:01
Units used are defined by G = 9.810
      48 960 5.000 are MAXDT MAXHYD & DTMIN values
Licensee: PLANNING INITIATIVES LTD
35 COMMENT
6 line(s) of comment
*****
* 111618 - OSPRINGE DEVELOPMENT *
* COUNTY OF WELLINGTON *
* IBI GROUP *
* PRELIMINARY - NOVEMBER 2018 *
*****
35 COMMENT
4 line(s) of comment
*****
* 5 YEAR CHICAGO STORM *
* FERGUS SHAND DAM IDF PARAMETERS *
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
1428.056 Coefficient a
11.305 Constant b (min)
.851 Exponent c
.400 Fraction to peak r
180.000 Duration ó 240 min
48.991 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.013 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
3 line(s) of comment
*****
* EXISTING CONDITIONS *
*****
35 COMMENT
3 line(s) of comment
*****
* AREA 104 *
*****
4 CATCHMENT
104.000 ID No.ó 99999
.382 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.015 .000 .000 .000 c.m/s
.213 .000 .213 c perv/imperv/total
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO WEST *
*****
15 ADD RUNOFF
.015 .015 .000 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 102 *
*****
4 CATCHMENT
102.000 ID No.ó 99999

```

```

.928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
30.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.032 .000 .000 .000 c.m/s
.214 .000 .214 C perv/imperv/total
15 ADD RUNOFF .032 .032 .000 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.032 .032 .032 .000 c.m/s
17 COMBINE
500 Junction Node No.
.032 .032 .032 .032 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 103 *
*****
4 CATCHMENT
103.000 ID No.ó 99999
.069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.015 .000 .032 .032 c.m/s
.213 .862 .680 C perv/imperv/total
15 ADD RUNOFF .015 .015 .032 .032 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.015 .015 .015 .032 c.m/s
17 COMBINE
500 Junction Node No.
.015 .015 .015 .036 c.m/s
18 CONFLUENCE
500 Junction Node No.
.015 .036 .015 .000 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 107 *
*****
4 CATCHMENT
107.000 ID No.ó 99999
2.560 Area in hectares

```

```

50.000 Length (PERV) metres
4.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.074 .036 .015 .000 c.m/s
.214 .881 .220 C perv/imperv/total
15 ADD RUNOFF
9 .074 .110 .015 .000 c.m/s
ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.074 .110 .110 .000 c.m/s
17 COMBINE
600 Junction Node No.
.074 .110 .110 .110 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 101 *
*****
4 CATCHMENT
101.000 ID No.ó 99999
.269 Area in hectares
20.000 Length (PERV) metres
2.000 Gradient (%)
4.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.010 .000 .110 .110 c.m/s
.214 .880 .240 C perv/imperv/total
15 ADD RUNOFF
35 .010 .010 .110 .110 c.m/s
COMMENT
3 line(s) of comment
*****
* AREA 105 *
*****
4 CATCHMENT
105.000 ID No.ó 99999
.533 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.021 .010 .110 .110 c.m/s
.213 .000 .213 C perv/imperv/total
15 ADD RUNOFF
.021 .031 .110 .110 c.m/s

```

```

9   ROUTE
    .000   Conduit Length
    .000   No Conduit defined
    .000   Zero lag
    .000   Beta weighting factor
    .000   Routing timestep
    0      No. of sub-reaches
    .021   .031   .031   .110 c.m/s
17  COMBINE
600 Junction Node No.
    .021   .031   .031   .139 c.m/s
14  START
1   1=Zero; 2=Define
35  COMMENT
3   1 line(s) of comment
    *****
    * AREA 106 *
    *****
4   CATCHMENT
106.000 ID No.ó 99999
    .147   Area in hectares
20.000   Length (PERV) metres
4.000    Gradient (%)
.000     Per cent Impervious
20.000   Length (IMPERV)
.000     %Imp. with Zero Dpth
1        Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250     Manning "n"
71.000   SCS Curve No or C
.100     Ia/S Coefficient
10.375   Initial Abstraction
1        Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .006   .000   .031   .139 c.m/s
    .213   .000   .213   C perv/imperv/total
15  ADD RUNOFF
    .006   .006   .031   .139 c.m/s
9   ROUTE
    .000   Conduit Length
    .000   No Conduit defined
    .000   Zero lag
    .000   Beta weighting factor
    .000   Routing timestep
    0      No. of sub-reaches
    .006   .006   .006   .139 c.m/s
17  COMBINE
600 Junction Node No.
    .006   .006   .006   .144 c.m/s
35  COMMENT
3   1 line(s) of comment
    *****
    * PEAK FLOW TO EAST *
    *****
18  CONFLUENCE
600 Junction Node No.
    .006   .144   .006   .000 c.m/s
14  START
1   1=Zero; 2=Define
35  COMMENT
3   1 line(s) of comment
    *****
    * PROPOSED CONDITIONS *
    *****
35  COMMENT
3   1 line(s) of comment
    *****
    * AREA 202 *
    *****
4   CATCHMENT
202.000 ID No.ó 99999
    .368   Area in hectares
20.000   Length (PERV) metres
4.000    Gradient (%)
.000     Per cent Impervious
20.000   Length (IMPERV)

```

```

                                111618P.OUT
.000 %Imp. with Zero Dpth
  1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
  1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .015 .000 .006 .000 c.m/s
    .213 .000 .213 C perv/imperv/total
35 COMMENT
  3 line(s) of comment
  *****
  * PEAK FLOW TO WEST *
  *****
15 ADD RUNOFF
    .015 .015 .006 .000 c.m/s
14 START
  1 1=Zero; 2=Define
35 COMMENT
  3 line(s) of comment
  *****
  * AREA 102 *
  *****
  4 CATCHMENT
102.000 ID No.ó 99999
.928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
30.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
  1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
  1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .032 .000 .006 .000 c.m/s
    .214 .000 .214 C perv/imperv/total
15 ADD RUNOFF
    .032 .032 .006 .000 c.m/s
35 COMMENT
  3 line(s) of comment
  *****
  * AREA 203 *
  *****
  4 CATCHMENT
203.000 ID No.ó 99999
.466 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
  1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
  1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .018 .032 .006 .000 c.m/s
    .213 .000 .213 C perv/imperv/total
15 ADD RUNOFF
    .018 .050 .006 .000 c.m/s
35 COMMENT
  3 line(s) of comment
  *****
  * AREA 103 *
  *****
  4 CATCHMENT
103.000 ID No.ó 99999
.069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)

```

```

72.000    Per cent Impervious
10.000    Length (IMPERV)
.000      %Imp. with Zero Dpth
1         Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250      Manning "n"
71.000    SCS Curve No or C
.100      Ia/S Coefficient
10.375    Initial Abstraction
1         Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .015      .050      .006      .000 c.m/s
          .213      .862      .680      C perv/imperv/total
15  ADD RUNOFF
          .015      .055      .006      .000 c.m/s
9   ROUTE
.000      Conduit Length
.000      No Conduit defined
.000      Zero lag
.000      Beta weighting factor
.000      Routing timestep
0         No. of sub-reaches
          .015      .055      .055      .000 c.m/s
17  COMBINE
700      Junction Node No.
          .015      .055      .055      .055 c.m/s
14  START
1         1=Zero; 2=Define
35  COMMENT
3         line(s) of comment
*****
* AREA 201 *
*****
4   CATCHMENT
201.000   ID No.ó 99999
2.226    Area in hectares
20.000   Length (PERV) metres
4.000    Gradient (%)
48.000   Per cent Impervious
20.000   Length (IMPERV)
.000     %Imp. with Zero Dpth
1        Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250     Manning "n"
71.000   SCS Curve No or C
.100     Ia/S Coefficient
10.375   Initial Abstraction
1        Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .334      .000      .055      .055 c.m/s
          .213      .873      .530      C perv/imperv/total
15  ADD RUNOFF
          .334      .334      .055      .055 c.m/s
35  COMMENT
3         line(s) of comment
*****
* AREA 204 *
*****
4   CATCHMENT
204.000   ID No.ó 99999
.239     Area in hectares
20.000   Length (PERV) metres
10.000   Gradient (%)
10.000   Per cent Impervious
20.000   Length (IMPERV)
.000     %Imp. with Zero Dpth
1        Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250     Manning "n"
71.000   SCS Curve No or C
.100     Ia/S Coefficient
10.375   Initial Abstraction
1        Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .012      .334      .055      .055 c.m/s
          .213      .858      .277      C perv/imperv/total
15  ADD RUNOFF
          .012      .343      .055      .055 c.m/s
35  COMMENT
3         line(s) of comment

```

\*\*\*\*\*  
 \* SURFACE STORAGE \*  
 \*\*\*\*\*

10

POND  
 11 Depth - Discharge - Volume sets  
 .000 .000 .0  
 .200 .0234 24.9  
 .400 .0396 64.9  
 .600 .0509 115.5  
 .800 .0601 177.3  
 1.000 .0680 251.0  
 1.200 .0751 337.3  
 1.400 .0817 437.6  
 1.500 .0847 493.6  
 1.600 .242 553.9  
 1.800 .523 688.3  
 Peak Outflow = .071 c.m/s  
 Maximum Depth = 1.095 metres  
 Maximum Storage = 292. c.m

17

COMBINE  
 700 Junction Node No.  
 .012 .343 .071 .055 c.m/s  
 .012 .343 .071 .124 c.m/s

14

START  
 1 1=Zero; 2=Define

35

COMMENT  
 3 line(s) of comment  
 \*\*\*\*\*  
 \* AREA 101 \*  
 \*\*\*\*\*

4

CATCHMENT  
 101.000 ID No.6 99999  
 .269 Area in hectares  
 20.000 Length (PERV) metres  
 2.000 Gradient (%)  
 4.000 Per cent Impervious  
 20.000 Length (IMPERV)  
 .000 %Imp. with Zero Dpth  
 1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat  
 .250 Manning "n"  
 71.000 SCS Curve No or C  
 .100 Ia/S Coefficient  
 10.375 Initial Abstraction  
 1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv  
 .010 .000 .071 .124 c.m/s  
 .214 .880 .240 C perv/imperv/total

15

ADD RUNOFF  
 .010 .010 .071 .124 c.m/s

35

COMMENT  
 3 line(s) of comment  
 \*\*\*\*\*  
 \* AREA 205 \*  
 \*\*\*\*\*

4

CATCHMENT  
 205.000 ID No.6 99999  
 .324 Area in hectares  
 10.000 Length (PERV) metres  
 10.000 Gradient (%)  
 .000 Per cent Impervious  
 10.000 Length (IMPERV)  
 .000 %Imp. with Zero Dpth  
 1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat  
 .250 Manning "n"  
 71.000 SCS Curve No or C  
 .100 Ia/S Coefficient  
 10.375 Initial Abstraction  
 1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv  
 .017 .010 .071 .124 c.m/s  
 .212 .000 .212 C perv/imperv/total

15

ADD RUNOFF  
 .017 .026 .071 .124 c.m/s

9

ROUTE  
 .000 Conduit Length  
 .000 No Conduit defined



```

.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.017 .026 .026 .124 c.m/s
17 COMBINE
700 Junction Node No.
.017 .026 .026 .144 c.m/s
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
700 Junction Node No.
.017 .144 .026 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
4 line(s) of comment
*****
* 10 YEAR CHICAGO STORM *
* FERGUS SHAND DAM IDF PARAMETERS *
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
2116.523 Coefficient a
14.709 Constant b (min)
.884 Exponent c
.400 Fraction to peak r
180.000 Duration ó 240 min
60.107 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.013 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
3 line(s) of comment
*****
* EXISTING CONDITIONS *
*****
35 COMMENT
3 line(s) of comment
*****
* AREA 104 *
*****
4 CATCHMENT
104.000 ID No.ó 99999
.382 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.025 .000 .026 .000 c.m/s
.268 .000 .268 C perv/imperv/total
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO WEST *
*****
15 ADD RUNOFF
.025 .025 .026 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT

```

```

3   line(s) of comment
*****
* AREA 102 *
*****
4   CATCHMENT
102.000 ID No.6 99999
    .928 Area in hectares
30.000 Length (PERV) metres
    4.000 Gradient (%)
    .000 Per cent Impervious
30.000 Length (IMPERV)
    .000 %Imp. with Zero Dpth
    1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
    .250 Manning "n"
71.000 SCS Curve No or C
    .100 Ia/S Coefficient
10.375 Initial Abstraction
    1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .058 .000 .026 .000 c.m/s
    .268 .000 .268 C perv/imperv/total
15  ADD RUNOFF
    .058 .058 .026 .000 c.m/s
9   ROUTE
    .000 Conduit Length
    .000 No Conduit defined
    .000 Zero lag
    .000 Beta weighting factor
    .000 Routing timestep
    0 No. of sub-reaches
    .058 .058 .058 .000 c.m/s
17  COMBINE
500 Junction Node No.
    .058 .058 .058 .058 c.m/s
14  START
1   1=Zero; 2=Define
35  COMMENT
3   line(s) of comment
*****
* AREA 103 *
*****
4   CATCHMENT
103.000 ID No.6 99999
    .069 Area in hectares
10.000 Length (PERV) metres
    2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
    .000 %Imp. with Zero Dpth
    1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
    .250 Manning "n"
71.000 SCS Curve No or C
    .100 Ia/S Coefficient
10.375 Initial Abstraction
    1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .018 .000 .058 .058 c.m/s
    .266 .876 .705 C perv/imperv/total
15  ADD RUNOFF
    .018 .018 .058 .058 c.m/s
9   ROUTE
    .000 Conduit Length
    .000 No Conduit defined
    .000 Zero lag
    .000 Beta weighting factor
    .000 Routing timestep
    0 No. of sub-reaches
    .018 .018 .018 .058 c.m/s
17  COMBINE
500 Junction Node No.
    .018 .018 .018 .064 c.m/s
18  CONFLUENCE
500 Junction Node No.
    .018 .064 .018 .000 c.m/s
35  COMMENT
3   line(s) of comment

```

```

*****
* AREA 107 *
*****
4  CATCHMENT
107.000 ID No.ó 99999
2.560 Area in hectares
50.000 Length (PERV) metres
4.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.131 .064 .018 .000 c.m/s
.268 .899 .274 C perv/imperv/total
15 ADD RUNOFF
.131 .189 .018 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.131 .189 .189 .000 c.m/s
17 COMBINE
600 Junction Node No.
.131 .189 .189 .189 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 101 *
*****
4 CATCHMENT
101.000 ID No.ó 99999
.269 Area in hectares
20.000 Length (PERV) metres
2.000 Gradient (%)
4.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.017 .000 .189 .189 c.m/s
.268 .897 .293 C perv/imperv/total
15 ADD RUNOFF
.017 .017 .189 .189 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 105 *
*****
4 CATCHMENT
105.000 ID No.ó 99999
.533 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient

```

```

10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .035 .017 .189 .189 c.m/s
      .268 .000 .268 C perv/imperv/total
15 ADD RUNOFF
      .035 .052 .189 .189 c.m/s
9 ROUTE
      .000 Conduit Length
      .000 No Conduit defined
      .000 Zero lag
      .000 Beta weighting factor
      .000 Routing timestep
      0 No. of sub-reaches
      .035 .052 .052 .189 c.m/s
17 COMBINE
600 Junction Node No.
      .035 .052 .052 .241 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 106 *
*****
4 CATCHMENT
106.000 ID No.6 99999
      .147 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
      .000 Per cent Impervious
20.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .010 .000 .052 .241 c.m/s
      .268 .000 .268 C perv/imperv/total
15 ADD RUNOFF
      .010 .010 .052 .241 c.m/s
9 ROUTE
      .000 Conduit Length
      .000 No Conduit defined
      .000 Zero lag
      .000 Beta weighting factor
      .000 Routing timestep
      0 No. of sub-reaches
      .010 .010 .010 .241 c.m/s
17 COMBINE
600 Junction Node No.
      .010 .010 .010 .251 c.m/s
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
600 Junction Node No.
      .010 .251 .010 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* PROPOSED CONDITIONS *
*****
35 COMMENT
3 line(s) of comment
*****
* AREA 202 *
*****
4 CATCHMENT

```

```

202.000 ID No.ó 99999
.368 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.024 .000 .010 .000 c.m/s
.268 .000 .268 C perv/imperv/total
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO WEST *
*****
15 ADD RUNOFF
.024 .024 .010 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 102 *
*****
4 CATCHMENT
102.000 ID No.ó 99999
.928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
30.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.058 .000 .010 .000 c.m/s
.268 .000 .268 C perv/imperv/total
15 ADD RUNOFF
.058 .058 .010 .000 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 203 *
*****
4 CATCHMENT
203.000 ID No.ó 99999
.466 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.030 .058 .010 .000 c.m/s
.268 .000 .268 C perv/imperv/total
15 ADD RUNOFF
.030 .088 .010 .000 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 103 *

```

```

*****
4  CATCHMENT
103.000 ID No.ó 99999
.069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.018 .088 .010 .000 c.m/s
.266 .876 .705 C perv/imperv/total
15  ADD RUNOFF
9  .018 .095 .010 .000 c.m/s
9  ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.018 .095 .095 .000 c.m/s
17  COMBINE
700 Junction Node No.
.018 .095 .095 .095 c.m/s
14  START
1 1=Zero; 2=Define
35  COMMENT
3 1 line(s) of comment
*****
* AREA 201 *
*****
4  CATCHMENT
201.000 ID No.ó 99999
2.226 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
48.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.399 .000 .095 .095 c.m/s
.268 .889 .566 C perv/imperv/total
15  ADD RUNOFF
35  .399 .399 .095 .095 c.m/s
35  COMMENT
3 1 line(s) of comment
*****
* AREA 204 *
*****
4  CATCHMENT
204.000 ID No.ó 99999
.239 Area in hectares
20.000 Length (PERV) metres
10.000 Gradient (%)
10.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv

```

```

111618P.OUT
      .020      .399      .095      .095 c.m/s
      .267      .871      .327      C perv/imperv/total
15  ADD RUNOFF      .020      .412      .095      .095 c.m/s
35  COMMENT
3    line(s) of comment
*****
* SURFACE STORAGE *
*****
10  POND
11  Depth - Discharge - Volume sets
      .000      .000      .0
      .200      .0234      24.9
      .400      .0396      64.9
      .600      .0509      115.5
      .800      .0601      177.3
      1.000      .0680      251.0
      1.200      .0751      337.3
      1.400      .0817      437.6
      1.500      .0847      493.6
      1.600      .242      553.9
      1.800      .523      688.3
      Peak Outflow = .080 c.m/s
      Maximum Depth = 1.363 metres
      Maximum Storage = 419. c.m
      .020      .412      .080      .095 c.m/s
17  COMBINE
700 Junction Node No.
      .020      .412      .080      .171 c.m/s
14  START
1    1=Zero; 2=Define
35  COMMENT
3    line(s) of comment
*****
* AREA 101 *
*****
4  CATCHMENT
101.000 ID No.ó 99999
      .269 Area in hectares
20.000 Length (PERV) metres
2.000 Gradient (%)
4.000 Per cent Impervious
20.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .017      .000      .080      .171 c.m/s
      .268      .897      .293      C perv/imperv/total
15  ADD RUNOFF      .017      .017      .080      .171 c.m/s
35  COMMENT
3    line(s) of comment
*****
* AREA 205 *
*****
4  CATCHMENT
205.000 ID No.ó 99999
      .324 Area in hectares
10.000 Length (PERV) metres
10.000 Gradient (%)
      .000 Per cent Impervious
10.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .026      .017      .080      .171 c.m/s

```

```

111618P.OUT
.266 .000 .266 C perv/imperv/total
15 ADD RUNOFF .026 .041 .080 .171 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.026 .041 .041 .171 c.m/s
17 COMBINE
700 Junction Node No.
.026 .041 .041 .206 c.m/s
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
700 Junction Node No.
.026 .206 .041 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
4 line(s) of comment
*****
* 25 YEAR CHICAGO STORM *
* FERGUS SHAND DAM IDF PARAMETERS *
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
2957.749 Coefficient a
17.167 Constant b (min)
.907 Exponent c
.400 Fraction to peak r
180.000 Duration ó 240 min
73.564 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.013 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
3 line(s) of comment
*****
* EXISTING CONDITIONS *
*****
35 COMMENT
3 line(s) of comment
*****
* AREA 104 *
*****
4 CATCHMENT
104.000 ID No.ó 99999
.382 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.042 .000 .041 .000 c.m/s
.323 .000 .323 C perv/imperv/total
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO WEST *

```



```

*****
15  ADD RUNOFF          .042      .042      .041      .000 c.m/s
14  START
1   1=Zero; 2=Define
35  COMMENT
3   1 line(s) of comment
   *****
   * AREA 102 *
   *****
4   CATCHMENT
102.000 ID No.6 99999
   .928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
30.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
   .090 .000 .041 .000 c.m/s
   .324 .000 .324 C perv/imperv/total
15  ADD RUNOFF          .090      .090      .041      .000 c.m/s
9   ROUTE
   .000 Conduit Length
   .000 No Conduit defined
   .000 Zero lag
   .000 Beta weighting factor
   .000 Routing timestep
   0 No. of sub-reaches
   .090 .090 .090 .000 c.m/s
17  COMBINE
500 Junction Node No.
   .090 .090 .090 .090 c.m/s
14  START
1   1=Zero; 2=Define
35  COMMENT
3   1 line(s) of comment
   *****
   * AREA 103 *
   *****
4   CATCHMENT
103.000 ID No.6 99999
   .069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
   .022 .000 .090 .090 c.m/s
   .324 .885 .728 C perv/imperv/total
15  ADD RUNOFF          .022      .022      .090      .090 c.m/s
9   ROUTE
   .000 Conduit Length
   .000 No Conduit defined
   .000 Zero lag
   .000 Beta weighting factor
   .000 Routing timestep
   0 No. of sub-reaches
   .022 .022 .022 .090 c.m/s
17  COMBINE
500 Junction Node No.

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```

111618P.OUT
18      .022      .022      .022      .098 c.m/s
CONFLUENCE
500      Junction Node No.
      .022      .098      .022      .000 c.m/s
35      COMMENT
3      line(s) of comment
*****
* AREA 107 *
*****
4      CATCHMENT
107.000      ID No.ó 99999
2.560      Area in hectares
50.000      Length (PERV) metres
4.000      Gradient (%)
1.000      Per cent Impervious
50.000      Length (IMPERV)
.000      %Imp. with Zero Dpth
1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250      Manning "n"
71.000      SCS Curve No or C
.100      Ia/S Coefficient
10.375      Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .220      .098      .022      .000 c.m/s
      .325      .915      .331      C perv/imperv/total
15      ADD RUNOFF
      .220      .318      .022      .000 c.m/s
9      ROUTE
.000      Conduit Length
.000      No Conduit defined
.000      Zero lag
.000      Beta weighting factor
.000      Routing timestep
0      No. of sub-reaches
      .220      .318      .318      .000 c.m/s
17      COMBINE
600      Junction Node No.
      .220      .318      .318      .318 c.m/s
14      START
1      1=Zero; 2=Define
35      COMMENT
3      line(s) of comment
*****
* AREA 101 *
*****
4      CATCHMENT
101.000      ID No.ó 99999
.269      Area in hectares
20.000      Length (PERV) metres
2.000      Gradient (%)
4.000      Per cent Impervious
20.000      Length (IMPERV)
.000      %Imp. with Zero Dpth
1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250      Manning "n"
71.000      SCS Curve No or C
.100      Ia/S Coefficient
10.375      Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .027      .000      .318      .318 c.m/s
      .324      .910      .347      C perv/imperv/total
15      ADD RUNOFF
      .027      .027      .318      .318 c.m/s
35      COMMENT
3      line(s) of comment
*****
* AREA 105 *
*****
4      CATCHMENT
105.000      ID No.ó 99999
.533      Area in hectares
20.000      Length (PERV) metres
4.000      Gradient (%)
.000      Per cent Impervious

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                                111618P.OUT
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
.250 1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.100 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.058 .027 .318 .318 c.m/s
.323 .000 .323 C perv/imperv/total
15 ADD RUNOFF
9 .058 .085 .318 .318 c.m/s
ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.058 .085 .085 .318 c.m/s
17 COMBINE
600 Junction Node No.
.058 .085 .085 .398 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 106 *
*****
4 CATCHMENT
106.000 ID No.6 99999
.147 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
.250 1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.100 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.016 .000 .085 .398 c.m/s
.323 .000 .323 C perv/imperv/total
15 ADD RUNOFF
9 .016 .016 .085 .398 c.m/s
ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.016 .016 .016 .398 c.m/s
17 COMBINE
600 Junction Node No.
.016 .016 .016 .413 c.m/s
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
600 Junction Node No.
.016 .413 .016 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* PROPOSED CONDITIONS *
*****

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```

35 COMMENT
3   line(s) of comment
*****
* AREA 202 *
*****
4 CATCHMENT
202.000 ID No.ó 99999
.368 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.040 .000 .016 .000 c.m/s
.323 .000 .323 C perv/imperv/total

```

```

35 COMMENT
3   line(s) of comment
*****
* PEAK FLOW TO WEST *
*****
15 ADD RUNOFF
.040 .040 .016 .000 c.m/s
14 START
1 1=Zero; 2=Define

```

```

35 COMMENT
3   line(s) of comment
*****
* AREA 102 *
*****
4 CATCHMENT
102.000 ID No.ó 99999
.928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
30.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.090 .000 .016 .000 c.m/s
.324 .000 .324 C perv/imperv/total
15 ADD RUNOFF
.090 .090 .016 .000 c.m/s

```

```

35 COMMENT
3   line(s) of comment
*****
* AREA 203 *
*****
4 CATCHMENT
203.000 ID No.ó 99999
.466 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.051 .090 .016 .000 c.m/s
.323 .000 .323 C perv/imperv/total

```

```

15  ADD RUNOFF          .051      .138      .016      .000 c.m/s
35  COMMENT
3    3 line(s) of comment
*****
* AREA 103 *
*****
4  CATCHMENT
103.000 ID No.ó 99999
.069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.022 .138 .016 .000 c.m/s
.324 .885 .728 C perv/imperv/total
15  ADD RUNOFF          .022      .150      .016      .000 c.m/s
9  ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.022 .150 .150 .000 c.m/s
17  COMBINE
700 Junction Node No.
.022 .150 .150 .150 c.m/s
14  START
1 1=Zero; 2=Define
35  COMMENT
3    3 line(s) of comment
*****
* AREA 201 *
*****
4  CATCHMENT
201.000 ID No.ó 99999
2.226 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
48.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.489 .000 .150 .150 c.m/s
.323 .900 .600 C perv/imperv/total
15  ADD RUNOFF          .489      .489      .150      .150 c.m/s
35  COMMENT
3    3 line(s) of comment
*****
* AREA 204 *
*****
4  CATCHMENT
204.000 ID No.ó 99999
.239 Area in hectares
20.000 Length (PERV) metres
10.000 Gradient (%)
10.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth

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111618P.OUT

```

1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250  Manning "n"
71.000 SCS Curve No or C
.100   Ia/S Coefficient
10.375 Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .032 .489 .150 .150 c.m/s
      .324 .880 .379 C perv/imperv/total
15    ADD RUNOFF
      .032 .507 .150 .150 c.m/s
35    COMMENT
3      line(s) of comment
*****
* SURFACE STORAGE *
*****
10    POND
11    Depth - Discharge - Volume sets
      .000 .000 .0
      .200 .0234 24.9
      .400 .0396 64.9
      .600 .0509 115.5
      .800 .0601 177.3
      1.000 .0680 251.0
      1.200 .0751 337.3
      1.400 .0817 437.6
      1.500 .0847 493.6
      1.600 .242 553.9
      1.800 .523 688.3
      Peak Outflow = .174 c.m/s
      Maximum Depth = 1.557 metres
      Maximum Storage = 528. c.m
      .032 .507 .174 .150 c.m/s
17    COMBINE
700   Junction Node No.
      .032 .507 .174 .283 c.m/s
14    START
1      1=Zero; 2=Define
35    COMMENT
3      line(s) of comment
*****
* AREA 101 *
*****
4     CATCHMENT
101.000 ID No.ó 99999
.269   Area in hectares
20.000 Length (PERV) metres
2.000  Gradient (%)
4.000  Per cent Impervious
20.000 Length (IMPERV)
.000   %Imp. with Zero Dpth
1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250  Manning "n"
71.000 SCS Curve No or C
.100   Ia/S Coefficient
10.375 Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .027 .000 .174 .283 c.m/s
      .324 .910 .347 C perv/imperv/total
15    ADD RUNOFF
      .027 .027 .174 .283 c.m/s
35    COMMENT
3      line(s) of comment
*****
* AREA 205 *
*****
4     CATCHMENT
205.000 ID No.ó 99999
.324   Area in hectares
10.000 Length (PERV) metres
10.000 Gradient (%)
.000   Per cent Impervious
10.000 Length (IMPERV)
.000   %Imp. with Zero Dpth
1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat

```

```

.250      Manning "n"
71.000    SCS Curve No or C
.100      Ia/S Coefficient
10.375    Initial Abstraction
1         Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .042      .027      .174      .283 c.m/s
          .323      .000      .323      C perv/imperv/total
15  ADD RUNOFF
          .042      .064      .174      .283 c.m/s
9   ROUTE
      .000      Conduit Length
      .000      No Conduit defined
      .000      Zero lag
      .000      Beta weighting factor
      .000      Routing timestep
      0         No. of sub-reaches
          .042      .064      .064      .283 c.m/s
17  COMBINE
700  Junction Node No.
          .042      .064      .064      .325 c.m/s
35  COMMENT
3     line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18  CONFLUENCE
700  Junction Node No.
          .042      .325      .064      .000 c.m/s
14  START
1     1=Zero; 2=Define
35  COMMENT
4     line(s) of comment
*****
* 50 YEAR CHICAGO STORM *
* FERGUS SHAND DAM IDF PARAMETERS *
*****
2   STORM
1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
3705.143 Coefficient a
19.206   Constant b (min)
.924     Exponent c
.400     Fraction to peak r
180.000  Duration ó 240 min
          83.439 mm      Total depth
3   IMPERVIOUS
1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.013     Manning "n"
98.000   SCS Curve No or C
.100     Ia/S Coefficient
.518     Initial Abstraction
35  COMMENT
3     line(s) of comment
*****
* EXISTING CONDITIONS *
*****
35  COMMENT
3     line(s) of comment
*****
* AREA 104 *
*****
4   CATCHMENT
104.000  ID No.ó 99999
.382     Area in hectares
20.000   Length (PERV) metres
4.000    Gradient (%)
.000     Per cent Impervious
20.000   Length (IMPERV)
.000     %Imp. with Zero Dpth
1         Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250     Manning "n"
71.000   SCS Curve No or C
.100     Ia/S Coefficient
10.375   Initial Abstraction
1         Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv

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111618P.OUT
      .055      .000      .064      .000 c.m/s
      .360      .000      .360      C perv/imperv/total
35  COMMENT
      3 line(s) of comment
      *****
      * PEAK FLOW TO WEST *
      *****
15  ADD RUNOFF
      .055      .055      .064      .000 c.m/s
14  START
      1 1=Zero; 2=Define
35  COMMENT
      3 line(s) of comment
      *****
      * AREA 102 *
      *****
4   CATCHMENT
102.000 ID No.6 99999
      .928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
      .000 Per cent Impervious
30.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .119 .000 .064 .000 c.m/s
      .361 .000 .361 C perv/imperv/total
15  ADD RUNOFF
      .119      .119      .064      .000 c.m/s
9   ROUTE
      .000 Conduit Length
      .000 No Conduit defined
      .000 Zero lag
      .000 Beta weighting factor
      .000 Routing timestep
      0 No. of sub-reaches
      .119 .119 .119 .000 c.m/s
17  COMBINE
500 Junction Node No.
      .119 .119 .119 .119 c.m/s
14  START
      1 1=Zero; 2=Define
35  COMMENT
      3 line(s) of comment
      *****
      * AREA 103 *
      *****
4   CATCHMENT
103.000 ID No.6 99999
      .069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .024 .000 .119 .119 c.m/s
      .360 .890 .741 C perv/imperv/total
15  ADD RUNOFF
      .024      .024      .119      .119 c.m/s
9   ROUTE
      .000 Conduit Length
      .000 No Conduit defined
      .000 Zero lag

```



```

.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
17 COMBINE .024 .024 .024 .119 c.m/s
500 Junction Node No.
.024 .024 .024 .132 c.m/s
18 CONFLUENCE
500 Junction Node No.
.024 .132 .024 .000 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 107 *
*****
4 CATCHMENT
107.000 ID No.ó 99999
2.560 Area in hectares
50.000 Length (PERV) metres
4.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.296 .132 .024 .000 c.m/s
.361 .923 .367 C perv/imperv/total
15 ADD RUNOFF .296 .423 .024 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.296 .423 .423 .000 c.m/s
17 COMBINE
600 Junction Node No.
.296 .423 .423 .423 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 101 *
*****
4 CATCHMENT
101.000 ID No.ó 99999
.269 Area in hectares
20.000 Length (PERV) metres
2.000 Gradient (%)
4.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.036 .000 .423 .423 c.m/s
.361 .917 .383 C perv/imperv/total
15 ADD RUNOFF .036 .036 .423 .423 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 105 *
*****

```

```

4   CATCHMENT
105.000 ID No.6 99999
.533 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.077 .036 .423 .423 c.m/s
.360 .000 .360 C perv/imperv/total
15  ADD RUNOFF
.077 .113 .423 .423 c.m/s
9   ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.077 .113 .113 .423 c.m/s
17  COMBINE
600 Junction Node No.
.077 .113 .113 .524 c.m/s
14  START
1 1=Zero; 2=Define
35 COMMENT
3 1 line(s) of comment
*****
* AREA 106 *
*****
4   CATCHMENT
106.000 ID No.6 99999
.147 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.021 .000 .113 .524 c.m/s
.360 .000 .360 C perv/imperv/total
15  ADD RUNOFF
.021 .021 .113 .524 c.m/s
9   ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.021 .021 .021 .524 c.m/s
17  COMBINE
600 Junction Node No.
.021 .021 .021 .542 c.m/s
35  COMMENT
3 1 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18  CONFLUENCE
600 Junction Node No.
.021 .542 .021 .000 c.m/s
14  START

```

```

1      1=Zero; 2=Define
35    COMMENT
3      line(s) of comment
*****
* PROPOSED CONDITIONS *
*****
35    COMMENT
3      line(s) of comment
*****
* AREA 202 *
*****
4      CATCHMENT
202.000 ID No.ó 99999
.368 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/s Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.053 .000 .021 .000 c.m/s
.360 .000 .360 C perv/imperv/total
35    COMMENT
3      line(s) of comment
*****
* PEAK FLOW TO WEST *
*****
15    ADD RUNOFF
.053 .053 .021 .000 c.m/s
14    START
1      1=Zero; 2=Define
35    COMMENT
3      line(s) of comment
*****
* AREA 102 *
*****
4      CATCHMENT
102.000 ID No.ó 99999
.928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
30.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/s Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.119 .000 .021 .000 c.m/s
.361 .000 .361 C perv/imperv/total
15    ADD RUNOFF
.119 .119 .021 .000 c.m/s
35    COMMENT
3      line(s) of comment
*****
* AREA 203 *
*****
4      CATCHMENT
203.000 ID No.ó 99999
.466 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"

```

```

71.000    SCS Curve No or C
.100      Ia/S Coefficient
10.375    Initial Abstraction
1         Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .067      .119      .021      .000 c.m/s
          .360      .000      .360      C perv/imperv/total
15  ADD RUNOFF
35  COMMENT
3         line(s) of comment
*****
* AREA 103 *
*****
4  CATCHMENT
103.000   ID No.ó 99999
.069     Area in hectares
10.000   Length (PERV) metres
2.000   Gradient (%)
72.000   Per cent Impervious
10.000   Length (IMPERV)
.000     %Imp. with Zero Dpth
1        Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250     Manning "n"
71.000   SCS Curve No or C
.100     Ia/S Coefficient
10.375   Initial Abstraction
1        Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .024      .186      .021      .000 c.m/s
          .360      .890      .741      C perv/imperv/total
15  ADD RUNOFF
9         ROUTE
.000     Conduit Length
.000     No Conduit defined
.000     Zero lag
.000     Beta weighting factor
.000     Routing timestep
0        No. of sub-reaches
          .024      .200      .200      .000 c.m/s
17  COMBINE
700      Junction Node No.
          .024      .200      .200      .200 c.m/s
14  START
1        1=Zero; 2=Define
35  COMMENT
3         line(s) of comment
*****
* AREA 201 *
*****
4  CATCHMENT
201.000  ID No.ó 99999
2.226   Area in hectares
20.000  Length (PERV) metres
4.000   Gradient (%)
48.000  Per cent Impervious
20.000  Length (IMPERV)
.000    %Imp. with Zero Dpth
1       Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250    Manning "n"
71.000  SCS Curve No or C
.100    Ia/S Coefficient
10.375  Initial Abstraction
1       Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
          .556      .000      .200      .200 c.m/s
          .360      .905      .622      C perv/imperv/total
15  ADD RUNOFF
35  COMMENT
3         line(s) of comment
*****
* AREA 204 *
*****
4  CATCHMENT
204.000  ID No.ó 99999

```

```

.239 Area in hectares
20.000 Length (PERV) metres
10.000 Gradient (%)
10.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.039 .556 .200 .200 c.m/s
.358 .884 .411 C perv/imperv/total
15 ADD RUNOFF .039 .579 .200 .200 c.m/s
35 COMMENT
3 line(s) of comment
*****
* SURFACE STORAGE *
*****
10 POND
11 Depth - Discharge - Volume sets
.000 .000 .0
.200 .0234 24.9
.400 .0396 64.9
.600 .0509 115.5
.800 .0601 177.3
1.000 .0680 251.0
1.200 .0751 337.3
1.400 .0817 437.6
1.500 .0847 493.6
1.600 .242 553.9
1.800 .523 688.3
Peak Outflow = .273 c.m/s
Maximum Depth = 1.622 metres
Maximum Storage = 569. c.m
.039 .579 .273 .200 c.m/s
17 COMBINE
700 Junction Node No.
.039 .579 .273 .442 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 101 *
*****
4 CATCHMENT
101.000 ID No.6 99999
.269 Area in hectares
20.000 Length (PERV) metres
2.000 Gradient (%)
4.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.036 .000 .273 .442 c.m/s
.361 .917 .383 C perv/imperv/total
15 ADD RUNOFF .036 .036 .273 .442 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 205 *
*****
4 CATCHMENT
205.000 ID No.6 99999
.324 Area in hectares

```

```

111618P.OUT
10.000 Length (PERV) metres
10.000 Gradient (%)
.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.054 .036 .273 .442 c.m/s
.359 .000 .359 C perv/imperv/total
15 ADD RUNOFF
9 .054 .083 .273 .442 c.m/s
ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.054 .083 .083 .442 c.m/s
17 COMBINE
700 Junction Node No.
.054 .083 .083 .508 c.m/s
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
700 Junction Node No.
.054 .508 .083 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
4 line(s) of comment
*****
* 100 YEAR CHICAGO STORM *
* FERGUS SHAND DAM IDF PARAMETERS *
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
4448.166 Coefficient a
20.416 Constant b (min)
.936 Exponent c
.400 Fraction to peak r
180.000 Duration ó 240 min
93.475 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.013 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
3 line(s) of comment
*****
* EXISTING CONDITIONS *
*****
35 COMMENT
3 line(s) of comment
*****
* AREA 104 *
*****
4 CATCHMENT
104.000 ID No.ó 99999
.382 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth

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1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250  Manning "n"
71.000 SCS Curve No or C
.100   Ia/S Coefficient
10.375 Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .070      .000      .083      .000 c.m/s
      .394      .000      .394      C perv/imperv/total
35    COMMENT
3      line(s) of comment
      *****
      * PEAK FLOW TO WEST *
      *****
15    ADD RUNOFF
      .070      .070      .083      .000 c.m/s
14    START
1      1=Zero; 2=Define
35    COMMENT
3      line(s) of comment
      *****
      * AREA 102 *
      *****
4      CATCHMENT
102.000 ID No.ó 99999
.928   Area in hectares
30.000 Length (PERV) metres
4.000  Gradient (%)
.000   Per cent Impervious
30.000 Length (IMPERV)
.000   %Imp. with Zero Dpth
1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250  Manning "n"
71.000 SCS Curve No or C
.100   Ia/S Coefficient
10.375 Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .155      .000      .083      .000 c.m/s
      .394      .000      .394      C perv/imperv/total
15    ADD RUNOFF
      .155      .155      .083      .000 c.m/s
9      ROUTE
.000   Conduit Length
.000   No Conduit defined
.000   Zero lag
.000   Beta weighting factor
.000   Routing timestep
0      No. of sub-reaches
      .155      .155      .155      .000 c.m/s
17    COMBINE
500   Junction Node No.
      .155      .155      .155      .155 c.m/s
14    START
1      1=Zero; 2=Define
35    COMMENT
3      line(s) of comment
      *****
      * AREA 103 *
      *****
4      CATCHMENT
103.000 ID No.ó 99999
.069   Area in hectares
10.000 Length (PERV) metres
2.000  Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
.000   %Imp. with Zero Dpth
1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250  Manning "n"
71.000 SCS Curve No or C
.100   Ia/S Coefficient
10.375 Initial Abstraction
1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .027      .000      .155      .155 c.m/s
      .391      .892      .752      C perv/imperv/total

```

```

15  ADD RUNOFF          .027          .027          .155          .155 c.m/s
  9  ROUTE
     .000      Conduit Length
     .000      No Conduit defined
     .000      Zero lag
     .000      Beta weighting factor
     .000      Routing timestep
     0        No. of sub-reaches
     .027          .027          .027          .155 c.m/s
17  COMBINE
  500 Junction Node No.
     .027          .027          .027          .170 c.m/s
18  CONFLUENCE
  500 Junction Node No.
     .027          .170          .027          .000 c.m/s
35  COMMENT
  3    line(s) of comment
     *****
     * AREA 107 *
     *****
  4  CATCHMENT
  107.000 ID No.ó 99999
     2.560 Area in hectares
     50.000 Length (PERV) metres
     4.000 Gradient (%)
     1.000 Per cent Impervious
     50.000 Length (IMPERV)
     .000 %Imp. with Zero Dpth
     1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
     .250 Manning "n"
     71.000 SCS Curve No or C
     .100 Ia/S Coefficient
     10.375 Initial Abstraction
     1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
     .389          .170          .027          .000 c.m/s
     .395          .930          .400          C perv/imperv/total
15  ADD RUNOFF          .389          .546          .027          .000 c.m/s
  9  ROUTE
     .000      Conduit Length
     .000      No Conduit defined
     .000      Zero lag
     .000      Beta weighting factor
     .000      Routing timestep
     0        No. of sub-reaches
     .389          .546          .546          .000 c.m/s
17  COMBINE
  600 Junction Node No.
     .389          .546          .546          .546 c.m/s
14  START
  1    1=Zero; 2=Define
35  COMMENT
  3    line(s) of comment
     *****
     * AREA 101 *
     *****
  4  CATCHMENT
  101.000 ID No.ó 99999
     .269 Area in hectares
     20.000 Length (PERV) metres
     2.000 Gradient (%)
     4.000 Per cent Impervious
     20.000 Length (IMPERV)
     .000 %Imp. with Zero Dpth
     1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
     .250 Manning "n"
     71.000 SCS Curve No or C
     .100 Ia/S Coefficient
     10.375 Initial Abstraction
     1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
     .047          .000          .546          .546 c.m/s
     .393          .922          .415          C perv/imperv/total
15  ADD RUNOFF

```



```

111618P.OUT
.047 .047 .546 .546 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 105 *
*****
4 CATCHMENT
105.000 ID No.6 99999
.533 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.098 .047 .546 .546 c.m/s
.394 .000 .394 C perv/imperv/total
15 ADD RUNOFF
9 ROUTE
.098 .145 .546 .546 c.m/s
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
17 COMBINE
600 Junction Node No.
.098 .145 .145 .546 c.m/s
.098 .145 .145 .668 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 106 *
*****
4 CATCHMENT
106.000 ID No.6 99999
.147 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.027 .000 .145 .668 c.m/s
.394 .000 .394 C perv/imperv/total
15 ADD RUNOFF
9 ROUTE
.027 .027 .145 .668 c.m/s
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
17 COMBINE
600 Junction Node No.
.027 .027 .027 .668 c.m/s
.027 .027 .027 .692 c.m/s
35 COMMENT
3 line(s) of comment
*****

```

```

* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
600 Junction Node No.
      .027      .692      .027      .000 c.m/s
14 START
1   1=Zero; 2=Define
35 COMMENT
3   line(s) of comment
*****
* PROPOSED CONDITIONS *
*****
35 COMMENT
3   line(s) of comment
*****
* AREA 202 *
*****
4 CATCHMENT
202.000 ID No.ó 99999
      .368 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
      .000 Per cent Impervious
20.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/s Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .068      .000      .027      .000 c.m/s
      .394      .000      .394      C perv/imperv/total
35 COMMENT
3   line(s) of comment
*****
* PEAK FLOW TO WEST *
*****
15 ADD RUNOFF
      .068      .068      .027      .000 c.m/s
14 START
1   1=Zero; 2=Define
35 COMMENT
3   line(s) of comment
*****
* AREA 102 *
*****
4 CATCHMENT
102.000 ID No.ó 99999
      .928 Area in hectares
30.000 Length (PERV) metres
4.000 Gradient (%)
      .000 Per cent Impervious
30.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/s Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .155      .000      .027      .000 c.m/s
      .394      .000      .394      C perv/imperv/total
15 ADD RUNOFF
      .155      .155      .027      .000 c.m/s
35 COMMENT
3   line(s) of comment
*****
* AREA 203 *
*****
4 CATCHMENT
203.000 ID No.ó 99999
      .466 Area in hectares
20.000 Length (PERV) metres

```

```

4.000 Gradient (%)
.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.085 .155 .027 .000 c.m/s
.394 .000 .394 C perv/imperv/total
15 ADD RUNOFF
.085 .241 .027 .000 c.m/s
35 COMMENT
3 line(s) of comment
*****
* AREA 103 *
*****
4 CATCHMENT
103.000 ID No.ó 99999
.069 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
72.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.027 .241 .027 .000 c.m/s
.391 .892 .752 C perv/imperv/total
15 ADD RUNOFF
.027 .256 .027 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.027 .256 .256 .000 c.m/s
17 COMBINE
700 Junction Node No.
.027 .256 .256 .256 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
* AREA 201 *
*****
4 CATCHMENT
201.000 ID No.ó 99999
2.226 Area in hectares
20.000 Length (PERV) metres
4.000 Gradient (%)
48.000 Per cent Impervious
20.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.618 .000 .256 .256 c.m/s
.394 .909 .641 C perv/imperv/total
15 ADD RUNOFF
.618 .618 .256 .256 c.m/s
35 COMMENT

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3      line(s) of comment
*****
* AREA 204 *
*****
4      CATCHMENT
204.000 ID No.6 99999
      .239 Area in hectares
20.000 Length (PERV) metres
10.000 Gradient (%)
10.000 Per cent Impervious
20.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .048      .618      .256      .256 c.m/s
      .391      .886      .440      C perv/imperv/total
15     ADD RUNOFF
      .048      .649      .256      .256 c.m/s
35     COMMENT
3      line(s) of comment
*****
* SURFACE STORAGE *
*****
10     POND
11 Depth - Discharge - Volume sets
      .000      .000      .0
      .200      .0234      24.9
      .400      .0396      64.9
      .600      .0509      115.5
      .800      .0601      177.3
      1.000      .0680      251.0
      1.200      .0751      337.3
      1.400      .0817      437.6
      1.500      .0847      493.6
      1.600      .242      553.9
      1.800      .523      688.3
      Peak Outflow =      .355 c.m/s
      Maximum Depth =      1.680 metres
      Maximum Storage =      608. c.m
      .048      .649      .355      .256 c.m/s
17     COMBINE
700 Junction Node No.
      .048      .649      .355      .581 c.m/s
14     START
1      1=Zero; 2=Define
35     COMMENT
3      line(s) of comment
*****
* AREA 101 *
*****
4      CATCHMENT
101.000 ID No.6 99999
      .269 Area in hectares
20.000 Length (PERV) metres
2.000 Gradient (%)
4.000 Per cent Impervious
20.000 Length (IMPERV)
      .000 %Imp. with Zero Dpth
      1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .250 Manning "n"
71.000 SCS Curve No or C
      .100 Ia/S Coefficient
10.375 Initial Abstraction
      1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
      .047      .000      .355      .581 c.m/s
      .393      .922      .415      C perv/imperv/total
15     ADD RUNOFF
      .047      .047      .355      .581 c.m/s
35     COMMENT
3      line(s) of comment

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*****
* AREA 205 *
*****
4  CATCHMENT
205.000 ID No.ó 99999
.324 Area in hectares
10.000 Length (PERV) metres
10.000 Gradient (%)
.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
71.000 SCS Curve No or C
.100 Ia/S Coefficient
10.375 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.068 .047 .355 .581 c.m/s
.390 .000 .390 C perv/imperv/total
15 ADD RUNOFF
.068 .107 .355 .581 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.068 .107 .107 .581 c.m/s
17 COMBINE
700 Junction Node No.
.068 .107 .107 .661 c.m/s
35 COMMENT
3 line(s) of comment
*****
* PEAK FLOW TO EAST *
*****
18 CONFLUENCE
700 Junction Node No.
.068 .661 .107 .000 c.m/s
20 MANUAL

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