

**Midtown Oakville Transportation and Stormwater  
Municipal Class EA Final Report June 2014**

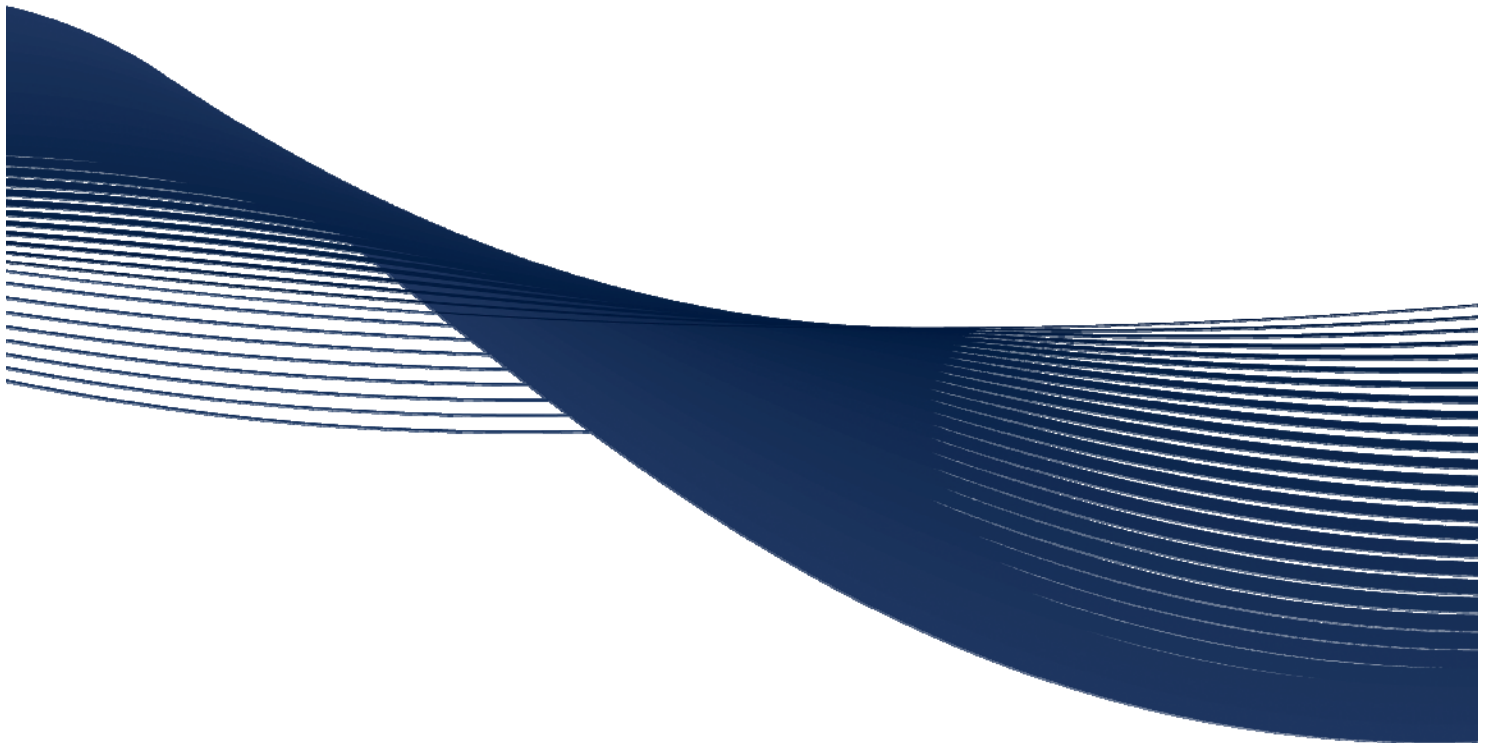
**APPENDIX J  
STORMWATER MANAGEMENT REPORT**

# Town of Oakville

## Stormwater Management Report

Oakville Part III Midtown EA, Town of Oakville

Project No. T11-767



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JUNE 2014

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**Issues and Revisions Registry**

Identification	Date	Description of issued and/or revision
Draft Report	February 19, 2014	Internal Review by Town – Hydrology Only
Draft Report	March 31, 2014	Internal Review by Town
Draft Report	May 16, 2014	Internal Review by Town
Draft Report	May 21, 2014	For Review by Conservation Halton
Draft Report	June 5, 2014	For Public Review

## 1.0 Introduction

Cole Engineering Group Ltd. (Cole Engineering) was retained by the Town of Oakville (the town) in 2012, following completion of the town's Transportation Master Plan (TMP) to complete a Class Environmental Assessment (EA) Study for improvements to Midtown Oakville. As part of this EA Study, a preferred alternative of transportation improvements was selected. The purpose of this Stormwater Management (SWM) Report is to assess the hydrologic and hydraulic impacts of the preferred alternative.

### 1.1. Site Description

Midtown Oakville, which is approximately 100 ha in size, has been identified as a vibrant, transit-supportive, mixed-use urban community. It will accommodate a significant portion of the future population growth and employment in the Greater Golden Horseshoe. As part of this future growth in population and employment within Midtown Oakville, transportation improvements were proposed as part of the Midtown Oakville EA Study. Throughout the EA process, several alternatives for transportation improvements were evaluated, and a preferred alternative was selected. The preferred alternative includes the proposed Trafalgar Road Interchange and the Royal Windsor Drive Interchange. The road layout of the preferred alternative is shown on **Figure DAP-2** provided at the end of this report.

### 1.2. Report Purpose

As part of the Midtown Oakville EA Study, the hydrologic and hydraulic impacts of the alternatives were assessed qualitatively. The purpose of this report is to discuss the hydrologic and hydraulic impacts of the preferred alternative and to advise on preliminary watercourse crossing requirements for the proposed transportation improvements within the study area. Preliminary SWM criteria are recommended as part of this Class EA, with a predominant focus on setting peak flow targets for each of the subwatersheds within the Midtown Oakville study area, and a preliminary assessment of water quality, erosion control and water balance.

### 1.3. Background Review

As noted in the *Stormwater Management Phase 1 Analysis Report* prepared by Cole Engineering, dated August 2012, the following background information was reviewed in order to identify the existing conditions within the Midtown Oakville study area:

- Town of Oakville Development Engineering Procedures and Guidelines Manual by the Town of Oakville (2013);
- Drainage and Hydrology Report Queen Elizabeth Way Widening & Improvements from East of Third Line to 1 km East of Trafalgar Road by URS (2006);
- Queen Elizabeth Way Widening & Improvements from East of Third Line to 1 km East of Trafalgar Road ESR by URS (2004);
- Queen Elizabeth Way from East of Third Line to East of Trafalgar Road Transportation ESR Addendum by McCormick Rankin Corporation/Ecoplans Limited (2006);
- Excerpts from 2010 Creek Erosion Inventory and Assessment Study by AECOM (2010);

- Lower Morrison/Wedgewood Creeks Flood Erosion and Master Drainage Plan Study Technical Report by R.V. Anderson Associates Limited (1993);
- Mid Town Core Drainage Study figure by SPNR Consultants Inc.;
- Town-wide Flood Study Town of Oakville by Philips Engineering Ltd. (2008);
- GIS data including storm sewers, catchbasins, storm sewer manholes, inlet/outlet structures, 1 m contours, watercourses, parcels, roads, right of ways, railways, and buildings; and,
- Plan and profiles for roads throughout the majority of the study area.

## 1.4. Site Visit

A site walk was completed with Conservation Halton on August 23, 2012 in order to identify any concerns or constraints with regards to stormwater management. The detailed notes from this site visit are provided in **Appendix A** of this report. The site walk included seven (7) locations of concern within the Midtown Oakville study area. The locations visited as part of the site walk are as follows:

- Site 1- Crossing of 16 Mile Creek at the Q.E.W.;
- Site 3 - South Service Road East at open watercourse;
- Site 4 - Wetland;
- Site 9 - Crossing of rail tracks west of Chartwell Road;
- Site 10 - South Service Road East west of Chartwell Road;
- Site 11 – High Priority Flooding Site at South Service Road East between Royal Windsor Drive and CNR; and
- Site 12 – Diversion Channel

Subsequent to this site visit, as well as the Technical Agencies Committee (TAC) Meeting #1 on July 17, 2012, preliminary comments (dated October 10, 2012) were received from Conservation Halton. These comments are also provided in **Appendix A**. As noted by Conservation Halton, at a minimum the proposed alternative must have no negative impacts on flooding and erosion hazards, and any opportunities to improve any deficiencies with respect to flooding and erosion should also be investigated. Conservation Halton has indicated areas of concern with regards to flooding and erosion impacts as part of these comments.

## 2.0 Hydrology

### 2.1. Existing Conditions

#### 2.1.1. Drainage Catchment Delineation

Major drainage areas within the Midtown Oakville study area were determined using 1 m contour data provided by the town. These drainage areas were compared against those shown in the *Lower Morrison/Wedgewood Creeks Flood, Erosion and Master Drainage Plan Study Technical Report* prepared by R.V. Anderson Associates Limited (1993). The drainage catchments shown in the *Lower Morrison/Wedgewood Creeks Flood, Erosion and Master Drainage Plan Study Technical Report* were confirmed to show similar drainage patterns to those determined using the 1 m contour data. The

drainage areas were further refined based on plan and profile information received from the town for roads and highways within the study area. The existing drainage area plan is shown on **Figure DAP-1** provided at the end of this report. As indicated on **Figure DAP-1**, the drainage catchments within the Midtown Oakville study area contribute flow to the following four (4) watercourses:

- Lower Morrison Creek;
- Wedgewood Creek;
- Morrison/Wedgewood Diversion Channel; and
- 16 Mile Creek

### 2.1.2. Weighted Imperviousness

The existing drainage conditions were simulated using a Visual OTTHYMO (VO2) hydrology model. A weighted imperviousness was determined in GIS for each drainage catchment based on land use shapefiles received from the town. A total imperviousness was assumed for each land use type based on the runoff coefficient values provided in the Town of Oakville's *Development Engineering Procedures and Guidelines*, for which an excerpt from this document regarding runoff coefficients is provided in **Appendix B**. The runoff coefficient values were then converted to percent imperviousness values by using the following conversion equation:

$$\% \text{ imp} = (C - 0.20) / (0.95 - 0.20)$$

Where:

% imp = imperviousness (%)

C = runoff coefficient

A summary of the imperviousness for each land use type within the Midtown Oakville study area is provided in **Table 2-1**. It is noted in **Table 2-1** that runoff coefficients for the Road and Railway land use types were not provided in the Town of Oakville's *Development Engineering Procedures & Guidelines*. Therefore, an imperviousness of 90% was assumed for both of these land use types, as they are shown as predominantly impervious from aerial images.

**Table 2-1 – Land Use Type Imperviousness**

Land Use Type (from Town GIS data)	Land Use Category (from Oakville Development Standards)	Runoff Coefficient (from Oakville Development Standards)	Correlated Imperviousness (%)
Business Commercial	Industrial/Commercial	0.90	93
Business Employment	Industrial/Commercial	0.90	93
Community Commercial	Industrial/Commercial	0.90	93
Core Commercial	Industrial/Commercial	0.90	93
High Density Residential	High Density (Condo/Highrise)	0.80	80
Industrial	Industrial/Commercial	0.90	93
Institutional	Industrial/Commercial	0.90	93
Low Density Residential	Single Residential	0.60	53
Low Density Residential – Special Policy	Single Residential	0.60	53
Medium Density Residential	Medium Density (Townhouses)	0.70	67
Natural Area**	N/A	0.20	0
Neighbourhood Commercial	Industrial/Commercial	0.90	93
Office Employment	Industrial/Commercial	0.90	93
Parks and Open Space**	N/A	0.20	0
Road*	N/A	N/A	90
Railway*	N/A	N/A	90
Urban Centre	Industrial/Commercial	0.90	93
Urban Core	Industrial/Commercial	0.90	93

\*Note: values not provided for these land use types in the town's development standards – imperviousness assumed based on aerial images

\*\*Note: values not provided for these land use types in the town's development standards – imperviousness assumed at 0% since land use is undeveloped and pervious

The weighted imperviousness for each catchment was calculated by determining the fraction of each land use type applied at the imperviousness values provided in **Table 2-1**. Any drainage catchment with a total imperviousness greater than 25% was simulated as a STANDHYD command in the VO2 model, and any catchment with a total imperviousness less than 25% was simulated as a NASHYD command. The weighted imperviousness for each drainage catchment is summarized in **Table 2-2**, for which the detailed calculations are provided in **Appendix B**.

**Table 2-2 – Weighted Imperviousness**

Catchment ID	Drainage Area (ha)	Total Imperviousness (%)	VO2 Command
A1	9.72	46	STANDHYD
A2	2.18	39	STANDHYD
A3	8.96	46	STANDHYD
A4	11.16	86	STANDHYD
A5	14.86	93	STANDHYD
A6	34.81	90	STANDHYD
A7	19.31	89	STANDHYD
A8	5.73	50	STANDHYD
A9	42.85	68	STANDHYD
A10	7.93	53	STANDHYD
A11	18.74	93	STANDHYD
A12	1.17	93	STANDHYD
A13	29.43	80	STANDHYD
A14	1.88	56	STANDHYD
A15	2.31	13	NASHYD
A16	11.25	93	STANDHYD
A17	9.75	52	STANDHYD
A18	11.58	53	STANDHYD
A19	1.83	14	NASHYD
A20	69.17	86	STANDHYD
A21	4.49	92	STANDHYD
A22	13.54	53	STANDHYD
A23	4.36	78	STANDHYD
A24	2.54	93	STANDHYD
A25	5.77	53	STANDHYD
A26	4.46	92	STANDHYD
A27	4.22	62	STANDHYD
A28	14.88	90	STANDHYD
A29	37.35	73	STANDHYD
A30	9.95	66	STANDHYD
A31	4.99	53	STANDHYD

It is noted that for all STANDHYD commands, it was assumed that all impervious areas are directly connected. This is a conservative assumption, however, it is anticipated that most roofs are connected as land use is predominantly commercial/industrial and urban roadways.

### 2.1.3. Weighted CN Values

A weighted CN value was also determined in GIS for each drainage catchment based on land use shapefiles received from the town, as well as the soil type information from the Ontario Soils Map of Halton County. From the soils mapping it was determined that the study area is comprised of three (3) soil types: clay loam, sandy loam and loam over bedrock. These soil types were classified into soil groups as per MTO Design Chart 1.08, which is provided in **Appendix B**. These soil groups were then applied to the land use types in MTO Design Chart 1.09 (also provided in **Appendix B**) in order to determine the resulting CN values (AMC II). The soil types, soil groups, land use and CN values are summarized in **Table 2-3**.

**Table 2-3 – CN Values**

Soil Type	Soil Group (from MTO Design Chart 1.08)	Land Use (from MTO Design Chart 1.09)	CN Value (AMC II) from MTO Design Chart 1.09
Sandy Loam	AB	Crop and Other Improved Land	70
Loam Overlying Bedrock	B		74
Clay Loam	C		Woodlots and Forest
		Pasture and Other Unimproved Land	71
			76

The weighted CN value for each catchment was calculated by determining the fraction of each CN area applied at the values provided in **Table 2-3**. For the STANDHYD commands in the VO2 model, the weighted CN values were applied to the Rainfall Loss – Modified SCS Curve Method. However, for the NASHYD commands in the VO2 model, the weighted CN values are applied to the pervious fraction only of the NASHYD catchments. The impervious fraction of the NASHYD catchments were designated a CN value of 98, as per MTO Design Chart 1.09. A composite CN value was then determined based on the pervious and impervious fractions of the NASHYD catchments. The weighted CN values for each drainage catchment are summarized in **Table 2-4**, for which the detailed calculations are provided in **Appendix B**.



**Table 2-4 – Weighted CN Values**

Catchment ID	Drainage Area (ha)	Weighted CN Value for Rainfall Loss Method in STANDHYDS (AMC II)	Pro-Rated for Impervious Area in NASHYD commands (AMC II)	Weighted CN Value for Rainfall Loss Method in STANDHYDS (AMC III)	Pro-Rated for Impervious Area in NASHYD commands (AMC III)
A1	9.72	81	-	91	-
A2	2.18	80	-	91	-
A3	8.96	79	-	90	-
A4	11.16	82	-	92	-
A5	14.86	82	-	92	-
A6	34.81	82	-	92	-
A7	19.31	82	-	92	-
A8	5.73	81	-	91	-
A9	42.85	81	-	91	-
A10	7.93	82	-	92	-
A11	18.74	82	-	92	-
A12	1.17	82	-	92	-
A13	29.43	82	-	92	-
A14	1.88	82	-	92	-
A15	2.31	-	80	-	91
A16	11.25	82	-	92	-
A17	9.75	81	-	91	-
A18	11.58	77	-	89	-
A19	1.83	-	78	-	90
A20	69.17	81	-	91	-
A21	4.49	82	-	92	-
A22	13.54	82	-	92	-
A23	4.36	81	-	91	-
A24	2.54	82	-	92	-
A25	5.77	81	-	91	-
A26	4.46	82	-	92	-
A27	4.22	76	-	89	-
A28	14.88	82	-	92	-
A29	37.35	81	-	91	-
A30	9.95	81	-	91	-
A31	4.99	80	-	91	-

### 2.1.4. Existing Conditions Hydrology Model

The existing conditions NASHYD and STANDHYD model input parameters are provided in **Appendix B**. The existing drainage conditions were modeled in VO2 using the 24-hour Chicago storm distribution, as per the town's design criteria. The Regional storm was also simulated in VO2 for existing conditions. In order to simulate existing conditions for the Regional storm event, the AMC II CN values were converted to AMC III CN values, as shown in **Table 2-4**. The input parameters for the existing conditions Regional storm model are provided in **Appendix B**. The existing flows were evaluated for the four (4) watercourses noted in **Section 2.1.1**. The results from the existing conditions hydrology model are summarized in **Table 2-5**, for which the detailed model output is provided in **Appendix B**.

**Table 2-5 – Existing Conditions Flow Results (24-hr Chicago)**

Storm Event	Total Flow to Lower Morrison Creek (m <sup>3</sup> /s) Total Area = 197.75 ha	Total Flow to Wedgewood Creek (m <sup>3</sup> /s) Total Area = 107.55 ha	Total Flow to Morrison/Wedgewood Diversion Channel (m <sup>3</sup> /s) Total Area = 42.85 ha	Total Flow to 16 Mile Creek (m <sup>3</sup> /s) Total Area = 73.02 ha
2-Year	29.09	14.97	4.87	11.35
5-Year	42.99	22.17	8.19	16.56
10-Year	52.12	29.67	9.96	19.97
25-Year	64.91	37.13	12.37	24.65
50-Year	74.26	42.44	14.90	28.17
100-Year	83.98	47.49	16.76	31.69
Regional	28.85	15.72	6.19	10.67

## 2.2. Target Flows

As per the *Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study*, prepared by R.V. Anderson Associates Ltd. (January 1993), peak runoff rates from all new developments within the Lower Morrison Creek and Wedgewood Creek watersheds are to be controlled to 50% of pre-development levels in order to mitigate potential erosion and flooding. The existing flows for Lower Morrison Creek and Wedgewood Creek from **Table 2-5**, were applied at 50% and compared to the existing flows provided in Table 3-11 of the *Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study*. This flow comparison is summarized in **Table 2-6**. As noted in **Table 2-6**, the existing Wedgewood Creek flows applied at 50% are well below the existing flows from the *Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study*, however, the existing Lower Morrison Creek flows applied at 50% are above the existing flows from the *Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study*. The existing flows from the VO2 model are significantly higher than the existing flows from the R.V. Anderson creek study as a result of assuming much higher imperviousness values. The target flows for the Wedgewood Creek will remain at 50% of existing flows, as per the R.V. Anderson study, but the existing flows from Table 3-11 of the R.V. Anderson creek study will be applied as the target flows for Lower Morrison Creek.

**Table 2-6 – Flow Comparison with R.V. Anderson Lower Morrison/Wedgewood Creek Study (1993)**

Storm Event	Lower Morrison Creek – 50% Existing Flows from Table 2-5 (m <sup>3</sup> /s)	Lower Morrison Creek – Existing Flows from Table 3-11 in R.V. Anderson Study at Morrison Road (m <sup>3</sup> /s)	Wedgewood Creek – 50% Existing Flows from Table 2-5 (m <sup>3</sup> /s)	Wedgewood Creek – Existing Flows from Table 3-11 in R.V. Anderson Study at Alscot Crescent (m <sup>3</sup> /s)
2-Year	14.6	11.2	7.5	10.6
5-Year	21.5	14.6	11.1	13.6
10-Year	26.1	18.2	14.8	17.0
25-Year	32.5	23.5	18.6	21.9
50-Year	37.1	27.4	21.2	25.8
100-Year	42.0	31.5	23.8	30.1

It is indicated in the *Morrison/Wedgewood Diversion Channel – Spill Control Class Environmental Assessment*, prepared by AMEC Environment & Infrastructure (May 2012), that there is a current potential for a spill of flood waters during extreme storm conditions, which potentially affects those lands within the vicinity of the diversion channel, as well as properties further downstream. However, work is currently being undertaken on behalf of Conservation Halton in order to mitigate these flood impacts of the diversion channel. Therefore, as part of the SWM analysis for the Midtown Oakville study area, it is recommended that peak runoff rates from any future development within the Morrison/Wedgewood Diversion Channel watershed be controlled to existing conditions. As there are no existing flood concerns for 16 Mile Creek in the study area, peak runoff rates from all future developments within the 16 Mile Creek watershed are also to be controlled to existing conditions. The target flows for the four (4) watersheds are summarized in **Table 2-7**. These targets are only applied for the 2-year to 100-year storm events.

**Table 2-7 – Target Flows (24-hr Chicago)**

Storm Event	Target Flow at Lower Morrison Creek (m <sup>3</sup> /s) Total Area = 197.75 ha	Target Flow at Wedgewood Creek (m <sup>3</sup> /s) Total Area = 107.55 ha	Target Flow at Morrison/Wedgewood Diversion Channel (m <sup>3</sup> /s) Total Area = 42.85 ha	Target Flow at 16 Mile Creek (m <sup>3</sup> /s) Total Area = 73.02 ha
2-Year	11.2	7.5	4.9	11.4
5-Year	14.6	11.1	8.2	16.6
10-Year	18.2	14.8	10.0	20.0
25-Year	23.5	18.6	12.4	24.7
50-Year	27.4	21.2	14.9	28.2
100-Year	31.5	23.8	16.8	31.7

## 2.3. Proposed Conditions – Preferred Alternative

As a result of the proposed transportation improvements, the existing drainage conditions will be modified. The proposed drainage conditions resulting from the transportation improvements are shown on **Figure DAP-2**, provided at the end of this report. As noted in **Figure DAP-2**, the proposed transportation improvements result in minor modifications to the drainage patterns within some of the catchments, however, the overall existing drainage patterns are maintained within the study area. The proposed Trafalgar Road Interchange and Royal Windsor Drive Interchange result in an overall increase to the total imperviousness of several drainage catchments, as the average imperviousness of these proposed roads is approximately 90%. With regards to drainage delineation, several catchments are affected by the proposed conditions resulting from the transportation improvements, as shown on **Figure DAP-2**. Similar to the analysis done for existing conditions, the proposed conditions of the transportation improvements was modeled using VO2. Due to the increase in imperviousness of several drainage catchments under proposed conditions, the resulting flows to the four (4) watercourses will increase with no mitigation measures. In order to mitigate these increases in flow under the proposed conditions of the transportation improvements, a total storage requirement was determined for each of the four (4) subwatershed blocks within the study area. This storage requirement is to be applied as a quantity control criteria on a per unit basis (m<sup>3</sup>/ha) for any future development within each of the four (4) blocks, which is discussed in further detail in **Section 2.5.1**.

### 2.3.1. Weighted Imperviousness

In order to determine the weighted imperviousness of each drainage catchment under proposed conditions, the same process was used as discussed in **Section 2.1.1**. The weighted imperviousness for each drainage catchment is summarized in **Table 2-8**, for which the detailed calculations are provided in **Appendix C**.

**Table 2-8 – Weighted Imperviousness**

Catchment ID	Drainage Area (ha)	Total Imperviousness (%)	VO2 Command
A1	9.72	46	STANDHYD
A2	2.18	39	STANDHYD
A3	8.96	46	STANDHYD
A4	11.16	86	STANDHYD
A5	14.33	93	STANDHYD
A6	34.81	89	STANDHYD
A7-a	9.32	88	STANDHYD
A7-b	9.98	90	STANDHYD
A8	5.73	50	STANDHYD
A9	42.85	68	STANDHYD
A10	7.93	53	STANDHYD
A11	19.25	92	STANDHYD
A12	1.17	91	STANDHYD
A13	29.43	82	STANDHYD

**Table 2-8 – Weighted Imperviousness (Continued)**

Catchment ID	Drainage Area (ha)	Total Imperviousness (%)	VO2 Command
A14	1.88	56	STANDHYD
A15	2.31	13	NASHYD
A16	11.78	92	STANDHYD
A17	9.75	52	STANDHYD
A18	11.58	53	STANDHYD
A19	1.83	14	NASHYD
A20	69.17	89	STANDHYD
A21	4.49	92	STANDHYD
A22	13.54	53	STANDHYD
A23	4.36	78	STANDHYD
A24	2.54	93	STANDHYD
A25	5.77	53	STANDHYD
A26	4.46	92	STANDHYD
A27	4.22	62	STANDHYD
A28-a	6.40	93	STANDHYD
A28-b	7.97	88	STANDHYD
A29	37.35	72	STANDHYD
A30	9.95	66	STANDHYD
A31	4.99	53	STANDHYD

As with existing conditions, all impervious area in each STANDHYD command was assumed to be directly connected.

### 2.3.2. Weighted CN Values

In order to determine the weighted CN value of each drainage catchment under proposed conditions, the same process was used as discussed in **Section 2.1.2**. The weighted CN value (AMC II) for each drainage catchment is summarized in **Table 2-9**, for which the detailed calculations are provided in **Appendix C**.

**Table 2-9 – Weighted CN Values**

Catchment ID	Drainage Area (ha)	Weighted CN Value for Rainfall Loss Method in STANDHYDS (AMC II)	Pro-Rated for Impervious Area in NASHYD commands (AMC II)	Weighted CN Value for Rainfall Loss Method in STANDHYDS (AMC III)	Pro-Rated for Impervious Area in NASHYD commands (AMC III)
A1	9.72	81	-	91	-
A2	2.18	80	-	91	-
A3	8.96	79	-	90	-
A4	11.16	82	-	92	-
A5	14.33	82	-	92	-
A6	34.81	82	-	92	-
A7-a	9.32	82	-	92	-
A7-b	9.98	82	-	92	-
A8	5.73	81	-	91	-
A9	42.85	81	-	91	-
A10	7.93	82	-	92	-
A11	19.25	82	-	92	-
A12	1.17	82	-	92	-
A13	29.43	82	-	92	-
A14	1.88	82	-	92	-
A15	2.31	-	80	-	91
A16	11.78	82	-	92	-
A17	9.75	81	-	91	-
A18	11.58	77	-	89	-
A19	1.83	-	78	-	90
A20	69.17	82	-	92	-
A21	4.49	82	-	92	-
A22	13.54	82	-	92	-
A23	4.36	81	-	91	-
A24	2.54	82	-	92	-
A25	5.77	81	-	91	-
A26	4.46	82	-	92	-
A27	4.22	76	-	89	-
A28-a	6.40	82	-	92	-
A28-b	7.97	82	-	92	-
A29	37.35	81	-	91	-
A30	9.95	81	-	91	-
A31	4.99	80	-	91	-

### 2.3.3. Proposed Conditions Hydrology Model

The proposed conditions NASHYD and STANDHYD model input parameters are provided in **Appendix C**. Similar to the existing conditions model, the proposed drainage conditions were modeled in VO2 using the 24-hour Chicago storm distribution, as per the town's design criteria. The Regional storm was also simulated in VO2 for proposed conditions. In order to simulate proposed conditions for the Regional storm event, the AMC II CN values were converted to AMC III CN values, as shown in **Table 2-8**. The input parameters for the proposed conditions Regional storm model are provided in **Appendix C**. However, the Regional storm event was not evaluated for storage requirements, as the 100-year storm is the governing storm event. This is shown in **Table 2-5** which indicates that the Regional storm is less than the 5-year storm event for existing conditions. Detailed output for the proposed conditions Regional storm model can be provided upon request.

The proposed conditions VO2 model was used to determine the storage required for each of the four (4) subwatershed blocks to meet the target flows summarized in **Table 2-6**. A summary of the proposed conditions flows and storage requirements is provided in **Tables 2-10** to **2-13**, for which the detailed model output is provided in **Appendix C**.

**Table 2-10 – Proposed Conditions Flow Results (24-hr Chicago): Lower Morrison Creek**

Storm Event	Target Flow from Table 2-7 (m <sup>3</sup> /s)	Total Post-Development Flow Uncontrolled (m <sup>3</sup> /s)	% Increase in Flow over Target Without Controls	Total Storage Required (m <sup>3</sup> )
2-Year	11.2	29.2	+161%	20,777
5-Year	14.6	43.1	+195%	30,936
10-Year	18.2	52.3	+187%	37,229
25-Year	23.5	65.1	+177%	45,011
50-Year	27.4	74.4	+172%	50,376
100-Year	31.5	84.2	+167%	55,552

**Table 2-11 – Proposed Conditions Flow Results (24-hr Chicago): Wedgewood Creek**

Storm Event	Target Flow from Table 2-7 (m <sup>3</sup> /s)	Total Post-Development Flow Uncontrolled (m <sup>3</sup> /s)	% Increase in Flow over Target Without Controls	Total Storage Required (m <sup>3</sup> )
2-Year	7.5	15.3	+104%	11,345
5-Year	11.1	22.6	+104%	15,984
10-Year	14.8	30.6	+107%	18,604
25-Year	18.6	37.8	+103%	22,032
50-Year	21.2	43.2	+104%	24,486
100-Year	23.8	48.3	+103%	26,934

**Table 2-12 – Proposed Conditions Flow Results (24-hr Chicago): Morrison/Wedgewood Diversion Channel**

Storm Event	Target Flow from Table 2-7 (m <sup>3</sup> /s)	Total Post-Development Flow Uncontrolled (m <sup>3</sup> /s)	% Increase in Flow over Target Without Controls	Total Storage Required (m <sup>3</sup> )
2-Year	4.9	4.9	+0%	0
5-Year	8.2	8.2	+0%	0
10-Year	10.0	10.0	+0%	0
25-Year	12.4	12.4	+0%	0
50-Year	14.9	14.9	+0%	0
100-Year	16.8	16.8	+0%	0

**Table 2-13 – Proposed Conditions Flow Results (24-hr Chicago): 16 Mile Creek**

Storm Event	Target Flow from Table 2-7 (m <sup>3</sup> /s)	Total Post-Development Flow Uncontrolled (m <sup>3</sup> /s)	% Increase in Flow over Target Without Controls	Total Storage Required (m <sup>3</sup> )
2-Year	11.4	11.5	+0.9%	1791
5-Year	16.6	16.7	+0.6%	2610
10-Year	20.0	20.1	+0.5%	3146
25-Year	24.7	24.8	+0.4%	3878
50-Year	28.2	28.3	+0.4%	4425
100-Year	31.7	31.9	+0.3%	4980

## 2.4. Flow Diversion

As per the *Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study*, prepared by R.V. Anderson Associates Ltd. (January 1993), there are currently major flooding and erosion issues within the Lower Morrison and Wedgewood Creeks. Therefore, in addition to applying the target flows specified in **Section 2.2** of this report, options were analyzed to divert flow from the Lower Morrison Creek watershed to the 16 Mile Creek watershed. This diversion was assessed at a high level in order to determine feasibility and the benefits to decreasing flows in Lower Morrison Creek. This assessment consisted of a hydrologic review only, and if this diversion is to be considered further, the resulting impacts to ecology and base flows should be assessed under separate cover.

The hydrologic assessment indicated that it is possible that the minor (5-year) flows from catchments A-4, A-29, A-17 and A-22 from the Lower Morrison Creek watershed (as shown in **Figure DAP-2**) be diverted via a storm pipe along the proposed Cross Avenue road. The minor flow from catchment A-4 could be captured at the following three (3) low points:

- Proposed underpass at Trafalgar Road;



- Proposed intersection of Cross Avenue at Trafalgar Road; and
- The southeast corner of catchment A-4

The minor flow from catchments A-29, A-17 and A-22 are to be diverted from the existing 1800 mm  $\emptyset$  pipe at Argus Road and Trafalgar road, and conveyed to the proposed diversion pipe along Cross Avenue.

The proposed diversion pipe would also convey flows captured at the proposed Cross Avenue road from the north portions of catchments A-28 and A-11 within the 16 Mile Creek watershed, and therefore the proposed diversion pipe would be sized to convey these flows as well. As per the Town of Oakville design standards, the obvert of any outlet to a watercourse must be above the 25-year water level. As per the HEC-RAS model of 16 Mile Creek provided by Conservation Halton, the 25-year water level at the location of the proposed outlet (Section 3299.205) is 79.61 m. The obvert of the proposed diversion pipe must remain above this water level. The proposed diversion pipe is assumed to be 869 m in length at 1.0%. The layout of the proposed diversion pipe is shown on **Figure DIV-1**.

As the proposed Cross Avenue road slopes in an easterly direction towards Trafalgar Road at approximately 0.5%, it will not be possible to convey major flows from the diverted catchments along the proposed road to 16 Mile Creek. The flows to the proposed diversion pipe were determined using the Rational Method, for which the calculations are provided in **Appendix D**. The proposed pipe was sized using FlowMaster, for which the model output is also provided in **Appendix D**. As indicated in the FlowMaster model output, the diversion pipe is required to be a minimum of 2400 mm  $\emptyset$  in order to adequately convey the 5-year flow. **Table 2-14** summarizes the various parameters for the proposed diversion pipe required to convey the 5-year storm event. As per **Table 2-14**, the diversion pipe was sized to convey 21.4 m<sup>3</sup>/s.

**Table 2-14 – Diversion Pipe Sizing**

Storm Event	Total Flow Diverted from Lower Morrison (m <sup>3</sup> /s)	Total Flow to be Conveyed by Diversion Pipe (m <sup>3</sup> /s)	Diversion Pipe Diameter (mm)	Upstream Invert (m)	Upstream Obvert (m)	Downstream Invert (m)	Downstream Obvert (m)
5-Year	16.3	21.4	2400	94.30	96.70	85.60	88.00

The hydrologic impacts of diverting this flow from Lower Morrison Creek to 16 Mile Creek were also assessed using VO2. The impacts were assessed for the 24-hour Chicago distribution for the 2-year to the 100-year storm events. The results of the hydrologic analysis are provided in **Tables 2-15** and **2-16**. The VO2 model output for the proposed diversion is provided in **Appendix D**.

**Table 2-15 – Proposed Diversion Hydrologic Analysis Results (Lower Morrison Creek)**

Storm Event	Target Flow from Table 2-7 (m <sup>3</sup> /s)	Total Proposed Flow – No Diversion (m <sup>3</sup> /s)	Total Proposed Storage – No Diversion (m <sup>3</sup> )	Total Proposed Flow – With Diversion (m <sup>3</sup> /s)	Total Proposed Storage – With Diversion (m <sup>3</sup> )	Total Change in Storage Resulting From Diversion (m <sup>3</sup> )
2-Year	11.2	11.1	20,777	11.0	8794	-11983
5-Year	14.6	14.6	30,936	14.5	13,452	-17,484
10-Year	18.2	18.0	37,229	17.9	17,106	-20,123
25-Year	23.5	23.1	45,011	23.3	22,073	-22,938
50-Year	27.4	26.8	50,376	27.2	26,321	-24,055
100-Year	31.5	30.9	55,552	31.2	30,954	-24,598

**Table 2-16 – Proposed Diversion Hydrologic Analysis Results (16 Mile Creek)**

Storm Event	Target Flow from Table 2-7 (m <sup>3</sup> /s)	Total Proposed Flow – No Diversion (m <sup>3</sup> /s)	Total Proposed Storage – No Diversion (m <sup>3</sup> )	Total Proposed Flow – With Diversion (m <sup>3</sup> /s)	Total Proposed Storage – With Diversion (m <sup>3</sup> )	Total Change in Storage Resulting From Diversion (m <sup>3</sup> )
2-Year	11.4	10.1	1791	11.2	10,496	+8705
5-Year	16.6	14.8	2610	16.4	15,358	+12,748
10-Year	20.0	17.9	3146	19.6	17,670	+14,524
25-Year	24.7	22.2	3878	23.9	20,323	+16,445
50-Year	28.2	25.4	4425	27.2	21,552	+17,127
100-Year	31.7	28.6	4980	31.5	22,403	+17,423

As shown in **Tables 2-15** and **2-16**, the benefits of the proposed diversion are limited as storage is still required for both Lower Morrison Creek and 16 Mile Creek. With the proposed flow diversion, the storage requirements decrease for Lower Morrison Creek and increase for 16 Mile Creek. Without the proposed flow diversion, the storage requirements decrease for 16 Mile Creek and increase for Lower Morrison Creek. However, the total combined storage requirements for both subwatersheds is not significantly reduced with the proposed diversion. It is therefore not proposed to implement the diversion pipe at this time, but the diversion may be reconsidered in the future. It is recommended that the possibility of the diversion alternative be evaluated as part of the flood opportunities study for Lower Morrison Creek to be conducted by the town in the near future.

## 2.5. Preliminary SWM Criteria

As part of the SWM assessment for the Midtown Oakville EA Study, the following **Sections 2.5.1** to **2.5.3** provide recommendations on SWM criteria for any future development within Midtown Oakville. The predominant focus of the preliminary SWM criteria recommended as part of this Class EA is on setting flow targets for each of the subwatersheds within the Midtown Oakville study area, with a preliminary assessment of water quality, erosion control and water balance requirements.

### 2.5.1. Quantity Control

Any future development within the Midtown Oakville study area, including the development of the proposed transportation improvements, is to utilize the Midtown Oakville EA Study hydrology model demonstrating that the target flows previously discussed in **Section 2.2** of this report are met. In addition to meeting the target flows on a block basis, minimum storage is to be provided by any future developments, as discussed in **Section 2.3.3**. The minimum storage requirements are summarized in **Table 2-15**.

**Table 2-17 – Unit Storage Requirements for Future Development**

Subwatershed Area within Midtown Oakville	Total Storage Required from Tables 2-10 to 2-13 (m <sup>3</sup> )	Total Subwatershed Area within Midtown Oakville (ha)	Unit Storage Requirement for Future Development (m <sup>3</sup> /ha)
Lower Morrison Creek	55,552	197.75	280.9
Wedgewood Creek	26,934	107.55	250.4
Morrison/Wedgewood Diversion Channel	0	42.85	0
16 Mile Creek	4980	73.02	68.2

In addition to providing the above minimum storage, the Midtown EA hydrologic model must be updated to demonstrate that target flows are achieved. The Regional storm event is also to be modeled in order to determine the downstream impacts of any future development within the Midtown Oakville study area.

### 2.5.2. Quality Control

Any future development within the Midtown Oakville study area is to achieve Enhanced Level 1 Protection, as per the MOE *Stormwater Management Planning and Design Manual* (March 2003). The proposed road networks as part of the Midtown EA transportation improvements are to be treated with oil/grit separators (OGS) units as a minimum, however, quality treatment of the proposed transportation improvements by low impact development (LID) measures should be considered where feasible.

### 2.5.3. Water Balance

Any future development within the Midtown Oakville study area shall consider water balance by achieving the greater of either of the two (2) following requirements:

- Provide retention of 5 mm over the entire area of the proposed development, as per the City of Toronto's *Wet Weather Flow Management Guidelines* (November 2006) ; or
- Retain stormwater on-site to achieve an equivalent annual volume of infiltration as pre-development conditions, as per Section 3.2 of the MOE *Stormwater Management Planning and Design Manual* (March 2003).

This water balance can be achieved by a variety of low impact development (LID) measures, as specified in the *Low Impact Development Stormwater Management Planning and Design Guide*, prepared by Credit Valley Conservation and Toronto and Region Conservation Authority (2010). The following LID measures are recommended in the *Low Impact Development Stormwater Management Planning and Design Guide* :

- Rainwater harvesting;
- Green roofs;
- Infiltration trenches and soakaway pits;
- Bioretention;
- Permeable pavement; and
- Perforated pipe systems.

LID measures would be assessed for each development area at the time of re-zoning and/or site plan approval to determine the best method to meet specified targets. The soil types within the Midtown Oakville study area were assessed on a preliminary level in order to determine any locations where infiltration is feasible. The soil types are shown on **Figure LID** provided in **Appendix C**. As noted on **Figure LID**, the study area is predominantly Soil Group C, which provides reasonable infiltration. Therefore, as the predominant soil type throughout the Midtown Oakville study area was determined to provide reasonable infiltration, opportunities for LIDs should be considered for all future developments.

The existing Midtown Oakville area is highly impervious with limited SWM controls, and very limited LID measures. This results in the generation and discharge of runoff during the majority of rainfall events, and would contribute to downstream erosion. Although a SWM criterion for erosion control was not assessed as part of the SWM analysis for this Class EA, from a practical perspective, it is anticipated that the water balance criteria will provide inherent benefits that will ensure that downstream erosion is decreased through development of Midtown Oakville. It should be noted that the town intends to complete a separate flood study in the near future through which there may be opportunity to further assess the SWM criteria for the Midtown Oakville study area in more detail, including potential refinements to erosion and flood control requirements.

### 3.0 Hydraulics

Hydraulic analysis was completed for the Morrison/Wedgewood Diversion Channel and the Lower Morrison Creek in order to evaluate the hydraulic impacts resulting from the proposed transportation improvements. The hydraulic analysis was completed using a HEC-RAS model for each watercourse. The purpose of the hydraulic analysis is to demonstrate that there are no significant hydraulic impacts (ie. changes in existing water levels) as a result of the proposed transportation improvements. Only the proposed major crossings of these watercourses were analyzed. Any proposed minor crossings and storm conveyance methods (ie. of ditches, swales) will be addressed at detailed design.

As per CH criteria, under all flow conditions, up to and including flows generated by the regulatory storm, the proposed crossings (including all required grading) will not result in any negative impacts to any existing habitable structure, and will provide safe access and egress to adjacent properties and roadways, for the duration or frequency of any spill. Any local water level increases may be accepted provided that:

- There is either no increased regulation of adjacent private properties; or
- The impacted private landowners have been given an understanding of how the proposed works will impact their property, the regulatory implications this will have on their future land use of the property, and have provided written confirmation of their understanding and acceptance of these impacts.

The analysis completed during the Midtown Oakville Class EA process has demonstrated that it is feasible to implement new crossings that meet CH's criteria. During subsequent detailed design phases, crossing sizes would be optimized to maximize cost efficiencies while meeting all appropriate criteria.

### 3.1. Morrison/Wedgewood Diversion Channel

A HEC-RAS model of the Morrison/Wedgewood Diversion Channel was done by AMEC for the recent channel modifications. This HEC-RAS model from AMEC was used to simulate existing conditions as part of the Midtown Oakville EA Study hydraulic analysis.

#### 3.1.1. Design Flows

The flows provided in AMEC's HEC-RAS model of the Morrison/Wedgewood Diversion Channel were used as the design flows to simulate both existing and proposed conditions. The Morrison/Wedgewood Diversion Channel was simulated as an unsteady model. Therefore, the unsteady design flows were provided by AMEC in the form of inflow hydrographs at sections 4087, 3200, 2400, 1828.71 and 532.03. A normal depth boundary condition is also provided by AMEC at section 399.99, using a friction slope of 0.005. Initial flow conditions were also provided by AMEC for sections 4087, 5440.1, 3200, 1829.71, 2400 and 532.03, which are summarized in **Table 3-1**.

**Table 3-1 – Initial Flow Conditions: Morrison/Wedgewood Diversion Channel HEC-RAS Model**

Section ID	Initial Flow (m <sup>3</sup> /s)
4087	0
5440.1	0.454
3200	0.183
1829.71	2.443
2400	2.472
532.03	1.567

#### 3.1.2. Existing Conditions

Currently, there are six (6) existing structures within the Morrison/Wedgewood Diversion Channel, as modeled by AMEC in HEC-RAS. **Table 3-2** summarizes the existing structures from upstream to downstream along the channel.

**Table 3-2 – Existing Structures: Morrison/Wedgewood Diversion Channel HEC-RAS Model**

Section ID	Location	Crossing Size (m)	Length of Crossing (m)	Upstream Invert (m)	Downstream Invert (m)
2726.357	Eighth Line	Span = 5.9 Rise = 1.9	34.2	116.02	115.95
2263.985	Pedestrian Bridge	Top Width = 18.0 Bottom Width = 2.0 Height = 2.3	1.0	113.92	113.92
1894.312	Trafalgar Road	Top Width = 8.0 Bottom Width = 2.0 Height = 3.0	33.2	112.24	112.02
1032.586	Kent Avenue	Span = 10.0 Rise = 5.0	32.4	107.58	106.98
622.568	Sixth Line	Span = 10.0 Rise = 3.5	82.0	106.10	105.03

The maximum water level results of the existing conditions unsteady state HEC-RAS model from AMEC are provided in **Appendix E**.

### 3.1.3. Proposed Conditions

As part of the proposed transportation improvements, a crossing over the Morrison/Wedgewood Diversion Channel is proposed approximately 240 m east of Trafalgar Road. This proposed crossing was sized to minimize any hydraulic impacts to the channel. Due to the proximity of the proposed crossing location to Trafalgar Road, the crossing was sized using the same geometry as the existing Trafalgar Road crossing. Therefore, the geometry of the proposed crossing is to be a total width of 8.0 m and a height of 3.0 m. This geometry was selected for the proposed crossing, as both structures are to convey the same channel flows. The proposed crossing is to convey the unsteady design flows provided by AMEC, such that the maximum water level results at the proposed crossing location are maintained below a minimum freeboard of 0.30 m from the edge of pavement elevation of the proposed road deck. There is also to be minimal impact to the existing maximum water levels within the Morrison/Wedgewood Diversion Channel. The results of the proposed conditions HEC-RAS model, including the proposed crossing of the Morrison/Wedgewood Diversion Channel 240 m east of Trafalgar Road, are summarized in **Table 3-3**. The HEC-RAS model output for proposed conditions is provided in **Appendix E**.

**Table 3-3 – Morrison/Wedgewood Diversion Channel HEC-RAS Model Results**

Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)	Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)
4087	119.95	119.95	0	2480.07*	116.37		
4000	119.77	119.77	0	2460.05*	116.31	116.31	0
3900	119.63	119.63	0	2440.03*	116.31	116.31	0
3874.32*	119.59	119.59	0	2420.01*	116.38	116.38	0
3849.55*	119.55	119.55	0	2400	116.5	116.5	0
3824.77*	119.51	119.51	0	2366.66*	116.38	116.38	0
3800	119.47	119.47	0	2333.33*	116.16	116.16	0
3775.*	119.42	119.42	0	2300	115.97		
3750.*	119.38	119.38	0	2263.986	115.81	115.81	0
3725.*	119.33	119.33	0	2263.985	Existing Crossing		
3700	119.29	119.29	0	2263.984	115.81		
3600	119.02	119.02	0	2200	115.58	115.59	+0.01
3500	118.96	118.96	0	2140	115.26	115.28	+0.02
3475	118.89	118.89	0	2135	Proposed Crossing		
3400	118.83	118.83	0	2100	115.04	115.04	0
3300	118.76	118.76	0	2000	114.67	114.67	0
3200	118.71	118.71	0	1919.601*	114.43	114.43	0
3129.289	118.4	118.4	0	1914.50*	114.42	114.42	0
3100	118.3	118.3	0	1909.40*	114.41	114.41	0
3000.99	Existing Crossing			1904.312	114.40	114.40	0
3000	118.1	118.1	0	1894.312	Existing Crossing		
2900	117.85	117.85	0	1850	114.47	114.47	0
2800	117.58	117.58	0	1848.034	114.47	114.46	-0.01
2761.459	117.46	117.46	0	1840	Existing Crossing		
2748.387	117.44	117.44	0	1829.706	113.11	113.11	0
2726.357	Existing Crossing			1828.706	113.11	113.11	0
2704.318	117.27	117.27	0	1800	113.06	113.06	0
2691.288	117.25	117.25	0	1700	112.75	112.75	0
2652.393	117.1	117.1	0	1600	112.45	112.45	0
2600	116.85	116.85	0	1500	112.14	112.14	0
2500	116.43	116.43	0	1400	111.86	111.86	0
2499.99	Existing Crossing			1300	111.63	111.63	0

**Table 3-3 – Morrison/Wedgewood Diversion Channel HEC-RAS Model Results (Continued)**

Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)	Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)
1200	111.34	111.34	0	662.9772	108.99	109.00	+0.01
1100	110.86	110.86	0	650.7119	108.89	108.90	+0.01
1073.348	110.60	110.60	0	622.5683	Existing Crossing		
1066.55*	110.55	110.55	0	551.4885	108.89	108.89	0
1059.76*	110.54	110.54	0	546.624*	108.80	108.80	0
1052.966	110.79	110.79	0	541.760*	108.61	108.62	+0.01
1032.586	Existing Crossing			536.896*	108.35	108.35	0
1007.762	110.84	110.84	0	532.0324	108.32	108.32	0
985.6076	110.80	110.80	0	500	108.17	108.17	0
959.0905	110.70	110.70	0	475*	108.10	108.10	0
900	110.48	110.48	0	449.999*	108.01	108.01	0
800	110.04	110.04	0	424.999*	107.89	107.89	0
700	109.41	109.41	0	399.9999	107.76	107.76	0

As noted in **Table 3-3**, the existing water levels are not significantly impacted by the proposed transportation improvements, which include a proposed crossing of the Morrison/Wedgewood Diversion Channel 240 m east of Trafalgar Road.

#### 3.1.4. Identified Data Gap

It should be noted that the elevations used for the proposed crossing in the HEC-RAS model from AMEC are different from those shown on the design drawing of the proposed road. It was observed through the hydraulic analysis of the Morrison/Wedgewood Diversion Channel that the topographic data from the town that was used for the proposed road design was not consistent with the topographic data used by AMEC in the HEC-RAS model. Both sets of topographic data were compared with the as-built drawings of the diversion channel. It was noted that the elevations shown in the as-built drawings were more consistent with the topographic data from the town. A survey was done by the town in March 2014 to confirm these results. Although there are discrepancies in the AMEC HEC-RAS model with regards to the channel geometry, the discrepancies are conservative in nature as the AMEC model shows a smaller channel in terms of depth, therefore simulating a channel with less capacity than existing conditions. Other hydraulic model parameters affecting the capacity of the channel, such as channel slope, remain relatively consistent between the AMEC model and the town's topographic data. It is proposed that the geometry of the channel be updated in the HEC-RAS model with the town's topographic data through detailed design for consistency purposes. It is anticipated that the update to the channel geometry in the model will not affect the sizing of the proposed crossing, however, invert, obvert and road deck elevations will be modified.



## 3.2. Lower Morrison Creek

A HEC2 hydraulic model of the Lower Morrison Creek was received from Conservation Halton. The HEC2 model was converted to HEC-RAS in order to complete a hydraulic analysis of the Lower Morrison Creek. The two (2) branches of the Lower Morrison Creek were analyzed as River 1 and River 2 in HEC-RAS. A survey of five (5) existing crossings was completed, for which the geometry data was updated in the existing conditions HEC-RAS model.

### 3.2.1. Design Flows

The design flows used in the existing conditions HEC-RAS model for both Rivers 1 and 2 of the Lower Morrison Creek were obtained from the VO2 model results discussed in **Section 2.1.4** of this report. **Figures XS-1** and **XS-2**, provided in **Appendix F**, show the HEC-RAS flow point locations along both Rivers 1 and 2, corresponding to the VO2 model flows. As indicated in **Section 2.1.4**, the highest flows result from the 100-year 24-hour Chicago storm event. Therefore, this was used as the regulatory storm in HEC-RAS. Existing flows without proposed SWM controls were utilized as it is assumed that roads and crossings would be constructed before site controls are in place. The design flows used in the HEC-RAS model for the Lower Morrison Creek are summarized in **Tables 3-4** and **3-5**.

**Table 3-4 – Existing Conditions: Design Flows for Lower Morrison Creek**

Reach in HEC-RAS Model	Section ID in HEC-RAS Model	Command ID in VO2 Model	100-Year Design Flow – Existing Conditions (m <sup>3</sup> /s)
River 1	4.03	STANDHYD 6	16.32
River 1	3.86	AddHyd 282	25.68
River 1	2.7	AddHyd 239	27.54
River 1	2.43	AddHyd 217	30.38
River 2	3.2	AddHyd 32	42.16
River 2	2.701	AddHyd 2701	50.28
River 2	2.22	AddHyd 222	53.60

**Table 3-5 – Proposed Conditions: Design Flows for Lower Morrison Creek**

Reach in HEC-RAS Model	Section ID in HEC-RAS Model	Command ID in VO2 Model	100-Year Design Flow – Existing Conditions (m <sup>3</sup> /s)
River 1	4.03	STANDHYD 6	16.22
River 1	3.67	AddHyd 53	25.91
River 1	2.7	AddHyd 239	27.76
River 1	2.43	AddHyd 217	30.61
River 2	3.2	AddHyd 32	42.13
River 2	2.701	AddHyd 2701	50.25
River 2	2.22	AddHyd 222	53.57

### 3.2.2. Existing Conditions

Currently, there are seven (7) existing structures within River 1 of the Lower Morrison Creek, as simulated in the existing conditions HEC-RAS model. **Table 3-5** summarizes the existing structures from upstream to downstream along River 1.

**Table 3-6 – Existing Structures: Lower Morrison Creek (River 1) HEC-RAS Model**

Section ID	Location	Crossing Size (m)	Length of Crossing (m)	Upstream Invert (m)	Downstream Invert (m)
3.92	Hwy QEW	Span = 6.0 Rise = 1.5	88.9	104.25	104.25
2.7955	CNR Bridge	Span = 1.8 Rise = 1.5	27.9	97.96	97.96
2.74	Culvert Under East Side of Longo's	Span = 3.5 Rise = 1.3	78.9	96.98	96.98
2.6525	Bridge at Cornwall Road	Twin Culverts Span = 3.25 (x2) Rise = 1.20	53.9	96.57	96.25
2.4035	Bridge #6	Span = 2.0 Rise = 1.9	5.7	93.07	93.07
2.365	Bridge #5	Span = 5.5 Rise = 1.9	9.1	92.72	92.71
2.3055	Bridge #4	Span = 7.25 Rise = 1.5	10.0	92.36	92.13

Currently, there are five (5) existing structures within River 2 of the Lower Morrison Creek, as simulated in the existing conditions HEC-RAS model. **Table 3-6** summarizes the existing structures from upstream to downstream along River 2.

**Table 3-7 – Existing Structures: Lower Morrison Creek (River 2) HEC-RAS Model**

Section ID	Location	Crossing Size (m)	Length of Crossing (m)	Upstream Invert (m)	Downstream Invert (m)
3.1725	Bridge #11 – At Railway	Span = 3.3 Rise = 1.5	24.0	96.23	96.14
3.1375	Bridge #10 – Downstream of Railway	Twin Culverts Diameter = 1.8 (x2)	10.0	95.91	95.73
2.875	Bridge at Cornwall Road	Span = 13.7 Rise = 1.4	48.9	94.00	94.00
2.621	Bridge #9	Span = 3.0 Rise = 1.25	159.9	93.13	93.13
2.291	Bridge #8	Span = 2.85 Rise = 1.60	18.7	91.38	91.36

The 100-year water level results of the existing conditions HEC-RAS model for Rivers 1 and 2 of the Lower Morrison Creek are provided in **Appendix F**. The HEC-RAS results are also shown on **Figures XS-1** and **XS-2**, provided at the end of this report.

### 3.2.3. Proposed Conditions

As part of the proposed transportation improvements, a crossing over the Lower Morrison Creek is proposed approximately 150 m south of Highway QEW. This proposed crossing was sized to minimize any hydraulic impacts to the creek. The proposed crossing is to be a Conspan arch with geometry of 9.8 m wide, and a height of 2.4 m. This geometry was selected for the proposed crossing, as it conveys the same channel flows as the Highway QEW culvert. The proposed crossing is to convey the 100-year 24-hour Chicago storm, such that the maximum water level results at the proposed crossing location are maintained below a minimum freeboard of 0.30 m from the top of the proposed edge of pavement. There is also to be minimal impact to the existing maximum water levels within the Lower Morrison Creek. The results of the proposed conditions HEC-RAS model, including the proposed crossing of the Lower Morrison Creek 150 m south of Highway QEW, are summarized in **Table 3-7** and **Table 3-8**. The HEC-RAS model output for proposed conditions is provided in **Appendix F**. The proposed crossing size is supported by the *Fluvial Geomorphological Assessment* provided in **Appendix G**.

**Table 3-8 – Lower Morrison Creek (River 1) HEC-RAS Model Results**

Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)	Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)
4.03	107.32	107.32	0	2.6525	Existing Crossing		
3.96	106.35	106.33	-0.02	2.625	97.39	97.40	+0.01
3.95	106.40	106.38	-0.02	2.59	97.07	97.07	0
3.92	Existing Crossing			2.54	96.82	96.82	0
3.86	105.48	105.49	+0.01	2.49	96.29	96.29	0
3.81	105.11	105.07	-0.04	2.43	95.88	95.88	0
3.75	104.43	104.47	+0.04	2.407	95.91	95.91	0
3.701	103.07	102.77	-0.30	2.4035	Existing Crossing		
3.7	Proposed Crossing			2.4	94.97	94.97	0
3.67	102.08	102.04	-0.04	2.39	94.86	94.86	0
3.6	101.61	101.61	0	2.37	94.93	94.93	0
3.55	101.30	101.31	+0.01	2.365	Existing Crossing		
3.05	101.02	101.02	0	2.36	94.35	94.36	+0.01
2.81	101.15	101.16	+0.01	2.35	94.38	94.39	+0.01
2.7955	Existing Crossing			2.33	93.98	93.98	0
2.781	99.93	99.93	0	2.311	94.16	94.16	0
2.78	100.11	100.12	+0.01	2.3055	Existing Crossing		
2.74	Existing Crossing			2.3	93.70	93.70	0
2.7	99.86	99.87	+0.01	2.28	93.19	93.19	0
2.68	99.78	99.79	+0.01	2.24	92.80	92.80	0

**Table 3-9 – Lower Morrison Creek (River 2) HEC-RAS Model Results**

Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)	Section ID	Existing Conditions: Maximum Water Level (m)	Proposed Conditions: Maximum Water Level (m)	Proposed Conditions: Change in Water Level (+/- m)
3.2	99.98	99.98	0	2.75	96.23	96.23	0
3.185	100.01	100.01	0	2.71	96.20	96.20	0
3.1725	Existing Crossing			2.701	96.14	96.14	0
3.16	98.84	98.84	0	2.621	Existing Crossing		
3.145	98.84	98.84	0	2.541	95.80	95.80	0
3.1375	Existing Crossing			2.53	94.80	94.80	0
3.13	98.43	98.42	-0.01	2.491	94.59	94.59	0
3.12	98.35	98.35	0	2.44	94.61	94.61	0
3.07	98.38	98.37	-0.01	2.401	94.52	94.52	0
3.0.3	97.74	97.74	0	2.36	94.34	94.34	0
2.97	96.93	96.93	0	2.31	93.86	93.86	0
2.93	96.83	96.83	0	2.301	94.05	94.05	0
2.90	96.89	96.89	0	2.291	Existing Crossing		
2.875	Existing Crossing			2.281	93.50	93.50	0
2.85	96.29	96.29	0	2.25	92.94	92.94	0
2.83	96.29	96.28	-0.01	2.22	92.51	92.51	0
2.79	96.24	96.24	0				

As noted in **Tables 3-8** and **3-9**, the existing water levels are not significantly impacted by the proposed transportation improvements, which include a proposed crossing of Lower Morrison Creek 150 m south of Highway QEW.

### 3.3. Fluvial Geomorphology

The behaviour of the existing watercourses within the study area is discussed in the *Fluvial Geomorphological Assessment* prepared by Water's Edge (December 2013). The information from this assessment was taken into consideration in sizing the proposed crossings. The *Fluvial Geomorphological Assessment* is provided in **Appendix G**. The fluvial assessment done by Water's Edge outlines the existing geomorphic conditions of the watercourses at the proposed crossings. The study included the assessment of five locations within the regulated watercourses. Site A in the fluvial assessment refers to the proposed crossing of the Morrison/Wedgewood Diversion Channel, as discussed in **Section 3.1.3**, and Site C refers to the proposed crossing of Lower Morrison Creek, as discussed in **Section 3.2.3**. A Rapid Geomorphic Assessment (RGS) was conducted for Site C, which indicated that the Lower Morrison Creek at this location is "transitional" or "stressed", meaning that the channel morphology is within a range of variance for rivers of similar hydrographic characteristics but the evidence of instability is

frequent. It is also noted in the fluvial assessment that the bankfull widths of Site A and Site C are 7.2 m and 2.7 m, respectively, and the bankfull mean depths of Site A and Site C are 1.2 and 0.3 m, respectively. These widths and depths are maintained as a minimum at the proposed crossings.

### 3.4. Natural Heritage

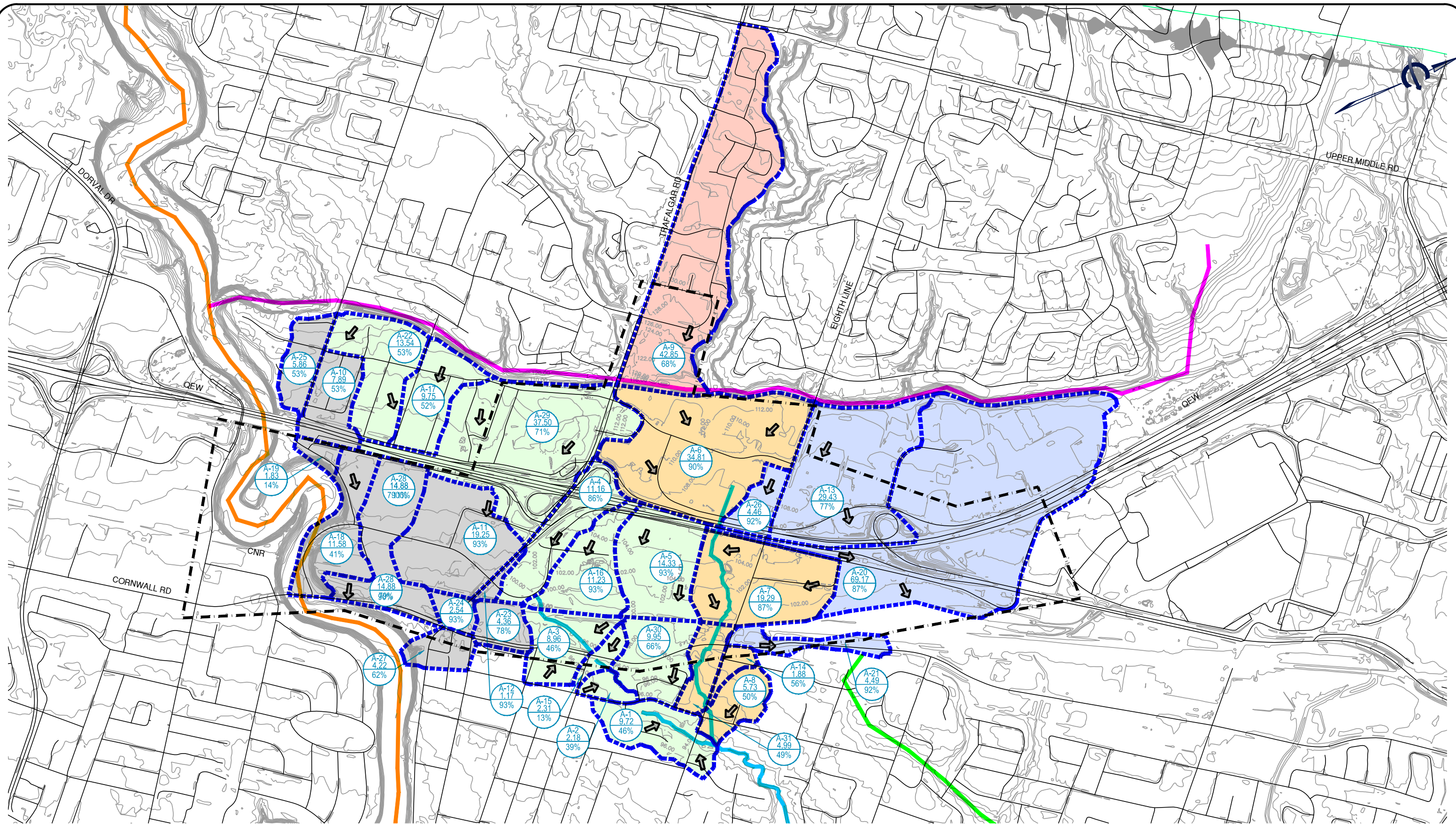
The *Natural Heritage Report* prepared by LGL (March 2014), outlines wildlife passage design considerations for both of the proposed crossings. The *Natural Heritage Report* is provided in **Appendix H**. It is noted in the *Natural Heritage Report* that an openness ration (OR) of 0.6 is required for the proposed crossing of the Morrison/Wedgewood Diversion Channel to allow for the passage of small and large animals. An OR of 0.05 is required for the proposed crossing of Lower Morrison Creek for the passage of small animals only. The proposed Diversion Channel crossing provides an OR of 0.69 (ie.  $(3 \text{ m} \times 8 \text{ m}) / 35 \text{ m} = 0.69$ ), and the proposed Lower Morrison Creek crossing provides an OR of 0.37 (ie.  $(1.5 \text{ m} \times 7.3 \text{ m}) / 30 \text{ m} = 0.37$ ). Therefore, both of the proposed crossings comply with the wildlife passage design criteria, as per the *Natural Heritage Report*.

## 4.0 Conclusions and Recommendations

Hydrology analysis was done for the Midtown Oakville study area in order to determine the hydrologic impacts of the proposed transportation improvements. The four (4) subwatersheds within the study area were analyzed separately. The proposed transportation improvements result in an overall increase in imperviousness. To address potential peak flow increases, and achieve desired peak flow reductions, unit storage requirements ( $\text{m}^3/\text{ha}$ ) are proposed for each subwatershed. Future developments within the Midtown Oakville study area will be required to provide this unit storage to mitigate the hydrologic impacts of the proposed improvements. Prior to development of each site, hydrologic models are to be updated to demonstrate that peak flow targets will be met. Preliminary SWM criteria have been recommended for any future development within the Midtown Oakville study area for quantity control, quality control and water balance. Although SWM criteria for erosion control was not assessed as part of the SWM analysis for this Class EA, it is anticipated that the water balance criteria will provide inherent benefits that will ensure that downstream erosion is decreased through development of Midtown Oakville. The town intends to complete a separate flood study in the near future which will confirm the final SWM criteria for the Midtown Oakville study area, including erosion and flood control requirements.

Hydraulic analysis was also completed for the Lower Morrison Creek and Morrison/Wedgewood Diversion Channel in order to evaluate the flood impacts of the crossings resulting from the proposed transportation improvements. The hydraulic analysis indicates that there are no flooding impacts resulting from the proposed crossings. The proposed crossings were also sized in support of the *Fluvial Geomorphological Assessment* prepared by Water's Edge, as well as the *Natural Heritage Report* prepared by LGL.





**LEGEND**

- DRAINAGE NAME
- DRAINAGE AREA (HECTARES)
- IMPERVIOUSNESS

- Orange box: DRAINAGE TO LOWER MORRISON (RIVER 1)
- Green box: DRAINAGE TO LOWER MORRISON (RIVER 2)
- Grey box: DRAINAGE TO 16 MILE
- Red box: DRAINAGE TO WEDGEWOOD MORRISON DIVERSION CHANNEL

- Blue box: DRAINAGE TO WEDGEWOOD
- Light blue line: LOWER MORRISON CREEK
- Orange line: 16 MILE CREEK
- Green line: WEDGEWOOD CREEK
- Pink line: MORRISON WEDGEWOOD DIVERSION CHANNEL

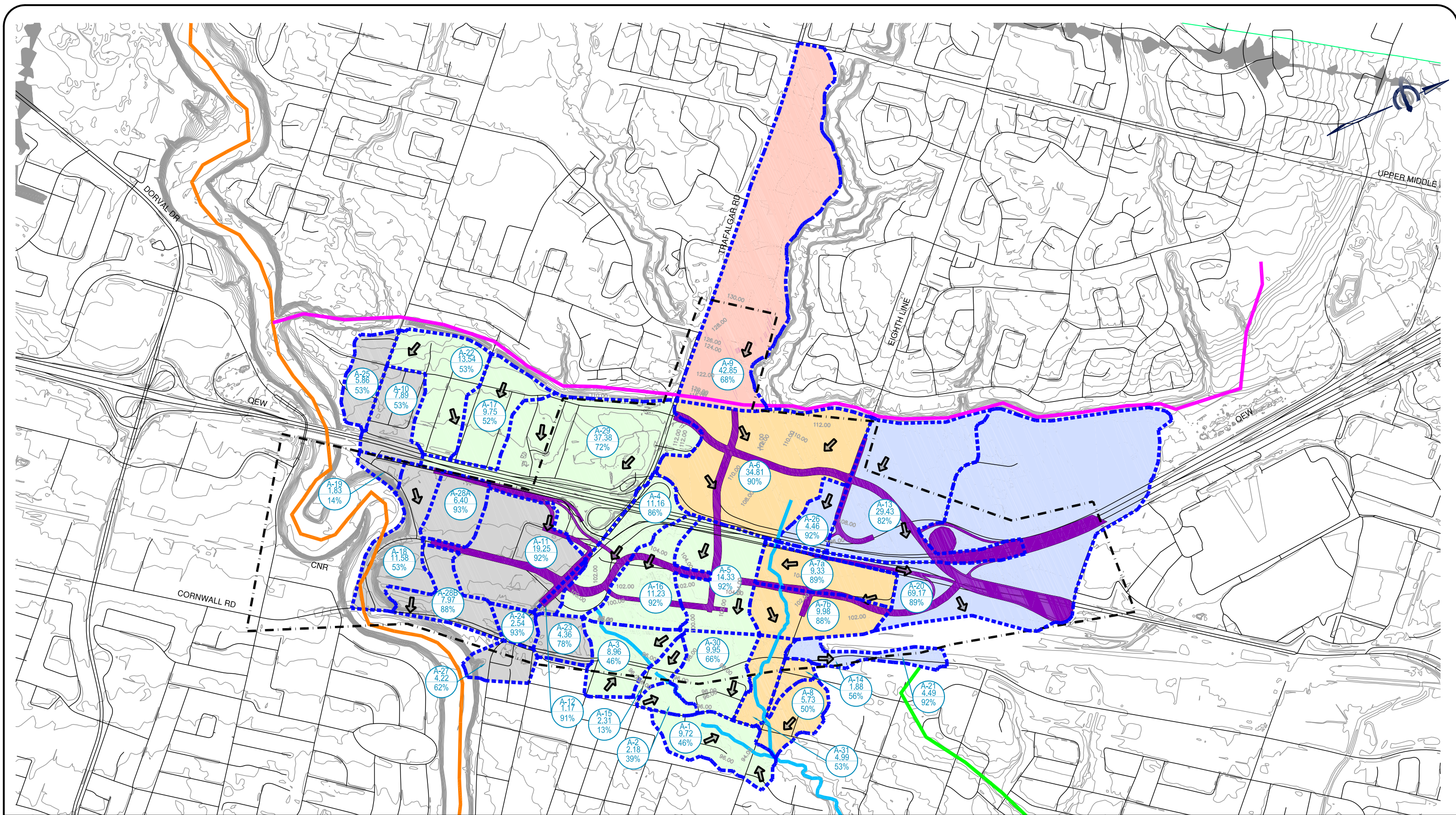
- 227.50: EXISTING CONTOUR LINE
- Arrow: EMERGENCY SPILL / OVERLAND FLOW DIRECTION
- Line: ROADS
- Dashed line: STUDY AREA

EXISTING CONTOUR LINE  
 EMERGENCY SPILL / OVERLAND FLOW DIRECTION  
 ROADS  
 STUDY AREA

**MAJOR DRAINAGE AREAS (EXISTING CONDITIONS)**  
 MIDTOWN ENVIRONMENTAL ASSESSMENT  
 TOWN OF OAKVILLE

DATE:	MAY 2014	PROJECT No.:	T11-767
SCALE:	1:15,000	FIGURE No.:	DAP-1



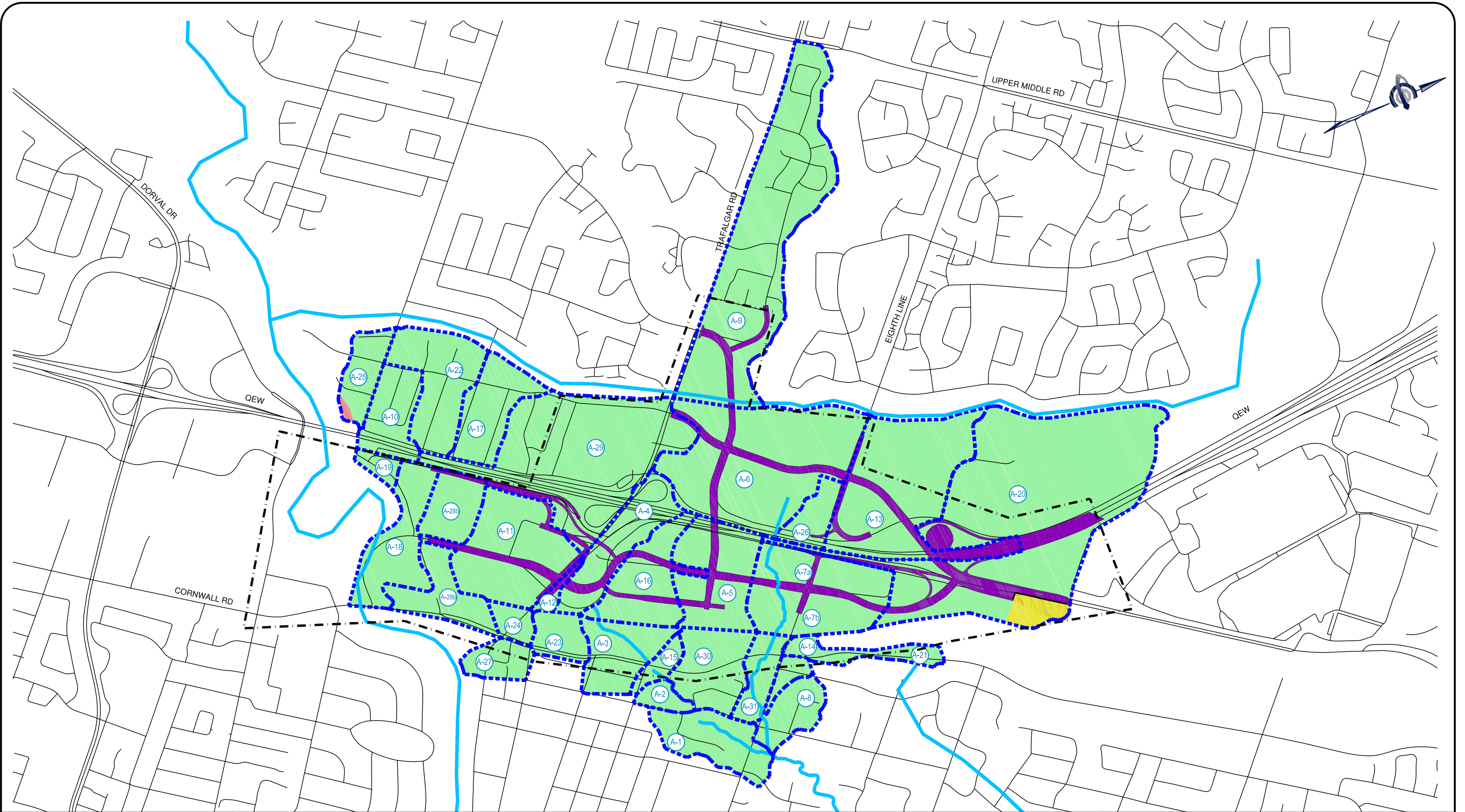


70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5  
 T:416.987.6161 / 905.940.6161 F:905.940.2064

LEGEND	
	DRAINAGE NAME
	DRAINAGE AREA (HECTARES)
	IMPERVIOUSNESS
	DRAINAGE TO LOWER MORRISON (RIVER 1)
	DRAINAGE TO LOWER MORRISON (RIVER 2)
	DRAINAGE TO 16 MILE
	DRAINAGE TO WEDGEWOOD
	LOWER MORRISON CREEK
	16 MILE CREEK
	WEDGEWOOD CREEK
	MORRISON WEDGEWOOD DIVERSION CHANNEL
	EXISTING CONTOUR LINE
	EMERGENCY SPILL / OVERLAND FLOW DIRECTION
	ROADS
	STUDY LIMIT
	PROPOSED ROAD

MAJOR DRAINAGE AREAS (PROPOSED CONDITIONS)			
MIDTOWN ENVIRONMENTAL ASSESSMENT			
TOWN OF OAKVILLE			
DATE:	MAY 2014	PROJECT No.:	T11-767
SCALE:	1:15,000	FIGURE No.:	DAP-2





70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5  
 T:416.987.6161 / 905.940.6161 F:905.940.2064

**LEGEND**

- A-1 DRAINAGE NAME
- EXISTING CREEK
- EXISTING ROADS
- STUDY LIMIT
- SOIL GROUP AB (GOOD INFILTRATION)
- SOIL GROUP B (GOOD INFILTRATION)
- SOIL GROUP C (REASONABLE INFILTRATION)
- PROPOSED ROADS
- DRAINAGE AREA BOUNDARY

**POTENTIAL LID AREAS (PROPOSED CONDITIONS)**  
 MIDTOWN ENVIRONMENTAL ASSESSMENT  
 TOWN OF OAKVILLE

DATE:	MAY 2014	PROJECT No.:	T11-767
SCALE:	1:15,000	FIGURE No.:	LID

## **APPENDIX A**

### **Site Visit Notes & Comments from Conservation Halton**

PROGRESS MEETING #:

DATE: August 23, 2012

TIME: 1:00 P.M.

PROJECT NAME: Oakville Part III Midtown EA

PROJECT #: T11-767

LOCATION: On Site

PURPOSE: Conservation Halton Site Walk

**PRESENT:**

Leah Smith, Conservation Halton  
 Kim Barret, Conservation Halton  
 Amy Mayes, Conservation Halton  
 Samantha Mason, Conservation Halton  
 Philip Kelly, Town of Oakville  
 Kristina Parker, Town of Oakville  
 Joanne Phoenix, Town of Oakville

**REGRETS:**

Mark Bassingthwaite, Cole Engineering  
 Laurella Chadee, Cole Engineering  
 Patricia Osika, Cole Engineering

ITEM	DESCRIPTION	ACTION BY
1.	<b>Introductions</b> <ul style="list-style-type: none"> <li>MB gave an introduction to the SWM within the area. Described how the purpose of the site visit was identify concerns/constraints.</li> <li>It was determined that the order of the site walk would be 1, 3, 4, 9, 10, 11, 12 and that the remaining sites, mainly flooding sites, did not have to be visited.</li> </ul>	
2.	<b>1 – Sixteen Mile Creek crossing of Q.E.W.</b> <ul style="list-style-type: none"> <li>Site visited.</li> </ul>	
3.	<b>3 – South Service Road East</b> <ul style="list-style-type: none"> <li>Open watercourse location. Currently this area does not appear regulated in CH regulation mapping, however CH said that upon a closer review this area will likely be added to the regulation mapping and should be treated by the study team as regulated. CH to review regulation mapping in this location.</li> <li>Mark identified that there is the possibility of diverting some flow in this location to Sixteen Mile Creek to help alleviate downstream flooding.</li> </ul>	CH
4.	<b>4 – Wetland</b> <ul style="list-style-type: none"> <li>CH to stake limits of wetland and therefore requires site access. One possibility for Town to gain access is through landowner meetings.</li> <li>MB suggested that we should get an ecologist sub-consultant who could stake the wetland.</li> <li>CH informed that wetlands are classified based on vegetation type. Currently this wetland is not evaluated, which means that it may or may not be a PSW. The restrictions associated with this wetland would be a 30 m buffer if it is not a PSW (15 m is restricted, next 15 m does not have such restrictions) and 120 m if it is a PSW (30 m of which is restricted and 90 m of which is less restricted).</li> </ul>	Town  Cole

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.

ITEM	DESCRIPTION	ACTION BY
5.	<p><b>9 – Crossing at rail tracks just west of Chartwell Road</b></p> <ul style="list-style-type: none"> <li>• Crossing is twin CSP culverts.</li> <li>• Open watercourse at this location.</li> <li>• Pipeline at this location.</li> <li>• If works done here/in regulated locations will have to update HEC-RAS model and update regulation limits.</li> </ul>	
6.	<p><b>10 – South Service Road East just west of Chartwell Road</b></p> <ul style="list-style-type: none"> <li>• On the north site of the QEW this crossing is a ditch. Crossing is box culvert.</li> <li>• This crossing is regulated on the downstream site. CH regulation mapping was only completed downstream of the Q.E.W.</li> </ul>	
7.	<p><b>11 – High Priority Flooding Site. South Service Road E.</b></p> <ul style="list-style-type: none"> <li>• Lagoon/pond between Royal Windsor and CNR with a culvert under CNR. Town to find information on what this is.</li> </ul>	Town
8.	<p><b>12 – Diversion Channel</b></p> <ul style="list-style-type: none"> <li>• CH identified that in this area they would just be concerned with not worsening (or ideally improving) hazards. They would also be concerned with the stability of the channel if works are occurring in this area.</li> <li>• MB described how the watercourses in this area are highly altered already.</li> </ul>	

Next Meeting:  
 Minutes Recorded By: Patricia Osika  
 Distribution: CEG



2596 Britannia Road West  
Burlington ON L7P 0G3  
905.336.1158 Fax 905.336.7014  
conservationhalton.ca

October 10, 2012

**BY MAIL AND EMAIL**

Tricia Collingwood  
Planning Services, Town of Oakville  
1225 Trafalgar Road  
Oakville ON L6J 5A6

Dear Ms Collingwood:

**Re: Midtown Oakville Environmental Assessment Study**  
**CH File: MPR 611**

Conservation Halton staff offers the following comments based on our site visit on August 23, 2012 and the presentation notes provided after the July 17, 2012 Technical Agencies Committee Meeting #1.

Ontario Regulation 162/06

Many of the proposed road improvements are within flooding and/or erosion hazards regulated by Conservation Halton pursuant to Ontario Regulation 162/06. Where feasible, major transportation corridor expansions should be directed to areas less constrained by hazard lands, and any new transportation corridors identified should be routed to avoid hazard areas. Consideration for potential road alignment is deemed particularly relevant when the alignment parallels the watercourse or valley wall within the erosion hazard limit.

Although in many instances, infrastructure conflicts with natural hazards will be unavoidable, the evaluation of alternatives should still consider the long term implications of infrastructure location relative to natural hazards. Public safety should be considered as roads intersecting flooding and erosion hazards may be unsafe under a major storm event. Maintenance costs for these sections of roadway are also anticipated to be higher over the long term. Potential to receive regulatory approval should also be a key consideration. At a minimum, the proposed alternative must have no negative impacts on flooding and erosion hazards in order for Conservation Halton to issue a future approval under Ontario Regulation 162/06. Opportunities to improve any deficiencies with respect to flooding and erosion should also be investigated.

Based on the slides presented at the Midtown Oakville Environmental Assessment Study – Technical Agencies Committee Meeting # 1, staff have flagged the following areas where the proposed road network improvements extend into regulated flooding or erosion hazards and the associated regulated setbacks:



- North-South QEW Crossing Road Connection – The proposed east-west road alignment connecting Davis Road to Chartwell Road (all options presented) has the potential to impact a tributary of Lower Morrison Creek, near the connection to Davis Road, as well as a wetland regulated by Conservation Halton. The new north-south alignment shown in red appears to impact Lower Morrison Creek south of the QEW. Staff also note that the new north south alignment (shown in red) and the new north-south connection from Iroquois Shore Road to Eighth Line/Chartwell (shown in blue) have the potential to convey spill from the Morrison-Wedgewood Diversion Channel, however the presence of a spill will not necessarily influence the road design, as Conservation Halton has initiated a process to eliminate these spills, and anticipates all spills will be eliminated within the next 10 years. The widening of Chartwell Road (shown in yellow) does not appear to impact regulated areas associated with Lower Morrison Creek.
- North-South QEW Crossing Priority Lane and Active Transportation Connection - The pink line (assumed to be the active transportation link) will further encroach into a remnant valley of West Morrison Creek south of McCraney Street East and Trafalgar Road. It is possible that this remnant valley may have been re-purposed for stormwater management after West Morrison Creek was piped. Staff have no information on the exact location, depth of cover, pipe size etc. of the piped section of West Morrison Creek from McCraney Street East to the connection with the Morrison-Wedgewood Diversion Channel. The proposed Active Transportation Connection and Priority Lanes may potentially impact this piped section of creek. Please note that we will need additional information on the location/size of pipe, etc. should new road works be proposed in this area. One proposed alignment will also result in a new crossing of the Morrison-Wedgewood Diversion Channel while the other proposed alignment will likely require a widening of the existing Morrison-Wedgewood Diversion Channel crossing. Staff further notes that all options presented would impact a wetland.
- East-West Corridor – All three options have the potential to impact a watercourse adjacent to Davis Road (opposite 547 Trafalgar Road) and will require a new crossing of a tributary of West Morrison Creek. The magenta alignment appears to have potentially greater impacts on Lower Morrison Creek due to a poor crossing alignment. This alignment would also remove a portion of a regulated wetland. The tributary of Lower Morrison Creek also conveys spill flow from the Morrison-Wedgewood Diversion. As indicated above, however, the presence of the spill will not impact the design in this instance.
- Iroquois Shore Road – It would appear that turning lanes from Iroquois Shore Road to Trafalgar Road may have the potential to impact the Morrison-Wedgewood Diversion Channel. The proposed extension may also become a preferential route for spill from the Morrison-Wedgewood Diversion Channel. While this is noted, the potential spill will not impact the design.
- Trafalgar Road Interchange - These modifications do not appear to impact any area regulated by Conservation Halton.
- Royal Windsor Road Interchange - Upgrades in this area will impact the floodplain associated with Lower Wedgewood Creek and potentially impact spill conveyance associated with a spill point on the Morrison-Wedgewood Diversion Channel. During the August 23, 2012 site visit, a large pond of unknown function was identified and may potentially be impacted by the proposed works. It is further noted that the proposed “green” alternative would require the crossing of an existing hydrologic connection (unregulated watercourse) at a skewed angle. While works near this feature do not require a permit from Conservation Halton pursuant to Ontario Regulation 162/06, any proposed works will be examined for impacts to fish habitat, as per our Level II Agreement with Fisheries and Oceans Canada. Further information is requested as to what length of culvert would

be required if a crossing of this hydrologic connection becomes necessary. Investigation about the impacts of realigning the hydrologic connection to allow for a perpendicular crossing by a new road crossing is suggested. The “red” alignment of the proposed road options may impose fewer impacts to the hydrologic connection than the “green” road alignment.

Ontario Regulation 162/06 requires that a Permit is obtained from Conservation Halton prior to development, interference with wetlands or alterations to shorelines and watercourses. A copy of Ontario Regulation 162/06 and the associated Policy document, *Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document* can be found at [www.conservationhalton.ca](http://www.conservationhalton.ca). Please ensure that the EA contains sufficient information to allow Conservation Halton staff to determine whether a Permit could be issued at detailed design.

As per Conservation Halton’s Policy 3.51, all new utility and transportation corridors must be located outside of valley and stream corridors, including the regulated tableland area, wherever possible. While permitting of new corridors within hazard lands is feasible, the need must be fully justified, and there must be no other reasonable alternative. Road alignments should be oriented to minimize impacts to existing valley features. Crossings should be made perpendicular to riverine valley features, and new roads should be elevated outside of the regional storm floodplain. The Environmental Assessment report should provide documentation to justify the proposed location of any new roads within the existing regulated area. At present, Conservation Halton staff do not have sufficient information to confirm that all of the proposed transportation improvements shown could be recommended for approval under Ontario Regulation 162/06.

In all areas where proposed road widening will traverse hazard lands regulated by Conservation Halton, staff will only be able to recommend approval of widening activities where it has been demonstrated that the proposed construction will not negatively impact flooding and erosion hazards on adjacent properties, and will not increase the flooding and erosion risk associated with the road itself. The following is required to determine these impacts:

- Where a proposed road or road widening crosses the regulated floodplain, a hydraulic analysis must be completed as part of the Environmental Assessment, and further refined at detailed design. The conceptual design should strive to achieve safe access and egress where feasible, and at a minimum, maintain the existing level of service with respect to flooding. The hydraulic analysis will also need to support the proposed bridge or culvert sizing and any grading changes within the floodplain by demonstrating that any widening or profile adjustment will not negatively increase flood depths, erosive velocities, flood duration and storage experienced on properties up and downstream under the full range of design storm conditions. Please note that while Conservation Halton policies would not allow even minor increases in flood elevations on a habitable structure, our policy would consider increases in flood depth, erosive velocity or flood duration on private property if there is no increased risk to life and property and the impacted landowner provides written consent of the change. The detailed road design must also consider floodplain connectivity under the full range of design storms to ensure that the net loss of floodplain storage is minimized. A hydrologic analysis may be required as part of the EA to support the hydraulic modeling. This is a critical component of Conservation Halton’s review of the EA. Please contact staff should you have any questions on this requirement.

- Roads aligned parallel to or traversing the valley wall or aligned adjacent to a watercourse may be susceptible to erosion due to either slope instability or the watercourse's natural adjustment within its meander-belt width. As part of the EA process, a geotechnical and geo-morphological review must be completed to demonstrate:
  - the level of risk associated with the location of the existing infrastructure,
  - that construction of the proposed widening will not have a negative impact on slope stability or natural channel migration patterns,
  - that the ultimate road will be stable from a geotechnical and geomorphic perspective over a 100 year time horizon. Please note that the assessment should consider all reasonably foreseeable stressors to the existing natural hazards, such as climate change and urbanization as part of the determination of long term stability (i.e. historic rates of change should not be relied upon as representative of future changes. The consulting team should identify the appropriate targets), and
  - that the ultimate road alignment will not encroach further within the 100 year long term stable slope crest or the watercourse's meander belt width than the existing road, or otherwise increase risk relative to the existing infrastructure.

Please note that all new watercourse crossings will require supporting hydraulic, geomorphologic, and geotechnical studies.

Per the on-going "Morrison-Wedgewood Spill Management Conservation Ontario Class Environmental Assessment (Class EA)" two spill zones have been identified within the subject area. One spill point flows to catchment M9 (as identified on the Stormwater Management plan) and reaches the QEW culvert through the channel between 474 and 500 Iroquois Shore Road. The second spill enters catchment W1 and flows southerly to the QEW through the area of the Iroquois Shore Road extension. Conservation Halton has completed an Environmental Assessment which found that the spill could be eliminated through works within the channel block, and is proceeding towards elimination of this spill in the near future, therefore staff will not require consideration of the spill when developing preliminary road grades and sizing the major drainage system. We do request, however, consideration be given to the potential to co-ordinate any works in the area.

Staff recommend that as part of the Midtown transportation and stormwater management improvements, Emergency Services and Town of Oakville staff evaluate the need to designate roads as emergency access routes with the goal of achieving flood free access (or as a minimum, safe access and egress – as set by either the Ministry of Natural Resources or more stringent local emergency service provider policies) during a Regional Storm Event. Conservation Halton staff are able to provide the Town information with respect to predicted overtopping depths and velocities for all significant roads within the watershed at the Town's request. Should emergency access under a flood scenario be considered by the Town as part of this study, we recommend that the Town consult their emergency service providers to determine the most applicable criteria for analysis.

The MTO's flooding criteria, guidelines and/or the municipal engineering standards for flooding along/over roads should be considered for all routes not deemed emergency access routes. At a minimum, safe access & egress as defined in the MNR's 2002 *Technical Guide: River & Stream Systems – Flooding Hazard Limit*, should be provided.



The location and condition of the piped section of West Morrison Creek (from McCraney Street East to the Morrison Wedgewood Diversion Channel), should also be evaluated as part of the EA to confirm whether the location of the structure may impact the feasibility of the alternative. A geotechnical evaluation of the potential change in loading experienced by the pipe is also requested to confirm whether the alternatives will impact the short and long term viability/functionality of the drainage infrastructure.

If any proposed works associated with the Royal Windsor Road Interchange will modify the drainage to the pond identified during the site visit August 23<sup>rd</sup>, 2012, or the stage-discharge-storage curve associated with the facility, the Environmental Assessment should characterize the functionality of this pond and confirm whether or not construction will impact the pond's functionality.

Staff request that consideration be given to creating modified Right-of-Way Guidelines to minimize infrastructure risks associated with natural hazards and impacts to environmentally sensitive areas.

Please identify any existing utilities within the creek corridor, in both plan and profile view on the drawings associated with the Environmental Assessment, and consider the impacts of any works on the level of protection afforded to existing utilities.

Please plot all areas regulated by Conservation Halton on drawings. ARL mapping may be utilized if more detailed study is not required at this time, however, please ensure that drawings indicate that limits shown are an approximation of the regulated area.

A topographic survey including all drainage features, watercourse ditchlines, culverts, etc. is required. Please ensure that detailed survey information is obtained for a minimum 30 m up and downstream of any proposed culvert.

#### Natural Heritage - Wetlands

As noted above, it would appear that several of the proposed road alignments would remove a portion of a wetland regulated pursuant to Ontario Regulation 162/06, located at the terminus of Davis Road. Staff is attending a site visit on October 12, 2012 to stake the limits of the wetland, and the wetland will be evaluated by the project team.

Please plot the limit of the wetland as staked by Conservation Halton staff on all future submissions. All efforts should be made to avoid any impacts to the wetland and staff would recommend that this feature is protected from development with a minimum 15 m buffer. As noted above, the EA must demonstrate the need for any proposed crossing of this feature and that there is no reasonable alternative. Should the Town wish to pursue a road option in this area, a hydrological evaluation (prepared by a qualified professional hydrological/hydrogeological engineer or hydrogeologist) is required with the EA study to identify impacts and mitigation measures.

Although terrestrial habitat in the study area is limited, any opportunities to improve habitat connectivity (e.g. through the installation of larger culverts at stream crossings) should be explored.

### Fish Habitat Impacts

The following points are suggested as commitments to be carried forward to detailed design:

- It is preferred that any new crossings of Lower Morrison Creek convey at least the 25 year flow rate to reduce upstream (backwatering) and downstream (scouring) impacts typically associated with undersized crossing structures.
- Where new roads are proposed to cross natural substrate channels, open bottom creek crossing structures are preferred over closed bottom structures.
- It is preferred that new roads be aligned to cross creeks in a perpendicular orientation to minimize the length of the creek that is enclosed in a crossing structure.
- The use of retaining walls is encouraged where possible on creek crossing structures to minimize the length of the stream or creek that is covered over by the new crossing structure.
- Staff recommends that underground utilities are placed at least 2.5 m or more below the invert of all watercourses, where feasible, to provide a buffer between the watercourse and the infrastructure below it as the creek downcuts over time in response to urban water flows.
- It is suggested that a plan to enhance riparian cover in the vicinity of the crossings of Lower Morrison Creek be implemented to partially mitigate the effects of this project which include the removal of existing riparian vegetation and increased inputs of urban stormwater.
- It is recommended that any new stormwater effluent outlets be oriented in a forty five degree angle to the downstream direction of flow in the watercourse to minimize erosive effects of stormwater discharge on the bed and banks of the creek.
- Erosion and sediment control plans for the proposed work should be prepared in accordance with the *Erosion and Sediment Control Guideline for Urban Construction*.
- Investigation of hydrogeological conditions may be warranted at detailed design to assess the likelihood of the need to dewater any deeper excavations that may be necessary as part of the proposed work. If significant dewatering is necessary, this could affect base flows in the adjacent watercourse and could result in the need to deposit significant amounts of dewatering effluent into the creek.

### Stormwater Management

Please discuss quality/quantity/erosion controls within the Stormwater Management Section of the Environmental Study Report. Per the “Lower Morrison/Wedgewood Creeks - Flood, Erosion and Master Drainage Plan Study, Technical Report” prepared by R.V. Anderson Associates Limited, in 1993, new development is required to control post-development peak flows to 50% of pre-development levels. For re-development within a developed area, quantity control requirements are dependant on the original assumptions within the Drainage Plan for the subject lands. Please refer to this study when developing the stormwater management strategy.

Any additional stormwater generated by new roads or other hardened surfaces should be treated to the Enhanced level of treatment.

Please identify existing vs. proposed drainage areas. Every effort should be taken to maintain existing drainage divides. Any proposed diversions must be clearly identified and the potential impacts fully assessed as part of the project’s evaluation.

Other

A Data Request Form is required for all digital information requests. This form and additional information on data holdings can be found in the “GIS & Mapping” section of Conservation Halton’s website: [www.conservationhalton.ca](http://www.conservationhalton.ca).

Please note that Conservation Halton staff do not screen on behalf of MNR for *Lakes and Rivers Improvement Act* implications. We recommend you contact the MNR to determine if this Act will apply to the proposed works.

In order to allow sufficient time to review the Draft Environmental Study Report, staff would appreciate it if a review timeline of 4 weeks could be incorporated into the project schedule. We would like to request 3 hard copies of the ESR for review.

We trust the above is of assistance. If you require additional information please contact the undersigned at extension 283.

Yours truly,



Leah Smith  
Environmental Planner, MCIP, RPP

LS/9

cc. (by email) Philip Kelly, Town of Oakville, Development Services





ITEM	DESCRIPTION	ACTION BY
	<ul style="list-style-type: none"> <li>• CH defers to the Town and the Region with respect to allowable overtopping depths. While flood free access is preferred since it is understood emergency service providers will not cross flowing water CH can accept overtopping at crossings provided access is no worse than existing conditions. CH prefers flood free access for new crossings.</li> <li>• Cole Engineering will do an analysis of access at crossings during the Regional storm if required.</li> </ul> <p><b>Post Meeting Note</b> At a minimum CH encourages safe access and egress as per MNR standards.</p>	Cole Engineering
4.	<p><b>Utility Profile Views</b></p> <ul style="list-style-type: none"> <li>• <b>Can this be deferred to preliminary design?</b></li> <li>• At the Master Plan stage Cole Engineering plans on only showing utilities in plan view.</li> <li>• AM is concerned that there are shallow utilities in the area and protecting them could impact floodplain elevations. Main concern is sanitary sewers, watermains, and pipelines. A field survey is not required but elevations should be taken from plans.</li> <li>• Cole Engineering will use information in hand, no subsurface investigation required at this time.</li> </ul>	Cole Engineering
5.	<p><b>Utility and Transportation Corridors</b></p> <ul style="list-style-type: none"> <li>• <b>“As per Conservation Halton’s Policy 3.51, all new utility and transportation corridors must be located outside of valley and stream corridors, including the regulated tableland area, wherever possible” (page 3).</b></li> <li>• <b>In general, roads will be located outside of valley and stream corridors, or cross them.</b></li> <li>• CH would require justification for new corridors that are parallel to or crossing valley and stream corridors. Where all alternatives involve the same crossing justification could involve consist of a traffic explanation included in previous studies or a needs / justification section in the ESR.</li> </ul>	Cole Engineering
6.	<p><b>Piped Section of West Morrison Creek</b></p> <ul style="list-style-type: none"> <li>• <b>Please clarify the requirements associated with this piped section of West Morrison Creek (page 5).</b></li> <li>• <b>No alternatives are proposed in this location.</b></li> <li>• CH does not know where the piped section is located before outletting to the diversion channel. If any alternatives do end up extending north of the diversion channel the pipe would have to be investigated.</li> <li>• KP to investigate if Town has any information on this piped section.</li> </ul>	Town
7.	<p><b>Pond Identified near Ford Property on August 23, 2012 Site Visit</b></p> <ul style="list-style-type: none"> <li>• <b>No information is available for this pond.</b></li> <li>• <b>Is an analysis of post to pre adequate?</b></li> <li>• <b>No alternatives are anticipated to have a significant effect on this pond.</b></li> <li>• Town doesn’t currently have any information on this pond. If an alternative will impact flows to the pond the Town will contact Ford requesting this information.</li> <li>• Works in this area are to be contained within the existing right of way.</li> <li>• Cole Engineering to confirm if existing drainage from Royal Windsor Drive in this area drains to the pond.</li> </ul>	Cole Engineering
8.	<p><b>Project Timelines / Deliverables</b></p> <ul style="list-style-type: none"> <li>• Preferred alternatives should be finalized within the next week.</li> <li>• Alternative evaluation will be submitted to CH in December. This will not include all the required supporting information that will be included in the ESR but will allow CH to identify if they have any major issues with any of the preferred alternatives before the second PIC.</li> <li>• The stormwater management support report should be completed in the end of January. It will be a technical appendix to the ESR.</li> <li>• A stakeholders meeting is scheduled to occur in February.</li> <li>• Impacted landowner meetings are scheduled to occur in February.</li> <li>• The second PIC will be held in March, 2013.</li> <li>• The ESR should be finalized late March, 2013.</li> </ul>	

ITEM	DESCRIPTION	ACTION BY
9.	<p><b>Other Items</b></p> <ul style="list-style-type: none"> <li>• KP to forward LGL wetland memo to LS.</li> <li>• None of the proposed works are in the five (5) year capital budget. They also currently are not in the 10 year budget but there is the possibility of some being implemented within 10 years.</li> <li>• LS to confirm which watercourse CH was referring to with comment at the bottom of page 2 “the proposed ‘green’ alternative would require the crossing of an existing hydrologic connection (unregulated watercourse) at a skewed angle”.</li> <li>• AM to review comment on stormwater management at the bottom of page 6 regarding quantity control requirements as per the “Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study, Technical Report” prepared by R.V. Anderson Associates Limited in 1993.</li> <li>• Stormwater management criteria will be set for blocks in the study area, roads will be uncontrolled but blocks will be overcontrolled to compensate for this.</li> </ul> <p><b>Post Meeting Note</b>            CH clarified in an email dated November 29, 2012 which watercourse CH was referring to with the comment at the bottom of page 2.</p> <p>CH clarified in an email dated December 13, 2012 that the criteria of requiring over-control of post-development peak flows to 50% of the pre-development level would apply to significant re-developments / expansions – for the new impervious area only. It is recognized that these criteria may not be achievable outside of a greenfield situation, however best efforts to meet these criteria should be incorporated into the design.</p>	<p>Town</p> <p>CH</p> <p>CH</p>

Next Meeting: Not scheduled  
 Minutes Recorded By: Patricia Osika  
 Distribution: All Invitees

**APPENDIX B**  
**Existing Conditions Hydrology Calculations**



Post-Development: To calculate the initial external time of concentration ( $t_c$ ) for external lands that are scheduled for future development, a straight line is to be drawn from the furthest point within the watershed to the proposed inlet. The top 50 metres shall have an initial time of concentration of 10 minutes and the remainder shall have a  $t_c$  as if the velocity in the sewer is  $2_{ms}^{-1}$ .

The summation of the two  $t_c$ 's will give the future external time of concentration. If the upstream area has adequate storm sewers, channels, or culverts, the velocity of the flow through these sewers, channels, or culverts shall supersede the  $2ms^{-1}$  calculations.

#### Run-off Coefficient

Pre-development values shall be based on the soil characteristics and the slope of the land.

Post-development values shall be a minimum of 0.60 for single residential, 0.70 for medium density ( townhouses ), and 0.80 for high density ( condo/highrise ).  
Future industrial/commercial shall use a minimum of 0.9 unless a significant landscape area is included, then the C value shall be calculated to reduce, if desired.

#### Meteorology / Hydrology

All models derive flows from storms of a given frequency. The frequency of the flow is, in general, not identical to the frequency of the storm. The Rational Method uses rainfall intensity-duration-frequency curves. All other models use design storm or, in special cases, real storm distribution.

Since there are no satisfactory meteorological data for Oakville, the data available from the Toronto Bloor Street station, which has continuous rainfall data for the last 50 years, shall be used in Oakville. Table 3.1 gives the rainfall intensity-duration-frequency (IDF) values that shall be used for all frequencies from 1:2 years to 1:100 years.

The 24 hour Keifer and Chu ( Chicago ) design storm should be used to develop hydrographs for urban and rural basins and for determining the required detention storage.

A time step of ten ( 10 ) minutes with a ratio of time of maximum intensity to storm duration of 0.33 should be used to discretize the design storm.



**Existing Conditions: CN & Imperviousness Summary Table**

Oakville Midtown EA

File No. T11-0767

Date : May 2014

Catchment ID	Catchment Area (ha)	Weight Imperviousness (%)	Weighted CN (AMC II) for STANDHYDS	Weighted CN (AMC III) for STANDHYDS	Composite CN (AMC II) for NASHYDS	Composite CN (AMC III) for NASHYDS
A-1	9.72	46%	81	91	-	-
A-2	2.18	39%	80	91	-	-
A-3	8.96	46%	79	90	-	-
A-4	11.16	86%	82	92	-	-
A-5	14.86	93%	82	92	-	-
A-6	34.81	90%	82	92	-	-
A-7	19.31	89%	82	92	-	-
A-8	5.73	50%	81	91	-	-
A-9	42.85	68%	81	91	-	-
A-10	7.93	53%	82	92	-	-
A-11	18.74	93%	82	92	-	-
A-12	1.17	93%	82	92	-	-
A-13	29.43	80%	82	92	-	-
A-14	1.88	56%	82	92	-	-
A-15	2.31	13%	77	89	80	91
A-16	11.25	93%	82	92	-	-
A-17	9.75	52%	81	91	-	-
A-18	11.58	53%	77	89	-	-
A-19	1.83	14%	75	88	78	90
A-20	69.17	86%	81	91	-	-
A-21	4.49	92%	82	92	-	-
A-22	13.54	53%	82	92	-	-
A-23	4.36	78%	81	91	-	-
A-24	2.54	93%	82	92	-	-
A-25	5.77	53%	81	91	-	-
A-26	4.46	92%	82	92	-	-
A-27	4.22	62%	76	89	-	-
A-28	14.88	90%	82	92	-	-
A-29	37.35	73%	81	91	-	-
A-30	9.95	66%	81	91	-	-
A-31	4.99	53%	80	91	-	-

**Design Chart 1.08: Hydrologic Soil Groups (Continued)**

- Based on Soil Texture

<u>Sands, Sandy Loams and Gravels</u>	
- overlying sand, gravel or limestone bedrock, very well drained	A
- ditto, imperfectly drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	B
<u>Medium to Coarse Loams</u>	
- overlying sand, gravel or limestone, well drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	B
<u>Medium Textured Loams</u>	
- shallow, overlying limestone bedrock	B
- overlying medium textured subsoil	BC
<u>Silt Loams, Some Loams</u>	
- with good internal drainage	BC
- with slow internal drainage and good external drainage	C
<u>Clays, Clay Loams, Silty Clay Loams</u>	
- with good internal drainage	C
- with imperfect or poor external drainage	C
- with slow internal drainage and good external drainage	D

Source: U.S. Department of Agriculture (1972)

**Design Chart 1.09: Soil Conservation Service Curve Numbers (Continued)**

Land Use or Surface	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Fallow (special cases only)	77	82	86	89	91	93	94
Crop and other improved land	66** (62)	70** (68)	74	78	82	84	86 AMC I
Pasture & other unimproved land	58* (38)	62* (51)	65	71	76	79	81
Woodlots and forest	50* (30)	54* (44)	58	65	71	74	77
Impervious areas (paved)							98
Bare bedrock draining directly to stream by surface flow							98
Bare bedrock draining indirectly to stream as groundwater (usual case)							70
Lakes and wetlands							50

Notes

- (i) All values are based on AMC II except those marked by \* (AMC III) or \*\* (mean of AMC II and AMC III).
- (ii) Values in brackets are AMC II and are to be used only for special cases.
- (iii) Table is not applicable to frozen soils or to periods in which snowmelt contributes to runoff.



**Existing Conditions: NASHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date : May 2014

Parameter	Unit	Description	A15	A19
Area	ha	Watershed Area	2.31	1.83
TP	hr	Unit Hydrograph Time to Peak	0.24	0.15
DT	min	Time Step Increment	5	
DWF	cms	Dry Weather Flow (Base Flow)	0	
CN	-	SCS Curve Number	80	78
IA	mm	Initial Abstraction	5	
N	-	Number of Linear Reservoir	3	
Rain	mm/hr	Optional Rainfall Intensities	0-Without Rainfall	

Time to Peak Calculation							
Area Number	Area	Cpre	CN	L	Elevation Change	Sw	Tp
	(ha)			(m)	(m)	(m/m)	(hr)
A15	2.31	0.20	80	120	3.9	3.3	0.24
A19	1.83	0.20	78	100	10	10.0	0.15



**Existing Conditions: NASHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date : May 2014

Parameter	Unit	Description	A15	A19
Area	ha	Watershed Area	2.31	1.83
TP	hr	Unit Hydrograph Time to Peak	0.24	0.15
DT	min	Time Step Increment	5	
DWF	cms	Dry Weather Flow (Base Flow)	0	
CN	-	SCS Curve Number	91	90
IA	mm	Initial Abstraction	5	
N	-	Number of Linear Reservoir	3	
Rain	mm/hr	Optional Rainfall Intensities	0-Without Rainfall	

Time to Peak Calculation							
Area Number	Area	Cpre	CN	L	Elevation Change	Sw	Tp
	(ha)			(m)	(m)	(m/m)	(hr)
A15	2.31	0.20	91	120	3.9	3.3	0.24
A19	1.83	0.20	90	100	10	10.0	0.15



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A1	A2	A3	A4	A5	A6
AREA		9.72	2.18	8.96	11.16	14.86	34.81
XIMP	Impervious Area (Direct Connection)	46%	39%	46%	86%	93%	90%
TIMP	Total Impervious Area	46%	39%	46%	86%	93%	90%
LGI	Overland Flow Length (Impervious)	254.56	120.55	244.40	272.76	314.75	481.73
SLPI	Average Slope (Impervious)	1.0%					
DT	Time Step Increment	5					
DWF	Dry Weather Flow (Base Flow)	0					
LOSS	Rainfall Loss Method	Modified SCS Curve Method: \IA = 1.5mm					
CN	Runoff Curve Number	81	80	79	82	82	82
SLPP	Average Slope (Pervious)	2.0%					
LGP	Overland Flow Length (Pervious)	40					
MNP	Manning's Roughness Coefficient (Pervious)	0.25					
DPSI	Depression Storage (Impervious)	1.0					
MNI	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A7	A8	A9	A10	A11	A12
AREA		19.31	5.73	42.85	7.93	18.74	1.17
XIMP	Impervious Area (Direct Connection)	89%	50%	68%	53%	93%	93%
TIMP	Total Impervious Area	89%	50%	68%	53%	93%	93%
LGI	Overland Flow Length (Impervious)	358.79	195.45	534.48	229.93	353.46	88.32
SLPI	Average Slope (Impervious)	1.0%					
DT	Time Step Increment	5					
DWF	Dry Weather Flow (Base Flow)	0					
LOSS	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
CN	Runoff Curve Number	82	81	81	82	82	82
SLPP	Average Slope (Pervious)	2.0%					
LGP	Overland Flow Length (Pervious)	40					
MNP	Manning's Roughness Coefficient (Pervious)	0.25					
DPSI	Depression Storage (Impervious)	1.0					
MNI	Manning's Roughness Coefficient (Impervious)	0.013					





**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A13	A14	A16	A17	A18	A20
<b>AREA</b>		29.43	1.88	11.25	9.75	11.58	69.17
<b>XIMP</b>	Impervious Area (Direct Connection)	80%	56%	93%	52%	53%	86%
<b>TIMP</b>	Total Impervious Area	80%	56%	93%	52%	53%	86%
<b>LGI</b>	Overland Flow Length (Impervious)	442.94	111.95	273.86	254.95	277.85	679.07
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: \VA = 1.5mm					
<b>CN</b>	Runoff Curve Number	82	82	82	81	77	81
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A21	A22	A23	A24	A25	A26
AREA		4.49	13.54	4.36	2.54	5.77	4.46
XIMP	Impervious Area (Direct Connection)	92%	53%	78%	93%	53%	92%
TIMP	Total Impervious Area	92%	53%	78%	93%	53%	92%
LGI	Overland Flow Length (Impervious)	173.01	300.44	170.49	130.13	196.13	172.43
SLPI	Average Slope (Impervious)	1.0%					
DT	Time Step Increment	5					
DWF	Dry Weather Flow (Base Flow)	0					
LOSS	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
CN	Runoff Curve Number	82	82	81	82	81	82
SLPP	Average Slope (Pervious)	2.0%					
LGP	Overland Flow Length (Pervious)	40					
MNP	Manning's Roughness Coefficient (Pervious)	0.25					
DPSI	Depression Storage (Impervious)	1.0					
MNI	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A27	A28	A29	A30	A31
<b>AREA</b>		4.22	14.88	37.35	9.95	4.99
<b>XIMP</b>	Impervious Area (Direct Connection)	62%	90%	73%	66%	53%
<b>TIMP</b>	Total Impervious Area	62%	90%	73%	66%	53%
<b>LGI</b>	Overland Flow Length (Impervious)	167.73	314.96	499.00	257.55	182.39
<b>SLPI</b>	Average Slope (Impervious)	1.0%				
<b>DT</b>	Time Step Increment	5				
<b>DWF</b>	Dry Weather Flow (Base Flow)	0				
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$				
<b>CN</b>	Runoff Curve Number	76	82	81	81	80
<b>SLPP</b>	Average Slope (Pervious)	2.0%				
<b>LGP</b>	Overland Flow Length (Pervious)	40				
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25				
<b>DPSI</b>	Depression Storage (Impervious)	1.0				
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013				



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A1	A2	A3	A4	A5	A6
<b>AREA</b>		9.72	2.18	8.96	11.16	14.86	34.81
<b>XIMP</b>	Impervious Area (Direct Connection)	46%	39%	46%	86%	93%	90%
<b>TIMP</b>	Total Impervious Area	46%	39%	46%	86%	93%	90%
<b>LGI</b>	Overland Flow Length (Impervious)	254.56	120.55	244.40	272.76	314.75	481.73
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	91	91	90	92	92	92
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A7	A8	A9	A10	A11	A12
AREA		19.31	5.73	42.85	7.93	18.74	1.17
XIMP	Impervious Area (Direct Connection)	89%	50%	68%	53%	93%	93%
TIMP	Total Impervious Area	89%	50%	68%	53%	93%	93%
LGI	Overland Flow Length (Impervious)	358.79	195.45	534.48	229.93	353.46	88.32
SLPI	Average Slope (Impervious)	1.0%					
DT	Time Step Increment	5					
DWF	Dry Weather Flow (Base Flow)	0					
LOSS	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
CN	Runoff Curve Number	92	91	91	92	92	92
SLPP	Average Slope (Pervious)	2.0%					
LGP	Overland Flow Length (Pervious)	40					
MNP	Manning's Roughness Coefficient (Pervious)	0.25					
DPSI	Depression Storage (Impervious)	1.0					
MNI	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A13	A14	A16	A17	A18	A20
<b>AREA</b>		29.43	1.88	11.25	9.75	11.58	69.17
<b>XIMP</b>	Impervious Area (Direct Connection)	80%	56%	93%	52%	53%	86%
<b>TIMP</b>	Total Impervious Area	80%	56%	93%	52%	53%	86%
<b>LGI</b>	Overland Flow Length (Impervious)	442.94	111.95	273.86	254.95	277.85	679.07
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	92	92	92	91	89	91
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A21	A22	A23	A24	A25	A26
<b>AREA</b>		4.49	13.54	4.36	2.54	5.77	4.46
<b>XIMP</b>	Impervious Area (Direct Connection)	92%	53%	78%	93%	53%	92%
<b>TIMP</b>	Total Impervious Area	92%	53%	78%	93%	53%	92%
<b>LGI</b>	Overland Flow Length (Impervious)	173.01	300.44	170.49	130.13	196.13	172.43
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	92	92	91	92	91	92
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Existing Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

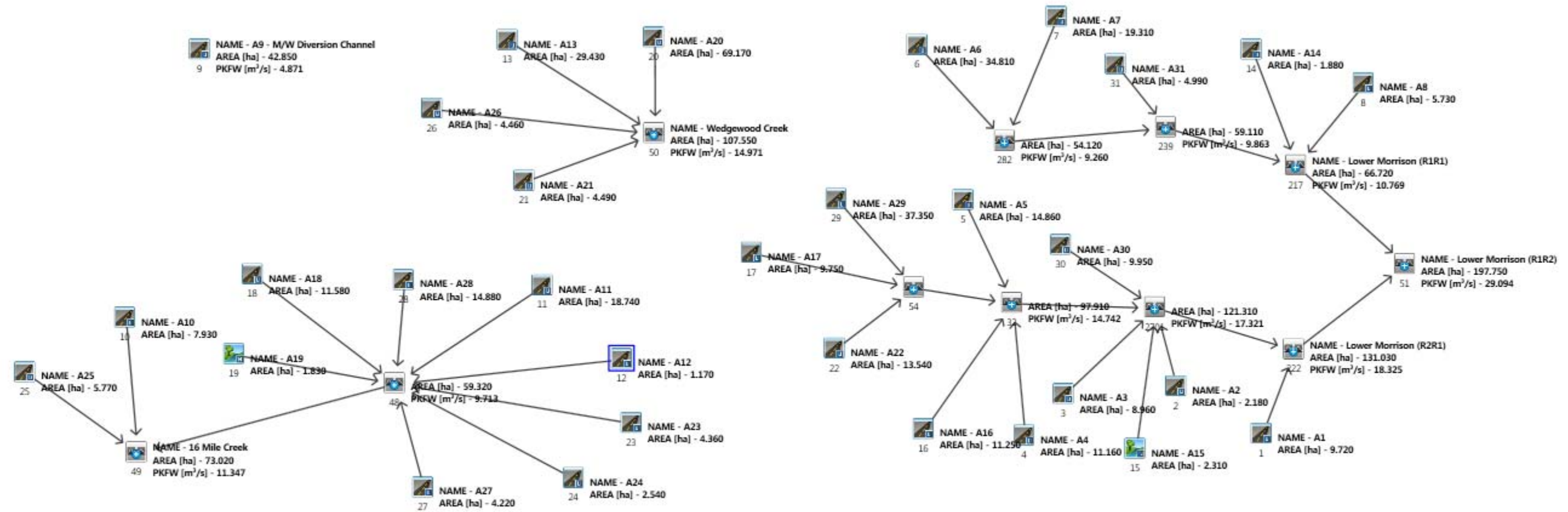
Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A27	A28	A29	A30	A31
<b>AREA</b>		4.22	14.88	37.35	9.95	4.99
<b>XIMP</b>	Impervious Area (Direct Connection)	62%	90%	73%	66%	53%
<b>TIMP</b>	Total Impervious Area	62%	90%	73%	66%	53%
<b>LGI</b>	Overland Flow Length (Impervious)	167.73	314.96	499.00	257.55	182.39
<b>SLPI</b>	Average Slope (Impervious)	1.0%				
<b>DT</b>	Time Step Increment	5				
<b>DWF</b>	Dry Weather Flow (Base Flow)	0				
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$				
<b>CN</b>	Runoff Curve Number	89	92	91	91	91
<b>SLPP</b>	Average Slope (Pervious)	2.0%				
<b>LGP</b>	Overland Flow Length (Pervious)	40				
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25				
<b>DPSI</b>	Depression Storage (Impervious)	1.0				
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013				



T11-767  
 Midtown Oakville EA Study, Town of Oakville  
 Existing Conditions Model Schematic  
 May 2014

VO2 Model Schematic





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4.83	0.85	10.83	1.67	16.83	0.64	22.83	0.42
5.00	0.89	11.00	1.59	17.00	0.63	23.00	0.42
5.17	0.94	11.17	1.52	17.17	0.62	23.17	0.41
5.33	0.99	11.33	1.45	17.33	0.61	23.33	0.41
5.50	1.04	11.50	1.39	17.50	0.61	23.50	0.40
5.67	1.11	11.67	1.34	17.67	0.60	23.67	0.40
5.83	1.18	11.83	1.29	17.83	0.59	23.83	0.40
6.00	1.26	12.00	1.24	18.00	0.58	24.00	0.39

```
V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U A A A A L
V V I SS U U A A L
VV I SSSSS UUUU A A LLLLL
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OOO TTTT TTTT 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 Y M M O O Company
OOO T T H H Y Y M M OOO Serial
```

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\*\*\*\*\* DETAILED OUTPUT \*\*\*\*\*

Input filename: C:\Program Files (x86)\Visual Otthymo 3.0\VO2\voindat  
Output filename: C:\Users\krothwell\AppData\Local\Temp\ff8e3132-c6dc-4dbf-9cfc-a5816f571813\Scenario.out  
Summary filename: C:\Users\krothwell\AppData\Local\Temp\ff8e3132-c6dc-4dbf-9cfc-a5816f571813\Scenario.sum

DATE: 05/16/2014 TIME: 11:25:38

USER:

COMMENTS:

\*\*\*\*\*  
\*\* SIMULATION NUMBER: 1 \*\*  
\*\*\*\*\*

CHICAGO STORM  
Ptotal= 48.69 mm

IDF curve parameters: A= 725.000  
B= 4.800  
C= 0.808

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.40	6.17	1.36	12.17	1.20	18.17	0.57
0.33	0.41	6.33	1.48	12.33	1.16	18.33	0.56
0.50	0.42	6.50	1.62	12.50	1.13	18.50	0.56
0.67	0.43	6.67	1.80	12.67	1.09	18.67	0.55
0.83	0.43	6.83	2.03	12.83	1.06	18.83	0.54
1.00	0.44	7.00	2.34	13.00	1.03	19.00	0.54
1.17	0.45	7.17	2.77	13.17	1.00	19.17	0.53
1.33	0.46	7.33	3.42	13.33	0.98	19.33	0.52
1.50	0.47	7.50	4.54	13.50	0.95	19.50	0.52
1.67	0.48	7.67	7.00	13.67	0.93	19.67	0.51
1.83	0.49	7.83	17.37	13.83	0.91	19.83	0.51
2.00	0.50	8.00	82.18	14.00	0.89	20.00	0.50
2.17	0.51	8.17	23.02	14.17	0.87	20.17	0.49
2.33	0.53	8.33	11.75	14.33	0.85	20.33	0.49
2.50	0.54	8.50	7.96	14.50	0.83	20.50	0.48
2.67	0.55	8.67	6.07	14.67	0.81	20.67	0.48
2.83	0.57	8.83	4.93	14.83	0.79	20.83	0.47
3.00	0.58	9.00	4.17	15.00	0.78	21.00	0.47
3.17	0.60	9.17	3.63	15.17	0.76	21.17	0.46
3.33	0.62	9.33	3.22	15.33	0.75	21.33	0.46
3.50	0.64	9.50	2.90	15.50	0.74	21.50	0.45
3.67	0.66	9.67	2.64	15.67	0.72	21.67	0.45
3.83	0.68	9.83	2.43	15.83	0.71	21.83	0.44
4.00	0.70	10.00	2.25	16.00	0.70	22.00	0.44
4.17	0.73	10.17	2.10	16.17	0.69	22.17	0.44
4.33	0.76	10.33	1.97	16.33	0.67	22.33	0.43
4.50	0.79	10.50	1.86	16.50	0.66	22.50	0.43
4.67	0.82	10.67	1.76	16.67	0.65	22.67	0.42

CALIB  
STANDHYD (0009)  
ID= 1 DT= 5.0 min

Area (ha)= 42.85  
Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00

IMPERVIOUS PERVIOUS (i)  
Surface Area (ha)= 29.14 13.71  
Dep. Storage (mm)= 1.00 1.50  
Average Slope (%)= 1.00 2.00  
Length (m)= 534.48 40.00  
Mannings n = 0.013 0.250

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	0.40	6.083	1.36	12.083	1.20	18.08	0.57
0.167	0.40	6.167	1.36	12.167	1.20	18.17	0.57
0.250	0.41	6.250	1.48	12.250	1.16	18.25	0.56
0.333	0.41	6.333	1.48	12.333	1.16	18.33	0.56
0.417	0.42	6.417	1.62	12.417	1.13	18.42	0.56
0.500	0.42	6.500	1.62	12.500	1.13	18.50	0.56
0.583	0.43	6.583	1.80	12.583	1.09	18.58	0.55
0.667	0.43	6.667	1.80	12.667	1.09	18.67	0.55
0.750	0.43	6.750	2.03	12.750	1.06	18.75	0.54
0.833	0.43	6.833	2.03	12.833	1.06	18.83	0.54
0.917	0.44	6.917	2.34	12.917	1.03	18.92	0.54
1.000	0.44	7.000	2.34	13.000	1.03	19.00	0.54
1.083	0.45	7.083	2.77	13.083	1.00	19.08	0.53
1.167	0.45	7.167	2.77	13.167	1.00	19.17	0.53
1.250	0.46	7.250	3.42	13.250	0.98	19.25	0.52
1.333	0.46	7.333	3.42	13.333	0.98	19.33	0.52
1.417	0.47	7.417	4.54	13.417	0.95	19.42	0.52
1.500	0.47	7.500	4.54	13.500	0.95	19.50	0.52
1.583	0.48	7.583	7.00	13.583	0.93	19.58	0.51
1.667	0.48	7.667	7.00	13.667	0.93	19.67	0.51
1.750	0.49	7.750	17.37	13.750	0.91	19.75	0.51
1.833	0.49	7.833	17.38	13.833	0.91	19.83	0.51
1.917	0.50	7.917	82.18	13.917	0.89	19.92	0.50
2.000	0.50	8.000	82.18	14.000	0.89	20.00	0.50
2.083	0.51	8.083	23.02	14.083	0.87	20.08	0.49
2.167	0.51	8.167	23.02	14.167	0.87	20.17	0.49
2.250	0.53	8.250	11.75	14.250	0.85	20.25	0.49
2.333	0.53	8.333	11.75	14.333	0.85	20.33	0.49
2.417	0.54	8.417	7.96	14.417	0.83	20.42	0.48
2.500	0.54	8.500	7.96	14.500	0.83	20.50	0.48
2.583	0.55	8.583	6.07	14.583	0.81	20.58	0.48
2.667	0.55	8.667	6.07	14.667	0.81	20.67	0.48
2.750	0.57	8.750	4.93	14.750	0.79	20.75	0.47
2.833	0.57	8.833	4.93	14.833	0.79	20.83	0.47
2.917	0.58	8.917	4.17	14.917	0.78	20.92	0.47
3.000	0.58	9.000	4.17	15.000	0.78	21.00	0.47
3.083	0.60	9.083	3.63	15.083	0.76	21.08	0.46
3.167	0.60	9.167	3.63	15.167	0.76	21.17	0.46
3.250	0.62	9.250	3.22	15.250	0.75	21.25	0.46
3.333	0.62	9.333	3.22	15.333	0.75	21.33	0.46
3.417	0.64	9.417	2.90	15.417	0.74	21.42	0.45
3.500	0.64	9.500	2.90	15.500	0.74	21.50	0.45
3.583	0.66	9.583	2.64	15.583	0.72	21.58	0.45
3.667	0.66	9.667	2.64	15.667	0.72	21.67	0.45
3.750	0.68	9.750	2.43	15.750	0.71	21.75	0.44
3.833	0.68	9.833	2.43	15.833	0.71	21.83	0.44
3.917	0.70	9.917	2.25	15.917	0.70	21.92	0.44
4.000	0.70	10.000	2.25	16.000	0.70	22.00	0.44
4.083	0.73	10.083	2.10	16.083	0.69	22.08	0.44
4.167	0.73	10.167	2.10	16.167	0.69	22.17	0.44
4.250	0.76	10.250	1.97	16.250	0.67	22.25	0.43
4.333	0.76	10.333	1.97	16.333	0.67	22.33	0.43
4.417	0.79	10.417	1.86	16.417	0.66	22.42	0.43
4.500	0.79	10.500	1.86	16.500	0.66	22.50	0.43
4.583	0.82	10.583	1.76	16.583	0.65	22.58	0.42
4.667	0.82	10.667	1.76	16.667	0.65	22.67	0.42
4.750	0.85	10.750	1.67	16.750	0.64	22.75	0.42



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4.833	0.85	10.833	1.67	16.833	0.64	22.83	0.42
4.917	0.89	10.917	1.59	16.917	0.63	22.92	0.42
5.000	0.89	11.000	1.59	17.000	0.63	23.00	0.42
5.083	0.94	11.083	1.52	17.083	0.62	23.08	0.41
5.167	0.94	11.167	1.52	17.167	0.62	23.17	0.41
5.250	0.99	11.250	1.45	17.250	0.61	23.25	0.41
5.333	0.99	11.333	1.45	17.333	0.61	23.33	0.41
5.417	1.04	11.417	1.39	17.417	0.61	23.42	0.40
5.500	1.04	11.500	1.39	17.500	0.61	23.50	0.40
5.583	1.11	11.583	1.34	17.583	0.60	23.58	0.40
5.667	1.11	11.667	1.34	17.667	0.60	23.67	0.40
5.750	1.18	11.750	1.29	17.750	0.59	23.75	0.40
5.833	1.18	11.833	1.29	17.833	0.59	23.83	0.40
5.917	1.26	11.917	1.24	17.917	0.58	23.92	0.39
6.000	1.26	12.000	1.24	18.000	0.58	24.00	0.39

Max.Eff.Inten.(mm/hr)= 82.18 25.17  
 over (min) 10.00 20.00  
 Storage Coeff. (min)= 7.55 (ii) 19.81 (iii)  
 Unit Hyd. Tpeak (min)= 10.00 20.00  
 Unit Hyd. peak (cms)= 0.13 0.06

PEAK FLOW (cms)= 4.54 0.51 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.08 8.25 4.871 (iii)  
 RUNOFF VOLUME (mm)= 47.69 20.86 39.10  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.43 0.80

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB NASHYD (0019) Area (ha)= 1.83 Curve Number (CN)= 78.0  
 ID= 1 DT= 5.0 min Ia (mm)= 5.00 # of Linear Res.(N)= 3.00  
 U.H. Tp(hrs)= 0.15

Unit Hyd Qpeak (cms)= 0.466  
 PEAK FLOW (cms)= 0.077 (i)  
 TIME TO PEAK (hrs)= 8.083  
 RUNOFF VOLUME (mm)= 16.454  
 TOTAL RAINFALL (mm)= 48.688  
 RUNOFF COEFFICIENT = 0.338

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

CALIB STANDHYD (0011) Area (ha)= 18.74 Dir. Conn.(%)= 93.00  
 ID= 1 DT= 5.0 min Total Imp(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	17.43	1.31
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	353.46	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min)=	5.89 (ii)	8.61 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.19	0.12

PEAK FLOW (cms)= 3.39 0.08 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.00 3.454 (iii)  
 RUNOFF VOLUME (mm)= 47.69 21.63 45.86  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0012) Area (ha)= 1.17 Dir. Conn.(%)= 93.00  
 ID= 1 DT= 5.0 min Total Imp(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.09	0.08
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 82.18 33.43  
 over (min) 5.00 10.00  
 Storage Coeff. (min)= 2.56 (ii) 5.28 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.29 0.16

PEAK FLOW (cms)= 0.24 0.01 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.08 0.250 (iii)  
 RUNOFF VOLUME (mm)= 47.69 21.63 45.86  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0018) Area (ha)= 11.58 Dir. Conn.(%)= 53.00  
 ID= 1 DT= 5.0 min Total Imp(%)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.14	5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 82.18 21.30  
 over (min) 5.00 20.00  
 Storage Coeff. (min)= 5.10 (ii) 18.20 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 20.00  
 Unit Hyd. peak (cms)= 0.21 0.06

PEAK FLOW (cms)= 1.24 0.18 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.25 1.315 (iii)  
 RUNOFF VOLUME (mm)= 47.69 18.09 33.78  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.37 0.69

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 77.0 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.

CALIB STANDHYD (0023) Area (ha)= 4.36 Dir. Conn.(%)= 78.00  
 ID= 1 DT= 5.0 min Total Imp(%)= 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 82.18 31.98  
 over (min) 5.00 10.00  
 Storage Coeff. (min)= 3.81 (ii) 8.41 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.25 0.12

PEAK FLOW (cms)= 0.73 0.06 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.08 0.780 (iii)  
 RUNOFF VOLUME (mm)= 47.69 20.86 41.78  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69



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RUNOFF COEFFICIENT = 0.98 0.43 0.86

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0024)  
ID= 1 DT= 5.0 min

Area (ha)=	2.54	Dir. Conn.(%)=	93.00
Total Imp(%)=	93.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.36	0.18
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	130.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min)=	3.24 (ii)	5.95 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.27	0.15

PEAK FLOW (cms)=	0.52	0.01	*TOTALS*	0.531 (iii)
TIME TO PEAK (hrs)=	8.00	8.08		8.00
RUNOFF VOLUME (mm)=	47.69	21.63		45.86
TOTAL RAINFALL (mm)=	48.69	48.69		48.69
RUNOFF COEFFICIENT =	0.98	0.44		0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0027)  
ID= 1 DT= 5.0 min

Area (ha)=	4.22	Dir. Conn.(%)=	62.00
Total Imp(%)=	62.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.62	1.60
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	167.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	82.18	20.46
over (min)	5.00	20.00
Storage Coeff. (min)=	3.77 (ii)	17.08 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.25	0.06

PEAK FLOW (cms)=	0.56	0.05	*TOTALS*	0.585 (iii)
TIME TO PEAK (hrs)=	8.00	8.25		8.00
RUNOFF VOLUME (mm)=	47.69	17.48		36.21
TOTAL RAINFALL (mm)=	48.69	48.69		48.69
RUNOFF COEFFICIENT =	0.98	0.36		0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB  
STANDHYD (0028)  
ID= 1 DT= 5.0 min

Area (ha)=	14.88	Dir. Conn.(%)=	90.00
Total Imp(%)=	90.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	13.39	1.49
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length (m)=	314.96	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min)=	5.50 (ii)	8.67 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.20	0.12

PEAK FLOW (cms)=	2.66	0.09	*TOTALS*	2.733 (iii)
TIME TO PEAK (hrs)=	8.00	8.08		8.00
RUNOFF VOLUME (mm)=	47.69	21.63		45.08
TOTAL RAINFALL (mm)=	48.69	48.69		48.69
RUNOFF COEFFICIENT =	0.98	0.44		0.93

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0011):	18.74	3.454	8.00	45.86
+ ID2= 2 (0012):	1.17	0.250	8.00	45.86
=====				
ID = 3 (0048):	19.91	3.704	8.00	45.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	19.91	3.704	8.00	45.86
+ ID2= 2 (0018):	11.58	1.315	8.00	33.78
=====				
ID = 1 (0048):	31.49	5.019	8.00	41.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	31.49	5.019	8.00	41.42
+ ID2= 2 (0019):	1.83	0.077	8.08	16.45
=====				
ID = 3 (0048):	33.32	5.084	8.00	40.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	33.32	5.084	8.00	40.05
+ ID2= 2 (0023):	4.36	0.780	8.00	41.78
=====				
ID = 1 (0048):	37.68	5.864	8.00	40.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	37.68	5.864	8.00	40.25
+ ID2= 2 (0024):	2.54	0.531	8.00	45.86
=====				
ID = 3 (0048):	40.22	6.395	8.00	40.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	40.22	6.395	8.00	40.60
+ ID2= 2 (0027):	4.22	0.585	8.00	36.21
ID = 1 (0048):	44.44	6.980	8.00	40.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	44.44	6.980	8.00	40.19
+ ID2= 2 (0028):	14.88	2.733	8.00	45.08
ID = 3 (0048):	59.32	9.713	8.00	41.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	7.93	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.20	3.73
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	229.93	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	26.28
over (min)	5.00	20.00
Storage Coeff. (min)	4.55 (ii)	16.60 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.23	0.06
PEAK FLOW (cms)	0.87	0.16
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

\*TOTALS\*  
PEAK FLOW (cms) = 0.87 0.16 0.940 (iii)  
TIME TO PEAK (hrs) = 8.00 8.25 8.00  
RUNOFF VOLUME (mm) = 47.69 21.63 35.44  
TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
RUNOFF COEFFICIENT = 0.98 0.44 0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	5.77	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.06	2.71
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	196.13	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	25.17
over (min)	5.00	20.00
Storage Coeff. (min)	4.14 (ii)	16.40 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.24	0.06
PEAK FLOW (cms)	0.65	0.11
TIME TO PEAK (hrs)	8.00	8.25
RUNOFF VOLUME (mm)	47.69	20.86
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.43

\*TOTALS\*  
PEAK FLOW (cms) = 0.65 0.11 0.694 (iii)  
TIME TO PEAK (hrs) = 8.00 8.25 8.00  
RUNOFF VOLUME (mm) = 47.69 20.86 35.07  
TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
RUNOFF COEFFICIENT = 0.98 0.43 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):	7.93	0.940	8.00	35.44
+ ID2= 2 (0025):	5.77	0.694	8.00	35.07
ID = 3 (0049):	13.70	1.634	8.00	35.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0049):	13.70	1.634	8.00	35.29
+ ID2= 2 (0048):	59.32	9.713	8.00	41.41
ID = 1 (0049):	73.02	11.347	8.00	40.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0013)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	29.43	80.00	80.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	23.54	5.89
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	442.94	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	33.43
over (min)	5.00	15.00
Storage Coeff. (min)	6.75 (ii)	11.13 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.18	0.09
PEAK FLOW (cms)	4.37	0.31
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

\*TOTALS\*  
PEAK FLOW (cms) = 4.37 0.31 4.550 (iii)  
TIME TO PEAK (hrs) = 8.00 8.17 8.00  
RUNOFF VOLUME (mm) = 47.69 21.63 42.48  
TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
RUNOFF COEFFICIENT = 0.98 0.44 0.87

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	69.17	86.00	86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	59.49	9.68
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	679.07	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	31.98
over (min)	10.00	15.00
Storage Coeff. (min)	8.72 (ii)	12.41 (ii)
Unit Hyd. Tpeak (min)	10.00	15.00
Unit Hyd. peak (cms)	0.12	0.08
PEAK FLOW (cms)	8.88	0.47
TIME TO PEAK (hrs)	8.08	8.17

\*TOTALS\*  
PEAK FLOW (cms) = 8.88 0.47 9.291 (iii)  
TIME TO PEAK (hrs) = 8.08 8.17 8.08



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RUNOFF VOLUME (mm) = 47.69 20.86 43.93  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.43 0.90

ID = 3 (0050): 98.60 13.160 8.00 43.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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	(0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0050):		98.60	13.160	8.00	43.50
+ ID2= 2 (0021):		4.49	0.909	8.00	45.60
ID = 1 (0050):		103.09	14.069	8.00	43.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD	(0021)	Area	(ha) =	4.49	Dir. Conn.(%) =	92.00
ID= 1 DT=	5.0 min	Total Imp(%) =				

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.13	0.36
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	172.01	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr) =	82.18	33.43
over (min) =	5.00	10.00
Storage Coeff. (min) =	3.84 (ii)	6.71 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.25	0.14
*TOTALS*		
PEAK FLOW (cms) =	0.89	0.02
TIME TO PEAK (hrs) =	8.00	8.08
RUNOFF VOLUME (mm) =	47.69	21.63
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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	(0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0050):		103.09	14.069	8.00	43.59
+ ID2= 2 (0026):		4.46	0.903	8.00	45.60
ID = 3 (0050):		107.55	14.971	8.00	43.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD	(0015)	Area	(ha) =	2.31	Curve Number (CN) =	80.0
ID= 1 DT=	5.0 min	Ia	(mm) =	5.00	# of Linear Res.(N) =	3.00
		U.H. Tp(hrs) =				

Unit Hyd Qpeak (cms) = 0.368

PEAK FLOW (cms) = 0.080 (i)  
 TIME TO PEAK (hrs) = 8.167  
 RUNOFF VOLUME (mm) = 17.790  
 TOTAL RAINFALL (mm) = 48.688  
 RUNOFF COEFFICIENT = 0.365

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

CALIB STANDHYD	(0026)	Area	(ha) =	4.46	Dir. Conn.(%) =	92.00
ID= 1 DT=	5.0 min	Total Imp(%) =				

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.10	0.36
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	172.43	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr) =	82.18	33.43
over (min) =	5.00	10.00
Storage Coeff. (min) =	3.83 (ii)	6.71 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.25	0.14
*TOTALS*		
PEAK FLOW (cms) =	0.88	0.02
TIME TO PEAK (hrs) =	8.00	8.08
RUNOFF VOLUME (mm) =	47.69	21.63
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD	(0003)	Area	(ha) =	8.96	Dir. Conn.(%) =	46.00
ID= 1 DT=	5.0 min	Total Imp(%) =				

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.12	4.84
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	244.40	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr) =	82.18	23.12
over (min) =	5.00	20.00
Storage Coeff. (min) =	4.72 (ii)	17.40 (ii)
Unit Hyd. Tpeak (min) =	5.00	20.00
Unit Hyd. peak (cms) =	0.22	0.06

PEAK FLOW (cms) = 0.85 0.18 0.923 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.25 8.00  
 RUNOFF VOLUME (mm) = 47.69 19.41 32.42  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.40 0.67

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 79.0 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	(0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):		29.43	4.550	8.00	42.48
+ ID2= 2 (0020):		69.17	9.291	8.08	43.93

CALIB STANDHYD	(0004)	Area	(ha) =	11.16	Dir. Conn.(%) =	86.00
ID= 1 DT=	5.0 min	Total Imp(%) =				



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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	9.60	1.56	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	272.76	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.05 (ii)	8.74 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.12	
PEAK FLOW (cms)=	1.95	0.10	2.029 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	47.69	21.63	44.04
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.90

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0005)	Area (ha)=	14.86	Dir. Conn.(%)=	93.00
ID= 1 DT= 5.0 min	Total Imp(%)=	93.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	13.82	1.04	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	314.75	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.50 (ii)	8.21 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.20	0.13	
PEAK FLOW (cms)=	2.74	0.07	2.796 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	47.69	21.63	45.86
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)	Area (ha)=	11.25	Dir. Conn.(%)=	93.00
ID= 1 DT= 5.0 min	Total Imp(%)=	93.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	10.46	0.79	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	273.86	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.06 (ii)	7.77 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.13	
PEAK FLOW (cms)=	2.12	0.05	2.165 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	47.69	21.63	45.86
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0017)	Area (ha)=	9.75	Dir. Conn.(%)=	52.00
ID= 1 DT= 5.0 min	Total Imp(%)=	52.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	5.07	4.68	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	254.95	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	25.17	
over (min)	5.00	20.00	
Storage Coeff. (min)=	4.85 (ii)	17.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.22	0.06	
PEAK FLOW (cms)=	1.04	0.19	1.117 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	34.81
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0022)	Area (ha)=	13.54	Dir. Conn.(%)=	53.00
ID= 1 DT= 5.0 min	Total Imp(%)=	53.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	7.18	6.36	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	300.44	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	26.28	
over (min)	5.00	20.00	
Storage Coeff. (min)=	5.35 (ii)	17.39 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.21	0.06	
PEAK FLOW (cms)=	1.43	0.26	1.544 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	35.44
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.73

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029)	Area (ha)=	37.35	Dir. Conn.(%)=	73.00
ID= 1 DT= 5.0 min	Total Imp(%)=	73.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	27.27	10.08	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	499.00	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	25.17	
over (min)	5.00	20.00	
Storage Coeff. (min)=	7.25 (ii)	19.51 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	



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Unit Hyd. peak (cms) =	0.17	0.06	
PEAK FLOW (cms) =	4.94	0.38	*TOTALS*
TIME TO PEAK (hrs) =	8.00	8.25	5.091 (iii)
RUNOFF VOLUME (mm) =	47.69	20.86	40.44
TOTAL RAINFALL (mm) =	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.83

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0054)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	1.117	8.00	34.81
+ ID2= 2 (0022):	13.54	1.544	8.00	35.44
=====				
ID = 3 (0054):	23.29	2.661	8.00	35.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0054):	23.29	2.661	8.00	35.18
+ ID2= 2 (0029):	37.35	5.091	8.00	40.44
=====				
ID = 1 (0054):	60.64	7.753	8.00	38.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.25	2.165	8.00	45.86
+ ID2= 2 (0004):	11.16	2.029	8.00	44.04
=====				
ID = 3 (0032):	22.41	4.194	8.00	44.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.41	4.194	8.00	44.96
+ ID2= 2 (0005):	14.86	2.796	8.00	45.86
=====				
ID = 1 (0032):	37.27	6.990	8.00	45.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0032):	37.27	6.990	8.00	45.32
+ ID2= 2 (0054):	60.64	7.753	8.00	38.42
=====				
ID = 3 (0032):	97.91	14.742	8.00	41.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)				
ID= 1 DT= 5.0 min	Area (ha) =	9.95	Total Imp(%) =	66.00
	Dir. Conn.(%) =	66.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	6.57	3.38	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	257.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr) =	82.18	25.17	
over (min) =	5.00	20.00	
Storage Coeff. (min) =	4.87 (ii)	17.13 (ii)	
Unit Hyd. Tpeak (min) =	5.00	20.00	
Unit Hyd. peak (cms) =	0.22	0.06	
*TOTALS*			
PEAK FLOW (cms) =	1.34	0.14	1.400 (iii)
TIME TO PEAK (hrs) =	8.00	8.25	8.00
RUNOFF VOLUME (mm) =	47.69	20.86	38.56
TOTAL RAINFALL (mm) =	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002)			
ID= 1 DT= 5.0 min	Area (ha) =	2.18	Dir. Conn.(%) =
	Total Imp(%) =	39.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	0.85	1.33	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	120.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr) =	82.18	24.12	
over (min) =	5.00	20.00	
Storage Coeff. (min) =	3.09 (ii)	15.56 (ii)	
Unit Hyd. Tpeak (min) =	5.00	20.00	
Unit Hyd. peak (cms) =	0.27	0.07	
*TOTALS*			
PEAK FLOW (cms) =	0.19	0.05	0.210 (iii)
TIME TO PEAK (hrs) =	8.00	8.25	8.00
RUNOFF VOLUME (mm) =	47.69	20.12	30.87
TOTAL RAINFALL (mm) =	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.41	0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.080	8.17	17.79
+ ID2= 2 (0002):	2.18	0.210	8.00	30.87
=====				
ID = 3 (2701):	4.49	0.256	8.00	24.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.256	8.00	24.14
+ ID2= 2 (0003):	8.96	0.923	8.00	32.42
=====				
ID = 1 (2701):	13.45	1.179	8.00	29.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	1.179	8.00	29.65
+ ID2= 2 (0030):	9.95	1.400	8.00	38.56
ID = 3 (2701):	23.40	2.579	8.00	33.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	2.579	8.00	33.44
+ ID2= 2 (0032):	97.91	14.742	8.00	41.05
ID = 1 (2701):	121.31	17.321	8.00	39.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.72	46.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	4.47	5.25	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	254.56	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	82.18	25.17	
over (min)	5.00	20.00	
Storage Coeff. (min)	4.84 (ii)	17.10 (ii)	
Unit Hyd. Tpeak (min)	5.00	20.00	
Unit Hyd. peak (cms)	0.22	0.06	
PEAK FLOW (cms)	0.92	0.21	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.25	1.004 (iii)
RUNOFF VOLUME (mm)	47.69	20.86	8.00
TOTAL RAINFALL (mm)	48.69	48.69	33.20
RUNOFF COEFFICIENT	0.98	0.43	48.69
			0.68

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	1.004	8.00	33.20
+ ID2= 2 (2701):	121.31	17.321	8.00	39.58
ID = 3 (0222):	131.03	18.325	8.00	39.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	34.81	90.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	31.33	3.48	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	481.73	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	82.18	33.43	

over (min)	5.00	15.00	
Storage Coeff. (min)	7.10 (ii)	10.27 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.17	0.09	
PEAK FLOW (cms)	5.72	0.19	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.17	5.824 (iii)
RUNOFF VOLUME (mm)	47.69	21.63	8.00
TOTAL RAINFALL (mm)	48.69	48.69	45.08
RUNOFF COEFFICIENT	0.98	0.44	48.69
			0.93

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	19.31	89.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	17.19	2.12	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	358.79	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)	5.95 (ii)	9.26 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.19	0.12	
PEAK FLOW (cms)	3.33	0.13	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	3.436 (iii)
RUNOFF VOLUME (mm)	47.69	21.63	8.00
TOTAL RAINFALL (mm)	48.69	48.69	44.82
RUNOFF COEFFICIENT	0.98	0.44	48.69
			0.92

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	5.824	8.00	45.08
+ ID2= 2 (0007):	19.31	3.436	8.00	44.82
ID = 3 (0282):	54.12	9.260	8.00	44.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.99	53.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	2.64	2.35	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	182.39	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	82.18	24.12	
over (min)	5.00	20.00	
Storage Coeff. (min)	3.96 (ii)	16.43 (ii)	
Unit Hyd. Tpeak (min)	5.00	20.00	
Unit Hyd. peak (cms)	0.24	0.06	
PEAK FLOW (cms)	0.57	0.09	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.25	0.603 (iii)
RUNOFF VOLUME (mm)	47.69	20.12	8.00
TOTAL RAINFALL (mm)	48.69	48.69	34.73
			48.69



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RUNOFF COEFFICIENT = 0.98 0.41 0.71

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0282):	54.12	9.260	8.00	44.99
+ ID2= 2 (0031):	4.99	0.603	8.00	34.73
=====				
ID = 3 (0239):	59.11	9.863	8.00	44.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)	Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	5.73	50.00	50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.87	2.87
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	195.45	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	25.17
over (min)	5.00	20.00
Storage Coeff. (min)	4.13 (ii)	16.39 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.24	0.06
*TOTALS*		
PEAK PLOW (cms)	0.61	0.12
TIME TO PEAK (hrs)	8.00	8.25
RUNOFF VOLUME (mm)	47.69	20.86
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.43

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area (ha)	Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	1.88	56.00	56.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	1.05	0.83
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	111.95	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	26.28
over (min)	5.00	20.00
Storage Coeff. (min)	2.96 (ii)	15.00 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.28	0.07
*TOTALS*		
PEAK PLOW (cms)	0.23	0.04
TIME TO PEAK (hrs)	8.00	8.25
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0014):	1.88	0.249	8.00	36.22
+ ID2= 2 (0239):	59.11	9.863	8.00	44.12
=====				
ID = 3 (0217):	60.99	10.113	8.00	43.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0217):	60.99	10.113	8.00	43.88
+ ID2= 2 (0008):	5.73	0.656	8.00	34.27
=====				
ID = 1 (0217):	66.72	10.769	8.00	43.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0217):	66.72	10.769	8.00	43.05
+ ID2= 2 (0222):	131.03	18.325	8.00	39.11
=====				
ID = 3 (0051):	197.75	29.094	8.00	40.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

\*\*\*\*\*  
\*\* SIMULATION NUMBER: 2 \*\*  
\*\*\*\*\*

CHICAGO STORM  
Ptotal= 60.87 mm

IDF curve parameters: A=1170.000  
B= 5.800  
C= 0.843

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.42	6.17	1.51	12.17	1.32	18.17	0.60
0.33	0.42	6.33	1.65	12.33	1.27	18.33	0.59
0.50	0.43	6.50	1.82	12.50	1.23	18.50	0.58
0.67	0.44	6.67	2.04	12.67	1.19	18.67	0.58
0.83	0.45	6.83	2.32	12.83	1.16	18.83	0.57
1.00	0.46	7.00	2.70	13.00	1.12	19.00	0.56
1.17	0.47	7.17	3.24	13.17	1.09	19.17	0.55
1.33	0.48	7.33	4.08	13.33	1.06	19.33	0.55
1.50	0.49	7.50	5.57	13.50	1.03	19.50	0.54
1.67	0.50	7.67	8.96	13.67	1.00	19.67	0.53
1.83	0.51	7.83	24.01	13.83	0.98	19.83	0.53
2.00	0.52	8.00	114.21	14.00	0.95	20.00	0.52
2.17	0.54	8.17	32.30	14.17	0.93	20.17	0.51
2.33	0.55	8.33	15.74	14.33	0.91	20.33	0.51
2.50	0.56	8.50	10.30	14.50	0.89	20.50	0.50
2.67	0.58	8.67	7.65	14.67	0.87	20.67	0.50
2.83	0.60	8.83	6.09	14.83	0.85	20.83	0.49
3.00	0.61	9.00	5.07	15.00	0.83	21.00	0.49
3.17	0.63	9.17	4.35	15.17	0.82	21.17	0.48
3.33	0.65	9.33	3.82	15.33	0.80	21.33	0.48
3.50	0.67	9.50	3.41	15.50	0.78	21.50	0.47
3.67	0.70	9.67	3.08	15.67	0.77	21.67	0.47
3.83	0.72	9.83	2.81	15.83	0.75	21.83	0.46
4.00	0.75	10.00	2.59	16.00	0.74	22.00	0.46
4.17	0.78	10.17	2.40	16.17	0.73	22.17	0.45
4.33	0.81	10.33	2.24	16.33	0.71	22.33	0.45
4.50	0.84	10.50	2.10	16.50	0.70	22.50	0.44



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4.67	0.88	10.67	1.98	16.67	0.69	22.67	0.44
4.83	0.92	10.83	1.87	16.83	0.68	22.83	0.43
5.00	0.96	11.00	1.78	17.00	0.67	23.00	0.43
5.17	1.01	11.17	1.69	17.17	0.66	23.17	0.43
5.33	1.07	11.33	1.61	17.33	0.65	23.33	0.42
5.50	1.14	11.50	1.54	17.50	0.64	23.50	0.42
5.67	1.21	11.67	1.48	17.67	0.63	23.67	0.41
5.83	1.29	11.83	1.42	17.83	0.62	23.83	0.41
6.00	1.39	12.00	1.37	18.00	0.61	24.00	0.41

4.750	0.92	10.750	1.87	16.750	0.68	22.75	0.43
4.833	0.92	10.833	1.87	16.833	0.68	22.83	0.43
4.917	0.96	10.917	1.78	16.917	0.67	22.92	0.43
5.000	0.96	11.000	1.78	17.000	0.67	23.00	0.43
5.083	1.01	11.083	1.69	17.083	0.66	23.08	0.43
5.167	1.01	11.167	1.69	17.167	0.66	23.17	0.43
5.250	1.07	11.250	1.61	17.250	0.65	23.25	0.42
5.333	1.07	11.333	1.61	17.333	0.65	23.33	0.42
5.417	1.14	11.417	1.54	17.417	0.64	23.42	0.42
5.500	1.14	11.500	1.54	17.500	0.64	23.50	0.42
5.583	1.21	11.583	1.48	17.583	0.63	23.58	0.41
5.667	1.21	11.667	1.48	17.667	0.63	23.67	0.41
5.750	1.29	11.750	1.42	17.750	0.62	23.75	0.41
5.833	1.29	11.833	1.42	17.833	0.62	23.83	0.41
5.917	1.39	11.917	1.37	17.917	0.61	23.92	0.41
6.000	1.39	12.000	1.37	18.000	0.61	24.00	0.41

CALIB STANDHYD (0009)  
ID= 1 DT= 5.0 min

Area (ha) = 42.85  
Total Imp(%) = 68.00 Dir. Conn.(%) = 68.00

Surface Area	(ha) =	29.14	13.71
Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	534.48	40.00
Mannings n	=	0.013	0.250

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.42	6.083	1.51	12.083	1.32	18.08	0.60
0.167	0.42	6.167	1.51	12.167	1.32	18.17	0.60
0.250	0.42	6.250	1.65	12.250	1.27	18.25	0.59
0.333	0.42	6.333	1.65	12.333	1.27	18.33	0.59
0.417	0.43	6.417	1.82	12.417	1.23	18.42	0.58
0.500	0.43	6.500	1.82	12.500	1.23	18.50	0.58
0.583	0.44	6.583	2.04	12.583	1.19	18.58	0.58
0.667	0.44	6.667	2.04	12.667	1.19	18.67	0.58
0.750	0.45	6.750	2.32	12.750	1.16	18.75	0.57
0.833	0.45	6.833	2.32	12.833	1.16	18.83	0.57
0.917	0.46	6.917	2.70	12.917	1.12	18.92	0.56
1.000	0.46	7.000	2.70	13.000	1.12	19.00	0.56
1.083	0.47	7.083	3.24	13.083	1.09	19.08	0.55
1.167	0.47	7.167	3.24	13.167	1.09	19.17	0.55
1.250	0.48	7.250	4.08	13.250	1.06	19.25	0.55
1.333	0.48	7.333	4.08	13.333	1.06	19.33	0.55
1.417	0.49	7.417	5.57	13.417	1.03	19.42	0.54
1.500	0.49	7.500	5.57	13.500	1.03	19.50	0.54
1.583	0.50	7.583	8.96	13.583	1.00	19.58	0.53
1.667	0.50	7.667	8.96	13.667	1.00	19.67	0.53
1.750	0.51	7.750	24.01	13.750	0.98	19.75	0.53
1.833	0.51	7.833	24.01	13.833	0.98	19.83	0.53
1.917	0.52	7.917	114.21	13.917	0.95	19.92	0.52
2.000	0.52	8.000	114.21	14.000	0.95	20.00	0.52
2.083	0.54	8.083	32.30	14.083	0.93	20.08	0.51
2.167	0.54	8.167	32.30	14.167	0.93	20.17	0.51
2.250	0.55	8.250	15.74	14.250	0.91	20.25	0.51
2.333	0.55	8.333	15.74	14.333	0.91	20.33	0.51
2.417	0.56	8.417	10.30	14.417	0.89	20.42	0.50
2.500	0.56	8.500	10.30	14.500	0.89	20.50	0.50
2.583	0.58	8.583	7.65	14.583	0.87	20.58	0.50
2.667	0.58	8.667	7.65	14.667	0.87	20.67	0.50
2.750	0.60	8.750	6.09	14.750	0.85	20.75	0.49
2.833	0.60	8.833	6.09	14.833	0.85	20.83	0.49
2.917	0.61	8.917	5.07	14.917	0.83	20.92	0.49
3.000	0.61	9.000	5.07	15.000	0.83	21.00	0.49
3.083	0.63	9.083	4.35	15.083	0.82	21.08	0.48
3.167	0.63	9.167	4.35	15.167	0.82	21.17	0.48
3.250	0.65	9.250	3.82	15.250	0.80	21.25	0.48
3.333	0.65	9.333	3.82	15.333	0.80	21.33	0.48
3.417	0.67	9.417	3.41	15.417	0.78	21.42	0.47
3.500	0.67	9.500	3.41	15.500	0.78	21.50	0.47
3.583	0.70	9.583	3.08	15.583	0.77	21.58	0.47
3.667	0.70	9.667	3.08	15.667	0.77	21.67	0.47
3.750	0.72	9.750	2.81	15.750	0.75	21.75	0.46
3.833	0.72	9.833	2.81	15.833	0.75	21.83	0.46
3.917	0.75	9.917	2.59	15.917	0.74	21.92	0.46
4.000	0.75	10.000	2.59	16.000	0.74	22.00	0.46
4.083	0.78	10.083	2.40	16.083	0.73	22.08	0.45
4.167	0.78	10.167	2.40	16.167	0.73	22.17	0.45
4.250	0.81	10.250	2.24	16.250	0.71	22.25	0.45
4.333	0.81	10.333	2.24	16.333	0.71	22.33	0.45
4.417	0.84	10.417	2.10	16.417	0.70	22.42	0.44
4.500	0.84	10.500	2.10	16.500	0.70	22.50	0.44
4.583	0.88	10.583	1.98	16.583	0.69	22.58	0.44
4.667	0.88	10.667	1.98	16.667	0.69	22.67	0.44

Max.Eff.Inten.(mm/hr)=	114.21	52.31	
over (min)	5.00	15.00	
Storage Coeff. (min)=	6.62 (ii)	11.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.18	0.09	
PEAK FLOW (cms)=	7.57	1.12	8.189 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	59.87	29.63	50.20
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.82

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB NASHYD (0019)  
ID= 1 DT= 5.0 min

Area (ha) = 1.83  
Ia (mm) = 5.00  
U.H. Tp(hrs) = 0.15

Curve Number (CN) = 78.0  
# of Linear Res.(N) = 3.00

Unit Hyd Qpeak (cms) =	0.466
PEAK FLOW (cms) =	0.134 (i)
TIME TO PEAK (hrs) =	8.083
RUNOFF VOLUME (mm) =	24.340
TOTAL RAINFALL (mm) =	60.873
RUNOFF COEFFICIENT =	0.400

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

CALIB STANDHYD (0011)  
ID= 1 DT= 5.0 min

Area (ha) = 18.74  
Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

Surface Area	(ha) =	17.43	1.31
Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	353.46	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.17 (ii)	7.55 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.13	
PEAK FLOW (cms)=	4.88	0.14	5.002 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	57.82
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.



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CALIB STANDHYD (0012)  
ID= 1 DT= 5.0 min

Area (ha) =	1.17	
Total Imp(%) =	93.00	Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	1.09	0.08
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	88.32	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	54.45
over (min) =	5.00	5.00
Storage Coeff. (min) =	2.25 (ii)	4.63 (ii)
Unit Hyd. Tpeak (min) =	5.00	5.00
Unit Hyd. peak (cms) =	0.30	0.22

			*TOTALS*
PEAK FLOW (cms) =	0.34	0.01	0.354 (iii)
TIME TO PEAK (hrs) =	8.00	8.00	8.00
RUNOFF VOLUME (mm) =	59.87	30.62	57.82
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018)  
ID= 1 DT= 5.0 min

Area (ha) =	11.58	
Total Imp(%) =	53.00	Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	6.14	5.44
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	277.85	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	44.79
over (min) =	5.00	15.00
Storage Coeff. (min) =	4.47 (ii)	14.20 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.23	0.08

			*TOTALS*
PEAK FLOW (cms) =	1.78	0.35	1.966 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	59.87	26.06	43.98
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.43	0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB STANDHYD (0023)  
ID= 1 DT= 5.0 min

Area (ha) =	4.36	
Total Imp(%) =	78.00	Dir. Conn.(%) = 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	3.40	0.96
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	170.49	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	52.31
over (min) =	5.00	10.00
Storage Coeff. (min) =	3.34 (ii)	7.37 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.26	0.13

			*TOTALS*
PEAK FLOW (cms) =	1.04	0.10	1.121 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00

RUNOFF VOLUME (mm) =	59.87	29.63	53.22
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.87

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0024)  
ID= 1 DT= 5.0 min

Area (ha) =	2.54	
Total Imp(%) =	93.00	Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	2.36	0.18
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	130.13	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	54.45
over (min) =	5.00	10.00
Storage Coeff. (min) =	2.84 (ii)	5.22 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.28	0.16

			*TOTALS*
PEAK FLOW (cms) =	0.73	0.02	0.751 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	59.87	30.62	57.82
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0027)  
ID= 1 DT= 5.0 min

Area (ha) =	4.22	
Total Imp(%) =	62.00	Dir. Conn.(%) = 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	2.62	1.60
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	167.73	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	43.13
over (min) =	5.00	15.00
Storage Coeff. (min) =	3.30 (ii)	13.18 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.27	0.08

			*TOTALS*
PEAK FLOW (cms) =	0.80	0.10	0.853 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	59.87	25.25	46.72
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.41	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB STANDHYD (0028)  
ID= 1 DT= 5.0 min

Area (ha) =	14.88	
Total Imp(%) =	90.00	Dir. Conn.(%) = 90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	13.39	1.49



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Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	314.96	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.82 (ii)	7.60 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.22	0.13	
			*TOTALS*
PEAK FLOW (cms)=	3.82	0.16	3.953 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	56.95
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	19.74	5.002	8.00	57.82
+ ID2= 2 (0012):	1.17	0.354	8.00	57.82
=====				
ID = 3 (0048):	19.91	5.356	8.00	57.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	19.91	5.356	8.00	57.82
+ ID2= 2 (0018):	11.58	1.966	8.00	43.98
=====				
ID = 1 (0048):	31.49	7.322	8.00	52.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	31.49	7.322	8.00	52.73
+ ID2= 2 (0019):	1.83	0.134	8.08	24.34
=====				
ID = 3 (0048):	33.32	7.436	8.00	51.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	33.32	7.436	8.00	51.17
+ ID2= 2 (0023):	4.36	1.121	8.00	53.22
=====				
ID = 1 (0048):	37.68	8.557	8.00	51.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	37.68	8.557	8.00	51.41
+ ID2= 2 (0024):	2.54	0.751	8.00	57.82
=====				

ID = 3 (0048): 40.22 9.308 8.00 51.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	40.22	9.308	8.00	51.82
+ ID2= 2 (0027):	4.22	0.853	8.00	46.72
=====				
ID = 1 (0048):	44.44	10.161	8.00	51.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	44.44	10.161	8.00	51.33
+ ID2= 2 (0028):	14.88	3.953	8.00	56.95
=====				
ID = 3 (0048):	59.32	14.114	8.00	52.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)=	7.93
ID= 1 DT= 5.0 min	Total Imp(%)=	53.00
	Dir. Conn.(%)=	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.20	3.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	229.93	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)	5.00	15.00
Storage Coeff. (min)=	3.99 (ii)	12.99 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.08

\*TOTALS\*

PEAK FLOW (cms)=	1.25	0.30	1.412 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	46.12
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha)=	5.77
ID= 1 DT= 5.0 min	Total Imp(%)=	53.00
	Dir. Conn.(%)=	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.06	2.71
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	196.13	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)	5.00	15.00
Storage Coeff. (min)=	3.63 (ii)	12.77 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.08

\*TOTALS\*

PEAK FLOW (cms)=	0.92	0.21	1.037 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	29.63	45.66
TOTAL RAINFALL (mm)=	60.87	60.87	60.87



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RUNOFF COEFFICIENT = 0.98 0.49 0.75

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	1.412	8.00	46.12
+ ID2= 2 (0025):	5.77	1.037	8.00	45.66
ID = 3 (0049):	13.70	2.449	8.00	45.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	2.449	8.00	45.93
+ ID2= 2 (0048):	59.32	14.114	8.00	52.74
ID = 1 (0049):	73.02	16.563	8.00	51.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0013)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	29.43	80.00	80.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	23.54	5.89
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	442.94	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	114.21	54.45
Storage Coeff. (min)	5.92 (ii)	9.76 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.19	0.11

PEAK FLOW (cms)	6.35	0.57	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	6.814 (iii)
RUNOFF VOLUME (mm)	59.87	30.62	54.02
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.50	0.89

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	69.17	86.00	86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	59.49	9.68
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	679.07	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	114.21	52.31
Storage Coeff. (min)	7.65 (ii)	10.88 (ii)
Unit Hyd. Tpeak (min)	10.00	15.00
Unit Hyd. peak (cms)	0.13	0.09

PEAK FLOW (cms)	12.85	0.81	*TOTALS*
TIME TO PEAK (hrs)	8.08	8.17	13.563 (iii)
RUNOFF VOLUME (mm)	59.87	29.63	8.08
TOTAL RAINFALL (mm)	60.87	60.87	55.64
RUNOFF COEFFICIENT	0.98	0.49	60.87

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0021)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	4.49	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.13	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	173.01	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	114.21	54.45
Storage Coeff. (min)	3.37 (ii)	5.89 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15

PEAK FLOW (cms)	1.26	0.04	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	1.294 (iii)
RUNOFF VOLUME (mm)	59.87	30.62	8.00
TOTAL RAINFALL (mm)	60.87	60.87	57.53
RUNOFF COEFFICIENT	0.98	0.50	60.87

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	4.46	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.10	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	172.43	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	114.21	54.45
Storage Coeff. (min)	3.36 (ii)	5.88 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15

PEAK FLOW (cms)	1.25	0.04	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	1.285 (iii)
RUNOFF VOLUME (mm)	59.87	30.62	8.00
TOTAL RAINFALL (mm)	60.87	60.87	57.53
RUNOFF COEFFICIENT	0.98	0.50	60.87

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				



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ID1= 1 (0013):	29.43	6.814	8.00	54.02
+ ID2= 2 (0020):	69.17	13.563	8.08	55.64
-----				
ID = 3 (0050):	98.60	19.587	8.00	55.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0050):	98.60	19.587	8.00	55.16
+ ID2= 2 (0021):	4.49	1.294	8.00	57.53
-----				
ID = 1 (0050):	103.09	20.881	8.00	55.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0050):	103.09	20.881	8.00	55.26
+ ID2= 2 (0026):	4.46	1.285	8.00	57.53
-----				
ID = 3 (0050):	107.55	22.166	8.00	55.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0015)	Area	(ha)	2.31	Curve Number (CN) = 80.0
ID= 1 DT= 5.0 min	Ia	(mm)	5.00	# of Linear Res. (N) = 3.00
	U.H. Tp	(hrs)	0.24	
-----				
Unit Hyd Qpeak	(cms)	0.368		
PEAK FLOW	(cms)	0.138 (i)		
TIME TO PEAK	(hrs)	8.167		
RUNOFF VOLUME	(mm)	26.127		
TOTAL RAINFALL	(mm)	60.873		
RUNOFF COEFFICIENT		0.429		

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

CALIB STANDHYD (0003)	Area	(ha)	8.96	
ID= 1 DT= 5.0 min	Total Imp (%)		46.00	Dir. Conn. (%) = 46.00
-----				
Surface Area	(ha)	4.12	4.84	IMPERVIOUS PERVIOUS (i)
Dep. Storage	(mm)	1.00	1.50	
Average Slope	(%)	1.00	2.00	
Length	(m)	244.40	40.00	
Mannings n		0.013	0.250	
-----				
Max.Eff.Inten.(mm/hr)		114.21	48.36	
over (min)		5.00	15.00	
Storage Coeff. (min)		4.14 (ii)	13.58 (ii)	
Unit Hyd. Tpeak (min)		5.00	15.00	
Unit Hyd. peak (cms)		0.24	0.08	
-----				
PEAK FLOW	(cms)	1.21	0.34	*TOTALS*
TIME TO PEAK	(hrs)	8.00	8.17	1.398 (iii)
RUNOFF VOLUME	(mm)	59.87	27.78	8.00
TOTAL RAINFALL	(mm)	60.87	60.87	42.54
RUNOFF COEFFICIENT		0.98	0.46	60.87
				0.70

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB

CALIB STANDHYD (0004)	Area	(ha)	11.16	
ID= 1 DT= 5.0 min	Total Imp (%)		86.00	Dir. Conn. (%) = 86.00

Surface Area	(ha)	9.60	1.56	IMPERVIOUS PERVIOUS (i)
Dep. Storage	(mm)	1.00	1.50	
Average Slope	(%)	1.00	2.00	
Length	(m)	272.76	40.00	
Mannings n		0.013	0.250	
-----				
Max.Eff.Inten.(mm/hr)		114.21	54.45	
over (min)		5.00	10.00	
Storage Coeff. (min)		4.42 (ii)	7.66 (ii)	
Unit Hyd. Tpeak (min)		5.00	10.00	
Unit Hyd. peak (cms)		0.23	0.13	

PEAK FLOW	(cms)	2.79	0.17	*TOTALS*
TIME TO PEAK	(hrs)	8.00	8.08	8.00
RUNOFF VOLUME	(mm)	59.87	30.62	55.78
TOTAL RAINFALL	(mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT		0.98	0.50	0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0005)	Area	(ha)	14.86	
ID= 1 DT= 5.0 min	Total Imp (%)		93.00	Dir. Conn. (%) = 93.00

Surface Area	(ha)	13.82	1.04	IMPERVIOUS PERVIOUS (i)
Dep. Storage	(mm)	1.00	1.50	
Average Slope	(%)	1.00	2.00	
Length	(m)	314.75	40.00	
Mannings n		0.013	0.250	
-----				
Max.Eff.Inten.(mm/hr)		114.21	54.45	
over (min)		5.00	10.00	
Storage Coeff. (min)		4.82 (ii)	7.20 (ii)	
Unit Hyd. Tpeak (min)		5.00	10.00	
Unit Hyd. peak (cms)		0.22	0.14	

PEAK FLOW	(cms)	3.94	0.11	*TOTALS*
TIME TO PEAK	(hrs)	8.00	8.08	8.00
RUNOFF VOLUME	(mm)	59.87	30.62	57.82
TOTAL RAINFALL	(mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT		0.98	0.50	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)	Area	(ha)	11.25	
ID= 1 DT= 5.0 min	Total Imp (%)		93.00	Dir. Conn. (%) = 93.00

Surface Area	(ha)	10.46	0.79	IMPERVIOUS PERVIOUS (i)
Dep. Storage	(mm)	1.00	1.50	
Average Slope	(%)	1.00	2.00	
Length	(m)	273.86	40.00	
Mannings n		0.013	0.250	
-----				
Max.Eff.Inten.(mm/hr)		114.21	54.45	
over (min)		5.00	10.00	
Storage Coeff. (min)		4.43 (ii)	6.81 (ii)	
Unit Hyd. Tpeak (min)		5.00	10.00	
Unit Hyd. peak (cms)		0.23	0.14	

PEAK FLOW	(cms)	3.04	0.09	*TOTALS*
TIME TO PEAK	(hrs)	8.00	8.08	3.115 (iii)
RUNOFF VOLUME	(mm)	59.87	30.62	8.00
TOTAL RAINFALL	(mm)	60.87	60.87	57.82
				60.87



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RUNOFF COEFFICIENT = 0.98 0.50 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0017)  
ID= 1 DT= 5.0 min

Area (ha)=	9.75	Dir. Conn.(%)=	52.00
Total Imp(%)=	52.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.07	4.68
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.95	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)	5.00	15.00
Storage Coeff. (min)=	4.25 (ii)	13.39 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.08

\*TOTALS\*  
PEAK FLOW (cms)= 1.49 0.36 1.681 (iii)  
TIME TO PEAK (hrs)= 8.00 8.17 8.00  
RUNOFF VOLUME (mm)= 59.87 29.63 45.36  
TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
RUNOFF COEFFICIENT = 0.98 0.49 0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0022)  
ID= 1 DT= 5.0 min

Area (ha)=	13.54	Dir. Conn.(%)=	53.00
Total Imp(%)=	53.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.18	6.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	300.44	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)	5.00	15.00
Storage Coeff. (min)=	4.69 (ii)	13.69 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.22	0.08

\*TOTALS\*  
PEAK FLOW (cms)= 2.06 0.50 2.334 (iii)  
TIME TO PEAK (hrs)= 8.00 8.17 8.00  
RUNOFF VOLUME (mm)= 59.87 30.62 46.12  
TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
RUNOFF COEFFICIENT = 0.98 0.50 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0029)  
ID= 1 DT= 5.0 min

Area (ha)=	37.35	Dir. Conn.(%)=	73.00
Total Imp(%)=	73.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	27.27	10.08
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length (m)=	499.00	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)	5.00	15.00
Storage Coeff. (min)=	6.35 (ii)	10.85 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.19	0.09

\*TOTALS\*  
PEAK FLOW (cms)= 7.18 0.85 7.654 (iii)  
TIME TO PEAK (hrs)= 8.00 8.17 8.00  
RUNOFF VOLUME (mm)= 59.87 29.63 51.71  
TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
RUNOFF COEFFICIENT = 0.98 0.49 0.85

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0054)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0017):	9.75	1.681	8.00	45.36
+ ID2= 2 (0022):	13.54	2.334	8.00	46.12
=====				
ID = 3 (0054):	23.29	4.015	8.00	45.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0054):	23.29	4.015	8.00	45.80
+ ID2= 2 (0029):	37.35	7.654	8.00	51.71
=====				
ID = 1 (0054):	60.64	11.669	8.00	49.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0016):	11.25	3.115	8.00	57.82
+ ID2= 2 (0004):	11.16	2.931	8.00	55.78
=====				
ID = 3 (0032):	22.41	6.046	8.00	56.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0032):	22.41	6.046	8.00	56.81
+ ID2= 2 (0005):	14.86	4.037	8.00	57.82
=====				
ID = 1 (0032):	37.27	10.083	8.00	57.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0032):	37.27	10.083	8.00	57.21
+ ID2= 2 (0054):	60.64	11.669	8.00	49.44
=====				
ID = 3 (0032):	97.91	21.752	8.00	52.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



CALIB  
STANDHYD (0030)  
ID= 1 DT= 5.0 min

	Area (ha)	Impervious (%)	Pervious (i)
Surface Area	9.95		
Dep. Storage			
Average Slope			
Length			
Mannings n			
Max.Eff.Inten.(mm/hr)			
over (min)			
Storage Coeff. (min)			
Unit Hyd. Tpeak (min)			
Unit Hyd. peak (cms)			
PEAK FLOW (cms)			
TIME TO PEAK (hrs)			
RUNOFF VOLUME (mm)			
TOTAL RAINFALL (mm)			
RUNOFF COEFFICIENT			

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0002)  
ID= 1 DT= 5.0 min

	Area (ha)	Impervious (%)	Pervious (i)
Surface Area	2.18		
Dep. Storage			
Average Slope			
Length			
Mannings n			
Max.Eff.Inten.(mm/hr)			
over (min)			
Storage Coeff. (min)			
Unit Hyd. Tpeak (min)			
Unit Hyd. peak (cms)			
PEAK FLOW (cms)			
TIME TO PEAK (hrs)			
RUNOFF VOLUME (mm)			
TOTAL RAINFALL (mm)			
RUNOFF COEFFICIENT			

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.138	8.17	26.13
+ ID2= 2 (0002):	2.18	0.321	8.00	40.85
ID = 3 (2701):	4.49	0.401	8.00	33.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				

ID1= 3 (2701):	4.49	0.401	8.00	33.27
+ ID2= 2 (0003):	8.96	1.398	8.00	42.54
ID = 1 (2701):	13.45	1.799	8.00	39.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	1.799	8.00	39.45
+ ID2= 2 (0030):	9.95	2.063	8.00	49.59
ID = 3 (2701):	23.40	3.862	8.00	43.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	3.862	8.00	43.76
+ ID2= 2 (0032):	97.91	21.752	8.00	52.40
ID = 1 (2701):	121.31	25.614	8.00	50.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
STANDHYD (0001)  
ID= 1 DT= 5.0 min

	Area (ha)	Impervious (%)	Pervious (i)
Surface Area	9.72		
Dep. Storage			
Average Slope			
Length			
Mannings n			
Max.Eff.Inten.(mm/hr)			
over (min)			
Storage Coeff. (min)			
Unit Hyd. Tpeak (min)			
Unit Hyd. peak (cms)			
PEAK FLOW (cms)			
TIME TO PEAK (hrs)			
RUNOFF VOLUME (mm)			
TOTAL RAINFALL (mm)			
RUNOFF COEFFICIENT			

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	1.530	8.00	43.54
+ ID2= 2 (2701):	121.31	25.614	8.00	50.73
ID = 3 (0222):	131.03	27.144	8.00	50.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
STANDHYD (0006)  
ID= 1 DT= 5.0 min

	Area (ha)	Impervious (%)	Pervious (i)
Surface Area	34.81		
Dep. Storage			
Average Slope			
Length			
Mannings n			
Max.Eff.Inten.(mm/hr)			
over (min)			
Storage Coeff. (min)			
Unit Hyd. Tpeak (min)			
Unit Hyd. peak (cms)			
PEAK FLOW (cms)			
TIME TO PEAK (hrs)			
RUNOFF VOLUME (mm)			
TOTAL RAINFALL (mm)			
RUNOFF COEFFICIENT			



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Surface Area (ha)=	31.33	3.48	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	481.73	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)=	6.22 (ii)	9.00 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.12	
			*TOTALS*
PEAK FLOW (cms)=	8.31	0.35	8.600 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	56.95
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.94

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007) ID= 1 DT= 5.0 min	Area (ha)= 19.31 Total Imp(%)= 89.00	Dir. Conn.(%)= 89.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	17.19	2.12	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	358.79	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.21 (ii)	8.11 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.13	
		*TOTALS*	
PEAK FLOW (cms)=	4.80	0.22	4.990 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	56.65
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.93

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0282) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0006):	34.81	8.600	8.00	56.95
+ ID2= 2 (0007):	19.31	4.990	8.00	56.65
=====				
ID = 3 (0282):	54.12	13.590	8.00	56.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031) ID= 1 DT= 5.0 min	Area (ha)= 4.99 Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	50.28
over (min)	5.00	15.00
Storage Coeff. (min)=	3.47 (ii)	12.77 (ii)

Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.26	0.08	
			*TOTALS*
PEAK FLOW (cms)=	0.80	0.18	0.898 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	28.69	45.21
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.47	0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 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 (0239) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0282):	54.12	13.590	8.00	56.84
+ ID2= 2 (0031):	4.99	0.898	8.00	45.21
=====				
ID = 3 (0239):	59.11	14.488	8.00	55.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008) ID= 1 DT= 5.0 min	Area (ha)= 5.73 Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.87	2.87	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	195.45	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	52.31	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.62 (ii)	12.77 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.08	
		*TOTALS*	
PEAK FLOW (cms)=	0.86	0.22	0.986 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	29.63	44.75
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014) ID= 1 DT= 5.0 min	Area (ha)= 1.88 Total Imp(%)= 56.00	Dir. Conn.(%)= 56.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	1.05	0.83	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	111.95	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.59 (ii)	11.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.09	
		*TOTALS*	
PEAK FLOW (cms)=	0.33	0.07	0.367 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	47.00
TOTAL RAINFALL (mm)=	60.87	60.87	60.87



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RUNOFF COEFFICIENT = 0.98 0.50 0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0014):	1.88	0.367	8.00	47.00
+ ID2= 2 (0239):	59.11	14.488	8.00	55.86
-----				
ID = 3 (0217):	60.99	14.855	8.00	55.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0217):	60.99	14.855	8.00	55.59
+ ID2= 2 (0008):	5.73	0.986	8.00	44.75
-----				
ID = 1 (0217):	66.72	15.841	8.00	54.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0217):	66.72	15.841	8.00	54.66
+ ID2= 2 (0222):	131.03	27.144	8.00	50.20
-----				
ID = 3 (0051):	197.75	42.985	8.00	51.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

\*\*\*\*\*  
\*\* SIMULATION NUMBER: 3 \*\*  
\*\*\*\*\*

CHICAGO STORM  
Ptotal= 70.24 mm

IDF curve parameters: A=1400.000  
B= 5.800  
C= 0.848

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.46	6.17	1.71	12.17	1.49	18.17	0.67
0.33	0.47	6.33	1.87	12.33	1.44	18.33	0.66
0.50	0.48	6.50	2.06	12.50	1.39	18.50	0.66
0.67	0.49	6.67	2.31	12.67	1.34	18.67	0.65
0.83	0.50	6.83	2.63	12.83	1.30	18.83	0.64
1.00	0.51	7.00	3.06	13.00	1.26	19.00	0.63
1.17	0.52	7.17	3.68	13.17	1.23	19.17	0.62
1.33	0.53	7.33	4.65	13.33	1.19	19.33	0.61
1.50	0.55	7.50	6.38	13.50	1.16	19.50	0.61
1.67	0.56	7.67	10.31	13.67	1.13	19.67	0.60
1.83	0.57	7.83	27.94	13.83	1.10	19.83	0.59
2.00	0.59	8.00	134.79	14.00	1.07	20.00	0.58
2.17	0.60	8.17	37.70	14.17	1.05	20.17	0.58
2.33	0.62	8.33	18.23	14.33	1.02	20.33	0.57
2.50	0.63	8.50	11.86	14.50	1.00	20.50	0.56
2.67	0.65	8.67	8.78	14.67	0.98	20.67	0.56
2.83	0.67	8.83	6.97	14.83	0.96	20.83	0.55
3.00	0.69	9.00	5.80	15.00	0.94	21.00	0.54
3.17	0.71	9.17	4.97	15.17	0.92	21.17	0.54
3.33	0.73	9.33	4.35	15.33	0.90	21.33	0.53

3.50	0.75	9.50	3.88	15.50	0.88	21.50	0.53
3.67	0.78	9.67	3.50	15.67	0.86	21.67	0.52
3.83	0.81	9.83	3.19	15.83	0.85	21.83	0.52
4.00	0.84	10.00	2.94	16.00	0.83	22.00	0.51
4.17	0.87	10.17	2.72	16.17	0.82	22.17	0.50
4.33	0.91	10.33	2.54	16.33	0.80	22.33	0.50
4.50	0.94	10.50	2.38	16.50	0.79	22.50	0.49
4.67	0.99	10.67	2.24	16.67	0.77	22.67	0.49
4.83	1.03	10.83	2.12	16.83	0.76	22.83	0.49
5.00	1.08	11.00	2.01	17.00	0.75	23.00	0.48
5.17	1.14	11.17	1.91	17.17	0.74	23.17	0.48
5.33	1.21	11.33	1.82	17.33	0.73	23.33	0.47
5.50	1.28	11.50	1.74	17.50	0.71	23.50	0.47
5.67	1.36	11.67	1.67	17.67	0.70	23.67	0.46
5.83	1.46	11.83	1.60	17.83	0.69	23.83	0.46
6.00	1.57	12.00	1.54	18.00	0.68	24.00	0.45

CALIB STANDHYD (0009)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	42.85	68.00	68.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	29.14	13.71
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	534.48	40.00
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	0.46	6.083	1.71	12.083	1.49	18.08	0.67
0.167	0.46	6.167	1.71	12.167	1.49	18.17	0.67
0.250	0.47	6.250	1.87	12.250	1.44	18.25	0.66
0.333	0.47	6.333	1.87	12.333	1.44	18.33	0.66
0.417	0.48	6.417	2.06	12.417	1.39	18.42	0.66
0.500	0.48	6.500	2.06	12.500	1.39	18.50	0.66
0.583	0.49	6.583	2.31	12.583	1.34	18.58	0.65
0.667	0.49	6.667	2.31	12.667	1.34	18.67	0.65
0.750	0.50	6.750	2.63	12.750	1.30	18.75	0.64
0.833	0.50	6.833	2.63	12.833	1.30	18.83	0.64
0.917	0.51	6.917	3.06	12.917	1.26	18.92	0.63
1.000	0.51	7.000	3.06	13.000	1.26	19.00	0.63
1.083	0.52	7.083	3.68	13.083	1.23	19.08	0.62
1.167	0.52	7.167	3.68	13.167	1.23	19.17	0.62
1.250	0.53	7.250	4.65	13.250	1.19	19.25	0.61
1.333	0.53	7.333	4.65	13.333	1.19	19.33	0.61
1.417	0.55	7.417	6.38	13.417	1.16	19.42	0.61
1.500	0.55	7.500	6.38	13.500	1.16	19.50	0.61
1.583	0.56	7.583	10.31	13.583	1.13	19.58	0.60
1.667	0.56	7.667	10.31	13.667	1.13	19.67	0.60
1.750	0.57	7.750	27.94	13.750	1.10	19.75	0.59
1.833	0.57	7.833	27.94	13.833	1.10	19.83	0.59
1.917	0.59	7.917	134.79	13.917	1.07	19.92	0.58
2.000	0.59	8.000	134.79	14.000	1.07	20.00	0.58
2.083	0.60	8.083	37.70	14.083	1.05	20.08	0.58
2.167	0.60	8.167	37.70	14.167	1.05	20.17	0.58
2.250	0.62	8.250	18.23	14.250	1.02	20.25	0.57
2.333	0.62	8.333	18.23	14.333	1.02	20.33	0.57
2.417	0.63	8.417	11.86	14.417	1.00	20.42	0.56
2.500	0.63	8.500	11.86	14.500	1.00	20.50	0.56
2.583	0.65	8.583	8.78	14.583	0.98	20.58	0.56
2.667	0.65	8.667	8.78	14.667	0.98	20.67	0.56
2.750	0.67	8.750	6.97	14.750	0.96	20.75	0.55
2.833	0.67	8.833	6.97	14.833	0.96	20.83	0.55
2.917	0.69	8.917	5.80	14.917	0.94	20.92	0.54
3.000	0.69	9.000	5.80	15.000	0.94	21.00	0.54
3.083	0.71	9.083	4.97	15.083	0.92	21.08	0.54
3.167	0.71	9.167	4.97	15.167	0.92	21.17	0.54
3.250	0.73	9.250	4.35	15.250	0.90	21.25	0.53
3.333	0.73	9.333	4.35	15.333	0.90	21.33	0.53
3.417	0.75	9.417	3.88	15.417	0.88	21.42	0.53
3.500	0.75	9.500	3.88	15.500	0.88	21.50	0.53
3.583	0.78	9.583	3.50	15.583	0.86	21.58	0.52
3.667	0.78	9.667	3.50	15.667	0.86	21.67	0.52
3.750	0.81	9.750	3.19	15.750	0.85	21.75	0.52
3.833	0.81	9.833	3.19	15.833	0.85	21.83	0.52
3.917	0.84	9.917	2.94	15.917	0.83	21.92	0.51
4.000	0.84	10.000	2.94	16.000	0.83	22.00	0.51
4.083	0.87	10.083	2.72	16.083	0.82	22.08	0.50



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4.167	0.87	10.167	2.72	16.167	0.82	22.17	0.50
4.250	0.91	10.250	2.54	16.250	0.80	22.25	0.50
4.333	0.91	10.333	2.54	16.333	0.80	22.33	0.50
4.417	0.94	10.417	2.38	16.417	0.79	22.42	0.49
4.500	0.94	10.500	2.38	16.500	0.79	22.50	0.49
4.583	0.99	10.583	2.24	16.583	0.77	22.58	0.49
4.667	0.99	10.667	2.24	16.667	0.77	22.67	0.49
4.750	1.03	10.750	2.12	16.750	0.76	22.75	0.49
4.833	1.03	10.833	2.12	16.833	0.76	22.83	0.49
4.917	1.08	10.917	2.01	16.917	0.75	22.92	0.48
5.000	1.08	11.000	2.01	17.000	0.75	23.00	0.48
5.083	1.14	11.083	1.91	17.083	0.74	23.08	0.48
5.167	1.14	11.167	1.91	17.167	0.74	23.17	0.48
5.250	1.21	11.250	1.82	17.250	0.73	23.25	0.47
5.333	1.21	11.333	1.82	17.333	0.73	23.33	0.47
5.417	1.28	11.417	1.74	17.417	0.71	23.42	0.47
5.500	1.28	11.500	1.74	17.500	0.71	23.50	0.47
5.583	1.36	11.583	1.67	17.583	0.70	23.58	0.46
5.667	1.36	11.667	1.67	17.667	0.70	23.67	0.46
5.750	1.46	11.750	1.60	17.750	0.69	23.75	0.46
5.833	1.46	11.833	1.60	17.833	0.69	23.83	0.46
5.917	1.57	11.917	1.54	17.917	0.68	23.92	0.45
6.000	1.57	12.000	1.54	18.000	0.68	24.00	0.45

Max. Eff. Inten. (mm/hr)=	134.79	67.67	
over (min)	5.00	15.00	
Storage Coeff. (min)=	6.20 (ii)	10.83 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.19	0.09	
*TOTALS*			
PEAK FLOW (cms)=	9.13	1.48	9.961 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	69.24	36.82	58.96
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52	0.84

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB					
STANDHYD (0019)	Area (ha)=	1.83	Curve Number (CN)=	78.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res. (N)=	3.00	
	U.H. Tp (hrs)=	0.15			

Unit Hyd Qpeak (cms)=	0.466	
PEAK FLOW (cms)=	0.178 (i)	
TIME TO PEAK (hrs)=	8.083	
RUNOFF VOLUME (mm)=	30.913	
TOTAL RAINFALL (mm)=	70.237	
RUNOFF COEFFICIENT =	0.440	

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

CALIB					
STANDHYD (0011)	Area (ha)=	18.74			
ID= 1 DT= 5.0 min	Total Imp(%)=	93.00	Dir. Conn.(%)=	93.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	17.43	1.31	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	353.46	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr)=	134.79	70.24	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.84 (ii)	7.06 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.22	0.14	
*TOTALS*			
PEAK FLOW (cms)=	5.86	0.18	6.017 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	67.05
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB					
STANDHYD (0012)	Area (ha)=	1.17			
ID= 1 DT= 5.0 min	Total Imp(%)=	93.00	Dir. Conn.(%)=	93.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	1.09	0.08	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	88.32	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr)=	134.79	70.24	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.10 (ii)	4.33 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.31	0.23	

*TOTALS*			
PEAK FLOW (cms)=	0.40	0.02	0.420 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	67.05
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB					
STANDHYD (0018)	Area (ha)=	11.58			
ID= 1 DT= 5.0 min	Total Imp(%)=	53.00	Dir. Conn.(%)=	53.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	6.14	5.44	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	277.85	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr)=	134.79	58.49	
over (min)	5.00	15.00	
Storage Coeff. (min)=	4.19 (ii)	12.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.24	0.08	

*TOTALS*			
PEAK FLOW (cms)=	2.13	0.47	2.385 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	32.67	52.05
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.47	0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB					
STANDHYD (0023)	Area (ha)=	4.36			
ID= 1 DT= 5.0 min	Total Imp(%)=	78.00	Dir. Conn.(%)=	78.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	3.40	0.96	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	170.49	40.00	
Mannings n =	0.013	0.250	



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Max. Eff. Inten. (mm/hr)= 134.79 67.67  
 over (min) = 5.00 10.00  
 Storage Coeff. (min)= 3.12 (ii) 6.90 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.27 0.14  
 \*TOTALS\*  
 PEAK FLOW (cms)= 1.23 0.13 1.345 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 69.24 36.82 62.10  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.52 0.88

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024) Area (ha) = 2.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.36 0.18  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 130.13 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 134.79 70.24  
 over (min) = 5.00 5.00  
 Storage Coeff. (min)= 2.66 (ii) 4.88 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 5.00  
 Unit Hyd. peak (cms) = 0.29 0.22

PEAK FLOW (cms)= 0.87 0.03 0.901 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.00 8.00  
 RUNOFF VOLUME (mm)= 69.24 37.95 67.05  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027) Area (ha) = 4.22  
 ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.62 1.60  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 167.73 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 134.79 56.44  
 over (min) = 5.00 15.00  
 Storage Coeff. (min)= 3.09 (ii) 11.96 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.27 0.09

PEAK FLOW (cms)= 0.95 0.14 1.025 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 69.24 31.72 54.98  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.45 0.78

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB STANDHYD (0028) Area (ha) = 14.88  
 ID= 1 DT= 5.0 min Total Imp(%) = 90.00 Dir. Conn.(%) = 90.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 13.39 1.49  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 314.96 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 134.79 70.24  
 over (min) = 5.00 10.00  
 Storage Coeff. (min)= 4.51 (ii) 7.11 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.23 0.14

PEAK FLOW (cms)= 4.57 0.21 4.753 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 69.24 37.95 66.11  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.94

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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 (0048)  
 1 + 2 = 3  
 AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)  
 ID1= 1 (0011): 18.74 6.017 8.00 67.05  
 + ID2= 2 (0012): 1.17 0.420 8.00 67.05  
 ID = 3 (0048): 19.91 6.437 8.00 67.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)  
 3 + 2 = 1  
 AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)  
 ID1= 3 (0048): 19.91 6.437 8.00 67.05  
 + ID2= 2 (0018): 11.58 2.385 8.00 52.05  
 ID = 1 (0048): 31.49 8.822 8.00 61.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)  
 1 + 2 = 3  
 AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)  
 ID1= 1 (0048): 31.49 8.822 8.00 61.53  
 + ID2= 2 (0019): 1.83 0.178 8.08 30.91  
 ID = 3 (0048): 33.32 8.976 8.00 59.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)  
 3 + 2 = 1  
 AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)  
 ID1= 3 (0048): 33.32 8.976 8.00 59.85  
 + ID2= 2 (0023): 4.36 1.345 8.00 62.10  
 ID = 1 (0048): 37.68 10.321 8.00 60.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	37.68	10.321	8.00	60.11
+ ID2= 2 (0024):	2.54	0.901	8.00	67.05
=====				
ID = 3 (0048):	40.22	11.222	8.00	60.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	40.22	11.222	8.00	60.55
+ ID2= 2 (0027):	4.22	1.025	8.00	54.98
=====				
ID = 1 (0048):	44.44	12.247	8.00	60.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	44.44	12.247	8.00	60.02
+ ID2= 2 (0028):	14.88	4.753	8.00	66.11
=====				
ID = 3 (0048):	59.32	17.000	8.00	61.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	7.93	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.20	3.73
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	229.93	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	3.74 (ii)	11.87 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.25	0.09
PEAK FLOW (cms)	1.49	0.40
TIME TO PEAK (hrs)	8.00	8.17
RUNOFF VOLUME (mm)	69.24	37.95
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	5.77	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.06	2.71
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	196.13	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	134.79	67.67
	5.00	15.00

Storage Coeff. (min)	3.40 (ii)	11.65 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.26	0.09	
PEAK FLOW (cms)	1.10	0.28	1.256 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	69.24	36.82	54.00
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52	0.77

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	1.712	8.00	54.53
+ ID2= 2 (0025):	5.77	1.256	8.00	54.00
=====				
ID = 3 (0049):	13.70	2.967	8.00	54.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	2.967	8.00	54.31
+ ID2= 2 (0048):	59.32	17.000	8.00	61.55
=====				
ID = 1 (0049):	73.02	19.967	8.00	60.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0013)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	29.43	80.00	80.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	23.54	5.89
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	442.94	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	5.54 (ii)	9.13 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.20	0.12

\*TOTALS\*

PEAK FLOW (cms)	7.63	0.75	8.263 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	69.24	37.95	62.98
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54	0.90

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	69.17	86.00	86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	59.49	9.68
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00

Length (m) = 679.07 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 134.79 67.67  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 7.16 (ii) 10.19 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.17 0.09  
 PEAK FLOW (cms) = 17.72 1.07  
 TIME TO PEAK (hrs) = 8.00 8.17  
 RUNOFF VOLUME (mm) = 69.24 36.82 64.70  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.52 0.92

\*TOTALS\*  
 18.326 (iii)  
 8.00  
 64.70  
 70.24  
 0.92

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB  
 STANDHYD (0021)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 4.49  
 Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.13	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	173.01	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)	3.15 (ii)	5.51 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.27	0.16

\*TOTALS\*  
 1.50 0.05  
 8.00 8.08 8.00  
 69.24 37.95 66.73  
 70.24 70.24 70.24  
 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB  
 STANDHYD (0026)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 4.46  
 Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.10	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	172.43	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)	3.14 (ii)	5.50 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.27	0.16

\*TOTALS\*  
 1.49 0.05  
 8.00 8.08 8.00  
 69.24 37.95 66.73  
 70.24 70.24 70.24  
 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0013):	29.43	8.263	8.00	62.98
+ ID2= 2 (0020):	69.17	18.326	8.00	64.70
ID = 3 (0050):	98.60	26.589	8.00	64.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0050):	98.60	26.589	8.00	64.19
+ ID2= 2 (0021):	4.49	1.544	8.00	66.73
ID = 1 (0050):	103.09	28.133	8.00	64.30

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0050):	103.09	28.133	8.00	64.30
+ ID2= 2 (0026):	4.46	1.534	8.00	66.73
ID = 3 (0050):	107.55	29.667	8.00	64.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
 NASHYD (0015)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 2.31  
 Curve Number (CN) = 80.0  
 Ia (mm) = 5.00 # of Linear Res.(N) = 3.00  
 U.H. Tp(hrs) = 0.24

Unit Hyd Qpeak (cms) = 0.368  
 PEAK FLOW (cms) = 0.182 (i)  
 TIME TO PEAK (hrs) = 8.167  
 RUNOFF VOLUME (mm) = 33.027  
 TOTAL RAINFALL (mm) = 70.237  
 RUNOFF COEFFICIENT = 0.470

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

CALIB  
 STANDHYD (0003)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 8.96  
 Total Imp(%) = 46.00 Dir. Conn.(%) = 46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.12	4.84
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	244.40	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	134.79	62.87
over (min)	5.00	15.00
Storage Coeff. (min)	3.88 (ii)	12.37 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.25	0.08

\*TOTALS\*  
 PEAK FLOW (cms) = 1.45 0.46 1.702 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 69.24 34.68 50.57  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.49 0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:



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CN\* = 79.0 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.

CALIB STANDHYD (0004) Area (ha) = 11.16  
 ID= 1 DT= 5.0 min Total Imp(%) = 86.00 Dir. Conn.(%) = 86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	9.60	1.56
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	272.76	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	5.00	10.00
Unit Hyd. Tpeak (min)	4.14 (ii)	7.17 (ii)
Unit Hyd. peak (cms)	5.00	10.00
	0.24	0.14

PEAK FLOW (cms)	3.34	0.22	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	3.524 (iii)
RUNOFF VOLUME (mm)	69.24	37.95	64.86
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54	0.92

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0005) Area (ha) = 14.86  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	13.82	1.04
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	314.75	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	5.00	10.00
Unit Hyd. Tpeak (min)	4.51 (ii)	6.74 (ii)
Unit Hyd. peak (cms)	5.00	10.00
	0.23	0.14

PEAK FLOW (cms)	4.72	0.15	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	4.849 (iii)
RUNOFF VOLUME (mm)	69.24	37.95	67.05
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54	0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0016) Area (ha) = 11.25  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	10.46	0.79
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	273.86	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	134.79	70.24
	5.00	10.00

Storage Coeff. (min)	4.15 (ii)	6.38 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.15

PEAK FLOW (cms)	3.63	0.11	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	69.24	37.95	67.05
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54	0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0017) Area (ha) = 9.75  
 ID= 1 DT= 5.0 min Total Imp(%) = 52.00 Dir. Conn.(%) = 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	5.07	4.68
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	254.95	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	134.79	67.67
Storage Coeff. (min)	5.00	15.00
Unit Hyd. Tpeak (min)	3.98 (ii)	12.23 (ii)
Unit Hyd. peak (cms)	5.00	15.00
	0.24	0.09

PEAK FLOW (cms)	1.78	0.48	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.17	2.042 (iii)
RUNOFF VOLUME (mm)	69.24	36.82	53.68
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52	0.76

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0022) Area (ha) = 13.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	7.18	6.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	300.44	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	5.00	15.00
Unit Hyd. Tpeak (min)	4.39 (ii)	12.52 (ii)
Unit Hyd. peak (cms)	5.00	15.00
	0.23	0.08

PEAK FLOW (cms)	2.47	0.67	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.17	2.838 (iii)
RUNOFF VOLUME (mm)	69.24	37.95	54.53
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54	0.78

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.





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CALIB STANDHYD (0029) ID= 1 DT= 5.0 min	Area (ha) = 37.35 Total Imp(%) = 73.00	Dir. Conn.(%) = 73.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	27.27	10.08
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	499.00	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	67.67
over (min)	5.00	15.00
Storage Coeff. (min)=	5.95 (ii)	10.15 (iii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.19	0.10

		*TOTALS*
PEAK FLOW (cms)	8.65	1.12
TIME TO PEAK (hrs)	8.00	8.17
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	69.24	36.82
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0054) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	2.042	8.00	53.68
+ ID2= 2 (0022):	13.54	2.838	8.00	54.53
=====				
ID = 3 (0054):	23.29	4.880	8.00	54.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0054):	23.29	4.880	8.00	54.17
+ ID2= 2 (0029):	37.35	9.287	8.00	60.48
=====				
ID = 1 (0054):	60.64	14.168	8.00	58.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.25	3.735	8.00	67.05
+ ID2= 2 (0004):	11.16	3.524	8.00	64.86
=====				
ID = 3 (0032):	22.41	7.259	8.00	65.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.41	7.259	8.00	65.96
+ ID2= 2 (0005):	14.86	4.849	8.00	67.05
=====				
ID = 1 (0032):	37.27	12.107	8.00	66.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)
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1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 (0032):	37.27	12.107	8.00	66.39
+ ID2= 2 (0054):	60.64	14.168	8.00	58.06
=====				
ID = 3 (0032):	97.91	26.275	8.00	61.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030) ID= 1 DT= 5.0 min	Area (ha) = 9.95 Total Imp(%) = 66.00	Dir. Conn.(%) = 66.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.57	3.38
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.55	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	67.67
over (min)	5.00	10.00
Storage Coeff. (min)=	4.00 (ii)	8.80 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.12

		*TOTALS*
PEAK FLOW (cms)	2.30	0.42
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	69.24	36.82
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha) = 2.18 Total Imp(%) = 39.00	Dir. Conn.(%) = 39.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	0.85	1.33
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	120.55	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	65.21
over (min)	5.00	15.00
Storage Coeff. (min)=	2.54 (ii)	10.91 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.29	0.09

		*TOTALS*
PEAK FLOW (cms)	0.31	0.14
TIME TO PEAK (hrs)	8.00	8.17
RUNOFF VOLUME (mm)	69.24	35.73
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.51

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.182	8.17	33.03
+ ID2= 2 (0002):	2.18	0.391	8.00	48.79
=====				
ID = 3 (2701):	4.49	0.498	8.00	40.68



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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.498	8.00	40.68
+ ID2= 2 (0003):	8.96	1.702	8.00	50.57
ID = 1 (2701):	13.45	2.200	8.00	47.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	2.200	8.00	47.27
+ ID2= 2 (0030):	9.95	2.651	8.00	58.21
ID = 3 (2701):	23.40	4.851	8.00	51.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	4.851	8.00	51.92
+ ID2= 2 (0032):	97.91	26.275	8.00	61.23
ID = 1 (2701):	121.31	31.126	8.00	59.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.72	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.47	5.25
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	254.56	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	134.79	67.67
Storage Coeff. (min)	5.00	15.00
Unit Hyd. Tpeak (min)	3.97 (ii)	12.22 (ii)
Unit Hyd. peak (cms)	0.24	0.09
PEAK FLOW (cms)	1.57	0.54
TIME TO PEAK (hrs)	8.00	8.17
RUNOFF VOLUME (mm)	69.24	36.82
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52

\*TOTALS\*  
1.865 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID= 1 (0001):	9.72	1.865	8.00	51.73
+ ID2= 2 (2701):	121.31	31.126	8.00	59.44
ID = 3 (0222):	131.03	32.991	8.00	58.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	34.81	90.00	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	31.33	3.48
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	481.73	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	5.82 (ii)	8.42 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.20	0.12
PEAK FLOW (cms)	10.01	0.46
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	69.24	37.95
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54

\*TOTALS\*  
10.397 (iii)

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	19.31	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	17.19	2.12
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	358.79	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	134.79	70.24
Storage Coeff. (min)	4.88 (ii)	7.59 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.22	0.13
PEAK FLOW (cms)	5.76	0.29
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	69.24	37.95
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54

\*TOTALS\*  
6.013 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	10.397	8.00	66.11
+ ID2= 2 (0007):	19.31	6.013	8.00	65.80
ID = 3 (0282):	54.12	16.410	8.00	66.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.99	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
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Surface Area (ha) = 2.64 2.35  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 182.39 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 134.79 65.21  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 3.25 (ii) 11.63 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.27 0.09  
 \*TOTALS\*  
 PEAK FLOW (cms) = 0.95 0.24 1.086 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 69.24 35.73 53.49  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.51 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 80.0 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 (0239)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0282):	54.12	16.410	8.00	66.00
+ ID2= 2 (0031):	4.99	1.086	8.00	53.49
ID = 3 (0239):	59.11	17.495	8.00	64.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area Total	(ha) = 5.73	Imp(%) = 50.00	Dir. Conn.(%) = 50.00
ID= 1 DT= 5.0 min				

Surface Area (ha) = 2.87 2.87  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 195.45 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 134.79 67.67  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 3.39 (ii) 11.64 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.26 0.09  
 \*TOTALS\*  
 PEAK FLOW (cms) = 1.03 0.30 1.196 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 69.24 36.82 53.03  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.52 0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area Total	(ha) = 1.88	Imp(%) = 56.00	Dir. Conn.(%) = 56.00
ID= 1 DT= 5.0 min				

Surface Area (ha) = 1.05 0.83  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 111.95 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 134.79 70.24

over (min) = 5.00 15.00  
 Storage Coeff. (min) = 2.43 (ii) 10.55 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.30 0.09  
 \*TOTALS\*  
 PEAK FLOW (cms) = 0.39 0.09 0.442 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 69.24 37.95 55.47  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0014):	1.88	0.442	8.00	55.47
+ ID2= 2 (0239):	59.11	17.495	8.00	64.94
ID = 3 (0217):	60.99	17.937	8.00	64.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0217):	60.99	17.937	8.00	64.65
+ ID2= 2 (0008):	5.73	1.196	8.00	53.03
ID = 1 (0217):	66.72	19.133	8.00	63.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0217):	66.72	19.133	8.00	63.65
+ ID2= 2 (0222):	131.03	32.991	8.00	58.86
ID = 3 (0051):	197.75	52.124	8.00	60.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 4 \*\*  
 \*\*\*\*\*

CHICAGO STORM	IDF curve parameters:
Ptotal= 82.47 mm	A=1680.000
	B= 5.600
	C= 0.851
used in:	INTENSITY = A / (t + B) <sup>C</sup>
Duration of storm = 24.00 hrs	
Storm time step = 10.00 min	
Time to peak ratio = 0.33	

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.53	6.17	1.97	12.17	1.72	18.17	0.78
0.33	0.54	6.33	2.16	12.33	1.66	18.33	0.77
0.50	0.55	6.50	2.38	12.50	1.60	18.50	0.75
0.67	0.57	6.67	2.67	12.67	1.55	18.67	0.74
0.83	0.58	6.83	3.04	12.83	1.50	18.83	0.73
1.00	0.59	7.00	3.54	13.00	1.46	19.00	0.72
1.17	0.60	7.17	4.27	13.17	1.41	19.17	0.72
1.33	0.62	7.33	5.39	13.33	1.38	19.33	0.71
1.50	0.63	7.50	7.40	13.50	1.34	19.50	0.70
1.67	0.64	7.67	11.98	13.67	1.30	19.67	0.69
1.83	0.66	7.83	32.72	13.83	1.27	19.83	0.68



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2.00	0.67	8.00	162.17	14.00	1.24	20.00	0.67
2.17	0.69	8.17	44.24	14.17	1.21	20.17	0.66
2.33	0.71	8.33	21.25	14.33	1.18	20.33	0.66
2.50	0.73	8.50	13.79	14.50	1.15	20.50	0.65
2.67	0.75	8.67	10.19	14.67	1.13	20.67	0.64
2.83	0.77	8.83	8.09	14.83	1.10	20.83	0.63
3.00	0.79	9.00	6.72	15.00	1.08	21.00	0.63
3.17	0.82	9.17	5.76	15.17	1.06	21.17	0.62
3.33	0.84	9.33	5.04	15.33	1.04	21.33	0.61
3.50	0.87	9.50	4.49	15.50	1.01	21.50	0.61
3.67	0.90	9.67	4.05	15.67	1.00	21.67	0.60
3.83	0.93	9.83	3.70	15.83	0.98	21.83	0.59
4.00	0.97	10.00	3.40	16.00	0.96	22.00	0.59
4.17	1.00	10.17	3.15	16.17	0.94	22.17	0.58
4.33	1.04	10.33	2.94	16.33	0.92	22.33	0.58
4.50	1.09	10.50	2.75	16.50	0.91	22.50	0.57
4.67	1.14	10.67	2.59	16.67	0.89	22.67	0.56
4.83	1.19	10.83	2.45	16.83	0.88	22.83	0.56
5.00	1.25	11.00	2.32	17.00	0.86	23.00	0.55
5.17	1.32	11.17	2.21	17.17	0.85	23.17	0.55
5.33	1.39	11.33	2.11	17.33	0.84	23.33	0.54
5.50	1.48	11.50	2.02	17.50	0.82	23.50	0.54
5.67	1.57	11.67	1.93	17.67	0.81	23.67	0.53
5.83	1.69	11.83	1.85	17.83	0.80	23.83	0.53
6.00	1.82	12.00	1.78	18.00	0.79	24.00	0.52

3.417	0.87	9.417	4.49	15.417	1.01	21.42	0.61
3.500	0.87	9.500	4.49	15.500	1.01	21.50	0.61
3.583	0.90	9.583	4.05	15.583	1.00	21.58	0.60
3.667	0.90	9.667	4.05	15.667	1.00	21.67	0.60
3.750	0.93	9.750	3.70	15.750	0.98	21.75	0.59
3.833	0.93	9.833	3.70	15.833	0.98	21.83	0.59
3.917	0.97	9.917	3.40	15.917	0.96	21.92	0.59
4.000	0.97	10.000	3.40	16.000	0.96	22.00	0.59
4.083	1.00	10.083	3.15	16.083	0.94	22.08	0.58
4.167	1.00	10.167	3.15	16.167	0.94	22.17	0.58
4.250	1.04	10.250	2.94	16.250	0.92	22.25	0.58
4.333	1.04	10.333	2.94	16.333	0.92	22.33	0.58
4.417	1.09	10.417	2.75	16.417	0.91	22.42	0.57
4.500	1.09	10.500	2.75	16.500	0.91	22.50	0.57
4.583	1.14	10.583	2.59	16.583	0.89	22.58	0.56
4.667	1.14	10.667	2.59	16.667	0.89	22.67	0.56
4.750	1.19	10.750	2.45	16.750	0.88	22.75	0.56
4.833	1.19	10.833	2.45	16.833	0.88	22.83	0.56
4.917	1.25	10.917	2.32	16.917	0.86	22.92	0.55
5.000	1.25	11.000	2.32	17.000	0.86	23.00	0.55
5.083	1.32	11.083	2.21	17.083	0.85	23.08	0.55
5.167	1.32	11.167	2.21	17.167	0.85	23.17	0.55
5.250	1.39	11.250	2.11	17.250	0.84	23.25	0.54
5.333	1.39	11.333	2.11	17.333	0.84	23.33	0.54
5.417	1.48	11.417	2.02	17.417	0.82	23.42	0.54
5.500	1.48	11.500	2.02	17.500	0.82	23.50	0.54
5.583	1.57	11.583	1.93	17.583	0.81	23.58	0.53
5.667	1.57	11.667	1.93	17.667	0.81	23.67	0.53
5.750	1.69	11.750	1.85	17.750	0.80	23.75	0.53
5.833	1.69	11.833	1.85	17.833	0.80	23.83	0.53
5.917	1.82	11.917	1.78	17.917	0.79	23.92	0.52
6.000	1.82	12.000	1.78	18.000	0.79	24.00	0.52

CALIB STANDHYD (0009)  
ID= 1 DT= 5.0 min

Area (ha)= 42.85  
Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00

Surface Area	(ha)=	29.14	PERVIOUS (i)	13.71
Dep. Storage	(mm)=	1.00		1.50
Average Slope	(%)=	1.00		2.00
Length	(m)=	534.48		40.00
Mannings n	=	0.013		0.250

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

TIME	RAIN	TRANSFORMED	HYETOGRAPH	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.53	6.083	1.97	12.083	1.72
0.167	0.53	6.167	1.97	12.167	1.72
0.250	0.54	6.250	2.16	12.250	1.66
0.333	0.54	6.333	2.16	12.333	1.66
0.417	0.55	6.417	2.38	12.417	1.60
0.500	0.55	6.500	2.38	12.500	1.60
0.583	0.57	6.583	2.67	12.583	1.55
0.667	0.57	6.667	2.67	12.667	1.55
0.750	0.58	6.750	3.04	12.750	1.50
0.833	0.58	6.833	3.04	12.833	1.50
0.917	0.59	6.917	3.54	12.917	1.46
1.000	0.59	7.000	3.54	13.000	1.46
1.083	0.60	7.083	4.27	13.083	1.42
1.167	0.60	7.167	4.27	13.167	1.41
1.250	0.62	7.250	5.39	13.250	1.38
1.333	0.62	7.333	5.39	13.333	1.38
1.417	0.63	7.417	7.40	13.417	1.34
1.500	0.63	7.500	7.40	13.500	1.34
1.583	0.64	7.583	11.98	13.583	1.30
1.667	0.64	7.667	11.98	13.667	1.30
1.750	0.66	7.750	32.72	13.750	1.27
1.833	0.66	7.833	32.73	13.833	1.27
1.917	0.67	7.917	162.17	13.917	1.24
2.000	0.67	8.000	162.16	14.000	1.24
2.083	0.69	8.083	44.24	14.083	1.21
2.167	0.69	8.167	44.23	14.167	1.21
2.250	0.71	8.250	21.25	14.250	1.18
2.333	0.71	8.333	21.25	14.333	1.18
2.417	0.73	8.417	13.79	14.417	1.15
2.500	0.73	8.500	13.79	14.500	1.15
2.583	0.75	8.583	10.19	14.583	1.13
2.667	0.75	8.667	10.19	14.667	1.13
2.750	0.77	8.750	8.09	14.750	1.10
2.833	0.77	8.833	8.09	14.833	1.10
2.917	0.79	8.917	6.72	14.917	1.08
3.000	0.79	9.000	6.72	15.000	1.08
3.083	0.82	9.083	5.76	15.083	1.06
3.167	0.82	9.167	5.76	15.167	1.06
3.250	0.84	9.250	5.04	15.250	1.04
3.333	0.84	9.333	5.04	15.333	1.04

Max.Eff.Inten.(mm/hr)= 162.17  
over (min)= 5.00  
Storage Coeff. (min)= 5.76 (ii)  
Unit Hyd. Tpeak (min)= 5.00  
Unit Hyd. peak (cms)= 0.20

PEAK FLOW (cms)= 11.23  
TIME TO PEAK (hrs)= 8.00  
RUNOFF VOLUME (mm)= 81.47  
TOTAL RAINFALL (mm)= 82.47  
RUNOFF COEFFICIENT = 0.99

\*TOTALS\*  
12.373 (iii)  
8.00  
70.33  
82.47  
0.85

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 81.0 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.

CALIB NASHYD (0019)  
ID= 1 DT= 5.0 min

Area (ha)= 1.83  
Ia (mm)= 5.00  
U.H. Tp(hrs)= 0.15

Curve Number (CN)= 78.0  
# of Linear Res.(N)= 3.00

Unit Hyd Qpeak (cms)= 0.466  
PEAK FLOW (cms)= 0.241 (i)  
TIME TO PEAK (hrs)= 8.083  
RUNOFF VOLUME (mm)= 40.020  
TOTAL RAINFALL (mm)= 82.474  
RUNOFF COEFFICIENT = 0.485

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

CALIB STANDHYD (0011)  
ID= 1 DT= 5.0 min

Area (ha)= 18.74  
Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

Surface Area	(ha)=	17.43	PERVIOUS (i)	1.31
Dep. Storage	(mm)=	1.00		1.50
Average Slope	(%)=	1.00		2.00
Length	(m)=	353.46		40.00
Mannings n	=	0.013		0.250

Max.Eff.Inten.(mm/hr)= 162.17  
over (min)= 5.00  
Storage Coeff. (min)= 4.49 (ii)  
Unit Hyd. Tpeak (min)= 5.00



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Unit Hyd. peak (cms) = 0.23 0.14  
 PEAK FLOW (cms) = 7.16 0.25  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 81.47 47.95  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58

\*TOTALS\*  
 7.381 (iii)  
 8.00  
 79.13  
 82.47  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0012) Area (ha) = 1.17  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 1.09 0.08  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 88.32 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 92.57  
 over (min) = 5.00 5.00  
 Storage Coeff. (min) = 1.95 (ii) 4.02 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 5.00  
 Unit Hyd. peak (cms) = 0.31 0.24

\*TOTALS\*  
 0.509 (iii)  
 8.00  
 79.13  
 82.47  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0018) Area (ha) = 11.58  
 ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 6.14 5.44  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 277.85 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 78.19  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 3.89 (ii) 11.67 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.25 0.09

\*TOTALS\*  
 2.958 (iii)  
 8.00  
 62.83  
 82.47  
 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 77.0 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.

CALIB STANDHYD (0023) Area (ha) = 4.36

ID= 1 DT= 5.0 min | Total Imp(%) = 78.00 Dir. Conn.(%) = 78.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 3.40 0.96  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 170.49 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 89.46  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 2.90 (ii) 6.41 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.28 0.14

\*TOTALS\*  
 1.648 (iii)  
 8.00  
 73.81  
 82.47  
 0.89

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024) Area (ha) = 2.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.36 0.18  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 130.13 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 92.57  
 over (min) = 5.00 5.00  
 Storage Coeff. (min) = 2.47 (ii) 4.53 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 5.00  
 Unit Hyd. peak (cms) = 0.30 0.23

\*TOTALS\*  
 1.093 (iii)  
 8.00  
 79.13  
 82.47  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027) Area (ha) = 4.22  
 ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.62 1.60  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 167.73 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 75.63  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 2.87 (ii) 7.65 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.28 0.13

\*TOTALS\*  
 1.350 (iii)  
 8.00  
 65.97  
 82.47  
 0.80

PEAK FLOW (cms) = 1.15 0.24  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 81.47 40.68  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.49



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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB STANDHYD (0028)			
ID= 1 DT= 5.0 min	Area (ha) = 14.88	Dir. Conn. (%) = 90.00	
	Total Imp (%) = 90.00		
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	13.39	1.49	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	314.96	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	162.17	92.57	
over (min) =	5.00	10.00	
Storage Coeff. (min) =	4.19 (ii)	6.61 (ii)	
Unit Hyd. Tpeak (min) =	5.00	10.00	
Unit Hyd. peak (cms) =	0.24	0.14	
			*TOTALS*
PEAK FLOW (cms) =	5.58	0.28	5.830 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	81.47	47.95	78.12
TOTAL RAINFALL (mm) =	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	18.74	7.381	8.00	79.13
+ ID2= 2 (0012):	1.17	0.509	8.00	79.13
ID = 3 (0048):	19.91	7.889	8.00	79.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	19.91	7.889	8.00	79.13
+ ID2= 2 (0018):	11.58	2.958	8.00	62.83
ID = 1 (0048):	31.49	10.847	8.00	73.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	31.49	10.847	8.00	73.13
+ ID2= 2 (0019):	1.83	0.241	8.08	40.02
ID = 3 (0048):	33.32	11.057	8.00	71.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	31.49	10.847	8.00	73.13
+ ID2= 2 (0019):	1.83	0.241	8.08	40.02
ID = 3 (0048):	33.32	11.057	8.00	71.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	33.32	11.057	8.00	71.32
+ ID2= 2 (0023):	4.36	1.648	8.00	73.81
ID = 1 (0048):	37.68	12.706	8.00	71.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	37.68	12.706	8.00	71.60
+ ID2= 2 (0024):	2.54	1.093	8.00	79.13
ID = 3 (0048):	40.22	13.799	8.00	72.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.22	13.799	8.00	72.08
+ ID2= 2 (0027):	4.22	1.350	8.00	65.97
ID = 1 (0048):	44.44	15.148	8.00	71.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.44	15.148	8.00	71.50
+ ID2= 2 (0028):	14.88	5.830	8.00	78.12
ID = 3 (0048):	59.32	20.978	8.00	73.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)			
ID= 1 DT= 5.0 min	Area (ha) = 7.93	Dir. Conn. (%) = 53.00	
	Total Imp (%) = 53.00		
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	4.20	3.73	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	229.93	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	162.17	92.57	
over (min) =	5.00	15.00	
Storage Coeff. (min) =	3.47 (ii)	10.75 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms) =	0.26	0.09	
			*TOTALS*
PEAK FLOW (cms) =	1.81	0.55	2.121 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	81.47	47.95	65.72
TOTAL RAINFALL (mm) =	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)			
ID= 1 DT= 5.0 min	Area (ha) = 5.77	Dir. Conn. (%) = 53.00	
	Total Imp (%) = 53.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	3.06	2.71	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	196.13	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	89.46	
over (min)=	5.00	15.00	
Storage Coeff. (min)=	3.15 (ii)	10.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.09	
PEAK FLOW (cms)=	1.33	0.39	1.553 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	81.47	46.65	65.11
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57	0.79

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0010):	7.93	2.121	8.00	65.72	
+ ID2= 2 (0025):	5.77	1.553	8.00	65.11	
=====					
ID = 3 (0049):	13.70	3.673	8.00	65.46	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (0049):	13.70	3.673	8.00	65.46	
+ ID2= 2 (0048):	59.32	20.978	8.00	73.16	
=====					
ID = 1 (0049):	73.02	24.652	8.00	71.72	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0013)		Area (ha)=	29.43
ID= 1 DT= 5.0 min	Total Imp(%)=	80.00	Dir. Conn.(%)= 80.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	23.54	5.89
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	442.94	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	92.57
over (min)=	5.00	10.00
Storage Coeff. (min)=	5.14 (ii)	8.48 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.12

\*TOTALS\*

PEAK FLOW (cms)=	9.37	1.02	10.229 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	74.77
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.91

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020)		Area (ha)=	69.17
ID= 1 DT= 5.0 min	Total Imp(%)=	86.00	Dir. Conn.(%)= 86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	59.49	9.68
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	679.07	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	89.46
over (min)=	5.00	10.00
Storage Coeff. (min)=	6.65 (ii)	9.46 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.18	0.12

\*TOTALS\*

PEAK FLOW (cms)=	21.87	1.55	23.159 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	46.65	76.60
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57	0.93

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0021)		Area (ha)=	4.49
ID= 1 DT= 5.0 min	Total Imp(%)=	92.00	Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.13	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	173.01	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	92.57
over (min)=	5.00	10.00
Storage Coeff. (min)=	2.93 (ii)	5.12 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.16

\*TOTALS\*

PEAK FLOW (cms)=	1.81	0.07	1.878 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	78.79
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026)		Area (ha)=	4.46
ID= 1 DT= 5.0 min	Total Imp(%)=	92.00	Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.10	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	172.43	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	92.57
over (min)=	5.00	10.00
Storage Coeff. (min)=	2.92 (ii)	5.11 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.16

\*TOTALS\*

PEAK FLOW (cms)=	1.80	0.07	1.866 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	78.79



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TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0013):	29.43	10.229	8.00	74.77
+ ID2= 2 (0020):	69.17	23.159	8.00	76.60
ID = 3 (0050):	98.60	33.389	8.00	76.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0050):	98.60	33.389	8.00	76.05
+ ID2= 2 (0021):	4.49	1.878	8.00	78.79
ID = 1 (0050):	103.09	35.267	8.00	76.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0050):	103.09	35.267	8.00	76.17
+ ID2= 2 (0026):	4.46	1.866	8.00	78.79
ID = 3 (0050):	107.55	37.133	8.00	76.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0015)	Area (ha)	Ia (mm)	U.H. Tp (hrs)	Curve Number (CN) = 80.0	# of Linear Res. (N) = 3.00
ID= 1 DT= 5.0 min	2.31	5.00	0.24		

Unit Hyd Qpeak (cms) = 0.368  
 PEAK FLOW (cms) = 0.245 (i)  
 TIME TO PEAK (hrs) = 8.167  
 RUNOFF VOLUME (mm) = 42.537  
 TOTAL RAINFALL (mm) = 82.474  
 RUNOFF COEFFICIENT = 0.516

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

CALIB STANDHYD (0003)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	8.96	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.12	4.84
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	244.40	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	162.17	92.57
Storage Coeff. (min)	3.60 (ii)	11.18 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.26	0.09

\*TOTALS\*

PEAK FLOW (cms) = 1.76 0.63 2.119 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 81.47 44.16 61.32  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.54 0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0004)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	11.16	86.00	86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	9.60	1.56
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	272.76	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	162.17	92.57
Storage Coeff. (min)	3.84 (ii)	6.66 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.25	0.14

\*TOTALS\*

PEAK FLOW (cms) = 4.06 0.29 4.323 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 81.47 47.95 76.78  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0005)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	14.86	93.00	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	13.82	1.04
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	314.75	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	162.17	92.57
Storage Coeff. (min)	4.19 (ii)	6.26 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.15

\*TOTALS\*

PEAK FLOW (cms) = 5.76 0.20 5.939 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 81.47 47.95 79.13  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	11.25	93.00	93.00





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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	10.46	0.79
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	273.86	40.00
Mannings n =	0.013	0.250
Max.Eff. Inten. (mm/hr)=	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)=	3.85 (ii)	5.92 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.15
PEAK FLOW (cms)=	4.43	0.15
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	81.47	47.95
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58

\*TOTALS\*  
 4.566 (iii)  
 8.00  
 79.13  
 82.47  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0017) ID= 1 DT= 5.0 min	Area (ha)= 9.75 Total Imp(%)= 52.00	Dir. Conn.(%)= 52.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.07	4.68
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.95	40.00
Mannings n =	0.013	0.250
Max.Eff. Inten. (mm/hr)=	162.17	89.46
over (min)	5.00	15.00
Storage Coeff. (min)=	3.69 (ii)	11.07 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09
PEAK FLOW (cms)=	2.16	0.66
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	81.47	46.65
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57

\*TOTALS\*  
 2.534 (iii)  
 8.00  
 64.76  
 82.47  
 0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0022) ID= 1 DT= 5.0 min	Area (ha)= 13.54 Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
--	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.18	6.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	300.44	40.00
Mannings n =	0.013	0.250
Max.Eff. Inten. (mm/hr)=	162.17	92.57
over (min)	5.00	15.00
Storage Coeff. (min)=	4.07 (ii)	11.35 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.09
PEAK FLOW (cms)=	3.01	0.91
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	81.47	47.95
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58

\*TOTALS\*  
 3.527 (iii)  
 8.00  
 65.72  
 82.47  
 0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029) ID= 1 DT= 5.0 min	Area (ha)= 37.35 Total Imp(%)= 73.00	Dir. Conn.(%)= 73.00
--	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	27.27	10.08
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	499.00	40.00
Mannings n =	0.013	0.250
Max.Eff. Inten. (mm/hr)=	162.17	89.46
over (min)	5.00	10.00
Storage Coeff. (min)=	5.52 (ii)	9.43 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.20	0.12
PEAK FLOW (cms)=	10.63	1.61
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	81.47	46.65
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57

\*TOTALS\*  
 11.981 (iii)  
 8.00  
 72.07  
 82.47  
 0.87

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0054) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	2.534	8.00	64.76
+ ID2= 2 (0022):	13.54	3.527	8.00	65.72
=====				
ID = 3 (0054):	23.29	6.061	8.00	65.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0054):	23.29	6.061	8.00	65.32
+ ID2= 2 (0029):	37.35	11.981	8.00	72.07
=====				
ID = 1 (0054):	60.64	18.042	8.00	69.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.25	4.566	8.00	79.13
+ ID2= 2 (0004):	11.16	4.323	8.00	76.78
=====				
ID = 3 (0032):	22.41	8.888	8.00	77.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.41	8.888	8.00	77.96
+ ID2= 2 (0005):	14.86	5.939	8.00	79.13



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-----  
 ID = 1 (0032): 37.27 14.827 8.00 78.42  
 -----

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0032):	37.27	14.827	8.00	78.42
+ ID2= 2 (0054):	60.64	18.042	8.00	69.48
ID = 3 (0032):	97.91	32.869	8.00	72.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.95	66.00	66.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.57	3.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	162.17	89.46
over (min)	5.00	10.00
Storage Coeff. (min)=	3.71 (ii)	8.18 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.13

\*TOTALS\*  
 PEAK FLOW (cms)= 2.80 0.57 3.284 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 81.47 46.65 69.63  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.84

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0002)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	2.18	39.00	39.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	162.17	86.47
over (min)	5.00	10.00
Storage Coeff. (min)=	2.36 (ii)	9.84 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.11

\*TOTALS\*  
 PEAK FLOW (cms)= 0.38 0.20 0.546 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 81.47 45.38 59.46  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.55 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.245	8.17	42.54
+ ID2= 2 (0002):	2.18	0.546	8.00	59.46
ID = 3 (2701):	4.49	0.693	8.00	57.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.693	8.00	50.75
+ ID2= 2 (0003):	8.96	2.119	8.00	61.32
ID = 1 (2701):	13.45	2.812	8.00	57.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	2.812	8.00	57.79
+ ID2= 2 (0030):	9.95	3.284	8.00	69.63
ID = 3 (2701):	23.40	6.096	8.00	62.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	6.096	8.00	62.83
+ ID2= 2 (0032):	97.91	32.869	8.00	72.88
ID = 1 (2701):	121.31	38.966	8.00	70.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.72	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	162.17	89.46
over (min)	5.00	15.00
Storage Coeff. (min)=	3.69 (ii)	11.07 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09

\*TOTALS\*  
 PEAK FLOW (cms)= 1.91 0.74 2.324 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 81.47 46.65 62.67  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.



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ADD HYD	(0222)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		9.72	2.324	8.00	62.67
+ ID2= 2 (2701):		121.31	38.966	8.00	70.94
=====					
ID = 3 (0222):		131.03	41.290	8.00	70.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD	(0006)	Area	(ha)=	34.81	Total Imp(%)=	90.00	Dir. Conn.(%)=	90.00
ID= 1 DT=	5.0 min							

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	31.33	3.48	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	481.73	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.41 (ii)	7.82 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.13	
PEAK FLOW (cms)=	12.29	0.62	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	12.825 (iii)
RUNOFF VOLUME (mm)=	81.47	47.95	78.12
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD	(0007)	Area	(ha)=	19.31	Total Imp(%)=	89.00	Dir. Conn.(%)=	89.00
ID= 1 DT=	5.0 min							

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	17.19	2.12	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	358.79	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.53 (ii)	7.05 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.23	0.14	
PEAK FLOW (cms)=	7.05	0.39	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	7.391 (iii)
RUNOFF VOLUME (mm)=	81.47	47.95	77.79
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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	(0282)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0006):		34.81	12.825	8.00	78.12
+ ID2= 2 (0007):		19.31	7.391	8.00	77.79
=====					
ID = 3 (0282):		54.12	20.216	8.00	78.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD	(0031)	Area	(ha)=	4.99	Total Imp(%)=	53.00	Dir. Conn.(%)=	53.00
ID= 1 DT=	5.0 min							

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.64	2.35	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	182.39	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	86.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.02 (ii)	10.50 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.09	
PEAK FLOW (cms)=	1.16	0.33	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	1.341 (iii)
RUNOFF VOLUME (mm)=	81.47	45.38	64.51
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.55	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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	(0239)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0282):		54.12	20.216	8.00	78.00
+ ID2= 2 (0031):		4.99	1.341	8.00	64.51
=====					
ID = 3 (0239):		59.11	21.558	8.00	76.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD	(0008)	Area	(ha)=	5.73	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00
ID= 1 DT=	5.0 min							

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.87	2.87	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	195.45	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	89.46	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.15 (ii)	10.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.09	
PEAK FLOW (cms)=	1.25	0.41	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	1.481 (iii)
RUNOFF VOLUME (mm)=	81.47	46.65	64.06
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD	(0014)	Area	(ha)=	1.88	Total Imp(%)=	56.00	Dir. Conn.(%)=	56.00
ID= 1 DT=	5.0 min							



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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	1.05	0.83
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	111.95	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	162.17	92.57
over (min) =	5.00	10.00
Storage Coeff. (min) =	2.25 (ii)	9.53 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.30	0.12
PEAK FLOW (cms) =	0.47	0.14
TIME TO PEAK (hrs) =	8.00	8.08
RUNOFF VOLUME (mm) =	81.47	47.95
TOTAL RAINFALL (mm) =	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58

\*TOTALS\*  
0.584 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0014):	1.88	0.584	8.00	66.72
+ ID2= 2 (0239):	59.11	21.558	8.00	76.86
=====				
ID = 3 (0217):	60.99	22.141	8.00	76.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0217):	60.99	22.141	8.00	76.55
+ ID2= 2 (0008):	5.73	1.481	8.00	64.06
=====				
ID = 1 (0217):	66.72	23.623	8.00	75.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0217):	66.72	23.623	8.00	75.48
+ ID2= 2 (0222):	131.03	41.290	8.00	70.33
=====				
ID = 3 (0051):	197.75	64.912	8.00	72.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

\*\*\*\*\*  
\*\* SIMULATION NUMBER: 5 \*\*  
\*\*\*\*\*

CHICAGO STORM IDF curve parameters: A=1960.000  
Ptotal= 89.46 mm B= 5.800  
C= 0.861  
used in: INTENSITY = A / (t + B)^C  
Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.54	6.17	2.04	12.17	1.78	18.17	0.79
0.33	0.55	6.33	2.24	12.33	1.71	18.33	0.78

0.50	0.56	6.50	2.48	12.50	1.66	18.50	0.77
0.67	0.57	6.67	2.79	12.67	1.60	18.67	0.76
0.83	0.59	6.83	3.19	12.83	1.55	18.83	0.75
1.00	0.60	7.00	3.73	13.00	1.50	19.00	0.74
1.17	0.61	7.17	4.51	13.17	1.46	19.17	0.73
1.33	0.63	7.33	5.73	13.33	1.42	19.33	0.72
1.50	0.64	7.50	7.93	13.50	1.38	19.50	0.71
1.67	0.65	7.67	13.01	13.67	1.34	19.67	0.70
1.83	0.67	7.83	36.39	13.83	1.31	19.83	0.69
2.00	0.69	8.00	182.06	14.00	1.27	20.00	0.68
2.17	0.70	8.17	49.43	14.17	1.24	20.17	0.68
2.33	0.72	8.33	23.41	14.33	1.21	20.33	0.67
2.50	0.74	8.50	15.03	14.50	1.18	20.50	0.66
2.67	0.76	8.67	11.02	14.67	1.16	20.67	0.65
2.83	0.79	8.83	8.69	14.83	1.13	20.83	0.64
3.00	0.81	9.00	7.18	15.00	1.11	21.00	0.64
3.17	0.83	9.17	6.13	15.17	1.08	21.17	0.63
3.33	0.86	9.33	5.35	15.33	1.06	21.33	0.62
3.50	0.89	9.50	4.75	15.50	1.04	21.50	0.62
3.67	0.92	9.67	4.27	15.67	1.02	21.67	0.61
3.83	0.95	9.83	3.89	15.83	1.00	21.83	0.60
4.00	0.99	10.00	3.57	16.00	0.98	22.00	0.60
4.17	1.03	10.17	3.30	16.17	0.96	22.17	0.59
4.33	1.07	10.33	3.08	16.33	0.95	22.33	0.58
4.50	1.12	10.50	2.88	16.50	0.93	22.50	0.58
4.67	1.17	10.67	2.71	16.67	0.91	22.67	0.57
4.83	1.23	10.83	2.55	16.83	0.90	22.83	0.57
5.00	1.29	11.00	2.42	17.00	0.88	23.00	0.56
5.17	1.36	11.17	2.30	17.17	0.87	23.17	0.56
5.33	1.44	11.33	2.19	17.33	0.86	23.33	0.55
5.50	1.52	11.50	2.09	17.50	0.84	23.50	0.55
5.67	1.63	11.67	2.00	17.67	0.83	23.67	0.54
5.83	1.74	11.83	1.92	17.83	0.82	23.83	0.54
6.00	1.88	12.00	1.85	18.00	0.80	24.00	0.53

CALIB STANDHYD (0009)  
ID= 1 DT= 5.0 min  
Area (ha) = 42.85  
Total Imp(%) = 68.00 Dir. Conn.(%) = 68.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	29.14	13.71
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	534.48	40.00
Mannings n =	0.013	0.250

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	0.54	6.083	2.04	12.083	1.78	18.08	0.79
0.167	0.54	6.167	2.04	12.167	1.78	18.17	0.79
0.250	0.55	6.250	2.24	12.250	1.71	18.25	0.78
0.333	0.55	6.333	2.24	12.333	1.71	18.33	0.78
0.417	0.56	6.417	2.48	12.417	1.66	18.42	0.77
0.500	0.56	6.500	2.48	12.500	1.66	18.50	0.77
0.583	0.57	6.583	2.79	12.583	1.60	18.58	0.76
0.667	0.57	6.667	2.79	12.667	1.60	18.67	0.76
0.750	0.59	6.750	3.19	12.750	1.55	18.75	0.75
0.833	0.59	6.833	3.19	12.833	1.55	18.83	0.75
0.917	0.60	6.917	3.73	12.917	1.50	18.92	0.74
1.000	0.60	7.000	3.73	13.000	1.50	19.00	0.74
1.083	0.61	7.083	4.51	13.083	1.46	19.08	0.73
1.167	0.61	7.167	4.51	13.167	1.46	19.17	0.73
1.250	0.63	7.250	5.73	13.250	1.42	19.25	0.72
1.333	0.63	7.333	5.73	13.333	1.42	19.33	0.72
1.417	0.64	7.417	7.93	13.417	1.38	19.42	0.71
1.500	0.64	7.500	7.93	13.500	1.38	19.50	0.71
1.583	0.65	7.583	13.01	13.583	1.34	19.58	0.70
1.667	0.65	7.667	13.01	13.667	1.34	19.67	0.70
1.750	0.67	7.750	36.39	13.750	1.31	19.75	0.69
1.833	0.67	7.833	36.40	13.833	1.31	19.83	0.69
1.917	0.69	7.917	182.06	13.917	1.27	19.92	0.68
2.000	0.69	8.000	182.05	14.000	1.27	20.00	0.68
2.083	0.70	8.083	49.43	14.083	1.24	20.08	0.68
2.167	0.70	8.167	49.43	14.167	1.24	20.17	0.68
2.250	0.72	8.250	23.41	14.250	1.21	20.25	0.67
2.333	0.72	8.333	23.41	14.333	1.21	20.33	0.67
2.417	0.74	8.417	15.03	14.417	1.18	20.42	0.66
2.500	0.74	8.500	15.03	14.500	1.18	20.50	0.66
2.583	0.76	8.583	11.02	14.583	1.16	20.58	0.65



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2.667	0.76	8.667	11.02	14.667	1.16	20.67	0.65
2.750	0.79	8.750	8.69	14.750	1.13	20.75	0.64
2.833	0.79	8.833	8.69	14.833	1.13	20.83	0.64
2.917	0.81	8.917	7.18	14.917	1.11	20.92	0.64
3.000	0.81	9.000	7.18	15.000	1.11	21.00	0.64
3.083	0.83	9.083	6.13	15.083	1.08	21.08	0.63
3.167	0.83	9.167	6.13	15.167	1.08	21.17	0.63
3.250	0.86	9.250	5.35	15.250	1.06	21.25	0.62
3.333	0.86	9.333	5.35	15.333	1.06	21.33	0.62
3.417	0.89	9.417	4.75	15.417	1.04	21.42	0.62
3.500	0.89	9.500	4.75	15.500	1.04	21.50	0.62
3.583	0.92	9.583	4.27	15.583	1.02	21.58	0.61
3.667	0.92	9.667	4.27	15.667	1.02	21.67	0.61
3.750	0.95	9.750	3.89	15.750	1.00	21.75	0.60
3.833	0.95	9.833	3.89	15.833	1.00	21.83	0.60
3.917	0.99	9.917	3.57	15.917	0.98	21.92	0.60
4.000	0.99	10.000	3.57	16.000	0.98	22.00	0.60
4.083	1.03	10.083	3.30	16.083	0.96	22.08	0.59
4.167	1.03	10.167	3.30	16.167	0.96	22.17	0.59
4.250	1.07	10.250	3.08	16.250	0.95	22.25	0.58
4.333	1.07	10.333	3.08	16.333	0.95	22.33	0.58
4.417	1.12	10.417	2.88	16.417	0.93	22.42	0.58
4.500	1.12	10.500	2.88	16.500	0.93	22.50	0.58
4.583	1.17	10.583	2.71	16.583	0.91	22.58	0.57
4.667	1.17	10.667	2.71	16.667	0.91	22.67	0.57
4.750	1.23	10.750	2.55	16.750	0.90	22.75	0.57
4.833	1.23	10.833	2.55	16.833	0.90	22.83	0.57
4.917	1.29	10.917	2.42	16.917	0.88	22.92	0.56
5.000	1.29	11.000	2.42	17.000	0.88	23.00	0.56
5.083	1.36	11.083	2.30	17.083	0.87	23.08	0.56
5.167	1.36	11.167	2.30	17.167	0.87	23.17	0.56
5.250	1.44	11.250	2.19	17.250	0.86	23.25	0.55
5.333	1.44	11.333	2.19	17.333	0.86	23.33	0.55
5.417	1.52	11.417	2.09	17.417	0.84	23.42	0.55
5.500	1.52	11.500	2.09	17.500	0.84	23.50	0.55
5.583	1.63	11.583	2.00	17.583	0.83	23.58	0.54
5.667	1.63	11.667	2.00	17.667	0.83	23.67	0.54
5.750	1.74	11.750	1.92	17.750	0.82	23.75	0.54
5.833	1.74	11.833	1.92	17.833	0.82	23.83	0.54
5.917	1.88	11.917	1.85	17.917	0.80	23.92	0.53
6.000	1.88	12.000	1.85	18.000	0.80	24.00	0.53

Max.Eff.Inten.(mm/hr)=	182.06	105.09	
over (min)	5.00	10.00	
Storage Coeff.(min)=	5.50 (ii)	9.60 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.20	0.11	
			*TOTALS*
PEAK FLOW (cms)=	12.77	2.55	14.901 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	76.93
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.86

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB NASHYD (0019) ID= 1 DT= 5.0 min	Area (ha)= 1.83 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.15	Curve Number (CN)= 78.0 # of Linear Res.(N)= 3.00
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Unit Hyd Qpeak (cms)=	0.466
PEAK FLOW (cms)=	0.286 (i)
TIME TO PEAK (hrs)=	8.083
RUNOFF VOLUME (mm)=	45.431
TOTAL RAINFALL (mm)=	89.456
RUNOFF COEFFICIENT =	0.508

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

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha)= 18.74 Total Imp(%)= 93.00	Dir. Conn.(%)= 93.00
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Surface Area (ha)=	IMPERVIOUS 17.43	PERVIOUS (i) 1.31
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Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	353.46	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	108.56	
over (min)	5.00	10.00	
Storage Coeff.(min)=	4.29 (ii)	6.26 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.23	0.15	
		*TOTALS*	
PEAK FLOW (cms)=	8.12	0.29	8.380 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	86.03
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.96

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012) ID= 1 DT= 5.0 min	Area (ha)= 1.17 Total Imp(%)= 93.00	Dir. Conn.(%)= 93.00
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Surface Area (ha)=	IMPERVIOUS 1.09	PERVIOUS (i) 0.08
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	5.00
Storage Coeff.(min)=	1.87 (ii)	3.84 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.32	0.25

PEAK FLOW (cms)=	0.55	0.02	0.573 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	86.03
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.96

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018) ID= 1 DT= 5.0 min	Area (ha)= 11.58 Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
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Surface Area (ha)=	IMPERVIOUS 6.14	PERVIOUS (i) 5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	92.40
over (min)	5.00	15.00
Storage Coeff.(min)=	3.71 (ii)	11.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09

PEAK FLOW (cms)=	2.93	0.79	3.376 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	47.22	69.08
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.53	0.77

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:



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CN\* = 77.0 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.

CALIB STANDHYD (0023)  
 ID= 1 DT= 5.0 min  
 Area (ha)= 4.36  
 Total Imp(%)= 78.00 Dir. Conn.(%)= 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)	5.00	10.00
Storage Coeff. (min)=	2.77 (ii)	6.12 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.15

		*TOTALS*
PEAK FLOW (cms)=	1.68	0.21
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	88.46	52.44
TOTAL RAINFALL (mm)=	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024)  
 ID= 1 DT= 5.0 min  
 Area (ha)= 2.54  
 Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.36	0.18
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	130.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	5.00
Storage Coeff. (min)=	2.35 (ii)	4.33 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.30	0.23

		*TOTALS*
PEAK FLOW (cms)=	1.18	0.05
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	88.46	53.83
TOTAL RAINFALL (mm)=	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027)  
 ID= 1 DT= 5.0 min  
 Area (ha)= 4.22  
 Total Imp(%)= 62.00 Dir. Conn.(%)= 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.62	1.60
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	167.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	89.50
over (min)	5.00	10.00

Storage Coeff. (min)=	2.74 (ii)	7.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.13

		*TOTALS*
PEAK FLOW (cms)=	1.30	0.28
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	88.46	46.00
TOTAL RAINFALL (mm)=	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.51

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB STANDHYD (0028)  
 ID= 1 DT= 5.0 min  
 Area (ha)= 14.88  
 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	13.39	1.49
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	314.96	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	1.00 (ii)	6.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.15

		*TOTALS*
PEAK FLOW (cms)=	6.32	0.33
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	88.46	53.83
TOTAL RAINFALL (mm)=	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0011):	18.74	8.380	8.00	86.03
+ ID2= 2 (0012):	1.17	0.573	8.00	86.03
=====				
ID = 3 (0048):	19.91	8.952	8.00	86.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	19.91	8.952	8.00	86.03
+ ID2= 2 (0018):	11.58	3.376	8.00	69.08
=====				
ID = 1 (0048):	31.49	12.328	8.00	79.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	31.49	12.328	8.00	79.80
+ ID2= 2 (0019):	1.83	0.286	8.08	45.43
=====				



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ID = 3 (0048): 33.32 12.579 8.00 77.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 3 (0048):	33.32	12.579	8.00	77.91
+ ID2= 2 (0023):	4.36	1.869	8.00	80.53
=====				
ID = 1 (0048):	37.68	14.448	8.00	78.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	37.68	14.448	8.00	78.21
+ ID2= 2 (0024):	2.54	1.233	8.00	86.03
=====				
ID = 3 (0048):	40.22	15.681	8.00	78.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	40.22	15.681	8.00	78.71
+ ID2= 2 (0027):	4.22	1.538	8.00	72.32
=====				
ID = 1 (0048):	44.44	17.219	8.00	78.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	44.44	17.219	8.00	78.10
+ ID2= 2 (0028):	14.88	6.617	8.00	84.99
=====				
ID = 3 (0048):	59.32	23.836	8.00	79.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 DT= 5.0 min	7.93			
	Total Imp(%) = 53.00			Dir. Conn.(%) = 53.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	4.20	3.73
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	229.93	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	15.00
Storage Coeff. (min)=	3.31 (ii)	10.14 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.10

	PEAK PLOW (cms)	TIME TO PEAK (hrs)	RUNOFF VOLUME (mm)	TOTAL RAINFALL (mm)	RUNOFF COEFFICIENT
	2.04	8.00	88.46	89.46	0.99
	0.65	8.17	53.83	89.46	0.60
	2.419 (iii)	8.00	72.18	89.46	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 DT= 5.0 min	5.77			
	Total Imp(%) = 53.00			Dir. Conn.(%) = 53.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	3.06	2.71
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	196.13	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)	5.00	10.00
Storage Coeff. (min)=	3.01 (ii)	9.93 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.11

	PEAK PLOW (cms)	TIME TO PEAK (hrs)	RUNOFF VOLUME (mm)	TOTAL RAINFALL (mm)	RUNOFF COEFFICIENT
	1.50	8.00	88.46	89.46	0.99
	0.50	8.08	52.44	89.46	0.59
	1.915 (iii)	8.00	71.53	89.46	0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	2.419	8.00	72.18
+ ID2= 2 (0025):	5.77	1.915	8.00	71.53
=====				
ID = 3 (0049):	13.70	4.333	8.00	71.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	4.333	8.00	71.91
+ ID2= 2 (0048):	59.32	23.836	8.00	79.83
=====				
ID = 1 (0049):	73.02	28.169	8.00	78.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0013)	Area (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 DT= 5.0 min	29.43			
	Total Imp(%) = 80.00			Dir. Conn.(%) = 80.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	23.54	5.89
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	442.94	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	4.91 (ii)	8.10 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.22	0.13

	PEAK PLOW (cms)	TIME TO PEAK (hrs)	RUNOFF VOLUME (mm)	TOTAL RAINFALL (mm)	RUNOFF COEFFICIENT
	10.64	8.00	88.46	89.46	0.99
	1.21	8.08	53.83	89.46	0.60
	11.674 (iii)	8.00	81.53	89.46	0.91

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

Max.Eff.Inten.(mm/hr)=	182.06	108.56	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.79 (ii)	4.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.28	0.22	
PEAK FLOW (cms)=	2.03	0.10	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	2.129 (iii)
RUNOFF VOLUME (mm)=	88.46	53.83	85.69
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.96

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min			
Area (ha)=	69.17	Dir. Conn.(%)=	86.00
Total Imp(%)=	86.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	59.49	9.68	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	679.07	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	105.09	
over (min)	5.00	10.00	
Storage Coeff. (min)=	6.34 (ii)	9.03 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.12	
			*TOTALS*
PEAK FLOW (cms)=	24.93	1.85	26.488 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	88.46	52.44	83.41
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.93

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min			
Area (ha)=	4.49	Dir. Conn.(%)=	92.00
Total Imp(%)=	92.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	4.13	0.36	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	173.01	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	108.56	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.79 (ii)	4.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.28	0.22	
			*TOTALS*
PEAK FLOW (cms)=	2.04	0.10	2.143 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	88.46	53.83	85.69
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min			
Area (ha)=	4.46	Dir. Conn.(%)=	92.00
Total Imp(%)=	92.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	4.10	0.36	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	172.43	40.00	
Mannings n =	0.013	0.250	

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0050)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	29.43	11.674	8.00	81.53
+ ID2= 2 (0020):	69.17	26.488	8.00	83.41
=====				
ID = 3 (0050):	98.60	38.162	8.00	82.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0050):	98.60	38.162	8.00	82.85
+ ID2= 2 (0021):	4.49	2.143	8.00	85.69
=====				
ID = 1 (0050):	103.09	40.305	8.00	82.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0050):	103.09	40.305	8.00	82.98
+ ID2= 2 (0026):	4.46	2.129	8.00	85.69
=====				
ID = 3 (0050):	107.55	42.435	8.00	83.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0015)			
ID= 1 DT= 5.0 min	Area (ha)=	2.31	Curve Number (CN)= 80.0
	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.24	

Unit Hyd Qpeak (cms)=	0.368
PEAK FLOW (cms)=	0.290 (i)
TIME TO PEAK (hrs)=	8.167
RUNOFF VOLUME (mm)=	48.164
TOTAL RAINFALL (mm)=	89.456
RUNOFF COEFFICIENT =	0.538

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

CALIB STANDHYD (0003) ID= 1 DT= 5.0 min			
Area (ha)=	8.96	Dir. Conn.(%)=	46.00
Total Imp(%)=	46.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	4.12	4.84	
Dep. Storage (mm)=	1.00	1.50	



Average Slope (%) = 1.00 2.00  
 Length (m) = 244.40 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 182.06 98.51  
 over (min) = 5.00 15.00  
 Storage Coeff. (min)= 3.44 (ii) 10.54 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.26 0.09

\*TOTALS\*  
 PEAK FLOW (cms)= 1.99 0.76 2.424 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 88.46 49.76 67.56  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.56 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 79.0 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.

CALIB STANDHYD (0004) Area (ha)= 11.16  
 ID= 1 DT= 5.0 min Total Imp(%)= 86.00 Dir. Conn.(%)= 86.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 9.60 1.56  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 272.76 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 182.06 108.56  
 over (min) = 5.00 10.00  
 Storage Coeff. (min)= 3.67 (ii) 6.36 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.25 0.15

\*TOTALS\*  
 PEAK FLOW (cms)= 4.60 0.35 4.906 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 88.46 53.83 83.61  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.60 0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0005) Area (ha)= 14.86  
 ID= 1 DT= 5.0 min Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 13.82 1.04  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 314.75 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 182.06 108.56  
 over (min) = 5.00 10.00  
 Storage Coeff. (min)= 4.00 (ii) 5.97 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.24 0.15

\*TOTALS\*  
 PEAK FLOW (cms)= 6.52 0.24 6.735 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 88.46 53.83 86.03  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.60 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0016) Area (ha)= 11.25  
 ID= 1 DT= 5.0 min Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 10.46 0.79  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 273.86 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 182.06 108.56  
 over (min) = 5.00 10.00  
 Storage Coeff. (min)= 3.68 (ii) 5.65 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.25 0.15

\*TOTALS\*  
 PEAK FLOW (cms)= 5.01 0.18 5.173 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 88.46 53.83 86.03  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.60 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0017) Area (ha)= 9.75  
 ID= 1 DT= 5.0 min Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 5.07 4.68  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 254.95 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 182.06 105.09  
 over (min) = 5.00 15.00  
 Storage Coeff. (min)= 3.52 (ii) 10.44 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.26 0.09

\*TOTALS\*  
 PEAK FLOW (cms)= 2.44 0.79 2.893 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 88.46 52.44 71.17  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.59 0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0022) Area (ha)= 13.54  
 ID= 1 DT= 5.0 min Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 7.18 6.36  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 300.44 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 182.06 108.56  
 over (min) = 5.00 15.00  
 Storage Coeff. (min)= 3.89 (ii) 10.72 (ii)



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Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	3.40	1.09	4.031 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	72.18
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

<b>CALIB STANDHYD (0029)</b>			
ID= 1 DT= 5.0 min	Area (ha)=	37.35	Dir. Conn.(%)= 73.00
	Total Imp(%)=	73.00	

		<b>IMPERVIOUS</b>	<b>PERVIOUS (i)</b>
Surface Area (ha)=	27.27	10.08	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	499.00	40.00	
Mannings n =	0.013	0.250	

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)	5.00	10.00
Storage Coeff. (min)=	5.27 (ii)	9.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.12

			<b>*TOTALS*</b>
PEAK FLOW (cms)=	12.09	1.93	13.713 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	78.73
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.88

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

<b>ADD HYD (0054)</b>				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	2.893	8.00	71.17
+ ID2= 2 (0022):	13.54	4.031	8.00	72.18
=====				
ID = 3 (0054):	23.29	6.923	8.00	71.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD (0054)</b>				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 3 (0054):	23.29	6.923	8.00	71.76
+ ID2= 2 (0029):	37.35	13.713	8.00	78.73
=====				
ID = 1 (0054):	60.64	20.636	8.00	76.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD (0032)</b>				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.25	5.173	8.00	86.03
+ ID2= 2 (0004):	11.16	4.906	8.00	83.61
=====				
ID = 3 (0032):	22.41	10.078	8.00	84.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD (0032)</b>				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.41	10.078	8.00	84.83
+ ID2= 2 (0005):	14.86	6.735	8.00	86.03
=====				
ID = 1 (0032):	37.27	16.814	8.00	85.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD (0032)</b>				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0032):	37.27	16.814	8.00	85.31
+ ID2= 2 (0054):	60.64	20.636	8.00	76.05
=====				
ID = 3 (0032):	97.91	37.450	8.00	79.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>CALIB STANDHYD (0030)</b>			
ID= 1 DT= 5.0 min	Area (ha)=	9.95	Dir. Conn.(%)= 66.00
	Total Imp(%)=	66.00	

		<b>IMPERVIOUS</b>	<b>PERVIOUS (i)</b>
Surface Area (ha)=	6.57	3.38	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	257.55	40.00	
Mannings n =	0.013	0.250	

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)	5.00	10.00
Storage Coeff. (min)=	3.55 (ii)	7.81 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.13

			<b>*TOTALS*</b>
PEAK FLOW (cms)=	3.16	0.68	3.748 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	76.21
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.85

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

<b>CALIB STANDHYD (0002)</b>			
ID= 1 DT= 5.0 min	Area (ha)=	2.18	Dir. Conn.(%)= 39.00
	Total Imp(%)=	39.00	

		<b>IMPERVIOUS</b>	<b>PERVIOUS (i)</b>
Surface Area (ha)=	0.85	1.33	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	120.55	40.00	
Mannings n =	0.013	0.250	

Max.Eff.Inten.(mm/hr)=	182.06	101.74
over (min)	5.00	10.00
Storage Coeff. (min)=	2.25 (ii)	9.26 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.12

			<b>*TOTALS*</b>
PEAK FLOW (cms)=	0.43	0.24	0.629 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	51.08	65.65
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.57	0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.290	8.17	48.16
+ ID2= 2 (0002):	2.18	0.629	8.00	65.65
-----				
ID = 3 (2701):	4.49	0.804	8.00	56.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.804	8.00	56.66
+ ID2= 2 (0003):	8.96	2.424	8.00	67.56
-----				
ID = 1 (2701):	13.45	3.228	8.00	63.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2701):	13.45	3.228	8.00	63.92
+ ID2= 2 (0030):	9.95	3.748	8.00	76.21
-----				
ID = 3 (2701):	23.40	6.975	8.00	69.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	23.40	6.975	8.00	69.15
+ ID2= 2 (0032):	97.91	37.450	8.00	79.58
-----				
ID = 1 (2701):	121.31	44.425	8.00	77.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min	Area (ha) = 9.72	Total Imp(%) = 46.00	Dir. Conn.(%) = 46.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)=	5.00	15.00
Storage Coeff. (min)=	3.52 (ii)	10.44 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

			*TOTALS*
PEAK FLOW (cms)=	2.15	0.88	2.659 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	69.01
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	9.72	2.659	8.00	69.01
+ ID2= 2 (2701):	121.31	44.425	8.00	77.56
-----				
ID = 3 (0222):	131.03	47.084	8.00	76.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha) = 34.81	Total Imp(%) = 90.00	Dir. Conn.(%) = 90.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	31.33	3.48
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	481.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)=	5.00	10.00
Storage Coeff. (min)=	5.16 (ii)	7.47 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.13

			*TOTALS*
PEAK FLOW (cms)=	13.97	0.74	14.611 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	84.99
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007) ID= 1 DT= 5.0 min	Area (ha) = 19.31	Total Imp(%) = 89.00	Dir. Conn.(%) = 89.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	17.19	2.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	358.79	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)=	5.00	10.00
Storage Coeff. (min)=	4.33 (ii)	6.73 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.23	0.14

			*TOTALS*
PEAK FLOW (cms)=	7.99	0.47	8.400 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	84.65
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.



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ADD HYD	(0282)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0006):	34.81	14.611	8.00	84.99	
+ ID2= 2 (0007):	19.31	8.400	8.00	84.65	
=====					
ID = 3 (0282):	54.12	23.011	8.00	84.87	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	STANDHYD	(0031)	Area	(ha)=	4.99	Dir. Conn.(%)=	53.00
ID= 1	DT=	5.0 min	Total Imp(%)=	53.00	Dir. Conn.(%)=	53.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.64	2.35	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	182.39	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	101.74	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.88 (ii)	9.89 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.28	0.11	
*TOTALS*			
PEAK FLOW (cms)=	1.30	0.42	1.650 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	51.08	70.89
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.57	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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	(0239)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0282):	54.12	23.011	8.00	84.87	
+ ID2= 2 (0031):	4.99	1.650	8.00	70.89	
=====					
ID = 3 (0239):	59.11	24.661	8.00	83.69	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	STANDHYD	(0008)	Area	(ha)=	5.73	Dir. Conn.(%)=	50.00
ID= 1	DT=	5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)=	50.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.87	2.87	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	195.45	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	105.09	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.01 (ii)	9.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.28	0.11	
*TOTALS*			
PEAK FLOW (cms)=	1.41	0.53	1.844 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	70.45
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

- CN\* = 81.0 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.

CALIB	STANDHYD	(0014)	Area	(ha)=	1.88	Dir. Conn.(%)=	56.00
ID= 1	DT=	5.0 min	Total Imp(%)=	56.00	Dir. Conn.(%)=	56.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	1.05	0.83	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	111.95	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	108.56	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.15 (ii)	8.98 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
*TOTALS*			
PEAK FLOW (cms)=	0.53	0.16	0.666 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	73.22
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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	(0217)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0014):	1.88	0.666	8.00	73.22	
+ ID2= 2 (0239):	59.11	24.661	8.00	83.69	
=====					
ID = 3 (0217):	60.99	25.327	8.00	83.37	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD	(0217)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (0217):	60.99	25.327	8.00	83.37	
+ ID2= 2 (0008):	5.73	1.844	8.00	70.45	
=====					
ID = 1 (0217):	66.72	27.171	8.00	82.26	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD	(0051)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0217):	66.72	27.171	8.00	82.26	
+ ID2= 2 (0222):	131.03	47.084	8.00	76.93	
=====					
ID = 3 (0051):	197.75	74.255	8.00	78.73	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

\*\*\*\*\*  
\*\* SIMULATION NUMBER: 6 \*\*  
\*\*\*\*\*

CHICAGO STORM	IDF curve parameters:	A=2150.000
Ptotal= 98.13 mm	B=	5.700
	C=	0.861



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used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.59	6.17	2.24	12.17	1.95	18.17	0.87
0.33	0.61	6.33	2.45	12.33	1.88	18.33	0.86
0.50	0.62	6.50	2.72	12.50	1.81	18.50	0.84
0.67	0.63	6.67	3.05	12.67	1.75	18.67	0.83
0.83	0.64	6.83	3.49	12.83	1.70	18.83	0.82
1.00	0.66	7.00	4.08	13.00	1.65	19.00	0.81
1.17	0.67	7.17	4.93	13.17	1.60	19.17	0.80
1.33	0.69	7.33	6.26	13.33	1.55	19.33	0.79
1.50	0.70	7.50	8.66	13.50	1.51	19.50	0.78
1.67	0.72	7.67	14.21	13.67	1.47	19.67	0.77
1.83	0.74	7.83	39.75	13.83	1.43	19.83	0.76
2.00	0.75	8.00	200.80	14.00	1.39	20.00	0.75
2.17	0.77	8.17	54.01	14.17	1.36	20.17	0.74
2.33	0.79	8.33	25.55	14.33	1.33	20.33	0.73
2.50	0.81	8.50	16.41	14.50	1.30	20.50	0.72
2.67	0.84	8.67	12.04	14.67	1.27	20.67	0.71
2.83	0.86	8.83	9.50	14.83	1.24	20.83	0.71
3.00	0.89	9.00	7.85	15.00	1.21	21.00	0.70
3.17	0.91	9.17	6.70	15.17	1.19	21.17	0.69
3.33	0.94	9.33	5.85	15.33	1.16	21.33	0.68
3.50	0.98	9.50	5.19	15.50	1.14	21.50	0.68
3.67	1.01	9.67	4.68	15.67	1.12	21.67	0.67
3.83	1.05	9.83	4.26	15.83	1.10	21.83	0.66
4.00	1.08	10.00	3.91	16.00	1.08	22.00	0.65
4.17	1.13	10.17	3.62	16.17	1.06	22.17	0.65
4.33	1.17	10.33	3.37	16.33	1.04	22.33	0.64
4.50	1.23	10.50	3.15	16.50	1.02	22.50	0.63
4.67	1.28	10.67	2.96	16.67	1.00	22.67	0.63
4.83	1.34	10.83	2.80	16.83	0.98	22.83	0.62
5.00	1.41	11.00	2.65	17.00	0.97	23.00	0.62
5.17	1.49	11.17	2.52	17.17	0.95	23.17	0.61
5.33	1.57	11.33	2.40	17.33	0.94	23.33	0.60
5.50	1.67	11.50	2.29	17.50	0.92	23.50	0.60
5.67	1.78	11.67	2.19	17.67	0.91	23.67	0.59
5.83	1.91	11.83	2.10	17.83	0.89	23.83	0.59
6.00	2.06	12.00	2.02	18.00	0.88	24.00	0.58

1.833	0.74	7.833	39.76	13.833	1.43	19.83	0.76
1.917	0.75	7.917	200.80	13.917	1.39	19.92	0.75
2.000	0.75	8.000	200.79	14.000	1.39	20.00	0.75
2.083	0.77	8.083	54.01	14.083	1.36	20.08	0.74
2.167	0.77	8.167	54.01	14.167	1.36	20.17	0.74
2.250	0.79	8.250	25.55	14.250	1.33	20.25	0.73
2.333	0.79	8.333	25.55	14.333	1.33	20.33	0.73
2.417	0.81	8.417	16.41	14.417	1.30	20.42	0.72
2.500	0.81	8.500	16.41	14.500	1.30	20.50	0.72
2.583	0.84	8.583	12.04	14.583	1.27	20.58	0.71
2.667	0.84	8.667	12.04	14.667	1.27	20.67	0.71
2.750	0.86	8.750	9.50	14.750	1.24	20.75	0.71
2.833	0.86	8.833	9.50	14.833	1.24	20.83	0.71
2.917	0.89	8.917	7.85	14.917	1.21	20.92	0.70
3.000	0.89	9.000	7.85	15.000	1.21	21.00	0.70
3.083	0.91	9.083	6.70	15.083	1.19	21.08	0.69
3.167	0.91	9.167	6.70	15.167	1.19	21.17	0.69
3.250	0.94	9.250	5.85	15.250	1.16	21.25	0.68
3.333	0.94	9.333	5.85	15.333	1.16	21.33	0.68
3.417	0.98	9.417	5.19	15.417	1.14	21.42	0.68
3.500	0.98	9.500	5.19	15.500	1.14	21.50	0.68
3.583	1.01	9.583	4.68	15.583	1.12	21.58	0.67
3.667	1.01	9.667	4.68	15.667	1.12	21.67	0.67
3.750	1.05	9.750	4.26	15.750	1.10	21.75	0.66
3.833	1.05	9.833	4.26	15.833	1.10	21.83	0.66
3.917	1.08	9.917	3.91	15.917	1.08	21.92	0.65
4.000	1.08	10.000	3.91	16.000	1.08	22.00	0.65
4.083	1.13	10.083	3.62	16.083	1.06	22.08	0.65
4.167	1.13	10.167	3.62	16.167	1.06	22.17	0.65
4.250	1.17	10.250	3.37	16.250	1.04	22.25	0.64
4.333	1.17	10.333	3.37	16.333	1.04	22.33	0.64
4.417	1.23	10.417	3.15	16.417	1.02	22.42	0.63
4.500	1.23	10.500	3.15	16.500	1.02	22.50	0.63
4.583	1.28	10.583	2.96	16.583	1.00	22.58	0.63
4.667	1.28	10.667	2.96	16.667	1.00	22.67	0.63
4.750	1.34	10.750	2.80	16.750	0.98	22.75	0.62
4.833	1.34	10.833	2.80	16.833	0.98	22.83	0.62
4.917	1.41	10.917	2.65	16.917	0.97	22.92	0.62
5.000	1.41	11.000	2.65	17.000	0.97	23.00	0.62
5.083	1.49	11.083	2.52	17.083	0.95	23.08	0.61
5.167	1.49	11.167	2.52	17.167	0.95	23.17	0.61
5.250	1.57	11.250	2.40	17.250	0.94	23.25	0.60
5.333	1.57	11.333	2.40	17.333	0.94	23.33	0.60
5.417	1.67	11.417	2.29	17.417	0.92	23.42	0.60
5.500	1.67	11.500	2.29	17.500	0.92	23.50	0.60
5.583	1.78	11.583	2.19	17.583	0.91	23.58	0.59
5.667	1.78	11.667	2.19	17.667	0.91	23.67	0.59
5.750	1.91	11.750	2.10	17.750	0.89	23.75	0.59
5.833	1.91	11.833	2.10	17.833	0.89	23.83	0.59
5.917	2.06	11.917	2.02	17.917	0.88	23.92	0.58
6.000	2.06	12.000	2.02	18.000	0.88	24.00	0.58

CALIB STANDHYD (0009)  
ID= 1 DT= 5.0 min  
Area (ha) = 42.85  
Total Imp(%) = 68.00 Dir. Conn.(%) = 68.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	29.14	13.71
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	534.48	40.00
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	0.59	6.083	2.24	12.083	1.95	18.08	0.87
0.167	0.59	6.167	2.24	12.167	1.95	18.17	0.87
0.250	0.61	6.250	2.45	12.250	1.88	18.25	0.86
0.333	0.61	6.333	2.45	12.333	1.88	18.33	0.86
0.417	0.62	6.417	2.72	12.417	1.81	18.42	0.84
0.500	0.62	6.500	2.72	12.500	1.81	18.50	0.84
0.583	0.63	6.583	3.05	12.583	1.75	18.58	0.83
0.667	0.63	6.667	3.05	12.667	1.75	18.67	0.83
0.750	0.64	6.750	3.49	12.750	1.70	18.75	0.82
0.833	0.64	6.833	3.49	12.833	1.70	18.83	0.82
0.917	0.66	6.917	4.08	12.917	1.65	18.92	0.81
1.000	0.66	7.000	4.08	13.000	1.65	19.00	0.81
1.083	0.67	7.083	4.93	13.083	1.60	19.08	0.80
1.167	0.67	7.167	4.93	13.167	1.60	19.17	0.80
1.250	0.69	7.250	6.26	13.250	1.55	19.25	0.79
1.333	0.69	7.333	6.26	13.333	1.55	19.33	0.79
1.417	0.70	7.417	8.66	13.417	1.51	19.42	0.78
1.500	0.70	7.500	8.66	13.500	1.51	19.50	0.78
1.583	0.72	7.583	14.21	13.583	1.47	19.58	0.77
1.667	0.72	7.667	14.21	13.667	1.47	19.67	0.77
1.750	0.74	7.750	39.75	13.750	1.43	19.75	0.76

Max.Eff.Inten.(mm/hr) = 200.80 121.52  
over (min) = 5.00 10.00  
Storage Coeff. (min) = 5.28 (ii) 9.23 (ii)  
Unit Hyd. Tpeak (min) = 5.00 10.00  
Unit Hyd. peak (cms) = 0.21 0.12

\*TOTALS\*  
PEAK FLOW (cms) = 14.24 2.99 16.763 (iii)  
TIME TO PEAK (hrs) = 8.00 8.08 8.00  
RUNOFF VOLUME (mm) = 97.13 59.78 85.18  
TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
RUNOFF COEFFICIENT = 0.99 0.61 0.87

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB NASHVD (0019)  
ID= 1 DT= 5.0 min  
Area (ha) = 1.83 Curve Number (CN) = 78.0  
Ia (mm) = 5.00 # of Linear Res. (N) = 3.00  
U.H. Tp (hrs) = 0.15

Unit Hyd Qpeak (cms) = 0.466  
PEAK FLOW (cms) = 0.335 (i)  
TIME TO PEAK (hrs) = 8.083  
RUNOFF VOLUME (mm) = 52.338  
TOTAL RAINFALL (mm) = 98.134  
RUNOFF COEFFICIENT = 0.533



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

CALIB  
STANDHYD (0011) Area (ha) = 18.74  
ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	17.43	1.31
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	353.46	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)	4.12 (ii)	6.02 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.15

			*TOTALS*
PEAK FLOW (cms)	9.02	0.34	9.330 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	97.13	61.28	94.62
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0012) Area (ha) = 1.17  
ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	1.09	0.08
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	88.32	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)	1.79 (ii)	3.69 (ii)
Unit Hyd. Tpeak (min)	5.00	5.00
Unit Hyd. peak (cms)	0.32	0.25

			*TOTALS*
PEAK FLOW (cms)	0.61	0.03	0.634 (iii)
TIME TO PEAK (hrs)	8.00	8.00	8.00
RUNOFF VOLUME (mm)	97.13	61.28	94.62
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0018) Area (ha) = 11.58  
ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.14	5.44
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	277.85	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	107.54
over (min)	5.00	15.00
Storage Coeff. (min)	3.57 (ii)	10.42 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.26	0.09

			*TOTALS*
PEAK FLOW (cms)	3.26	0.94	3.786 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	97.13	54.13	76.92
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.55	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB  
STANDHYD (0023) Area (ha) = 4.36  
ID= 1 DT= 5.0 min Total Imp(%) = 78.00 Dir. Conn.(%) = 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.40	0.96
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	170.49	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)	2.66 (ii)	5.88 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.29	0.15

			*TOTALS*
PEAK FLOW (cms)	1.86	0.24	2.081 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	97.13	59.78	88.91
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.61	0.91

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0024) Area (ha) = 2.54  
ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.36	0.18
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	130.13	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)	2.26 (ii)	4.16 (ii)
Unit Hyd. Tpeak (min)	5.00	5.00
Unit Hyd. peak (cms)	0.30	0.24

			*TOTALS*
PEAK FLOW (cms)	1.30	0.06	1.365 (iii)
TIME TO PEAK (hrs)	8.00	8.00	8.00
RUNOFF VOLUME (mm)	97.13	61.28	94.62
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0027) Area (ha) = 4.22  
ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.62	1.60
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	167.73	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	200.80	104.32
Storage Coeff. (min)	2.64 (ii)	7.03 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.29	0.14
PEAK FLOW (cms)	1.43	0.33
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	97.13	52.80
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.54

\*TOTALS\*  
1.721 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB STANDHYD (0028)	Area (ha)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	14.88	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	13.39	1.49
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	314.96	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	200.80	125.31
Storage Coeff. (min)	3.85 (ii)	6.07 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.25	0.15
PEAK FLOW (cms)	7.02	0.39
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	97.13	61.28
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62

\*TOTALS\*  
7.367 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	18.74	9.330	8.00	94.62
+ ID2= 2 (0012):	1.17	0.634	8.00	94.62
ID = 3 (0048):	19.91	9.963	8.00	94.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	19.91	9.963	8.00	94.62
+ ID2= 2 (0018):	11.58	3.786	8.00	76.92
ID = 1 (0048):	31.49	13.749	8.00	88.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	31.49	13.749	8.00	88.11
+ ID2= 2 (0019):	1.83	0.335	8.00	52.34
ID = 3 (0048):	33.32	14.044	8.00	86.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	33.32	14.044	8.00	86.15
+ ID2= 2 (0023):	4.36	2.081	8.00	88.91
ID = 1 (0048):	37.68	16.125	8.00	86.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	37.68	16.125	8.00	86.47
+ ID2= 2 (0024):	2.54	1.365	8.00	94.62
ID = 3 (0048):	40.22	17.490	8.00	86.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	40.22	17.490	8.00	86.98
+ ID2= 2 (0027):	4.22	1.721	8.00	80.29
ID = 1 (0048):	44.44	19.212	8.00	86.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	44.44	19.212	8.00	86.35
+ ID2= 2 (0028):	14.88	7.367	8.00	93.55
ID = 3 (0048):	59.32	26.579	8.00	88.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	7.93	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.20	3.73
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	229.93	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	200.80	125.31
Storage Coeff. (min)	3.19 (ii)	9.63 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.27	0.11

PEAK FLOW (cms) = 2.26 0.82 \*TOTALS\* 2.955 (iii)



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TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 97.13 61.28 80.28  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.62 0.82

over (min) = 5.00 10.00  
 Storage Coeff. (min) = 4.72 (ii) 7.79 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.22 0.13

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

\*TOTALS\*  
 13.066 (iii)  
 8.00  
 89.96  
 98.13  
 0.92

CALIB  
 STANDHYD (0025)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 5.77  
 Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 3.06 2.71  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 196.13 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 200.80 121.52  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 2.90 (ii) 9.42 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.28 0.12

PEAK FLOW (cms) = 1.66 0.59 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 2.156 (iii)  
 RUNOFF VOLUME (mm) = 97.13 59.78  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.61 0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB  
 STANDHYD (0020)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 69.17  
 Total Imp(%) = 86.00 Dir. Conn.(%) = 86.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 59.49 9.68  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 679.07 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 200.80 121.52  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 6.10 (ii) 8.68 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.19 0.12

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

\*TOTALS\*  
 29.689 (iii)  
 8.00  
 91.90  
 98.13  
 0.94

ADD HYD (0049)  
 1 + 2 = 3  
 AREA QPEAK TPEAK R.V.  
 (ha) (cms) (hrs) (mm)  
 ID1= 1 (0010): 7.93 2.955 8.00 80.28  
 + ID2= 2 (0025): 5.77 2.156 8.00 79.58  
 =====  
 ID = 3 (0049): 13.70 5.111 8.00 79.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)  
 3 + 2 = 1  
 AREA QPEAK TPEAK R.V.  
 (ha) (cms) (hrs) (mm)  
 ID1= 3 (0049): 13.70 5.111 8.00 79.98  
 + ID2= 2 (0048): 59.32 26.579 8.00 88.15  
 =====  
 ID = 1 (0049): 73.02 31.689 8.00 86.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
 STANDHYD (0013)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 29.43  
 Total Imp(%) = 80.00 Dir. Conn.(%) = 80.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 23.54 5.89  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 442.94 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 200.80 125.31

CALIB  
 STANDHYD (0021)  
 ID= 1 DT= 5.0 min  
 Area (ha) = 4.49  
 Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 4.13 0.36  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 173.01 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 200.80 125.31  
 over (min) = 5.00 5.00  
 Storage Coeff. (min) = 2.69 (ii) 4.70 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 5.00  
 Unit Hyd. peak (cms) = 0.29 0.22

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

\*TOTALS\*  
 2.377 (iii)  
 8.00  
 94.27  
 98.13  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.





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CALIB  
STANDHYD (0026)  
ID= 1 DT= 5.0 min

Area (ha)= 4.46  
Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.10	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	172.43	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.68 (ii)	4.69 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.29	0.22

		*TOTALS*
PEAK FLOW (cms)=	2.24	0.12
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050)  
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	29.43	13.066	8.00	89.96
+ ID2= 2 (0020):	69.17	29.689	8.00	91.90
=====				
ID = 3 (0050):	98.60	42.755	8.00	91.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)  
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0050):	98.60	42.755	8.00	91.32
+ ID2= 2 (0021):	4.49	2.377	8.00	94.27
=====				
ID = 1 (0050):	103.09	45.132	8.00	91.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)  
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0050):	103.09	45.132	8.00	91.45
+ ID2= 2 (0026):	4.46	2.362	8.00	94.27
=====				
ID = 3 (0050):	107.55	47.494	8.00	91.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
NASHYD (0015)  
ID= 1 DT= 5.0 min

Area (ha)= 2.31 Curve Number (CN)= 80.0  
Ia (mm)= 5.00 # of Linear Res. (N)= 3.00  
U.H. Tp (hrs)= 0.24

Unit Hyd Qpeak (cms)= 0.368

PEAK FLOW (cms)= 0.338 (i)  
TIME TO PEAK (hrs)= 8.167  
RUNOFF VOLUME (mm)= 55.325  
TOTAL RAINFALL (mm)= 98.134  
RUNOFF COEFFICIENT = 0.564

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

CALIB  
STANDHYD (0003)  
ID= 1 DT= 5.0 min

Area (ha)= 8.96  
Total Imp(%)= 46.00 Dir. Conn.(%)= 46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.12	4.84
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	244.40	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	114.30
over (min)	5.00	10.00
Storage Coeff. (min)=	3.30 (ii)	9.99 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.11

		*TOTALS*
PEAK FLOW (cms)=	2.21	0.96
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	97.13	56.89
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.58

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB  
STANDHYD (0004)  
ID= 1 DT= 5.0 min

Area (ha)= 11.16  
Total Imp(%)= 86.00 Dir. Conn.(%)= 86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	9.60	1.56
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	272.76	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.53 (ii)	6.11 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

		*TOTALS*
PEAK FLOW (cms)=	5.10	0.40
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	97.13	61.28
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0005)  
ID= 1 DT= 5.0 min

Area (ha)= 14.86  
Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	13.82	1.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	314.75	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.85 (ii)	5.74 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.15

\*TOTALS\*



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PEAK FLOW (cms) = 7.24 0.27 7.493 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 97.13 61.28 94.62  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.62 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016) Area (ha) = 11.25  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	10.46	0.79
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	273.86	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)	3.54 (ii)	5.44 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.16

\*TOTALS\*

PEAK FLOW (cms) = 5.56 0.21 5.749 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 97.13 61.28 94.62  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.62 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0017) Area (ha) = 9.75  
 ID= 1 DT= 5.0 min Total Imp(%) = 52.00 Dir. Conn.(%) = 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	5.07	4.68
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	254.95	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)	3.39 (ii)	9.92 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.11

\*TOTALS\*

PEAK FLOW (cms) = 2.71 0.99 3.536 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 97.13 59.78 79.20  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.61 0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0022) Area (ha) = 13.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	7.18	6.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	300.44	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	125.31
over (min)	5.00	15.00
Storage Coeff. (min)	3.74 (ii)	10.19 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.25	0.09

\*TOTALS\*

PEAK FLOW (cms) = 3.78 1.28 4.524 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 97.13 61.28 80.28  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.62 0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029) Area (ha) = 37.35  
 ID= 1 DT= 5.0 min Total Imp(%) = 73.00 Dir. Conn.(%) = 73.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	27.27	10.08
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	499.00	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)	5.07 (ii)	8.66 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.21	0.12

\*TOTALS\*

PEAK FLOW (cms) = 13.47 2.26 15.393 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 97.13 59.78 87.05  
 TOTAL RAINFALL (mm) = 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.61 0.89

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0054)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0017):	9.75	3.536	8.00	79.20
+ ID2= 2 (0022):	13.54	4.524	8.00	80.28
ID = 3 (0054):	23.29	8.059	8.00	79.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0054):	23.29	8.059	8.00	79.83
+ ID2= 2 (0029):	37.35	15.393	8.00	87.05
ID = 1 (0054):	60.64	23.453	8.00	84.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0016):	11.25	5.749	8.00	94.62
+ ID2= 2 (0004):	11.16	5.463	8.00	92.11
=====				
ID = 3 (0032):	22.41	11.212	8.00	93.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0032):	22.41	11.212	8.00	93.37
+ ID2= 2 (0005):	14.86	7.493	8.00	94.62
=====				
ID = 1 (0032):	37.27	18.705	8.00	93.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0032):	37.27	18.705	8.00	93.87
+ ID2= 2 (0054):	60.64	23.453	8.00	84.28
=====				
ID = 3 (0032):	97.91	42.157	8.00	87.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.95	66.00	66.00

	IMPERVIOUS	PERVIOUS (i)	*TOTALS*
Surface Area (ha)	6.57	3.38	4.199 (iii)
Dep. Storage (mm)	1.00	1.50	8.00
Average Slope (%)	1.00	2.00	84.43
Length (m)	257.55	40.00	98.13
Mannings n	0.013	0.250	0.99
Max.Eff.Inten.(mm/hr) over (min)	200.80	121.52	5.00
Storage Coeff. (min)	3.41 (ii)	7.51 (ii)	0.26
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.26	0.13	
PEAK FLOW (cms)	3.51	0.80	
TIME TO PEAK (hrs)	8.00	8.08	
RUNOFF VOLUME (mm)	97.13	59.78	
TOTAL RAINFALL (mm)	98.13	98.13	
RUNOFF COEFFICIENT	0.99	0.61	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	2.18	39.00	39.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	0.85	1.33
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	120.55	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	200.80	117.85
	5.00	10.00

Storage Coeff. (min)	2.16 (ii)	8.77 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.31	0.12	
PEAK FLOW (cms)	0.47	0.29	0.714 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	97.13	58.31	73.45
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.59	0.75

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.338	8.17	55.33
+ ID2= 2 (0002):	2.18	0.714	8.00	73.45
=====				
ID = 3 (2701):	4.49	0.920	8.00	64.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.920	8.00	64.13
+ ID2= 2 (0003):	8.96	3.006	8.00	75.40
=====				
ID = 1 (2701):	13.45	3.926	8.00	71.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	3.926	8.00	71.64
+ ID2= 2 (0030):	9.95	4.199	8.00	84.43
=====				
ID = 3 (2701):	23.40	8.124	8.00	77.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	8.124	8.00	77.08
+ ID2= 2 (0032):	97.91	42.157	8.00	87.93
=====				
ID = 1 (2701):	121.31	50.282	8.00	85.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.72	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.47	5.25
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	254.56	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	200.80	121.52
	5.00	10.00
Storage Coeff. (min)	3.39 (ii)	9.91 (ii)



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Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.26 0.11  
 PEAK FLOW (cms)= 2.39 1.11 3.317 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 97.13 59.78 76.96  
 TOTAL RAINFALL (mm)= 98.13 98.13 98.13  
 RUNOFF COEFFICIENT = 0.99 0.61 0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	3.317	8.00	76.96
+ ID2= 2 (2701):	121.31	50.282	8.00	85.84
ID = 3 (0222):	131.03	53.599	8.00	85.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	34.81	90.00	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	31.33	3.48
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	481.73	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)=	5.00	10.00
Storage Coeff. (min)=	4.96 (ii)	7.18 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.22	0.14
PEAK FLOW (cms)=	15.56	0.86
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	97.13	61.28
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62

\*TOTALS\*  
 16.318 (iii)  
 8.00  
 93.55  
 98.13  
 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	19.31	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	17.19	2.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	358.79	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)=	5.00	10.00
Storage Coeff. (min)=	4.16 (ii)	6.47 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.14
PEAK FLOW (cms)=	8.88	0.54
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	97.13	61.28
TOTAL RAINFALL (mm)=	98.13	98.13

\*TOTALS\*  
 9.364 (iii)  
 8.00  
 93.19  
 98.13

RUNOFF COEFFICIENT = 0.99 0.62 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	16.318	8.00	93.55
+ ID2= 2 (0007):	19.31	9.364	8.00	93.19
ID = 3 (0282):	54.12	25.681	8.00	93.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	4.99	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	117.85
over (min)=	5.00	10.00
Storage Coeff. (min)=	2.77 (ii)	9.38 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.12
PEAK FLOW (cms)=	1.44	0.49
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	97.13	58.31
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.59

\*TOTALS\*  
 1.857 (iii)  
 8.00  
 78.89  
 98.13  
 0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0282):	54.12	25.681	8.00	93.42
+ ID2= 2 (0031):	4.99	1.857	8.00	78.89
ID = 3 (0239):	59.11	27.538	8.00	92.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	5.73	50.00	50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	121.52
over (min)=	5.00	10.00
Storage Coeff. (min)=	2.89 (ii)	9.42 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00



Experience Enhancing Excellence

Unit Hyd. peak (cms)=	0.28	0.12	
PEAK FLOW (cms)=	1.56	0.62	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	2.079 (iii)
RUNOFF VOLUME (mm)=	97.13	59.78	78.46
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014) ID= 1 DT= 5.0 min	Area (ha)= 1.88 Total Imp(%)= 56.00	Dir. Conn.(%)= 56.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	1.05	0.83	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	111.95	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	2.07 (ii)	6.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.14	
			*TOTALS*
PEAK FLOW (cms)=	0.58	0.21	0.766 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	81.36
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.83

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0217) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0014):	1.88	0.766	8.00	81.36
+ ID2= 2 (0239):	59.11	27.538	8.00	92.19
ID = 3 (0217):	60.99	28.304	8.00	91.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0217):	60.99	28.304	8.00	91.86
+ ID2= 2 (0008):	5.73	2.079	8.00	78.46
ID = 1 (0217):	66.72	30.383	8.00	90.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0217):	66.72	30.383	8.00	90.71
+ ID2= 2 (0222):	131.03	53.599	8.00	85.18
ID = 3 (0051):	197.75	83.982	8.00	87.04

**APPENDIX C**  
**Proposed Conditions Hydrology Calculations**



**Proposed Conditions: CN & Imperviousness Summary Table**

Oakville Midtown EA

File No. T11-0767

Date : May 2014

Catchment ID	Catchment Area (ha)	Weight Imperviousness (%)	Weighted CN (AMC II) for STANDHYDS	Weighted CN (AMC III) for STANDHYDS	Composite CN (AMC II) for NASHYDS	Composite CN (AMC III) for NASHYDS
A-1	9.72	46%	81	91	-	-
A-2	2.18	39%	80	91	-	-
A-3	8.96	46%	79	90	-	-
A-4	11.16	86%	82	92	-	-
A-5	14.33	93%	82	92	-	-
A-6	34.81	89%	82	92	-	-
A-7a	9.32	88%	82	92	-	-
A-7b	9.98	90%	82	92	-	-
A-8	5.73	50%	81	91	-	-
A-9	42.85	68%	81	91	-	-
A-10	7.93	53%	82	92	-	-
A-11	19.25	92%	82	92	-	-
A-12	1.17	91%	82	92	-	-
A-13	29.43	82%	82	92	-	-
A-14	1.88	56%	82	92	-	-
A-15	2.31	13%	77	89	80	91
A-16	11.78	92%	82	92	-	-
A-17	9.75	52%	81	91	-	-
A-18	11.58	53%	77	89	-	-
A-19	1.83	14%	75	88	78	90
A-20	69.17	89%	82	92	-	-
A-21	4.49	92%	82	92	-	-
A-22	13.54	53%	82	92	-	-
A-23	4.36	78%	81	91	-	-
A-24	2.54	93%	82	92	-	-
A-25	5.77	53%	81	91	-	-
A-26	4.46	92%	82	92	-	-
A-27	4.22	62%	76	89	-	-
A-28a	6.40	93%	82	92	-	-
A-28b	7.97	88%	82	92	-	-
A-29	37.35	73%	81	91	-	-
A-30	9.95	66%	81	91	-	-
A-31	4.99	53%	80	91	-	-



**Proposed Conditions: NASHYD Input  
Parameters (OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date : May 2014

Parameter	Unit	Description	A15	A19
Area	ha	Watershed Area	2.31	1.83
TP	hr	Unit Hydrograph Time to Peak	0.24	0.15
DT	min	Time Step Increment	5	
DWF	cms	Dry Weather Flow (Base Flow)	0	
CN	-	SCS Curve Number	80	78
IA	mm	Initial Abstraction	5	
N	-	Number of Linear Reservoir	3	
Rain	mm/hr	Optional Rainfall Intensities	0-Without Rainfall	

Time to Peak Calculation							
Area Number	Area	Cpre	CN	L	Elevation Change	Sw	Tp
	(ha)			(m)	(m)	(m/m)	(hr)
A15	2.31	0.20	80	120	3.9	3.3	0.24
A19	1.83	0.20	78	100	10	10.0	0.15





**Proposed Conditions: NASHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date : May 2014

Parameter	Unit	Description	A15	A19
Area	ha	Watershed Area	2.31	1.83
TP	hr	Unit Hydrograph Time to Peak	0.24	0.15
DT	min	Time Step Increment	5	
DWF	cms	Dry Weather Flow (Base Flow)	0	
CN	-	SCS Curve Number	91	90
IA	mm	Initial Abstraction	5	
N	-	Number of Linear Reservoir	3	
Rain	mm/hr	Optional Rainfall Intensities	0-Without Rainfall	

Time to Peak Calculation							
Area Number	Area	Cpre	CN	L	Elevation Change	Sw	Tp
	(ha)			(m)	(m)	(m/m)	(hr)
A15	2.31	0.20	91	120	3.9	3.3	0.24
A19	1.83	0.20	90	100	10	10.0	0.15



**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A1	A2	A3	A4	A5	A6
<b>AREA</b>		9.72	2.18	8.96	11.16	14.33	34.81
<b>XIMP</b>	Impervious Area (Direct Connection)	46%	39%	46%	86%	93%	89%
<b>TIMP</b>	Total Impervious Area	46%	39%	46%	86%	93%	89%
<b>LGI</b>	Overland Flow Length (Impervious)	254.56	120.55	244.40	272.76	309.08	481.73
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	81	80	79	82	82	82
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A7-a	A7-b	A8	A9	A10	A11	A12
AREA		9.32	9.98	5.73	42.85	7.93	19.25	1.17
XIMP	Impervious Area (Direct Connection)	88%	90%	50%	68%	53%	92%	91%
TIMP	Total Impervious Area	88%	90%	50%	68%	53%	92%	91%
LGI	Overland Flow Length (Impervious)	249.27	257.94	195.45	534.48	229.93	358.24	88.32
SLPI	Average Slope (Impervious)	1.0%						
DT	Time Step Increment	5						
DWF	Dry Weather Flow (Base Flow)	0						
LOSS	Rainfall Loss Method	Modified SCS Curve Method: VA = 1.5mm						
CN	Runoff Curve Number	82	82	81	81	82	82	82
SLPP	Average Slope (Pervious)	2.0%						
LGP	Overland Flow Length (Pervious)	40						
MNP	Manning's Roughness Coefficient (Pervious)	0.25						
DPSI	Depression Storage (Impervious)	1.0						
MNI	Manning's Roughness Coefficient (Impervious)	0.013						



**Proposed Conditions: STANDHYD Input Parameters**

**(OTTHYMO)**  
 Oakville Midtown EA  
 File No. T11-0767  
 Date: May 2014

Parameter	Description	A13	A14	A16	A17	A18	A20
<b>AREA</b>		29.43	1.88	11.78	9.75	11.58	69.17
<b>XIMP</b>	Impervious Area (Direct Connection)	82%	56%	92%	52%	53%	89%
<b>TIMP</b>	Total Impervious Area	82%	56%	92%	52%	53%	89%
<b>LGI</b>	Overland Flow Length (Impervious)	442.94	111.95	280.24	254.95	277.85	679.07
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	82	82	82	81	77	82
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A21	A22	A23	A24	A25	A26
<b>AREA</b>		4.49	13.54	4.36	2.54	5.77	4.46
<b>XIMP</b>	Impervious Area (Direct Connection)	92%	53%	78%	93%	53%	92%
<b>TIMP</b>	Total Impervious Area	92%	53%	78%	93%	53%	92%
<b>LGI</b>	Overland Flow Length (Impervious)	173.01	300.44	170.49	130.13	196.13	172.43
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	82	82	81	82	81	82
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Proposed Conditions: STANDHYD Input Parameters (OTTHYMO)**

Oakville Midtown EA  
 File No. T11-0767  
 Date: May 2014

Parameter	Description	A27	A28-a	A28-b	A29	A30	A31
AREA		4.22	6.40	7.97	37.35	9.95	4.99
XIMP	Impervious Area (Direct Connection)	62%	93%	88%	73%	66%	53%
TIMP	Total Impervious Area	62%	93%	88%	73%	66%	53%
LGI	Overland Flow Length (Impervious)	167.73	206.56	230.51	499.00	257.55	182.39
SLPI	Average Slope (Impervious)	1.0%					
DT	Time Step Increment	5					
DWF	Dry Weather Flow (Base Flow)	0					
LOSS	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
CN	Runoff Curve Number	76	82	82	81	81	80
SLPP	Average Slope (Pervious)	2.0%					
LGP	Overland Flow Length (Pervious)	40					
MNP	Manning's Roughness Coefficient (Pervious)	0.25					
DPSI	Depression Storage (Impervious)	1.0					
MNI	Manning's Roughness Coefficient (Impervious)	0.013					



**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A1	A2	A3	A4	A5	A6
<b>AREA</b>		9.72	2.18	8.96	11.16	14.33	34.81
<b>XIMP</b>	Impervious Area (Direct Connection)	46%	39%	46%	86%	93%	89%
<b>TIMP</b>	Total Impervious Area	46%	39%	46%	86%	93%	89%
<b>LGI</b>	Overland Flow Length (Impervious)	254.56	120.55	244.40	272.76	309.08	481.73
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	91	91	90	92	92	92
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A7-a	A7-b	A8	A9	A10	A11	A12
AREA		9.32	9.98	5.73	42.85	7.93	19.25	1.17
XIMP	Impervious Area (Direct Connection)	88%	90%	50%	68%	53%	92%	91%
TIMP	Total Impervious Area	88%	90%	50%	68%	53%	92%	91%
LGI	Overland Flow Length (Impervious)	249.27	257.94	195.45	534.48	229.93	358.24	88.32
SLPI	Average Slope (Impervious)	1.0%						
DT	Time Step Increment	5						
DWF	Dry Weather Flow (Base Flow)	0						
LOSS	Rainfall Loss Method	Modified SCS Curve Method: VA = 1.5mm						
CN	Runoff Curve Number	92	92	91	91	92	92	92
SLPP	Average Slope (Pervious)	2.0%						
LGP	Overland Flow Length (Pervious)	40						
MNP	Manning's Roughness Coefficient (Pervious)	0.25						
DPSI	Depression Storage (Impervious)	1.0						
MNI	Manning's Roughness Coefficient (Impervious)	0.013						





**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A13	A14	A16	A17	A18	A20
<b>AREA</b>		29.43	1.88	11.78	9.75	11.58	69.17
<b>XIMP</b>	Impervious Area (Direct Connection)	82%	56%	92%	52%	53%	89%
<b>TIMP</b>	Total Impervious Area	82%	56%	92%	52%	53%	89%
<b>LGI</b>	Overland Flow Length (Impervious)	442.94	111.95	280.24	254.95	277.85	679.07
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	92	92	92	91	89	92
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A21	A22	A23	A24	A25	A26
<b>AREA</b>		4.49	13.54	4.36	2.54	5.77	4.46
<b>XIMP</b>	Impervious Area (Direct Connection)	92%	53%	78%	93%	53%	92%
<b>TIMP</b>	Total Impervious Area	92%	53%	78%	93%	53%	92%
<b>LGI</b>	Overland Flow Length (Impervious)	173.01	300.44	170.49	130.13	196.13	172.43
<b>SLPI</b>	Average Slope (Impervious)	1.0%					
<b>DT</b>	Time Step Increment	5					
<b>DWF</b>	Dry Weather Flow (Base Flow)	0					
<b>LOSS</b>	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
<b>CN</b>	Runoff Curve Number	92	92	91	92	91	92
<b>SLPP</b>	Average Slope (Pervious)	2.0%					
<b>LGP</b>	Overland Flow Length (Pervious)	40					
<b>MNP</b>	Manning's Roughness Coefficient (Pervious)	0.25					
<b>DPSI</b>	Depression Storage (Impervious)	1.0					
<b>MNI</b>	Manning's Roughness Coefficient (Impervious)	0.013					



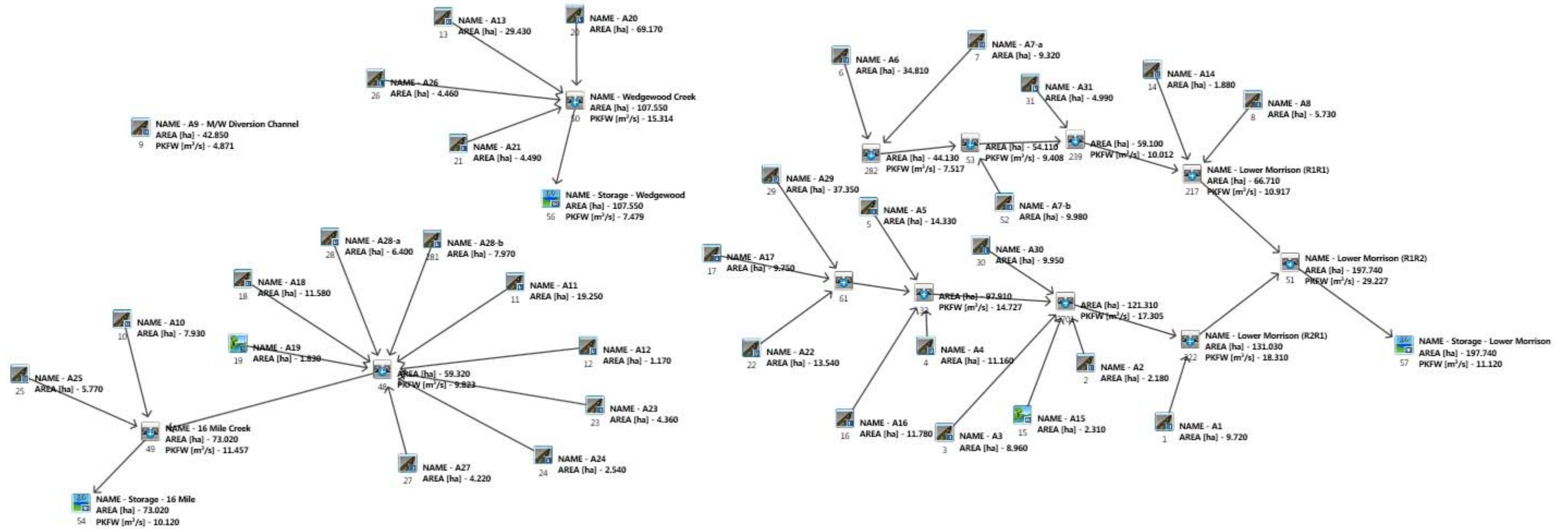
**Proposed Conditions: STANDHYD Input Parameters  
(OTTHYMO) - Regional Storm (AMC III)**

Oakville Midtown EA  
File No. T11-0767  
Date: May 2014

Parameter	Description	A27	A28-a	A28-b	A29	A30	A31
AREA		4.22	6.40	7.97	37.35	9.95	4.99
XIMP	Impervious Area (Direct Connection)	62%	93%	88%	73%	66%	53%
TIMP	Total Impervious Area	62%	93%	88%	73%	66%	53%
LGI	Overland Flow Length (Impervious)	167.73	206.56	230.51	499.00	257.55	182.39
SLPI	Average Slope (Impervious)	1.0%					
DT	Time Step Increment	5					
DWF	Dry Weather Flow (Base Flow)	0					
LOSS	Rainfall Loss Method	Modified SCS Curve Method: $\lambda A = 1.5\text{mm}$					
CN	Runoff Curve Number	89	92	92	91	91	91
SLPP	Average Slope (Pervious)	2.0%					
LGP	Overland Flow Length (Pervious)	40					
MNP	Manning's Roughness Coefficient (Pervious)	0.25					
DPSI	Depression Storage (Impervious)	1.0					
MNI	Manning's Roughness Coefficient (Impervious)	0.013					

T11-767  
 Midtown Oakville EA Study, Town of Oakville  
 Proposed Conditions Model Schematic  
 May 2014

VO2 Model Schematic





Experience Enhancing Excellence

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V V I SSSSS U U A L
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V V I SS U U A A L
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OOO T T H H Y Y M M OOO
  
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\*\*\*\*\* DETAILED OUTPUT \*\*\*\*\*

Input filename: C:\Program Files (x86)\Visual Otthymo 3.0\VO2\voindat  
 Output filename: C:\Users\krothwell\AppData\Local\Temp\8793c943-440e-41fa-a6dd-4cea8d1dd0c\Scenario.out  
 Summary filename: C:\Users\krothwell\AppData\Local\Temp\8793c943-440e-41fa-a6dd-4cea8d1dd0c\Scenario.sum

DATE: 05/16/2014 TIME: 11:55:49  
 USER:

COMMENTS:

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 1 \*\*  
 \*\*\*\*\*

CHICAGO STORM IDF curve parameters: A= 725.000  
 Ptotal= 48.69 mm B= 4.800  
 C= 0.808  
 used in: INTENSITY = A / (t + B)^C  
 Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.40	6.17	1.36	12.17	1.20	18.17	0.57
0.33	0.41	6.33	1.48	12.33	1.16	18.33	0.56
0.50	0.42	6.50	1.62	12.50	1.13	18.50	0.56
0.67	0.43	6.67	1.80	12.67	1.09	18.67	0.55
0.83	0.43	6.83	2.03	12.83	1.06	18.83	0.54
1.00	0.44	7.00	2.34	13.00	1.03	19.00	0.54
1.17	0.45	7.17	2.77	13.17	1.00	19.17	0.53
1.33	0.46	7.33	3.42	13.33	0.98	19.33	0.52
1.50	0.47	7.50	4.54	13.50	0.95	19.50	0.52
1.67	0.48	7.67	7.00	13.67	0.93	19.67	0.51
1.83	0.49	7.83	17.37	13.83	0.91	19.83	0.51
2.00	0.50	8.00	82.18	14.00	0.89	20.00	0.50
2.17	0.51	8.17	23.02	14.17	0.87	20.17	0.49
2.33	0.53	8.33	11.75	14.33	0.85	20.33	0.49
2.50	0.54	8.50	7.96	14.50	0.83	20.50	0.48
2.67	0.55	8.67	6.07	14.67	0.81	20.67	0.48
2.83	0.57	8.83	4.93	14.83	0.79	20.83	0.47
3.00	0.58	9.00	4.17	15.00	0.78	21.00	0.47
3.17	0.60	9.17	3.63	15.17	0.76	21.17	0.46
3.33	0.62	9.33	3.22	15.33	0.75	21.33	0.46
3.50	0.64	9.50	2.90	15.50	0.74	21.50	0.45
3.67	0.66	9.67	2.64	15.67	0.72	21.67	0.45
3.83	0.68	9.83	2.43	15.83	0.71	21.83	0.44
4.00	0.70	10.00	2.25	16.00	0.70	22.00	0.44
4.17	0.73	10.17	2.10	16.17	0.69	22.17	0.44
4.33	0.76	10.33	1.97	16.33	0.67	22.33	0.43
4.50	0.79	10.50	1.86	16.50	0.66	22.50	0.43

4.67	0.82	10.67	1.76	16.67	0.65	22.67	0.42
4.83	0.85	10.83	1.67	16.83	0.64	22.83	0.42
5.00	0.89	11.00	1.59	17.00	0.63	23.00	0.42
5.17	0.94	11.17	1.52	17.17	0.62	23.17	0.41
5.33	0.99	11.33	1.45	17.33	0.61	23.33	0.41
5.50	1.04	11.50	1.39	17.50	0.61	23.50	0.40
5.67	1.11	11.67	1.34	17.67	0.60	23.67	0.40
5.83	1.18	11.83	1.29	17.83	0.59	23.83	0.40
6.00	1.26	12.00	1.24	18.00	0.58	24.00	0.39

CALIB STANDHYD (0009) Area (ha) = 42.85  
 ID= 1 DT= 5.0 min Total Imp(%) = 68.00 Dir. Conn.(%) = 68.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 29.14 13.71  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 534.48 40.00  
 Mannings n = 0.013 0.250

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	0.40	6.083	1.36	12.083	1.20	18.08	0.57
0.167	0.40	6.167	1.36	12.167	1.20	18.17	0.57
0.250	0.41	6.250	1.48	12.250	1.16	18.25	0.56
0.333	0.41	6.333	1.48	12.333	1.16	18.33	0.56
0.417	0.42	6.417	1.62	12.417	1.13	18.42	0.56
0.500	0.42	6.500	1.62	12.500	1.13	18.50	0.56
0.583	0.43	6.583	1.80	12.583	1.09	18.58	0.55
0.667	0.43	6.667	1.80	12.667	1.09	18.67	0.55
0.750	0.43	6.750	2.03	12.750	1.06	18.75	0.54
0.833	0.43	6.833	2.03	12.833	1.06	18.83	0.54
0.917	0.44	6.917	2.34	12.917	1.03	18.92	0.54
1.000	0.44	7.000	2.34	13.000	1.03	19.00	0.54
1.083	0.45	7.083	2.77	13.083	1.00	19.08	0.53
1.167	0.45	7.167	2.77	13.167	1.00	19.17	0.53
1.250	0.46	7.250	3.42	13.250	0.98	19.25	0.52
1.333	0.46	7.333	3.42	13.333	0.98	19.33	0.52
1.417	0.47	7.417	4.54	13.417	0.95	19.42	0.52
1.500	0.47	7.500	4.54	13.500	0.95	19.50	0.52
1.583	0.48	7.583	7.00	13.583	0.93	19.58	0.51
1.667	0.48	7.667	7.00	13.667	0.93	19.67	0.51
1.750	0.49	7.750	17.37	13.750	0.91	19.75	0.51
1.833	0.49	7.833	17.37	13.833	0.91	19.83	0.51
1.917	0.50	7.917	82.18	13.917	0.89	19.92	0.50
2.000	0.50	8.000	82.18	14.000	0.89	20.00	0.50
2.083	0.51	8.083	23.02	14.083	0.87	20.08	0.49
2.167	0.51	8.167	23.02	14.167	0.87	20.17	0.49
2.250	0.53	8.250	11.75	14.250	0.85	20.25	0.49
2.333	0.53	8.333	11.75	14.333	0.85	20.33	0.49
2.417	0.54	8.417	7.96	14.417	0.83	20.42	0.48
2.500	0.54	8.500	7.96	14.500	0.83	20.50	0.48
2.583	0.55	8.583	6.07	14.583	0.81	20.58	0.48
2.667	0.55	8.667	6.07	14.667	0.81	20.67	0.48
2.750	0.57	8.750	4.93	14.750	0.79	20.75	0.47
2.833	0.57	8.833	4.93	14.833	0.79	20.83	0.47
2.917	0.58	8.917	4.17	14.917	0.78	20.92	0.47
3.000	0.58	9.000	4.17	15.000	0.78	21.00	0.47
3.083	0.60	9.083	3.63	15.083	0.76	21.08	0.46
3.167	0.60	9.167	3.63	15.167	0.76	21.17	0.46
3.250	0.62	9.250	3.22	15.250	0.75	21.25	0.46
3.333	0.62	9.333	3.22	15.333	0.75	21.33	0.46
3.417	0.64	9.417	2.90	15.417	0.74	21.42	0.45
3.500	0.64	9.500	2.90	15.500	0.74	21.50	0.45
3.583	0.66	9.583	2.64	15.583	0.72	21.58	0.45
3.667	0.66	9.667	2.64	15.667	0.72	21.67	0.45
3.750	0.68	9.750	2.43	15.750	0.71	21.75	0.44
3.833	0.68	9.833	2.43	15.833	0.71	21.83	0.44
3.917	0.70	9.917	2.25	15.917	0.70	21.92	0.44
4.000	0.70	10.000	2.25	16.000	0.70	22.00	0.44
4.083	0.73	10.083	2.10	16.083	0.69	22.08	0.44
4.167	0.73	10.167	2.10	16.167	0.69	22.17	0.44
4.250	0.76	10.250	1.97	16.250	0.67	22.25	0.43
4.333	0.76	10.333	1.97	16.333	0.67	22.33	0.43
4.417	0.79	10.417	1.86	16.417	0.66	22.42	0.43
4.500	0.79	10.500	1.86	16.500	0.66	22.50	0.43
4.583	0.82	10.583	1.76	16.583	0.65	22.58	0.42
4.667	0.82	10.667	1.76	16.667	0.65	22.67	0.42



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4.750	0.85	10.750	1.67	16.750	0.64	22.75	0.42
4.833	0.85	10.833	1.67	16.833	0.64	22.83	0.42
4.917	0.85	10.917	1.59	16.917	0.63	22.92	0.42
5.000	0.89	11.000	1.59	17.000	0.63	23.00	0.42
5.083	0.94	11.083	1.52	17.083	0.62	23.08	0.41
5.167	0.94	11.167	1.52	17.167	0.62	23.17	0.41
5.250	0.99	11.250	1.45	17.250	0.61	23.25	0.41
5.333	0.99	11.333	1.45	17.333	0.61	23.33	0.41
5.417	1.04	11.417	1.39	17.417	0.61	23.42	0.40
5.500	1.04	11.500	1.39	17.500	0.61	23.50	0.40
5.583	1.11	11.583	1.34	17.583	0.60	23.58	0.40
5.667	1.11	11.667	1.34	17.667	0.60	23.67	0.40
5.750	1.18	11.750	1.29	17.750	0.59	23.75	0.40
5.833	1.18	11.833	1.29	17.833	0.59	23.83	0.40
5.917	1.26	11.917	1.24	17.917	0.58	23.92	0.39
6.000	1.26	12.000	1.24	18.000	0.58	24.00	0.39

Max.Eff.Inten.(mm/hr)= 82.18 25.17  
 over (min)= 10.00 20.00  
 Storage Coeff. (min)= 7.55 (ii) 19.81 (ii)  
 Unit Hyd. Tpeak (min)= 10.00 20.00  
 Unit Hyd. peak (cms)= 0.13 0.06

\*TOTALS\*  
 PEAK FLOW (cms)= 4.54 0.51 4.871 (iii)  
 TIME TO PEAK (hrs)= 8.08 8.25 8.08  
 RUNOFF VOLUME (mm)= 47.69 20.86 39.10  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.43 0.80

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB NASHYD (0019)	Area (ha)= 1.83	Curve Number (CN)= 78.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.15	

Unit Hyd Qpeak (cms)= 0.466

PEAK FLOW (cms)= 0.077 (i)  
 TIME TO PEAK (hrs)= 8.083  
 RUNOFF VOLUME (mm)= 16.454  
 TOTAL RAINFALL (mm)= 48.688  
 RUNOFF COEFFICIENT = 0.338

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

CALIB STANDHYD (0011)	Area (ha)= 19.25	Dir. Conn.(%)= 92.00
ID= 1 DT= 5.0 min	Total Imp(%)= 92.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	17.71	1.54
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	358.24	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)=	5.00	10.00
Storage Coeff. (min)=	5.94 (ii)	8.82 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.19	0.12

\*TOTALS\*  
 PEAK FLOW (cms)= 3.43 0.10 3.511 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 47.69 21.63 45.60  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012)	Area (ha)= 1.17	Dir. Conn.(%)= 91.00
ID= 1 DT= 5.0 min	Total Imp(%)= 91.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.06	0.11
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)=	5.00	10.00
Storage Coeff. (min)=	2.56 (ii)	5.59 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.29	0.16

PEAK FLOW (cms)=	0.24	0.01	0.246 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	45.34
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.93

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018)	Area (ha)= 11.58	Dir. Conn.(%)= 53.00
ID= 1 DT= 5.0 min	Total Imp(%)= 53.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.14	5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	82.18	21.30
over (min)=	5.00	20.00
Storage Coeff. (min)=	5.10 (ii)	18.20 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.21	0.06

PEAK FLOW (cms)=	1.24	0.18	1.315 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	18.09	33.78
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.37	0.69

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB STANDHYD (0023)	Area (ha)= 4.36	Dir. Conn.(%)= 78.00
ID= 1 DT= 5.0 min	Total Imp(%)= 78.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	82.18	31.98
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.81 (ii)	8.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.12

PEAK FLOW (cms)=	0.73	0.06	0.780 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	41.78



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TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.43 0.86

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024) Area (ha) = 2.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.36 0.18  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 130.13 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 82.18 33.43  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 3.24 (ii) 5.95 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.27 0.15

\*TOTALS\*  
 PEAK FLOW (cms) = 0.52 0.01 0.531 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 47.69 21.63 45.86  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027) Area (ha) = 4.22  
 ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.62 1.60  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 167.73 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 82.18 20.46  
 over (min) = 5.00 20.00  
 Storage Coeff. (min) = 3.77 (ii) 17.08 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 20.00  
 Unit Hyd. peak (cms) = 0.25 0.06

\*TOTALS\*  
 PEAK FLOW (cms) = 0.56 0.05 0.585 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.25 8.00  
 RUNOFF VOLUME (mm) = 47.69 17.48 36.21  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.36 0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB STANDHYD (0028) Area (ha) = 6.40  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 5.95 0.45  
 Dep. Storage (mm) = 1.00 1.50

Average Slope (%) = 1.00 2.00  
 Length (m) = 206.56 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 82.18 33.43  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 4.27 (ii) 6.98 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.23 0.14

\*TOTALS\*  
 PEAK FLOW (cms) = 1.25 0.03 1.280 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 47.69 21.63 45.86  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0281) Area (ha) = 7.97  
 ID= 1 DT= 5.0 min Total Imp(%) = 88.00 Dir. Conn.(%) = 88.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 7.01 0.96  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 230.51 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 82.18 33.43  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 4.56 (ii) 8.00 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.23 0.13

\*TOTALS\*  
 PEAK FLOW (cms) = 1.46 0.06 1.509 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 47.69 21.63 44.56  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.92

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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 (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0011):	19.25	3.511	8.00	45.60
+ ID2= 2 (0012):	1.17	0.246	8.00	45.34
=====				
ID = 3 (0048):	20.42	3.757	8.00	45.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	20.42	3.757	8.00	45.59
+ ID2= 2 (0018):	11.58	1.315	8.00	33.78
=====				
ID = 1 (0048):	32.00	5.072	8.00	41.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	32.00	5.072	8.00	41.31
+ ID2= 2 (0019):	1.83	0.077	8.08	16.45
=====				
ID = 3 (0048):	33.83	5.137	8.00	39.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	33.83	5.137	8.00	39.97
+ ID2= 2 (0023):	4.36	0.780	8.00	41.78
=====				
ID = 1 (0048):	38.19	5.918	8.00	40.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	38.19	5.918	8.00	40.18
+ ID2= 2 (0024):	2.54	0.531	8.00	45.86
=====				
ID = 3 (0048):	40.73	6.448	8.00	40.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.73	6.448	8.00	40.53
+ ID2= 2 (0027):	4.22	0.585	8.00	36.21
=====				
ID = 1 (0048):	44.95	7.033	8.00	40.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.95	7.033	8.00	40.13
+ ID2= 2 (0028):	6.40	1.280	8.00	45.86
=====				
ID = 3 (0048):	51.35	8.313	8.00	40.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	51.35	8.313	8.00	40.84
+ ID2= 2 (0281):	7.97	1.509	8.00	44.56
=====				
ID = 1 (0048):	59.32	9.823	8.00	41.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)			
ID= 1 DT= 5.0 min			
Area (ha)	Imp (%)	Dir. Conn. (%)	
7.93	53.00	53.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.20	3.73
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	229.93	40.00

Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	82.18	26.28
Storage Coeff. (min)	=	4.55 (ii)	16.60 (ii)
Unit Hyd. Tpeak (min)	=	5.00	20.00
Unit Hyd. peak (cms)	=	0.23	0.06
PEAK FLOW (cms)	=	0.87	0.16
TIME TO PEAK (hrs)	=	8.00	8.25
RUNOFF VOLUME (mm)	=	47.69	21.63
TOTAL RAINFALL (mm)	=	48.69	48.69
RUNOFF COEFFICIENT	=	0.98	0.44

\*TOTALS\*  
0.940 (iii)  
8.00  
35.44  
48.69  
0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)		
ID= 1 DT= 5.0 min		
Area (ha)	Imp (%)	Dir. Conn. (%)
5.77	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.06	2.71
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	196.13	40.00
Mannings n	=	0.013

Max.Eff.Inten.(mm/hr)	=	82.18	25.17
Storage Coeff. (min)	=	4.14 (ii)	16.40 (ii)
Unit Hyd. Tpeak (min)	=	5.00	20.00
Unit Hyd. peak (cms)	=	0.24	0.06

PEAK FLOW (cms)	=	0.65	0.11
TIME TO PEAK (hrs)	=	8.00	8.25
RUNOFF VOLUME (mm)	=	47.69	20.86
TOTAL RAINFALL (mm)	=	48.69	48.69
RUNOFF COEFFICIENT	=	0.98	0.43

\*TOTALS\*  
0.694 (iii)  
8.00  
35.07  
48.69  
0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	7.93	0.940	8.00	35.44
+ ID2= 2 (0025):	5.77	0.694	8.00	35.07
=====				
ID = 3 (0049):	13.70	1.634	8.00	35.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0049):	13.70	1.634	8.00	35.29
+ ID2= 2 (0048):	59.32	9.823	8.00	41.34
=====				
ID = 1 (0049):	73.02	11.457	8.00	40.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0054)			
IN= 2---> OUT= 1			
DT= 5.0 min			
	OUTFLOW	STORAGE	OUTFLOW STORAGE





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	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	24.7000	0.3878
	11.4000	0.1791	28.2000	0.4425
	16.6000	0.2610	31.7000	0.4980
	20.0000	0.3146	0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0049)	73.020	11.457	8.00	40.20
OUTFLOW: ID= 1 (0054)	73.020	10.120	8.00	40.20
PEAK FLOW REDUCTION [Qout/Qin] (%)	= 88.33			
TIME SHIFT OF PEAK FLOW	(min) = 0.00			
MAXIMUM STORAGE USED	(ha.m.) = 0.1791			

Surface Area	(ha) =	4.13	0.36
Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	173.01	40.00
Mannings n	=	0.013	0.250
Max. Eff. Inten. (mm/hr)	=	82.18	33.43
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.84 (ii)	6.71 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.25	0.14
PEAK FLOW (cms)	=	0.89	0.02
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	47.69	21.63
TOTAL RAINFALL (mm)	=	48.69	48.69
RUNOFF COEFFICIENT	=	0.98	0.44

\*TOTALS\*  
0.909 (iii)  
8.00  
45.60  
48.69  
0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0013)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	29.43	82.00	82.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	24.13	5.30
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	442.94	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	82.18	33.43
over (min)	5.00	15.00
Storage Coeff. (min)	6.75 (ii)	10.91 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.18	0.09

\*TOTALS\*  
PEAK FLOW (cms) = 4.48 0.28 4.643 (iii)  
TIME TO PEAK (hrs) = 8.00 8.17 8.00  
RUNOFF VOLUME (mm) = 47.69 21.63 43.00  
TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
RUNOFF COEFFICIENT = 0.98 0.44 0.88

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.46	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.10	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	172.43	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min)	3.83 (ii)	6.71 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.25	0.14

\*TOTALS\*  
PEAK FLOW (cms) = 0.88 0.02 0.903 (iii)  
TIME TO PEAK (hrs) = 8.00 8.08 8.00  
RUNOFF VOLUME (mm) = 47.69 21.63 45.60  
TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
RUNOFF COEFFICIENT = 0.98 0.44 0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	69.17	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	61.56	7.61
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	679.07	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	82.18	33.43
over (min)	10.00	15.00
Storage Coeff. (min)	8.72 (ii)	12.03 (ii)
Unit Hyd. Tpeak (min)	10.00	15.00
Unit Hyd. peak (cms)	0.12	0.09

\*TOTALS\*  
PEAK FLOW (cms) = 9.19 0.39 9.534 (iii)  
TIME TO PEAK (hrs) = 8.08 8.17 8.08  
RUNOFF VOLUME (mm) = 47.69 21.63 44.82  
TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
RUNOFF COEFFICIENT = 0.98 0.44 0.92

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0013) :	29.43	4.643	8.00	43.00
+ ID2= 2 (0020) :	69.17	9.534	8.08	44.82
ID = 3 (0050) :	98.60	13.503	8.00	44.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0021)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.49	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0050) :	98.60	13.503	8.00	44.28
+ ID2= 2 (0021) :	4.49	0.909	8.00	45.60
ID = 1 (0050) :	103.09	14.411	8.00	44.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



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ADD HYD	(0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0050):	103.09	14.411	8.00	44.33	
+ ID2= 2 (0026):	4.46	0.903	8.00	45.60	
ID = 3 (0050):	107.55	15.314	8.00	44.39	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR	(0056)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2 --> OUT= 1	DT= 5.0 min	(cms)	(ha.m.)	(cms)	(ha.m.)
		0.0000	0.0000	18.6000	2.2032
		7.5000	1.1345	21.2000	2.4486
		11.1000	1.5984	23.8000	2.6934
		14.8000	1.8604	0.0000	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0050)	107.550	15.314	8.00	44.39
OUTFLOW: ID= 1 (0056)	107.550	7.479	8.25	44.39

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.84  
 TIME SHIFT OF PEAK FLOW (min) = 15.00  
 MAXIMUM STORAGE USED (ha.m.) = 1.1345

CALIB	NASHYD	(0015)	Area	(ha)	2.31	Curve Number	(CN) = 80.0
ID= 1	DT= 5.0 min	U.H. Tp	(hrs)	5.00	# of Linear Res.	(N) = 3.00	

Unit Hyd Qpeak (cms) = 0.368  
 PEAK FLOW (cms) = 0.080 (i)  
 TIME TO PEAK (hrs) = 8.167  
 RUNOFF VOLUME (mm) = 17.790  
 TOTAL RAINFALL (mm) = 48.688  
 RUNOFF COEFFICIENT = 0.365

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

CALIB	STANDHYD	(0003)	Area	(ha)	8.96	Total Imp (%)	46.00	Dir. Conn. (%)	46.00
ID= 1	DT= 5.0 min								

Surface Area (ha) = 4.12 IMPERVIOUS 4.84 PERVIOUS (i)  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 244.40 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 82.18 23.12  
 over (min) = 5.00 20.00  
 Storage Coeff. (min) = 4.72 (ii) 17.40 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 20.00  
 Unit Hyd. peak (cms) = 0.22 0.06

PEAK FLOW (cms) = 0.85 0.18 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.25 0.923 (iii)  
 RUNOFF VOLUME (mm) = 47.69 19.41 32.42  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.40 0.67

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 79.0 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.

CALIB	STANDHYD	(0004)	Area	(ha)	11.16
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ID= 1 DT= 5.0 min | Total Imp (%) = 86.00 Dir. Conn. (%) = 86.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 9.60 1.56  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 272.76 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 82.18 33.43  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 5.05 (ii) 8.74 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.21 0.12

\*TOTALS\*  
 PEAK FLOW (cms) = 1.95 0.10 2.029 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 47.69 21.63 44.04  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0005) | Area (ha) = 14.33 | Total Imp (%) = 93.00 | Dir. Conn. (%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 13.33 1.00  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 309.08 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 82.18 33.43  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 5.44 (ii) 8.15 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.20 0.13

PEAK FLOW (cms) = 2.65 0.06 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 47.69 21.63 45.86  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0016) | Area (ha) = 11.78 | Total Imp (%) = 92.00 | Dir. Conn. (%) = 92.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 10.84 0.94  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 280.24 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 82.18 33.43  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 5.13 (ii) 8.00 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.21 0.13

PEAK FLOW (cms) = 2.19 0.06 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 47.69 21.63 45.60  
 TOTAL RAINFALL (mm) = 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.94



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- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0017)  
ID= 1 DT= 5.0 min

Area (ha)=	9.75
Total Imp(%)=	52.00
Dir. Conn.(%)=	52.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	5.07	4.68	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	254.95	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	25.17	
over (min)	5.00	20.00	
Storage Coeff. (min)=	4.85 (ii)	17.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.22	0.06	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.04	0.19	1.117 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	34.81
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0022)  
ID= 1 DT= 5.0 min

Area (ha)=	13.54
Total Imp(%)=	53.00
Dir. Conn.(%)=	53.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	7.18	6.36	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	300.44	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	26.28	
over (min)	5.00	20.00	
Storage Coeff. (min)=	5.35 (ii)	17.39 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.21	0.06	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.43	0.26	1.544 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	35.44
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.73

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0029)  
ID= 1 DT= 5.0 min

Area (ha)=	37.35
Total Imp(%)=	73.00
Dir. Conn.(%)=	73.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	27.27	10.08	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	499.00	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	25.17	
over (min)	5.00	20.00	

Storage Coeff. (min)=	7.25 (ii)	19.51 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.17	0.06	

PEAK FLOW (cms)=	4.94	0.38	5.091 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	40.44
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.83

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0061)  
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	1.117	8.00	34.81
+ ID2= 2 (0022):	13.54	1.544	8.00	35.44
=====				
ID = 3 (0061):	23.29	2.661	8.00	35.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)  
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0061):	23.29	2.661	8.00	35.18
+ ID2= 2 (0029):	37.35	5.091	8.00	40.44
=====				
ID = 1 (0061):	60.64	7.753	8.00	38.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)  
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	2.241	8.00	45.60
+ ID2= 2 (0004):	11.16	2.029	8.00	44.04
=====				
ID = 3 (0032):	22.94	4.270	8.00	44.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)  
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.94	4.270	8.00	44.84
+ ID2= 2 (0005):	14.33	2.705	8.00	45.86
=====				
ID = 1 (0032):	37.27	6.974	8.00	45.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)  
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0032):	37.27	6.974	8.00	45.24
+ ID2= 2 (0061):	60.64	7.753	8.00	38.42
=====				
ID = 3 (0032):	97.91	14.727	8.00	41.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
STANDHYD (0030) Area (ha)= 9.95



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ID= 1 DT= 5.0 min | Total Imp(%)= 66.00 Dir. Conn.(%)= 66.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.57	3.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	25.17
over (min)=	5.00	20.00
Storage Coeff.(min)=	4.87 (ii)	17.13 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.22	0.06
PEAK FLOW (cms)=	1.34	0.14
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	20.86
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43

\*TOTALS\*  
1.400 (iii)  
8.00  
38.56  
48.69  
0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) | Area (ha)= 2.18 | Total Imp(%)= 39.00 | Dir. Conn.(%)= 39.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	24.12
over (min)=	5.00	20.00
Storage Coeff.(min)=	3.09 (ii)	15.56 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.27	0.07
PEAK FLOW (cms)=	0.19	0.05
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	20.12
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.41

\*TOTALS\*  
0.210 (iii)  
8.00  
30.87  
48.69  
0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.080	8.17	17.79
+ ID2= 2 (0002):	2.18	0.210	8.00	30.87
ID = 3 (2701):	4.49	0.256	8.00	24.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.256	8.00	24.14
+ ID2= 2 (0003):	8.96	0.923	8.00	32.42
ID = 1 (2701):	13.45	1.179	8.00	29.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	1.179	8.00	29.65
+ ID2= 2 (0030):	9.95	1.400	8.00	38.56
ID = 3 (2701):	23.40	2.579	8.00	33.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	2.579	8.00	33.44
+ ID2= 2 (0032):	97.91	14.727	8.00	41.01
ID = 1 (2701):	121.31	17.305	8.00	39.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) | Area (ha)= 9.72 | Total Imp(%)= 46.00 | Dir. Conn.(%)= 46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	25.17
over (min)=	5.00	20.00
Storage Coeff.(min)=	4.84 (ii)	17.10 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.22	0.06
PEAK FLOW (cms)=	0.92	0.21
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	20.86
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43

\*TOTALS\*  
1.004 (iii)  
8.00  
33.20  
48.69  
0.68

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	1.004	8.00	33.20
+ ID2= 2 (2701):	121.31	17.305	8.00	39.55
ID = 3 (0222):	131.03	18.310	8.00	39.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) | Area (ha)= 34.81 | Total Imp(%)= 89.00 | Dir. Conn.(%)= 89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	30.98	3.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	481.73	40.00
Mannings n =	0.013	0.250



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Max. Eff. Inten. (mm/hr)=	82.18	33.43	
over (min)	5.00	15.00	
Storage Coeff. (min)=	7.10 (ii)	10.41 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.17	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	5.65	0.21	5.770 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	44.82
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.92

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)=	9.32	
ID= 1 DT= 5.0 min	Total Imp(\$)=	88.00	Dir. Conn.(\$)= 88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.20	1.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	249.27	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.78 (ii)	8.22 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.22	0.13	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.69	0.07	1.746 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	44.56
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.92

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0006):	34.81	5.770	8.00	44.82
+ ID2= 2 (0007):	9.32	1.746	8.00	44.56
=====				
ID = 3 (0282):	44.13	7.517	8.00	44.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052)	Area (ha)=	9.98	
ID= 1 DT= 5.0 min	Total Imp(\$)=	90.00	Dir. Conn.(\$)= 90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.98	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.94	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.88 (ii)	8.05 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.22	0.13	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.84	0.06	1.892 (iii)

TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	45.08
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.93

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0053)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0282):	44.13	7.517	8.00	44.77
+ ID2= 2 (0052):	9.98	1.892	8.00	45.08
=====				
ID = 3 (0053):	54.11	9.408	8.00	44.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)=	4.99	
ID= 1 DT= 5.0 min	Total Imp(\$)=	53.00	Dir. Conn.(\$)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	82.18	24.12	
over (min)	5.00	20.00	
Storage Coeff. (min)=	3.96 (ii)	16.43 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.24	0.06	

PEAK FLOW (cms)=	0.57	0.09	<b>*TOTALS*</b>
TIME TO PEAK (hrs)=	8.00	8.25	0.603 (iii)
RUNOFF VOLUME (mm)=	47.69	20.12	8.00
TOTAL RAINFALL (mm)=	48.69	48.69	34.73
RUNOFF COEFFICIENT =	0.98	0.41	48.69
			0.71

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 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 (0239)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0031):	4.99	0.603	8.00	34.73
+ ID2= 2 (0053):	54.11	9.408	8.00	44.82
=====				
ID = 3 (0239):	59.10	10.012	8.00	43.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)=	5.73	
ID= 1 DT= 5.0 min	Total Imp(\$)=	50.00	Dir. Conn.(\$)= 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	82.18	25.17
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over (min) 5.00 20.00  
 Storage Coeff. (min)= 4.13 (ii) 16.39 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 20.00  
 Unit Hyd. peak (cms)= 0.24 0.06

\*TOTALS\*  
 0.656 (iii)  
 PEAK FLOW (cms)= 0.61 0.12  
 TIME TO PEAK (hrs)= 8.00 8.25  
 RUNOFF VOLUME (mm)= 47.69 20.86 34.27  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.43 0.70

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB  
 STANDHYD (0014) Area (ha)= 1.88  
 ID= 1 DT= 5.0 min Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 1.05 0.83  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 111.95 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 82.18 26.28  
 over (min)= 5.00 20.00  
 Storage Coeff.(min)= 2.96 (ii) 15.00 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 20.00  
 Unit Hyd. peak (cms)= 0.28 0.07

\*TOTALS\*  
 0.249 (iii)  
 PEAK FLOW (cms)= 0.23 0.04  
 TIME TO PEAK (hrs)= 8.00 8.25  
 RUNOFF VOLUME (mm)= 47.69 21.63 36.22  
 TOTAL RAINFALL (mm)= 48.69 48.69 48.69  
 RUNOFF COEFFICIENT = 0.98 0.44 0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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 (0217)  
 1 + 2 = 3  
 ID1= 1 (0014): 1.88 0.249 8.00 36.22  
 + ID2= 2 (0239): 59.10 10.012 8.00 43.97  
 ID = 3 (0217): 60.98 10.261 8.00 43.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)  
 3 + 2 = 1  
 ID1= 3 (0217): 60.98 10.261 8.00 43.73  
 + ID2= 2 (0008): 5.73 0.656 8.00 34.27  
 ID = 1 (0217): 66.71 10.917 8.00 42.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)  
 1 + 2 = 3  
 ID1= 1 (0217): 66.71 10.917 8.00 42.92  
 + ID2= 2 (0222): 131.03 18.310 8.00 39.08

ID = 3 (0051): 197.74 29.227 8.00 40.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0057)	IN= 2--> OUT= 1	DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	23.5000	4.5011
			11.2000	2.0777	27.4000	5.0376
			14.6000	3.0936	31.5000	5.5552
			18.2000	3.7229	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	197.740	29.227	8.00	40.38
OUTFLOW: ID= 1 (0057)	197.740	11.120	8.25	40.38

PEAK FLOW REDUCTION [Qout/Qin](%)= 38.05  
 TIME SHIFT OF PEAK FLOW (min)= 15.00  
 MAXIMUM STORAGE USED (ha.m.)= 2.0777

\*\* SIMULATION NUMBER: 2 \*\*

CHICAGO STORM IDF curve parameters: A=1170.000  
 Ptotal= 60.87 mm B= 5.800  
 C= 0.843  
 used in: INTENSITY= A / (t + B)^C

Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.42	6.17	1.51	12.17	1.32	18.17	0.60
0.33	0.42	6.33	1.65	12.33	1.27	18.33	0.59
0.50	0.43	6.50	1.82	12.50	1.23	18.50	0.58
0.67	0.44	6.67	2.04	12.67	1.19	18.67	0.58
0.83	0.45	6.83	2.32	12.83	1.16	18.83	0.57
1.00	0.46	7.00	2.70	13.00	1.12	19.00	0.56
1.17	0.47	7.17	3.24	13.17	1.09	19.17	0.55
1.33	0.48	7.33	4.08	13.33	1.06	19.33	0.55
1.50	0.49	7.50	5.57	13.50	1.03	19.50	0.54
1.67	0.50	7.67	8.96	13.67	1.00	19.67	0.53
1.83	0.51	7.83	24.01	13.83	0.98	19.83	0.53
2.00	0.52	8.00	114.21	14.00	0.95	20.00	0.52
2.17	0.54	8.17	32.30	14.17	0.93	20.17	0.51
2.33	0.55	8.33	15.74	14.33	0.91	20.33	0.51
2.50	0.56	8.50	10.30	14.50	0.89	20.50	0.50
2.67	0.58	8.67	7.65	14.67	0.87	20.67	0.50
2.83	0.60	8.83	6.09	14.83	0.85	20.83	0.49
3.00	0.61	9.00	5.07	15.00	0.83	21.00	0.49
3.17	0.63	9.17	4.35	15.17	0.82	21.17	0.48
3.33	0.65	9.33	3.82	15.33	0.80	21.33	0.48
3.50	0.67	9.50	3.41	15.50	0.78	21.50	0.47
3.67	0.70	9.67	3.08	15.67	0.77	21.67	0.47
3.83	0.72	9.83	2.81	15.83	0.75	21.83	0.46
4.00	0.75	10.00	2.59	16.00	0.74	22.00	0.46
4.17	0.78	10.17	2.40	16.17	0.73	22.17	0.45
4.33	0.81	10.33	2.24	16.33	0.71	22.33	0.45
4.50	0.84	10.50	2.10	16.50	0.70	22.50	0.44
4.67	0.88	10.67	1.98	16.67	0.69	22.67	0.44
4.83	0.92	10.83	1.87	16.83	0.68	22.83	0.43
5.00	0.96	11.00	1.78	17.00	0.67	23.00	0.43
5.17	1.01	11.17	1.69	17.17	0.66	23.17	0.43
5.33	1.07	11.33	1.61	17.33	0.65	23.33	0.42
5.50	1.14	11.50	1.54	17.50	0.64	23.50	0.42
5.67	1.21	11.67	1.48	17.67	0.63	23.67	0.41
5.83	1.29	11.83	1.42	17.83	0.62	23.83	0.41
6.00	1.39	12.00	1.37	18.00	0.61	24.00	0.41

CALIB  
 STANDHYD (0009) Area (ha)= 42.85  
 ID= 1 DT= 5.0 min Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00



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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	29.14	13.71
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	534.48	40.00
Mannings n =	0.013	0.250

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	0.42	6.083	1.51	12.083	1.32	18.08	0.60
0.167	0.42	6.167	1.51	12.167	1.32	18.17	0.60
0.250	0.42	6.250	1.65	12.250	1.27	18.25	0.59
0.333	0.42	6.333	1.65	12.333	1.27	18.33	0.59
0.417	0.43	6.417	1.82	12.417	1.23	18.42	0.58
0.500	0.43	6.500	1.82	12.500	1.23	18.50	0.58
0.583	0.44	6.583	2.04	12.583	1.19	18.58	0.58
0.667	0.44	6.667	2.04	12.667	1.19	18.67	0.58
0.750	0.45	6.750	2.32	12.750	1.16	18.75	0.57
0.833	0.45	6.833	2.32	12.833	1.16	18.83	0.57
0.917	0.46	6.917	2.70	12.917	1.12	18.92	0.56
1.000	0.46	7.000	2.70	13.000	1.12	19.00	0.56
1.083	0.47	7.083	3.24	13.083	1.09	19.08	0.55
1.167	0.47	7.167	3.24	13.167	1.09	19.17	0.55
1.250	0.48	7.250	4.08	13.250	1.06	19.25	0.55
1.333	0.48	7.333	4.08	13.333	1.06	19.33	0.55
1.417	0.49	7.417	5.57	13.417	1.03	19.42	0.54
1.500	0.49	7.500	5.57	13.500	1.03	19.50	0.54
1.583	0.50	7.583	8.96	13.583	1.00	19.58	0.53
1.667	0.50	7.667	8.96	13.667	1.00	19.67	0.53
1.750	0.51	7.750	24.01	13.750	0.98	19.75	0.53
1.833	0.51	7.833	24.01	13.833	0.98	19.83	0.53
1.917	0.52	7.917	114.21	13.917	0.95	19.92	0.52
2.000	0.52	8.000	114.21	14.000	0.95	20.00	0.52
2.083	0.54	8.083	32.30	14.083	0.93	20.08	0.51
2.167	0.54	8.167	32.30	14.167	0.93	20.17	0.51
2.250	0.55	8.250	15.74	14.250	0.91	20.25	0.51
2.333	0.55	8.333	15.74	14.333	0.91	20.33	0.51
2.417	0.56	8.417	10.30	14.417	0.89	20.42	0.50
2.500	0.56	8.500	10.30	14.500	0.89	20.50	0.50
2.583	0.58	8.583	7.65	14.583	0.87	20.58	0.50
2.667	0.58	8.667	7.65	14.667	0.87	20.67	0.50
2.750	0.60	8.750	6.09	14.750	0.85	20.75	0.49
2.833	0.60	8.833	6.09	14.833	0.85	20.83	0.49
2.917	0.61	8.917	5.07	14.917	0.83	20.92	0.49
3.000	0.61	9.000	5.07	15.000	0.83	21.00	0.49
3.083	0.63	9.083	4.35	15.083	0.82	21.08	0.48
3.167	0.63	9.167	4.35	15.167	0.82	21.17	0.48
3.250	0.65	9.250	3.82	15.250	0.80	21.25	0.48
3.333	0.65	9.333	3.82	15.333	0.80	21.33	0.48
3.417	0.67	9.417	3.41	15.417	0.78	21.42	0.47
3.500	0.67	9.500	3.41	15.500	0.78	21.50	0.47
3.583	0.70	9.583	3.08	15.583	0.77	21.58	0.47
3.667	0.70	9.667	3.08	15.667	0.77	21.67	0.47
3.750	0.72	9.750	2.81	15.750	0.75	21.75	0.46
3.833	0.72	9.833	2.81	15.833	0.75	21.83	0.46
3.917	0.75	9.917	2.59	15.917	0.74	21.92	0.46
4.000	0.75	10.000	2.59	16.000	0.74	22.00	0.46
4.083	0.78	10.083	2.40	16.083	0.73	22.08	0.45
4.167	0.78	10.167	2.40	16.167	0.73	22.17	0.45
4.250	0.81	10.250	2.24	16.250	0.71	22.25	0.45
4.333	0.81	10.333	2.24	16.333	0.71	22.33	0.45
4.417	0.84	10.417	2.10	16.417	0.70	22.42	0.44
4.500	0.84	10.500	2.10	16.500	0.70	22.50	0.44
4.583	0.88	10.583	1.98	16.583	0.69	22.58	0.44
4.667	0.88	10.667	1.98	16.667	0.69	22.67	0.44
4.750	0.92	10.750	1.87	16.750	0.68	22.75	0.43
4.833	0.92	10.833	1.87	16.833	0.68	22.83	0.43
4.917	0.96	10.917	1.78	16.917	0.67	22.92	0.43
5.000	0.96	11.000	1.78	17.000	0.67	23.00	0.43
5.083	1.01	11.083	1.69	17.083	0.66	23.08	0.43
5.167	1.01	11.167	1.69	17.167	0.66	23.17	0.43
5.250	1.07	11.250	1.61	17.250	0.65	23.25	0.42
5.333	1.07	11.333	1.61	17.333	0.65	23.33	0.42
5.417	1.14	11.417	1.54	17.417	0.64	23.42	0.42
5.500	1.14	11.500	1.54	17.500	0.64	23.50	0.42
5.583	1.21	11.583	1.48	17.583	0.63	23.58	0.41
5.667	1.21	11.667	1.48	17.667	0.63	23.67	0.41
5.750	1.29	11.750	1.42	17.750	0.62	23.75	0.41
5.833	1.29	11.833	1.42	17.833	0.62	23.83	0.41
5.917	1.39	11.917	1.37	17.917	0.61	23.92	0.41
6.000	1.39	12.000	1.37	18.000	0.61	24.00	0.41

Max. Eff. Inten. (mm/hr) =	114.21	52.31	
over (min) =	5.00	15.00	
Storage Coeff. (min) =	6.62 (ii)	11.57 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms) =	0.18	0.09	
*TOTALS*			
PEAK FLOW (cms) =	7.57	1.12	8.189 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	59.87	29.63	50.20
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.82

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB NASHYD (0019)			
Area (ha) =	1.83	Curve Number (CN) =	78.0
Ia (mm) =	5.00	# of Linear Res. (N) =	3.00
U.H. Tp (hrs) =	0.15		

Unit Hyd Opeak (cms) = 0.466

PEAK FLOW (cms) =	0.134 (i)
TIME TO PEAK (hrs) =	8.083
RUNOFF VOLUME (mm) =	24.340
TOTAL RAINFALL (mm) =	60.873
RUNOFF COEFFICIENT =	0.400

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

CALIB STANDHYD (0011)			
Area (ha) =	19.25	Dir. Conn. (%) =	92.00
Total Imp (%) =	92.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	17.71	1.54
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	358.24	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	54.45
over (min) =	5.00	10.00
Storage Coeff. (min) =	5.21 (ii)	7.73 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.21	0.13

*TOTALS*			
PEAK FLOW (cms) =	4.95	0.16	5.090 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	59.87	30.62	57.53
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012)			
Area (ha) =	1.17	Dir. Conn. (%) =	91.00
Total Imp (%) =	91.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	1.06	0.11
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	88.32	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr) =	114.21	54.45
over (min) =	5.00	5.00
Storage Coeff. (min) =	2.25 (ii)	4.90 (ii)
Unit Hyd. Tpeak (min) =	5.00	5.00
Unit Hyd. peak (cms) =	0.30	0.22



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PEAK FLOW (cms) = 0.33 0.01 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.00 0.350 (iii)  
 RUNOFF VOLUME (mm) = 59.87 30.62 57.24  
 TOTAL RAINFALL (mm) = 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
 STANDHYD (0018)  
 ID= 1 DT= 5.0 min Area (ha) = 11.58  
 Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 6.14 5.44  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 277.85 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 114.21 44.79  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 4.47 (ii) 14.20 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.23 0.08

PEAK FLOW (cms) = 1.78 0.35 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00 (iii)  
 RUNOFF VOLUME (mm) = 59.87 26.06 43.98  
 TOTAL RAINFALL (mm) = 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.43 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB  
 STANDHYD (0023)  
 ID= 1 DT= 5.0 min Area (ha) = 4.36  
 Total Imp(%) = 78.00 Dir. Conn.(%) = 78.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 3.40 0.96  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 170.49 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 114.21 52.31  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 3.34 (ii) 7.37 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.26 0.13

PEAK FLOW (cms) = 1.04 0.10 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 1.121 (iii)  
 RUNOFF VOLUME (mm) = 59.87 29.63 53.22  
 TOTAL RAINFALL (mm) = 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.49 0.87

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
 STANDHYD (0024)  
 ID= 1 DT= 5.0 min Area (ha) = 2.54  
 Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.36 0.18  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 130.13 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 114.21 54.45  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 2.84 (ii) 5.22 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.28 0.16

PEAK FLOW (cms) = 0.73 0.02 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 0.751 (iii)  
 RUNOFF VOLUME (mm) = 59.87 30.62 57.82  
 TOTAL RAINFALL (mm) = 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
 STANDHYD (0027)  
 ID= 1 DT= 5.0 min Area (ha) = 4.22  
 Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.62 1.60  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 167.73 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 114.21 43.13  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 3.30 (ii) 13.18 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.27 0.08

PEAK FLOW (cms) = 0.80 0.10 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00 (iii)  
 RUNOFF VOLUME (mm) = 59.87 25.25 46.72  
 TOTAL RAINFALL (mm) = 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.41 0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB  
 STANDHYD (0028)  
 ID= 1 DT= 5.0 min Area (ha) = 6.40  
 Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 5.95 0.45  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 206.56 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr) = 114.21 54.45  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 3.74 (ii) 6.12 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.25 0.15

PEAK FLOW (cms) = 1.78 0.05 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 1.829 (iii)  
 RUNOFF VOLUME (mm) = 59.87 30.62 57.82  
 TOTAL RAINFALL (mm) = 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.95





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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0281) ID= 1 DT= 5.0 min	Area (ha) = 7.97 Total Imp(%) = 88.00	Dir. Conn.(%) = 88.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	7.01	0.96
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	230.51	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	114.21	54.45
over (min) =	5.00	10.00
Storage Coeff. (min) =	4.00 (ii)	7.01 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.24	0.14
PEAK FLOW (cms) =	2.08	0.11
TIME TO PEAK (hrs) =	8.00	8.00
RUNOFF VOLUME (mm) =	59.87	30.62
TOTAL RAINFALL (mm) =	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50

\*TOTALS\*  
2.169 (iii)  
8.00  
56.36  
60.87  
0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	19.25	5.090	8.00	57.53
+ ID2= 2 (0012):	1.17	0.350	8.00	57.24
ID = 3 (0048):	20.42	5.440	8.00	57.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	20.42	5.440	8.00	57.52
+ ID2= 2 (0018):	11.58	1.966	8.00	43.98
ID = 1 (0048):	32.00	7.405	8.00	52.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	32.00	7.405	8.00	52.62
+ ID2= 2 (0019):	1.83	0.134	8.08	24.34
ID = 3 (0048):	33.83	7.520	8.00	51.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
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ID1= 3 (0048):	33.83	7.520	8.00	51.09
+ ID2= 2 (0023):	4.36	1.121	8.00	53.22
ID = 1 (0048):	38.19	8.640	8.00	51.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	38.19	8.640	8.00	51.33
+ ID2= 2 (0024):	2.54	0.751	8.00	57.82
ID = 3 (0048):	40.73	9.391	8.00	51.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.73	9.391	8.00	51.74
+ ID2= 2 (0027):	4.22	0.853	8.00	46.72
ID = 1 (0048):	44.95	10.244	8.00	51.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.95	10.244	8.00	51.27
+ ID2= 2 (0028):	6.40	1.829	8.00	57.82
ID = 3 (0048):	51.35	12.073	8.00	52.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	51.35	12.073	8.00	52.08
+ ID2= 2 (0281):	7.97	2.169	8.00	56.36
ID = 1 (0048):	59.32	14.242	8.00	52.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010) ID= 1 DT= 5.0 min	Area (ha) = 7.93 Total Imp(%) = 53.00	Dir. Conn.(%) = 53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.20	3.73
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	229.93	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	114.21	54.45
over (min) =	5.00	15.00
Storage Coeff. (min) =	3.99 (ii)	12.99 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.24	0.08
PEAK FLOW (cms) =	1.25	0.30
TIME TO PEAK (hrs) =	8.00	8.17
RUNOFF VOLUME (mm) =	59.87	30.62
TOTAL RAINFALL (mm) =	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50

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



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- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025) ID= 1 DT= 5.0 min	Area (ha)= 5.77 Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	3.06	2.71	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	196.13	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	52.31	
over (min)=	5.00	15.00	
Storage Coeff. (min)=	3.63 (ii)	12.77 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.08	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	0.92	0.21	1.037 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	29.63	45.66
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.75

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 (0049) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	7.93	1.412	8.00	46.12
+ ID2= 2 (0025):	5.77	1.037	8.00	45.66
=====				
ID = 3 (0049):	13.70	2.449	8.00	45.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0049):	13.70	2.449	8.00	45.93
+ ID2= 2 (0048):	59.32	14.242	8.00	52.66
=====				
ID = 1 (0049):	73.02	16.691	8.00	51.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0054) IN= 2----> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	24.7000	0.3878
	11.4000	0.1791	28.2000	0.4425
	16.6000	0.2610	31.7000	0.4980
	20.0000	0.3146	0.0000	0.0000
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	73.020	16.691	8.00	51.40
OUTFLOW: ID= 1 (0054)	73.020	14.838	8.00	51.40
	PEAK FLOW REDUCTION [Qout/Qin] (%)=	88.90		
	TIME SHIFT OF PEAK FLOW (min)=	0.00		
	MAXIMUM STORAGE USED (ha.m.)=	0.2610		

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha)= 29.43 Total Imp(%)= 82.00 Dir. Conn.(%)= 82.00
---	---

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	24.13	5.30	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	442.94	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	5.92 (ii)	9.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.11	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	6.50	0.52	6.931 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	54.61
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.90

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha)= 69.17 Total Imp(%)= 89.00 Dir. Conn.(%)= 89.00
---	---

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	61.56	7.61	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	679.07	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)=	10.00	15.00	
Storage Coeff. (min)=	7.65 (ii)	10.55 (ii)	
Unit Hyd. Tpeak (min)=	10.00	15.00	
Unit Hyd. peak (cms)=	0.13	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	13.29	0.67	13.890 (iii)
TIME TO PEAK (hrs)=	8.08	8.17	8.08
RUNOFF VOLUME (mm)=	59.87	30.62	56.65
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.93

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha)= 4.49 Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00
---	--

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	4.13	0.36	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	173.01	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	114.21	54.45	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	3.37 (ii)	5.89 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.15	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.26	0.04	1.294 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	57.53
TOTAL RAINFALL (mm)=	60.87	60.87	60.87



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RUNOFF COEFFICIENT = 0.98 0.50 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026)  
ID= 1 DT= 5.0 min

Area (ha) =	4.46
Total Imp(%) =	92.00
Dir. Conn.(%) =	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.10	0.36
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	172.43	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr) =	114.21	54.45
over (min) =	5.00	10.00
Storage Coeff. (min) =	3.36 (ii)	5.88 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.26	0.15
	*TOTALS*	
PEAK FLOW (cms) =	1.25	0.04
TIME TO PEAK (hrs) =	8.00	8.00
RUNOFF VOLUME (mm) =	59.87	30.62
TOTAL RAINFALL (mm) =	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	29.43	6.931	8.00	54.61
+ ID2= 2 (0020):	69.17	13.890	8.08	56.65
=====				
ID = 3 (0050):	98.60	20.058	8.00	56.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0050):	98.60	20.058	8.00	56.04
+ ID2= 2 (0021):	4.49	1.294	8.00	57.53
=====				
ID = 1 (0050):	103.09	21.352	8.00	56.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0050):	103.09	21.352	8.00	56.11
+ ID2= 2 (0026):	4.46	1.285	8.00	57.53
=====				
ID = 3 (0050):	107.55	22.637	8.00	56.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0056)  
IN= 2---> OUT= 1

DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0050)	107.550	22.637	8.00	56.17
OUTFLOW: ID= 1 (0056)	107.550	11.023	8.25	56.17
	PEAK FLOW REDUCTION [Qout/Qin] (%) =	48.70		
	TIME SHIFT OF PEAK FLOW (min) =	15.00		
	MAXIMUM STORAGE USED (ha.m.) =	1.5984		

CALIB NASHYD (0015)  
ID= 1 DT= 5.0 min

Area (ha) =	2.31
Ia (mm) =	5.00
U.H. Tp (hrs) =	0.24
Curve Number (CN) =	80.0
# of Linear Res. (N) =	3.00

Unit Hyd Qpeak (cms) =	0.368
PEAK FLOW (cms) =	0.138 (i)
TIME TO PEAK (hrs) =	8.167
RUNOFF VOLUME (mm) =	26.127
TOTAL RAINFALL (mm) =	60.873
RUNOFF COEFFICIENT =	0.429

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

CALIB STANDHYD (0003)  
ID= 1 DT= 5.0 min

Area (ha) =	8.96
Total Imp(%) =	46.00
Dir. Conn.(%) =	46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.12	4.84
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	244.40	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr) =	114.21	48.36
over (min) =	5.00	15.00
Storage Coeff. (min) =	4.14 (ii)	13.58 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.24	0.08

	*TOTALS*	
PEAK FLOW (cms) =	1.21	0.34
TIME TO PEAK (hrs) =	8.00	8.17
RUNOFF VOLUME (mm) =	59.87	27.78
TOTAL RAINFALL (mm) =	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.46

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0004)  
ID= 1 DT= 5.0 min

Area (ha) =	11.16
Total Imp(%) =	86.00
Dir. Conn.(%) =	86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	9.60	1.56
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	272.76	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr) =	114.21	54.45
over (min) =	5.00	10.00
Storage Coeff. (min) =	4.42 (ii)	7.66 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.23	0.13

	*TOTALS*	
PEAK FLOW (cms) =	2.79	0.17
		2.931 (iii)



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TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 59.87 30.62 55.78  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.92

Surface Area (ha)= 5.07 4.68  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 254.95 40.00  
 Mannings n = 0.013 0.250

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

Max. Eff. Inten. (mm/hr)= 114.21 52.31  
 over (min)= 5.00 15.00  
 Storage Coeff. (min)= 4.25 (ii) 13.39 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.24 0.08

PEAK FLOW (cms)= 1.49 0.36 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 59.87 29.63 45.36  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.49 0.75

CALIB STANDHYD (0005) Area (ha)= 14.33  
 ID= 1 DT= 5.0 min Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

IMPERVIOUS PVIOUS (i)  
 Surface Area (ha)= 13.33 1.00  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 309.08 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 114.21 54.45  
 over (min)= 5.00 10.00  
 Storage Coeff. (min)= 4.77 (ii) 7.15 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.22 0.14

PEAK FLOW (cms)= 3.81 0.11 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.08 3.903 (iii)  
 RUNOFF VOLUME (mm)= 59.87 30.62 8.00  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.95

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0022) Area (ha)= 13.54  
 ID= 1 DT= 5.0 min Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

IMPERVIOUS PVIOUS (i)  
 Surface Area (ha)= 7.18 6.36  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 300.44 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 114.21 54.45  
 over (min)= 5.00 15.00  
 Storage Coeff. (min)= 4.69 (ii) 13.69 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.22 0.08

PEAK FLOW (cms)= 2.06 0.50 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 59.87 30.62 46.12  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.76

CALIB STANDHYD (0016) Area (ha)= 11.78  
 ID= 1 DT= 5.0 min Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

IMPERVIOUS PVIOUS (i)  
 Surface Area (ha)= 10.84 0.94  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 280.24 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 114.21 54.45  
 over (min)= 5.00 10.00  
 Storage Coeff. (min)= 4.50 (ii) 7.01 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.23 0.14

PEAK FLOW (cms)= 3.14 0.10 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.08 3.228 (iii)  
 RUNOFF VOLUME (mm)= 59.87 30.62 57.53  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.95

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0029) Area (ha)= 37.35  
 ID= 1 DT= 5.0 min Total Imp(%)= 73.00 Dir. Conn.(%)= 73.00

IMPERVIOUS PVIOUS (i)  
 Surface Area (ha)= 27.27 10.08  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 499.00 40.00  
 Mannings n = 0.013 0.250

Max. Eff. Inten. (mm/hr)= 114.21 52.31  
 over (min)= 5.00 15.00  
 Storage Coeff. (min)= 6.35 (ii) 10.85 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.19 0.09

PEAK FLOW (cms)= 7.18 0.85 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.17 7.654 (iii)  
 RUNOFF VOLUME (mm)= 59.87 29.63 51.71  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.49 0.85

CALIB STANDHYD (0017) Area (ha)= 9.75  
 ID= 1 DT= 5.0 min Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

IMPERVIOUS PVIOUS (i)

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:



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- CN\* = 81.0 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 (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0017):	9.75	1.681	8.00	45.36
+ ID2= 2 (0022):	13.54	2.334	8.00	46.12
=====				
ID = 3 (0061):	23.29	4.015	8.00	45.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0061):	23.29	4.015	8.00	45.80
+ ID2= 2 (0029):	37.35	7.654	8.00	51.71
=====				
ID = 1 (0061):	60.64	11.669	8.00	49.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0016):	11.78	3.228	8.00	57.53
+ ID2= 2 (0004):	11.16	2.931	8.00	55.78
=====				
ID = 3 (0032):	22.94	6.159	8.00	56.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0032):	22.94	6.159	8.00	56.68
+ ID2= 2 (0005):	14.33	3.903	8.00	57.82
=====				
ID = 1 (0032):	37.27	10.062	8.00	57.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0032):	37.27	10.062	8.00	57.12
+ ID2= 2 (0061):	60.64	11.669	8.00	49.44
=====				
ID = 3 (0032):	97.91	21.731	8.00	52.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.95	66.00	66.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.57	3.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)	5.00	15.00
Storage Coeff. (min)=	4.27 (ii)	13.42 (ii)

Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.23	0.08

PEAK FLOW (cms)=	1.92	0.26	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	2.063 (iii)
RUNOFF VOLUME (mm)=	59.87	29.63	8.00
TOTAL RAINFALL (mm)=	60.87	60.87	49.59
RUNOFF COEFFICIENT =	0.98	0.49	60.87
			0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0002)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	2.18	39.00	39.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	50.28
over (min)	5.00	15.00
Storage Coeff. (min)=	2.71 (ii)	12.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.29	0.09

PEAK FLOW (cms)=	0.26	0.10	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	0.321 (iii)
RUNOFF VOLUME (mm)=	59.87	28.69	8.00
TOTAL RAINFALL (mm)=	60.87	60.87	40.85
RUNOFF COEFFICIENT =	0.98	0.47	60.87
			0.67

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.138	8.17	26.13
+ ID2= 2 (0002):	2.18	0.321	8.00	40.85
=====				
ID = 3 (2701):	4.49	0.401	8.00	33.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.401	8.00	33.27
+ ID2= 2 (0003):	8.96	1.398	8.00	42.54
=====				
ID = 1 (2701):	13.45	1.799	8.00	39.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	1.799	8.00	39.45
+ ID2= 2 (0030):	9.95	2.063	8.00	49.59
=====				
ID = 3 (2701):	23.40	3.862	8.00	43.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	3.862	8.00	43.76
+ ID2= 2 (0032):	97.91	21.731	8.00	52.36
ID = 1 (2701):	121.31	25.594	8.00	50.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.72	46.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	4.47	5.25	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	254.56	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	52.31	
over (min)	5.00	15.00	
Storage Coeff. (min)	4.24 (ii)	13.39 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.24	0.08	
			<b>*TOTALS*</b>
PEAK FLOW (cms)	1.31	0.40	1.530 (iii)
TIME TO PEAK (hrs)	8.00	8.00	
RUNOFF VOLUME (mm)	59.87	29.63	43.54
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.49	0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	1.530	8.00	43.54
+ ID2= 2 (2701):	121.31	25.594	8.00	50.70
ID = 3 (0222):	131.03	27.124	8.00	50.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	34.81	89.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	30.98	3.83	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	481.73	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)	6.22 (ii)	9.12 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.19	0.12	
			<b>*TOTALS*</b>
PEAK FLOW (cms)	8.22	0.38	8.534 (iii)
TIME TO PEAK (hrs)	8.00	8.00	
RUNOFF VOLUME (mm)	59.87	30.62	56.65
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.50	0.93

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.32	88.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	8.20	1.12	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	249.27	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)	4.19 (ii)	7.21 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.24	0.14	
			<b>*TOTALS*</b>
PEAK FLOW (cms)	2.41	0.12	2.514 (iii)
TIME TO PEAK (hrs)	8.00	8.00	
RUNOFF VOLUME (mm)	59.87	30.62	56.36
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.50	0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	8.534	8.00	56.65
+ ID2= 2 (0007):	9.32	2.514	8.00	56.36
ID = 3 (0282):	44.13	11.048	8.00	56.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.98	90.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	8.98	1.00	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	257.94	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	54.45	
over (min)	5.00	10.00	
Storage Coeff. (min)	4.28 (ii)	7.06 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.23	0.14	
			<b>*TOTALS*</b>
PEAK FLOW (cms)	2.63	0.11	2.723 (iii)
TIME TO PEAK (hrs)	8.00	8.00	
RUNOFF VOLUME (mm)	59.87	30.62	56.95
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.50	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0053)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0282):	44.13	11.048	8.00	56.59
+ ID2= 2 (0052):	9.98	2.723	8.00	56.95
=====				
ID = 3 (0053):	54.11	13.771	8.00	56.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)			
ID= 1 DT= 5.0 min			
Area	(ha)	Dir. Conn.(%) = 53.00	
Total Imp(%)	53.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	2.64	2.35	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	182.39	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	50.28	
over (min)	5.00	15.00	
Storage Coeff. (min)	3.47 (ii)	12.77 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.26	0.08	
			<b>*TOTALS*</b>
PEAK FLOW (cms)	0.80	0.18	0.898 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	59.87	28.69	45.21
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.47	0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0031):	4.99	0.898	8.00	45.21
+ ID2= 2 (0053):	54.11	13.771	8.00	56.66
=====				
ID = 3 (0239):	59.10	14.669	8.00	55.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)			
ID= 1 DT= 5.0 min			
Area	(ha)	Dir. Conn.(%) = 50.00	
Total Imp(%)	50.00		

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	2.87	2.87	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	195.45	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	52.31	
over (min)	5.00	15.00	
Storage Coeff. (min)	3.62 (ii)	12.77 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.25	0.08	
			<b>*TOTALS*</b>
PEAK FLOW (cms)	0.86	0.22	0.986 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	59.87	29.63	44.75
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.49	0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)		
ID= 1 DT= 5.0 min		
Area	(ha)	Dir. Conn.(%) = 56.00
Total Imp(%)	56.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	1.05	0.83	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	111.95	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	114.21	54.45	
over (min)	5.00	15.00	
Storage Coeff. (min)	2.59 (ii)	11.59 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.29	0.09	
PEAK FLOW (cms)	0.33	0.07	<b>*TOTALS*</b>
TIME TO PEAK (hrs)	8.00	8.17	0.367 (iii)
RUNOFF VOLUME (mm)	59.87	30.62	47.00
TOTAL RAINFALL (mm)	60.87	60.87	60.87
RUNOFF COEFFICIENT	0.98	0.50	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0014):	1.88	0.367	8.00	47.00
+ ID2= 2 (0239):	59.10	14.669	8.00	55.69
=====				
ID = 3 (0217):	60.98	15.036	8.00	55.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0217):	60.98	15.036	8.00	55.42
+ ID2= 2 (0008):	5.73	0.986	8.00	44.75
=====				
ID = 1 (0217):	66.71	16.022	8.00	54.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0217):	66.71	16.022	8.00	54.51
+ ID2= 2 (0222):	131.03	27.124	8.00	50.17
=====				
ID = 3 (0051):	197.74	43.146	8.00	51.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0057)			
IN= 2--> OUT= 1			
DT= 5.0 min			
	OUTFLOW	STORAGE	STORAGE
	(cms)	(ha.m.)	(ha.m.)
	0.0000	0.0000	23.5000
			4.5011



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11.2000	2.0777	27.4000	5.0376
14.6000	3.0936	31.5000	5.5552
18.2000	3.7229	0.0000	0.0000
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	197.740	43.146	8.00
OUTFLOW : ID= 1 (0057)	197.740	14.563	8.25
51.64			

PEAK FLOW REDUCTION [Qout/Qin] (%) = 33.75  
 TIME SHFT OF PEAK FLOW (min) = 15.00  
 MAXIMUM STORAGE USED (ha.m.) = 3.0936

\*\* SIMULATION NUMBER: 3 \*\*

CHICAGO STORM  
 Ptotal= 70.24 mm

IDF curve parameters: A=1400.000  
 B= 5.800  
 Cs= 0.848  
 used in: INTENSITY = A / (t + B)^C  
 Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.46	6.17	1.71	12.17	1.49	18.17	0.67
0.33	0.47	6.33	1.87	12.33	1.44	18.33	0.66
0.50	0.48	6.50	2.06	12.50	1.39	18.50	0.66
0.67	0.49	6.67	2.31	12.67	1.34	18.67	0.65
0.83	0.50	6.83	2.63	12.83	1.30	18.83	0.64
1.00	0.51	7.00	3.06	13.00	1.26	19.00	0.63
1.17	0.52	7.17	3.68	13.17	1.23	19.17	0.62
1.33	0.53	7.33	4.65	13.33	1.19	19.33	0.61
1.50	0.55	7.50	6.38	13.50	1.16	19.50	0.61
1.67	0.56	7.67	10.31	13.67	1.13	19.67	0.60
1.83	0.57	7.83	27.94	13.83	1.10	19.83	0.59
2.00	0.59	8.00	134.79	14.00	1.07	20.00	0.58
2.17	0.60	8.17	37.70	14.17	1.05	20.17	0.58
2.33	0.62	8.33	18.23	14.33	1.02	20.33	0.57
2.50	0.63	8.50	11.86	14.50	1.00	20.50	0.56
2.67	0.65	8.67	8.78	14.67	0.98	20.67	0.56
2.83	0.67	8.83	6.97	14.83	0.96	20.83	0.55
3.00	0.69	9.00	5.80	15.00	0.94	21.00	0.54
3.17	0.71	9.17	4.97	15.17	0.92	21.17	0.54
3.33	0.73	9.33	4.35	15.33	0.90	21.33	0.53
3.50	0.75	9.50	3.88	15.50	0.88	21.50	0.53
3.67	0.78	9.67	3.50	15.67	0.86	21.67	0.52
3.83	0.81	9.83	3.19	15.83	0.85	21.83	0.52
4.00	0.84	10.00	2.94	16.00	0.83	22.00	0.51
4.17	0.87	10.17	2.72	16.17	0.82	22.17	0.50
4.33	0.91	10.33	2.54	16.33	0.80	22.33	0.50
4.50	0.94	10.50	2.38	16.50	0.79	22.50	0.49
4.67	0.99	10.67	2.24	16.67	0.77	22.67	0.49
4.83	1.03	10.83	2.12	16.83	0.76	22.83	0.49
5.00	1.08	11.00	2.01	17.00	0.75	23.00	0.48
5.17	1.14	11.17	1.91	17.17	0.74	23.17	0.48
5.33	1.21	11.33	1.82	17.33	0.73	23.33	0.47
5.50	1.28	11.50	1.74	17.50	0.71	23.50	0.47
5.67	1.36	11.67	1.67	17.67	0.70	23.67	0.46
5.83	1.46	11.83	1.60	17.83	0.69	23.83	0.46
6.00	1.57	12.00	1.54	18.00	0.68	24.00	0.45

CALIB STANDHYD (0009)  
 ID= 1 DT= 5.0 min

Area (ha) = 42.85  
 Total Imp (%) = 68.00 Dir. Conn. (%) = 68.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	29.14	13.71
Dep. Storage	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	534.48	40.00
Mannings n	0.013	0.250

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	0.46	6.083	1.71	12.083	1.49	18.083	0.67
0.167	0.46	6.167	1.71	12.167	1.49	18.167	0.67
0.250	0.47	6.250	1.87	12.250	1.44	18.250	0.66
0.333	0.47	6.333	1.87	12.333	1.44	18.333	0.66
0.417	0.48	6.417	2.06	12.417	1.39	18.417	0.66
0.500	0.48	6.500	2.06	12.500	1.39	18.500	0.66
0.583	0.49	6.583	2.31	12.583	1.34	18.583	0.65
0.667	0.49	6.667	2.31	12.667	1.34	18.667	0.65
0.750	0.50	6.750	2.63	12.750	1.30	18.750	0.64
0.833	0.50	6.833	2.63	12.833	1.30	18.833	0.64
0.917	0.51	6.917	3.06	12.917	1.26	18.917	0.63
1.000	0.51	7.000	3.06	13.000	1.26	19.000	0.63
1.083	0.52	7.083	3.68	13.083	1.23	19.083	0.62
1.167	0.52	7.167	3.68	13.167	1.23	19.167	0.62
1.250	0.53	7.250	4.65	13.250	1.19	19.250	0.61
1.333	0.53	7.333	4.65	13.333	1.19	19.333	0.61
1.417	0.55	7.417	6.38	13.417	1.16	19.417	0.61
1.500	0.55	7.500	6.38	13.500	1.16	19.500	0.61
1.583	0.56	7.583	10.31	13.583	1.13	19.583	0.60
1.667	0.56	7.667	10.31	13.667	1.13	19.667	0.60
1.750	0.57	7.750	27.94	13.750	1.10	19.750	0.59
1.833	0.57	7.833	27.95	13.833	1.10	19.833	0.59
1.917	0.59	7.917	134.79	13.917	1.07	19.917	0.58
2.000	0.59	8.000	134.79	14.000	1.07	20.000	0.58
2.083	0.60	8.083	37.70	14.083	1.05	20.083	0.58
2.167	0.60	8.167	37.70	14.167	1.05	20.167	0.58
2.250	0.62	8.250	18.23	14.250	1.02	20.250	0.57
2.333	0.62	8.333	18.23	14.333	1.02	20.333	0.57
2.417	0.63	8.417	11.86	14.417	1.00	20.417	0.56
2.500	0.63	8.500	11.86	14.500	1.00	20.500	0.56
2.583	0.65	8.583	8.78	14.583	0.98	20.583	0.56
2.667	0.65	8.667	8.78	14.667	0.98	20.667	0.56
2.750	0.67	8.750	6.97	14.750	0.96	20.750	0.55
2.833	0.67	8.833	6.97	14.833	0.96	20.833	0.55
2.917	0.69	8.917	5.80	14.917	0.94	20.917	0.54
3.000	0.69	9.000	5.80	15.000	0.94	21.000	0.54
3.083	0.71	9.083	4.97	15.083	0.92	21.083	0.54
3.167	0.71	9.167	4.97	15.167	0.92	21.167	0.54
3.250	0.73	9.250	4.35	15.250	0.90	21.250	0.53
3.333	0.73	9.333	4.35	15.333	0.90	21.333	0.53
3.417	0.75	9.417	3.88	15.417	0.88	21.417	0.53
3.500	0.75	9.500	3.88	15.500	0.88	21.500	0.53
3.583	0.78	9.583	3.50	15.583	0.86	21.583	0.52
3.667	0.78	9.667	3.50	15.667	0.86	21.667	0.52
3.750	0.81	9.750	3.19	15.750	0.85	21.750	0.52
3.833	0.81	9.833	3.19	15.833	0.85	21.833	0.52
3.917	0.84	9.917	2.94	15.917	0.83	21.917	0.51
4.000	0.84	10.000	2.94	16.000	0.83	22.000	0.51
4.083	0.87	10.083	2.72	16.083	0.82	22.083	0.50
4.167	0.87	10.167	2.72	16.167	0.82	22.167	0.50
4.250	0.91	10.250	2.54	16.250	0.80	22.250	0.50
4.333	0.91	10.333	2.54	16.333	0.80	22.333	0.50
4.417	0.94	10.417	2.38	16.417	0.79	22.417	0.49
4.500	0.94	10.500	2.38	16.500	0.79	22.500	0.49
4.583	0.99	10.583	2.24	16.583	0.77	22.583	0.49
4.667	0.99	10.667	2.24	16.667	0.77	22.667	0.49
4.750	1.03	10.750	2.12	16.750	0.76	22.750	0.49
4.833	1.03	10.833	2.12	16.833	0.76	22.833	0.49
4.917	1.08	10.917	2.01	16.917	0.75	22.917	0.48
5.000	1.08	11.000	2.01	17.000	0.75	23.000	0.48
5.083	1.14	11.083	1.91	17.083	0.74	23.083	0.48
5.167	1.14	11.167	1.91	17.167	0.74	23.167	0.48
5.250	1.21	11.250	1.82	17.250	0.73	23.250	0.47
5.333	1.21	11.333	1.82	17.333	0.73	23.333	0.47
5.417	1.28	11.417	1.74	17.417	0.71	23.417	0.47
5.500	1.28	11.500	1.74	17.500	0.71	23.500	0.47
5.583	1.36	11.583	1.67	17.583	0.70	23.583	0.46
5.667	1.36	11.667	1.67	17.667	0.70	23.667	0.46
5.750	1.46	11.750	1.60	17.750	0.69	23.750	0.46
5.833	1.46	11.833	1.60	17.833	0.69	23.833	0.46
5.917	1.57	11.917	1.54	17.917	0.68	23.917	0.45
6.000	1.57	12.000	1.54	18.000	0.68	24.000	0.45

Max. Eff. Inten. (mm/hr) =	134.79	67.67
over (min)	5.00	15.00
Storage Coeff. (min) =	6.20 (ii)	10.83 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.19	0.09
PEAK FLOW (cms) =	9.13	1.48
TIME TO PEAK (hrs) =	8.00	8.17
RUNOFF VOLUME (mm) =	69.24	36.82
TOTAL RAINFALL (mm) =	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52

\*TOTALS\*  
 9.961 (iii)  
 8.00  
 58.86  
 70.24  
 0.84





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- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0019) ID= 1 DT= 5.0 min	Area (ha)= 1.83 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.15	Curve Number (CN)= 78.0 # of Linear Res.(N)= 3.00
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Unit Hyd Qpeak (cms) = 0.466

PEAK FLOW (cms) = 0.178 (i)  
TIME TO PEAK (hrs) = 8.083  
RUNOFF VOLUME (mm) = 30.913  
TOTAL RAINFALL (mm) = 70.237  
RUNOFF COEFFICIENT = 0.440

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

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha)= 19.25 Total Imp(%)= 92.00	Dir. Conn.(%)= 92.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	17.71	1.54
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	358.24	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 over (min) 5.00  
Storage Coeff. (min)= 4.88 (ii) 7.23 (ii)  
Unit Hyd. Tpeak (min)= 5.00 10.00  
Unit Hyd. peak (cms)= 0.22 0.14

PEAK FLOW (cms) = 5.94 0.22 \*TOTALS\*  
TIME TO PEAK (hrs) = 8.00 8.08 6.126 (iii)  
RUNOFF VOLUME (mm) = 69.24 37.95 66.73  
TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012) ID= 1 DT= 5.0 min	Area (ha)= 1.17 Total Imp(%)= 91.00	Dir. Conn.(%)= 91.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	1.06	0.11
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	88.32	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 over (min) 5.00  
Storage Coeff. (min)= 2.10 (ii) 4.59 (ii)  
Unit Hyd. Tpeak (min)= 5.00 5.00  
Unit Hyd. peak (cms)= 0.31 0.23

PEAK FLOW (cms) = 0.40 0.02 \*TOTALS\*  
TIME TO PEAK (hrs) = 8.00 8.00 0.416 (iii)  
RUNOFF VOLUME (mm) = 69.24 37.95 66.42  
TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018) ID= 1 DT= 5.0 min	Area (ha)= 11.58 Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.14	5.44
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	277.85	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 over (min) 5.00  
Storage Coeff. (min)= 4.19 (ii) 12.93 (ii)  
Unit Hyd. Tpeak (min)= 5.00 15.00  
Unit Hyd. peak (cms)= 0.24 0.08

PEAK FLOW (cms) = 2.13 0.47 \*TOTALS\*  
TIME TO PEAK (hrs) = 8.00 8.17 8.00  
RUNOFF VOLUME (mm) = 69.24 32.67 52.05  
TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
RUNOFF COEFFICIENT = 0.99 0.47 0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB STANDHYD (0023) ID= 1 DT= 5.0 min	Area (ha)= 4.36 Total Imp(%)= 78.00	Dir. Conn.(%)= 78.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.40	0.96
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	170.49	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 over (min) 5.00  
Storage Coeff. (min)= 3.12 (ii) 6.90 (ii)  
Unit Hyd. Tpeak (min)= 5.00 10.00  
Unit Hyd. peak (cms)= 0.27 0.14

PEAK FLOW (cms) = 1.23 0.13 \*TOTALS\*  
TIME TO PEAK (hrs) = 8.00 8.08 1.345 (iii)  
RUNOFF VOLUME (mm) = 69.24 36.82 62.10  
TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
RUNOFF COEFFICIENT = 0.99 0.52 0.88

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0024) ID= 1 DT= 5.0 min	Area (ha)= 2.54 Total Imp(%)= 93.00	Dir. Conn.(%)= 93.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.36	0.18
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	130.13	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 over (min) 5.00  
Storage Coeff. (min)= 2.66 (ii) 4.88 (ii)



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Unit Hyd. Tpeak (min)= 5.00 5.00  
 Unit Hyd. peak (cms)= 0.29 0.22  
 PEAK FLOW (cms)= 0.87 0.03  
 TIME TO PEAK (hrs)= 8.00 8.00  
 RUNOFF VOLUME (mm)= 69.24 37.95  
 TOTAL RAINFALL (mm)= 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54

\*TOTALS\*  
 0.901 (iii)  
 8.00  
 67.05  
 70.24  
 0.95

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!  
 (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027) Area (ha)= 4.22  
 ID= 1 DT= 5.0 min Total Imp(%)= 62.00 Dir. Conn.(%)= 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.62	1.60
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	167.73	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	134.79	56.44
over (min)=	5.00	15.00
Storage Coeff. (min)=	3.09 (ii)	11.96 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.27	0.09
PEAK FLOW (cms)=	0.95	0.14
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	69.24	31.72
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.45

\*TOTALS\*  
 1.025 (iii)  
 8.00  
 54.98  
 70.24  
 0.78

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!  
 (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB STANDHYD (0028) Area (ha)= 6.40  
 ID= 1 DT= 5.0 min Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.95	0.45
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	206.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.50 (ii)	5.73 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15
PEAK FLOW (cms)=	2.13	0.07
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	69.24	37.95
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54

\*TOTALS\*  
 2.186 (iii)  
 8.00  
 67.05  
 70.24  
 0.95

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!  
 (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB

STANDHYD (0281) Area (ha)= 7.97  
 ID= 1 DT= 5.0 min Total Imp(%)= 88.00 Dir. Conn.(%)= 88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.01	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	230.51	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.74 (ii)	6.56 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.14
PEAK FLOW (cms)=	2.48	0.14
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	69.24	37.95
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54

\*TOTALS\*  
 2.601 (iii)  
 8.00  
 65.48  
 70.24  
 0.93

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!  
 (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0011):	19.25	6.126	8.00	66.73
+ ID2= 2 (0012):	1.17	0.416	8.00	66.42
ID = 3 (0048):	20.42	6.541	8.00	66.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	20.42	6.541	8.00	66.72
+ ID2= 2 (0018):	11.58	2.385	8.00	52.05
ID = 1 (0048):	32.00	8.926	8.00	61.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	32.00	8.926	8.00	61.41
+ ID2= 2 (0019):	1.83	0.178	8.08	30.91
ID = 3 (0048):	33.83	9.080	8.00	59.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	33.83	9.080	8.00	59.76
+ ID2= 2 (0023):	4.36	1.345	8.00	62.10
ID = 1 (0048):	38.19	10.425	8.00	60.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)

1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	38.19	10.425	8.00	60.03
+ ID2= 2 (0024):	2.54	0.901	8.00	67.05
-----				
ID = 3 (0048):	40.73	11.326	8.00	60.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.73	11.326	8.00	60.46
+ ID2= 2 (0027):	4.22	1.025	8.00	54.98
-----				
ID = 1 (0048):	44.95	12.351	8.00	59.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.95	12.351	8.00	59.95
+ ID2= 2 (0028):	6.40	2.186	8.00	67.05
-----				
ID = 3 (0048):	51.35	14.537	8.00	60.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	51.35	14.537	8.00	60.83
+ ID2= 2 (0281):	7.97	2.601	8.00	65.48
-----				
ID = 1 (0048):	59.32	17.138	8.00	61.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010) ID= 1 DT= 5.0 min			
Area (ha)	Imp(%)	Dir. Conn.(%)	
7.93	53.00	53.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.20	3.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	229.93	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
Storage Coeff. (min)=	5.00	15.00
Unit Hyd. Tpeak (min)=	3.74 (ii)	11.87 (ii)
Unit Hyd. peak (cms)=	0.25	0.09

		*TOTALS*
PEAK FLOW (cms)=	1.49	0.40
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	37.95
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025) ID= 1 DT= 5.0 min			
Area (ha)	Imp(%)	Dir. Conn.(%)	
5.77	53.00	53.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.06	2.71
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	196.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	67.67
Storage Coeff. (min)=	5.00	15.00
Unit Hyd. Tpeak (min)=	3.40 (ii)	11.65 (ii)
Unit Hyd. peak (cms)=	0.26	0.09

		*TOTALS*
PEAK FLOW (cms)=	1.10	0.28
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	69.24	36.82
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	7.93	1.712	8.00	54.53
+ ID2= 2 (0025):	5.77	1.256	8.00	54.00
-----				
ID = 3 (0049):	13.70	2.967	8.00	54.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0049):	13.70	2.967	8.00	54.31
+ ID2= 2 (0048):	59.32	17.138	8.00	61.46
-----				
ID = 1 (0049):	73.02	20.105	8.00	60.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0054) IN= 2 --> OUT= 1 DT= 5.0 min			
	OUTFLOW (cms)	STORAGE (ha.m.)	PERVIOUS (i)
	0.0000	0.0000	24.7000
	11.4000	0.1791	28.2000
	16.6000	0.2610	31.7000
	20.0000	0.3146	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	73.020	20.105	8.00	60.12
OUTFLOW: ID= 1 (0054)	73.020	17.937	8.00	60.12

PEAK FLOW REDUCTION [Qout/Qin] (%) =	89.22
TIME SHIFT OF PEAK FLOW (min) =	0.00
MAXIMUM STORAGE USED (ha.m.) =	0.3146

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min			
Area (ha)	Imp(%)	Dir. Conn.(%)	
29.43	82.00	82.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	24.13	5.30
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	442.94	40.00
Mannings n =	0.013	0.250



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Max.Eff.Inten.(mm/hr)= 134.79 70.24  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 5.54 (ii) 8.95 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.20 0.12

PEAK FLOW (cms) = 7.83 0.68  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 69.24 37.95  
 TOTAL RAINFALL (mm) = 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.91

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0020)  
 ID= 1 DT= 5.0 min

Area (ha) = 69.17  
 Total Imp(%) = 89.00 Dir. Conn.(%) = 89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	61.56	7.61
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	679.07	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 70.24  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 7.16 (ii) 9.87 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.17 0.11

PEAK FLOW (cms) = 18.34 0.94  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 69.24 37.95  
 TOTAL RAINFALL (mm) = 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0021)  
 ID= 1 DT= 5.0 min

Area (ha) = 4.49  
 Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.13	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	173.01	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 70.24  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 3.15 (ii) 5.51 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.27 0.16

PEAK FLOW (cms) = 1.50 0.05  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 69.24 37.95  
 TOTAL RAINFALL (mm) = 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0026)  
 ID= 1 DT= 5.0 min

Area (ha) = 4.46  
 Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.10	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	172.43	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)= 134.79 70.24  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 3.14 (ii) 5.50 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.27 0.16

PEAK FLOW (cms) = 1.49 0.05  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 69.24 37.95  
 TOTAL RAINFALL (mm) = 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID= 1 (0013):	29.43	8.397	8.00	63.61
+ ID= 2 (0020):	69.17	19.115	8.00	65.80
ID = 3 (0050):	98.60	27.512	8.00	65.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0050):	98.60	27.512	8.00	65.14
+ ID2= 2 (0021):	4.49	1.544	8.00	66.73
ID = 1 (0050):	103.09	29.056	8.00	65.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0050):	103.09	29.056	8.00	65.21
+ ID2= 2 (0026):	4.46	1.534	8.00	66.73
ID = 3 (0050):	107.55	30.590	8.00	65.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0056)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2---> OUT= 1				
DT= 5.0 min	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0050)	107.550	30.590	8.00	65.27
OUTFLOW: ID= 1 (0056)	107.550	14.711	8.17	65.27

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.09  
 TIME SHIFT OF PEAK FLOW (min) = 10.00  
 MAXIMUM STORAGE USED (ha.m.) = 1.8604

CALIB STANDHYD (0015)  
 ID= 1 DT= 5.0 min

Area (ha)	=	2.31	Curve Number (CN)	=	80.0
Ia (mm)	=	5.00	# of Linear Res. (N)	=	3.00
U.H. Tp (hrs)	=	0.24			

Unit Hyd Qpeak (cms) = 0.368

PEAK FLOW (cms) = 0.182 (i)  
 TIME TO PEAK (hrs) = 8.167  
 RUNOFF VOLUME (mm) = 33.027  
 TOTAL RAINFALL (mm) = 70.237  
 RUNOFF COEFFICIENT = 0.470

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

CALIB STANDHYD (0003)  
 ID= 1 DT= 5.0 min

Area (ha)	=	8.96	Dir. Conn. (%)	=	46.00
Total Imp (%)	=	46.00			

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 4.12	4.84
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 244.40	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten. (mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 3.88 (ii) 12.37 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.25

PEAK FLOW (cms) = 1.45 0.46 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.17 1.702 (iii)  
 RUNOFF VOLUME (mm) = 69.24 34.68 50.57  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.49 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 79.0 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.

CALIB STANDHYD (0004)  
 ID= 1 DT= 5.0 min

Area (ha)	=	11.16	Dir. Conn. (%)	=	86.00
Total Imp (%)	=	86.00			

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 9.60	1.56
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 272.76	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten. (mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 4.14 (ii) 7.17 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.24

PEAK FLOW (cms) = 3.34 0.22 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 3.524 (iii)  
 RUNOFF VOLUME (mm) = 69.24 37.95 64.86  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0005)  
 ID= 1 DT= 5.0 min

Area (ha)	=	14.33	Dir. Conn. (%)	=	93.00
Total Imp (%)	=	93.00			

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 13.33	1.00
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 309.08	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten. (mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 4.46 (ii) 6.69 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.23

PEAK FLOW (cms) = 4.56 0.14 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 4.687 (iii)  
 RUNOFF VOLUME (mm) = 69.24 37.95 67.05  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0016)  
 ID= 1 DT= 5.0 min

Area (ha)	=	11.78	Dir. Conn. (%)	=	92.00
Total Imp (%)	=	92.00			

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 10.84	0.94
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 280.24	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten. (mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 4.21 (ii) 6.57 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.24

PEAK FLOW (cms) = 3.75 0.14 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 3.873 (iii)  
 RUNOFF VOLUME (mm) = 69.24 37.95 66.73  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0017)  
 ID= 1 DT= 5.0 min

Area (ha)	=	9.75	Dir. Conn. (%)	=	52.00
Total Imp (%)	=	52.00			

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 5.07	4.68
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 254.95	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten. (mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 3.98 (ii) 12.23 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.24



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			<b>*TOTALS*</b>
PEAK FLOW (cms)	= 1.78	0.48	2.042 (iii)
TIME TO PEAK (hrs)	= 8.00	8.17	8.00
RUNOFF VOLUME (mm)	= 69.24	36.82	53.68
TOTAL RAINFALL (mm)	= 70.24	70.24	70.24
RUNOFF COEFFICIENT	= 0.99	0.52	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

<b>CALIB</b> STANDHYD (0022) ID= 1 DT= 5.0 min	Area (ha) = 13.54 Total Imp(%) = 53.00	Dir. Conn.(%) = 53.00
--	---	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 7.18	6.36
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 300.44	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	= 134.79	70.24
over (min)	= 5.00	15.00
Storage Coeff. (min)	= 4.39 (ii)	12.52 (ii)
Unit Hyd. Tpeak (min)	= 5.00	15.00
Unit Hyd. peak (cms)	= 0.23	0.08

			<b>*TOTALS*</b>
PEAK FLOW (cms)	= 2.47	0.67	2.838 (iii)
TIME TO PEAK (hrs)	= 8.00	8.17	8.00
RUNOFF VOLUME (mm)	= 69.24	37.95	54.53
TOTAL RAINFALL (mm)	= 70.24	70.24	70.24
RUNOFF COEFFICIENT	= 0.99	0.54	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

<b>CALIB</b> STANDHYD (0029) ID= 1 DT= 5.0 min	Area (ha) = 37.35 Total Imp(%) = 73.00	Dir. Conn.(%) = 73.00
--	---	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 27.27	10.08
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 499.00	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	= 134.79	67.67
over (min)	= 5.00	15.00
Storage Coeff. (min)	= 5.95 (ii)	10.15 (ii)
Unit Hyd. Tpeak (min)	= 5.00	15.00
Unit Hyd. peak (cms)	= 0.19	0.10

			<b>*TOTALS*</b>
PEAK FLOW (cms)	= 8.65	1.12	9.287 (iii)
TIME TO PEAK (hrs)	= 8.00	8.17	8.00
RUNOFF VOLUME (mm)	= 69.24	36.82	60.48
TOTAL RAINFALL (mm)	= 70.24	70.24	70.24
RUNOFF COEFFICIENT	= 0.99	0.52	0.86

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

<b>ADD HYD</b> (0061) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
------------------------------------	-----------	-------------	-------------	-----------

ID1= 1 (0017):	9.75	2.042	8.00	53.68
+ ID2= 2 (0022):	13.54	2.838	8.00	54.53
-----				
ID = 3 (0061):	23.29	4.880	8.00	54.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD</b> (0061) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0061):	23.29	4.880	8.00	54.17
+ ID2= 2 (0029):	37.35	9.287	8.00	60.48
-----				
ID = 1 (0061):	60.64	14.168	8.00	58.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD</b> (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	3.873	8.00	66.73
+ ID2= 2 (0004):	11.16	3.524	8.00	64.86
-----				
ID = 3 (0032):	22.94	7.397	8.00	65.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD</b> (0032) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.94	7.397	8.00	65.82
+ ID2= 2 (0005):	14.33	4.687	8.00	67.05
-----				
ID = 1 (0032):	37.27	12.084	8.00	66.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>ADD HYD</b> (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0032):	37.27	12.084	8.00	66.29
+ ID2= 2 (0061):	60.64	14.168	8.00	58.06
-----				
ID = 3 (0032):	97.91	26.252	8.00	61.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

<b>CALIB</b> STANDHYD (0030) ID= 1 DT= 5.0 min	Area (ha) = 9.95 Total Imp(%) = 66.00	Dir. Conn.(%) = 66.00
--	--	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 6.57	3.38
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 257.55	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	= 134.79	67.67
over (min)	= 5.00	10.00
Storage Coeff. (min)	= 4.00 (ii)	8.80 (ii)
Unit Hyd. Tpeak (min)	= 5.00	10.00
Unit Hyd. peak (cms)	= 0.24	0.12

			<b>*TOTALS*</b>
PEAK FLOW (cms)	= 2.30	0.42	2.651 (iii)
TIME TO PEAK (hrs)	= 8.00	8.08	8.00
RUNOFF VOLUME (mm)	= 69.24	36.82	58.21
TOTAL RAINFALL (mm)	= 70.24	70.24	70.24
RUNOFF COEFFICIENT	= 0.99	0.52	0.83

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



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- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

=====  
ID = 1 (2701): 121.31 31.102 8.00 59.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 2.18 Total Imp(%)= 39.00	Dir. Conn.(%)= 39.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.85	1.33	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	120.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	134.79	65.21	
over (min)=	5.00	15.00	
Storage Coeff. (min)=	2.54 (ii)	10.91 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.09	
			*TOTALS*
PEAK FLOW (cms)=	0.31	0.14	0.391 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	69.24	35.73	48.79
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.51	0.69

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 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 (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.182	8.17	33.03
+ ID2= 2 (0002):	2.18	0.391	8.00	48.79
=====				
ID = 3 (2701):	4.49	0.498	8.00	40.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.498	8.00	40.68
+ ID2= 2 (0003):	8.96	1.702	8.00	50.57
=====				
ID = 1 (2701):	13.45	2.200	8.00	47.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2701):	13.45	2.200	8.00	47.27
+ ID2= 2 (0030):	9.95	2.651	8.00	58.21
=====				
ID = 3 (2701):	23.40	4.851	8.00	51.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	23.40	4.851	8.00	51.92
+ ID2= 2 (0032):	97.91	26.252	8.00	61.19

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min	Area (ha)= 9.72 Total Imp(%)= 46.00	Dir. Conn.(%)= 46.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	4.47	5.25	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	254.56	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	134.79	67.67	
over (min)=	5.00	15.00	
Storage Coeff. (min)=	3.97 (ii)	12.22 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.24	0.09	
			*TOTALS*
PEAK FLOW (cms)=	1.57	0.54	1.865 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	69.24	36.82	51.73
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52	0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 (0222) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	9.72	1.865	8.00	51.73
+ ID2= 2 (2701):	121.31	31.102	8.00	59.41
=====				
ID = 3 (0222):	131.03	32.967	8.00	58.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha)= 34.81 Total Imp(%)= 89.00	Dir. Conn.(%)= 89.00
---	---	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	30.98	3.83	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	481.73	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	134.79	70.24	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	5.82 (ii)	8.54 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.20	0.12	
			*TOTALS*
PEAK FLOW (cms)=	9.90	0.50	10.321 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	65.80
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.94

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

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STANDHYD (0007) Area (ha)= 9.32  
ID= 1 DT= 5.0 min Total Imp(%)= 88.00 Dir. Conn.(%)= 88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.20	1.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	249.27	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	3.92 (ii)	6.74 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.14

		*TOTALS*
PEAK FLOW (cms)=	2.88	0.16
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	37.95
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0006):	34.81	10.321	8.00	65.80
+ ID2= 2 (0007):	9.32	3.017	8.00	65.48
=====				
ID = 3 (0282):	44.13	13.339	8.00	65.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052) Area (ha)= 9.98  
ID= 1 DT= 5.0 min Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.98	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.94	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	4.00 (ii)	6.60 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.14

		*TOTALS*
PEAK FLOW (cms)=	3.14	0.14
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	37.95
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0053)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0282):	44.13	13.339	8.00	65.73
+ ID2= 2 (0052):	9.98	3.266	8.00	66.11
=====				
ID = 3 (0053):	54.11	16.605	8.00	65.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031) Area (ha)= 4.99  
ID= 1 DT= 5.0 min Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	65.21
over (min)	5.00	15.00
Storage Coeff. (min)=	3.25 (ii)	11.63 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.27	0.09

		*TOTALS*
PEAK FLOW (cms)=	0.95	0.24
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	35.73
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.51

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0031):	4.99	1.086	8.00	53.49
+ ID2= 2 (0053):	54.11	16.605	8.00	65.80
=====				
ID = 3 (0239):	59.10	17.690	8.00	64.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008) Area (ha)= 5.73  
ID= 1 DT= 5.0 min Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	67.67
over (min)	5.00	15.00
Storage Coeff. (min)=	3.39 (ii)	11.64 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

		*TOTALS*
PEAK FLOW (cms)=	1.03	0.30
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	69.24	36.82
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014) Area (ha)= 1.88





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[ID= 1 DT= 5.0 min | Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

MAXIMUM STORAGE USED (ha.m.)= 3.7229

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.05	0.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	111.95	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	15.00
Storage Coeff. (min)=	2.43 (ii)	10.55 (iii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.09

\*\*\*\*TOTALS\*\*\*\*  
 PEAK FLOW (cms)= 0.39 0.09 0.442 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 69.24 37.95 55.47  
 TOTAL RAINFALL (mm)= 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0217)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0014):	1.88	0.442	8.00	55.47
+ ID2= 2 (0239):	59.10	17.690	8.00	64.76
=====				
ID = 3 (0217):	60.98	18.133	8.00	64.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0217):	60.98	18.133	8.00	64.47
+ ID2= 2 (0008):	5.73	1.196	8.00	53.03
=====				
ID = 1 (0217):	66.71	19.328	8.00	63.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0217):	66.71	19.328	8.00	63.49
+ ID2= 2 (0222):	131.03	32.967	8.00	58.84
=====				
ID = 3 (0051):	197.74	52.295	8.00	60.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0057)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2---> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min	0.0000	0.0000	23.5000	4.5011
	11.2000	2.0777	27.4000	5.0376
	14.6000	3.0936	31.5000	5.5552
	18.2000	3.7229	0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0051)	197.740	52.295	8.00	60.41
OUTFLOW: ID= 1 (0057)	197.740	18.034	8.25	60.41

PEAK FLOW REDUCTION [Qout/Qin] (%) = 34.49  
 TIME SHIFT OF PEAK FLOW (min) = 15.00

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 4 \*\*  
 \*\*\*\*\*

CHICAGO STORM	IDF curve parameters: A=1680.000
Ptotal= 82.47 mm	B= 5.600
	C= 0.851
	used in: INTENSITY = A / (t + B) ^ C

Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.53	6.17	1.97	12.17	1.72	18.17	0.78
0.33	0.54	6.33	2.16	12.33	1.66	18.33	0.77
0.50	0.55	6.50	2.38	12.50	1.60	18.50	0.75
0.67	0.57	6.67	2.67	12.67	1.55	18.67	0.74
0.83	0.58	6.83	3.04	12.83	1.50	18.83	0.73
1.00	0.59	7.00	3.54	13.00	1.46	19.00	0.72
1.17	0.60	7.17	4.27	13.17	1.41	19.17	0.72
1.33	0.62	7.33	5.39	13.33	1.38	19.33	0.71
1.50	0.63	7.50	7.40	13.50	1.34	19.50	0.70
1.67	0.64	7.67	11.98	13.67	1.30	19.67	0.69
1.83	0.66	7.83	32.72	13.83	1.27	19.83	0.68
2.00	0.67	8.00	162.17	14.00	1.24	20.00	0.67
2.17	0.69	8.17	44.24	14.17	1.21	20.17	0.66
2.33	0.71	8.33	21.25	14.33	1.18	20.33	0.66
2.50	0.73	8.50	13.79	14.50	1.15	20.50	0.65
2.67	0.75	8.67	10.19	14.67	1.13	20.67	0.64
2.83	0.77	8.83	8.09	14.83	1.10	20.83	0.63
3.00	0.79	9.00	6.72	15.00	1.08	21.00	0.63
3.17	0.82	9.17	5.76	15.17	1.06	21.17	0.62
3.33	0.84	9.33	5.04	15.33	1.04	21.33	0.61
3.50	0.87	9.50	4.49	15.50	1.01	21.50	0.61
3.67	0.90	9.67	4.05	15.67	1.00	21.67	0.60
3.83	0.93	9.83	3.70	15.83	0.98	21.83	0.59
4.00	0.97	10.00	3.40	16.00	0.96	22.00	0.59
4.17	1.00	10.17	3.15	16.17	0.94	22.17	0.58
4.33	1.04	10.33	2.94	16.33	0.92	22.33	0.58
4.50	1.09	10.50	2.75	16.50	0.91	22.50	0.57
4.67	1.14	10.67	2.59	16.67	0.89	22.67	0.56
4.83	1.19	10.83	2.45	16.83	0.88	22.83	0.56
5.00	1.25	11.00	2.32	17.00	0.86	23.00	0.55
5.17	1.32	11.17	2.21	17.17	0.85	23.17	0.55
5.33	1.39	11.33	2.11	17.33	0.84	23.33	0.54
5.50	1.48	11.50	2.02	17.50	0.82	23.50	0.54
5.67	1.57	11.67	1.93	17.67	0.81	23.67	0.53
5.83	1.69	11.83	1.85	17.83	0.80	23.83	0.53
6.00	1.82	12.00	1.78	18.00	0.79	24.00	0.52

CALIB	Area (ha)= 42.85
STANDHYD (0009)	Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00
ID= 1 DT= 5.0 min	

IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	29.14
Dep. Storage (mm)=	1.00
Average Slope (%)=	1.00
Length (m)=	534.48
Mannings n =	0.013

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	0.53	6.083	1.97	12.083	1.72	18.08	0.78
0.167	0.53	6.167	1.97	12.167	1.72	18.17	0.78
0.250	0.54	6.250	2.16	12.250	1.66	18.25	0.77
0.333	0.54	6.333	2.16	12.333	1.66	18.33	0.77
0.417	0.55	6.417	2.38	12.417	1.60	18.42	0.75
0.500	0.55	6.500	2.38	12.500	1.60	18.50	0.75
0.583	0.57	6.583	2.67	12.583	1.55	18.58	0.74
0.667	0.57	6.667	2.67	12.667	1.55	18.67	0.74
0.750	0.58	6.750	3.04	12.750	1.50	18.75	0.73
0.833	0.58	6.833	3.04	12.833	1.50	18.83	0.73



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0.917	0.59	6.917	3.54	12.917	1.46	18.92	0.72
1.000	0.59	7.000	3.54	13.000	1.46	19.00	0.72
1.083	0.60	7.083	4.27	13.083	1.42	19.08	0.72
1.167	0.60	7.167	4.27	13.167	1.41	19.17	0.72
1.250	0.62	7.250	5.39	13.250	1.38	19.25	0.71
1.333	0.62	7.333	5.39	13.333	1.38	19.33	0.71
1.417	0.63	7.417	7.40	13.417	1.34	19.42	0.70
1.500	0.63	7.500	7.40	13.500	1.34	19.50	0.70
1.583	0.64	7.583	11.98	13.583	1.30	19.58	0.69
1.667	0.64	7.667	11.98	13.667	1.30	19.67	0.69
1.750	0.66	7.750	32.72	13.750	1.27	19.75	0.68
1.833	0.66	7.833	32.73	13.833	1.27	19.83	0.68
1.917	0.67	7.917	162.17	13.917	1.24	19.92	0.67
2.000	0.67	8.000	162.16	14.000	1.24	20.00	0.67
2.083	0.69	8.083	44.24	14.083	1.21	20.08	0.66
2.167	0.69	8.167	44.23	14.167	1.21	20.17	0.66
2.250	0.71	8.250	21.25	14.250	1.18	20.25	0.66
2.333	0.71	8.333	21.25	14.333	1.18	20.33	0.66
2.417	0.73	8.417	13.79	14.417	1.15	20.42	0.65
2.500	0.73	8.500	13.79	14.500	1.15	20.50	0.65
2.583	0.75	8.583	10.19	14.583	1.13	20.58	0.64
2.667	0.75	8.667	10.19	14.667	1.13	20.67	0.64
2.750	0.77	8.750	8.09	14.750	1.10	20.75	0.63
2.833	0.77	8.833	8.09	14.833	1.10	20.83	0.63
2.917	0.79	8.917	6.72	14.917	1.08	20.92	0.63
3.000	0.79	9.000	6.72	15.000	1.08	21.00	0.63
3.083	0.82	9.083	5.76	15.083	1.06	21.08	0.62
3.167	0.82	9.167	5.76	15.167	1.06	21.17	0.62
3.250	0.84	9.250	5.04	15.250	1.04	21.25	0.61
3.333	0.84	9.333	5.04	15.333	1.04	21.33	0.61
3.417	0.87	9.417	4.49	15.417	1.01	21.42	0.61
3.500	0.87	9.500	4.49	15.500	1.01	21.50	0.61
3.583	0.90	9.583	4.05	15.583	1.00	21.58	0.60
3.667	0.90	9.667	4.05	15.667	1.00	21.67	0.60
3.750	0.93	9.750	3.70	15.750	0.98	21.75	0.59
3.833	0.93	9.833	3.70	15.833	0.98	21.83	0.59
3.917	0.97	9.917	3.40	15.917	0.96	21.92	0.59
4.000	0.97	10.000	3.40	16.000	0.96	22.00	0.59
4.083	1.00	10.083	3.15	16.083	0.94	22.08	0.58
4.167	1.00	10.167	3.15	16.167	0.94	22.17	0.58
4.250	1.04	10.250	2.94	16.250	0.92	22.25	0.58
4.333	1.04	10.333	2.94	16.333	0.92	22.33	0.58
4.417	1.09	10.417	2.75	16.417	0.91	22.42	0.57
4.500	1.09	10.500	2.75	16.500	0.91	22.50	0.57
4.583	1.14	10.583	2.59	16.583	0.89	22.58	0.56
4.667	1.14	10.667	2.59	16.667	0.89	22.67	0.56
4.750	1.19	10.750	2.45	16.750	0.88	22.75	0.56
4.833	1.19	10.833	2.45	16.833	0.88	22.83	0.56
4.917	1.25	10.917	2.32	16.917	0.86	22.92	0.55
5.000	1.25	11.000	2.32	17.000	0.86	23.00	0.55
5.083	1.32	11.083	2.21	17.083	0.85	23.08	0.55
5.167	1.32	11.167	2.21	17.167	0.85	23.17	0.55
5.250	1.39	11.250	2.11	17.250	0.84	23.25	0.54
5.333	1.39	11.333	2.11	17.333	0.84	23.33	0.54
5.417	1.48	11.417	2.02	17.417	0.82	23.42	0.54
5.500	1.48	11.500	2.02	17.500	0.82	23.50	0.54
5.583	1.57	11.583	1.93	17.583	0.81	23.58	0.53
5.667	1.57	11.667	1.93	17.667	0.81	23.67	0.53
5.750	1.69	11.750	1.85	17.750	0.80	23.75	0.53
5.833	1.69	11.833	1.85	17.833	0.80	23.83	0.53
5.917	1.82	11.917	1.78	17.917	0.79	23.92	0.52
6.000	1.82	12.000	1.78	18.000	0.79	24.00	0.52

Max.Eff.Inten.(mm/hr)= 162.17 89.46  
 over (min)= 5.00 15.00  
 Storage Coeff. (min)= 5.76 (ii) 10.06 (iii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.20 0.10

PEAK FLOW (cms)= 11.23 2.00  
 TIME TO PEAK (hrs)= 8.00 8.17  
 RUNOFF VOLUME (mm)= 81.47 46.65  
 TOTAL RAINFALL (mm)= 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57

\*TOTALS\*  
 12.373 (iii)  
 8.00  
 70.33  
 82.47  
 0.85

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res. (N)= 3.00  
 U.H. Tp(hrs)= 0.15

Unit Hyd Opeak (cms)= 0.466  
 PEAK FLOW (cms)= 0.241 (i)  
 TIME TO PEAK (hrs)= 8.083  
 RUNOFF VOLUME (mm)= 40.020  
 TOTAL RAINFALL (mm)= 82.474  
 RUNOFF COEFFICIENT = 0.485

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

CALIB STANDHYD (0011) Area (ha)= 19.25  
 ID= 1 DT= 5.0 min Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 17.71 1.54  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 358.24 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 162.17 92.57  
 over (min)= 5.00 10.00  
 Storage Coeff. (min)= 4.53 (ii) 6.72 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.23 0.14

\*TOTALS\*  
 7.27 0.29  
 8.00 8.08  
 81.47 47.95  
 82.47 82.47  
 0.99 0.58  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0012) Area (ha)= 1.17  
 ID= 1 DT= 5.0 min Total Imp(%)= 91.00 Dir. Conn.(%)= 91.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 1.06 0.11  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 88.32 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 162.17 92.57  
 over (min)= 5.00 5.00  
 Storage Coeff. (min)= 1.95 (ii) 4.26 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 5.00  
 Unit Hyd. peak (cms)= 0.31 0.23

\*TOTALS\*  
 0.48 0.03  
 8.00 8.00  
 81.47 47.95  
 82.47 82.47  
 0.99 0.58  
 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0018) Area (ha)= 11.58  
 ID= 1 DT= 5.0 min Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

IMPERVIOUS PERVIOUS (i)

CALIB NASHYD (0019) Area (ha)= 1.83 Curve Number (CN)= 78.0



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Surface Area (ha) = 6.14 5.44  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 277.95 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 78.19  
 over (min) = 5.00 15.00  
 Storage Coeff. (min) = 3.89 (ii) 11.67 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 15.00  
 Unit Hyd. peak (cms) = 0.25 0.09  
 PEAK FLOW (cms) = 2.59 0.66  
 TIME TO PEAK (hrs) = 8.00 8.17  
 RUNOFF VOLUME (mm) = 81.47 41.80  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.51

\*TOTALS\*  
 2.958 (iii)  
 8.00  
 62.83  
 82.47  
 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 77.0 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.

CALIB  
 STANDHYD (0023) Area (ha) = 4.36  
 ID= 1 DT= 5.0 min Total Imp(%) = 78.00 Dir. Conn.(%) = 78.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 3.40 0.96  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 170.49 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 89.46  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 2.90 (ii) 6.41 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.28 0.14  
 PEAK FLOW (cms) = 1.49 0.18  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 81.47 46.65  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57

\*TOTALS\*  
 1.648 (iii)  
 8.00  
 73.81  
 82.47  
 0.89

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB  
 STANDHYD (0024) Area (ha) = 2.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.36 0.18  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 130.13 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 92.57  
 over (min) = 5.00 5.00  
 Storage Coeff. (min) = 2.47 (ii) 4.53 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 5.00  
 Unit Hyd. peak (cms) = 0.30 0.23  
 PEAK FLOW (cms) = 1.05 0.04  
 TIME TO PEAK (hrs) = 8.00 8.00  
 RUNOFF VOLUME (mm) = 81.47 47.95  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58

\*TOTALS\*  
 1.093 (iii)  
 8.00  
 79.13  
 82.47  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB  
 STANDHYD (0027) Area (ha) = 4.22  
 ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 2.62 1.60  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 167.73 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 75.63  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 2.87 (ii) 7.65 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.28 0.13  
 PEAK FLOW (cms) = 1.15 0.24  
 TIME TO PEAK (hrs) = 8.00 8.00  
 RUNOFF VOLUME (mm) = 81.47 40.68  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.49

\*TOTALS\*  
 1.350 (iii)  
 8.00  
 65.97  
 82.47  
 0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB  
 STANDHYD (0028) Area (ha) = 6.40  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 5.95 0.45  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 206.56 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 92.57  
 over (min) = 5.00 10.00  
 Storage Coeff. (min) = 3.25 (ii) 5.32 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 10.00  
 Unit Hyd. peak (cms) = 0.27 0.16  
 PEAK FLOW (cms) = 2.58 0.09  
 TIME TO PEAK (hrs) = 8.00 8.08  
 RUNOFF VOLUME (mm) = 81.47 47.95  
 TOTAL RAINFALL (mm) = 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58

\*TOTALS\*  
 2.663 (iii)  
 8.00  
 79.13  
 82.47  
 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB  
 STANDHYD (0281) Area (ha) = 7.97  
 ID= 1 DT= 5.0 min Total Imp(%) = 88.00 Dir. Conn.(%) = 88.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 7.01 0.96  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 230.51 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr) = 162.17 92.57

over (min)	5.00	10.00	
Storage Coeff. (min)=	3.48 (ii)	6.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.15	
PEAK FLOW (cms)=	3.02	0.18	3.181 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	77.45
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	19.25	7.519	8.00	78.79
+ ID2= 2 (0012):	1.17	0.504	8.00	78.46
ID = 3 (0048):	20.42	8.023	8.00	78.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	20.42	8.023	8.00	78.77
+ ID2= 2 (0018):	11.58	2.958	8.00	62.83
ID = 1 (0048):	32.00	10.980	8.00	73.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	32.00	10.980	8.00	73.00
+ ID2= 2 (0019):	1.83	0.241	8.08	40.02
ID = 3 (0048):	33.83	11.190	8.00	71.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	33.83	11.190	8.00	71.22
+ ID2= 2 (0023):	4.36	1.648	8.00	73.81
ID = 1 (0048):	38.19	12.839	8.00	71.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	38.19	12.839	8.00	71.51
+ ID2= 2 (0024):	2.54	1.093	8.00	79.13
ID = 3 (0048):	40.73	13.932	8.00	71.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	40.73	13.932	8.00	71.99
+ ID2= 2 (0027):	4.22	1.350	8.00	65.97
ID = 1 (0048):	44.95	15.282	8.00	71.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	44.95	15.282	8.00	71.42
+ ID2= 2 (0028):	6.40	2.663	8.00	79.13
ID = 3 (0048):	51.35	17.945	8.00	72.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	51.35	17.945	8.00	72.38
+ ID2= 2 (0281):	7.97	3.181	8.00	77.45
ID = 1 (0048):	59.32	21.125	8.00	73.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)=	7.93
STANDHYD (0010)	Total Imp(%)=	53.00
ID= 1 DT= 5.0 min	Dir. Conn.(%)=	53.00

Surface Area (ha)=	4.20	3.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	229.93	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	92.57
over (min)	5.00	15.00
Storage Coeff. (min)=	3.47 (ii)	10.75 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

PEAK FLOW (cms)=	1.81	0.55
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	81.47	47.95
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58

*TOTALS*		2.121 (iii)
		8.00
		65.72
		82.47
		0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB	Area (ha)=	5.77
STANDHYD (0025)	Total Imp(%)=	53.00
ID= 1 DT= 5.0 min	Dir. Conn.(%)=	53.00

Surface Area (ha)=	3.06	2.71
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	196.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	89.46
over (min)	5.00	15.00
Storage Coeff. (min)=	3.15 (ii)	10.53 (ii)



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Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.27 0.09  
 PEAK FLOW (cms)= 1.33 0.39  
 TIME TO PEAK (hrs)= 8.00 8.17  
 RUNOFF VOLUME (mm)= 81.47 46.65  
 TOTAL RAINFALL (mm)= 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57

\*TOTALS\*  
 1,553 (iii)  
 8.00  
 65.11  
 82.47  
 0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	2.121	8.00	65.72
+ ID2= 2 (0025):	5.77	1.553	8.00	65.11
=====				
ID = 3 (0049):	13.70	3.673	8.00	65.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	3.673	8.00	65.46
+ ID2= 2 (0048):	59.32	21.125	8.00	73.07
=====				
ID = 1 (0049):	73.02	24.799	8.00	71.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0054)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2--> OUT= 1				
DT= 5.0 min				
	0.0000	0.0000	24.7000	0.3878
	11.4000	0.1791	28.2000	0.4425
	16.6000	0.2610	31.7000	0.4980
	20.0000	0.3146	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	73.020	24.799	8.00	71.64
OUTFLOW: ID= 1 (0054)	73.020	22.199	8.00	71.64

PEAK FLOW REDUCTION [Qout/Qin] (%)	TIME SHIFT OF PEAK FLOW (min)	MAXIMUM STORAGE USED (ha.m.)
89.52	0.00	0.3878

CALIB STANDHYD (0013)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	29.43	82.00	82.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	24.13	5.30
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	442.94	40.00
Mannings n =	0.013	0.250

	IMPERVIOUS	PERVIOUS (i)
Max. Eff. Inten. (mm/hr)=	162.17	92.57
over (min)=	5.00	10.00
Storage Coeff. (min)=	5.14 (ii)	8.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.13

	PEAK FLOW (cms)	TIME TO PEAK (hrs)	RUNOFF VOLUME (mm)	TOTAL RAINFALL (mm)
	9.60	8.00	81.47	82.47
	0.92	8.08	47.95	82.47
	10.385 (iii)	8.00	75.44	82.47

RUNOFF COEFFICIENT = 0.99 0.58 0.91

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0020)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	69.17	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	61.56	7.61
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	679.07	40.00
Mannings n =	0.013	0.250

	IMPERVIOUS	PERVIOUS (i)
Max. Eff. Inten. (mm/hr)=	162.17	92.57
over (min)=	5.00	10.00
Storage Coeff. (min)=	6.65 (ii)	9.17 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.18	0.12

	PEAK FLOW (cms)	TIME TO PEAK (hrs)	RUNOFF VOLUME (mm)	TOTAL RAINFALL (mm)	RUNOFF COEFFICIENT
	22.63	8.00	81.47	82.47	0.99
	1.27	8.08	47.95	82.47	0.58
	23.702 (iii)	8.00	77.79	82.47	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0021)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.49	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.13	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	173.01	40.00
Mannings n =	0.013	0.250

	IMPERVIOUS	PERVIOUS (i)
Max. Eff. Inten. (mm/hr)=	162.17	92.57
over (min)=	5.00	10.00
Storage Coeff. (min)=	2.93 (ii)	5.12 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.16

	PEAK FLOW (cms)	TIME TO PEAK (hrs)	RUNOFF VOLUME (mm)	TOTAL RAINFALL (mm)	RUNOFF COEFFICIENT
	1.81	8.00	81.47	82.47	0.99
	0.07	8.08	47.95	82.47	0.58
	1.878 (iii)	8.00	78.79	82.47	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0026)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.46	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.10	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	172.43	40.00
Mannings n =	0.013	0.250



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Max. Eff. Inten. (mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)	2.92 (ii)	5.11 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.28	0.16	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.80	0.07	1.866 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	78.79
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.96

Unit Hyd Qpeak (cms)=	0.368
PEAK FLOW (cms)=	0.245 (i)
TIME TO PEAK (hrs)=	8.167
RUNOFF VOLUME (mm)=	42.537
TOTAL RAINFALL (mm)=	82.474
RUNOFF COEFFICIENT =	0.516

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

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0050)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	29.43	10.385	8.00	75.44
+ ID2= 2 (0020):	69.17	23.702	8.00	77.79
=====				
ID = 3 (0050):	98.60	34.087	8.00	77.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0050):	98.60	34.087	8.00	77.09
+ ID2= 2 (0021):	4.49	1.878	8.00	78.79
=====				
ID = 1 (0050):	103.09	35.965	8.00	77.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0050):	103.09	35.965	8.00	77.16
+ ID2= 2 (0026):	4.46	1.866	8.00	78.79
=====				
ID = 3 (0050):	107.55	37.831	8.00	77.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0056)				
IN= 2--> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0050)	107.550	37.831	8.00	77.23
OUTFLOW: ID= 1 (0056)	107.550	18.478	8.17	77.23

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.84  
 TIME SHIFT OF PEAK FLOW (min) = 10.00  
 MAXIMUM STORAGE USED (ha.m.) = 2.2032

CALIB NASHYD (0015)				
ID= 1 DT= 5.0 min				
	Area	(ha)	Curve Number	(CN) = 80.0
	Ia	(mm)	# of Linear Res. (N)	= 3.00
	U.H. Tp	(hrs)		= 0.24

CALIB STANDHYD (0003)			
ID= 1 DT= 5.0 min			
Area	(ha)	=	8.96
Total Imp (%)	=	46.00	Dir. Conn. (%) = 46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)	4.12 4.84
Dep. Storage	(mm)	1.00 1.50
Average Slope	(%)	1.00 2.00
Length	(m)	244.40 40.00
Mannings n	=	0.013 0.250

Max. Eff. Inten. (mm/hr)=	162.17	83.60
over (min)	5.00	15.00
Storage Coeff. (min)	3.60 (ii)	11.18 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

**\*TOTALS\***

PEAK FLOW (cms)=	1.76	0.63	2.119 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	81.47	44.16	61.32
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.54	0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0004)			
ID= 1 DT= 5.0 min			
Area	(ha)	=	11.16
Total Imp (%)	=	86.00	Dir. Conn. (%) = 86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)	9.60 1.56
Dep. Storage	(mm)	1.00 1.50
Average Slope	(%)	1.00 2.00
Length	(m)	272.76 40.00
Mannings n	=	0.013 0.250

Max. Eff. Inten. (mm/hr)=	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)	3.84 (ii)	6.66 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.14

**\*TOTALS\***

PEAK PLOW (cms)=	4.06	0.29	4.323 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	76.78
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.93

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0005)			
ID= 1 DT= 5.0 min			
Area	(ha)	=	14.33
Total Imp (%)	=	93.00	Dir. Conn. (%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)	13.33 1.00
Dep. Storage	(mm)	1.00 1.50



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Average Slope (%) = 1.00 2.00  
 Length (m) = 309.08 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 162.17 92.57  
     over (min) = 5.00 10.00  
 Storage Coeff. (min)= 4.14 (ii) 6.21 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.24 0.15

\*TOTALS\*  
 PEAK FLOW (cms) = 5.57 0.19 5.739 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 81.47 47.95 79.13  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0016) Area (ha) = 11.78  
 ID= 1 DT= 5.0 min Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 10.84 0.94  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 280.24 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 162.17 92.57  
     over (min) = 5.00 10.00  
 Storage Coeff. (min)= 3.91 (ii) 6.10 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.25 0.15

\*TOTALS\*  
 PEAK FLOW (cms) = 4.58 0.18 4.739 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 81.47 47.95 78.79  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0017) Area (ha) = 9.75  
 ID= 1 DT= 5.0 min Total Imp(%) = 52.00 Dir. Conn.(%) = 52.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 5.07 4.68  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 254.95 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 162.17 89.46  
     over (min) = 5.00 15.00  
 Storage Coeff. (min)= 3.69 (ii) 11.07 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.25 0.09

\*TOTALS\*  
 PEAK FLOW (cms) = 2.16 0.66 2.534 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 81.47 46.65 64.76  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0022) Area (ha) = 13.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 7.18 6.36  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 300.44 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 162.17 92.57  
     over (min) = 5.00 15.00  
 Storage Coeff. (min)= 4.07 (ii) 11.35 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.24 0.09

\*TOTALS\*  
 PEAK FLOW (cms) = 3.01 0.91 3.527 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00  
 RUNOFF VOLUME (mm) = 81.47 47.95 65.72  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0029) Area (ha) = 37.35  
 ID= 1 DT= 5.0 min Total Imp(%) = 73.00 Dir. Conn.(%) = 73.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha) = 27.27 10.08  
 Dep. Storage (mm) = 1.00 1.50  
 Average Slope (%) = 1.00 2.00  
 Length (m) = 499.00 40.00  
 Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 162.17 89.46  
     over (min) = 5.00 10.00  
 Storage Coeff. (min)= 5.52 (ii) 9.43 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.20 0.12

\*TOTALS\*  
 PEAK FLOW (cms) = 10.63 1.61 11.981 (iii)  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00  
 RUNOFF VOLUME (mm) = 81.47 46.65 72.07  
 TOTAL RAINFALL (mm) = 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.87

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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 (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0017):	9.75	2.534	8.00	64.76
+ ID2= 2 (0022):	13.54	3.527	8.00	65.72
=====				
ID = 3 (0061):	23.29	6.061	8.00	65.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)

3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0061):	23.29	6.061	8.00	65.32
+ ID2= 2 (0029):	37.35	11.981	8.00	72.07
-----				
ID = 1 (0061):	60.64	18.042	8.00	69.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	4.739	8.00	78.79
+ ID2= 2 (0004):	11.16	4.323	8.00	76.78
-----				
ID = 3 (0032):	22.94	9.061	8.00	77.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.94	9.061	8.00	77.81
+ ID2= 2 (0005):	14.33	5.739	8.00	79.13
-----				
ID = 1 (0032):	37.27	14.800	8.00	78.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0032):	37.27	14.800	8.00	78.32
+ ID2= 2 (0061):	60.64	18.042	8.00	69.48
-----				
ID = 3 (0032):	97.91	32.843	8.00	72.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030) ID= 1 DT= 5.0 min			
Area (ha)	Imp (%)	Dir. Conn. (%)	
9.95	66.00	66.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.57	3.38
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.55	40.00
Mannings n	0.013	0.250

Max.Eff. Inten. (mm/hr) over (min)	162.17	89.46
Storage Coeff. (min)	5.00	10.00
Unit Hyd. Tpeak (min)	3.71 (ii)	8.18 (ii)
Unit Hyd. peak (cms)	5.00	10.00
	0.25	0.13

			*TOTALS*
PEAK FLOW (cms)	2.80	0.57	3.284 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	81.47	46.65	69.63
TOTAL RAINFALL (mm)	82.47	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.57	0.84

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min			
Area (ha)	Imp (%)	Dir. Conn. (%)	
2.18	39.00	39.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	0.85	1.33
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	120.55	40.00
Mannings n	0.013	0.250

Max.Eff. Inten. (mm/hr) over (min)	162.17	86.47
Storage Coeff. (min)	5.00	10.00
Unit Hyd. Tpeak (min)	2.36 (ii)	9.84 (ii)
Unit Hyd. peak (cms)	5.00	10.00
	0.30	0.11

			*TOTALS*
PEAK FLOW (cms)	0.38	0.20	0.546 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	81.47	45.38	59.46
TOTAL RAINFALL (mm)	82.47	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.55	0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.245	8.17	42.54
+ ID2= 2 (0002):	2.18	0.546	8.00	59.46
-----				
ID = 3 (2701):	4.49	0.693	8.00	50.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.693	8.00	50.75
+ ID2= 2 (0003):	8.96	2.119	8.00	61.32
-----				
ID = 1 (2701):	13.45	2.812	8.00	57.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2701):	13.45	2.812	8.00	57.79
+ ID2= 2 (0030):	9.95	3.284	8.00	69.63
-----				
ID = 3 (2701):	23.40	6.096	8.00	62.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	23.40	6.096	8.00	62.83
+ ID2= 2 (0032):	97.91	32.843	8.00	72.84
-----				
ID = 1 (2701):	121.31	38.939	8.00	70.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min			
Area (ha)	Imp (%)	Dir. Conn. (%)	
9.72	46.00	46.00	





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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	162.17	89.46
over (min)	5.00	15.00
Storage Coeff. (min)=	3.69 (ii)	11.07 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09

			*TOTALS*
PEAK FLOW (cms)=	1.91	0.74	2.324 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	81.47	46.65	62.67
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	2.324	8.00	62.67
+ ID2= 2 (2701):	121.31	38.939	8.00	70.91
=====				
ID = 3 (0222):	131.03	41.263	8.00	70.30

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	34.81	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	30.98	3.83	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	481.73	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.41 (ii)	7.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.13	
PEAK FLOW (cms)=	12.16	0.68	12.738 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	
RUNOFF VOLUME (mm)=	81.47	47.95	77.79
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.32	88.00	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.20	1.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	249.27	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	162.17	92.57

	over (min)	5.00	10.00
Storage Coeff. (min)=	3.64 (ii)	6.26 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.15	
PEAK FLOW (cms)=	3.50	0.21	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	3.693 (iii)
RUNOFF VOLUME (mm)=	81.47	47.95	8.00
TOTAL RAINFALL (mm)=	82.47	82.47	77.45
RUNOFF COEFFICIENT =	0.99	0.58	82.47
			0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	12.738	8.00	77.79
+ ID2= 2 (0007):	9.32	3.693	8.00	77.45
=====				
ID = 3 (0282):	44.13	16.431	8.00	77.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.98	90.00	90.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	8.98	1.00	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	257.94	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.72 (ii)	6.13 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.15	
PEAK FLOW (cms)=	3.82	0.19	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	3.996 (iii)
RUNOFF VOLUME (mm)=	81.47	47.95	8.00
TOTAL RAINFALL (mm)=	82.47	82.47	78.12
RUNOFF COEFFICIENT =	0.99	0.58	82.47
			0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0053)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0282):	44.13	16.431	8.00	77.72
+ ID2= 2 (0052):	9.98	3.996	8.00	78.12
=====				
ID = 3 (0053):	54.11	20.427	8.00	77.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	4.99	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35



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Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 182.39 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 162.17 86.47  
 over (min)= 5.00 15.00  
 Storage Coeff. (min)= 3.02 (ii) 10.50 (iii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.27 0.09  
 \*TOTALS\*  
 PEAK FLOW (cms)= 1.16 0.33 1.341 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 81.47 45.38 64.51  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.55 0.78

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 80.0 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 (0239)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0031):	4.99	1.341	8.00	64.51
+ ID2= 2 (0053):	54.11	20.427	8.00	77.79
=====				
ID = 3 (0239):	59.10	21.768	8.00	76.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)	PERVIOUS (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	5.73	50.00	50.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 2.87 2.87  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 195.45 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 162.17 89.46  
 over (min)= 5.00 15.00  
 Storage Coeff. (min)= 3.15 (ii) 10.53 (iii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.27 0.09  
 \*TOTALS\*  
 PEAK FLOW (cms)= 1.25 0.41 1.481 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 81.47 46.65 64.06  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.78

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area (ha)	PERVIOUS (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	1.88	56.00	56.00

IMPERVIOUS PERVIOUS (i)  
 Surface Area (ha)= 1.05 0.83  
 Dep. Storage (mm)= 1.00 1.50  
 Average Slope (%)= 1.00 2.00  
 Length (m)= 111.95 40.00  
 Mannings n = 0.013 0.250  
 Max.Eff.Inten.(mm/hr)= 162.17 92.57  
 over (min)= 5.00 10.00

Storage Coeff. (min)= 2.25 (ii) 9.53 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.30 0.12  
 \*TOTALS\*  
 PEAK FLOW (cms)= 0.47 0.14 0.584 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 81.47 47.95 66.72  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.58 0.81

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
 CN\* = 82.0 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 (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0014):	1.88	0.584	8.00	66.72
+ ID2= 2 (0239):	59.10	21.768	8.00	76.67
=====				
ID = 3 (0217):	60.98	22.352	8.00	76.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0217):	60.98	22.352	8.00	76.36
+ ID2= 2 (0008):	5.73	1.481	8.00	64.06
=====				
ID = 1 (0217):	66.71	23.833	8.00	75.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0217):	66.71	23.833	8.00	75.31
+ ID2= 2 (0222):	131.03	41.263	8.00	70.30
=====				
ID = 3 (0051):	197.74	65.096	8.00	71.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0057)	IN= 2--> OUT= 1	DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	23.5000	4.5011
			11.2000	2.0777	27.4000	5.0376
			14.6000	3.0936	31.5000	5.5552
			18.2000	3.7229	0.0000	0.0000

INFLOW : ID= 2 (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
197.740	197.740	65.096	8.00	71.99

OUTFLOW: ID= 1 (0057)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
197.740	197.740	23.064	8.25	71.99

PEAK FLOW REDUCTION [Qout/Qin] (%) = 35.43  
 TIME SHIFT OF PEAK FLOW (min) = 15.00  
 MAXIMUM STORAGE USED (ha.m.) = 4.5011

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 5 \*\*  
 \*\*\*\*\*

CHICAGO STORM	IDF curve parameters:
Ptotal= 89.46 mm	A=1960.000
	B= 5.800
	C= 0.861



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used in: INTENSITY =  $A / (t + B)^C$

Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.54	6.17	2.04	12.17	1.78	18.17	0.79
0.33	0.55	6.33	2.24	12.33	1.71	18.33	0.78
0.50	0.56	6.50	2.48	12.50	1.66	18.50	0.77
0.67	0.57	6.67	2.79	12.67	1.60	18.67	0.76
0.83	0.59	6.83	3.19	12.83	1.55	18.83	0.75
1.00	0.60	7.00	3.73	13.00	1.50	19.00	0.74
1.17	0.61	7.17	4.51	13.17	1.46	19.17	0.73
1.33	0.63	7.33	5.73	13.33	1.42	19.33	0.72
1.50	0.64	7.50	7.93	13.50	1.38	19.50	0.71
1.67	0.65	7.67	13.01	13.67	1.34	19.67	0.70
1.83	0.67	7.83	36.39	13.83	1.31	19.83	0.69
2.00	0.69	8.00	182.06	14.00	1.27	20.00	0.68
2.17	0.70	8.17	49.43	14.17	1.24	20.17	0.68
2.33	0.72	8.33	23.41	14.33	1.21	20.33	0.67
2.50	0.74	8.50	15.03	14.50	1.18	20.50	0.66
2.67	0.76	8.67	11.02	14.67	1.16	20.67	0.65
2.83	0.79	8.83	8.69	14.83	1.13	20.83	0.64
3.00	0.81	9.00	7.18	15.00	1.11	21.00	0.64
3.17	0.83	9.17	6.13	15.17	1.08	21.17	0.63
3.33	0.86	9.33	5.35	15.33	1.06	21.33	0.62
3.50	0.89	9.50	4.75	15.50	1.04	21.50	0.62
3.67	0.92	9.67	4.27	15.67	1.02	21.67	0.61
3.83	0.95	9.83	3.89	15.83	1.00	21.83	0.60
4.00	0.99	10.00	3.57	16.00	0.98	22.00	0.60
4.17	1.03	10.17	3.30	16.17	0.96	22.17	0.59
4.33	1.07	10.33	3.08	16.33	0.95	22.33	0.58
4.50	1.12	10.50	2.88	16.50	0.93	22.50	0.58
4.67	1.17	10.67	2.71	16.67	0.91	22.67	0.57
4.83	1.23	10.83	2.55	16.83	0.90	22.83	0.57
5.00	1.29	11.00	2.42	17.00	0.88	23.00	0.56
5.17	1.36	11.17	2.30	17.17	0.87	23.17	0.56
5.33	1.44	11.33	2.19	17.33	0.86	23.33	0.55
5.50	1.52	11.50	2.09	17.50	0.84	23.50	0.55
5.67	1.63	11.67	2.00	17.67	0.83	23.67	0.54
5.83	1.74	11.83	1.92	17.83	0.82	23.83	0.54
6.00	1.88	12.00	1.85	18.00	0.80	24.00	0.53

1.833	0.67	7.833	36.40	13.833	1.31	19.83	0.69
1.917	0.69	7.917	182.06	13.917	1.27	19.92	0.68
2.000	0.69	8.000	182.05	14.000	1.27	20.00	0.68
2.083	0.70	8.083	49.43	14.083	1.24	20.08	0.68
2.167	0.70	8.167	49.43	14.167	1.24	20.17	0.68
2.250	0.72	8.250	23.41	14.250	1.21	20.25	0.67
2.333	0.72	8.333	23.41	14.333	1.21	20.33	0.67
2.417	0.74	8.417	15.03	14.417	1.18	20.42	0.66
2.500	0.74	8.500	15.03	14.500	1.18	20.50	0.66
2.583	0.76	8.583	11.02	14.583	1.16	20.58	0.65
2.667	0.76	8.667	11.02	14.667	1.16	20.67	0.65
2.750	0.79	8.750	8.69	14.750	1.13	20.75	0.64
2.833	0.79	8.833	8.69	14.833	1.13	20.83	0.64
2.917	0.81	8.917	7.18	14.917	1.11	20.92	0.64
3.000	0.81	9.000	7.18	15.000	1.11	21.00	0.64
3.083	0.83	9.083	6.13	15.083	1.08	21.08	0.63
3.167	0.83	9.167	6.13	15.167	1.08	21.17	0.63
3.250	0.86	9.250	5.35	15.250	1.06	21.25	0.62
3.333	0.86	9.333	5.35	15.333	1.06	21.33	0.62
3.417	0.89	9.417	4.75	15.417	1.04	21.42	0.62
3.500	0.89	9.500	4.75	15.500	1.04	21.50	0.62
3.583	0.92	9.583	4.27	15.583	1.02	21.58	0.61
3.667	0.92	9.667	4.27	15.667	1.02	21.67	0.61
3.750	0.95	9.750	3.89	15.750	1.00	21.75	0.60
3.833	0.95	9.833	3.89	15.833	1.00	21.83	0.60
3.917	0.99	9.917	3.57	15.917	0.98	21.92	0.60
4.000	0.99	10.000	3.57	16.000	0.98	22.00	0.60
4.083	1.03	10.083	3.30	16.083	0.96	22.08	0.59
4.167	1.03	10.167	3.30	16.167	0.96	22.17	0.59
4.250	1.07	10.250	3.08	16.250	0.95	22.25	0.58
4.333	1.07	10.333	3.08	16.333	0.95	22.33	0.58
4.417	1.12	10.417	2.88	16.417	0.93	22.42	0.58
4.500	1.12	10.500	2.88	16.500	0.93	22.50	0.58
4.583	1.17	10.583	2.71	16.583	0.91	22.58	0.57
4.667	1.17	10.667	2.71	16.667	0.91	22.67	0.57
4.750	1.23	10.750	2.55	16.750	0.90	22.75	0.57
4.833	1.23	10.833	2.55	16.833	0.90	22.83	0.57
4.917	1.29	10.917	2.42	16.917	0.88	22.92	0.56
5.000	1.29	11.000	2.42	17.000	0.88	23.00	0.56
5.083	1.36	11.083	2.30	17.083	0.87	23.08	0.56
5.167	1.36	11.167	2.30	17.167	0.87	23.17	0.56
5.250	1.44	11.250	2.19	17.250	0.86	23.25	0.55
5.333	1.44	11.333	2.19	17.333	0.86	23.33	0.55
5.417	1.52	11.417	2.09	17.417	0.84	23.42	0.55
5.500	1.52	11.500	2.09	17.500	0.84	23.50	0.55
5.583	1.63	11.583	2.00	17.583	0.83	23.58	0.54
5.667	1.63	11.667	2.00	17.667	0.83	23.67	0.54
5.750	1.74	11.750	1.92	17.750	0.82	23.75	0.54
5.833	1.74	11.833	1.92	17.833	0.82	23.83	0.54
5.917	1.88	11.917	1.85	17.917	0.80	23.92	0.53
6.000	1.88	12.000	1.85	18.000	0.80	24.00	0.53

CALIB STANDHYD (0009)	Area (ha) = 42.85
ID= 1 DT= 5.0 min	Total Imp(%) = 68.00 Dir. Conn.(%) = 68.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	29.14	13.71
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	534.48	40.00
Mannings n =	0.013	0.250

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.54	6.083	2.04	12.083	1.78	18.08	0.79
0.167	0.54	6.167	2.04	12.167	1.78	18.17	0.79
0.250	0.55	6.250	2.24	12.250	1.71	18.25	0.78
0.333	0.55	6.333	2.24	12.333	1.71	18.33	0.78
0.417	0.56	6.417	2.48	12.417	1.66	18.42	0.77
0.500	0.56	6.500	2.48	12.500	1.66	18.50	0.77
0.583	0.57	6.583	2.79	12.583	1.60	18.58	0.76
0.667	0.57	6.667	2.79	12.667	1.60	18.67	0.76
0.750	0.59	6.750	3.19	12.750	1.55	18.75	0.75
0.833	0.59	6.833	3.19	12.833	1.55	18.83	0.75
0.917	0.60	6.917	3.73	12.917	1.50	18.92	0.74
1.000	0.60	7.000	3.73	13.000	1.50	19.00	0.74
1.083	0.61	7.083	4.51	13.083	1.46	19.08	0.73
1.167	0.61	7.167	4.51	13.167	1.46	19.17	0.73
1.250	0.63	7.250	5.73	13.250	1.42	19.25	0.72
1.333	0.63	7.333	5.73	13.333	1.42	19.33	0.72
1.417	0.64	7.417	7.93	13.417	1.38	19.42	0.71
1.500	0.64	7.500	7.93	13.500	1.38	19.50	0.71
1.583	0.65	7.583	13.01	13.583	1.34	19.58	0.70
1.667	0.65	7.667	13.01	13.667	1.34	19.67	0.70
1.750	0.67	7.750	36.39	13.750	1.31	19.75	0.69

Max.Eff.Inten.(mm/hr) =	182.06	105.09
over (min) =	5.00	10.00
Storage Coeff. (min) =	5.50 (ii)	9.60 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.20	0.11
PEAK FLOW (cms) =	12.77	2.55
TIME TO PEAK (hrs) =	8.00	8.08
RUNOFF VOLUME (mm) =	88.46	52.44
TOTAL RAINFALL (mm) =	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59

\*TOTALS\*

14.901 (iii)
8.00
76.93
89.46
0.86

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB NASHVD (0019)	Area (ha) = 1.83	Curve Number (CN) = 78.0
ID= 1 DT= 5.0 min	Ia (mm) = 5.00	# of Linear Res. (N) = 3.00
	U.H. Tp (hrs) = 0.15	

Unit Hyd Qpeak (cms) =	0.466
PEAK FLOW (cms) =	0.286 (i)
TIME TO PEAK (hrs) =	8.083
RUNOFF VOLUME (mm) =	45.431
TOTAL RAINFALL (mm) =	89.456
RUNOFF COEFFICIENT =	0.508



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

CALIB  
STANDHYD (0011) Area (ha) = 19.25  
ID= 1 DT= 5.0 min Total Imp(%) = 92.00 Dir. Conn.(%) = 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	17.71	1.54
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	358.24	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	182.06 5.00	108.56 10.00
Storage Coeff. (min)	4.32 (ii)	6.41 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.23	0.14

PEAK FLOW (cms)	8.24	0.34	8.540 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	88.46	53.83	85.69
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0012) Area (ha) = 1.17  
ID= 1 DT= 5.0 min Total Imp(%) = 91.00 Dir. Conn.(%) = 91.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	1.06	0.11
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	88.32	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	182.06 5.00	108.56 5.00
Storage Coeff. (min)	1.87 (ii)	4.07 (ii)
Unit Hyd. Tpeak (min)	5.00	5.00
Unit Hyd. peak (cms)	0.32	0.24

PEAK FLOW (cms)	0.54	0.03	0.568 (iii)
TIME TO PEAK (hrs)	8.00	8.00	8.00
RUNOFF VOLUME (mm)	88.46	53.83	85.34
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0018) Area (ha) = 11.58  
ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.14	5.44
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	277.85	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	182.06 5.00	92.40 15.00
Storage Coeff. (min)	3.71 (ii)	11.00 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.25	0.09

PEAK FLOW (cms)	2.93	0.79	3.376 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	88.46	47.22	69.08
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.53	0.77

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB  
STANDHYD (0023) Area (ha) = 4.36  
ID= 1 DT= 5.0 min Total Imp(%) = 78.00 Dir. Conn.(%) = 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.40	0.96
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	170.49	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	182.06 5.00	105.09 10.00
Storage Coeff. (min)	2.77 (ii)	6.12 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.15

PEAK FLOW (cms)	1.68	0.21	1.869 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	88.46	52.44	80.53
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.59	0.90

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0024) Area (ha) = 2.54  
ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.36	0.18
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	130.13	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	182.06 5.00	108.56 5.00
Storage Coeff. (min)	2.35 (ii)	4.33 (ii)
Unit Hyd. Tpeak (min)	5.00	5.00
Unit Hyd. peak (cms)	0.30	0.23

PEAK FLOW (cms)	1.18	0.05	1.233 (iii)
TIME TO PEAK (hrs)	8.00	8.00	8.00
RUNOFF VOLUME (mm)	88.46	53.83	86.03
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0027) Area (ha) = 4.22  
ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.62	1.60
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	167.73	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	182.06	89.50
over (min)	5.00	10.00
Storage Coeff. (min)	2.74 (ii)	7.31 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.13
PEAK FLOW (cms)	1.30	0.28
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	88.46	46.00
TOTAL RAINFALL (mm)	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.51

\*TOTALS\*  
1.538 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB STANDHYD (0028)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	6.40	93.00	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	5.95	0.45
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	206.56	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)	3.11 (ii)	5.08 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.27	0.16
PEAK FLOW (cms)	2.91	0.11
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	88.46	53.83
TOTAL RAINFALL (mm)	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60

\*TOTALS\*  
3.010 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0281)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	7.97	88.00	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	7.01	0.96
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	230.51	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)	3.32 (ii)	5.82 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15
PEAK FLOW (cms)	3.41	0.22
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	88.46	53.83
TOTAL RAINFALL (mm)	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60

\*TOTALS\*  
3.603 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0011):	19.25	8.540	8.00	85.69
+ ID2= 2 (0012):	1.17	0.568	8.00	85.34
ID = 3 (0048):	20.42	9.107	8.00	85.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	20.42	9.107	8.00	85.67
+ ID2= 2 (0018):	11.58	3.376	8.00	69.08
ID = 1 (0048):	32.00	12.483	8.00	79.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	32.00	12.483	8.00	79.66
+ ID2= 2 (0019):	1.83	0.286	8.00	45.43
ID = 3 (0048):	33.83	12.734	8.00	77.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	33.83	12.734	8.00	77.81
+ ID2= 2 (0023):	4.36	1.869	8.00	80.53
ID = 1 (0048):	38.19	14.603	8.00	78.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	38.19	14.603	8.00	78.12
+ ID2= 2 (0024):	2.54	1.233	8.00	86.03
ID = 3 (0048):	40.73	15.836	8.00	78.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	40.73	15.836	8.00	78.61
+ ID2= 2 (0027):	4.22	1.538	8.00	72.32
ID = 1 (0048):	44.95	17.373	8.00	78.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



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ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	44.95	17.373	8.00	78.02
+ ID2= 2 (0028):	6.40	3.010	8.00	86.03
ID = 3 (0048):	51.35	20.384	8.00	79.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	51.35	20.384	8.00	79.02
+ ID2= 2 (0281):	7.97	3.603	8.00	84.30
ID = 1 (0048):	59.32	23.987	8.00	79.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	7.93	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	4.20	3.73	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	229.93	40.00	
Mannings n	0.013	0.250	
Max. Eff. Inten. (mm/hr) over (min)	182.06 / 5.00	108.56 / 15.00	
Storage Coeff. (min)	3.31 (ii)	10.14 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.26	0.10	
PEAK FLOW (cms)	2.04	0.65	2.419 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	88.46	53.83	72.18
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.81

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	5.77	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	3.06	2.71	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	196.13	40.00	
Mannings n	0.013	0.250	
Max. Eff. Inten. (mm/hr) over (min)	182.06 / 5.00	105.09 / 10.00	
Storage Coeff. (min)	3.01 (ii)	9.93 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.28	0.11	
PEAK FLOW (cms)	1.50	0.50	1.915 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	88.46	52.44	71.53
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.59	0.80

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	2.419	8.00	72.18
+ ID2= 2 (0025):	5.77	1.915	8.00	71.53
ID = 3 (0049):	13.70	4.333	8.00	71.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	4.333	8.00	71.91
+ ID2= 2 (0048):	59.32	23.987	8.00	79.73
ID = 1 (0049):	73.02	28.321	8.00	78.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0054)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2---> OUT= 1				
DT= 5.0 min				
	0.0000	0.0000	24.7000	0.3878
	11.4000	0.1791	28.2000	0.4425
	16.6000	0.2610	31.7000	0.4980
	20.0000	0.3146	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	73.020	28.321	8.00	78.26
OUTFLOW : ID= 1 (0054)	73.020	25.400	8.00	78.26

PEAK FLOW REDUCTION [Qout/Qin] (%) = 89.69  
 TIME SHIFT OF PEAK FLOW (min) = 0.00  
 MAXIMUM STORAGE USED (ha.m.) = 0.4425

CALIB STANDHYD (0013)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	29.43	82.00	82.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	24.13	5.30	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	442.94	40.00	
Mannings n	0.013	0.250	
Max. Eff. Inten. (mm/hr) over (min)	182.06 / 5.00	108.56 / 10.00	
Storage Coeff. (min)	4.91 (ii)	7.94 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.22	0.13	
PEAK FLOW (cms)	10.90	1.10	11.846 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	88.46	53.83	82.22
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.92

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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.



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CALIB STANDHYD (0020) ID= 1 DT= 5.0 min			
Area (ha)	=	69.17	
Total Imp(%)	=	89.00	Dir. Conn.(%) = 89.00
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	61.56	7.61
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	679.07	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	6.34 (ii)	8.75 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.19	0.12
		<b>*TOTALS*</b>	
PEAK FLOW (cms)	=	25.80	1.52
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	88.46	53.83
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.60

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min			
Area (ha)	=	4.49	
Total Imp(%)	=	92.00	Dir. Conn.(%) = 92.00
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	4.13	0.36
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	173.01	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	5.00
Storage Coeff. (min)	=	2.79 (ii)	4.88 (ii)
Unit Hyd. Tpeak (min)	=	5.00	5.00
Unit Hyd. peak (cms)	=	0.28	0.22
		<b>*TOTALS*</b>	
PEAK FLOW (cms)	=	2.04	0.10
TIME TO PEAK (hrs)	=	8.00	2.143 (iii)
RUNOFF VOLUME (mm)	=	88.46	53.83
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.60

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min			
Area (ha)	=	4.46	
Total Imp(%)	=	92.00	Dir. Conn.(%) = 92.00
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	4.10	0.36
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	172.43	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	5.00
Storage Coeff. (min)	=	2.79 (ii)	4.88 (ii)
Unit Hyd. Tpeak (min)	=	5.00	5.00
Unit Hyd. peak (cms)	=	0.28	0.22
		<b>*TOTALS*</b>	
PEAK FLOW (cms)	=	2.03	0.10
TIME TO PEAK (hrs)	=	8.00	2.129 (iii)
RUNOFF VOLUME (mm)	=	88.46	53.83

TOTAL RAINFALL (mm)	=	89.46	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.60	0.96

- \*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	29.43	11.846	8.00	82.22
+ ID2= 2 (0020):	69.17	27.090	8.00	84.65
ID = 3 (0050):	98.60	38.936	8.00	83.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050) 3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0050):	98.60	38.936	8.00	83.92
+ ID2= 2 (0021):	4.49	2.143	8.00	85.69
ID = 1 (0050):	103.09	41.079	8.00	84.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050) 1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0050):	103.09	41.079	8.00	84.00
+ ID2= 2 (0026):	4.46	2.129	8.00	85.69
ID = 3 (0050):	107.55	43.208	8.00	84.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0056) IN= 2---> OUT= 1 DT= 5.0 min				
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000

INFLOW : ID= 2 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	107.550	43.208	8.00	84.07
OUTFLOW: ID= 1 (0056)	107.550	20.990	8.17	84.07

PEAK FLOW REDUCTION [Qout/Qin] (%)	=	48.58
TIME SHIFT OF PEAK FLOW (min)	=	10.00
MAXIMUM STORAGE USED (ha.m.)	=	2.4486

CALIB NASHYD (0015) ID= 1 DT= 5.0 min			
Area (ha)	=	2.31	Curve Number (CN) = 80.0
Ia (mm)	=	5.00	# of Linear Res. (N) = 3.00
U.H. Tp (hrs)	=	0.24	

Unit Hyd Qpeak (cms)	=	0.368
PEAK FLOW (cms)	=	0.290 (i)
TIME TO PEAK (hrs)	=	8.167
RUNOFF VOLUME (mm)	=	48.164
TOTAL RAINFALL (mm)	=	89.456
RUNOFF COEFFICIENT	=	0.538

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

CALIB  
STANDHYD (0003)  
ID= 1 DT= 5.0 min

Area (ha)= 8.96  
Total Imp(%)= 46.00 Dir. Conn.(%)= 46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.12	4.84
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	244.40	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	98.51
over (min)	5.00	15.00
Storage Coeff. (min)=	3.44 (ii)	10.54 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

\*TOTALS\*  
PEAK FLOW (cms)= 1.99 0.76 2.424 (iii)  
TIME TO PEAK (hrs)= 8.00 8.17 8.00  
RUNOFF VOLUME (mm)= 88.46 49.76 67.56  
TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
RUNOFF COEFFICIENT = 0.99 0.56 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB  
STANDHYD (0004)  
ID= 1 DT= 5.0 min

Area (ha)= 11.16  
Total Imp(%)= 86.00 Dir. Conn.(%)= 86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	9.60	1.56
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	272.76	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	3.67 (ii)	6.36 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.15

\*TOTALS\*  
PEAK FLOW (cms)= 4.60 0.35 4.906 (iii)  
TIME TO PEAK (hrs)= 8.00 8.08 8.00  
RUNOFF VOLUME (mm)= 88.46 53.83 83.61  
TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
RUNOFF COEFFICIENT = 0.99 0.60 0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0005)  
ID= 1 DT= 5.0 min

Area (ha)= 14.33  
Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	13.33	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	309.08	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	3.96 (ii)	5.93 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.15

\*TOTALS\*

PEAK FLOW (cms)=	6.30	0.23	6.508 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	86.03
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0016)  
ID= 1 DT= 5.0 min

Area (ha)= 11.78  
Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	10.84	0.94
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	280.24	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	3.73 (ii)	5.82 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.15

\*TOTALS\*  
PEAK FLOW (cms)= 5.18 0.21 5.371 (iii)  
TIME TO PEAK (hrs)= 8.00 8.08 8.00  
RUNOFF VOLUME (mm)= 88.46 53.83 85.69  
TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
RUNOFF COEFFICIENT = 0.99 0.60 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0017)  
ID= 1 DT= 5.0 min

Area (ha)= 9.75  
Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.07	4.68
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.95	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)	5.00	15.00
Storage Coeff. (min)=	3.52 (ii)	10.44 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

\*TOTALS\*  
PEAK FLOW (cms)= 2.44 0.79 2.893 (iii)  
TIME TO PEAK (hrs)= 8.00 8.17 8.00  
RUNOFF VOLUME (mm)= 88.46 52.44 71.17  
TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
RUNOFF COEFFICIENT = 0.99 0.59 0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0022)  
ID= 1 DT= 5.0 min

Area (ha)= 13.54  
Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00





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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	7.18	6.36	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	300.44	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	108.56	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.89 (ii)	10.72 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	3.40	1.09	4.031 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	72.18
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029) ID= 1 DT= 5.0 min	Area (ha)= 37.35 Total Imp(%)= 73.00	Dir. Conn.(%)= 73.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	27.27	10.08	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	499.00	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	105.09	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.27 (ii)	9.00 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.12	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	12.09	1.93	13.713 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	78.73
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.88

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0061) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	2.893	8.00	71.17
+ ID2= 2 (0022):	13.54	4.031	8.00	72.18
=====				
ID = 3 (0061):	23.29	6.923	8.00	71.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0061):	23.29	6.923	8.00	71.76
+ ID2= 2 (0029):	37.35	13.713	8.00	78.73
=====				
ID = 1 (0061):	60.64	20.636	8.00	76.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	5.371	8.00	85.69
+ ID2= 2 (0004):	11.16	4.906	8.00	83.61
=====				
ID = 3 (0032):	22.94	10.276	8.00	84.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	22.94	10.276	8.00	84.68
+ ID2= 2 (0005):	14.33	6.508	8.00	86.03
=====				
ID = 1 (0032):	37.27	16.785	8.00	85.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0032):	37.27	16.785	8.00	85.20
+ ID2= 2 (0061):	60.64	20.636	8.00	76.05
=====				
ID = 3 (0032):	97.91	37.421	8.00	79.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030) ID= 1 DT= 5.0 min	Area (ha)= 9.95 Total Imp(%)= 66.00	Dir. Conn.(%)= 66.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	6.57	3.38	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	257.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	105.09	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.55 (ii)	7.81 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.13	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	3.16	0.68	3.748 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	76.21
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.85

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 2.18 Total Imp(%)= 39.00	Dir. Conn.(%)= 39.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.85	1.33	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	120.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	182.06	101.74	
over (min)	5.00	10.00	



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Storage Coeff. (min)=	2.25 (ii)	9.26 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.12	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	0.43	0.24	0.629 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	51.08	65.65
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.57	0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0015):	2.31	0.290	8.17	48.16
+ ID2= 2 (0002):	2.18	0.629	8.00	65.65
=====				
ID = 3 (2701):	4.49	0.804	8.00	56.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (2701):	4.49	0.804	8.00	56.66
+ ID2= 2 (0003):	8.96	2.424	8.00	67.56
=====				
ID = 1 (2701):	13.45	3.228	8.00	63.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (2701):	13.45	3.228	8.00	63.92
+ ID2= 2 (0030):	9.95	3.748	8.00	76.21
=====				
ID = 3 (2701):	23.40	6.975	8.00	69.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (2701):	23.40	6.975	8.00	69.15
+ ID2= 2 (0032):	97.91	37.421	8.00	79.53
=====				
ID = 1 (2701):	121.31	44.396	8.00	77.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)				
ID= 1 DT= 5.0 min				
	Area	(ha)=	9.72	
	Total Imp(%)=		46.00	Dir. Conn.(%)= 46.00
=====				
	IMPERVIOUS	PERVIOUS (i)		
Surface Area (ha)=	4.47	5.25		
Dep. Storage (mm)=	1.00	1.50		
Average Slope (%)=	1.00	2.00		
Length (m)=	254.56	40.00		
Mannings n =	0.013	0.250		
=====				
Max.Eff.Inten.(mm/hr)=	182.06	105.09		
over (min)	5.00	15.00		
Storage Coeff. (min)=	3.52 (ii)	10.44 (ii)		

Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.26	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	2.15	0.88	2.659 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	69.01
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):	9.72	2.659	8.00	69.01
+ ID2= 2 (2701):	121.31	44.396	8.00	77.53
=====				
ID = 3 (0222):	131.03	47.055	8.00	76.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)				
ID= 1 DT= 5.0 min				
	Area	(ha)=	34.81	
	Total Imp(%)=		89.00	Dir. Conn.(%)= 89.00
=====				
	IMPERVIOUS	PERVIOUS (i)		
Surface Area (ha)=	30.98	3.83		
Dep. Storage (mm)=	1.00	1.50		
Average Slope (%)=	1.00	2.00		
Length (m)=	481.73	40.00		
Mannings n =	0.013	0.250		
=====				
Max.Eff.Inten.(mm/hr)=	182.06	108.56		
over (min)	5.00	10.00		
Storage Coeff. (min)=	5.16 (ii)	7.57 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.21	0.13		
=====				
PEAK FLOW (cms)=	13.82	0.81	14.515 (iii)	
TIME TO PEAK (hrs)=	8.00	8.08	8.00	
RUNOFF VOLUME (mm)=	88.46	53.83	84.65	
TOTAL RAINFALL (mm)=	89.46	89.46	89.46	
RUNOFF COEFFICIENT =	0.99	0.60	0.95	

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)				
ID= 1 DT= 5.0 min				
	Area	(ha)=	9.32	
	Total Imp(%)=		88.00	Dir. Conn.(%)= 88.00
=====				
	IMPERVIOUS	PERVIOUS (i)		
Surface Area (ha)=	8.20	1.12		
Dep. Storage (mm)=	1.00	1.50		
Average Slope (%)=	1.00	2.00		
Length (m)=	249.27	40.00		
Mannings n =	0.013	0.250		
=====				
Max.Eff.Inten.(mm/hr)=	182.06	108.56		
over (min)	5.00	10.00		
Storage Coeff. (min)=	3.48 (ii)	5.98 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.26	0.15		
=====				
PEAK FLOW (cms)=	3.96	0.25	4.186 (iii)	
TIME TO PEAK (hrs)=	8.00	8.08	8.00	
RUNOFF VOLUME (mm)=	88.46	53.83	84.30	
TOTAL RAINFALL (mm)=	89.46	89.46	89.46	
RUNOFF COEFFICIENT =	0.99	0.60	0.94	

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	14.515	8.00	84.65
+ ID2= 2 (0007):	9.32	4.186	8.00	84.30
=====				
ID = 3 (0282):	44.13	18.701	8.00	84.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.98	90.00	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.98	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.94	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	3.55 (ii)	5.86 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

PEAK FLOW (cms)=	4.32	0.23	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	84.99
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.95

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0053)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0282):	44.13	18.701	8.00	84.57
+ ID2= 2 (0052):	9.98	4.528	8.00	84.99
=====				
ID = 3 (0053):	54.11	23.229	8.00	84.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	4.99	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	101.74
over (min)	5.00	10.00
Storage Coeff. (min)=	2.88 (ii)	9.89 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.11

PEAK FLOW (cms)=	1.30	0.42	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	51.08	70.89
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.57	0.79

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 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 (0239)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0031):	4.99	1.650	8.00	70.89
+ ID2= 2 (0053):	54.11	23.229	8.00	84.65
=====				
ID = 3 (0239):	59.10	24.879	8.00	83.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	5.73	50.00	50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)	5.00	10.00
Storage Coeff. (min)=	3.01 (ii)	9.92 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.11

PEAK FLOW (cms)=	1.41	0.53	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	70.45
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.79

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	1.88	56.00	56.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.05	0.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	111.95	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)=	2.15 (ii)	8.98 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.12

PEAK FLOW (cms)=	0.53	0.16	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	73.22
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.82



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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1 = 1 (0014):	1.88	0.666	8.00	73.22
+ ID2 = 2 (0239):	59.10	24.879	8.00	83.49
-----				
ID = 3 (0217):	60.98	25.545	8.00	83.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1 = 3 (0217):	60.98	25.545	8.00	83.17
+ ID2 = 2 (0008):	5.73	1.844	8.00	70.45
-----				
ID = 1 (0217):	66.71	27.389	8.00	82.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1 = 1 (0217):	66.71	27.389	8.00	82.08
+ ID2 = 2 (0222):	131.03	47.055	8.00	76.90
-----				
ID = 3 (0051):	197.74	74.444	8.00	78.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0057)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2----> OUT= 1				
DT= 5.0 min	0.0000	0.0000	23.5000	4.5011
	11.2000	2.0777	27.4000	5.0376
	14.6000	3.0936	31.5000	5.5552
	18.2000	3.7229	0.0000	0.0000

INFLOW : ID= 2 (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
OUTFLOW: ID= 1 (0057)	197.740	74.444	8.00	78.65
	197.740	26.755	8.17	78.65

PEAK FLOW REDUCTION [Qout/Qin] (%) = 35.94  
 TIME SHIFT OF PEAK FLOW (min) = 10.00  
 MAXIMUM STORAGE USED (ha.m.) = 5.0376

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 6 \*\*  
 \*\*\*\*\*

CHICAGO STORM	IDF curve parameters:
Ptotal = 98.13 mm	A=2150.000
	B= 5.700
	C= 0.861
used in: INTENSITY =	$A / (t + B)^C$
Duration of storm =	24.00 hrs
Storm time step =	10.00 min
Time to peak ratio =	0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.59	6.17	2.24	12.17	1.95
0.33	0.61	6.33	2.45	12.33	1.88

0.50	0.62	6.50	2.72	12.50	1.81	18.50	0.84
0.67	0.63	6.67	3.05	12.67	1.75	18.67	0.83
0.83	0.64	6.83	3.44	12.83	1.70	18.83	0.82
1.00	0.66	7.00	4.08	13.00	1.65	19.00	0.81
1.17	0.67	7.17	4.93	13.17	1.60	19.17	0.80
1.33	0.69	7.33	6.26	13.33	1.55	19.33	0.79
1.50	0.70	7.50	8.66	13.50	1.51	19.50	0.78
1.67	0.72	7.67	14.21	13.67	1.47	19.67	0.77
1.83	0.74	7.83	39.75	13.83	1.43	19.83	0.76
2.00	0.75	8.00	200.80	14.00	1.39	20.00	0.75
2.17	0.77	8.17	54.01	14.17	1.36	20.17	0.74
2.33	0.79	8.33	25.55	14.33	1.33	20.33	0.73
2.50	0.81	8.50	16.41	14.50	1.30	20.50	0.72
2.67	0.84	8.67	12.04	14.67	1.27	20.67	0.71
2.83	0.86	8.83	9.50	14.83	1.24	20.83	0.71
3.00	0.89	9.00	7.55	15.00	1.21	21.00	0.70
3.17	0.91	9.17	6.70	15.17	1.19	21.17	0.69
3.33	0.94	9.33	5.85	15.33	1.16	21.33	0.68
3.50	0.98	9.50	5.19	15.50	1.14	21.50	0.68
3.67	1.01	9.67	4.68	15.67	1.12	21.67	0.67
3.83	1.05	9.83	4.26	15.83	1.10	21.83	0.66
4.00	1.08	10.00	3.91	16.00	1.08	22.00	0.65
4.17	1.13	10.17	3.62	16.17	1.06	22.17	0.65
4.33	1.17	10.33	3.37	16.33	1.04	22.33	0.64
4.50	1.23	10.50	3.15	16.50	1.02	22.50	0.63
4.67	1.28	10.67	2.96	16.67	1.00	22.67	0.63
4.83	1.34	10.83	2.80	16.83	0.98	22.83	0.62
5.00	1.41	11.00	2.65	17.00	0.97	23.00	0.62
5.17	1.49	11.17	2.52	17.17	0.95	23.17	0.61
5.33	1.57	11.33	2.40	17.33	0.94	23.33	0.60
5.50	1.67	11.50	2.29	17.50	0.92	23.50	0.60
5.67	1.78	11.67	2.19	17.67	0.91	23.67	0.59
5.83	1.91	11.83	2.10	17.83	0.89	23.83	0.59
6.00	2.06	12.00	2.02	18.00	0.88	24.00	0.58

CALIB	Area (ha)	PERVIOUS (i)
STANDHYD (0009)	42.85	
ID= 1 DT= 5.0 min	68.00	68.00

Surface Area (ha)	IMPERVIOUS	PERVIOUS (i)
29.14		
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	534.48	40.00
Mannings n	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---					
TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.59	6.083	2.24	12.083	1.95
0.167	0.59	6.167	2.24	12.167	1.95
0.250	0.61	6.250	2.45	12.250	1.88
0.333	0.61	6.333	2.45	12.333	1.88
0.417	0.62	6.417	2.72	12.417	1.81
0.500	0.62	6.500	2.72	12.500	1.81
0.583	0.63	6.583	3.05	12.583	1.75
0.667	0.63	6.667	3.05	12.667	1.75
0.750	0.64	6.750	3.49	12.750	1.70
0.833	0.64	6.833	3.49	12.833	1.70
0.917	0.66	6.917	4.08	12.917	1.65
1.000	0.66	7.000	4.08	13.000	1.65
1.083	0.67	7.083	4.93	13.083	1.60
1.167	0.67	7.167	4.93	13.167	1.60
1.250	0.69	7.250	6.26	13.250	1.55
1.333	0.69	7.333	6.26	13.333	1.55
1.417	0.70	7.417	8.66	13.417	1.51
1.500	0.70	7.500	8.66	13.500	1.51
1.583	0.72	7.583	14.21	13.583	1.47
1.667	0.72	7.667	14.21	13.667	1.47
1.750	0.74	7.750	39.75	13.750	1.43
1.833	0.74	7.833	39.76	13.833	1.43
1.917	0.75	7.917	200.80	13.917	1.39
2.000	0.75	8.000	200.79	14.000	1.39
2.083	0.77	8.083	54.01	14.083	1.36
2.167	0.77	8.167	54.01	14.167	1.36
2.250	0.79	8.250	25.55	14.250	1.33
2.333	0.79	8.333	25.55	14.333	1.33
2.417	0.81	8.417	16.41	14.417	1.30
2.500	0.81	8.500	16.41	14.500	1.30
2.583	0.84	8.583	12.04	14.583	1.27



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2.667	0.84	8.667	12.04	14.667	1.27	20.67	0.71
2.750	0.86	8.750	9.50	14.750	1.24	20.75	0.71
2.833	0.86	8.833	9.50	14.833	1.24	20.83	0.71
2.917	0.89	8.917	7.85	14.917	1.21	20.92	0.70
3.000	0.89	9.000	7.85	15.000	1.21	21.00	0.70
3.083	0.91	9.083	6.70	15.083	1.19	21.08	0.69
3.167	0.91	9.167	6.70	15.167	1.19	21.17	0.69
3.250	0.94	9.250	5.85	15.250	1.16	21.25	0.68
3.333	0.94	9.333	5.85	15.333	1.16	21.33	0.68
3.417	0.98	9.417	5.19	15.417	1.14	21.42	0.68
3.500	0.98	9.500	5.19	15.500	1.14	21.50	0.68
3.583	1.01	9.583	4.68	15.583	1.12	21.58	0.67
3.667	1.01	9.667	4.68	15.667	1.12	21.67	0.67
3.750	1.05	9.750	4.26	15.750	1.10	21.75	0.66
3.833	1.05	9.833	4.26	15.833	1.10	21.83	0.66
3.917	1.08	9.917	3.91	15.917	1.08	21.92	0.65
4.000	1.08	10.000	3.91	16.000	1.08	22.00	0.65
4.083	1.13	10.083	3.62	16.083	1.06	22.08	0.65
4.167	1.13	10.167	3.62	16.167	1.06	22.17	0.65
4.250	1.17	10.250	3.37	16.250	1.04	22.25	0.64
4.333	1.17	10.333	3.37	16.333	1.04	22.33	0.64
4.417	1.23	10.417	3.15	16.417	1.02	22.42	0.63
4.500	1.23	10.500	3.15	16.500	1.02	22.50	0.63
4.583	1.28	10.583	2.96	16.583	1.00	22.58	0.63
4.667	1.28	10.667	2.96	16.667	1.00	22.67	0.63
4.750	1.34	10.750	2.80	16.750	0.98	22.75	0.62
4.833	1.34	10.833	2.80	16.833	0.98	22.83	0.62
4.917	1.41	10.917	2.65	16.917	0.97	22.92	0.62
5.000	1.41	11.000	2.65	17.000	0.97	23.00	0.62
5.083	1.49	11.083	2.52	17.083	0.95	23.08	0.61
5.167	1.49	11.167	2.52	17.167	0.95	23.17	0.61
5.250	1.57	11.250	2.40	17.250	0.94	23.25	0.60
5.333	1.57	11.333	2.40	17.333	0.94	23.33	0.60
5.417	1.67	11.417	2.29	17.417	0.92	23.42	0.60
5.500	1.67	11.500	2.29	17.500	0.92	23.50	0.60
5.583	1.78	11.583	2.19	17.583	0.91	23.58	0.59
5.667	1.78	11.667	2.19	17.667	0.91	23.67	0.59
5.750	1.91	11.750	2.10	17.750	0.89	23.75	0.59
5.833	1.91	11.833	2.10	17.833	0.89	23.83	0.59
5.917	2.06	11.917	2.02	17.917	0.88	23.92	0.58
6.000	2.06	12.000	2.02	18.000	0.88	24.00	0.58

Max.Eff.Inten.(mm/hr)=	200.80	121.52	
over (min)	5.00	10.00	
Storage Coeff.(min)=	5.28 (ii)	9.23 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.12	
			*TOTALS*
PEAK FLOW (cms)=	14.24	2.99	16.763 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	85.18
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.87

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0019) ID= 1 DT= 5.0 min	Area (ha)= 1.83 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.15	Curve Number (CN)= 78.0 # of Linear Res. (N)= 3.00
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Unit Hyd Qpeak (cms)=	0.466
PEAK FLOW (cms)=	0.335 (i)
TIME TO PEAK (hrs)=	8.083
RUNOFF VOLUME (mm)=	52.338
TOTAL RAINFALL (mm)=	98.134
RUNOFF COEFFICIENT =	0.533

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

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha)= 19.25 Total Imp(%)= 92.00	Dir. Conn.(%)= 92.00
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Surface Area (ha)=	IMPERVIOUS 17.71	PERVIOUS (i) 1.54
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Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	358.24	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	10.00	
Storage Coeff.(min)=	4.16 (ii)	6.17 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.24	0.15	
		*TOTALS*	
PEAK FLOW (cms)=	9.15	0.40	9.511 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.27
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012) ID= 1 DT= 5.0 min	Area (ha)= 1.17 Total Imp(%)= 91.00	Dir. Conn.(%)= 91.00
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Surface Area (ha)=	IMPERVIOUS 1.06	PERVIOUS (i) 0.11	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	88.32	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	5.00	
Storage Coeff.(min)=	1.79 (ii)	3.91 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.25	
		*TOTALS*	
PEAK FLOW (cms)=	0.59	0.04	0.628 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	93.91
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018) ID= 1 DT= 5.0 min	Area (ha)= 11.58 Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
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Surface Area (ha)=	IMPERVIOUS 6.14	PERVIOUS (i) 5.44	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	277.85	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	107.54	
over (min)	5.00	15.00	
Storage Coeff.(min)=	3.57 (ii)	10.42 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.26	0.09	
		*TOTALS*	
PEAK FLOW (cms)=	3.26	0.94	3.786 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	97.13	54.13	76.92
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.55	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:



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CN\* = 77.0 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.

CALIB STANDHYD (0023)  
 ID= 1 DT= 5.0 min Area (ha)= 4.36  
 Total Imp(%)= 78.00 Dir. Conn.(%)= 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)=	2.66 (ii)	5.88 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.29	0.15

			*TOTALS*
PEAK FLOW (cms)=	1.86	0.24	2.081 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	88.91
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.91

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024)  
 ID= 1 DT= 5.0 min Area (ha)= 2.54  
 Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.36	0.18
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	130.13	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.26 (ii)	4.16 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.30	0.24

			*TOTALS*
PEAK FLOW (cms)=	1.30	0.06	1.365 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.62
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027)  
 ID= 1 DT= 5.0 min Area (ha)= 4.22  
 Total Imp(%)= 62.00 Dir. Conn.(%)= 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.62	1.60
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	167.73	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	104.32
over (min)	5.00	10.00

Storage Coeff. (min)= 2.64 (ii) 7.03 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.29 0.14

			*TOTALS*
PEAK FLOW (cms)=	1.43	0.33	1.721 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	52.80	80.29
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.54	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB STANDHYD (0028)  
 ID= 1 DT= 5.0 min Area (ha)= 6.40  
 Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.95	0.45
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	206.56	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.99 (ii)	4.88 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.28	0.22

			*TOTALS*
PEAK FLOW (cms)=	3.23	0.15	3.371 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.62
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0281)  
 ID= 1 DT= 5.0 min Area (ha)= 7.97  
 Total Imp(%)= 88.00 Dir. Conn.(%)= 88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.01	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	230.51	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.19 (ii)	5.60 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.27	0.15

			*TOTALS*
PEAK FLOW (cms)=	3.77	0.25	4.006 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	92.83
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	19.25	9.511	8.00	94.27
+ ID2= 2 (0012):	1.17	0.628	8.00	93.91
=====				
ID = 3 (0048):	20.42	10.139	8.00	94.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	20.42	10.139	8.00	94.24
+ ID2= 2 (0018):	11.58	3.786	8.00	76.92
=====				
ID = 1 (0048):	32.00	13.925	8.00	87.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	32.00	13.925	8.00	87.98
+ ID2= 2 (0019):	1.83	0.335	8.08	52.34
=====				
ID = 3 (0048):	33.83	14.220	8.00	86.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	33.83	14.220	8.00	86.05
+ ID2= 2 (0023):	4.36	2.081	8.00	88.91
=====				
ID = 1 (0048):	38.19	16.301	8.00	86.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	38.19	16.301	8.00	86.38
+ ID2= 2 (0024):	2.54	1.365	8.00	94.62
=====				
ID = 3 (0048):	40.73	17.666	8.00	86.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.73	17.666	8.00	86.89
+ ID2= 2 (0027):	4.22	1.721	8.00	80.29
=====				
ID = 1 (0048):	44.95	19.388	8.00	86.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.95	19.388	8.00	86.27
+ ID2= 2 (0028):	6.40	3.371	8.00	94.62
=====				
ID = 3 (0048):	51.35	22.759	8.00	87.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	51.35	22.759	8.00	87.31
+ ID2= 2 (0281):	7.97	4.006	8.00	92.83
=====				
ID = 1 (0048):	59.32	26.765	8.00	88.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)			
ID= 1 DT= 5.0 min	Area (ha)=	7.93	
	Total Imp(%)=	53.00	Dir. Conn.(%)= 53.00
	IMPERVIOUS		PERVIOUS (i)
Surface Area (ha)=	4.20		3.73
Dep. Storage (mm)=	1.00		1.50
Average Slope (%)=	1.00		2.00
Length (m)=	229.93		40.00
Mannings n =	0.013		0.250
Max.Eff.Inten.(mm/hr)=	200.80		125.31
over (min)	5.00		10.00
Storage Coeff. (min)=	3.19 (ii)		9.63 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.27		0.11
*TOTALS*			
PEAK FLOW (cms)=	2.26		0.82
TIME TO PEAK (hrs)=	8.00		8.08
RUNOFF VOLUME (mm)=	97.13		61.28
TOTAL RAINFALL (mm)=	98.13		98.13
RUNOFF COEFFICIENT =	0.99		0.62

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)			
ID= 1 DT= 5.0 min	Area (ha)=	5.77	
	Total Imp(%)=	53.00	Dir. Conn.(%)= 53.00
	IMPERVIOUS		PERVIOUS (i)
Surface Area (ha)=	3.06		2.71
Dep. Storage (mm)=	1.00		1.50
Average Slope (%)=	1.00		2.00
Length (m)=	196.13		40.00
Mannings n =	0.013		0.250
Max.Eff.Inten.(mm/hr)=	200.80		121.52
over (min)	5.00		10.00
Storage Coeff. (min)=	2.90 (ii)		9.42 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.28		0.12
*TOTALS*			
PEAK FLOW (cms)=	1.66		0.59
TIME TO PEAK (hrs)=	8.00		8.08
RUNOFF VOLUME (mm)=	97.13		59.78
TOTAL RAINFALL (mm)=	98.13		98.13
RUNOFF COEFFICIENT =	0.99		0.61

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)



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1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	7.93	2.955	8.00	80.28
+ ID2= 2 (0025):	5.77	2.156	8.00	79.58
ID = 3 (0049):	13.70	5.111	8.00	79.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0049):	13.70	5.111	8.00	79.98
+ ID2= 2 (0048):	59.32	26.765	8.00	88.05
ID = 1 (0049):	73.02	31.875	8.00	86.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0054) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	24.7000	0.3878
	11.4000	0.1791	28.2000	0.4425
	16.6000	0.2610	31.7000	0.4980
	20.0000	0.3146	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	73.020	31.875	8.00	86.54
OUTFLOW: ID= 1 (0054)	73.020	28.608	8.00	86.54

PEAK FLOW REDUCTION [Qout/Qin] (%) = 89.75  
 TIME SHIFT OF PEAK FLOW (min) = 0.00  
 MAXIMUM STORAGE USED (ha.m.) = 0.4980

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha) = 29.43	Total Imp (%) = 82.00	Dir. Conn. (%) = 82.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	24.13	5.30
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	442.94	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	4.72 (ii)	7.63 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.22	0.13

\*TOTALS\*

PEAK FLOW (cms)=	12.14	1.28	13.251 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	90.68
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha) = 69.17	Total Imp (%) = 89.00	Dir. Conn. (%) = 89.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	61.56	7.61
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	679.07	40.00

Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	10.00	
Storage Coeff. (min)=	6.10 (ii)	8.41 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.12	

\*TOTALS\*

PEAK FLOW (cms)=	28.82	1.77	30.340 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	93.19
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha) = 4.49	Total Imp (%) = 92.00	Dir. Conn. (%) = 92.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.13	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	173.01	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.69 (ii)	4.70 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.29	0.22

\*TOTALS\*

PEAK FLOW (cms)=	2.26	0.12	2.377 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.27
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min	Area (ha) = 4.46	Total Imp (%) = 92.00	Dir. Conn. (%) = 92.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.10	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	172.43	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.68 (ii)	4.69 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.29	0.22

\*TOTALS\*

PEAK FLOW (cms)=	2.24	0.12	2.362 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.27
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0013):	29.43	13.251	8.00	90.68
+ ID2= 2 (0020):	69.17	30.340	8.00	93.19
ID = 3 (0050):	98.60	43.591	8.00	92.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0050):	98.60	43.591	8.00	92.44
+ ID2= 2 (0021):	4.49	2.377	8.00	94.27
ID = 1 (0050):	103.09	45.968	8.00	92.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0050):	103.09	45.968	8.00	92.52
+ ID2= 2 (0026):	4.46	2.362	8.00	94.27
ID = 3 (0050):	107.55	48.329	8.00	92.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0056)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	R.V. (mm)
IN= 2---> OUT= 1 DT= 5.0 min					
	0.0000	0.0000	18.6000	2.2032	
	7.5000	1.1345	21.2000	2.4486	
	11.1000	1.5984	23.8000	2.6934	
	14.8000	1.8604	0.0000	0.0000	
INFLOW : ID= 2 (0050)	107.550	48.329	8.00	92.59	
OUTFLOW: ID= 1 (0056)	107.550	23.473	8.17	92.59	
	PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.57				
	TIME SHIFT OF PEAK FLOW (min) = 10.00				
	MAXIMUM STORAGE USED (ha.m.) = 2.6934				

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

CALIB STANDHYD (0003)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	8.96	46.00	46.00
Surface Area (ha)=	4.12		4.84
Dep. Storage (mm)=	1.00		1.50

Average Slope (%)=	1.00	2.00
Length (m)=	244.40	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	114.30
over (min)	5.00	10.00
Storage Coeff. (min)=	3.30 (ii)	9.99 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.11
PEAK FLOW (cms)=	2.21	0.96
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	97.13	56.89
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.58

\*TOTALS\*  
3.006 (iii)  
8.00  
75.40  
98.13  
0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0004)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	11.16	86.00	86.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	9.60	1.56
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	272.76	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.53 (ii)	6.11 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

\*TOTALS\*  
5.463 (iii)  
8.00  
92.11  
98.13  
0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0005)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	14.33	93.00	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	13.33	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	309.08	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.80 (ii)	5.70 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.15

\*TOTALS\*  
7.239 (iii)  
8.00  
94.62  
98.13  
0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 Ia = Dep. Storage (Above)



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- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB  
STANDHYD (0016) Area (ha)= 11.78  
ID= 1 DT= 5.0 min Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	10.84	0.94
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	280.24	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.59 (ii)	5.60 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

PEAK FLOW (cms)=	5.74	0.25	5.972 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.27
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0017) Area (ha)= 9.75  
ID= 1 DT= 5.0 min Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.07	4.68
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.95	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)=	3.39 (ii)	9.92 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.11

PEAK FLOW (cms)=	2.71	0.99	3.536 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	79.20
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.81

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0022) Area (ha)= 13.54  
ID= 1 DT= 5.0 min Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.18	6.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	300.44	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	15.00
Storage Coeff. (min)=	3.74 (ii)	10.19 (ii)

Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09
PEAK FLOW (cms)=	3.78	1.28
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	97.13	61.28
TOTAL RAINFALL (mm)=	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62

\*TOTALS\*  
4.524 (iii)  
8.00  
80.28  
98.13  
0.82

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0029) Area (ha)= 37.35  
ID= 1 DT= 5.0 min Total Imp(%)= 73.00 Dir. Conn.(%)= 73.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	27.27	10.08
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	499.00	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)=	5.07 (ii)	8.66 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.12

PEAK FLOW (cms)=	13.47	2.26	15.393 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	87.05
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.89

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 (0061)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0017):	9.75	3.536	8.00	79.20
+ ID2= 2 (0022):	13.54	4.524	8.00	80.28
=====				
ID = 3 (0061):	23.29	8.059	8.00	79.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0061):	23.29	8.059	8.00	79.83
+ ID2= 2 (0029):	37.35	15.393	8.00	87.05
=====				
ID = 1 (0061):	60.64	23.453	8.00	84.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0016):	11.78	5.972	8.00	94.27
+ ID2= 2 (0004):	11.16	5.463	8.00	92.11
=====				
ID = 3 (0032):	22.94	11.435	8.00	93.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0032):	22.94	11.435	8.00	93.22
+ ID2= 2 (0005):	14.33	7.239	8.00	94.62
-----				
ID = 1 (0032):	37.27	18.674	8.00	93.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0032):	37.27	18.674	8.00	93.76
+ ID2= 2 (0061):	60.64	23.453	8.00	84.28
-----				
ID = 3 (0032):	97.91	42.126	8.00	87.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.95	66.00	66.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	6.57	3.38	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	257.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	121.52	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	3.41 (ii)	7.51 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.13	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	3.51	0.80	4.199 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	84.43
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.86

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	2.18	39.00	39.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.85	1.33	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	120.55	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	117.85	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	2.16 (ii)	8.77 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	0.47	0.29	0.714 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	58.31	73.45
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.59	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.338	8.17	55.33
+ ID2= 2 (0002):	2.18	0.714	8.00	73.45
-----				
ID = 3 (2701):	4.49	0.920	8.00	64.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.920	8.00	64.13
+ ID2= 2 (0003):	8.96	3.006	8.00	75.40
-----				
ID = 1 (2701):	13.45	3.926	8.00	71.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	3.926	8.00	71.64
+ ID2= 2 (0030):	9.95	4.199	8.00	84.43
-----				
ID = 3 (2701):	23.40	8.124	8.00	77.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	8.124	8.00	77.08
+ ID2= 2 (0032):	97.91	42.126	8.00	87.89
-----				
ID = 1 (2701):	121.31	50.251	8.00	85.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.72	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	4.47	5.25	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	254.56	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	121.52	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	3.39 (ii)	9.91 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.11	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	2.39	1.11	3.317 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	76.96
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	9.72	3.317	8.00	76.96
+ ID2= 2 (2701):	121.31	50.251	8.00	85.80
ID = 3 (0222):	131.03	53.568	8.00	85.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	34.81	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	30.98	3.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	481.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	4.96 (ii)	7.28 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.22	0.14

PEAK FLOW (cms)=	15.39	0.94	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	16.215 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	93.19
RUNOFF COEFFICIENT =	0.99	0.62	98.13
			0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.32	88.00	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.20	1.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	249.27	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.34 (ii)	5.75 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

PEAK FLOW (cms)=	4.39	0.29	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	4.657 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	92.83
RUNOFF COEFFICIENT =	0.99	0.62	98.13
			0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	16.215	8.00	93.19
+ ID2= 2 (0007):	9.32	4.657	8.00	92.83
ID = 3 (0282):	44.13	20.871	8.00	93.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	9.98	90.00	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.98	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.94	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.41 (ii)	5.63 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

PEAK FLOW (cms)=	4.79	0.26	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	5.035 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	93.55
RUNOFF COEFFICIENT =	0.99	0.62	98.13
			0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0053)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0282):	44.13	20.871	8.00	93.11
+ ID2= 2 (0052):	9.98	5.035	8.00	93.55
ID = 3 (0053):	54.11	25.906	8.00	93.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	4.99	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	117.85
over (min)	5.00	10.00
Storage Coeff. (min)=	2.77 (ii)	9.38 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.12

PEAK FLOW (cms)=	1.44	0.49	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	1.857 (iii)
RUNOFF VOLUME (mm)=	97.13	58.31	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	78.99
RUNOFF COEFFICIENT =	0.99	0.59	98.13
			0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0031):	4.99	1.857	8.00	78.89
+ ID2= 2 (0053):	54.11	25.906	8.00	93.19
=====				
ID = 3 (0239):	59.10	27.763	8.00	91.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008) ID= 1 DT= 5.0 min	Area (ha)= 5.73	Dir. Conn.(%) = 50.00
IMPERVIOUS PERVIOUS (i)		
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	121.52	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	2.89 (ii)	9.42 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.28	0.12	
*TOTALS*			
PEAK FLOW (cms)=	1.56	0.62	2.079 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	97.13	59.78	78.46
TOTAL RAINFALL (mm)=	98.13	98.13	
RUNOFF COEFFICIENT =	0.99	0.61	0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014) ID= 1 DT= 5.0 min	Area (ha)= 1.88	Dir. Conn.(%) = 56.00
IMPERVIOUS PERVIOUS (i)		
Surface Area (ha)=	1.05	0.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	111.95	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)=	5.00	10.00	
Storage Coeff. (min)=	2.07 (ii)	6.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.14	
*TOTALS*			
PEAK FLOW (cms)=	0.58	0.21	0.766 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	
RUNOFF VOLUME (mm)=	97.13	61.28	81.36
TOTAL RAINFALL (mm)=	98.13	98.13	
RUNOFF COEFFICIENT =	0.99	0.62	0.83

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0014):	1.88	0.766	8.00	81.36
+ ID2= 2 (0239):	59.10	27.763	8.00	91.99
=====				
ID = 3 (0217):	60.98	28.529	8.00	91.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0217):	60.98	28.529	8.00	91.66
+ ID2= 2 (0008):	5.73	2.079	8.00	78.46
=====				
ID = 1 (0217):	66.71	30.608	8.00	90.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0217):	66.71	30.608	8.00	90.52
+ ID2= 2 (0222):	131.03	53.568	8.00	85.14
=====				
ID = 3 (0051):	197.74	84.175	8.00	86.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0057) IN= 2----> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	23.5000	4.5011
	11.2000	2.0777	27.4000	5.0376
	14.6000	3.0936	31.5000	5.5552
	18.2000	3.7229	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	197.740	84.175	8.00	86.96
OUTFLOW: ID= 1 (0057)	197.740	30.949	8.17	86.96

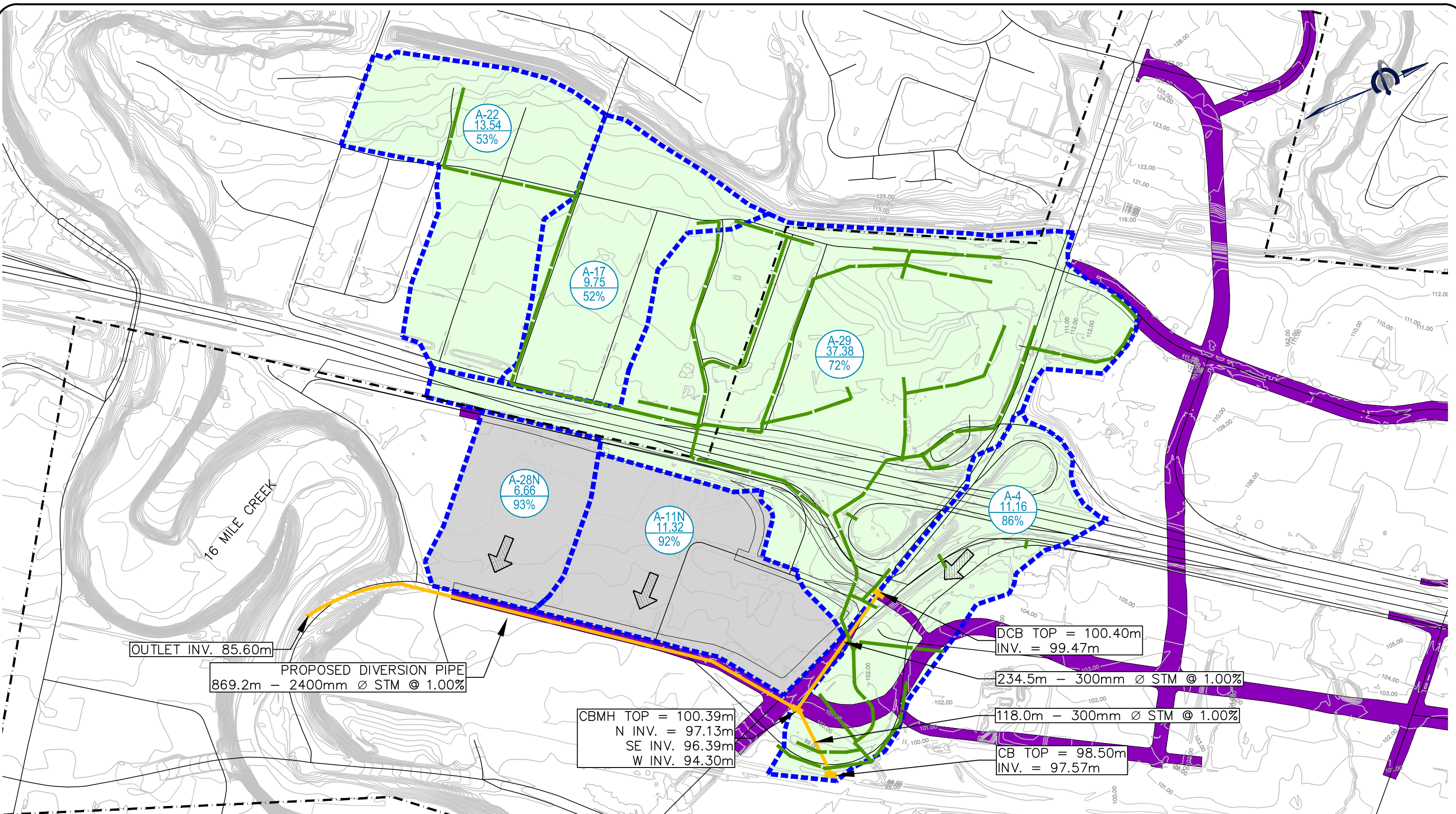
PEAK FLOW REDUCTION [Qout/Qin] (%) = 36.77
TIME SHIFT OF PEAK FLOW (min) = 10.00
MAXIMUM STORAGE USED (ha.m.) = 5.5552

FINISH

=====

**APPENDIX D**  
**Diversion Pipe Calculations**





LEGEND	
DRAINAGE NAME	DRAINAGE REDIRECTED TO 16 MILE
DRAINAGE AREA (HECTARES)	DRAINAGE TO 16 MILE
IMPERVIOUSNESS	DRAINAGE AREA BOUNDARY
PROPOSED ROAD	PROPOSED STORM SEWERS
EXISTING CONTOUR LINE	EXISTING STORM SEWER
EMERGENCY SPILL / OVERLAND FLOW DIRECTION	EXISTING ROADS
227.50	EXISTING STORM SEWER

DIVERSION PIPE LAYOUT			
MIDTOWN ENVIRONMENTAL ASSESSMENT			
TOWN OF OAKVILLE			
DATE:	MAY 2014	PROJECT No.:	T11-767
SCALE:	1:5,000	FIGURE No.:	DIV-1



**Rational Method  
Peak Flow Calculation**

Oakville Midtown EA  
File No. T11-767  
Date: May 2014

Area Number	Area (ha)	C	Tc (City Min) (min.)
A-4 Post	11.16	0.85	10
A-29 Post	37.38	0.74	10
A-17 Post	9.75	0.59	10
A-22 Post	13.54	0.60	10
A-11 Post N	11.32	0.89	10
A-28 Post N	6.68	0.90	10

**Rational Method Calculation**

Event 5 yr  
IDF Data Set Town of Oakville  
a = 1170  
b = 5.80  
c = 0.843

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m <sup>3</sup> /s)	Q (L/s)	Q Total (m <sup>3</sup> /s)
A-4 Post	11.16	0.85	9.43	10	114.2	3.015	3015.3	3.015
A-29 Post	37.38	0.74	27.66	10	114.2	8.846	8846.0	13.273
A-17 Post	9.75	0.59	5.75	10	114.2	1.840	1839.6	
A-22 Post	13.54	0.60	8.09	10	114.2	2.587	2587.2	
A-11 Post N	11.32	0.89	10.07	10	114.2	3.222	3221.8	5.139
A-28 Post N	6.68	0.90	6.00	10	114.2	1.917	1917.3	
Total	89.83			10	114.2	21.427	21427.2	21.427



---

## Diversion Pipe Sizing (5-Year)

---

### Project Description

Friction Method	Manning Formula
Solve For	Discharge

### Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	m/m
Normal Depth	2.40	m
Diameter	2.400	m

### Results

Discharge	24.755	m <sup>3</sup> /s
Flow Area	4.52	m <sup>2</sup>
Wetted Perimeter	7.54	m
Hydraulic Radius	0.60	m
Top Width	0.00	m
Critical Depth	2.20	m
Percent Full	100.0	%
Critical Slope	0.00869	m/m
Velocity	5.47	m/s
Velocity Head	1.53	m
Specific Energy	3.93	m
Froude Number	0.00	
Maximum Discharge	26.63	m <sup>3</sup> /s
Discharge Full	24.76	m <sup>3</sup> /s
Slope Full	0.01000	m/m
Flow Type	SubCritical	

### GVF Input Data

Downstream Depth	0.00	m
Length	0.00	m
Number Of Steps	0	

### GVF Output Data

Upstream Depth	0.00	m
Profile Description		
Profile Headloss	0.00	m
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	m/s

---

## Diversion Pipe Sizing (5-Year)

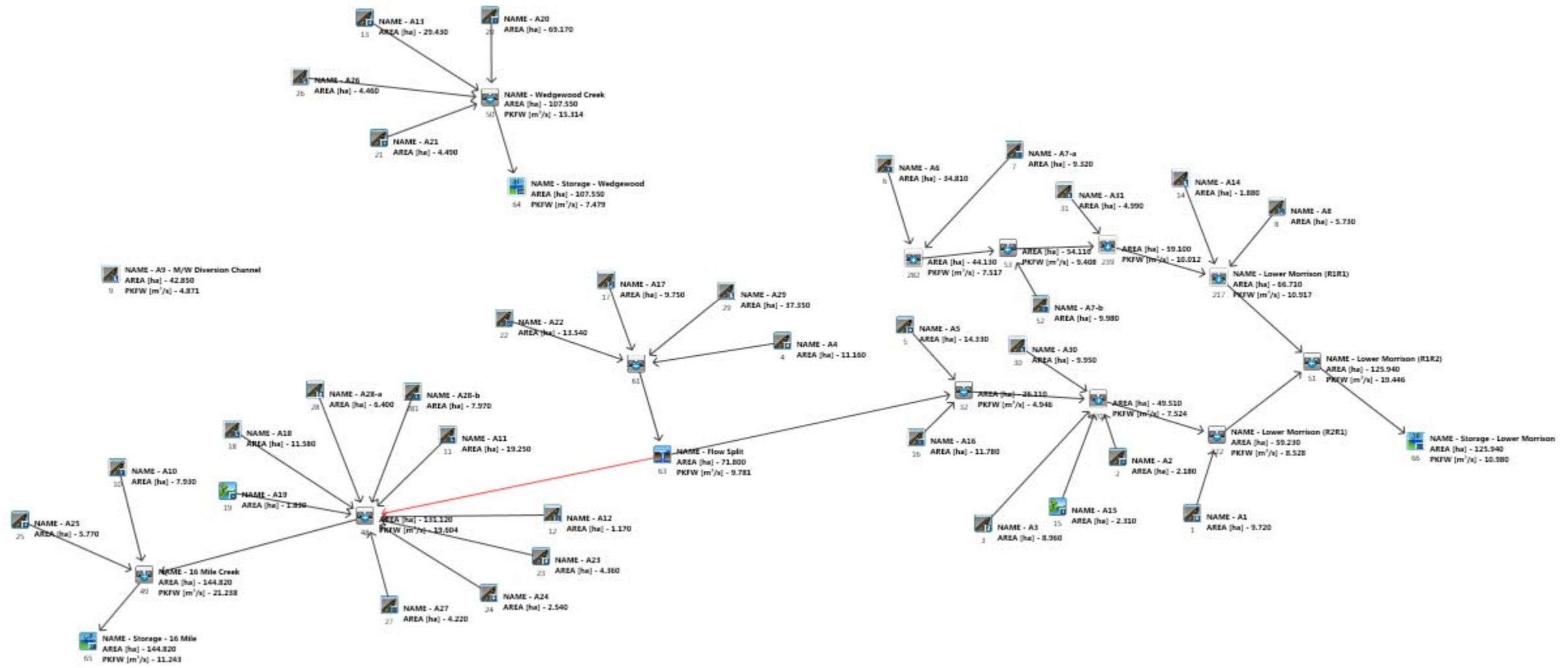
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### GVF Output Data

Upstream Velocity	Infinity	m/s
Normal Depth	2.40	m
Critical Depth	2.20	m
Channel Slope	0.01000	m/m
Critical Slope	0.00869	m/m

**T11-767**  
 Midtown Oakville EA Study, Town of Oakville  
 Proposed Conditions Model Schematic – Diversion from Lower Morrison Creek to 16 Mile Creek  
 May 2014

**VO2 Model Schematic**





Experience Enhancing Excellence

4.50	0.79	10.50	1.86	16.50	0.66	22.50	0.43
4.67	0.82	10.67	1.76	16.67	0.65	22.67	0.42
4.83	0.85	10.83	1.67	16.83	0.64	22.83	0.42
5.00	0.89	11.00	1.59	17.00	0.63	23.00	0.42
5.17	0.94	11.17	1.52	17.17	0.62	23.17	0.41
5.33	0.99	11.33	1.45	17.33	0.61	23.33	0.41
5.50	1.04	11.50	1.39	17.50	0.61	23.50	0.40
5.67	1.11	11.67	1.34	17.67	0.60	23.67	0.40
5.83	1.18	11.83	1.29	17.83	0.59	23.83	0.40
6.00	1.26	12.00	1.24	18.00	0.58	24.00	0.39

```
V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U A A A A L
V V I SS U U A A A L
VV I SSSSS UUUU A A LLLLL
```

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OOO TTTT TTTT 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 Y M M OOO Company Serial
```

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\*\*\*\*\* DETAILED OUTPUT \*\*\*\*\*

Input filename: C:\Program Files (x86)\Visual Otthymo 3.0\VO2\voain.dat  
Output filename: C:\Users\krothwell\AppData\Local\Temp\16e5ca76-9ca9-4da5-a339-1e708ccb27d1\Scenario.out  
Summary filename: C:\Users\krothwell\AppData\Local\Temp\16e5ca76-9ca9-4da5-a339-1e708ccb27d1\Scenario.sum

DATE: 05/16/2014 TIME: 02:18:59

USER:

COMMENTS:

\*\*\*\*\*  
\*\* SIMULATION NUMBER: 1 \*\*  
\*\*\*\*\*

CHICAGO STORM IDF curve parameters: A= 725.000  
Ptotal= 48.69 mm B= 4.800  
C<sub>s</sub>= 0.808  
used in: INTENSITY = A / (t + B)<sup>C<sub>s</sub></sup>  
Duration of storm = 24.00 hrs  
Storm time step = 10.00 min  
Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.40	6.17	1.36	12.17	1.20	18.17	0.57
0.33	0.41	6.33	1.48	12.33	1.16	18.33	0.56
0.50	0.42	6.50	1.62	12.50	1.13	18.50	0.56
0.67	0.43	6.67	1.80	12.67	1.09	18.67	0.55
0.83	0.43	6.83	2.03	12.83	1.06	18.83	0.54
1.00	0.44	7.00	2.34	13.00	1.03	19.00	0.54
1.17	0.45	7.17	2.77	13.17	1.00	19.17	0.53
1.33	0.46	7.33	3.42	13.33	0.98	19.33	0.52
1.50	0.47	7.50	4.54	13.50	0.95	19.50	0.52
1.67	0.48	7.67	7.00	13.67	0.93	19.67	0.51
1.83	0.49	7.83	17.37	13.83	0.91	19.83	0.51
2.00	0.50	8.00	82.18	14.00	0.89	20.00	0.50
2.17	0.51	8.17	23.02	14.17	0.87	20.17	0.49
2.33	0.53	8.33	11.75	14.33	0.85	20.33	0.49
2.50	0.54	8.50	7.96	14.50	0.83	20.50	0.48
2.67	0.55	8.67	6.07	14.67	0.81	20.67	0.48
2.83	0.57	8.83	4.93	14.83	0.79	20.83	0.47
3.00	0.58	9.00	4.17	15.00	0.78	21.00	0.47
3.17	0.60	9.17	3.63	15.17	0.76	21.17	0.46
3.33	0.62	9.33	3.22	15.33	0.75	21.33	0.46
3.50	0.64	9.50	2.90	15.50	0.74	21.50	0.45
3.67	0.66	9.67	2.64	15.67	0.72	21.67	0.45
3.83	0.68	9.83	2.43	15.83	0.71	21.83	0.44
4.00	0.70	10.00	2.25	16.00	0.70	22.00	0.44
4.17	0.73	10.17	2.10	16.17	0.69	22.17	0.44
4.33	0.76	10.33	1.97	16.33	0.67	22.33	0.43

CALIB  
STANDHYD (0009) Area (ha)= 42.85  
ID= 1 DT= 5.0 min Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00

IMPERVIOUS PERVIOUS (i)  
Surface Area (ha)= 29.14 13.71  
Dep. Storage (mm)= 1.00 1.50  
Average Slope (%)= 1.00 2.00  
Length (m)= 534.48 40.00  
Mannings n = 0.013 0.250

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	0.40	6.083	1.36	12.083	1.20	18.08	0.57
0.167	0.40	6.167	1.36	12.167	1.20	18.17	0.57
0.250	0.41	6.250	1.48	12.250	1.16	18.25	0.56
0.333	0.41	6.333	1.48	12.333	1.16	18.33	0.56
0.417	0.42	6.417	1.62	12.417	1.13	18.42	0.56
0.500	0.42	6.500	1.62	12.500	1.13	18.50	0.56
0.583	0.43	6.583	1.80	12.583	1.09	18.58	0.55
0.667	0.43	6.667	1.80	12.667	1.09	18.67	0.55
0.750	0.43	6.750	2.03	12.750	1.06	18.75	0.54
0.833	0.43	6.833	2.03	12.833	1.06	18.83	0.54
0.917	0.44	6.917	2.34	12.917	1.03	18.92	0.54
1.000	0.44	7.000	2.34	13.000	1.03	19.00	0.54
1.083	0.45	7.083	2.77	13.083	1.00	19.08	0.53
1.167	0.45	7.167	2.77	13.167	1.00	19.17	0.53
1.250	0.46	7.250	3.42	13.250	0.98	19.25	0.52
1.333	0.46	7.333	3.42	13.333	0.98	19.33	0.52
1.417	0.47	7.417	4.54	13.417	0.95	19.42	0.52
1.500	0.47	7.500	4.54	13.500	0.95	19.50	0.52
1.583	0.48	7.583	7.00	13.583	0.93	19.58	0.51
1.667	0.48	7.667	7.00	13.667	0.93	19.67	0.51
1.750	0.49	7.750	17.37	13.750	0.91	19.75	0.51
1.833	0.49	7.833	17.38	13.833	0.91	19.83	0.51
1.917	0.50	7.917	82.18	13.917	0.89	19.92	0.50
2.000	0.50	8.000	82.18	14.000	0.89	20.00	0.50
2.083	0.51	8.083	23.02	14.083	0.87	20.08	0.49
2.167	0.51	8.167	23.02	14.167	0.87	20.17	0.49
2.250	0.53	8.250	11.75	14.250	0.85	20.25	0.49
2.333	0.53	8.333	11.75	14.333	0.85	20.33	0.49
2.417	0.54	8.417	7.96	14.417	0.83	20.42	0.48
2.500	0.54	8.500	7.96	14.500	0.83	20.50	0.48
2.583	0.55	8.583	6.07	14.583	0.81	20.58	0.48
2.667	0.55	8.667	6.07	14.667	0.81	20.67	0.48
2.750	0.57	8.750	4.93	14.750	0.79	20.75	0.47
2.833	0.57	8.833	4.93	14.833	0.79	20.83	0.47
2.917	0.58	8.917	4.17	14.917	0.78	20.92	0.47
3.000	0.58	9.000	4.17	15.000	0.78	21.00	0.47
3.083	0.60	9.083	3.63	15.083	0.76	21.08	0.46
3.167	0.60	9.167	3.63	15.167	0.76	21.17	0.46
3.250	0.62	9.250	3.22	15.250	0.75	21.25	0.46
3.333	0.62	9.333	3.22	15.333	0.75	21.33	0.46
3.417	0.64	9.417	2.90	15.417	0.74	21.42	0.45
3.500	0.64	9.500	2.90	15.500	0.74	21.50	0.45
3.583	0.66	9.583	2.64	15.583	0.72	21.58	0.45
3.667	0.66	9.667	2.64	15.667	0.72	21.67	0.45
3.750	0.68	9.750	2.43	15.750	0.71	21.75	0.44
3.833	0.68	9.833	2.43	15.833	0.71	21.83	0.44
3.917	0.70	9.917	2.25	15.917	0.70	21.92	0.44
4.000	0.70	10.000	2.25	16.000	0.70	22.00	0.44
4.083	0.73	10.083	2.10	16.083	0.69	22.08	0.44
4.167	0.73	10.167	2.10	16.167	0.69	22.17	0.44
4.250	0.76	10.250	1.97	16.250	0.67	22.25	0.43
4.333	0.76	10.333	1.97	16.333	0.67	22.33	0.43
4.417	0.79	10.417	1.86	16.417	0.66	22.42	0.43
4.500	0.79	10.500	1.86	16.500	0.66	22.50	0.43
4.583	0.82	10.583	1.76	16.583	0.65	22.58	0.42



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4.667	0.82	10.667	1.76	16.667	0.65	22.67	0.42
4.750	0.85	10.750	1.67	16.750	0.64	22.75	0.42
4.833	0.85	10.833	1.67	16.833	0.64	22.83	0.42
4.917	0.89	10.917	1.59	16.917	0.63	22.92	0.42
5.000	0.89	11.000	1.59	17.000	0.63	23.00	0.42
5.083	0.94	11.083	1.52	17.083	0.62	23.08	0.41
5.167	0.94	11.167	1.52	17.167	0.62	23.17	0.41
5.250	0.99	11.250	1.45	17.250	0.61	23.25	0.41
5.333	0.99	11.333	1.45	17.333	0.61	23.33	0.41
5.417	1.04	11.417	1.39	17.417	0.61	23.42	0.40
5.500	1.04	11.500	1.39	17.500	0.61	23.50	0.40
5.583	1.11	11.583	1.34	17.583	0.60	23.58	0.40
5.667	1.11	11.667	1.34	17.667	0.60	23.67	0.40
5.750	1.18	11.750	1.29	17.750	0.59	23.75	0.40
5.833	1.18	11.833	1.29	17.833	0.59	23.83	0.40
5.917	1.26	11.917	1.24	17.917	0.58	23.92	0.39
6.000	1.26	12.000	1.24	18.000	0.58	24.00	0.39

Max. Eff. Inten. (mm/hr) =	82.18	25.17
over (min)	10.00	20.00
Storage Coeff. (min) =	7.55 (ii)	19.81 (ii)
Unit Hyd. Tpeak (min) =	10.00	20.00
Unit Hyd. peak (cms) =	0.13	0.06
*TOTALS*		
PEAK FLOW (cms) =	4.54	0.51
TIME TO PEAK (hrs) =	8.08	8.08
RUNOFF VOLUME (mm) =	47.69	20.86
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha) = 29.43	Total Imp(%) = 82.00	Dir. Conn.(%) = 82.00
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		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	24.13	5.30	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	442.94	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr) =	82.18	33.43
over (min)	5.00	15.00
Storage Coeff. (min) =	6.75 (ii)	10.91 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.18	0.09
*TOTALS*		
PEAK FLOW (cms) =	4.48	0.28
TIME TO PEAK (hrs) =	8.00	8.00
RUNOFF VOLUME (mm) =	47.69	21.63
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha) = 69.17	Total Imp(%) = 89.00	Dir. Conn.(%) = 89.00
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		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	61.56	7.61	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	679.07	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr) =	82.18	33.43
over (min)	10.00	15.00
Storage Coeff. (min) =	8.72 (ii)	12.03 (ii)
Unit Hyd. Tpeak (min) =	10.00	15.00

Unit Hyd. peak (cms) =	0.12	0.09
*TOTALS*		
PEAK FLOW (cms) =	9.19	0.39
TIME TO PEAK (hrs) =	8.08	8.17
RUNOFF VOLUME (mm) =	47.69	21.63
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44
		0.92

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha) = 4.49	Total Imp(%) = 92.00	Dir. Conn.(%) = 92.00
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		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.13	0.36	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	173.01	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr) =	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min) =	3.84 (ii)	6.71 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.25	0.14

PEAK FLOW (cms) =	0.89	0.02
TIME TO PEAK (hrs) =	8.00	8.00
RUNOFF VOLUME (mm) =	47.69	21.63
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44
		0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min	Area (ha) = 4.46	Total Imp(%) = 92.00	Dir. Conn.(%) = 92.00
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		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.10	0.36	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	172.43	40.00	
Mannings n =	0.013	0.250	

Max. Eff. Inten. (mm/hr) =	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min) =	3.83 (ii)	6.71 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.25	0.14

PEAK FLOW (cms) =	0.88	0.02
TIME TO PEAK (hrs) =	8.00	8.00
RUNOFF VOLUME (mm) =	47.69	21.63
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44
		0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050) 1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
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	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	29.43	4.643	8.00	43.00
+ ID2= 2 (0020):	69.17	9.534	8.08	44.82
=====				
ID = 3 (0050):	98.60	13.503	8.00	44.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0050):	98.60	13.503	8.00	44.28
+ ID2= 2 (0021):	4.49	0.909	8.00	45.60
=====				
ID = 1 (0050):	103.09	14.411	8.00	44.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0050):	103.09	14.411	8.00	44.33
+ ID2= 2 (0026):	4.46	0.903	8.00	45.60
=====				
ID = 3 (0050):	107.55	15.314	8.00	44.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0064)				
IN= 2--> OUT= 1				
DT= 5.0 min				
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0050)	107.550	15.314	8.00	44.39
OUTFLOW: ID= 1 (0064)	107.550	7.479	8.25	44.39

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.84	
TIME SHIFT OF PEAK FLOW (min) = 15.00	
MAXIMUM STORAGE USED (ha.m.) = 1.1345	

CALIB NASHYD (0019)			
ID= 1 DT= 5.0 min	Area (ha)	Ia (mm)	Curve Number (CN) = 78.0
	1.83	5.00	# of Linear Res. (N) = 3.00
	U.H. Tp (hrs) = 0.15		

Unit Hyd Qpeak (cms)	0.466
PEAK FLOW (cms)	0.077 (i)
TIME TO PEAK (hrs)	8.083
RUNOFF VOLUME (mm)	16.454
TOTAL RAINFALL (mm)	48.688
RUNOFF COEFFICIENT	0.338

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

CALIB STANDHYD (0004)				
ID= 1 DT= 5.0 min	Area (ha)	Total Imp (%) = 86.00	Dir. Conn. (%) = 86.00	
	11.16			

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	9.60	1.56
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	272.76	40.00
Mannings n	0.013	0.250

Max. Eff. Inten. (mm/hr) over (min)	82.18 / 5.00	33.43 / 10.00
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Storage Coeff. (min)	= 5.05 (ii)	8.74 (ii)	
Unit Hyd. Tpeak (min)	= 5.00	10.00	
Unit Hyd. peak (cms)	= 0.21	0.12	
*TOTALS*			
PEAK FLOW (cms)	= 1.95	0.10	2.029 (iii)
TIME TO PEAK (hrs)	= 8.00	8.08	8.00
RUNOFF VOLUME (mm)	= 47.69	21.63	44.04
TOTAL RAINFALL (mm)	= 48.69	48.69	48.69
RUNOFF COEFFICIENT	= 0.98	0.44	0.90

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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.

CALIB STANDHYD (0017)			
ID= 1 DT= 5.0 min	Area (ha)	Total Imp (%) = 52.00	Dir. Conn. (%) = 52.00
	9.75		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	5.07	4.68
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	254.95	40.00
Mannings n	0.013	0.250

Max. Eff. Inten. (mm/hr) over (min)	82.18 / 5.00	25.17 / 20.00
Storage Coeff. (min)	4.85 (ii)	17.10 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.22	0.06

	IMPERVIOUS	PERVIOUS (i)
PEAK FLOW (cms)	1.04	0.19
TIME TO PEAK (hrs)	8.00	8.25
RUNOFF VOLUME (mm)	47.69	20.86
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.43

\*TOTALS\*  
1.117 (iii)  
8.00  
34.81  
48.69  
0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 81.0 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.

CALIB STANDHYD (0022)			
ID= 1 DT= 5.0 min	Area (ha)	Total Imp (%) = 53.00	Dir. Conn. (%) = 53.00
	13.54		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	7.18	6.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	300.44	40.00
Mannings n	0.013	0.250

Max. Eff. Inten. (mm/hr) over (min)	82.18 / 5.00	26.28 / 20.00
Storage Coeff. (min)	5.35 (ii)	17.39 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.21	0.06

	IMPERVIOUS	PERVIOUS (i)
PEAK FLOW (cms)	1.43	0.26
TIME TO PEAK (hrs)	8.00	8.25
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

\*TOTALS\*  
1.544 (iii)  
8.00  
35.44  
48.69  
0.73

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 82.0 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.

CALIB STANDHYD (0029)	
Area (ha)	= 37.35



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|ID= 1 DT= 5.0 min | Total Imp(%)= 73.00 Dir. Conn.(%)= 73.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	27.27	10.08	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	499.00	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	25.17	
over (min)	5.00	20.00	
Storage Coeff. (min)=	7.25 (ii)	19.51 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.17	0.06	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	4.94	0.38	5.091 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	40.44
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.83

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0017):	9.75	1.117	8.00	34.81
+ ID2= 2 (0022):	13.54	1.544	8.00	35.44
=====				
ID = 3 (0061):	23.29	2.661	8.00	35.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0061):	23.29	2.661	8.00	35.18
+ ID2= 2 (0029):	37.35	5.091	8.00	40.44
=====				
ID = 1 (0061):	60.64	7.753	8.00	38.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0061):	60.64	7.753	8.00	38.42
+ ID2= 2 (0004):	11.16	2.029	8.00	44.04
=====				
ID = 3 (0061):	71.80	9.781	8.00	39.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (0063)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
Inlet Cap.=*****				
#of Inlets= 1				
Total (cms)= 14.6				
=====				
TOTAL HYD. (ID= 1):	71.80	9.78	8.00	39.29
=====				
MAJOR SYS. (ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS. (ID= 3):	71.80	9.78	8.00	39.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0011)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	19.25	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	17.71	1.54	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	358.24	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.94 (ii)	8.82 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.12	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	3.43	0.10	3.511 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	45.60
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	1.17	91.00	91.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	1.06	0.11	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	88.32	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	33.43	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.56 (ii)	5.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.29	0.16	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	0.24	0.01	0.246 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	45.34
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	11.58	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	6.14	5.44	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	277.85	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	82.18	21.30	
over (min)	5.00	20.00	
Storage Coeff. (min)=	5.10 (ii)	18.20 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.21	0.06	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.24	0.18	1.315 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	18.09	33.78
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.37	0.69



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- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB  
STANDHYD (0023)  
ID= 1 DT= 5.0 min

Area (ha)=	4.36	Dir. Conn.(%)=	78.00
Total Imp(\$)=	78.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	31.98
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.81 (ii)	8.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.12

		*TOTALS*
PEAK FLOW (cms)=	0.73	0.780 (iii)
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	47.69	20.86
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.86

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0024)  
ID= 1 DT= 5.0 min

Area (ha)=	2.54	Dir. Conn.(%)=	93.00
Total Imp(\$)=	93.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.36	0.18
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	130.13	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.24 (ii)	5.95 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.27	0.15

		*TOTALS*
PEAK FLOW (cms)=	0.52	0.531 (iii)
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	47.69	21.63
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.94

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0027)  
ID= 1 DT= 5.0 min

Area (ha)=	4.22	Dir. Conn.(%)=	62.00
Total Imp(\$)=	62.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.62	1.60
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	167.73	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	20.46

over (min)=	5.00	20.00
Storage Coeff. (min)=	3.77 (ii)	17.08 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.25	0.06

		*TOTALS*
PEAK FLOW (cms)=	0.56	0.05
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	17.48
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.74

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB  
STANDHYD (0028)  
ID= 1 DT= 5.0 min

Area (ha)=	6.40	Dir. Conn.(%)=	93.00
Total Imp(\$)=	93.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.95	0.45
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	206.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)=	5.00	10.00
Storage Coeff. (min)=	4.27 (ii)	6.98 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.23	0.14

		*TOTALS*
PEAK FLOW (cms)=	1.25	0.03
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	47.69	21.63
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.94

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0281)  
ID= 1 DT= 5.0 min

Area (ha)=	7.97	Dir. Conn.(%)=	88.00
Total Imp(\$)=	88.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.01	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	230.51	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	33.43
over (min)=	5.00	10.00
Storage Coeff. (min)=	4.56 (ii)	8.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.23	0.13

		*TOTALS*
PEAK FLOW (cms)=	1.46	0.06
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	47.69	21.63
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.92

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0011):	19.25	3.511	8.00	45.60
+ ID2= 2 (0012):	1.17	0.246	8.00	45.34
ID = 3 (0048):	20.42	3.757	8.00	45.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 3 (0048):	20.42	3.757	8.00	45.59
+ ID2= 2 (0018):	11.58	1.315	8.00	33.78
ID = 1 (0048):	32.00	5.072	8.00	41.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0048):	32.00	5.072	8.00	41.31
+ ID2= 2 (0019):	1.83	0.077	8.08	16.45
ID = 3 (0048):	33.83	5.137	8.00	39.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 3 (0048):	33.83	5.137	8.00	39.97
+ ID2= 2 (0023):	4.36	0.780	8.00	41.78
ID = 1 (0048):	38.19	5.918	8.00	40.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0048):	38.19	5.918	8.00	40.18
+ ID2= 2 (0024):	2.54	0.531	8.00	45.86
ID = 3 (0048):	40.73	6.448	8.00	40.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 3 (0048):	40.73	6.448	8.00	40.53
+ ID2= 2 (0027):	4.22	0.585	8.00	36.21
ID = 1 (0048):	44.95	7.033	8.00	40.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0048):	44.95	7.033	8.00	40.13
+ ID2= 2 (0028):	6.40	1.280	8.00	45.86

ID = 3 (0048): 51.35 8.313 8.00 40.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 3 (0048):	51.35	8.313	8.00	40.84
+ ID2= 2 (0281):	7.97	1.509	8.00	44.56
ID = 1 (0048):	59.32	9.823	8.00	41.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0048):	59.32	9.823	8.00	41.34
+ ID2= 2 (0063):	71.80	9.781	8.00	39.29
ID = 3 (0048):	131.12	19.604	8.00	40.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010) ID= 1 DT= 5.0 min	Area (ha)=	7.93	Total Imp(%)=	53.00	Dir. Conn.(%)=	53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.20	3.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	229.93	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr)=	82.18	26.28
over (min)=	5.00	20.00
Storage Coeff. (min)=	4.55 (ii)	16.60 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.23	0.06

\*TOTALS\*

PEAK FLOW (cms)=	0.87	0.16	0.940 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	35.44
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025) ID= 1 DT= 5.0 min	Area (ha)=	5.77	Total Imp(%)=	53.00	Dir. Conn.(%)=	53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.06	2.71
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	196.13	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr)=	82.18	25.17
over (min)=	5.00	20.00
Storage Coeff. (min)=	4.14 (ii)	16.40 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.24	0.06

\*TOTALS\*

PEAK FLOW (cms)=	0.65	0.11	0.694 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	35.07
TOTAL RAINFALL (mm)=	48.69	48.69	48.69



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RUNOFF COEFFICIENT = 0.98 0.43 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	0.940	8.00	35.44
+ ID2= 2 (0025):	5.77	0.694	8.00	35.07
ID = 3 (0049):	13.70	1.634	8.00	35.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	1.634	8.00	35.29
+ ID2= 2 (0048):	131.12	19.604	8.00	40.22
ID = 1 (0049):	144.82	21.238	8.00	39.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0065)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2 -> OUT= 1 DT= 5.0 min				
	0.0000	0.0000	24.7000	2.0323
	11.4000	1.0496	28.2000	2.1552
	16.6000	1.5358	31.7000	2.2403
	20.0000	1.7670	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	144.820	21.238	8.00	39.75
OUTFLOW: ID= 1 (0065)	144.820	11.243	8.17	39.75

PEAK FLOW REDUCTION [Qout/Qin] (%) = 52.93  
TIME SHIFT OF PEAK FLOW (min) = 10.00  
MAXIMUM STORAGE USED (ha.m.) = 1.0496

CALIB NASHYD (0015)	Area (ha)	Ia (mm)	U.H. Tp (hrs)	Curve Number (CN) = 80.0	# of Linear Res. (N) = 3.00
ID= 1 DT= 5.0 min	2.31	5.00	0.24		

Unit Hyd Qpeak (cms) = 0.368  
PEAK FLOW (cms) = 0.080 (i)  
TIME TO PEAK (hrs) = 8.167  
RUNOFF VOLUME (mm) = 17.790  
TOTAL RAINFALL (mm) = 48.688  
RUNOFF COEFFICIENT = 0.365

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

CALIB STANDHYD (0003)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	8.96	46.00	46.00

Surface Area (ha) = 4.12 IMPERVIOUS 4.84  
Dep. Storage (mm) = 1.00 1.50  
Average Slope (%) = 1.00 2.00  
Length (m) = 244.40 40.00  
Mannings n = 0.013 0.250

Max.Eff.Inten. (mm/hr) =	82.18	23.12
Storage Coeff. (min) =	5.00	20.00
Unit Hyd. Tpeak (min) =	4.72 (ii)	17.40 (ii)
Unit Hyd. peak (cms) =	5.00	20.00
Unit Hyd. peak (cms) =	0.22	0.06
PEAK FLOW (cms) =	0.85	0.18
TIME TO PEAK (hrs) =	8.00	8.25
RUNOFF VOLUME (mm) =	47.69	19.41
TOTAL RAINFALL (mm) =	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.40

\*TOTALS\*

0.923 (iii)  
8.00  
32.42  
48.69  
0.67

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0005)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	14.33	93.00	93.00

IMPERVIOUS 1.00  
PERVIOUS (i) 1.50  
Surface Area (ha) = 13.33  
Dep. Storage (mm) = 1.00  
Average Slope (%) = 1.00  
Length (m) = 309.08  
Mannings n = 0.013  
0.250

Max.Eff.Inten. (mm/hr) = 82.18 33.43  
over (min) = 5.00 10.00  
Storage Coeff. (min) = 5.44 (ii) 8.15 (ii)  
Unit Hyd. Tpeak (min) = 5.00 10.00  
Unit Hyd. peak (cms) = 0.20 0.13

\*TOTALS\*

2.705 (iii)  
8.00  
21.63  
45.86  
0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	11.78	92.00	92.00

IMPERVIOUS 0.94  
PERVIOUS (i) 1.50  
Surface Area (ha) = 10.84  
Dep. Storage (mm) = 1.00  
Average Slope (%) = 1.00  
Length (m) = 280.24  
Mannings n = 0.013  
0.250

Max.Eff.Inten. (mm/hr) = 82.18 33.43  
over (min) = 5.00 10.00  
Storage Coeff. (min) = 5.13 (ii) 8.00 (ii)  
Unit Hyd. Tpeak (min) = 5.00 10.00  
Unit Hyd. peak (cms) = 0.21 0.13

\*TOTALS\*

2.241 (iii)  
8.00  
21.63  
48.69  
0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.



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ADD HYD	(0032)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0016):		11.78	2.241	8.00	45.60
+ ID2= 2 (0005):		14.33	2.705	8.00	45.86
=====					
ID = 3 (0032):		26.11	4.946	8.00	45.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD	(0032)	AREA	QPEAK	TPEAK	R.V.
3 + 2 =	1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0032):		26.11	4.946	8.00	45.75
+ ID2= 2 (0063):		0.00	0.000	0.00	0.00
=====					
ID = 1 (0032):		26.11	4.946	8.00	45.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	STANDHYD	Area	(ha)=	9.95
ID= 1	DT= 5.0 min	Total Imp(%)=	66.00	Dir. Conn.(%)= 66.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.57	3.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	25.17
over (min)=	5.00	20.00
Storage Coeff. (min)=	4.87 (ii)	17.13 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.22	0.06
PEAK FLOW (cms)=	1.34	0.14
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	20.86
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43

\*TOTALS\*  
1.400 (iii)  
8.00  
38.56  
48.69  
0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB	STANDHYD	Area	(ha)=	2.18
ID= 1	DT= 5.0 min	Total Imp(%)=	39.00	Dir. Conn.(%)= 39.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	24.12
over (min)=	5.00	20.00
Storage Coeff. (min)=	3.09 (ii)	15.56 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.27	0.07
PEAK FLOW (cms)=	0.19	0.05
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	20.12
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.41

\*TOTALS\*  
0.210 (iii)  
8.00  
30.87  
48.69  
0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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	(2701)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0015):		2.31	0.080	8.17	17.79
+ ID2= 2 (0002):		2.18	0.210	8.00	30.87
=====					
ID = 3 (2701):		4.49	0.256	8.00	24.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD	(2701)	AREA	QPEAK	TPEAK	R.V.
3 + 2 =	1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (2701):		4.49	0.256	8.00	24.14
+ ID2= 2 (0003):		8.96	0.923	8.00	32.42
=====					
ID = 1 (2701):		13.45	1.179	8.00	29.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD	(2701)	AREA	QPEAK	TPEAK	R.V.
1 + 2 =	3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (2701):		13.45	1.179	8.00	29.65
+ ID2= 2 (0030):		9.95	1.400	8.00	38.56
=====					
ID = 3 (2701):		23.40	2.579	8.00	33.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD	(2701)	AREA	QPEAK	TPEAK	R.V.
3 + 2 =	1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (2701):		23.40	2.579	8.00	33.44
+ ID2= 2 (0032):		26.11	4.946	8.00	45.75
=====					
ID = 1 (2701):		49.51	7.524	8.00	39.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	STANDHYD	Area	(ha)=	9.72
ID= 1	DT= 5.0 min	Total Imp(%)=	46.00	Dir. Conn.(%)= 46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	25.17
over (min)=	5.00	20.00
Storage Coeff. (min)=	4.84 (ii)	17.10 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.22	0.06
PEAK FLOW (cms)=	0.92	0.21
TIME TO PEAK (hrs)=	8.00	8.25
RUNOFF VOLUME (mm)=	47.69	20.86
TOTAL RAINFALL (mm)=	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43

\*TOTALS\*  
1.004 (iii)  
8.00  
33.20  
48.69  
0.68

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



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- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	9.72	1.004	8.00	33.20
+ ID2= 2 (2701):	49.51	7.524	8.00	39.93
ID = 3 (0222):	59.23	8.528	8.00	38.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha) = 34.81	Total Imp(%) = 89.00	Dir. Conn.(%) = 89.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	30.98	3.83
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	481.73	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	33.43
over (min)	5.00	15.00
Storage Coeff. (min)	7.10 (ii)	10.41 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.17	0.09
PEAK FLOW (cms)	5.65	0.21
TIME TO PEAK (hrs)	8.00	8.17
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

\*TOTALS\*  
5.770 (iii)  
8.00  
44.82  
48.69  
0.92

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007) ID= 1 DT= 5.0 min	Area (ha) = 9.32	Total Imp(%) = 88.00	Dir. Conn.(%) = 88.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	8.20	1.12
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	249.27	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min)	4.78 (ii)	8.22 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.22	0.13
PEAK FLOW (cms)	1.69	0.07
TIME TO PEAK (hrs)	8.00	8.00
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

\*TOTALS\*  
1.746 (iii)  
8.00  
44.56  
48.69  
0.92

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0006):	34.81	5.770	8.00	44.82
+ ID2= 2 (0007):	9.32	1.746	8.00	44.56
ID = 3 (0282):	44.13	7.517	8.00	44.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052) ID= 1 DT= 5.0 min	Area (ha) = 9.98	Total Imp(%) = 90.00	Dir. Conn.(%) = 90.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	8.98	1.00
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.94	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	33.43
over (min)	5.00	10.00
Storage Coeff. (min)	4.88 (ii)	8.05 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.22	0.13
PEAK FLOW (cms)	1.84	0.06
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	47.69	21.63
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.44

\*TOTALS\*  
1.892 (iii)  
8.00  
45.08  
48.69  
0.93

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0282):	44.13	7.517	8.00	44.77
+ ID2= 2 (0052):	9.98	1.892	8.00	45.08
ID = 3 (0053):	54.11	9.408	8.00	44.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031) ID= 1 DT= 5.0 min	Area (ha) = 4.99	Total Imp(%) = 53.00	Dir. Conn.(%) = 53.00
---	------------------	----------------------	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.64	2.35
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	182.39	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	82.18	24.12
over (min)	5.00	20.00
Storage Coeff. (min)	3.96 (ii)	16.43 (ii)
Unit Hyd. Tpeak (min)	5.00	20.00
Unit Hyd. peak (cms)	0.24	0.06
PEAK FLOW (cms)	0.57	0.09
TIME TO PEAK (hrs)	8.00	8.25
RUNOFF VOLUME (mm)	47.69	20.12
TOTAL RAINFALL (mm)	48.69	48.69
RUNOFF COEFFICIENT	0.98	0.41

\*TOTALS\*  
0.603 (iii)  
8.00  
34.73  
48.69  
0.71

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 Ia = Dep. Storage (Above)



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- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0239)					
1 + 2 = 3					
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0031):	4.99	0.603	8.00	34.73	
+ ID2= 2 (0053):	54.11	9.408	8.00	44.82	
=====					
ID = 3 (0239):	59.10	10.012	8.00	43.97	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)			
ID= 1 DT= 5.0 min			
Area	(ha)	5.73	
Total Imp(%)	= 50.00 Dir. Conn.(%) = 50.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	25.17
over (min)	5.00	20.00
Storage Coeff.(min)=	4.13 (ii)	16.39 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.24	0.06

	*TOTALS*		
PEAK FLOW (cms)=	0.61	0.12	0.656 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	20.86	34.27
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.43	0.70

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)			
ID= 1 DT= 5.0 min			
Area	(ha)	1.88	
Total Imp(%)	= 56.00 Dir. Conn.(%) = 56.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.05	0.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	111.95	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	82.18	26.28
over (min)	5.00	20.00
Storage Coeff.(min)=	2.96 (ii)	15.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.28	0.07

	*TOTALS*		
PEAK FLOW (cms)=	0.23	0.04	0.249 (iii)
TIME TO PEAK (hrs)=	8.00	8.25	8.00
RUNOFF VOLUME (mm)=	47.69	21.63	36.22
TOTAL RAINFALL (mm)=	48.69	48.69	48.69
RUNOFF COEFFICIENT =	0.98	0.44	0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)					
1 + 2 = 3					
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0014):	1.88	0.249	8.00	36.22	
+ ID2= 2 (0239):	59.10	10.012	8.00	43.97	
=====					
ID = 3 (0217):	60.98	10.261	8.00	43.73	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)					
3 + 2 = 1					
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (0217):	60.98	10.261	8.00	43.73	
+ ID2= 2 (0008):	5.73	0.656	8.00	34.27	
=====					
ID = 1 (0217):	66.71	10.917	8.00	42.92	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)					
1 + 2 = 3					
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0217):	66.71	10.917	8.00	42.92	
+ ID2= 2 (0222):	59.23	8.528	8.00	38.83	
=====					
ID = 3 (0051):	125.94	19.446	8.00	40.99	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0066)				
IN= 2 ---> OUT= 1				
DT= 5.0 min				
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	23.5000	2.2073
	11.2000	0.8794	27.4000	2.6321
	14.6000	1.3452	31.5000	3.0954
	18.2000	1.7106	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	125.940	19.446	8.00	40.99
OUTFLOW: ID= 1 (0066)	125.940	10.980	8.08	40.99

PEAK FLOW REDUCTION [Qout/Qin] (%) = 56.47  
 TIME SHIFT OF PEAK FLOW (min) = 5.00  
 MAXIMUM STORAGE USED (ha.m.) = 0.8794

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 2 \*\*  
 \*\*\*\*\*

CHICAGO STORM  
 Ptotal= 60.87 mm

IDF curve parameters: A=1170.000  
 B= 5.800  
 C= 0.843  
 used in: INTENSITY = A / (t + B) ^C

Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	0.42	6.17	1.51	12.17	1.32	18.17	0.60
0.33	0.42	6.33	1.65	12.33	1.27	18.33	0.59
0.50	0.43	6.50	1.82	12.50	1.23	18.50	0.58
0.67	0.44	6.67	2.04	12.67	1.19	18.67	0.58
0.83	0.45	6.83	2.32	12.83	1.16	18.83	0.57
1.00	0.46	7.00	2.70	13.00	1.12	19.00	0.56
1.17	0.47	7.17	3.24	13.17	1.09	19.17	0.55
1.33	0.48	7.33	4.08	13.33	1.06	19.33	0.55
1.50	0.49	7.50	5.57	13.50	1.03	19.50	0.54
1.67	0.50	7.67	8.96	13.67	1.00	19.67	0.53
1.83	0.51	7.83	24.01	13.83	0.98	19.83	0.53
2.00	0.52	8.00	114.21	14.00	0.95	20.00	0.52
2.17	0.54	8.17	32.30	14.17	0.93	20.17	0.51



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2.33	0.55	8.33	15.74	14.33	0.91	20.33	0.51
2.50	0.56	8.50	10.30	14.50	0.89	20.50	0.50
2.67	0.58	8.67	7.65	14.67	0.87	20.67	0.50
2.83	0.60	8.83	6.09	14.83	0.85	20.83	0.49
3.00	0.61	9.00	5.07	15.00	0.83	21.00	0.49
3.17	0.63	9.17	4.35	15.17	0.82	21.17	0.48
3.33	0.65	9.33	3.82	15.33	0.80	21.33	0.48
3.50	0.67	9.50	3.41	15.50	0.78	21.50	0.47
3.67	0.70	9.67	3.08	15.67	0.77	21.67	0.47
3.83	0.72	9.83	2.81	15.83	0.75	21.83	0.46
4.00	0.75	10.00	2.59	16.00	0.74	22.00	0.46
4.17	0.78	10.17	2.40	16.17	0.73	22.17	0.45
4.33	0.81	10.33	2.24	16.33	0.71	22.33	0.45
4.50	0.84	10.50	2.10	16.50	0.70	22.50	0.44
4.67	0.88	10.67	1.98	16.67	0.69	22.67	0.44
4.83	0.92	10.83	1.87	16.83	0.68	22.83	0.43
5.00	0.96	11.00	1.78	17.00	0.67	23.00	0.43
5.17	1.01	11.17	1.69	17.17	0.66	23.17	0.43
5.33	1.07	11.33	1.61	17.33	0.65	23.33	0.42
5.50	1.14	11.50	1.54	17.50	0.64	23.50	0.42
5.67	1.21	11.67	1.48	17.67	0.63	23.67	0.41
5.83	1.29	11.83	1.42	17.83	0.62	23.83	0.41
6.00	1.39	12.00	1.37	18.00	0.61	24.00	0.41

3.583	0.70	9.583	3.08	15.583	0.77	21.58	0.47
3.667	0.70	9.667	3.08	15.667	0.77	21.67	0.47
3.750	0.72	9.750	2.81	15.750	0.75	21.75	0.46
3.833	0.72	9.833	2.81	15.833	0.75	21.83	0.46
3.917	0.75	9.917	2.59	15.917	0.74	21.92	0.46
4.000	0.75	10.000	2.59	16.000	0.74	22.00	0.46
4.083	0.78	10.083	2.40	16.083	0.73	22.08	0.45
4.167	0.78	10.167	2.40	16.167	0.73	22.17	0.45
4.250	0.81	10.250	2.24	16.250	0.71	22.25	0.45
4.333	0.81	10.333	2.24	16.333	0.71	22.33	0.45
4.417	0.84	10.417	2.10	16.417	0.70	22.42	0.44
4.500	0.84	10.500	2.10	16.500	0.70	22.50	0.44
4.583	0.88	10.583	1.98	16.583	0.69	22.58	0.44
4.667	0.88	10.667	1.98	16.667	0.69	22.67	0.44
4.750	0.92	10.750	1.87	16.750	0.68	22.75	0.43
4.833	0.92	10.833	1.87	16.833	0.68	22.83	0.43
4.917	0.96	10.917	1.78	16.917	0.67	22.92	0.43
5.000	0.96	11.000	1.78	17.000	0.67	23.00	0.43
5.083	1.01	11.083	1.69	17.083	0.66	23.08	0.43
5.167	1.01	11.167	1.69	17.167	0.66	23.17	0.43
5.250	1.07	11.250	1.61	17.250	0.65	23.25	0.42
5.333	1.07	11.333	1.61	17.333	0.65	23.33	0.42
5.417	1.14	11.417	1.54	17.417	0.64	23.42	0.42
5.500	1.14	11.500	1.54	17.500	0.64	23.50	0.42
5.583	1.21	11.583	1.48	17.583	0.63	23.58	0.41
5.667	1.21	11.667	1.48	17.667	0.63	23.67	0.41
5.750	1.29	11.750	1.42	17.750	0.62	23.75	0.41
5.833	1.29	11.833	1.42	17.833	0.62	23.83	0.41
5.917	1.39	11.917	1.37	17.917	0.61	23.92	0.41
6.000	1.39	12.000	1.37	18.000	0.61	24.00	0.41

CALIB STANDHYD (0009) ID= 1 DT= 5.0 min	Area (ha)= 42.85 Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00
---	---

Surface Area (ha)= 29.14	IMPERVIOUS	PERVIOUS (i)
Dep. Storage (mm)= 1.50		
Average Slope (%)= 1.00		
Length (m)= 534.48		
Mannings n = 0.013		

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	0.42	6.083	1.51	12.083	1.32	18.08	0.60
0.167	0.42	6.167	1.51	12.167	1.32	18.17	0.60
0.250	0.42	6.250	1.65	12.250	1.27	18.25	0.59
0.333	0.42	6.333	1.65	12.333	1.27	18.33	0.59
0.417	0.43	6.417	1.82	12.417	1.23	18.42	0.58
0.500	0.43	6.500	1.82	12.500	1.23	18.50	0.58
0.583	0.44	6.583	2.04	12.583	1.19	18.58	0.58
0.667	0.44	6.667	2.04	12.667	1.19	18.67	0.58
0.750	0.45	6.750	2.32	12.750	1.16	18.75	0.57
0.833	0.45	6.833	2.32	12.833	1.16	18.83	0.57
0.917	0.46	6.917	2.70	12.917	1.12	18.92	0.56
1.000	0.46	7.000	2.70	13.000	1.12	19.00	0.56
1.083	0.47	7.083	3.24	13.083	1.09	19.08	0.55
1.167	0.47	7.167	3.24	13.167	1.09	19.17	0.55
1.250	0.48	7.250	4.08	13.250	1.06	19.25	0.55
1.333	0.48	7.333	4.08	13.333	1.06	19.33	0.55
1.417	0.49	7.417	5.57	13.417	1.03	19.42	0.54
1.500	0.49	7.500	5.57	13.500	1.03	19.50	0.54
1.583	0.50	7.583	8.96	13.583	1.00	19.58	0.53
1.667	0.50	7.667	8.96	13.667	1.00	19.67	0.53
1.750	0.51	7.750	24.01	13.750	0.98	19.75	0.53
1.833	0.51	7.833	24.01	13.833	0.98	19.83	0.53
1.917	0.52	7.917	114.21	13.917	0.95	19.92	0.52
2.000	0.52	8.000	114.21	14.000	0.95	20.00	0.52
2.083	0.54	8.083	32.30	14.083	0.93	20.08	0.51
2.167	0.54	8.167	32.30	14.167	0.93	20.17	0.51
2.250	0.55	8.250	15.74	14.250	0.91	20.25	0.51
2.333	0.55	8.333	15.74	14.333	0.91	20.33	0.51
2.417	0.56	8.417	10.30	14.417	0.89	20.42	0.50
2.500	0.56	8.500	10.30	14.500	0.89	20.50	0.50
2.583	0.58	8.583	7.65	14.583	0.87	20.58	0.50
2.667	0.58	8.667	7.65	14.667	0.87	20.67	0.50
2.750	0.60	8.750	6.09	14.750	0.85	20.75	0.49
2.833	0.60	8.833	6.09	14.833	0.85	20.83	0.49
2.917	0.61	8.917	5.07	14.917	0.83	20.92	0.49
3.000	0.61	9.000	5.07	15.000	0.83	21.00	0.49
3.083	0.63	9.083	4.35	15.083	0.82	21.08	0.48
3.167	0.63	9.167	4.35	15.167	0.82	21.17	0.48
3.250	0.65	9.250	3.82	15.250	0.80	21.25	0.48
3.333	0.65	9.333	3.82	15.333	0.80	21.33	0.48
3.417	0.67	9.417	3.41	15.417	0.78	21.42	0.47
3.500	0.67	9.500	3.41	15.500	0.78	21.50	0.47

Max.Eff. Inten. (mm/hr)= 114.21	52.31
over (min)= 5.00	15.00
Storage Coeff. (min)= 6.62 (ii)	11.57 (ii)
Unit Hyd. Tpeak (min)= 5.00	15.00
Unit Hyd. peak (cms)= 0.18	0.09

\*TOTALS\*

PEAK FLOW (cms)= 7.57	1.12	8.189 (iii)
TIME TO PEAK (hrs)= 8.00		8.00
RUNOFF VOLUME (mm)= 59.87	30.62	50.20
TOTAL RAINFALL (mm)= 60.87	60.87	60.87
RUNOFF COEFFICIENT = 0.98	0.49	0.82

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha)= 29.43 Total Imp(%)= 82.00 Dir. Conn.(%)= 82.00
---	---

Surface Area (ha)= 24.13	IMPERVIOUS	PERVIOUS (i)
Dep. Storage (mm)= 1.00		
Average Slope (%)= 1.00		
Length (m)= 442.94		
Mannings n = 0.013		

Max.Eff. Inten. (mm/hr)= 114.21	54.45
over (min)= 5.00	10.00
Storage Coeff. (min)= 5.92 (ii)	9.57 (ii)
Unit Hyd. Tpeak (min)= 5.00	10.00
Unit Hyd. peak (cms)= 0.19	0.11

\*TOTALS\*

PEAK FLOW (cms)= 6.50	0.52	6.931 (iii)
TIME TO PEAK (hrs)= 8.00		8.00
RUNOFF VOLUME (mm)= 59.87	30.62	54.61
TOTAL RAINFALL (mm)= 60.87	60.87	60.87
RUNOFF COEFFICIENT = 0.98	0.50	0.90

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020)	Area (ha)= 69.17
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ID= 1 DT= 5.0 min | Total Imp(%)= 89.00 Dir. Conn.(%)= 89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	61.56	7.61
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	679.07	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)=	10.00	15.00
Storage Coeff. (min)=	7.65 (ii)	10.55 (ii)
Unit Hyd. Tpeak (min)=	10.00	15.00
Unit Hyd. peak (cms)=	0.13	0.09

\*TOTALS\*  
 PEAK FLOW (cms)= 13.29 0.67 13.890 (iii)  
 TIME TO PEAK (hrs)= 8.08 8.17 8.08  
 RUNOFF VOLUME (mm)= 59.87 30.62 56.65  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.93

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB  
 STANDHYD (0021) | Area (ha)= 4.49  
 ID= 1 DT= 5.0 min | Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.13	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	173.01	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.37 (ii)	5.89 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

\*TOTALS\*  
 PEAK FLOW (cms)= 1.26 0.04 1.294 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 59.87 30.62 57.53  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB  
 STANDHYD (0026) | Area (ha)= 4.46  
 ID= 1 DT= 5.0 min | Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.10	0.36
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	172.43	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.36 (ii)	5.88 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.15

\*TOTALS\*  
 PEAK FLOW (cms)= 1.25 0.04 1.285 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 59.87 30.62 57.53  
 TOTAL RAINFALL (mm)= 60.87 60.87 60.87  
 RUNOFF COEFFICIENT = 0.98 0.50 0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	29.43	6.931	8.00	54.61
+ ID2= 2 (0020):	69.17	13.890	8.08	56.65
=====				
ID = 3 (0050):	98.60	20.058	8.00	56.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0050):	98.60	20.058	8.00	56.04
+ ID2= 2 (0021):	4.49	1.294	8.00	57.53
=====				
ID = 1 (0050):	103.09	21.352	8.00	56.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0050):	103.09	21.352	8.00	56.11
+ ID2= 2 (0026):	4.46	1.285	8.00	57.53
=====				
ID = 3 (0050):	107.55	22.637	8.00	56.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0064)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2--> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0050)	107.550	22.637	8.00	56.17
OUTFLOW: ID= 1 (0064)	107.550	11.023	8.25	56.17

PEAK FLOW REDUCTION [Qout/Qin](%)= 48.70  
 TIME SHIFT OF PEAK FLOW (min)= 15.00  
 MAXIMUM STORAGE USED (ha.m.)= 1.5984

CALIB	Area (ha)=	1.83	Curve Number (CN)=	78.0
NASHYD (0019)	Ia (mm)=	5.00	# of Linear Res. (N)=	3.00
ID= 1 DT= 5.0 min	U.H. Tp (hrs)=	0.15		

Unit Hyd Opeak (cms)= 0.466

PEAK FLOW (cms)=	0.134 (i)
TIME TO PEAK (hrs)=	8.083
RUNOFF VOLUME (mm)=	24.340
TOTAL RAINFALL (mm)=	60.873
RUNOFF COEFFICIENT =	0.400

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



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CALIB  
STANDHYD (0004)  
ID= 1 DT= 5.0 min

Area (ha)	=	11.16	Dir. Conn.(%)	=	86.00
Total Imp(%)	=	86.00			

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	9.60	1.56
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	272.76	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)	=	114.21	54.45
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	4.42 (ii)	7.66 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.23	0.13

			*TOTALS*
PEAK FLOW (cms)	=	2.79	0.17
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	59.87	30.62
TOTAL RAINFALL (mm)	=	60.87	60.87
RUNOFF COEFFICIENT	=	0.98	0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0017)  
ID= 1 DT= 5.0 min

Area (ha)	=	9.75	Dir. Conn.(%)	=	52.00
Total Imp(%)	=	52.00			

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	5.07	4.68
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	254.95	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)	=	114.21	52.31
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	4.25 (ii)	13.39 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.24	0.08

			*TOTALS*
PEAK FLOW (cms)	=	1.49	0.36
TIME TO PEAK (hrs)	=	8.00	8.17
RUNOFF VOLUME (mm)	=	59.87	29.63
TOTAL RAINFALL (mm)	=	60.87	60.87
RUNOFF COEFFICIENT	=	0.98	0.49

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0022)  
ID= 1 DT= 5.0 min

Area (ha)	=	13.54	Dir. Conn.(%)	=	53.00
Total Imp(%)	=	53.00			

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	7.18	6.36
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	300.44	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)	=	114.21	54.45
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	4.69 (ii)	13.69 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.22	0.08

			*TOTALS*
PEAK FLOW (cms)	=	2.06	0.50
TIME TO PEAK (hrs)	=	8.00	8.17
RUNOFF VOLUME (mm)	=	59.87	30.62

TOTAL RAINFALL (mm)	=	60.87	60.87	60.87
RUNOFF COEFFICIENT	=	0.98	0.50	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0029)  
ID= 1 DT= 5.0 min

Area (ha)	=	37.35	Dir. Conn.(%)	=	73.00
Total Imp(%)	=	73.00			

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	27.27	10.08
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	499.00	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)	=	114.21	52.31
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	6.35 (ii)	10.85 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.19	0.09

			*TOTALS*
PEAK FLOW (cms)	=	7.18	0.85
TIME TO PEAK (hrs)	=	8.00	8.17
RUNOFF VOLUME (mm)	=	59.87	29.63
TOTAL RAINFALL (mm)	=	60.87	60.87
RUNOFF COEFFICIENT	=	0.98	0.49

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0061)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0017):		9.75	1.681	8.00	45.36
+ ID2= 2 (0022):		13.54	2.334	8.00	46.12
=====					
ID = 3 (0061):		23.29	4.015	8.00	45.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0061):		23.29	4.015	8.00	45.80
+ ID2= 2 (0029):		37.35	7.654	8.00	51.71
=====					
ID = 1 (0061):		60.64	11.669	8.00	49.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0061):		60.64	11.669	8.00	49.44
+ ID2= 2 (0004):		11.16	2.931	8.00	55.78
=====					
ID = 3 (0061):		71.80	14.600	8.00	50.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (0063)  
Inlet Cap.=\*\*\*\*\*





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#of Inlets=	1			
Total (cms)=	14.6			
AREA	QPEAK	TPEAK	R.V.	
(ha)	(cms)	(hrs)	(mm)	
TOTAL HYD. (ID= 1):	71.80	14.60	8.00	50.43
MAJOR SYS. (ID= 2):	0.00	0.00	8.00	50.43
MINOR SYS. (ID= 3):	71.80	14.60	8.00	50.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha)=	19.25	
	Total Imp(%)=	92.00	Dir. Conn.(%)= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	17.71	1.54
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	358.24	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten. (mm/hr)=	114.21	54.45
over (min)	5.00	10.00
Storage Coeff. (min)=	5.21 (ii)	7.73 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.13

PEAK FLOW (cms)=	4.95	0.16	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	5.090 (iii)
RUNOFF VOLUME (mm)=	59.87	30.62	57.53
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012) ID= 1 DT= 5.0 min	Area (ha)=	1.17	
	Total Imp(%)=	91.00	Dir. Conn.(%)= 91.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.06	0.11
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten. (mm/hr)=	114.21	54.45
over (min)	5.00	5.00
Storage Coeff. (min)=	2.25 (ii)	4.90 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.30	0.22

PEAK FLOW (cms)=	0.33	0.01	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	0.350 (iii)
RUNOFF VOLUME (mm)=	59.87	30.62	57.24
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018) ID= 1 DT= 5.0 min	Area (ha)=	11.58	
	Total Imp(%)=	53.00	Dir. Conn.(%)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.14	5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00

Mannings n =	0.013	0.250
Max.Eff.Inten. (mm/hr)=	114.21	44.79
over (min)	5.00	15.00
Storage Coeff. (min)=	4.47 (ii)	14.20 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.23	0.08
PEAK FLOW (cms)=	1.78	0.35
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	59.87	26.06
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.43

*TOTALS*	1.966 (iii)
	8.00
	43.98
	60.87
	0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB STANDHYD (0023) ID= 1 DT= 5.0 min	Area (ha)=	4.36	
	Total Imp(%)=	78.00	Dir. Conn.(%)= 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten. (mm/hr)=	114.21	52.31
over (min)	5.00	10.00
Storage Coeff. (min)=	3.34 (ii)	7.37 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.13

PEAK FLOW (cms)=	1.04	0.10	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	1.121 (iii)
RUNOFF VOLUME (mm)=	59.87	29.63	53.22
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.87

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0024) ID= 1 DT= 5.0 min	Area (ha)=	2.54	
	Total Imp(%)=	93.00	Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.36	0.18
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	130.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten. (mm/hr)=	114.21	54.45
over (min)	5.00	10.00
Storage Coeff. (min)=	2.84 (ii)	5.22 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.16

PEAK FLOW (cms)=	0.73	0.02	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	0.751 (iii)
RUNOFF VOLUME (mm)=	59.87	30.62	57.82
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.



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

CALIB STANDHYD (0027) Area (ha) = 4.22  
ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.62	1.60
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	167.73	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	114.21	43.13
over (min)	5.00	15.00
Storage Coeff. (min)	3.30 (ii)	13.18 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.27	0.08

PEAK FLOW (cms)	0.80	0.10	*TOTALS*	0.853 (iii)
TIME TO PEAK (hrs)	8.00	8.17		8.00
RUNOFF VOLUME (mm)	59.87	25.25		46.72
TOTAL RAINFALL (mm)	60.87	60.87		60.87
RUNOFF COEFFICIENT	0.98	0.41		0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB STANDHYD (0028) Area (ha) = 6.40  
ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	5.95	0.45
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	2.00	2.00
Length (m)	206.56	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	114.21	54.45
over (min)	5.00	10.00
Storage Coeff. (min)	3.74 (ii)	6.12 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.25	0.15

PEAK FLOW (cms)	1.78	0.05	*TOTALS*	1.829 (iii)
TIME TO PEAK (hrs)	8.00	8.08		8.00
RUNOFF VOLUME (mm)	59.87	30.62		57.82
TOTAL RAINFALL (mm)	60.87	60.87		60.87
RUNOFF COEFFICIENT	0.98	0.50		0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0281) Area (ha) = 7.97  
ID= 1 DT= 5.0 min Total Imp(%) = 88.00 Dir. Conn.(%) = 88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	7.01	0.96
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	230.51	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	114.21	54.45
over (min)	5.00	10.00
Storage Coeff. (min)	4.00 (ii)	7.01 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.14

PEAK FLOW (cms)	2.08	0.11	*TOTALS*	2.169 (iii)
TIME TO PEAK (hrs)	8.00	8.08		8.00
RUNOFF VOLUME (mm)	59.87	30.62		56.36
TOTAL RAINFALL (mm)	60.87	60.87		60.87
RUNOFF COEFFICIENT	0.98	0.50		0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	19.25	5.090	8.00	57.53
+ ID2= 2 (0012):	1.17	0.350	8.00	57.24
=====				
ID = 3 (0048):	20.42	5.440	8.00	57.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	20.42	5.440	8.00	57.52
+ ID2= 2 (0018):	11.58	1.966	8.00	43.98
=====				
ID = 1 (0048):	32.00	7.405	8.00	52.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	32.00	7.405	8.00	52.62
+ ID2= 2 (0019):	1.83	0.134	8.08	24.34
=====				
ID = 3 (0048):	33.83	7.520	8.00	51.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	33.83	7.520	8.00	51.09
+ ID2= 2 (0023):	4.36	1.121	8.00	53.22
=====				
ID = 1 (0048):	38.19	8.640	8.00	51.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	38.19	8.640	8.00	51.33
+ ID2= 2 (0024):	2.54	0.751	8.00	57.82
=====				
ID = 3 (0048):	40.73	9.391	8.00	51.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)

ID1= 3 (0048) :	40.73	9.391	8.00	51.74
+ ID2= 2 (0027) :	4.22	0.853	8.00	46.72
-----				
ID = 1 (0048) :	44.95	10.244	8.00	51.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048) :	44.95	10.244	8.00	51.27
+ ID2= 2 (0028) :	6.40	1.829	8.00	57.82
-----				
ID = 3 (0048) :	51.35	12.073	8.00	52.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048) :	51.35	12.073	8.00	52.08
+ ID2= 2 (0281) :	7.97	2.169	8.00	56.36
-----				
ID = 1 (0048) :	59.32	14.242	8.00	52.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048) :	59.32	14.242	8.00	52.66
+ ID2= 2 (0063) :	71.80	14.600	8.00	50.43
-----				
ID = 3 (0048) :	131.12	28.842	8.00	51.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha) =	7.93
ID= 1 DT= 5.0 min	Total Imp(%) =	53.00
	Dir. Conn.(%) =	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.20	3.73
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	229.93	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr) =	114.21	54.45
over (min) =	5.00	15.00
Storage Coeff. (min) =	3.99 (ii)	12.99 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.24	0.08

PEAK FLOW (cms) =	1.25	0.30	*TOTALS*
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	59.87	30.62	46.12
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha) =	5.77
ID= 1 DT= 5.0 min	Total Imp(%) =	53.00
	Dir. Conn.(%) =	53.00

IMPERVIOUS	PERVIOUS (i)
------------	--------------

Surface Area (ha) =	3.06	2.71
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	196.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr) =	114.21	52.31
over (min) =	5.00	15.00
Storage Coeff. (min) =	3.63 (ii)	12.77 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.25	0.08

PEAK FLOW (cms) =	0.92	0.21	*TOTALS*
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	59.87	29.63	45.66
TOTAL RAINFALL (mm) =	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010) :	7.93	1.412	8.00	46.12
+ ID2= 2 (0025) :	5.77	1.037	8.00	45.66
-----				
ID = 3 (0049) :	13.70	2.449	8.00	45.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0049) :	13.70	2.449	8.00	45.93
+ ID2= 2 (0048) :	131.12	28.842	8.00	51.44
-----				
ID = 1 (0049) :	144.82	31.291	8.00	50.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0065)	IN= 2---> OUT= 1	DT= 5.0 min	
OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	24.7000	2.0323
11.4000	1.0496	28.2000	2.1552
16.6000	1.5358	31.7000	2.2403
20.0000	1.7670	0.0000	0.0000

INFLOW : ID= 2 (0049)	144.820	31.291	8.00	50.91
OUTFLOW: ID= 1 (0065)	144.820	16.371	8.17	50.91

PEAK FLOW REDUCTION [Qout/Qin] (%) = 52.32  
TIME SHIFT OF PEAK FLOW (min) = 10.00  
MAXIMUM STORAGE USED (ha.m.) = 1.5358

CALIB NASHYD (0015)	Area (ha) =	2.31	Curve Number (CN) =	80.0
ID= 1 DT= 5.0 min	Ia (mm) =	5.00	# of Linear Res. (N) =	3.00
	U.H. Tp (hrs) =	0.24		

Unit Hyd Qpeak (cms) =	0.368
------------------------	-------

PEAK FLOW (cms) =	0.138 (i)
TIME TO PEAK (hrs) =	8.167
RUNOFF VOLUME (mm) =	26.127
TOTAL RAINFALL (mm) =	60.873
RUNOFF COEFFICIENT =	0.429

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

CALIB STANDHYD (0003) ID= 1 DT= 5.0 min	Area (ha)= 8.96 Total Imp(%)= 46.00	Dir. Conn.(%)= 46.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.12	4.84
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	244.40	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	48.36
over (min)	5.00	15.00
Storage Coeff. (min)=	4.14 (ii)	13.58 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.08

		*TOTALS*
PEAK FLOW (cms)=	1.21	0.34
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	59.87	42.54
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.70

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0005) ID= 1 DT= 5.0 min	Area (ha)= 14.33 Total Imp(%)= 93.00	Dir. Conn.(%)= 93.00
---	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	13.33	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	309.08	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)	5.00	10.00
Storage Coeff. (min)=	4.77 (ii)	7.15 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.22	0.14

		*TOTALS*
PEAK FLOW (cms)=	3.81	0.11
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	59.87	30.62
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016) ID= 1 DT= 5.0 min	Area (ha)= 11.78 Total Imp(%)= 92.00	Dir. Conn.(%)= 92.00
---	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	10.84	0.94
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	280.24	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)	5.00	10.00
Storage Coeff. (min)=	4.50 (ii)	7.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00

Unit Hyd. peak (cms)= 0.23 0.14

			*TOTALS*
PEAK FLOW (cms)=	3.14	0.10	3.228 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	57.53
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0032) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	3.228	8.00	57.53
+ ID2= 2 (0005):	14.33	3.903	8.00	57.82
=====				
ID = 3 (0032):	26.11	7.131	8.00	57.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	26.11	7.131	8.00	57.69
+ ID2= 2 (0063):	0.00	0.000	8.00	50.43
=====				
ID = 1 (0032):	26.11	7.131	8.00	57.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030) ID= 1 DT= 5.0 min	Area (ha)= 9.95 Total Imp(%)= 66.00	Dir. Conn.(%)= 66.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.57	3.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.55	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)	5.00	15.00
Storage Coeff. (min)=	4.27 (ii)	13.42 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.23	0.08

		*TOTALS*
PEAK FLOW (cms)=	1.92	0.26
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	59.87	29.63
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 2.18 Total Imp(%)= 39.00	Dir. Conn.(%)= 39.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00



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Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.21	50.28
over (min)		5.00	15.00
Storage Coeff.(min)=		2.71 (ii)	12.00 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.29	0.09
PEAK FLOW (cms)=		0.26	0.10
TIME TO PEAK (hrs)=		8.00	8.17
RUNOFF VOLUME (mm)=		59.87	28.69
TOTAL RAINFALL (mm)=		60.87	60.87
RUNOFF COEFFICIENT =		0.98	0.47
			*TOTALS*
			0.321 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0015):		2.31	0.138	8.17	26.13
+ ID2= 2 (0002):		2.18	0.321	8.00	40.85
ID = 3 (2701):		4.49	0.401	8.00	33.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (2701):		4.49	0.401	8.00	33.27
+ ID2= 2 (0003):		8.96	1.398	8.00	42.54
ID = 1 (2701):		13.45	1.799	8.00	39.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (2701):		13.45	1.799	8.00	39.45
+ ID2= 2 (0030):		9.95	2.063	8.00	49.59
ID = 3 (2701):		23.40	3.862	8.00	43.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (2701):		23.40	3.862	8.00	43.76
+ ID2= 2 (0032):		26.11	7.131	8.00	57.69
ID = 1 (2701):		49.51	10.994	8.00	51.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)=	9.72
ID= 1 DT= 5.0 min	Total Imp(%)=	46.00
	Dir. Conn.(%)=	46.00
	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)	5.00	15.00
Storage Coeff.(min)=	4.24 (ii)	13.99 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.08
PEAK FLOW (cms)=	1.31	0.40
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	59.87	29.63
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49
		*TOTALS*
		1.530 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		9.72	1.530	8.00	43.54
+ ID2= 2 (2701):		49.51	10.994	8.00	51.11
ID = 3 (0222):		59.23	12.524	8.00	49.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006)	Area (ha)=	34.81
ID= 1 DT= 5.0 min	Total Imp(%)=	89.00
	Dir. Conn.(%)=	89.00
	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	30.98	3.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	481.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)	5.00	10.00
Storage Coeff.(min)=	6.22 (ii)	9.12 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.19	0.12
PEAK FLOW (cms)=	8.22	0.38
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	59.87	30.62
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50
		*TOTALS*
		8.534 (iii)

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	Area (ha)=	9.32
ID= 1 DT= 5.0 min	Total Imp(%)=	88.00
	Dir. Conn.(%)=	88.00
	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.20	1.12
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	249.27	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)	5.00	10.00
Storage Coeff.(min)=	4.19 (ii)	7.21 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.14
PEAK FLOW (cms)=	2.41	0.12
		*TOTALS*
		2.514 (iii)



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TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	59.87	30.62	56.36
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50	0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0006):	34.81	8.534	8.00	56.65
+ ID2= 2 (0007):	9.32	2.514	8.00	56.36
ID = 3 (0282):	44.13	11.048	8.00	56.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052)	Area (ha)= 9.98	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.98	1.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.94	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)=	5.00	10.00
Storage Coeff. (min)=	4.28 (ii)	7.06 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.23	0.14
PEAK FLOW (cms)=	2.63	0.11
TIME TO PEAK (hrs)=	8.00	2.723 (iii)
RUNOFF VOLUME (mm)=	59.87	30.62
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.50

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0053)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0282):	44.13	11.048	8.00	56.59
+ ID2= 2 (0052):	9.98	2.723	8.00	56.95
ID = 3 (0053):	54.11	13.771	8.00	56.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)= 4.99	Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.64	2.35
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	182.39	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	50.28

over (min)=	5.00	15.00
Storage Coeff. (min)=	3.47 (ii)	12.77 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.08

\*TOTALS\*

PEAK FLOW (cms)=	0.80	0.18	0.898 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	59.87	28.69	45.21
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.47	0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0031):	4.99	0.898	8.00	45.21
+ ID2= 2 (0053):	54.11	13.771	8.00	56.66
ID = 3 (0239):	59.10	14.669	8.00	55.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)= 5.73	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.87	2.87
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	195.45	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	52.31
over (min)=	5.00	15.00
Storage Coeff. (min)=	3.62 (ii)	12.77 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.08
PEAK FLOW (cms)=	0.86	0.22
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	59.87	29.63
TOTAL RAINFALL (mm)=	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.49

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area (ha)= 1.88	Total Imp(%)= 56.00	Dir. Conn.(%)= 56.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.05	0.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	111.95	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	114.21	54.45
over (min)=	5.00	15.00
Storage Coeff. (min)=	2.59 (ii)	11.59 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.29	0.09
PEAK FLOW (cms)=	0.33	0.07
TIME TO PEAK (hrs)=	8.00	8.17

\*TOTALS\*





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2.333	0.62	8.333	18.23	14.333	1.02	20.33	0.57
2.417	0.63	8.417	11.86	14.417	1.00	20.42	0.56
2.500	0.63	8.500	11.86	14.500	1.00	20.50	0.56
2.583	0.65	8.583	8.78	14.583	0.98	20.58	0.56
2.667	0.65	8.667	8.78	14.667	0.98	20.67	0.56
2.750	0.67	8.750	6.97	14.750	0.96	20.75	0.55
2.833	0.67	8.833	6.97	14.833	0.96	20.83	0.55
2.917	0.69	8.917	5.80	14.917	0.94	20.92	0.54
3.000	0.69	9.000	5.80	15.000	0.94	21.00	0.54
3.083	0.71	9.083	4.97	15.083	0.92	21.08	0.54
3.167	0.71	9.167	4.97	15.167	0.92	21.17	0.54
3.250	0.73	9.250	4.35	15.250	0.90	21.25	0.53
3.333	0.73	9.333	4.35	15.333	0.90	21.33	0.53
3.417	0.75	9.417	3.88	15.417	0.88	21.42	0.53
3.500	0.75	9.500	3.88	15.500	0.88	21.50	0.53
3.583	0.78	9.583	3.50	15.583	0.86	21.58	0.52
3.667	0.78	9.667	3.50	15.667	0.86	21.67	0.52
3.750	0.81	9.750	3.19	15.750	0.85	21.75	0.52
3.833	0.81	9.833	3.19	15.833	0.85	21.83	0.52
3.917	0.84	9.917	2.94	15.917	0.83	21.92	0.51
4.000	0.84	10.000	2.94	16.000	0.83	22.00	0.51
4.083	0.87	10.083	2.72	16.083	0.82	22.08	0.50
4.167	0.87	10.167	2.72	16.167	0.82	22.17	0.50
4.250	0.91	10.250	2.54	16.250	0.80	22.25	0.50
4.333	0.91	10.333	2.54	16.333	0.80	22.33	0.50
4.417	0.94	10.417	2.38	16.417	0.79	22.42	0.49
4.500	0.94	10.500	2.38	16.500	0.79	22.50	0.49
4.583	0.99	10.583	2.24	16.583	0.77	22.58	0.49
4.667	0.99	10.667	2.24	16.667	0.77	22.67	0.49
4.750	1.03	10.750	2.12	16.750	0.76	22.75	0.49
4.833	1.03	10.833	2.12	16.833	0.76	22.83	0.49
4.917	1.08	10.917	2.01	16.917	0.75	22.92	0.48
5.000	1.08	11.000	2.01	17.000	0.75	23.00	0.48
5.083	1.14	11.083	1.91	17.083	0.74	23.08	0.48
5.167	1.14	11.167	1.91	17.167	0.74	23.17	0.48
5.250	1.21	11.250	1.82	17.250	0.73	23.25	0.47
5.333	1.21	11.333	1.82	17.333	0.73	23.33	0.47
5.417	1.28	11.417	1.74	17.417	0.71	23.42	0.47
5.500	1.28	11.500	1.74	17.500	0.71	23.50	0.47
5.583	1.36	11.583	1.67	17.583	0.70	23.58	0.46
5.667	1.36	11.667	1.67	17.667	0.70	23.67	0.46
5.750	1.46	11.750	1.60	17.750	0.69	23.75	0.46
5.833	1.46	11.833	1.60	17.833	0.69	23.83	0.46
5.917	1.57	11.917	1.54	17.917	0.68	23.92	0.45
6.000	1.57	12.000	1.54	18.000	0.68	24.00	0.45

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha)= 29.43 Total Imp(%)= 82.00 Dir. Conn.(%)= 82.00
--	--

Surface Area (ha)=	24.13	PERVIOUS (i)	5.30
Dep. Storage (mm)=	1.00	PERVIOUS (i)	1.50
Average Slope (%)=	1.00	PERVIOUS (i)	2.00
Length (m)=	442.94	PERVIOUS (i)	40.00
Mannings n =	0.013	PERVIOUS (i)	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	5.54 (ii)	8.95 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.20	0.12
*TOTALS*		
PEAK FLOW (cms)=	7.83	0.68
TIME TO PEAK (hrs)=	8.00	8.08

RUNOFF VOLUME (mm)=	69.24	37.95	63.61
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.91

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha)= 69.17 Total Imp(%)= 89.00 Dir. Conn.(%)= 89.00
--	--

Surface Area (ha)=	61.56	PERVIOUS (i)	7.61
Dep. Storage (mm)=	1.00	PERVIOUS (i)	1.50
Average Slope (%)=	1.00	PERVIOUS (i)	2.00
Length (m)=	679.07	PERVIOUS (i)	40.00
Mannings n =	0.013	PERVIOUS (i)	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	7.16 (ii)	10.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.17	0.11

*TOTALS*			
PEAK FLOW (cms)=	18.34	0.94	19.115 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	65.80
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha)= 4.49 Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00
--	---

Surface Area (ha)=	4.13	PERVIOUS (i)	0.36
Dep. Storage (mm)=	1.00	PERVIOUS (i)	1.50
Average Slope (%)=	1.00	PERVIOUS (i)	2.00
Length (m)=	173.01	PERVIOUS (i)	40.00
Mannings n =	0.013	PERVIOUS (i)	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	3.15 (ii)	5.51 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.27	0.16

*TOTALS*			
PEAK FLOW (cms)=	1.50	0.05	1.544 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	66.73
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min	Area (ha)= 4.46 Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00
--	---

Surface Area (ha)=	4.10	PERVIOUS (i)	0.36
Dep. Storage (mm)=	1.00	PERVIOUS (i)	1.50
Average Slope (%)=	1.00	PERVIOUS (i)	2.00





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Length (m)=	172.43	40.00	
Mannings n	= 0.013	0.250	
Max.Eff.Inten.(mm/hr)=	134.79	70.24	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.14 (ii)	5.50 (iii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.16	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.49	0.05	1.534 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	66.73
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	29.43	8.397	8.00	63.61
+ ID2= 2 (0020):	69.17	19.115	8.00	65.80
=====				
ID = 3 (0050):	98.60	27.512	8.00	65.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0050):	98.60	27.512	8.00	65.14
+ ID2= 2 (0021):	4.49	1.544	8.00	66.73
=====				
ID = 1 (0050):	103.09	29.056	8.00	65.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0050):	103.09	29.056	8.00	65.21
+ ID2= 2 (0026):	4.46	1.534	8.00	66.73
=====				
ID = 3 (0050):	107.55	30.590	8.00	65.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0064)				
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0050)	107.550	30.590	8.00	65.27
OUTFLOW: ID= 1 (0064)	107.550	14.711	8.17	65.27

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.09  
TIME SHIFT OF PEAK FLOW (min) = 10.00  
MAXIMUM STORAGE USED (ha.m.) = 1.8604

CALIB NASHYD (0019)	Area (ha)=	1.83	Curve Number (CN)=	78.0
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ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res. (N)=	3.00
	U.H. Tp (hrs)=	0.15		

Unit Hyd Qpeak (cms)=	0.466
PEAK FLOW (cms)=	0.178 (i)
TIME TO PEAK (hrs)=	8.083
RUNOFF VOLUME (mm)=	30.913
TOTAL RAINFALL (mm)=	70.237
RUNOFF COEFFICIENT =	0.440

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

CALIB STANDHYD (0004)	Area (ha)=	11.16	Total Imp (%) =	86.00	Dir. Conn. (%) =	86.00
ID= 1 DT= 5.0 min						

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	9.60	1.56
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	272.76	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	4.14 (ii)	7.17 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.14

<b>*TOTALS*</b>		
PEAK FLOW (cms)=	3.34	0.22
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	69.24	37.95
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54
		0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0017)	Area (ha)=	9.75	Total Imp (%) =	52.00	Dir. Conn. (%) =	52.00
ID= 1 DT= 5.0 min						

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	5.07	4.68
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.95	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	134.79	67.67
over (min)	5.00	15.00
Storage Coeff. (min)=	3.98 (ii)	12.23 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.09

<b>*TOTALS*</b>		
PEAK FLOW (cms)=	1.78	0.48
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	69.24	36.82
TOTAL RAINFALL (mm)=	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52
		0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0022)	Area (ha)=	13.54	Total Imp (%) =	53.00	Dir. Conn. (%) =	53.00
ID= 1 DT= 5.0 min						

	IMPERVIOUS	PERVIOUS (i)
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Surface Area (ha) =	7.18	6.36	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	300.44	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	134.79	70.24	
over (min) =	5.00	15.00	
Storage Coeff. (min) =	4.39 (ii)	12.52 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms) =	0.23	0.08	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	2.47	0.67	2.838 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	69.24	37.95	54.53
TOTAL RAINFALL (mm) =	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029) ID= 1 DT= 5.0 min	Area (ha) =	37.35	
	Total Imp (%) =	73.00	Dir. Conn. (%) = 73.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	27.27	10.08	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	499.00	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	134.79	67.67	
over (min) =	5.00	15.00	
Storage Coeff. (min) =	5.95 (ii)	10.15 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms) =	0.19	0.10	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	8.65	1.12	9.287 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	69.24	36.82	60.48
TOTAL RAINFALL (mm) =	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.52	0.86

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0061) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0017):	9.75	2.042	8.00	53.68
+ ID2= 2 (0022):	13.54	2.838	8.00	54.53
-----				
ID = 3 (0061):	23.29	4.880	8.00	54.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 3 (0061):	23.29	4.880	8.00	54.17
+ ID2= 2 (0029):	37.35	9.287	8.00	60.48
-----				
ID = 1 (0061):	60.64	14.168	8.00	58.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
ID1= 1 (0061):	60.64	14.168	8.00	58.06
+ ID2= 2 (0004):	11.16	3.524	8.00	64.86
-----				
ID = 3 (0061):	71.80	17.692	8.00	59.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (0063) Inlet Cap. = ***** #of Inlets = 1 Total (cms) = 14.6	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R. V. (mm)
TOTAL HYD. (ID= 1):	71.80	17.69	8.00	59.12
-----				
MAJOR SYS. (ID= 2):	1.57	3.09	8.00	59.12
MINOR SYS. (ID= 3):	70.23	14.60	8.00	59.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha) =	19.25	
	Total Imp (%) =	92.00	Dir. Conn. (%) = 92.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	17.71	1.54	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	358.24	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	134.79	70.24	
over (min) =	5.00	10.00	
Storage Coeff. (min) =	4.88 (ii)	7.23 (ii)	
Unit Hyd. Tpeak (min) =	5.00	10.00	
Unit Hyd. peak (cms) =	0.22	0.14	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	5.94	0.22	6.126 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	69.24	37.95	66.73
TOTAL RAINFALL (mm) =	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012) ID= 1 DT= 5.0 min	Area (ha) =	1.17	
	Total Imp (%) =	91.00	Dir. Conn. (%) = 91.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	1.06	0.11	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	88.32	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	134.79	70.24	
over (min) =	5.00	5.00	
Storage Coeff. (min) =	2.10 (ii)	4.59 (ii)	
Unit Hyd. Tpeak (min) =	5.00	5.00	
Unit Hyd. peak (cms) =	0.31	0.23	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	0.40	0.02	0.416 (iii)
TIME TO PEAK (hrs) =	8.00	8.00	8.00
RUNOFF VOLUME (mm) =	69.24	37.95	66.42
TOTAL RAINFALL (mm) =	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:



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CN\* = 82.0 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.

CALIB STANDHYD (0018) Area (ha) = 11.58  
 ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.14	5.44
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	277.85	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 4.19 (ii) 12.93 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.24 0.08

PEAK FLOW (cms) = 2.13 0.47 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00 2.385 (iii)  
 RUNOFF VOLUME (mm) = 69.24 32.67 52.05  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.47 0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 77.0 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.

CALIB STANDHYD (0023) Area (ha) = 4.36  
 ID= 1 DT= 5.0 min Total Imp(%) = 78.00 Dir. Conn.(%) = 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.40	0.96
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	170.49	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 3.12 (ii) 6.90 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.27 0.14

PEAK FLOW (cms) = 1.23 0.13 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00 1.345 (iii)  
 RUNOFF VOLUME (mm) = 69.24 36.82 62.10  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.52 0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024) Area (ha) = 2.54  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.36	0.18
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	130.13	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) = 134.79 over (min) = 5.00  
 70.24 5.00

Storage Coeff. (min) = 2.66 (ii) 4.88 (ii)  
 Unit Hyd. Tpeak (min) = 5.00 5.00  
 Unit Hyd. peak (cms) = 0.29 0.22

PEAK FLOW (cms) = 0.87 0.03 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.00 8.00 0.901 (iii)  
 RUNOFF VOLUME (mm) = 69.24 37.95 67.05  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027) Area (ha) = 4.22  
 ID= 1 DT= 5.0 min Total Imp(%) = 62.00 Dir. Conn.(%) = 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.62	1.60
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	167.73	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 3.09 (ii) 11.96 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.27 0.09

PEAK FLOW (cms) = 0.95 0.14 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.17 8.00 1.025 (iii)  
 RUNOFF VOLUME (mm) = 69.24 31.72 54.98  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.45 0.78

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 76.0 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.

CALIB STANDHYD (0028) Area (ha) = 6.40  
 ID= 1 DT= 5.0 min Total Imp(%) = 93.00 Dir. Conn.(%) = 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	5.95	0.45
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	206.56	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr) = 134.79 over (min) = 5.00  
 Storage Coeff. (min) = 3.50 (ii) 5.73 (ii)  
 Unit Hyd. Tpeak (min) = 5.00  
 Unit Hyd. peak (cms) = 0.26 0.15

PEAK FLOW (cms) = 2.13 0.07 \*TOTALS\*  
 TIME TO PEAK (hrs) = 8.00 8.08 8.00 2.186 (iii)  
 RUNOFF VOLUME (mm) = 69.24 37.95 67.05  
 TOTAL RAINFALL (mm) = 70.24 70.24 70.24  
 RUNOFF COEFFICIENT = 0.99 0.54 0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.



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CALIB  
STANDHYD (0281)  
ID= 1 DT= 5.0 min

Area (ha)=	7.97	Dir. Conn.(%)=	88.00
Total Imp(%)=	88.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.01	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	230.51	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	10.00
Storage Coeff. (min)=	3.74 (ii)	6.56 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.14

PEAK FLOW (cms)=	2.48	0.14	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	2.601 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	65.48
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	19.25	6.126	8.00	66.73
+ ID2= 2 (0012):	1.17	0.416	8.00	66.42
ID = 3 (0048):	20.42	6.541	8.00	66.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	20.42	6.541	8.00	66.72
+ ID2= 2 (0018):	11.58	2.385	8.00	52.05
ID = 1 (0048):	32.00	8.926	8.00	61.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	32.00	8.926	8.00	61.41
+ ID2= 2 (0019):	1.83	0.178	8.08	30.91
ID = 3 (0048):	33.83	9.080	8.00	59.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	33.83	9.080	8.00	59.76
+ ID2= 2 (0023):	4.36	1.345	8.00	62.10
ID = 1 (0048):	38.19	10.425	8.00	60.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	38.19	10.425	8.00	60.03
+ ID2= 2 (0024):	2.54	0.901	8.00	67.05
ID = 3 (0048):	40.73	11.326	8.00	60.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.73	11.326	8.00	60.46
+ ID2= 2 (0027):	4.22	1.025	8.00	54.98
ID = 1 (0048):	44.95	12.351	8.00	59.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.95	12.351	8.00	59.95
+ ID2= 2 (0028):	6.40	2.186	8.00	67.05
ID = 3 (0048):	51.35	14.537	8.00	60.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	51.35	14.537	8.00	60.83
+ ID2= 2 (0281):	7.97	2.601	8.00	65.48
ID = 1 (0048):	59.32	17.138	8.00	61.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	59.32	17.138	8.00	61.46
+ ID2= 2 (0063):	70.23	14.600	8.00	59.12
ID = 3 (0048):	129.55	31.738	8.00	60.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
STANDHYD (0010)  
ID= 1 DT= 5.0 min

Area (ha)=	7.93	Dir. Conn.(%)=	53.00
Total Imp(%)=	53.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.20	3.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	229.93	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	134.79	70.24
over (min)	5.00	15.00
Storage Coeff. (min)=	3.74 (ii)	11.87 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09

PEAK FLOW (cms)=	1.49	0.40	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	1.712 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	69.24	37.95	54.53
TOTAL RAINFALL (mm)=	70.24	70.24	70.24
RUNOFF COEFFICIENT =	0.99	0.54	0.78



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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)			
ID= 1 DT= 5.0 min	Area (ha)	(ha) = 5.77	Dir. Conn. (%) = 53.00
Surface Area	(ha) =	3.06	2.71
Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	196.13	40.00
Mannings n	=	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	=	134.79	67.67
Storage Coeff. (min)	=	3.40 (ii)	11.65 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.26	0.09
PEAK FLOW (cms)	=	1.10	0.28
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	69.24	36.82
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.52

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 (0049)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	7.93	1.712	8.00	54.53
+ ID2= 2 (0025):	5.77	1.256	8.00	54.00
ID = 3 (0049):	13.70	2.967	8.00	54.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0049):	13.70	2.967	8.00	54.31
+ ID2= 2 (0048):	129.55	31.738	8.00	60.19
ID = 1 (0049):	143.25	34.705	8.00	59.63

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0065)					
IN= 2----> OUT= 1					
DT= 5.0 min					
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	24.7000	2.0323	
	11.4000	1.0496	28.2000	2.1552	
	16.6000	1.5358	31.7000	2.2403	
	20.0000	1.7670	0.0000	0.0000	
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)		143.251	34.705	8.00	59.63
OUTFLOW: ID= 1 (0065)		143.251	19.582	8.17	59.63
PEAK FLOW REDUCTION [Qout/Qin] (%) = 56.42					
TIME SHIFT OF PEAK FLOW (min) = 10.00					

MAXIMUM STORAGE USED (ha.m.) = 1.7670

CALIB NASHYD (0015)			
ID= 1 DT= 5.0 min	Area (ha)	(ha) = 2.31	Dir. Conn. (%) = 80.0
	Ia	(mm) = 5.00	# of Linear Res. (N) = 3.00
	U.H. Tp (hrs)	= 0.24	

Unit Hyd Qpeak (cms) = 0.368

PEAK FLOW (cms)	=	0.182 (i)
TIME TO PEAK (hrs)	=	8.167
RUNOFF VOLUME (mm)	=	33.027
TOTAL RAINFALL (mm)	=	70.237
RUNOFF COEFFICIENT	=	0.470

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

CALIB STANDHYD (0003)			
ID= 1 DT= 5.0 min	Area (ha)	(ha) = 8.96	Dir. Conn. (%) = 46.00

Surface Area	(ha) =	4.12	4.84
Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	244.40	40.00
Mannings n	=	0.013	0.250

Max. Eff. Inten. (mm/hr) over (min)	=	134.79	62.87
Storage Coeff. (min)	=	3.88 (ii)	12.37 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.25	0.08

PEAK FLOW (cms)	=	1.45	0.46
TIME TO PEAK (hrs)	=	8.00	8.17
RUNOFF VOLUME (mm)	=	69.24	34.68
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.49

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0005)			
ID= 1 DT= 5.0 min	Area (ha)	(ha) = 14.33	Dir. Conn. (%) = 93.00

Surface Area	(ha) =	13.33	1.00
Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	309.08	40.00
Mannings n	=	0.013	0.250

Max. Eff. Inten. (mm/hr) over (min)	=	134.79	70.24
Storage Coeff. (min)	=	4.46 (ii)	6.69 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.23	0.14

PEAK FLOW (cms)	=	4.56	0.14
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	69.24	37.95
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.54

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.



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CALIB STANDHYD (0016)  
ID= 1 DT= 5.0 min

Area (ha)	= 11.78
Total Imp(%)	= 92.00
Dir. Conn.(%)	= 92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	10.84	0.94
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	280.24	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	134.79 / 5.00	70.24 / 10.00
Storage Coeff. (min)	4.21 (ii)	6.57 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.14
<b>*TOTALS*</b>		
PEAK FLOW (cms)	3.75	0.14
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	69.24	37.95
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0016):	11.78	3.873	8.00	66.73
+ ID2= 2 (0005):	14.33	4.687	8.00	67.05
ID = 3 (0032):	26.11	8.560	8.00	66.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0032):	26.11	8.560	8.00	66.91
+ ID2= 2 (0063):	1.57	3.092	8.00	59.12
ID = 1 (0032):	27.68	11.652	8.00	66.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)  
ID= 1 DT= 5.0 min

Area (ha)	= 9.95
Total Imp(%)	= 66.00
Dir. Conn.(%)	= 66.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.57	3.38
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.55	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	134.79 / 5.00	67.67 / 10.00
Storage Coeff. (min)	4.00 (ii)	8.80 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.12
<b>*TOTALS*</b>		
PEAK FLOW (cms)	2.30	0.42
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	69.24	36.82
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN\* = 81.0 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.

CALIB STANDHYD (0002)  
ID= 1 DT= 5.0 min

Area (ha)	= 2.18
Total Imp(%)	= 39.00
Dir. Conn.(%)	= 39.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	0.85	1.33
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	120.55	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr) over (min)	134.79 / 5.00	65.21 / 15.00
Storage Coeff. (min)	2.54 (ii)	10.91 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.29	0.09
<b>*TOTALS*</b>		
PEAK FLOW (cms)	0.31	0.14
TIME TO PEAK (hrs)	8.00	8.17
RUNOFF VOLUME (mm)	69.24	35.73
TOTAL RAINFALL (mm)	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.51

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0015):	2.31	0.182	8.17	33.03
+ ID2= 2 (0002):	2.18	0.391	8.00	48.79
ID = 3 (2701):	4.49	0.498	8.00	40.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	4.49	0.498	8.00	40.68
+ ID2= 2 (0003):	8.96	1.702	8.00	50.57
ID = 1 (2701):	13.45	2.200	8.00	47.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (2701):	13.45	2.200	8.00	47.27
+ ID2= 2 (0030):	9.95	2.651	8.00	58.21
ID = 3 (2701):	23.40	4.851	8.00	51.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (2701):	23.40	4.851	8.00	51.92
+ ID2= 2 (0032):	27.68	11.652	8.00	66.46



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ID = 1 (2701): 51.08 16.502 8.00 59.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min			
Area (ha)	=	9.72	
Total Imp(%)	=	46.00	Dir. Conn.(%) = 46.00
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	4.47	5.25
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	254.56	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	134.79	67.67
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	3.97 (ii)	12.22 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.24	0.09
		*TOTALS*	
PEAK FLOW (cms)	=	1.57	0.54
TIME TO PEAK (hrs)	=	8.00	8.17
RUNOFF VOLUME (mm)	=	69.24	36.82
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.52
		1.865 (iii)	0.74

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222) 1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):	9.72	1.865	8.00	51.73
+ ID2= 2 (2701):	51.08	16.502	8.00	59.80
ID = 3 (0222):	60.80	18.367	8.00	58.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min			
Area (ha)	=	34.81	
Total Imp(%)	=	89.00	Dir. Conn.(%) = 89.00
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	30.98	3.83
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	481.73	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	134.79	70.24
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	5.82 (ii)	8.54 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.20	0.12
		*TOTALS*	
PEAK FLOW (cms)	=	9.90	0.50
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	69.24	37.95
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.54
		10.321 (iii)	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007)	
Area (ha)	= 9.32

ID= 1 DT= 5.0 min | Total Imp(%) = 88.00 Dir. Conn.(%) = 88.00

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min			
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	8.20	1.12
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	249.27	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	134.79	70.24
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.92 (ii)	6.74 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.24	0.14
		*TOTALS*	
PEAK FLOW (cms)	=	2.88	0.16
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	69.24	37.95
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.54
		3.017 (iii)	0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282) 1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0006):	34.81	10.321	8.00	65.80
+ ID2= 2 (0007):	9.32	3.017	8.00	65.48
ID = 3 (0282):	44.13	13.339	8.00	65.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052) ID= 1 DT= 5.0 min			
Area (ha)	=	9.98	
Total Imp(%)	=	90.00	Dir. Conn.(%) = 90.00
		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	=	8.98	1.00
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	257.94	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	134.79	70.24
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	4.00 (ii)	6.60 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.24	0.14
		*TOTALS*	
PEAK FLOW (cms)	=	3.14	0.14
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	69.24	37.95
TOTAL RAINFALL (mm)	=	70.24	70.24
RUNOFF COEFFICIENT	=	0.99	0.54
		3.266 (iii)	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0053) 1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0282):	44.13	13.339	8.00	65.73
+ ID2= 2 (0052):	9.98	3.266	8.00	66.11
ID = 3 (0053):	54.11	16.605	8.00	65.80



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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
STANDHYD (0031) Area (ha) = 4.99  
ID= 1 DT= 5.0 min Total Imp(%) = 53.00 Dir. Conn.(%) = 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.64	2.35
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	182.39	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	134.79	65.21
over (min)	5.00	15.00
Storage Coeff. (min)	3.25 (ii)	11.63 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.27	0.09

PEAK FLOW (cms)	0.95	0.24	1.086 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	69.24	35.73	53.49
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.51	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239)  
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0031):	4.99	1.086	8.00	53.49
+ ID2= 2 (0053):	54.11	16.605	8.00	65.80
ID = 3 (0239):	59.10	17.690	8.00	64.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB  
STANDHYD (0008) Area (ha) = 5.73  
ID= 1 DT= 5.0 min Total Imp(%) = 50.00 Dir. Conn.(%) = 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.87	2.87
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	195.45	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	134.79	67.67
over (min)	5.00	15.00
Storage Coeff. (min)	3.39 (ii)	11.64 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.26	0.09

PEAK FLOW (cms)	1.03	0.30	1.196 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	69.24	36.82	53.03
TOTAL RAINFALL (mm)	70.24	70.24	70.24
RUNOFF COEFFICIENT	0.99	0.52	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0014) Area (ha) = 1.88  
ID= 1 DT= 5.0 min Total Imp(%) = 56.00 Dir. Conn.(%) = 56.00

Surface Area (ha)	=	1.05	PERVIOUS (i)	0.83
Dep. Storage (mm)	=	1.00		1.50
Average Slope (%)	=	1.00		2.00
Length (m)	=	111.95		40.00
Mannings n	=	0.013		0.250

Max.Eff.Inten.(mm/hr)	=	134.79	70.24
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	2.43 (ii)	10.55 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.30	0.09

PEAK FLOW (cms)	=	0.39	0.09	*TOTALS*	0.442 (iii)
TIME TO PEAK (hrs)	=	8.00	8.17		8.00
RUNOFF VOLUME (mm)	=	69.24	37.95		55.47
TOTAL RAINFALL (mm)	=	70.24	70.24		70.24
RUNOFF COEFFICIENT	=	0.99	0.54		0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)  
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0014):	1.88	0.442	8.00	55.47
+ ID2= 2 (0239):	59.10	17.690	8.00	64.76
ID = 3 (0217):	60.98	18.133	8.00	64.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)  
3 + 2 = 1

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0217):	60.98	18.133	8.00	64.47
+ ID2= 2 (0008):	5.73	1.196	8.00	53.03
ID = 1 (0217):	66.71	19.328	8.00	63.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)  
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0217):	66.71	19.328	8.00	63.49
+ ID2= 2 (0022):	60.80	18.367	8.00	58.51
ID = 3 (0051):	127.51	37.695	8.00	61.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0066)  
IN= 2--> OUT= 1  
DT= 5.0 min

	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	23.5000	2.2073
	11.2000	0.8794	27.4000	2.6321
	14.6000	1.3452	31.5000	3.0954
	18.2000	1.7106	0.0000	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0051)	127.509	37.695	8.00	61.12
OUTFLOW: ID= 1 (0066)	127.509	17.857	8.17	61.12

PEAK FLOW REDUCTION [Qout/Qin] (%) = 47.37  
TIME SHIFT OF PEAK FLOW (min) = 10.00  
MAXIMUM STORAGE USED (ha.m.) = 1.7106





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\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 4 \*\*  
 \*\*\*\*\*

CHICAGO STORM  
 Ptotal= 82.47 mm

IDF curve parameters: A=1680.000  
 B= 5.600  
 C= 0.851

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.53	6.17	1.97	12.17	1.72	18.17	0.78
0.33	0.54	6.33	2.16	12.33	1.66	18.33	0.77
0.50	0.55	6.50	2.38	12.50	1.60	18.50	0.75
0.67	0.57	6.67	2.67	12.67	1.55	18.67	0.74
0.83	0.58	6.83	3.04	12.83	1.50	18.83	0.73
1.00	0.59	7.00	3.54	13.00	1.46	19.00	0.72
1.17	0.60	7.17	4.27	13.17	1.41	19.17	0.72
1.33	0.62	7.33	5.39	13.33	1.38	19.33	0.71
1.50	0.63	7.50	7.40	13.50	1.34	19.50	0.70
1.67	0.64	7.67	11.98	13.67	1.30	19.67	0.69
1.83	0.66	7.83	32.72	13.83	1.27	19.83	0.68
2.00	0.67	8.00	162.17	14.00	1.24	20.00	0.67
2.17	0.69	8.17	44.24	14.17	1.21	20.17	0.66
2.33	0.71	8.33	21.25	14.33	1.18	20.33	0.66
2.50	0.73	8.50	13.79	14.50	1.15	20.50	0.65
2.67	0.75	8.67	10.19	14.67	1.13	20.67	0.64
2.83	0.77	8.83	8.09	14.83	1.10	20.83	0.63
3.00	0.79	9.00	6.72	15.00	1.08	21.00	0.63
3.17	0.82	9.17	5.76	15.17	1.06	21.17	0.62
3.33	0.84	9.33	5.04	15.33	1.04	21.33	0.61
3.50	0.87	9.50	4.49	15.50	1.01	21.50	0.61
3.67	0.90	9.67	4.05	15.67	1.00	21.67	0.60
3.83	0.93	9.83	3.70	15.83	0.98	21.83	0.59
4.00	0.97	10.00	3.40	16.00	0.96	22.00	0.59
4.17	1.00	10.17	3.15	16.17	0.94	22.17	0.58
4.33	1.04	10.33	2.94	16.33	0.92	22.33	0.58
4.50	1.09	10.50	2.75	16.50	0.91	22.50	0.57
4.67	1.14	10.67	2.59	16.67	0.89	22.67	0.56
4.83	1.19	10.83	2.45	16.83	0.88	22.83	0.56
5.00	1.25	11.00	2.32	17.00	0.86	23.00	0.55
5.17	1.32	11.17	2.21	17.17	0.85	23.17	0.55
5.33	1.39	11.33	2.11	17.33	0.84	23.33	0.54
5.50	1.48	11.50	2.02	17.50	0.82	23.50	0.54
5.67	1.57	11.67	1.93	17.67	0.81	23.67	0.53
5.83	1.69	11.83	1.85	17.83	0.80	23.83	0.53
6.00	1.82	12.00	1.78	18.00	0.79	24.00	0.52

1.000	0.59	7.000	3.54	13.000	1.46	19.00	0.72
1.083	0.60	7.083	4.27	13.083	1.42	19.08	0.72
1.167	0.61	7.167	4.27	13.167	1.41	19.17	0.72
1.250	0.62	7.250	5.39	13.250	1.38	19.25	0.71
1.333	0.62	7.333	5.39	13.333	1.38	19.33	0.71
1.417	0.63	7.417	7.40	13.417	1.34	19.42	0.70
1.500	0.63	7.500	7.40	13.500	1.34	19.50	0.70
1.583	0.64	7.583	11.98	13.583	1.30	19.58	0.69
1.667	0.64	7.667	11.98	13.667	1.30	19.67	0.69
1.750	0.66	7.750	32.72	13.750	1.27	19.75	0.68
1.833	0.66	7.833	32.73	13.833	1.27	19.83	0.68
1.917	0.67	7.917	162.17	13.917	1.24	19.92	0.67
2.000	0.67	8.000	162.16	14.000	1.24	20.00	0.67
2.083	0.69	8.083	44.24	14.083	1.21	20.08	0.66
2.167	0.69	8.167	44.23	14.167	1.21	20.17	0.66
2.250	0.71	8.250	21.25	14.250	1.18	20.25	0.66
2.333	0.71	8.333	21.25	14.333	1.18	20.33	0.66
2.417	0.73	8.417	13.79	14.417	1.15	20.42	0.65
2.500	0.73	8.500	13.79	14.500	1.15	20.50	0.65
2.583	0.75	8.583	10.19	14.583	1.13	20.58	0.64
2.667	0.75	8.667	10.19	14.667	1.13	20.67	0.64
2.750	0.77	8.750	8.09	14.750	1.10	20.75	0.63
2.833	0.77	8.833	8.09	14.833	1.10	20.83	0.63
2.917	0.79	8.917	6.72	14.917	1.08	20.92	0.63
3.000	0.79	9.000	6.72	15.000	1.08	21.00	0.63
3.083	0.82	9.083	5.76	15.083	1.06	21.08	0.62
3.167	0.82	9.167	5.76	15.167	1.06	21.17	0.62
3.250	0.84	9.250	5.04	15.250	1.04	21.25	0.61
3.333	0.84	9.333	5.04	15.333	1.04	21.33	0.61
3.417	0.87	9.417	4.49	15.417	1.01	21.42	0.61
3.500	0.87	9.500	4.49	15.500	1.01	21.50	0.61
3.583	0.90	9.583	4.05	15.583	1.00	21.58	0.60
3.667	0.90	9.667	4.05	15.667	1.00	21.67	0.60
3.750	0.93	9.750	3.70	15.750	0.98	21.75	0.59
3.833	0.93	9.833	3.70	15.833	0.98	21.83	0.59
3.917	0.97	9.917	3.40	15.917	0.96	21.92	0.59
4.000	0.97	10.000	3.40	16.000	0.96	22.00	0.59
4.083	1.00	10.083	3.15	16.083	0.94	22.08	0.58
4.167	1.00	10.167	3.15	16.167	0.94	22.17	0.58
4.250	1.04	10.250	2.94	16.250	0.92	22.25	0.58
4.333	1.04	10.333	2.94	16.333	0.92	22.33	0.58
4.417	1.09	10.417	2.75	16.417	0.91	22.42	0.57
4.500	1.09	10.500	2.75	16.500	0.91	22.50	0.57
4.583	1.14	10.583	2.59	16.583	0.89	22.58	0.56
4.667	1.14	10.667	2.59	16.667	0.89	22.67	0.56
4.750	1.19	10.750	2.45	16.750	0.88	22.75	0.56
4.833	1.19	10.833	2.45	16.833	0.88	22.83	0.56
4.917	1.25	10.917	2.32	16.917	0.86	22.92	0.55
5.000	1.25	11.000	2.32	17.000	0.86	23.00	0.55
5.083	1.32	11.083	2.21	17.083	0.85	23.08	0.55
5.167	1.32	11.167	2.21	17.167	0.85	23.17	0.55
5.250	1.39	11.250	2.11	17.250	0.84	23.25	0.54
5.333	1.39	11.333	2.11	17.333	0.84	23.33	0.54
5.417	1.48	11.417	2.02	17.417	0.82	23.42	0.54
5.500	1.48	11.500	2.02	17.500	0.82	23.50	0.54
5.583	1.57	11.583	1.93	17.583	0.81	23.58	0.53
5.667	1.57	11.667	1.93	17.667	0.81	23.67	0.53
5.750	1.69	11.750	1.85	17.750	0.80	23.75	0.53
5.833	1.69	11.833	1.85	17.833	0.80	23.83	0.53
5.917	1.82	11.917	1.78	17.917	0.79	23.92	0.52
6.000	1.82	12.000	1.78	18.000	0.79	24.00	0.52

CALIB  
 STANDHYD (0009)  
 ID= 1 DT= 5.0 min

Area (ha)= 42.85  
 Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	29.14	13.71
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	534.48	40.00
Mannings n =	0.013	0.250

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	0.53	6.083	1.97	12.083	1.72	18.083	0.78
0.167	0.53	6.167	1.97	12.167	1.72	18.167	0.78
0.250	0.54	6.250	2.16	12.250	1.66	18.250	0.77
0.333	0.54	6.333	2.16	12.333	1.66	18.333	0.77
0.417	0.55	6.417	2.38	12.417	1.60	18.42	0.75
0.500	0.55	6.500	2.38	12.500	1.60	18.50	0.75
0.583	0.57	6.583	2.67	12.583	1.55	18.58	0.74
0.667	0.57	6.667	2.67	12.667	1.55	18.67	0.74
0.750	0.58	6.750	3.04	12.750	1.50	18.75	0.73
0.833	0.58	6.833	3.04	12.833	1.50	18.83	0.73
0.917	0.59	6.917	3.54	12.917	1.46	18.92	0.72

Max. Eff. Inten. (mm/hr)= 162.17 89.46  
 over (min)= 5.00 15.00  
 Storage Coeff (min)= 5.76 (ii) 10.06 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.20 0.10

\*TOTALS\*  
 PEAK FLOW (cms)= 11.23 2.00 12.373 (iii)  
 TIME TO PEAK (hrs)= 8.00 8.17 8.00  
 RUNOFF VOLUME (mm)= 81.47 46.65 70.33  
 TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.85

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB  
 STANDHYD (0013)  
 ID= 1 DT= 5.0 min

Area (ha)= 29.43  
 Total Imp(%)= 82.00 Dir. Conn.(%)= 82.00



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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	24.13	5.30
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	442.94	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)	5.14 (ii)	8.31 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.21	0.13
PEAK FLOW (cms)	9.60	0.92
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	81.47	47.95
TOTAL RAINFALL (mm)	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.58

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha) = 69.17 Total Imp(%) = 89.00	Dir. Conn.(%) = 89.00
--	---	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	61.56	7.61
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	679.07	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)	6.65 (ii)	9.17 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.18	0.12
PEAK FLOW (cms)	22.63	1.27
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	81.47	47.95
TOTAL RAINFALL (mm)	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.58

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha) = 4.49 Total Imp(%) = 92.00	Dir. Conn.(%) = 92.00
--	--	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.13	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	173.01	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)	2.93 (ii)	5.12 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.16
PEAK FLOW (cms)	1.81	0.07
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	81.47	47.95
TOTAL RAINFALL (mm)	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.58

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min	Area (ha) = 4.46 Total Imp(%) = 92.00	Dir. Conn.(%) = 92.00
--	--	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.10	0.36
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	172.43	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)	2.92 (ii)	5.11 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.16
PEAK FLOW (cms)	1.80	0.07
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	81.47	47.95
TOTAL RAINFALL (mm)	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.58

\*TOTALS\*  
10.385 (iii)  
75.44  
82.47  
0.91

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	29.43	10.385	8.00	75.44
+ ID2= 2 (0020):	69.17	23.702	8.00	77.79
=====				
ID = 3 (0050):	98.60	34.087	8.00	77.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0050):	98.60	34.087	8.00	77.09
+ ID2= 2 (0021):	4.49	1.878	8.00	78.79
=====				
ID = 1 (0050):	103.09	35.965	8.00	77.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0050):	103.09	35.965	8.00	77.16
+ ID2= 2 (0026):	4.46	1.866	8.00	78.79
=====				
ID = 3 (0050):	107.55	37.831	8.00	77.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0064) IN= 2 ---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486



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11.1000	1.5984	23.8000	2.6934
14.8000	1.8604	0.0000	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0050)	107.550	37.831	8.00	77.23
OUTFLOW: ID= 1 (0064)	107.550	18.478	8.17	77.23

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.84
TIME SHIFT OF PEAK FLOW (min) = 10.00
MAXIMUM STORAGE USED (ha.m.) = 2.2032

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB	STANDHYD	(0019)	Area (ha) = 1.83	Curve Number (CN) = 78.0
ID= 1 DT= 5.0 min			Ia (mm) = 5.00	# of Linear Res. (N) = 3.00
			U.H. Tp (hrs) = 0.15	

Unit Hyd Qpeak (cms) = 0.466
PEAK FLOW (cms) = 0.241 (i)
TIME TO PEAK (hrs) = 8.083
RUNOFF VOLUME (mm) = 40.020
TOTAL RAINFALL (mm) = 82.474
RUNOFF COEFFICIENT = 0.485

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

CALIB	STANDHYD	(0022)	Area (ha) = 13.54	Dir. Conn. (%) = 53.00
ID= 1 DT= 5.0 min			Total Imp (%) = 53.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	7.18	6.36
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	300.44	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	162.17	92.57
over (min) =	5.00	15.00
Storage Coeff. (min) =	4.07 (ii)	11.35 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.24	0.09

PEAK FLOW (cms) = 3.01	0.91	3.527 (iii)
TIME TO PEAK (hrs) = 8.00	8.17	8.00
RUNOFF VOLUME (mm) = 81.47	47.95	65.72
TOTAL RAINFALL (mm) = 82.47	82.47	82.47
RUNOFF COEFFICIENT = 0.99	0.58	0.80

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB	STANDHYD	(0004)	Area (ha) = 11.16	Dir. Conn. (%) = 86.00
ID= 1 DT= 5.0 min			Total Imp (%) = 86.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	9.60	1.56
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	272.76	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	162.17	92.57
over (min) =	5.00	10.00
Storage Coeff. (min) =	3.84 (ii)	6.66 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.25	0.14

PEAK FLOW (cms) = 4.06	0.29	4.323 (iii)
TIME TO PEAK (hrs) = 8.00	8.08	8.00
RUNOFF VOLUME (mm) = 81.47	47.95	76.78
TOTAL RAINFALL (mm) = 82.47	82.47	82.47
RUNOFF COEFFICIENT = 0.99	0.58	0.93

\*TOTALS\*

CALIB	STANDHYD	(0029)	Area (ha) = 37.35	Dir. Conn. (%) = 73.00
ID= 1 DT= 5.0 min			Total Imp (%) = 73.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	27.27	10.08
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	499.00	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	162.17	89.46
over (min) =	5.00	10.00
Storage Coeff. (min) =	5.52 (ii)	9.43 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.20	0.12

PEAK FLOW (cms) = 10.63	1.61	11.981 (iii)
TIME TO PEAK (hrs) = 8.00	8.08	8.00
RUNOFF VOLUME (mm) = 81.47	46.65	72.07
TOTAL RAINFALL (mm) = 82.47	82.47	82.47
RUNOFF COEFFICIENT = 0.99	0.57	0.87

\*TOTALS\*

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB	STANDHYD	(0017)	Area (ha) = 9.75	Dir. Conn. (%) = 52.00
ID= 1 DT= 5.0 min			Total Imp (%) = 52.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	5.07	4.68
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	254.95	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) =	162.17	89.46
over (min) =	5.00	15.00
Storage Coeff. (min) =	3.69 (ii)	11.07 (ii)
Unit Hyd. Tpeak (min) =	5.00	15.00
Unit Hyd. peak (cms) =	0.25	0.09

PEAK FLOW (cms) = 2.16	0.66	2.534 (iii)
TIME TO PEAK (hrs) = 8.00	8.17	8.00
RUNOFF VOLUME (mm) = 81.47	46.65	64.76
TOTAL RAINFALL (mm) = 82.47	82.47	82.47
RUNOFF COEFFICIENT = 0.99	0.57	0.79

\*TOTALS\*

ADD HYD	(0061)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID= 1 (0017):		9.75	2.534	8.00	64.76
+ ID= 2 (0022):		13.54	3.527	8.00	65.72
=====					
ID = 3 (0061):		23.29	6.061	8.00	65.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



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ADD HYD (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0061):	23.29	6.061	8.00	65.32
+ ID2= 2 (0029):	37.35	11.981	8.00	72.07
ID = 1 (0061):	60.64	18.042	8.00	69.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0061):	60.64	18.042	8.00	69.48
+ ID2= 2 (0004):	11.16	4.323	8.00	76.78
ID = 3 (0061):	71.80	22.365	8.00	70.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (0063)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
Inlet Cap.=*****				
#of Inlets= 1				
Total (cms)= 14.6				
TOTAL HYD. (ID= 1):	71.80	22.36	8.00	70.61
MAJOR SYS. (ID= 2):	4.30	7.76	8.00	70.61
MINOR SYS. (ID= 3):	67.50	14.60	7.92	70.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0011)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	19.25	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	17.71	1.54
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	358.24	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)=	4.53 (ii)	6.72 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.23	0.14
PEAK FLOW (cms)=	7.27	0.29
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	81.47	47.95
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58
		0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0012)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	1.17	91.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.06	0.11
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	162.17	92.57
over (min)	5.00	5.00
Storage Coeff. (min)=	1.95 (ii)	4.26 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.31	0.23
PEAK FLOW (cms)=	0.48	0.03
TIME TO PEAK (hrs)=	8.00	8.00
RUNOFF VOLUME (mm)=	81.47	47.95
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58
		0.95

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	11.58	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.14	5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	162.17	78.19
over (min)	5.00	15.00
Storage Coeff. (min)=	3.89 (ii)	11.67 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09
PEAK FLOW (cms)=	2.59	0.66
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	81.47	41.80
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.51
		0.76

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 77.0 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.

CALIB STANDHYD (0023)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	4.36	78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250

Max. Eff. Inten. (mm/hr)=	162.17	89.46
over (min)	5.00	10.00
Storage Coeff. (min)=	2.90 (ii)	6.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.14
PEAK FLOW (cms)=	1.49	0.18
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	81.47	46.65
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57
		0.89

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.



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CALIB  
STANDHYD (0024)  
ID= 1 DT= 5.0 min

Area (ha)	=	2.54
Total Imp(%)	=	93.00
Dir. Conn.(%)	=	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 2.36	0.18
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 130.13	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	=	162.17	92.57
over (min)	=	5.00	5.00
Storage Coeff. (min)	=	2.47 (ii)	4.53 (ii)
Unit Hyd. Tpeak (min)	=	5.00	5.00
Unit Hyd. peak (cms)	=	0.30	0.23

PEAK FLOW (cms)	=	1.05	0.04	*TOTALS*
TIME TO PEAK (hrs)	=	8.00	8.00	1.093 (iii)
RUNOFF VOLUME (mm)	=	81.47	47.95	8.00
TOTAL RAINFALL (mm)	=	82.47	82.47	79.13
RUNOFF COEFFICIENT	=	0.99	0.58	82.47
				0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0027)  
ID= 1 DT= 5.0 min

Area (ha)	=	4.22
Total Imp(%)	=	62.00
Dir. Conn.(%)	=	62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 2.62	1.60
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 167.73	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	=	162.17	75.63
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	2.87 (ii)	7.65 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.28	0.13

PEAK FLOW (cms)	=	1.15	0.24	*TOTALS*
TIME TO PEAK (hrs)	=	8.00	8.08	1.350 (iii)
RUNOFF VOLUME (mm)	=	81.47	40.68	8.00
TOTAL RAINFALL (mm)	=	82.47	82.47	65.97
RUNOFF COEFFICIENT	=	0.99	0.49	82.47
				0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB  
STANDHYD (0028)  
ID= 1 DT= 5.0 min

Area (ha)	=	6.40
Total Imp(%)	=	93.00
Dir. Conn.(%)	=	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 5.95	0.45
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 206.56	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	=	162.17	92.57
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.25 (ii)	5.32 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.27	0.16

\*TOTALS\*

PEAK FLOW (cms)	=	2.58	0.09	2.663 (iii)
TIME TO PEAK (hrs)	=	8.00	8.08	8.00
RUNOFF VOLUME (mm)	=	81.47	47.95	79.13
TOTAL RAINFALL (mm)	=	82.47	82.47	82.47
RUNOFF COEFFICIENT	=	0.99	0.58	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0281)  
ID= 1 DT= 5.0 min

Area (ha)	=	7.97
Total Imp(%)	=	88.00
Dir. Conn.(%)	=	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 7.01	0.96
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 230.51	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	=	162.17	92.57
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.48 (ii)	6.10 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.26	0.15

PEAK FLOW (cms)	=	3.02	0.18	*TOTALS*
TIME TO PEAK (hrs)	=	8.00	8.08	3.181 (iii)
RUNOFF VOLUME (mm)	=	81.47	47.95	8.00
TOTAL RAINFALL (mm)	=	82.47	82.47	77.45
RUNOFF COEFFICIENT	=	0.99	0.58	82.47
				0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):		19.25	7.519	8.00	78.79
+ ID2= 2 (0012):		1.17	0.504	8.00	78.46
=====					
ID = 3 (0048):		20.42	8.023	8.00	78.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):		20.42	8.023	8.00	78.77
+ ID2= 2 (0018):		11.58	2.958	8.00	62.83
=====					
ID = 1 (0048):		32.00	10.980	8.00	73.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):		32.00	10.980	8.00	73.00
+ ID2= 2 (0019):		1.83	0.241	8.08	40.02
=====					
ID = 3 (0048):		33.83	11.190	8.00	71.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	33.83	11.190	8.00	71.22
+ ID2= 2 (0023):	4.36	1.648	8.00	73.81
-----				
ID = 1 (0048):	38.19	12.839	8.00	71.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	38.19	12.839	8.00	71.51
+ ID2= 2 (0024):	2.54	1.093	8.00	79.13
-----				
ID = 3 (0048):	40.73	13.932	8.00	71.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	40.73	13.932	8.00	71.99
+ ID2= 2 (0027):	4.22	1.350	8.00	65.97
-----				
ID = 1 (0048):	44.95	15.282	8.00	71.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	44.95	15.282	8.00	71.42
+ ID2= 2 (0028):	6.40	2.663	8.00	79.13
-----				
ID = 3 (0048):	51.35	17.945	8.00	72.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0048):	51.35	17.945	8.00	72.38
+ ID2= 2 (0281):	7.97	3.181	8.00	77.45
-----				
ID = 1 (0048):	59.32	21.125	8.00	73.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0048):	59.32	21.125	8.00	73.07
+ ID2= 2 (0063):	67.50	14.600	7.92	70.61
-----				
ID = 3 (0048):	126.82	35.725	8.00	71.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	7.93	53.00	53.00

Surface Area (ha)	IMPERVIOUS	PERVIOUS (i)
	4.20	3.73

Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	229.93	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	162.17	92.57
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	3.47 (ii)	10.75 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.26	0.09
PEAK FLOW (cms)	=	1.81	0.55
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	81.47	47.95
TOTAL RAINFALL (mm)	=	82.47	82.47
RUNOFF COEFFICIENT	=	0.99	0.58

\*TOTALS\*

2.121 (iii)
8.00
65.72
82.47
0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	5.77	53.00	53.00

Surface Area (ha)	IMPERVIOUS	PERVIOUS (i)
	3.06	2.71
Dep. Storage (mm)	=	1.00
Average Slope (%)	=	1.00
Length (m)	=	196.13
Mannings n	=	0.013

Max.Eff.Inten.(mm/hr)	=	162.17	89.46
over (min)	=	5.00	15.00
Storage Coeff. (min)	=	3.15 (ii)	10.53 (ii)
Unit Hyd. Tpeak (min)	=	5.00	15.00
Unit Hyd. peak (cms)	=	0.27	0.09

\*TOTALS\*

1.33	0.39	1.553 (iii)
8.00	8.17	8.00
81.47	46.65	65.11
82.47	82.47	82.47
0.99	0.57	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	7.93	2.121	8.00	65.72
+ ID2= 2 (0025):	5.77	1.553	8.00	65.11
-----				
ID = 3 (0049):	13.70	3.673	8.00	65.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0049):	13.70	3.673	8.00	65.46
+ ID2= 2 (0048):	126.82	35.725	8.00	71.76
-----				
ID = 1 (0049):	140.52	39.399	8.00	71.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



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RESERVOIR (0065)  
IN= 2---> OUT= 1  
DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	24.7000	2.0323
11.4000	1.0496	28.2000	2.1552
16.6000	1.5358	31.7000	2.2403
20.0000	1.7670	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	140.524	39.399	8.00	71.15
OUTFLOW : ID= 1 (0065)	140.524	23.926	8.17	71.15

PEAK FLOW REDUCTION [Qout/Qin] (%) = 60.73  
TIME SHIFT OF PEAK FLOW (min) = 10.00  
MAXIMUM STORAGE USED (ha.m.) = 2.0323

CALIB STANDHYD (0015)  
ID= 1 DT= 5.0 min

Area (ha)	Ia (mm)	U.H. Tp (hrs)	Curve Number (CN)	# of Linear Res. (N)
2.31	5.00	0.24	80.0	3.00

Unit Hyd Qpeak (cms) = 0.368  
PEAK FLOW (cms) = 0.245 (i)  
TIME TO PEAK (hrs) = 8.167  
RUNOFF VOLUME (mm) = 42.537  
TOTAL RAINFALL (mm) = 82.474  
RUNOFF COEFFICIENT = 0.516

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

CALIB STANDHYD (0003)  
ID= 1 DT= 5.0 min

Area (ha)	Total Imp (%)	Dir. Conn. (%)
8.96	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.12	4.84
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	244.40	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	162.17 / 5.00	83.60 / 15.00
Storage Coeff. (min)	3.60 (ii)	11.18 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.26	0.09

PEAK FLOW (cms) = 1.76  
TIME TO PEAK (hrs) = 8.00  
RUNOFF VOLUME (mm) = 81.47  
TOTAL RAINFALL (mm) = 82.47  
RUNOFF COEFFICIENT = 0.99

\*TOTALS\*  
2.119 (iii)  
8.00  
61.32  
82.47  
0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0005)  
ID= 1 DT= 5.0 min

Area (ha)	Total Imp (%)	Dir. Conn. (%)
14.33	93.00	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	13.33	1.00
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	309.08	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	162.17 / 5.00	92.57 / 10.00
Storage Coeff. (min)	4.14 (ii)	6.21 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.24	0.15

\*TOTALS\*  
PEAK FLOW (cms) = 5.57  
TIME TO PEAK (hrs) = 8.00  
RUNOFF VOLUME (mm) = 81.47  
TOTAL RAINFALL (mm) = 82.47  
RUNOFF COEFFICIENT = 0.99

0.19  
8.08  
47.95  
82.47  
0.58

5.739 (iii)  
8.00  
79.13  
82.47  
0.96

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)  
ID= 1 DT= 5.0 min

Area (ha)	Total Imp (%)	Dir. Conn. (%)
11.78	92.00	92.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	10.84	0.94
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	280.24	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	162.17 / 5.00	92.57 / 10.00
Storage Coeff. (min)	3.91 (ii)	6.10 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.25	0.15

PEAK FLOW (cms) = 4.58  
TIME TO PEAK (hrs) = 8.00  
RUNOFF VOLUME (mm) = 81.47  
TOTAL RAINFALL (mm) = 82.47  
RUNOFF COEFFICIENT = 0.99

0.18  
8.08  
47.95  
82.47  
0.96

\*TOTALS\*  
4.739 (iii)  
8.00  
78.79  
82.47  
0.96

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0032)  
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016) :	11.78	4.739	8.00	78.79
+ ID2= 2 (0005) :	14.33	5.739	8.00	79.13
=====				
ID = 3 (0032) :	26.11	10.478	8.00	78.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)  
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032) :	26.11	10.478	8.00	78.98
+ ID2= 2 (0063) :	4.30	7.765	8.00	70.61
=====				
ID = 1 (0032) :	30.41	18.243	8.00	77.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)  
ID= 1 DT= 5.0 min

Area (ha)	Total Imp (%)	Dir. Conn. (%)
9.95	66.00	66.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	6.57	3.38
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.55	40.00
Mannings n	0.013	0.250



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Max.Eff.Inten.(mm/hr)=	162.17	89.46	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.71 (ii)	9.18 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.13	
			<b>*TOTALS*</b>
PEAK FLOW (cms)=	2.80	0.57	3.284 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	46.65	69.63
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57	0.84

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 2.18 Total Imp(%)= 39.00	Dir. Conn.(%)= 39.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	86.47
over (min)	5.00	10.00
Storage Coeff. (min)=	2.36 (ii)	9.84 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.11

		<b>*TOTALS*</b>
PEAK FLOW (cms)=	0.38	0.20
TIME TO PEAK (hrs)=	8.00	8.08
RUNOFF VOLUME (mm)=	81.47	45.38
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.55

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.245	8.17	42.54
+ ID2= 2 (0002):	2.18	0.546	8.00	59.46
ID = 3 (2701):	4.49	0.693	8.00	50.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.693	8.00	50.75
+ ID2= 2 (0003):	8.96	2.119	8.00	61.32
ID = 1 (2701):	13.45	2.812	8.00	57.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
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ID1= 1 (2701):	13.45	2.812	8.00	57.79
+ ID2= 2 (0030):	9.95	3.284	8.00	69.63
ID = 3 (2701):	23.40	6.096	8.00	62.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	23.40	6.096	8.00	62.83
+ ID2= 2 (0032):	30.41	18.243	8.00	77.79
ID = 1 (2701):	53.81	24.339	8.00	71.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min	Area (ha)= 9.72 Total Imp(%)= 46.00	Dir. Conn.(%)= 46.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	89.46
over (min)	5.00	15.00
Storage Coeff. (min)=	3.69 (ii)	11.07 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.25	0.09

		<b>*TOTALS*</b>
PEAK FLOW (cms)=	1.91	0.74
TIME TO PEAK (hrs)=	8.00	8.17
RUNOFF VOLUME (mm)=	81.47	46.65
TOTAL RAINFALL (mm)=	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.57

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0222) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	9.72	2.324	8.00	62.67
+ ID2= 2 (2701):	53.81	24.339	8.00	71.29
ID = 3 (0222):	63.53	26.663	8.00	69.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha)= 34.81 Total Imp(%)= 89.00	Dir. Conn.(%)= 89.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	30.98	3.83
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	481.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	162.17	92.57
over (min)	5.00	10.00
Storage Coeff. (min)=	5.41 (ii)	7.93 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.13

		<b>*TOTALS*</b>
PEAK FLOW (cms)=	12.16	0.68
		12.738 (iii)





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TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	81.47	47.95	77.79
TOTAL RAINFALL (mm)=	82.47	82.47	82.47
RUNOFF COEFFICIENT =	0.99	0.58	0.94

CN\* = 82.0 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.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007) ID= 1 DT= 5.0 min	Area (ha)= 9.32 Total Imp(%)= 88.00	Dir. Conn.(%)= 88.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	8.20	1.12	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	249.27	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.64 (ii)	6.26 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.15	
PEAK FLOW (cms)=	3.50	0.21	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	3.693 (iii)
RUNOFF VOLUME (mm)=	81.47	47.95	8.00
TOTAL RAINFALL (mm)=	82.47	82.47	77.45
RUNOFF COEFFICIENT =	0.99	0.58	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0282) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0006):	34.81	12.738	8.00	77.79
+ ID2= 2 (0007):	9.32	3.693	8.00	77.45
ID = 3 (0282):	44.13	16.431	8.00	77.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052) ID= 1 DT= 5.0 min	Area (ha)= 9.98 Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	8.98	1.00	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	257.94	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.72 (ii)	6.13 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.15	
PEAK FLOW (cms)=	3.82	0.19	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	3.996 (iii)
RUNOFF VOLUME (mm)=	81.47	47.95	8.00
TOTAL RAINFALL (mm)=	82.47	82.47	78.12
RUNOFF COEFFICIENT =	0.99	0.58	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

ADD HYD (0053) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0282):	44.13	16.431	8.00	77.72
+ ID2= 2 (0052):	9.98	3.996	8.00	78.12
ID = 3 (0053):	54.11	20.427	8.00	77.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031) ID= 1 DT= 5.0 min	Area (ha)= 4.99 Total Imp(%)= 53.00	Dir. Conn.(%)= 53.00
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	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.64	2.35	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	182.39	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	86.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.02 (ii)	10.50 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.09	
PEAK FLOW (cms)=	1.16	0.33	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	1.341 (iii)
RUNOFF VOLUME (mm)=	81.47	45.38	8.00
TOTAL RAINFALL (mm)=	82.47	82.47	64.51
RUNOFF COEFFICIENT =	0.99	0.55	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (0239) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0031):	4.99	1.341	8.00	64.51
+ ID2= 2 (0053):	54.11	20.427	8.00	77.79
ID = 3 (0239):	59.10	21.768	8.00	76.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008) ID= 1 DT= 5.0 min	Area (ha)= 5.73 Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00
---	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.87	2.87	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	195.45	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	162.17	89.46	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.15 (ii)	10.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.09	
PEAK FLOW (cms)=	1.25	0.41	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	1.481 (iii)
RUNOFF VOLUME (mm)=	81.47	46.65	8.00
TOTAL RAINFALL (mm)=	82.47	82.47	64.06



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TOTAL RAINFALL (mm)= 82.47 82.47 82.47  
 RUNOFF COEFFICIENT = 0.99 0.57 0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0014)  
 ID= 1 DT= 5.0 min  
 Area (ha)= 1.88  
 Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	1.05	0.83	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	111.95	40.00	
Mannings n	0.013	0.250	
Max. Eff. Inten. (mm/hr)	162.17	92.57	
over (min)	5.00	10.00	
Storage Coeff. (min)	2.25 (ii)	9.53 (ii)	
Unit Hyd. Tpeak (min)	5.00	10.00	
Unit Hyd. peak (cms)	0.30	0.12	
*TOTALS*			
PEAK FLOW (cms)	0.47	0.14	0.584 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	81.47	47.95	66.72
TOTAL RAINFALL (mm)	82.47	82.47	82.47
RUNOFF COEFFICIENT	0.99	0.58	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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 (0217)  
 1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0014):	1.88	0.584	8.00	66.72
+ ID2= 2 (0239):	59.10	21.768	8.00	76.67
ID = 3 (0217):	60.98	22.352	8.00	76.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)  
 3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0217):	60.98	22.352	8.00	76.36
+ ID2= 2 (0008):	5.73	1.481	8.00	64.06
ID = 1 (0217):	66.71	23.833	8.00	75.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)  
 1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0217):	66.71	23.833	8.00	75.31
+ ID2= 2 (0222):	63.53	26.663	8.00	69.97
ID = 3 (0051):	130.24	50.496	8.00	72.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0066)

IN= 2---> OUT= 1  
 DT= 5.0 min

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	23.5000	2.2073
	11.2000	0.8794	27.4000	2.6321
	14.6000	1.3452	31.5000	3.0954
	18.2000	1.7106	0.0000	0.0000

AREA QPEAK TPEAK R.V.  
 (ha) (cms) (hrs) (mm)  
 INFLOW : ID= 2 (0051) 130.236 50.496 8.00 72.70  
 OUTFLOW: ID= 1 (0066) 130.236 23.319 8.08 72.70

PEAK FLOW REDUCTION [Qout/Qin] (%) = 46.18  
 TIME SHIFT OF PEAK FLOW (min) = 5.00  
 MAXIMUM STORAGE USED (ha.m.) = 2.2073

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 5 \*\*  
 \*\*\*\*\*

CHICAGO STORM  
 Ptotal= 89.46 mm

IDF curve parameters: A=1960.000  
 B= 5.800  
 C= 0.861

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.54	6.17	2.04	12.17	1.78	18.17	0.79
0.33	0.55	6.33	2.24	12.33	1.71	18.33	0.78
0.50	0.56	6.50	2.48	12.50	1.66	18.50	0.77
0.67	0.57	6.67	2.79	12.67	1.60	18.67	0.76
0.83	0.59	6.83	3.19	12.83	1.55	18.83	0.75
1.00	0.60	7.00	3.73	13.00	1.50	19.00	0.74
1.17	0.61	7.17	4.51	13.17	1.46	19.17	0.73
1.33	0.63	7.33	5.73	13.33	1.42	19.33	0.72
1.50	0.64	7.50	7.93	13.50	1.38	19.50	0.71
1.67	0.65	7.67	13.01	13.67	1.34	19.67	0.70
1.83	0.67	7.83	36.39	13.83	1.31	19.83	0.69
2.00	0.69	8.00	182.06	14.00	1.27	20.00	0.68
2.17	0.70	8.17	49.43	14.17	1.24	20.17	0.68
2.33	0.72	8.33	23.41	14.33	1.21	20.33	0.67
2.50	0.74	8.50	15.03	14.50	1.18	20.50	0.66
2.67	0.76	8.67	11.02	14.67	1.16	20.67	0.65
2.83	0.79	8.83	8.69	14.83	1.13	20.83	0.64
3.00	0.81	9.00	7.18	15.00	1.11	21.00	0.64
3.17	0.83	9.17	6.13	15.17	1.08	21.17	0.63
3.33	0.86	9.33	5.35	15.33	1.06	21.33	0.62
3.50	0.89	9.50	4.75	15.50	1.04	21.50	0.62
3.67	0.92	9.67	4.27	15.67	1.02	21.67	0.61
3.83	0.95	9.83	3.89	15.83	1.00	21.83	0.60
4.00	0.99	10.00	3.57	16.00	0.98	22.00	0.60
4.17	1.03	10.17	3.30	16.17	0.96	22.17	0.59
4.33	1.07	10.33	3.08	16.33	0.95	22.33	0.58
4.50	1.12	10.50	2.88	16.50	0.93	22.50	0.58
4.67	1.17	10.67	2.71	16.67	0.91	22.67	0.57
4.83	1.23	10.83	2.55	16.83	0.90	22.83	0.57
5.00	1.29	11.00	2.42	17.00	0.88	23.00	0.56
5.17	1.36	11.17	2.30	17.17	0.87	23.17	0.56
5.33	1.44	11.33	2.19	17.33	0.86	23.33	0.55
5.50	1.52	11.50	2.09	17.50	0.84	23.50	0.55
5.67	1.63	11.67	2.00	17.67	0.83	23.67	0.54
5.83	1.74	11.83	1.92	17.83	0.82	23.83	0.54
6.00	1.88	12.00	1.85	18.00	0.80	24.00	0.53

CALIB STANDHYD (0009)  
 ID= 1 DT= 5.0 min  
 Area (ha)= 42.85  
 Total Imp(%)= 68.00 Dir. Conn.(%)= 68.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	29.14	13.71
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	534.48	40.00
Mannings n	0.013	0.250

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



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--- TRANSFORMED HYETOGRAPH ---					
TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.54	6.083	2.04	12.083	1.78
0.167	0.54	6.167	2.04	12.167	1.78
0.250	0.55	6.250	2.24	12.250	1.71
0.333	0.55	6.333	2.24	12.333	1.71
0.417	0.56	6.417	2.48	12.417	1.66
0.500	0.56	6.500	2.48	12.500	1.66
0.583	0.57	6.583	2.79	12.583	1.60
0.667	0.57	6.667	2.79	12.667	1.60
0.750	0.59	6.750	3.19	12.750	1.55
0.833	0.59	6.833	3.19	12.833	1.55
0.917	0.60	6.917	3.73	12.917	1.50
1.000	0.60	7.000	3.73	13.000	1.50
1.083	0.61	7.083	4.51	13.083	1.46
1.167	0.61	7.167	4.51	13.167	1.46
1.250	0.63	7.250	5.73	13.250	1.42
1.333	0.63	7.333	5.73	13.333	1.42
1.417	0.64	7.417	7.93	13.417	1.38
1.500	0.64	7.500	7.93	13.500	1.38
1.583	0.65	7.583	13.01	13.583	1.34
1.667	0.65	7.667	13.01	13.667	1.34
1.750	0.67	7.750	16.39	13.750	1.31
1.833	0.67	7.833	16.40	13.833	1.31
1.917	0.69	7.917	182.05	13.917	1.27
2.000	0.69	8.000	182.05	14.000	1.27
2.083	0.70	8.083	49.43	14.083	1.24
2.167	0.70	8.167	49.43	14.167	1.24
2.250	0.72	8.250	23.41	14.250	1.21
2.333	0.72	8.333	23.41	14.333	1.21
2.417	0.74	8.417	15.03	14.417	1.18
2.500	0.74	8.500	15.03	14.500	1.18
2.583	0.76	8.583	11.02	14.583	1.16
2.667	0.76	8.667	11.02	14.667	1.16
2.750	0.79	8.750	8.69	14.750	1.13
2.833	0.79	8.833	8.69	14.833	1.13
2.917	0.81	8.917	7.18	14.917	1.11
3.000	0.81	9.000	7.18	15.000	1.11
3.083	0.83	9.083	6.13	15.083	1.08
3.167	0.83	9.167	6.13	15.167	1.08
3.250	0.86	9.250	5.35	15.250	1.06
3.333	0.86	9.333	5.35	15.333	1.06
3.417	0.89	9.417	4.75	15.417	1.04
3.500	0.89	9.500	4.75	15.500	1.04
3.583	0.92	9.583	4.27	15.583	1.02
3.667	0.92	9.667	4.27	15.667	1.02
3.750	0.95	9.750	3.89	15.750	1.00
3.833	0.95	9.833	3.89	15.833	1.00
3.917	0.99	9.917	3.57	15.917	0.98
4.000	0.99	10.000	3.57	16.000	0.98
4.083	1.03	10.083	3.30	16.083	0.96
4.167	1.03	10.167	3.30	16.167	0.96
4.250	1.07	10.250	3.08	16.250	0.95
4.333	1.07	10.333	3.08	16.333	0.95
4.417	1.12	10.417	2.88	16.417	0.93
4.500	1.12	10.500	2.88	16.500	0.93
4.583	1.17	10.583	2.71	16.583	0.91
4.667	1.17	10.667	2.71	16.667	0.91
4.750	1.23	10.750	2.55	16.750	0.90
4.833	1.23	10.833	2.55	16.833	0.90
4.917	1.29	10.917	2.42	16.917	0.88
5.000	1.29	11.000	2.42	17.000	0.88
5.083	1.36	11.083	2.30	17.083	0.87
5.167	1.36	11.167	2.30	17.167	0.87
5.250	1.44	11.250	2.19	17.250	0.86
5.333	1.44	11.333	2.19	17.333	0.86
5.417	1.52	11.417	2.09	17.417	0.84
5.500	1.52	11.500	2.09	17.500	0.84
5.583	1.63	11.583	2.00	17.583	0.83
5.667	1.63	11.667	2.00	17.667	0.83
5.750	1.74	11.750	1.92	17.750	0.82
5.833	1.74	11.833	1.92	17.833	0.82
5.917	1.88	11.917	1.85	17.917	0.80
6.000	1.88	12.000	1.85	18.000	0.80

Max. Eff. Inten. (mm/hr) over (min) =	182.06	105.09
Storage Coeff. (min) =	5.00	10.00
Unit Hyd. Tpeak (min) =	5.00 (ii)	9.60 (ii)
Unit Hyd. peak (cms) =	0.20	0.11
*TOTALS*		
PEAK FLOW (cms) =	12.77	2.55
TIME TO PEAK (hrs) =	8.00	8.08
		8.00

RUNOFF VOLUME (mm) =	88.46	52.44	76.93
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.86

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha) = 29.43	Total Imp (%) = 82.00	Dir. Conn. (%) = 82.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	24.13	5.30
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	442.94	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min) =	182.06	108.56
Storage Coeff. (min) =	5.00	10.00
Unit Hyd. Tpeak (min) =	4.91 (ii)	7.94 (ii)
Unit Hyd. peak (cms) =	0.22	0.13

*TOTALS*			
PEAK FLOW (cms) =	10.90	1.10	11.846 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	88.46	53.83	82.22
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha) = 69.17	Total Imp (%) = 89.00	Dir. Conn. (%) = 89.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	61.56	7.61
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00
Length (m) =	679.07	40.00
Mannings n =	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min) =	182.06	108.56
Storage Coeff. (min) =	6.34 (ii)	8.75 (ii)
Unit Hyd. Tpeak (min) =	5.00	10.00
Unit Hyd. peak (cms) =	0.19	0.12

*TOTALS*			
PEAK FLOW (cms) =	25.80	1.52	27.090 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	88.46	53.83	84.65
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha) = 4.49	Total Imp (%) = 92.00	Dir. Conn. (%) = 92.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha) =	4.13	0.36
Dep. Storage (mm) =	1.00	1.50
Average Slope (%) =	1.00	2.00



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Length (m)=	173.01	40.00	
Mannings n	= 0.013	0.250	
Max.Eff.Inten.(mm/hr) over (min)	= 182.06	108.56	
Storage Coeff. (min)	= 2.79 (ii)	4.88 (ii)	
Unit Hyd. Tpeak (min)	= 5.00	5.00	
Unit Hyd. peak (cms)	= 0.28	0.22	
*TOTALS*			
PEAK FLOW (cms)	= 2.04	0.10	2.143 (iii)
TIME TO PEAK (hrs)	= 8.00	8.00	
RUNOFF VOLUME (mm)	= 88.46	53.83	85.69
TOTAL RAINFALL (mm)	= 89.46	89.46	89.46
RUNOFF COEFFICIENT	= 0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min	Area (ha) = 4.46	Dir. Conn.(%) = 92.00
	Total Imp(%) = 92.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	= 4.10	0.36	
Dep. Storage (mm)	= 1.00	1.50	
Average Slope (%)	= 1.00	2.00	
Length (m)	= 172.43	40.00	
Mannings n	= 0.013	0.250	
Max.Eff.Inten.(mm/hr) over (min)	= 182.06	108.56	
Storage Coeff. (min)	= 2.79 (ii)	4.88 (ii)	
Unit Hyd. Tpeak (min)	= 5.00	5.00	
Unit Hyd. peak (cms)	= 0.28	0.22	
*TOTALS*			
PEAK FLOW (cms)	= 2.03	0.10	2.129 (iii)
TIME TO PEAK (hrs)	= 8.00	8.00	
RUNOFF VOLUME (mm)	= 88.46	53.83	85.69
TOTAL RAINFALL (mm)	= 89.46	89.46	89.46
RUNOFF COEFFICIENT	= 0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0050) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	29.43	11.846	8.00	82.22
+ ID2= 2 (0020):	69.17	27.090	8.00	84.65
ID = 3 (0050):	98.60	38.936	8.00	83.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0050):	98.60	38.936	8.00	83.92
+ ID2= 2 (0021):	4.49	2.143	8.00	85.69
ID = 1 (0050):	103.09	41.079	8.00	84.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)
----------------

1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0050):	103.09	41.079	8.00	84.00
+ ID2= 2 (0026):	4.46	2.129	8.00	85.69
ID = 3 (0050):	107.55	43.208	8.00	84.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0064) IN= 2---> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4486
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000
INFLOW : ID= 2 (0050)	107.550	43.208	8.00	84.07
OUTFLOW: ID= 1 (0064)	107.550	20.990	8.17	84.07

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.58  
TIME SHIFT OF PEAK FLOW (min) = 10.00  
MAXIMUM STORAGE USED (ha.m.) = 2.4486

CALIB NASHYD (0019) ID= 1 DT= 5.0 min	Area (ha) = 1.83	Curve Number (CN) = 78.0
	Ia (mm) = 5.00	# of Linear Res.(N) = 3.00
	U.H. Tp (hrs) = 0.15	

Unit Hyd Qpeak (cms) = 0.466

PEAK FLOW (cms)	= 0.286 (i)
TIME TO PEAK (hrs)	= 8.083
RUNOFF VOLUME (mm)	= 45.431
TOTAL RAINFALL (mm)	= 89.456
RUNOFF COEFFICIENT	= 0.508

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

CALIB STANDHYD (0004) ID= 1 DT= 5.0 min	Area (ha) = 11.16	Dir. Conn.(%) = 86.00
	Total Imp(%) = 86.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 9.60	1.56
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 272.76	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr) over (min)	= 182.06	108.56
Storage Coeff. (min)	= 3.67 (ii)	6.36 (ii)
Unit Hyd. Tpeak (min)	= 5.00	10.00
Unit Hyd. peak (cms)	= 0.25	0.15

*TOTALS*				
PEAK FLOW (cms)	= 4.60	0.35	4.906 (iii)	
TIME TO PEAK (hrs)	= 8.00	8.08	8.00	
RUNOFF VOLUME (mm)	= 88.46	53.83	83.61	
TOTAL RAINFALL (mm)	= 89.46	89.46	89.46	
RUNOFF COEFFICIENT	= 0.99	0.60	0.93	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0017) ID= 1 DT= 5.0 min	Area (ha) = 9.75	Dir. Conn.(%) = 52.00
	Total Imp(%) = 52.00	

IMPERVIOUS PERVIOUS (i)



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Surface Area (ha) =	5.07	4.68	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	2.00	2.00	
Length (m) =	254.95	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	182.06	105.09	
over (min) =	5.00	15.00	
Storage Coeff. (min) =	3.52 (ii)	10.44 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms) =	0.26	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	2.44	0.79	2.893 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	88.46	52.44	71.17
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0022) ID= 1 DT= 5.0 min	Area (ha) = 13.54	Dir. Conn. (%) = 53.00
	Total Imp (%) = 53.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	7.18	6.36	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	300.44	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	182.06	108.56	
over (min) =	5.00	15.00	
Storage Coeff. (min) =	3.89 (ii)	10.72 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms) =	0.25	0.09	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	3.40	1.09	4.031 (iii)
TIME TO PEAK (hrs) =	8.00	8.17	8.00
RUNOFF VOLUME (mm) =	88.46	53.83	72.18
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029) ID= 1 DT= 5.0 min	Area (ha) = 37.35	Dir. Conn. (%) = 73.00
	Total Imp (%) = 73.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	27.27	10.08	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	2.00	2.00	
Length (m) =	499.00	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	182.06	105.09	
over (min) =	5.00	10.00	
Storage Coeff. (min) =	5.27 (ii)	9.00 (ii)	
Unit Hyd. Tpeak (min) =	5.00	10.00	
Unit Hyd. peak (cms) =	0.21	0.12	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	12.09	1.93	13.713 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	88.46	52.44	78.73
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.88

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

- CN\* = 81.0 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 (0061) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	9.75	2.893	8.00	71.17
+ ID2= 2 (0022):	13.54	4.031	8.00	72.18
ID= 3 (0061):	23.29	6.923	8.00	71.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0061):	23.29	6.923	8.00	71.76
+ ID2= 2 (0029):	37.35	13.713	8.00	78.73
ID= 1 (0061):	60.64	20.636	8.00	76.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0061):	60.64	20.636	8.00	76.05
+ ID2= 2 (0004):	11.16	4.906	8.00	83.61
ID= 3 (0061):	71.80	25.542	8.00	77.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (0063) Inlet Cap.=***** #of Inlets= 1 Total (cms) = 14.6	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD. (ID= 1):	71.80	25.54	8.00	77.23
MAJOR SYS. (ID= 2):	6.63	10.94	8.00	77.23
MINOR SYS. (ID= 3):	65.17	14.60	7.92	77.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha) = 19.25	Dir. Conn. (%) = 92.00
	Total Imp (%) = 92.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha) =	17.71	1.54	
Dep. Storage (mm) =	1.00	1.50	
Average Slope (%) =	1.00	2.00	
Length (m) =	358.24	40.00	
Mannings n =	0.013	0.250	
Max. Eff. Inten. (mm/hr) =	182.06	108.56	
over (min) =	5.00	10.00	
Storage Coeff. (min) =	4.32 (ii)	6.41 (ii)	
Unit Hyd. Tpeak (min) =	5.00	10.00	
Unit Hyd. peak (cms) =	0.23	0.14	
			<b>*TOTALS*</b>
PEAK FLOW (cms) =	8.24	0.34	8.540 (iii)
TIME TO PEAK (hrs) =	8.00	8.08	8.00
RUNOFF VOLUME (mm) =	88.46	53.83	85.69
TOTAL RAINFALL (mm) =	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:



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CN\* = 82.0 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.

CALIB STANDHYD (0012)  
 ID= 1 DT= 5.0 min Area (ha)= 1.17 Total Imp(%)= 91.00 Dir. Conn.(%)= 91.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.06	0.11
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 182.06 108.56  
 over (min) = 5.00  
 Storage Coeff. (min)= 1.87 (ii) 4.07 (ii)  
 Unit Hyd. Tpeak (min)= 5.00  
 Unit Hyd. peak (cms)= 0.32

PEAK FLOW (cms)= 0.54 0.03 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.00 0.568 (iii)  
 RUNOFF VOLUME (mm)= 88.46 53.83 85.34  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.60 0.95

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0018)  
 ID= 1 DT= 5.0 min Area (ha)= 11.58 Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.14	5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 182.06 92.40  
 over (min) = 5.00 15.00  
 Storage Coeff. (min)= 3.71 (ii) 11.00 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 15.00  
 Unit Hyd. peak (cms)= 0.25 0.09

PEAK FLOW (cms)= 2.93 0.79 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.17 3.376 (iii)  
 RUNOFF VOLUME (mm)= 88.46 47.22 69.08  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.53 0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 77.0 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.

CALIB STANDHYD (0023)  
 ID= 1 DT= 5.0 min Area (ha)= 4.36 Total Imp(%)= 78.00 Dir. Conn.(%)= 78.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.40	0.96
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	170.49	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 182.06 105.09  
 over (min) = 5.00 10.00

Storage Coeff. (min)= 2.77 (ii) 6.12 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.28 0.15

PEAK FLOW (cms)= 1.68 0.21 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 88.46 52.44 80.53  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.59 0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 81.0 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.

CALIB STANDHYD (0024)  
 ID= 1 DT= 5.0 min Area (ha)= 2.54 Total Imp(%)= 93.00 Dir. Conn.(%)= 93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.36	0.18
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	130.13	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 182.06 108.56  
 over (min) = 5.00 5.00  
 Storage Coeff. (min)= 2.35 (ii) 4.33 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 5.00  
 Unit Hyd. peak (cms)= 0.30 0.23

PEAK FLOW (cms)= 1.18 0.05 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.00 8.00  
 RUNOFF VOLUME (mm)= 88.46 53.83 86.03  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.60 0.96

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 82.0 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.

CALIB STANDHYD (0027)  
 ID= 1 DT= 5.0 min Area (ha)= 4.22 Total Imp(%)= 62.00 Dir. Conn.(%)= 62.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.62	1.60
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	167.73	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)= 182.06 89.50  
 over (min) = 5.00 10.00  
 Storage Coeff. (min)= 2.74 (ii) 7.31 (ii)  
 Unit Hyd. Tpeak (min)= 5.00 10.00  
 Unit Hyd. peak (cms)= 0.28 0.13

PEAK FLOW (cms)= 1.30 0.28 \*TOTALS\*  
 TIME TO PEAK (hrs)= 8.00 8.08 8.00  
 RUNOFF VOLUME (mm)= 88.46 46.00 72.32  
 TOTAL RAINFALL (mm)= 89.46 89.46 89.46  
 RUNOFF COEFFICIENT = 0.99 0.51 0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
 CN\* = 76.0 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.



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CALIB  
STANDHYD (0028)  
ID= 1 DT= 5.0 min

Area (ha)	=	6.40
Total Imp(%)	=	93.00
Dir. Conn.(%)	=	93.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 5.95	0.45
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 206.56	40.00
Mannings n	=	0.250

Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.11 (ii)	5.08 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.27	0.16

PEAK FLOW (cms)	=	2.91	0.11	*TOTALS*	3.010 (iii)
TIME TO PEAK (hrs)	=	8.00	8.08		8.00
RUNOFF VOLUME (mm)	=	88.46	53.83		86.03
TOTAL RAINFALL (mm)	=	89.46	89.46		89.46
RUNOFF COEFFICIENT	=	0.99	0.60		0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0281)  
ID= 1 DT= 5.0 min

Area (ha)	=	7.97
Total Imp(%)	=	88.00
Dir. Conn.(%)	=	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 7.01	0.96
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 230.51	40.00
Mannings n	=	0.250

Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.32 (ii)	5.82 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.26	0.15

PEAK FLOW (cms)	=	3.41	0.22	*TOTALS*	3.603 (iii)
TIME TO PEAK (hrs)	=	8.00	8.08		8.00
RUNOFF VOLUME (mm)	=	88.46	53.83		84.30
TOTAL RAINFALL (mm)	=	89.46	89.46		89.46
RUNOFF COEFFICIENT	=	0.99	0.60		0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	19.25	8.540	8.00	85.69
+ ID2= 2 (0012):	1.17	0.568	8.00	85.34
=====				
ID = 3 (0048):	20.42	9.107	8.00	85.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	20.42	9.107	8.00	85.67
+ ID2= 2 (0018):	11.58	3.376	8.00	69.08
=====				

ID = 1 (0048): 32.00 12.483 8.00 79.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	32.00	12.483	8.00	79.66
+ ID2= 2 (0019):	1.83	0.286	8.08	45.43
=====				
ID = 3 (0048):	33.83	12.734	8.00	77.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	33.83	12.734	8.00	77.81
+ ID2= 2 (0023):	4.36	1.869	8.00	80.53
=====				
ID = 1 (0048):	38.19	14.603	8.00	78.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	38.19	14.603	8.00	78.12
+ ID2= 2 (0024):	2.54	1.233	8.00	86.03
=====				
ID = 3 (0048):	40.73	15.836	8.00	78.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	40.73	15.836	8.00	78.61
+ ID2= 2 (0027):	4.22	1.538	8.00	72.32
=====				
ID = 1 (0048):	44.95	17.373	8.00	78.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0048):	44.95	17.373	8.00	78.02
+ ID2= 2 (0028):	6.40	3.010	8.00	86.03
=====				
ID = 3 (0048):	51.35	20.384	8.00	79.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0048):	51.35	20.384	8.00	79.02
+ ID2= 2 (0281):	7.97	3.603	8.00	84.30
=====				
ID = 1 (0048):	59.32	23.987	8.00	79.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
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1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 (0048):	59.32	23.987	8.00	79.73
+ ID2= 2 (0063):	65.17	14.600	7.92	77.23
-----				
ID = 3 (0048):	124.49	38.587	8.00	78.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010) ID= 1 DT= 5.0 min	Area Total	(ha) Imp(%)	7.93 53.00	Dir. Conn.(%) = 53.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.20	3.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	229.93	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	182.06	108.56
over (min)=	5.00	15.00
Storage Coeff. (min)=	3.31 (ii)	10.14 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.10

			*TOTALS*
PEAK FLOW (cms)=	2.04	0.65	2.419 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	53.83	72.18
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.60	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025) ID= 1 DT= 5.0 min	Area Total	(ha) Imp(%)	5.77 53.00	Dir. Conn.(%) = 53.00
---	---------------	----------------	---------------	-----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.06	2.71
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	196.13	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	182.06	105.09
over (min)=	5.00	10.00
Storage Coeff. (min)=	3.01 (ii)	9.93 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.11

			*TOTALS*
PEAK FLOW (cms)=	1.50	0.50	1.915 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	88.46	52.44	71.53
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.59	0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 (0049) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 (0010):	7.93	2.419	8.00	72.18
+ ID2= 2 (0025):	5.77	1.915	8.00	71.53
-----				
ID = 3 (0049):	13.70	4.333	8.00	71.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 3 (0049):	13.70	4.333	8.00	71.91
+ ID2= 2 (0048):	124.49	38.587	8.00	78.42
-----				
ID = 1 (0049):	138.19	42.921	8.00	77.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0065) IN= 2--> OUT= 1 DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	24.7000	2.0323
	11.4000	1.0496	28.2000	2.1552
	16.6000	1.5358	31.7000	2.2403
	20.0000	1.7670	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	138.191	42.921	8.00	77.77
OUTFLOW: ID= 1 (0065)	138.191	27.178	8.08	77.77

PEAK FLOW REDUCTION [Qout/Qin] (%) = 63.32  
TIME SHIFT OF PEAK FLOW (min) = 5.00  
MAXIMUM STORAGE USED (ha.m.) = 2.1552

CALIB NASHVD (0015) ID= 1 DT= 5.0 min	Area Total	(ha) Imp(%)	2.31 5.00	Curve Number (CN) = 80.0	# of Linear Res. (N) = 3.00
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U.H. Tp(hrs)= 0.24

Unit Hyd Qpeak (cms)=	0.368
PEAK FLOW (cms)=	0.290 (i)
TIME TO PEAK (hrs)=	8.167
RUNOFF VOLUME (mm)=	48.164
TOTAL RAINFALL (mm)=	89.456
RUNOFF COEFFICIENT =	0.538

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

CALIB STANDHYD (0003) ID= 1 DT= 5.0 min	Area Total	(ha) Imp(%)	8.96 46.00	Dir. Conn.(%) = 46.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.12	4.84
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	244.40	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	182.06	98.51
over (min)=	5.00	15.00
Storage Coeff. (min)=	3.44 (ii)	10.54 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

			*TOTALS*
PEAK FLOW (cms)=	1.99	0.76	2.424 (iii)
TIME TO PEAK (hrs)=	8.00	8.17	8.00
RUNOFF VOLUME (mm)=	88.46	49.76	67.56
TOTAL RAINFALL (mm)=	89.46	89.46	89.46
RUNOFF COEFFICIENT =	0.99	0.56	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 79.0 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.





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CALIB STANDHYD (0005)			
ID= 1 DT= 5.0 min			
Area (ha)	=	14.33	
Total Imp(%)	=	93.00	Dir. Conn.(%) = 93.00
IMPERVIOUS PERVIOUS (i)			
Surface Area (ha)	=	13.33	1.00
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	309.08	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.96 (ii)	5.93 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.24	0.15
*TOTALS*			
PEAK FLOW (cms)	=	6.30	0.23 6.508 (iii)
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	88.46	53.83 86.03
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.60 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)			
ID= 1 DT= 5.0 min			
Area (ha)	=	11.78	
Total Imp(%)	=	92.00	Dir. Conn.(%) = 92.00
IMPERVIOUS PERVIOUS (i)			
Surface Area (ha)	=	10.84	0.94
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	280.24	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.73 (ii)	5.82 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.25	0.15
*TOTALS*			
PEAK FLOW (cms)	=	5.18	0.21 5.371 (iii)
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	88.46	53.83 85.69
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.60 0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0032)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	5.371	8.00	85.69
+ ID2= 2 (0005):	14.33	6.508	8.00	86.03
=====				
ID = 3 (0032):	26.11	11.879	8.00	85.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	26.11	11.879	8.00	85.88
+ ID2= 2 (0063):	6.63	10.942	8.00	77.23

ID = 1 (0032): 32.74 22.821 8.00 84.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030)			
ID= 1 DT= 5.0 min			
Area (ha)	=	9.95	
Total Imp(%)	=	66.00	Dir. Conn.(%) = 66.00
IMPERVIOUS PERVIOUS (i)			
Surface Area (ha)	=	6.57	3.38
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	257.55	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	105.09
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	3.55 (ii)	7.81 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.26	0.13
*TOTALS*			
PEAK FLOW (cms)	=	3.16	0.68 3.748 (iii)
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	88.46	52.44 76.21
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.59 0.85

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002)			
ID= 1 DT= 5.0 min			
Area (ha)	=	2.18	
Total Imp(%)	=	39.00	Dir. Conn.(%) = 39.00
IMPERVIOUS PERVIOUS (i)			
Surface Area (ha)	=	0.85	1.33
Dep. Storage (mm)	=	1.00	1.50
Average Slope (%)	=	1.00	2.00
Length (m)	=	120.55	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	101.74
over (min)	=	5.00	10.00
Storage Coeff. (min)	=	2.25 (ii)	9.26 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.30	0.12
*TOTALS*			
PEAK FLOW (cms)	=	0.43	0.24 0.629 (iii)
TIME TO PEAK (hrs)	=	8.00	8.00
RUNOFF VOLUME (mm)	=	88.46	51.08 65.65
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.57 0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.290	8.17	48.16
+ ID2= 2 (0002):	2.18	0.629	8.00	65.65
=====				
ID = 3 (2701):	4.49	0.804	8.00	56.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



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ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.804	8.00	56.66
+ ID2= 2 (0003):	8.96	2.424	8.00	67.56
=====				
ID = 1 (2701):	13.45	3.228	8.00	63.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2701):	13.45	3.228	8.00	63.92
+ ID2= 2 (0030):	9.95	3.748	8.00	76.21
=====				
ID = 3 (2701):	23.40	6.975	8.00	69.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	23.40	6.975	8.00	69.15
+ ID2= 2 (0032):	32.74	22.821	8.00	84.12
=====				
ID = 1 (2701):	56.14	29.796	8.00	77.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	9.72	46.00	46.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)	4.47	5.25	
Dep. Storage (mm)	1.00	1.50	
Average Slope (%)	1.00	2.00	
Length (m)	254.56	40.00	
Mannings n	0.013	0.250	
Max.Eff.Inten.(mm/hr)	182.06	105.09	
over (min)	5.00	15.00	
Storage Coeff. (min)	3.52 (ii)	10.44 (ii)	
Unit Hyd. Tpeak (min)	5.00	15.00	
Unit Hyd. peak (cms)	0.26	0.09	
PEAK FLOW (cms)	2.15	0.88	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.17	2.659 (iii)
RUNOFF VOLUME (mm)	88.46	52.44	69.01
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.59	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	9.72	2.659	8.00	69.01
+ ID2= 2 (2701):	56.14	29.796	8.00	77.88
=====				
ID = 3 (0222):	65.86	32.455	8.00	76.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB

STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	34.81	89.00	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	30.98	3.83
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	481.73	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)	5.16 (ii)	7.57 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.21	0.13

PEAK FLOW (cms)	13.82	0.81	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	88.46	53.83	84.65
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.95

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007) ID= 1 DT= 5.0 min	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	9.32	88.00	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	8.20	1.12
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	249.27	40.00
Mannings n	0.013	0.250

Max.Eff.Inten.(mm/hr)	182.06	108.56
over (min)	5.00	10.00
Storage Coeff. (min)	3.48 (ii)	5.98 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15

PEAK FLOW (cms)	3.96	0.25	*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	88.46	53.83	84.30
TOTAL RAINFALL (mm)	89.46	89.46	89.46
RUNOFF COEFFICIENT	0.99	0.60	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0006):	34.81	14.515	8.00	84.65
+ ID2= 2 (0007):	9.32	4.186	8.00	84.30
=====				
ID = 3 (0282):	44.13	18.701	8.00	84.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052) ID= 1 DT= 5.0 min	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	9.98	90.00	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	8.98	1.00
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.94	40.00



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Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)	=	182.06	108.56
over (min)	=	5.00	10.00
Storage Coeff.(min)	=	3.55 (ii)	5.86 (ii)
Unit Hyd. Tpeak (min)	=	5.00	10.00
Unit Hyd. peak (cms)	=	0.26	0.15
*TOTALS*			
PEAK FLOW (cms)	=	4.32	0.23
TIME TO PEAK (hrs)	=	8.00	8.08
RUNOFF VOLUME (mm)	=	88.46	53.83
TOTAL RAINFALL (mm)	=	89.46	89.46
RUNOFF COEFFICIENT	=	0.99	0.60

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0053)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0282):		44.13	18.701	8.00	84.57
+ ID2= 2 (0052):		9.98	4.528	8.00	84.99
=====					
ID = 3 (0053):		54.11	23.229	8.00	84.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031)	Area (ha)= 4.99
ID= 1 DT= 5.0 min	Total Imp(%)= 53.00 Dir. Conn.(%)= 53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 2.64	2.35
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 182.39	40.00
Mannings n	= 0.013	0.250
Max.Eff.Inten.(mm/hr)	= 182.06	101.74
over (min)	= 5.00	10.00
Storage Coeff.(min)	= 2.88 (ii)	9.89 (ii)
Unit Hyd. Tpeak (min)	= 5.00	10.00
Unit Hyd. peak (cms)	= 0.28	0.11
*TOTALS*		
PEAK FLOW (cms)	= 1.30	0.42
TIME TO PEAK (hrs)	= 8.00	8.08
RUNOFF VOLUME (mm)	= 88.46	51.08
TOTAL RAINFALL (mm)	= 89.46	89.46
RUNOFF COEFFICIENT	= 0.99	0.57

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 80.0 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 (0239)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0031):		4.99	1.650	8.00	70.89
+ ID2= 2 (0053):		54.11	23.229	8.00	84.65
=====					
ID = 3 (0239):		59.10	24.879	8.00	83.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)= 5.73
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

Surface Area (ha)	= 2.87	PERVIOUS (i)
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 195.45	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	= 182.06	105.09
over (min)	= 5.00	10.00
Storage Coeff.(min)	= 3.01 (ii)	9.92 (ii)
Unit Hyd. Tpeak (min)	= 5.00	10.00
Unit Hyd. peak (cms)	= 0.28	0.11

*TOTALS*		
PEAK FLOW (cms)	= 1.41	0.53
TIME TO PEAK (hrs)	= 8.00	8.08
RUNOFF VOLUME (mm)	= 88.46	52.44
TOTAL RAINFALL (mm)	= 89.46	89.46
RUNOFF COEFFICIENT	= 0.99	0.59

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area (ha)= 1.88
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	= 1.05	0.83
Dep. Storage (mm)	= 1.00	1.50
Average Slope (%)	= 1.00	2.00
Length (m)	= 111.95	40.00
Mannings n	= 0.013	0.250

Max.Eff.Inten.(mm/hr)	= 182.06	108.56
over (min)	= 5.00	10.00
Storage Coeff.(min)	= 2.15 (ii)	8.98 (ii)
Unit Hyd. Tpeak (min)	= 5.00	10.00
Unit Hyd. peak (cms)	= 0.31	0.12

*TOTALS*		
PEAK FLOW (cms)	= 0.53	0.16
TIME TO PEAK (hrs)	= 8.00	8.08
RUNOFF VOLUME (mm)	= 88.46	53.83
TOTAL RAINFALL (mm)	= 89.46	89.46
RUNOFF COEFFICIENT	= 0.99	0.60

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0217)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0014):		1.88	0.666	8.00	73.22
+ ID2= 2 (0239):		59.10	24.879	8.00	83.49
=====					
ID = 3 (0217):		60.98	25.545	8.00	83.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0217):		60.98	25.545	8.00	83.17
+ ID2= 2 (0008):		5.73	1.844	8.00	70.45
=====					
ID = 1 (0217):		66.71	27.389	8.00	82.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



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6.00 2.06 | 12.00 2.02 | 18.00 0.88 | 24.00 0.58

ADD HYD (0051)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0217):	66.71	27.389	8.00	82.08
+ ID2= 2 (0222):	65.86	32.455	8.00	76.57
ID = 3 (0051):	132.57	59.844	8.00	79.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0066)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2---> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min	(mm)	(mm)	(mm)	(mm)
	0.0000	0.0000	23.5000	2.2073
	11.2000	0.8794	27.4000	2.6321
	14.6000	1.3452	31.5000	3.0954
	18.2000	1.7106	0.0000	0.0000

AREA	QPEAK	TPEAK	R.V.
(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0051)	132.569	59.844	8.00
OUTFLOW: ID= 1 (0066)	132.569	27.179	8.08

PEAK FLOW REDUCTION [Qout/Qin] (%) =	45.42
TIME SHIFT OF PEAK FLOW (min) =	5.00
MAXIMUM STORAGE USED (ha.m.) =	2.6321

\*\*\*\*\*  
 \*\* SIMULATION NUMBER: 6 \*\*  
 \*\*\*\*\*

CHICAGO STORM	IDF curve parameters:
Ptotal= 98.13 mm	A=2150.000
	B= 5.700
	C= 0.861

used in: INTENSITY =  $A / (t + B)^C$

Duration of storm = 24.00 hrs  
 Storm time step = 10.00 min  
 Time to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.17	0.59	6.17	2.24	12.17	1.95	18.17	0.87
0.33	0.61	6.33	2.45	12.33	1.88	18.33	0.86
0.50	0.62	6.50	2.72	12.50	1.81	18.50	0.84
0.67	0.63	6.67	3.05	12.67	1.75	18.67	0.83
0.83	0.64	6.83	3.49	12.83	1.70	18.83	0.82
1.00	0.66	7.00	4.08	13.00	1.65	19.00	0.81
1.17	0.67	7.17	4.93	13.17	1.60	19.17	0.80
1.33	0.69	7.33	6.26	13.33	1.55	19.33	0.79
1.50	0.70	7.50	8.66	13.50	1.51	19.50	0.78
1.67	0.72	7.67	14.21	13.67	1.47	19.67	0.77
1.83	0.74	7.83	39.75	13.83	1.43	19.83	0.76
2.00	0.75	8.00	200.80	14.00	1.39	20.00	0.75
2.17	0.77	8.17	54.01	14.17	1.36	20.17	0.74
2.33	0.79	8.33	25.55	14.33	1.33	20.33	0.73
2.50	0.81	8.50	16.41	14.50	1.30	20.50	0.72
2.67	0.84	8.67	12.04	14.67	1.27	20.67	0.71
2.83	0.86	8.83	9.50	14.83	1.24	20.83	0.71
3.00	0.89	9.00	7.85	15.00	1.21	21.00	0.70
3.17	0.91	9.17	6.70	15.17	1.19	21.17	0.69
3.33	0.94	9.33	5.85	15.33	1.16	21.33	0.68
3.50	0.98	9.50	5.19	15.50	1.14	21.50	0.68
3.67	1.01	9.67	4.68	15.67	1.12	21.67	0.67
3.83	1.05	9.83	4.26	15.83	1.10	21.83	0.66
4.00	1.08	10.00	3.91	16.00	1.08	22.00	0.65
4.17	1.13	10.17	3.62	16.17	1.06	22.17	0.65
4.33	1.17	10.33	3.37	16.33	1.04	22.33	0.64
4.50	1.23	10.50	3.15	16.50	1.02	22.50	0.63
4.67	1.28	10.67	2.96	16.67	1.00	22.67	0.63
4.83	1.34	10.83	2.80	16.83	0.98	22.83	0.62
5.00	1.41	11.00	2.65	17.00	0.97	23.00	0.62
5.17	1.49	11.17	2.52	17.17	0.95	23.17	0.61
5.33	1.57	11.33	2.40	17.33	0.94	23.33	0.60
5.50	1.67	11.50	2.29	17.50	0.92	23.50	0.60
5.67	1.78	11.67	2.19	17.67	0.91	23.67	0.59
5.83	1.91	11.83	2.10	17.83	0.89	23.83	0.59

CALIB	Area	(ha) =	42.85	
STANDHYD (0009)	Total Imp (%) =	68.00	Dir. Conn. (%) =	68.00

Surface Area	(ha) =	29.14	PERVIOUS (i)	13.71
Dep. Storage	(mm) =	1.00	1.50	
Average Slope	(%) =	1.00	2.00	
Length	(m) =	534.48	40.00	
Mannings n	=	0.013	0.250	

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	0.59	6.083	2.24	12.083	1.95	18.083	0.87
0.167	0.59	6.167	2.24	12.167	1.95	18.167	0.87
0.250	0.61	6.250	2.45	12.250	1.88	18.250	0.86
0.333	0.61	6.333	2.45	12.333	1.88	18.333	0.86
0.417	0.62	6.417	2.72	12.417	1.81	18.417	0.84
0.500	0.62	6.500	2.72	12.500	1.81	18.500	0.84
0.583	0.63	6.583	3.05	12.583	1.75	18.583	0.83
0.667	0.63	6.667	3.05	12.667	1.75	18.667	0.83
0.750	0.64	6.750	3.49	12.750	1.70	18.750	0.82
0.833	0.64	6.833	3.49	12.833	1.70	18.833	0.82
0.917	0.66	6.917	4.08	12.917	1.65	18.917	0.81
1.000	0.66	7.000	4.08	13.000	1.65	19.000	0.81
1.083	0.67	7.083	4.93	13.083	1.60	19.083	0.80
1.167	0.67	7.167	4.93	13.167	1.60	19.167	0.80
1.250	0.69	7.250	6.26	13.250	1.55	19.250	0.79
1.333	0.69	7.333	6.26	13.333	1.55	19.333	0.79
1.417	0.70	7.417	8.66	13.417	1.51	19.417	0.78
1.500	0.70	7.500	8.66	13.500	1.51	19.500	0.78
1.583	0.72	7.583	14.21	13.583	1.47	19.583	0.77
1.667	0.72	7.667	14.21	13.667	1.47	19.667	0.77
1.750	0.74	7.750	39.75	13.750	1.43	19.750	0.76
1.833	0.74	7.833	39.75	13.833	1.43	19.833	0.76
1.917	0.75	7.917	200.80	13.917	1.39	19.917	0.75
2.000	0.75	8.000	200.79	14.000	1.39	20.000	0.75
2.083	0.77	8.083	54.01	14.083	1.36	20.083	0.74
2.167	0.77	8.167	54.01	14.167	1.36	20.167	0.74
2.250	0.79	8.250	25.55	14.250	1.33	20.250	0.73
2.333	0.79	8.333	25.55	14.333	1.33	20.333	0.73
2.417	0.81	8.417	16.41	14.417	1.30	20.417	0.72
2.500	0.81	8.500	16.41	14.500	1.30	20.500	0.72
2.583	0.84	8.583	12.04	14.583	1.27	20.583	0.71
2.667	0.84	8.667	12.04	14.667	1.27	20.667	0.71
2.750	0.86	8.750	9.50	14.750	1.24	20.750	0.71
2.833	0.86	8.833	9.50	14.833	1.24	20.833	0.71
2.917	0.89	8.917	7.85	14.917	1.21	20.917	0.70
3.000	0.89	9.000	7.85	15.000	1.21	21.000	0.70
3.083	0.91	9.083	6.70	15.083	1.19	21.083	0.69
3.167	0.91	9.167	6.70	15.167	1.19	21.167	0.69
3.250	0.94	9.250	5.85	15.250	1.16	21.250	0.68
3.333	0.94	9.333	5.85	15.333	1.16	21.333	0.68
3.417	0.98	9.417	5.19	15.417	1.14	21.417	0.68
3.500	0.98	9.500	5.19	15.500	1.14	21.500	0.68
3.583	1.01	9.583	4.68	15.583	1.12	21.583	0.67
3.667	1.01	9.667	4.68	15.667	1.12	21.667	0.67
3.750	1.05	9.750	4.26	15.750	1.10	21.750	0.66
3.833	1.05	9.833	4.26	15.833	1.10	21.833	0.66
3.917	1.08	9.917	3.91	15.917	1.08	21.917	0.65
4.000	1.08	10.000	3.91	16.000	1.08	22.000	0.65
4.083	1.13	10.083	3.62	16.083	1.06	22.083	0.65
4.167	1.13	10.167	3.62	16.167	1.06	22.167	0.65
4.250	1.17	10.250	3.37	16.250	1.04	22.250	0.64
4.333	1.17	10.333	3.37	16.333	1.04	22.333	0.64
4.417	1.23	10.417	3.15	16.417	1.02	22.417	0.63
4.500	1.23	10.500	3.15	16.500	1.02	22.500	0.63
4.583	1.28	10.583	2.96	16.583	1.00	22.583	0.63
4.667	1.28	10.667	2.96	16.667	1.00	22.667	0.63
4.750	1.34	10.750	2.80	16.750	0.98	22.750	0.62
4.833	1.34	10.833	2.80	16.833	0.98	22.833	0.62
4.917	1.41	10.917	2.65	16.917	0.97	22.917	0.62
5.000	1.41	11.000	2.65	17.000	0.97	23.000	0.62
5.083	1.49	11.083	2.52	17.083	0.95	23.083	0.61
5.167	1.49	11.167	2.52	17.167	0.95	23.167	0.61
5.250	1.57	11.250	2.40	17.250	0.94	23.250	0.60
5.333	1.57	11.333	2.40	17.333	0.94	23.333	0.60



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5.417	1.67	11.417	2.29	17.417	0.92	23.42	0.60
5.500	1.67	11.500	2.29	17.500	0.92	23.50	0.60
5.583	1.78	11.583	2.19	17.583	0.91	23.58	0.59
5.667	1.78	11.667	2.19	17.667	0.91	23.67	0.59
5.750	1.91	11.750	2.10	17.750	0.89	23.75	0.59
5.833	1.91	11.833	2.10	17.833	0.89	23.83	0.59
5.917	2.06	11.917	2.02	17.917	0.88	23.92	0.58
6.000	2.06	12.000	2.02	18.000	0.88	24.00	0.58

Max. Eff. Inten. (mm/hr)=	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)=	5.28 (ii)	9.23 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.12

PEAK FLOW (cms)=	14.24	2.99	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	16.763 (iii)
RUNOFF VOLUME (mm)=	97.13	59.78	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	85.18
RUNOFF COEFFICIENT =	0.99	0.61	0.87

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0013) ID= 1 DT= 5.0 min	Area (ha)= 29.43	Dir. Conn.(%)= 82.00
	Total Imp(%)= 82.00	

Surface Area (ha)=	24.13	PERVIOUS (i)	5.30
Dep. Storage (mm)=	1.00	IMPERVIOUS	1.50
Average Slope (%)=	1.00		2.00
Length (m)=	442.94		40.00
Mannings n =	0.013		0.250

Max. Eff. Inten. (mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	4.72 (ii)	7.63 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.22	0.13

PEAK FLOW (cms)=	12.14	1.28	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	13.251 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	90.68
RUNOFF COEFFICIENT =	0.99	0.62	0.92

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0020) ID= 1 DT= 5.0 min	Area (ha)= 69.17	Dir. Conn.(%)= 89.00
	Total Imp(%)= 89.00	

Surface Area (ha)=	61.56	PERVIOUS (i)	7.61
Dep. Storage (mm)=	1.00	IMPERVIOUS	1.50
Average Slope (%)=	1.00		2.00
Length (m)=	679.07		40.00
Mannings n =	0.013		0.250

Max. Eff. Inten. (mm/hr)=	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)=	6.10 (ii)	8.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.19	0.12

PEAK FLOW (cms)=	28.82	1.77	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	30.340 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	93.19
RUNOFF COEFFICIENT =	0.99	0.62	0.95

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0021) ID= 1 DT= 5.0 min	Area (ha)= 4.49	Dir. Conn.(%)= 92.00
	Total Imp(%)= 92.00	

Surface Area (ha)=	4.13	PERVIOUS (i)	0.36
Dep. Storage (mm)=	1.00	IMPERVIOUS	1.50
Average Slope (%)=	1.00		2.00
Length (m)=	173.01		40.00
Mannings n =	0.013		0.250

Max. Eff. Inten. (mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.69 (ii)	4.70 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.29	0.22

PEAK FLOW (cms)=	2.26	0.12	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	2.377 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	94.27
RUNOFF COEFFICIENT =	0.99	0.62	98.13

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0026) ID= 1 DT= 5.0 min	Area (ha)= 4.46	Dir. Conn.(%)= 92.00
	Total Imp(%)= 92.00	

Surface Area (ha)=	4.10	PERVIOUS (i)	0.36
Dep. Storage (mm)=	1.00	IMPERVIOUS	1.50
Average Slope (%)=	1.00		2.00
Length (m)=	172.43		40.00
Mannings n =	0.013		0.250

Max. Eff. Inten. (mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	2.68 (ii)	4.69 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.29	0.22

PEAK FLOW (cms)=	2.24	0.12	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	2.362 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	8.00
TOTAL RAINFALL (mm)=	98.13	98.13	94.27
RUNOFF COEFFICIENT =	0.99	0.62	98.13

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0050) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	29.43	13.251	8.00	90.68
+ ID2= 2 (0020):	69.17	30.340	8.00	93.19
ID = 3 (0050):	98.60	43.591	8.00	92.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0050):	98.60	43.591	8.00	92.44
+ ID2= 2 (0021):	4.49	2.377	8.00	94.27
ID = 1 (0050):	103.09	45.968	8.00	92.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0050):	103.09	45.968	8.00	92.52
+ ID2= 2 (0026):	4.46	2.362	8.00	94.27
ID = 3 (0050):	107.55	48.329	8.00	92.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0064)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2---> OUT= 1 DT= 5.0 min				
	0.0000	0.0000	18.6000	2.2032
	7.5000	1.1345	21.2000	2.4466
	11.1000	1.5984	23.8000	2.6934
	14.8000	1.8604	0.0000	0.0000

INFLOW: ID= 2 (0050)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
107.550		48.329	8.00	92.59
OUTFLOW: ID= 1 (0064)	107.550	23.473	8.17	92.59

PEAK FLOW REDUCTION [Qout/Qin] (%) = 48.57  
 TIME SHIFT OF PEAK FLOW (min) = 10.00  
 MAXIMUM STORAGE USED (ha.m.) = 2.6934

CALIB NASHYD (0019)	Area (ha)	Ia (mm)	U.H. Tp (hrs)	Curve Number (CN)	# of Linear Res. (N)
ID= 1 DT= 5.0 min	1.83	5.00	0.15	78.0	3.00
Unit Hyd Qpeak (cms)	0.466				
PEAK FLOW (cms)	0.335 (i)				
TIME TO PEAK (hrs)	8.093				
RUNOFF VOLUME (mm)	52.338				
TOTAL RAINFALL (mm)	98.134				
RUNOFF COEFFICIENT	0.533				

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

CALIB STANDHYD (0004)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	11.16	86.00	86.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	9.60	1.56
Dep. Storage	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	272.76	40.00
Mannings n	0.013	0.250

Max.Eff.Inten. (mm/hr) over (min)	200.80	125.31
Storage Coeff. (min)	3.53 (ii)	6.11 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15

PEAK FLOW (cms)	5.10	0.40	5.463 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	97.13	61.28	92.11
TOTAL RAINFALL (mm)	98.13	98.13	98.13

RUNOFF COEFFICIENT = 0.99 0.62 0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0017)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	9.75	52.00	52.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	5.07	4.68
Dep. Storage	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	254.95	40.00
Mannings n	0.013	0.250

Max.Eff.Inten. (mm/hr) over (min)	200.80	121.52
Storage Coeff. (min)	3.39 (ii)	9.92 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.11

PEAK FLOW (cms)	2.71	0.99	3.536 (iii)
TIME TO PEAK (hrs)	8.00	8.08	8.00
RUNOFF VOLUME (mm)	97.13	59.78	79.20
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.61	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0022)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	13.54	53.00	53.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	7.18	6.36
Dep. Storage	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	300.44	40.00
Mannings n	0.013	0.250

Max.Eff.Inten. (mm/hr) over (min)	200.80	125.31
Storage Coeff. (min)	3.74 (ii)	10.19 (ii)
Unit Hyd. Tpeak (min)	5.00	15.00
Unit Hyd. peak (cms)	0.25	0.09

PEAK FLOW (cms)	3.78	1.28	4.524 (iii)
TIME TO PEAK (hrs)	8.00	8.17	8.00
RUNOFF VOLUME (mm)	97.13	61.28	80.28
TOTAL RAINFALL (mm)	98.13	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62	0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0029)	Area (ha)	Total Imp (%)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	37.35	73.00	73.00

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	27.27	10.08
Dep. Storage	1.00	1.50
Average Slope (%)	1.00	2.00



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Length (m)=	499.00	40.00	
Mannings n	= 0.013	0.250	
Max.Eff.Inten.(mm/hr)	200.80	121.52	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.07 (ii)	8.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.12	
PEAK FLOW (cms)=	13.47	2.26	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	15.393 (iii)
RUNOFF VOLUME (mm)=	97.13	59.78	87.05
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.89

Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.16 (ii)	6.17 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.24	0.15	
PEAK FLOW (cms)=	9.15	0.40	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.08	9.511 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	94.27
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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.

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0061)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0017):	9.75	3.536	8.00	79.20
+ ID2= 2 (0022):	13.54	4.524	8.00	80.28
=====				
ID = 3 (0061):	23.29	8.059	8.00	79.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0061):	23.29	8.059	8.00	79.83
+ ID2= 2 (0029):	37.35	15.393	8.00	87.05
=====				
ID = 1 (0061):	60.64	23.453	8.00	84.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0061)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0061):	60.64	23.453	8.00	84.28
+ ID2= 2 (0004):	11.16	5.463	8.00	92.11
=====				
ID = 3 (0061):	71.80	28.916	8.00	85.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

DUHYD (0063)	AREA	QPEAK	TPEAK	R.V.
Inlet Cap.=*****	(ha)	(cms)	(hrs)	(mm)
#of Inlets= 1				
Total (cms)= 14.6				
TOTAL HYD. (ID= 1):	71.80	28.92	8.00	85.49
MAJOR SYS. (ID= 2):	8.71	14.32	8.00	85.49
MINOR SYS. (ID= 3):	63.09	14.60	7.92	85.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0011)	Area (ha)=	19.25
ID= 1 DT= 5.0 min	Total Imp(%)=	92.00
	Dir. Conn.(%)=	92.00

Surface Area (ha)=	17.71	1.54
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	358.24	40.00

CALIB STANDHYD (0012)	Area (ha)=	1.17
ID= 1 DT= 5.0 min	Total Imp(%)=	91.00
	Dir. Conn.(%)=	91.00

Surface Area (ha)=	1.06	0.11
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n	=	0.013

Max.Eff.Inten.(mm/hr)=	200.80	125.31
over (min)	5.00	5.00
Storage Coeff. (min)=	1.79 (ii)	3.91 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.32	0.25

PEAK FLOW (cms)=	0.59	0.04	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.00	0.628 (iii)
RUNOFF VOLUME (mm)=	97.13	61.28	93.91
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0018)	Area (ha)=	11.58
ID= 1 DT= 5.0 min	Total Imp(%)=	53.00
	Dir. Conn.(%)=	53.00

Surface Area (ha)=	6.14	5.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	277.85	40.00
Mannings n	=	0.013

Max.Eff.Inten.(mm/hr)=	200.80	107.54
over (min)	5.00	15.00
Storage Coeff. (min)=	3.57 (ii)	10.42 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

PEAK FLOW (cms)=	3.26	0.94	*TOTALS*
TIME TO PEAK (hrs)=	8.00	8.17	3.786 (iii)
RUNOFF VOLUME (mm)=	97.13	54.13	76.92
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.55	0.78

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 77.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.



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

CALIB  
STANDHYD (0023)  
ID= 1 DT= 5.0 min

Area (ha)=	4.36		
Total Imp(%)=	78.00	Dir. Conn.(%)=	78.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	3.40	0.96	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	170.49	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	121.52	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.66 (ii)	5.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.29	0.15	

			*TOTALS*
PEAK FLOW (cms)=	1.86	0.24	2.081 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	59.78	88.91
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.61	0.91

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB  
STANDHYD (0024)  
ID= 1 DT= 5.0 min

Area (ha)=	2.54		
Total Imp(%)=	93.00	Dir. Conn.(%)=	93.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.36	0.18	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	130.13	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.26 (ii)	4.16 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.30	0.24	

			*TOTALS*
PEAK FLOW (cms)=	1.30	0.06	1.365 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.62
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0027)  
ID= 1 DT= 5.0 min

Area (ha)=	4.22		
Total Imp(%)=	62.00	Dir. Conn.(%)=	62.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.62	1.60	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	167.73	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	104.32	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.64 (ii)	7.03 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.29	0.14	

PEAK FLOW (cms)=	1.43	0.33	1.721 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	52.80	80.29
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.54	0.82

\*TOTALS\*

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 76.0 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.

CALIB  
STANDHYD (0028)  
ID= 1 DT= 5.0 min

Area (ha)=	6.40		
Total Imp(%)=	93.00	Dir. Conn.(%)=	93.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	5.95	0.45	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	206.56	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.99 (ii)	4.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.28	0.22	

			*TOTALS*
PEAK FLOW (cms)=	3.23	0.15	3.371 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	94.62
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB  
STANDHYD (0281)  
ID= 1 DT= 5.0 min

Area (ha)=	7.97		
Total Imp(%)=	88.00	Dir. Conn.(%)=	88.00

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	7.01	0.96	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	230.51	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	200.80	125.31	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.19 (ii)	5.60 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.15	

			*TOTALS*
PEAK FLOW (cms)=	3.77	0.25	4.006 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	97.13	61.28	92.83
TOTAL RAINFALL (mm)=	98.13	98.13	98.13
RUNOFF COEFFICIENT =	0.99	0.62	0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0048)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3				



	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	19.25	9.511	8.00	94.27
+ ID2= 2 (0012):	1.17	0.628	8.00	93.91
=====				
ID = 3 (0048):	20.42	10.139	8.00	94.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	20.42	10.139	8.00	94.24
+ ID2= 2 (0018):	11.58	3.786	8.00	76.92
=====				
ID = 1 (0048):	32.00	13.925	8.00	87.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	32.00	13.925	8.00	87.98
+ ID2= 2 (0019):	1.83	0.335	8.08	52.34
=====				
ID = 3 (0048):	33.83	14.220	8.00	86.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	33.83	14.220	8.00	86.05
+ ID2= 2 (0023):	4.36	2.081	8.00	88.91
=====				
ID = 1 (0048):	38.19	16.301	8.00	86.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	38.19	16.301	8.00	86.38
+ ID2= 2 (0024):	2.54	1.365	8.00	94.62
=====				
ID = 3 (0048):	40.73	17.666	8.00	86.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	40.73	17.666	8.00	86.89
+ ID2= 2 (0027):	4.22	1.721	8.00	80.29
=====				
ID = 1 (0048):	44.95	19.388	8.00	86.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	44.95	19.388	8.00	86.27
+ ID2= 2 (0028):	6.40	3.371	8.00	94.62
=====				
ID = 3 (0048):	51.35	22.759	8.00	87.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0048):	51.35	22.759	8.00	87.31
+ ID2= 2 (0281):	7.97	4.006	8.00	92.83
=====				
ID = 1 (0048):	59.32	26.765	8.00	88.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0048)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0048):	59.32	26.765	8.00	88.05
+ ID2= 2 (0063):	63.09	14.600	7.92	85.49
=====				
ID = 3 (0048):	122.41	41.365	8.00	86.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0010)			
ID= 1 DT= 5.0 min	Area (ha)	Imp (%)	Dir. Conn. (%)
	7.93	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	4.20	3.73
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	229.93	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	200.80	125.31
Storage Coeff. (min)	3.19 (ii)	9.63 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.27	0.11
PEAK FLOW (cms)	2.26	0.82
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	61.28
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62

\*TOTALS\*

2.955 (iii)
8.00
80.28
98.13
0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0025)			
ID= 1 DT= 5.0 min	Area (ha)	Imp (%)	Dir. Conn. (%)
	5.77	53.00	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	3.06	2.71
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	196.13	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr) over (min)	200.80	121.52
Storage Coeff. (min)	2.90 (ii)	9.42 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.12
PEAK FLOW (cms)	1.66	0.59
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	59.78
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.61

\*TOTALS\*

2.156 (iii)
8.00
79.58
98.13
0.81

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 81.0 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 (0049)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0010):	7.93	2.955	8.00	80.28	
+ ID2= 2 (0025):	5.77	2.156	8.00	79.58	
=====					
ID = 3 (0049):	13.70	5.111	8.00	79.98	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0049)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0049):	13.70	5.111	8.00	79.98	
+ ID2= 2 (0048):	122.41	41.365	8.00	86.73	
=====					
ID = 1 (0049):	136.11	46.475	8.00	86.05	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0065)					
IN= 2--> OUT= 1					
DT= 5.0 min					
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	24.7000	2.0323	
	11.4000	1.0496	28.2000	2.1552	
	16.6000	1.5358	31.7000	2.2403	
	20.0000	1.7670	0.0000	0.0000	
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0049)	136.108	46.475	8.00	86.05	
OUTFLOW: ID= 1 (0065)	136.108	31.493	8.08	86.05	
=====					
	PEAK FLOW REDUCTION [Qout/Qin] (%) = 67.76				
	TIME SHIFT OF PEAK FLOW (min) = 5.00				
	MAXIMUM STORAGE USED (ha.m.) = 2.2403				

CALIB NASHYD (0015)					
ID= 1 DT= 5.0 min					
Area (ha)	2.31	Curve Number (CN) = 80.0			
Ia (mm)	5.00	# of Linear Res. (N) = 3.00			
U.H. Tp (hrs)	0.24				
Unit Hyd Qpeak (cms)	0.368				
PEAK FLOW (cms)	0.338 (i)				
TIME TO PEAK (hrs)	8.167				
RUNOFF VOLUME (mm)	55.325				
TOTAL RAINFALL (mm)	98.134				
RUNOFF COEFFICIENT	0.564				

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

CALIB STANDHYD (0003)					
ID= 1 DT= 5.0 min					
Area (ha)	8.96	Dir. Conn. (%) = 46.00			
Total Imp (%)	46.00				
Surface Area (ha)	4.12	PERVIOUS (i)	4.84		
Dep. Storage (mm)	1.00		1.50		
Average Slope (%)	1.00		2.00		
Length (m)	244.40		40.00		
Mannings n	0.013		0.250		
Max.Eff.Inten. (mm/hr)	200.80		114.30		
over (min)	5.00		10.00		
Storage Coeff. (min)	3.30 (ii)		9.99 (ii)		
Unit Hyd. Tpeak (min)	5.00		10.00		

Unit Hyd. peak (cms)	0.26	0.11			
PEAK FLOW (cms)	2.21	0.96			*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08			3.006 (iii)
RUNOFF VOLUME (mm)	97.13	56.89			8.00
TOTAL RAINFALL (mm)	98.13	98.13			75.40
RUNOFF COEFFICIENT	0.99	0.58			98.13
					0.77

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 79.0 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.

CALIB STANDHYD (0005)					
ID= 1 DT= 5.0 min					
Area (ha)	14.33	Dir. Conn. (%) = 93.00			
Total Imp (%)	93.00				
Surface Area (ha)	13.33	IMPERVIOUS	1.00	PERVIOUS (i)	
Dep. Storage (mm)	1.00		1.50		
Average Slope (%)	1.00		2.00		
Length (m)	309.08		40.00		
Mannings n	0.013		0.250		
Max.Eff.Inten. (mm/hr)	200.80		125.31		
over (min)	5.00		10.00		
Storage Coeff. (min)	3.80 (ii)		5.70 (ii)		
Unit Hyd. Tpeak (min)	5.00		10.00		
Unit Hyd. peak (cms)	0.25		0.15		
PEAK FLOW (cms)	7.00	0.26			*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08			7.239 (iii)
RUNOFF VOLUME (mm)	97.13	61.28			8.00
TOTAL RAINFALL (mm)	98.13	98.13			94.62
RUNOFF COEFFICIENT	0.99	0.62			98.13
					0.96

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0016)					
ID= 1 DT= 5.0 min					
Area (ha)	11.78	Dir. Conn. (%) = 92.00			
Total Imp (%)	92.00				
Surface Area (ha)	10.84	IMPERVIOUS	0.94	PERVIOUS (i)	
Dep. Storage (mm)	1.00		1.50		
Average Slope (%)	1.00		2.00		
Length (m)	280.24		40.00		
Mannings n	0.013		0.250		
Max.Eff.Inten. (mm/hr)	200.80		125.31		
over (min)	5.00		10.00		
Storage Coeff. (min)	3.59 (ii)		5.60 (ii)		
Unit Hyd. Tpeak (min)	5.00		10.00		
Unit Hyd. peak (cms)	0.26		0.15		
PEAK FLOW (cms)	5.74	0.25			*TOTALS*
TIME TO PEAK (hrs)	8.00	8.08			5.972 (iii)
RUNOFF VOLUME (mm)	97.13	61.28			8.00
TOTAL RAINFALL (mm)	98.13	98.13			94.27
RUNOFF COEFFICIENT	0.99	0.62			98.13
					0.96

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

- (i) CN PROCEDURE SELECTED FOR PVIOUS LOSSES:  
CN\* = 82.0 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 (0032)



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1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0016):	11.78	5.972	8.00	94.27
+ ID2= 2 (0005):	14.33	7.239	8.00	94.62
-----				
ID = 3 (0032):	26.11	13.211	8.00	94.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0032) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0032):	26.11	13.211	8.00	94.46
+ ID2= 2 (0063):	8.71	14.316	8.00	85.49
-----				
ID = 1 (0032):	34.82	27.526	8.00	92.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0030) ID= 1 DT= 5.0 min	Area (ha)=	9.95	Total Imp(%)=	66.00	Dir. Conn.(%)=	66.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	6.57	3.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	257.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)=	3.41 (ii)	7.51 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.13

	PEAK FLOW (cms)=	3.51	0.80	4.199 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00	
RUNOFF VOLUME (mm)=	97.13	59.78	84.43	
TOTAL RAINFALL (mm)=	98.13	98.13	98.13	
RUNOFF COEFFICIENT =	0.99	0.61	0.86	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)=	2.18	Total Imp(%)=	39.00	Dir. Conn.(%)=	39.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.85	1.33
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	120.55	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	117.85
over (min)	5.00	10.00
Storage Coeff. (min)=	2.16 (ii)	8.77 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.12

	PEAK FLOW (cms)=	0.47	0.29	0.714 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00	
RUNOFF VOLUME (mm)=	97.13	58.31	73.45	
TOTAL RAINFALL (mm)=	98.13	98.13	98.13	
RUNOFF COEFFICIENT =	0.99	0.59	0.75	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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 (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	2.31	0.338	8.17	55.33
+ ID2= 2 (0002):	2.18	0.714	8.00	73.45
-----				
ID = 3 (2701):	4.49	0.920	8.00	64.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	4.49	0.920	8.00	64.13
+ ID2= 2 (0003):	8.96	3.006	8.00	75.40
-----				
ID = 1 (2701):	13.45	3.926	8.00	71.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2701):	13.45	3.926	8.00	71.64
+ ID2= 2 (0030):	9.95	4.199	8.00	84.43
-----				
ID = 3 (2701):	23.40	8.124	8.00	77.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2701) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (2701):	23.40	8.124	8.00	77.08
+ ID2= 2 (0032):	34.82	27.526	8.00	92.22
-----				
ID = 1 (2701):	58.22	35.651	8.00	86.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001) ID= 1 DT= 5.0 min	Area (ha)=	9.72	Total Imp(%)=	46.00	Dir. Conn.(%)=	46.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.47	5.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	254.56	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)=	3.39 (ii)	9.91 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.11

	PEAK FLOW (cms)=	2.39	1.11	3.317 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00	
RUNOFF VOLUME (mm)=	97.13	59.78	76.96	
TOTAL RAINFALL (mm)=	98.13	98.13	98.13	
RUNOFF COEFFICIENT =	0.99	0.61	0.78	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.



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ADD HYD 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	9.72	3.317	8.00	76.96
+ ID2= 2 (2701):	58.22	35.651	8.00	86.13
ID = 3 (0222):	67.94	38.968	8.00	84.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha)	Dir. Conn. (%)
	34.81	89.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	30.98	3.83
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	481.73	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)	4.96 (ii)	7.28 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.22	0.14
PEAK FLOW (cms)	15.39	0.94
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	61.28
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62
		16.215 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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.

CALIB STANDHYD (0007) ID= 1 DT= 5.0 min	Area (ha)	Dir. Conn. (%)
	9.32	88.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	8.20	1.12
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	249.27	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)	3.34 (ii)	5.75 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15
PEAK FLOW (cms)	4.39	0.29
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	61.28
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62
		4.657 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0282):	44.13	20.871	8.00	93.11
+ ID2= 2 (0052):	9.98	5.035	8.00	93.55
ID = 3 (0053):	54.11	25.906	8.00	93.19

ID1= 1 (0006):	34.81	16.215	8.00	93.19
+ ID2= 2 (0007):	9.32	4.657	8.00	92.83
ID = 3 (0282):	44.13	20.871	8.00	93.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0052) ID= 1 DT= 5.0 min	Area (ha)	Dir. Conn. (%)
	9.98	90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	8.98	1.00
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	257.94	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)	3.41 (ii)	5.63 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.26	0.15
PEAK FLOW (cms)	4.79	0.26
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	61.28
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62
		5.035 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0282):	44.13	20.871	8.00	93.11
+ ID2= 2 (0052):	9.98	5.035	8.00	93.55
ID = 3 (0053):	54.11	25.906	8.00	93.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0031) ID= 1 DT= 5.0 min	Area (ha)	Dir. Conn. (%)
	4.99	53.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.64	2.35
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	182.39	40.00
Mannings n	0.013	0.250
Max. Eff. Inten. (mm/hr)	200.80	117.85
over (min)	5.00	10.00
Storage Coeff. (min)	2.77 (ii)	9.38 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.12
PEAK FLOW (cms)	1.44	0.49
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	58.31
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.59
		1.857 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 80.0 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.



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ADD HYD (0239)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0031):	4.99	1.857	8.00	78.89
+ ID2= 2 (0053):	54.11	25.906	8.00	93.19
ID = 3 (0239):	59.10	27.763	8.00	91.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0008)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	5.73	50.00	50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	2.87	2.87
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	195.45	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	121.52
over (min)	5.00	10.00
Storage Coeff. (min)	2.89 (ii)	9.42 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.28	0.12
PEAK FLOW (cms)	1.56	0.62
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	59.78
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.61
		<b>*TOTALS*</b>
		2.079 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 81.0 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.

CALIB STANDHYD (0014)	Area (ha)	Total Imp(%)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	1.88	56.00	56.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	1.05	0.83
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	111.95	40.00
Mannings n	0.013	0.250
Max.Eff.Inten.(mm/hr)	200.80	125.31
over (min)	5.00	10.00
Storage Coeff. (min)	2.07 (ii)	6.92 (ii)
Unit Hyd. Tpeak (min)	5.00	10.00
Unit Hyd. peak (cms)	0.31	0.14
PEAK FLOW (cms)	0.58	0.21
TIME TO PEAK (hrs)	8.00	8.08
RUNOFF VOLUME (mm)	97.13	61.28
TOTAL RAINFALL (mm)	98.13	98.13
RUNOFF COEFFICIENT	0.99	0.62
		<b>*TOTALS*</b>
		0.766 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  
CN\* = 82.0 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 (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0014):	1.88	0.766	8.00	81.36

+ ID2= 2 (0239):	59.10	27.763	8.00	91.99
ID = 3 (0217):	60.98	28.529	8.00	91.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0217)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0217):	60.98	28.529	8.00	91.66
+ ID2= 2 (0008):	5.73	2.079	8.00	78.46
ID = 1 (0217):	66.71	30.608	8.00	90.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0051)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0217):	66.71	30.608	8.00	90.52
+ ID2= 2 (0222):	67.94	38.968	8.00	84.82
ID = 3 (0051):	134.65	69.576	8.00	87.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0066)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2--> OUT= 1				
DT= 5.0 min				
	0.0000	0.0000	23.5000	2.2073
	11.2000	0.8794	27.4000	2.6321
	14.6000	1.3452	31.5000	3.0954
	18.2000	1.7106	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0051)	134.652	69.576	8.00	87.65
OUTFLOW: ID= 1 (0066)	134.652	31.159	8.08	87.65

PEAK FLOW REDUCTION [Qout/Qin] (%) = 44.78  
 TIME SHIFT OF PEAK FLOW (min) = 5.00  
 MAXIMUM STORAGE USED (ha.m.) = 3.0954

FINISH

**APPENDIX E**  
**Hydraulic Model Output: Morrison/Wedgewood**  
**Diversion Channel**

**HEC-RAS Model Output: Existing Conditions**

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach1	4087	Max WS	11.16	118.5	119.95	119.97	120.44	0.0025	3.08	3.62	3.93	1.02
Reach1	4000	Max WS	11.14	118.29	119.77		120.19	0.00185	2.93	4.88	5.03	0.86
Reach1	3900	Max WS	11.14	118.13	119.63	119.51	120	0.001661	2.81	5.58	6.66	0.82
Reach1	3874.32*	Max WS	11.13	118.09	119.59		119.96	0.001648	2.8	5.61	6.59	0.81
Reach1	3849.55*	Max WS	11.13	118.05	119.55		119.92	0.001644	2.8	5.64	6.66	0.81
Reach1	3824.77*	Max WS	11.13	118.01	119.51	119.39	119.88	0.001641	2.8	5.67	6.77	0.81
Reach1	3800	Max WS	11.13	117.97	119.47	119.35	119.84	0.00164	2.8	5.7	6.9	0.81
Reach1	3775.*	Max WS	11.13	117.93	119.42		119.8	0.001657	2.81	5.61	6.59	0.81
Reach1	3750.*	Max WS	11.12	117.89	119.38	119.26	119.76	0.001672	2.82	5.55	6.53	0.82
Reach1	3725.*	Max WS	11.12	117.84	119.33	119.22	119.72	0.00169	2.83	5.5	6.5	0.82
Reach1	3700	Max WS	11.12	117.8	119.29	119.18	119.67	0.001708	2.84	5.46	6.44	0.83
Reach1	3600	Max WS	11.1	117.62	119.02	118.99	119.51	0.002309	3.14	4.45	4.81	0.95
Reach1	3500	Max WS	11.08	117.41	118.96	118.8	119.26	0.001324	2.58	7.36	11.47	0.73
Reach1	3475	Max WS	11.07	117.41	118.89	118.8	119.24	0.001637	2.76	6.59	10.65	0.81
Reach1	3400	Max WS	11.05	117.18	118.83		119.13	0.00118	2.53	6.45	6.89	0.7
Reach1	3300	Max WS	11.05	117.03	118.76		119.01	0.000885	2.31	7.05	6.98	0.61
Reach1	3200	Max WS	11.05	116.9	118.71		118.92	0.000715	2.15	8.49	10.06	0.56
Reach1	3129.289	Max WS	15.68	116.8	118.4	118.58	118.92	0.002695	3.41	9.71	24.23	0.98
Reach1	3100	Max WS	15.68	116.72	118.3	118.46	118.87	0.002965	3.54	8.1	16.3	1.02
Reach1	3000.99		Lat Struct									
Reach1	3000	Max WS	14.78	116.5	118.1	118.15	118.53	0.002284	3.14	9.41	18.05	0.9
Reach1	2900	Max WS	12.69	116.38	117.85	117.96	118.37	0.0029	3.29	6.05	12.79	0.99
Reach1	2800	Max WS	12.59	116.1	117.58	117.64	118.06	0.002726	3.2	6.26	12.35	0.96
Reach1	2761.459	Max WS	12.59	116.07	117.46	117.61	118.07	0.003774	3.56	5.21	10.76	1.12
Reach1	2748.387	Max WS	12.59	116.02	117.44		117.51	0.000251	1.23	12.48	13.05	0.33
Reach1	2726.357		Culvert									
Reach1	2704.318	Max WS	12.59	115.95	117.27		117.37	0.000353	1.38	10.36	11.34	0.39
Reach1	2691.288	Max WS	12.59	115.83	117.25	117.41	117.84	0.003479	3.48	5.35	12.13	1.08
Reach1	2652.393	Max WS	12.59	115.75	117.1	117.31	117.82	0.004618	3.83	4.19	8.38	1.23
Reach1	2600	Max WS	12.59	115.47	116.85	117.09	117.66	0.005434	4.06	3.96	7.65	1.34
Reach1	2500	Max WS	12.59	115	116.43	116.6	116.98	0.003301	3.41	5.89	14	1.05
Reach1	2499.99		Lat Struct									
Reach1	2480.07*	Max WS	12.59	114.91	116.37	116.5	116.89	0.003011	3.31	5.94	12.49	1.01
Reach1	2460.05*	Max WS	12.59	114.82	116.31	116.35	116.79	0.002656	3.18	6.25	12.14	0.95
Reach1	2440.03*	Max WS	12.57	114.73	116.31	116.27	116.7	0.001989	2.9	7.3	14.12	0.84
Reach1	2420.01*	Max WS	11.79	114.64	116.38		116.62	0.001061	2.3	9.39	14.2	0.62
Reach1	2400	Max WS	8.6	114.55	116.5		116.58	0.000322	1.39	12.13	14.33	0.35
Reach1	2366.66*	Max WS	41.57	114.37	116.38	116.93	118.19	0.006759	6.52	12.56	15.17	1.62
Reach1	2333.33*	Max WS	38.49	114.2	116.16	116.72	117.96	0.006809	6.41	11.65	16.85	1.62
Reach1	2300	Max WS	38.2	114.02	115.97	116.3	117.03	0.004862	5.38	23.64	57.17	1.36
Reach1	2263.986	Max WS	38.2	113.92	115.81	116.03	116.7	0.003731	4.17	9.15	7.68	1.22
Reach1	2263.985		Bridge									
Reach1	2263.984	Max WS	38.2	113.92	115.81	116.23	116.7	0.003762	4.19	9.12	7.66	1.22
Reach1	2200	Max WS	38.2	113.65	115.58	115.75	116.41	0.003413	4.04	9.46	7.79	1.17
Reach1	2140	Max WS	38.2	113.65	115.26	115.75	116.73	0.00735	5.37	7.11	6.83	1.68
Reach1	2100	Max WS	38.2	113.15	115.04	115.24	115.93	0.003738	4.18	9.15	7.67	1.22
Reach1	2000	Max WS	38.2	112.8	114.67	114.9	115.59	0.00395	4.26	8.96	7.6	1.25
Reach1	1919.601	Max WS	38.19	112.3	114.43	114.41	115.03	0.0021	3.44	12.07	16.52	0.94
Reach1	1914.50*	Max WS	38.19	112.28	114.42	114.39	115.01	0.002055	3.42	12.14	16.86	0.93
Reach1	1909.40*	Max WS	38.19	112.26	114.41	114.37	114.99	0.002007	3.4	12.24	17.2	0.92
Reach1	1904.312	Max WS	38.19	112.24	114.4	114.35	114.97	0.001958	3.37	12.38	17.35	0.91
Reach1	1894.312		Bridge									
Reach1	1850	Max WS	38.19	112.02	114.47		114.84	0.000999	2.73	17.82	19.63	0.67
Reach1	1848.034	Max WS	38.19	112.02	114.47	114.13	114.83	0.001003	2.73	17.79	19.62	0.67
Reach1	1840		Inl Struct									
Reach1	1829.706	Max WS	38.15	109.5	113.11		113.32	0.000401	2.09	21.86	12.41	0.43
Reach1	1828.706	Max WS	38.15	109.5	113.11		113.32	0.000401	2.09	21.85	12.41	0.43
Reach1	1800	Max WS	76.03	109.51	113.06	113.26	114.35	0.002984	5.11	17.34	9.92	1.1
Reach1	1700	Max WS	76.03	109.52	112.75	113.04	114.09	0.003257	5.25	18.16	12.84	1.18
Reach1	1600	Max WS	76.03	109.02	112.45	112.63	113.7	0.002692	4.98	17.25	12.19	1.08
Reach1	1500	Max WS	76.02	108.92	112.14	112.49	113.66	0.003611	5.49	14.61	9.23	1.25
Reach1	1400	Max WS	76.02	108.71	111.86	111.95	112.96	0.002033	4.73	20.1	14.63	1.01
Reach1	1300	Max WS	76.02	108.43	111.63	111.79	112.85	0.002434	4.93	18.08	12.17	1.07
Reach1	1200	Max WS	76.02	108.01	111.34	111.64	112.79	0.003461	5.36	15.32	9.75	1.21
Reach1	1100	Max WS	76.02	107.67	110.86	111.52	113.02	0.006245	6.53	12.25	7.71	1.53
Reach1	1073.348	Max WS	76.02	107.66	110.6	111.57	113.88	0.013003	8.02	9.48	6.46	2.11
Reach1	1066.55*	Max WS	76.01	107.63	110.55	110.59	111.63	0.002713	4.61	16.5	7.98	1.02
Reach1	1059.76*	Max WS	76.02	107.61	110.54		111.03	0.000964	3.09	24.6	10.12	0.63
Reach1	1052.966	Max WS	76.02	107.58	110.79		111.01	0.000353	2.08	36.54	12.79	0.39
Reach1	1032.586		Culvert									
Reach1	1007.762	Max WS	76.02	106.98	110.84		111	0.000222	1.76	43.1	12.32	0.3
Reach1	985.6076	Max WS	76.02	106.98	110.8	110.99	112.15	0.003305	5.17	15.47	8.11	1.11
Reach1	959.0905	Max WS	76.02	106.98	110.7	111.04	112.24	0.004131	5.5	14.14	7.6	1.22
Reach1	900	Max WS	76.02	106.78	110.48	110.7	111.87	0.003516	5.23	14.75	7.98	1.16
Reach1	800	Max WS	76.02	106.53	110.04	110.51	111.83	0.005309	5.93	12.93	7.37	1.38
Reach1	700	Max WS	75.17	106.08	109.41	110.08	111.64	0.007362	6.61	11.41	6.86	1.6
Reach1	662.9772	Max WS	74.62	106.09	108.99	110.06	112.78	0.015814	8.62	8.66	5.94	2.28
Reach1	650.7119	Max WS	73.91	106.1	108.89		109.23	0.000648	2.56	28.92	10.71	0.5
Reach1	622.5683		Culvert									
Reach1	551.4885	Max WS	74.15	105.03	108.89		109.05	0.000225	1.76	42.02	11.78	0.3
Reach1	546.624*	Max WS	73.89	105.03	108.8		109.05	0.00039	2.2	33.59	10.27	0.39
Reach1	541.760*	Max WS	73.59	105.03	108.61		109.06	0.000831	2.95	24.96	8.83	0.56
Reach1	536.896*	Max WS	77	105.03	108.35	108.29	109.41	0.002599	4.57	16.85	7.43	0.97
Reach1	532.0324	Max WS	76.98	105.03	108.32	109.03	110.56	0.00722	6.62	11.71	7.31	1.58
Reach1	500	Max WS	102.15	104.41	108.17	108.53	109.75	0.002518	5.59	20.78	17.98	1.11
Reach1	475.*	Max WS	102	104.09	108.1	108.56	109.76	0.003175	5.76	21.36	20.54	1.17
Reach1	449.999*	Max WS	101.83	103.76	108.01	108.58	109.77	0.004113	5.97	22.34	24.01	1.24
Reach1	424.999*	Max WS	101.63	103.44	107.89	108.5	109.74	0.005357	6.2	25.1	37.45	1.31
Reach1	399.9999	Max WS	101.41	103.12	107.76	108.24	109.2	0.005063	5.79	34.06	38.41	1.19

**HEC-RAS Model Output: Proposed Conditions**

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach1	4087	Max WS	11.16	118.5	119.95	119.97	120.44	0.0025	3.08	3.62	3.93	1.02
Reach1	4000	Max WS	11.15	118.29	119.77		120.19	0.001853	2.94	4.88	5.03	0.86
Reach1	3900	Max WS	11.13	118.13	119.63	119.51	120	0.001659	2.81	5.58	6.66	0.81
Reach1	3874.32*	Max WS	11.13	118.09	119.59		119.96	0.001648	2.8	5.61	6.59	0.81
Reach1	3849.55*	Max WS	11.13	118.05	119.55		119.92	0.001644	2.8	5.64	6.66	0.81
Reach1	3824.77*	Max WS	11.13	118.01	119.51	119.39	119.88	0.001641	2.8	5.67	6.77	0.81
Reach1	3800	Max WS	11.13	117.97	119.47	119.35	119.84	0.00164	2.8	5.7	6.9	0.81
Reach1	3775.*	Max WS	11.13	117.93	119.42		119.8	0.001657	2.81	5.61	6.59	0.81
Reach1	3750.*	Max WS	11.12	117.89	119.38	119.26	119.76	0.001672	2.82	5.55	6.53	0.82
Reach1	3725.*	Max WS	11.12	117.84	119.33	119.22	119.72	0.00169	2.83	5.5	6.5	0.82
Reach1	3700	Max WS	11.12	117.8	119.29	119.18	119.67	0.001708	2.84	5.46	6.44	0.83
Reach1	3600	Max WS	11.1	117.62	119.02	118.99	119.51	0.002309	3.14	4.45	4.81	0.95
Reach1	3500	Max WS	11.08	117.41	118.96	118.8	119.26	0.001324	2.58	7.36	11.47	0.73
Reach1	3475	Max WS	11.07	117.41	118.89	118.8	119.24	0.001637	2.76	6.59	10.65	0.81
Reach1	3400	Max WS	11.05	117.18	118.83		119.13	0.00118	2.53	6.45	6.89	0.7
Reach1	3300	Max WS	11.05	117.03	118.76		119.01	0.000885	2.31	7.05	6.98	0.61
Reach1	3200	Max WS	11.05	116.9	118.71		118.92	0.000715	2.15	8.49	10.06	0.56
Reach1	3129.289	Max WS	15.68	116.8	118.4	118.58	118.92	0.002695	3.41	9.71	24.23	0.98
Reach1	3100	Max WS	15.68	116.72	118.3	118.46	118.87	0.002965	3.54	8.1	16.3	1.02
Reach1	3000.99		Lat Struct									
Reach1	3000	Max WS	14.78	116.5	118.1	118.15	118.53	0.002284	3.14	9.41	18.05	0.9
Reach1	2900	Max WS	12.69	116.38	117.85	117.96	118.37	0.0029	3.29	6.05	12.79	0.99
Reach1	2800	Max WS	12.59	116.1	117.58	117.64	118.06	0.002726	3.2	6.26	12.35	0.96
Reach1	2761.459	Max WS	12.59	116.07	117.46	117.61	118.07	0.003774	3.56	5.21	10.76	1.12
Reach1	2748.387	Max WS	12.59	116.02	117.44		117.51	0.000251	1.23	12.48	13.05	0.33
Reach1	2726.357		Culvert									
Reach1	2704.318	Max WS	12.59	115.95	117.27		117.37	0.000353	1.38	10.36	11.34	0.39
Reach1	2691.288	Max WS	12.59	115.83	117.25	117.41	117.84	0.003479	3.48	5.35	12.13	1.08
Reach1	2652.393	Max WS	12.59	115.75	117.1	117.31	117.82	0.004618	3.83	4.19	8.38	1.23
Reach1	2600	Max WS	12.59	115.47	116.85	117.09	117.66	0.005434	4.06	3.96	7.65	1.34
Reach1	2500	Max WS	12.59	115	116.43	116.6	116.98	0.0033	3.41	5.89	14	1.05
Reach1	2499.99		Lat Struct									
Reach1	2480.07*	Max WS	12.58	114.91	116.37	116.5	116.88	0.003005	3.31	5.95	12.5	1.01
Reach1	2460.05*	Max WS	12.59	114.82	116.31	116.35	116.79	0.002653	3.18	6.25	12.15	0.95
Reach1	2440.03*	Max WS	12.58	114.73	116.31	116.27	116.7	0.001991	2.9	7.3	14.12	0.84
Reach1	2420.01*	Max WS	11.8	114.64	116.38		116.62	0.001063	2.3	9.39	14.2	0.62
Reach1	2400	Max WS	8.59	114.55	116.5		116.58	0.000322	1.39	12.13	14.33	0.35
Reach1	2366.66*	Max WS	41.56	114.37	116.38	116.93	118.19	0.006751	6.51	12.57	15.17	1.62
Reach1	2333.33*	Max WS	38.47	114.2	116.16	116.72	117.96	0.006792	6.41	11.66	16.86	1.61
Reach1	2300	Max WS	38.17	114.02	115.97	116.3	117.03	0.004825	5.37	23.73	57.18	1.36
Reach1	2263.986	Max WS	38.17	113.92	115.81	116.03	116.7	0.003706	4.16	9.17	7.68	1.22
Reach1	2263.985		Bridge									
Reach1	2263.984	Max WS	38.17	113.92	115.81	116.23	116.7	0.003737	4.18	9.14	7.67	1.22
Reach1	2200	Max WS	38.17	113.65	115.59	115.75	116.41	0.003372	4.02	9.5	7.81	1.16
Reach1	2140	Max WS	38.17	113.65	115.28	115.72	116.7	0.007046	5.29	7.22	6.88	1.65
Reach1	2135		Bridge									
Reach1	2100	Max WS	38.17	113.15	115.04	115.22	115.93	0.003739	4.18	9.14	7.67	1.22
Reach1	2000	Max WS	38.17	112.8	114.67	114.9	115.59	0.003948	4.26	8.96	7.6	1.25
Reach1	1919.601	Max WS	38.17	112.3	114.43	114.41	115.03	0.002101	3.44	12.06	16.51	0.94
Reach1	1914.50*	Max WS	38.17	112.28	114.42	114.39	115.01	0.002054	3.42	12.14	16.86	0.93
Reach1	1909.40*	Max WS	38.17	112.26	114.41	114.37	114.99	0.002006	3.4	12.23	17.2	0.92
Reach1	1904.312	Max WS	38.17	112.24	114.4	114.35	114.97	0.001957	3.37	12.37	17.34	0.91
Reach1	1894.312		Bridge									
Reach1	1850	Max WS	38.17	112.02	114.47		114.83	0.000999	2.73	17.81	19.63	0.67
Reach1	1848.034	Max WS	38.17	112.02	114.46	114.13	114.83	0.001003	2.73	17.77	19.61	0.67
Reach1	1840		Inl Struct									
Reach1	1829.706	Max WS	38.13	109.5	113.11		113.32	0.000401	2.09	21.85	12.41	0.43
Reach1	1828.706	Max WS	38.13	109.5	113.11		113.32	0.000401	2.09	21.85	12.41	0.43
Reach1	1800	Max WS	76.01	109.51	113.06	113.26	114.35	0.002983	5.11	17.34	9.92	1.1
Reach1	1700	Max WS	76	109.52	112.75	113.04	114.09	0.003259	5.25	18.15	12.84	1.18
Reach1	1600	Max WS	76	109.02	112.45	112.63	113.69	0.002693	4.98	17.24	12.18	1.08
Reach1	1500	Max WS	76	108.92	112.14	112.49	113.66	0.003611	5.49	14.61	9.23	1.25
Reach1	1400	Max WS	76	108.71	111.86	111.95	112.96	0.002032	4.72	20.1	14.63	1.01
Reach1	1300	Max WS	75.99	108.43	111.63	111.79	112.85	0.002434	4.93	18.08	12.17	1.07
Reach1	1200	Max WS	75.99	108.01	111.34	111.64	112.79	0.003461	5.36	15.31	9.75	1.21
Reach1	1100	Max WS	75.99	107.67	110.86	111.52	113.02	0.006244	6.53	12.24	7.71	1.53
Reach1	1073.348	Max WS	75.99	107.66	110.6	111.57	113.88	0.013009	8.02	9.48	6.46	2.11
Reach1	1066.55*	Max WS	75.99	107.63	110.55	110.59	111.63	0.002713	4.61	16.5	7.98	1.02
Reach1	1059.76*	Max WS	75.99	107.61	110.54		111.02	0.000964	3.09	24.6	10.12	0.63
Reach1	1052.966	Max WS	75.99	107.58	110.79		111.01	0.000353	2.08	36.54	12.79	0.39
Reach1	1032.586		Culvert									
Reach1	1007.762	Max WS	75.99	106.98	110.84		111	0.000222	1.76	43.09	12.32	0.3
Reach1	985.6076	Max WS	75.99	106.98	110.8	110.99	112.15	0.003305	5.17	15.47	8.11	1.11
Reach1	959.0905	Max WS	75.99	106.98	110.7	111.04	112.24	0.00413	5.5	14.14	7.6	1.22
Reach1	900	Max WS	75.99	106.78	110.48	110.7	111.87	0.003515	5.23	14.74	7.98	1.16
Reach1	800	Max WS	75.99	106.53	110.04	110.5	111.83	0.005308	5.93	12.93	7.37	1.38
Reach1	700	Max WS	75.16	106.08	109.41	110.08	111.63	0.007353	6.61	11.42	6.86	1.6
Reach1	662.9772	Max WS	74.55	106.09	109	110.05	112.74	0.015608	8.58	8.69	5.95	2.27
Reach1	650.7119	Max WS	74.01	106.1	108.9		109.23	0.000644	2.55	29	10.71	0.5
Reach1	622.5683		Culvert									
Reach1	551.4885	Max WS	74.01	105.03	108.89		109.05	0.000224	1.76	42.04	11.78	0.3
Reach1	546.624*	Max WS	73.75	105.03	108.8		109.05	0.000388	2.19	33.6	10.27	0.39
Reach1	541.760*	Max WS	73.45	105.03	108.62		109.06	0.000826	2.94	24.98	8.83	0.56
Reach1	536.896*	Max WS	76.98	105.03	108.35	108.29	109.41	0.002598	4.57	16.85	7.43	0.97
Reach1	532.0324	Max WS	76.96	105.03	108.32	109.03	110.55	0.00722	6.62	11.71	7.31	1.58
Reach1	500	Max WS	102.13	104.41	108.17	108.53	109.74	0.002519	5.59	20.77	17.97	1.11
Reach1	475.*	Max WS	101.98	104.09	108.1	108.56	109.76	0.003175	5.76	21.35	20.53	1.17
Reach1	449.999*	Max WS	101.81	103.76	108.01	108.58	109.77	0.004112	5.96	22.34	24.01	1.24
Reach1	424.999*	Max WS	101.61	103.44	107.89	108.5	109.74	0.005358	6.2	25.09	37.45	1.31
Reach1	399.9999	Max WS	101.39	103.12	107.76	108.24	109.2	0.005061	5.79	34.06	38.41	1.19



**APPENDIX F**  
**Hydraulic Model Output: Lower Morrison Creek**

**HEC-RAS Model Output: Existing Conditions (River 1)**

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach-1	4.03	Pre (March 28 2014)	16.32	105.98	107.32	107.32	107.47	0.004481	2.17	17.87	56.69	0.62
Reach-1	3.96	Pre (March 28 2014)	16.32	104.39	106.35		106.45	0.001532	1.63	14.68	12	0.39
Reach-1	3.95	Pre (March 28 2014)	16.32	104.25	106.4	105.16	106.41	0.000405	0.76	36.4	41.43	0.17
Reach-1	3.92		Bridge									
Reach-1	3.86	Pre (March 28 2014)	25.68	104.25	105.48	105.48	106.09	0.017283	3.46	7.42	6.14	1
Reach-1	3.81	Pre (March 28 2014)	25.68	103.5	105.11	105.06	105.39	0.005251	2.6	15.36	24.29	0.69
Reach-1	3.75	Pre (March 28 2014)	25.68	103	104.43	104.43	104.93	0.010366	3.53	11.15	16.52	0.96
Reach-1	3.701	Pre (March 28 2014)	25.68	102.06	103.07	103.07	103.37	0.018067	2.63	12.01	25.32	1.11
Reach-1	3.67	Pre (March 28 2014)	25.68	101	102.08		102.21	0.005394	1.56	16.8	31.2	0.62
Reach-1	3.6	Pre (March 28 2014)	25.68	100	101.61	101.61	101.81	0.005752	2.41	19.94	43.82	0.69
Reach-1	3.55	Pre (March 28 2014)	25.68	99	101.3		101.32	0.00049	1.04	51.27	41.61	0.22
Reach-1	3.05	Pre (March 28 2014)	25.68	98.37	101.02		101.26	0.002667	2.75	16.37	8.67	0.55
Reach-1	2.81	Pre (March 28 2014)	25.68	97.96	101.15	99.88	101.17	0.000278	0.84	60.96	43.29	0.15
Reach-1	2.7955		Bridge									
Reach-1	2.781	Pre (March 28 2014)	25.68	97.96	99.93	99.82	100.31	0.007165	2.95	11.58	12.85	0.72
Reach-1	2.78	Pre (March 28 2014)	25.68	96.98	100.11	98.74	100.12	0.000113	0.54	81.91	67.58	0.1
Reach-1	2.74		Bridge									
Reach-1	2.7	Pre (March 28 2014)	27.54	96.98	99.86	98.2	99.88	0.000187	0.66	67.9	61.76	0.13
Reach-1	2.68	Pre (March 28 2014)	27.54	96.55	99.78	97.89	99.85	0.00071	1.23	23.65	9.21	0.23
Reach-1	2.6525		Bridge									
Reach-1	2.625	Pre (March 28 2014)	27.54	96.25	97.39	97.39	97.97	0.01172	3.37	8.18	8.85	1.01
Reach-1	2.59	Pre (March 28 2014)	27.54	96.26	97.07	97.07	97.3	0.013855	2.48	15.81	34.96	0.99
Reach-1	2.54	Pre (March 28 2014)	27.54	95.14	96.82	96.7	96.96	0.003994	2.18	24.08	39.76	0.59
Reach-1	2.49	Pre (March 28 2014)	27.54	95.05	96.29	96.29	96.62	0.012343	3.33	13.85	19.77	0.99
Reach-1	2.43	Pre (March 28 2014)	30.38	93.6	95.88		95.97	0.001144	1.43	26.68	20.13	0.33
Reach-1	2.407	Pre (March 28 2014)	30.38	93.07	95.91	95.32	95.94	0.000269	0.82	54.18	61.42	0.17
Reach-1	2.4035		Bridge									
Reach-1	2.4	Pre (March 28 2014)	30.38	93.07	94.97	94.6	95.07	0.001672	1.37	23.23	22.56	0.38
Reach-1	2.39	Pre (March 28 2014)	30.38	92.47	94.86		95.02	0.003399	2.04	22.08	27.18	0.54
Reach-1	2.37	Pre (March 28 2014)	30.38	92.72	94.93	94.17	94.98	0.000111	1.04	52.49	106.14	0.25
Reach-1	2.365		Bridge									
Reach-1	2.36	Pre (March 28 2014)	30.38	92.71	94.35	94.16	94.91	0.007065	3.34	9.11	40.28	0.83
Reach-1	2.35	Pre (March 28 2014)	30.38	92.47	94.38	94.23	94.72	0.009492	2.93	13.09	13.27	0.87
Reach-1	2.33	Pre (March 28 2014)	30.38	92.39	93.98	93.98	94.48	0.013514	3.33	11.09	14.74	1.04
Reach-1	2.311	Pre (March 28 2014)	30.38	92.36	94.16	93.71	94.2	0.000172	1.18	104.91	152.22	0.3
Reach-1	2.3055		Bridge									
Reach-1	2.3	Pre (March 28 2014)	30.38	92.13	93.7	93.26	93.74	0.001146	1.11	58.53	111.35	0.32
Reach-1	2.28	Pre (March 28 2014)	30.38	91.62	93.19	93.19	93.59	0.007988	2.97	14.37	24.24	0.83
Reach-1	2.24	Pre (March 28 2014)	30.38	91.31	92.8	92.8	93.04	0.006197	2.38	23.47	58.03	0.72

**HEC-RAS Model Output: Existing Conditions (River 2)**

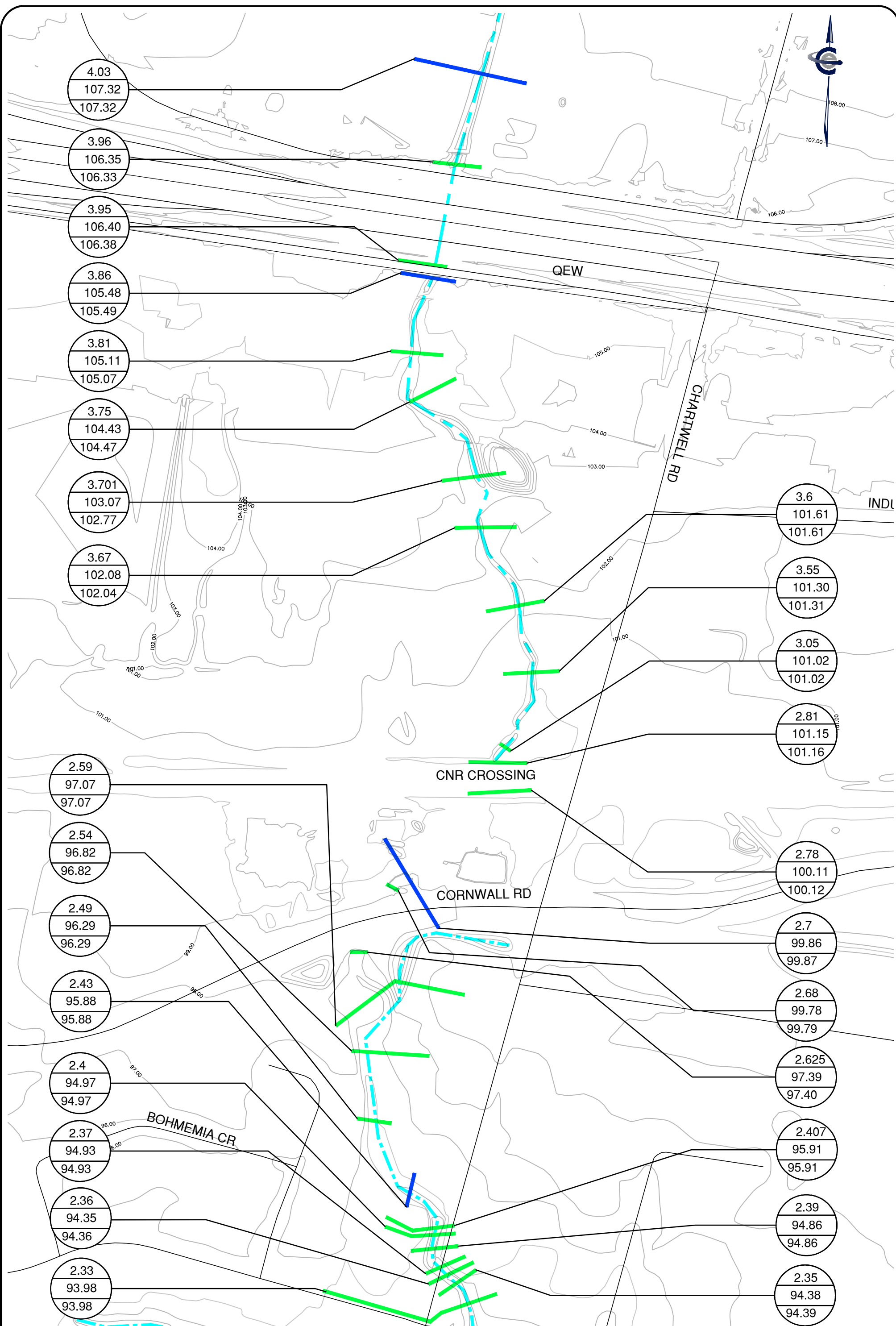
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach-1	3.2	Pre (March 28 2014)	42.16	96.41	99.98		100.03	0.000143	1.55	106.17	79.69	0.27
Reach-1	3.185	Pre (March 28 2014)	42.16	96.23	100.01	98.5	100.01	0.000003	0.23	507.72	308.69	0.05
Reach-1	3.1725		Bridge									
Reach-1	3.16	Pre (March 28 2014)	42.16	96.14	98.84	98.1	98.84	0.000059	0.29	221.87	177.04	0.07
Reach-1	3.145	Pre (March 28 2014)	42.16	95.91	98.84	98.29	98.84	0.000144	0.55	156.47	128.46	0.11
Reach-1	3.1375		Bridge									
Reach-1	3.13	Pre (March 28 2014)	42.16	95.73	98.43	97.47	98.44	0.000438	0.72	106.5	121.8	0.15
Reach-1	3.12	Pre (March 28 2014)	42.16	95.8	98.35		98.41	0.000859	1.37	53.1	49.86	0.3
Reach-1	3.07	Pre (March 28 2014)	42.16	95.55	98.38		98.38	0.000139	0.59	164.53	120.77	0.12
Reach-1	3.03	Pre (March 28 2014)	42.16	95.35	97.74	97.74	98.3	0.006887	3.81	22.62	26.98	0.84
Reach-1	2.97	Pre (March 28 2014)	42.16	94.61	96.93	96.93	97.17	0.004444	2.83	42.87	77.39	0.64
Reach-1	2.93	Pre (March 28 2014)	42.16	94.31	96.83		96.97	0.003286	2.31	46.88	59.5	0.54
Reach-1	2.9	Pre (March 28 2014)	42.16	94	96.89	95.03	96.91	0.00014	0.63	126.41	80.2	0.12
Reach-1	2.875		Bridge									
Reach-1	2.85	Pre (March 28 2014)	42.16	94	96.29	95.02	96.33	0.000475	1.05	77.84	80.2	0.22
Reach-1	2.83	Pre (March 28 2014)	42.16	94	96.29		96.3	0.000558	1.03	94.09	97.81	0.23
Reach-1	2.79	Pre (March 28 2014)	42.16	93.78	96.24		96.27	0.000997	1.41	75.83	96	0.31
Reach-1	2.75	Pre (March 28 2014)	42.16	93.12	96.23		96.24	0.000387	1.02	146.56	150.84	0.19
Reach-1	2.71	Pre (March 28 2014)	42.16	93.35	96.2		96.23	0.000491	0.99	111.48	144.12	0.22
Reach-1	2.701	Pre (March 28 2014)	50.28	93.13	96.14	95.8	96.21	0.000157	1.24	66.22	84.71	0.29
Reach-1	2.621		Bridge									
Reach-1	2.541	Pre (March 28 2014)	50.28	93.13	95.8	95.8	95.91	0.001705	1.53	41.32	63.22	0.39
Reach-1	2.53	Pre (March 28 2014)	50.28	92.66	94.8	94.69	95.22	0.008367	2.94	19.01	20.21	0.84
Reach-1	2.491	Pre (March 28 2014)	50.28	92.7	94.59	94.51	94.96	0.00774	2.89	21.59	24.57	0.81
Reach-1	2.44	Pre (March 28 2014)	50.28	92.41	94.61		94.71	0.001565	1.68	58.32	59.92	0.4
Reach-1	2.401	Pre (March 28 2014)	50.28	92.31	94.52		94.64	0.00199	2	57.99	59.65	0.45
Reach-1	2.36	Pre (March 28 2014)	50.28	92.17	94.34		94.54	0.002406	2.14	33.22	24.27	0.49
Reach-1	2.31	Pre (March 28 2014)	50.28	92.52	93.86	93.86	94.3	0.011275	3.45	28.65	46.85	0.99
Reach-1	2.301	Pre (March 28 2014)	50.28	91.38	94.05	93.47	94.08	0.000061	0.77	94.86	116.47	0.18
Reach-1	2.291		Bridge									
Reach-1	2.281	Pre (March 28 2014)	50.28	91.36	93.5	92.74	93.56	0.001124	1.13	48.48	52.69	0.32
Reach-1	2.25	Pre (March 28 2014)	50.28	91.11	92.94	92.94	93.38	0.008225	3.58	28.28	38.16	0.88
Reach-1	2.22	Pre (March 28 2014)	53.6	90.75	92.51	92.51	92.78	0.006152	2.69	36.04	74.38	0.74

**HEC-RAS Model Output: Proposed Conditions (River 1)**

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach-1	4.03	Post (March 28 2014)	16.22	105.98	107.32	107.32	107.47	0.004471	2.17	17.77	56.59	0.62
Reach-1	3.96	Post (March 28 2014)	16.22	104.39	106.33		106.43	0.001563	1.64	14.51	11.94	0.39
Reach-1	3.95	Post (March 28 2014)	16.22	104.25	106.38	105.16	106.4	0.000418	0.77	35.79	41.43	0.17
Reach-1	3.92		Bridge									
Reach-1	3.86	Post (March 28 2014)	25.91	104.25	105.49	105.49	106.1	0.017252	3.47	7.47	6.15	1
Reach-1	3.81	Post (March 28 2014)	25.91	103.5	105.07	105.07	105.39	0.006162	2.76	14.38	24.23	0.74
Reach-1	3.75	Post (March 28 2014)	25.91	103	104.5	104.5	104.92	0.008421	3.29	12.27	16.7	0.87
Reach-1	3.701	Post (March 28 2014)	25.91	101.3	102.89	102.27	103.08	0.002817	1.91	13.59	18.59	0.48
Reach-1	3.7		Culvert									
Reach-1	3.67	Post (March 28 2014)	25.91	101	102.05	101.98	102.48	0.011275	2.88	8.99	30.74	0.9
Reach-1	3.6	Post (March 28 2014)	25.91	100	101.61	101.61	101.82	0.005795	2.42	20.03	43.82	0.7
Reach-1	3.55	Post (March 28 2014)	25.91	99	101.31		101.33	0.000492	1.05	51.51	41.61	0.22
Reach-1	3.05	Post (March 28 2014)	25.91	98.37	101.02		101.26	0.00271	2.78	16.38	8.67	0.55
Reach-1	2.81	Post (March 28 2014)	25.91	97.96	101.16	99.89	101.17	0.000281	0.84	61.11	43.29	0.15
Reach-1	2.7955		Bridge									
Reach-1	2.781	Post (March 28 2014)	25.91	97.96	99.93	99.82	100.32	0.007245	2.97	11.62	12.87	0.73
Reach-1	2.78	Post (March 28 2014)	25.91	96.98	100.12	98.76	100.13	0.000114	0.54	82.23	67.6	0.1
Reach-1	2.74		Bridge									
Reach-1	2.7	Post (March 28 2014)	27.76	96.98	99.87	98.21	99.89	0.000187	0.66	68.48	62.12	0.13
Reach-1	2.68	Post (March 28 2014)	27.76	96.55	99.79	97.89	99.86	0.000714	1.23	23.72	9.21	0.23
Reach-1	2.6525		Bridge									
Reach-1	2.625	Post (March 28 2014)	27.76	96.25	97.4	97.4	97.98	0.011534	3.36	8.26	8.85	1
Reach-1	2.59	Post (March 28 2014)	27.76	96.26	97.07	97.07	97.3	0.013853	2.49	15.9	35.01	0.99
Reach-1	2.54	Post (March 28 2014)	27.76	95.14	96.82	96.7	96.97	0.003981	2.18	24.27	39.81	0.59
Reach-1	2.49	Post (March 28 2014)	27.76	95.05	96.29	96.29	96.62	0.012321	3.33	13.94	19.8	0.99
Reach-1	2.43	Post (March 28 2014)	30.61	93.6	95.88		95.97	0.00115	1.44	26.78	20.13	0.33
Reach-1	2.407	Post (March 28 2014)	30.61	93.07	95.91	95.32	95.94	0.00027	0.82	54.5	61.9	0.17
Reach-1	2.4035		Bridge									
Reach-1	2.4	Post (March 28 2014)	30.61	93.07	94.97	94.6	95.07	0.00169	1.38	23.27	22.58	0.39
Reach-1	2.39	Post (March 28 2014)	30.61	92.47	94.86		95.02	0.003458	2.06	22.06	27.17	0.55
Reach-1	2.37	Post (March 28 2014)	30.61	92.72	94.93	94.18	94.98	0.000112	1.05	52.54	106.22	0.25
Reach-1	2.365		Bridge									
Reach-1	2.36	Post (March 28 2014)	30.61	92.71	94.36	94.17	94.93	0.006979	3.33	9.18	40.81	0.83
Reach-1	2.35	Post (March 28 2014)	30.61	92.47	94.39	94.24	94.73	0.009179	2.9	13.34	13.4	0.86
Reach-1	2.33	Post (March 28 2014)	30.61	92.39	93.98	93.98	94.49	0.013834	3.36	11.05	14.71	1.05
Reach-1	2.311	Post (March 28 2014)	30.61	92.36	94.16	93.72	94.21	0.000174	1.19	105.2	152.35	0.3
Reach-1	2.3055		Bridge									
Reach-1	2.3	Post (March 28 2014)	30.61	92.13	93.7	93.26	93.75	0.001139	1.11	59.13	111.9	0.32
Reach-1	2.28	Post (March 28 2014)	30.61	91.62	93.19	93.19	93.59	0.007911	2.96	14.56	24.27	0.83
Reach-1	2.24	Post (March 28 2014)	30.61	91.31	92.8	92.8	93.04	0.006295	2.4	23.46	58.03	0.72

**HEC-RAS Model Output: Proposed Conditions (River 2)**

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach-1	3.2	Post (March 28 2014)	42.13	96.41	99.98		100.03	0.000143	1.55	106.08	79.69	0.27
Reach-1	3.185	Post (March 28 2014)	42.13	96.23	100.01	98.5	100.01	0.000003	0.23	507.36	308.65	0.05
Reach-1	3.1725		Bridge									
Reach-1	3.16	Post (March 28 2014)	42.13	96.14	98.84	98.1	98.84	0.000059	0.29	221.64	176.98	0.07
Reach-1	3.145	Post (March 28 2014)	42.13	95.91	98.84	98.29	98.84	0.000144	0.55	156.3	128.44	0.11
Reach-1	3.1375		Bridge									
Reach-1	3.13	Post (March 28 2014)	42.13	95.73	98.42	97.48	98.44	0.000438	0.72	106.41	121.79	0.15
Reach-1	3.12	Post (March 28 2014)	42.13	95.8	98.35		98.41	0.00086	1.37	53.06	49.86	0.3
Reach-1	3.07	Post (March 28 2014)	42.13	95.55	98.37		98.38	0.000139	0.59	164.44	120.77	0.12
Reach-1	3.03	Post (March 28 2014)	42.13	95.35	97.74	97.74	98.3	0.006889	3.81	22.6	26.96	0.84
Reach-1	2.97	Post (March 28 2014)	42.13	94.61	96.93	96.93	97.17	0.004406	2.82	43.01	77.39	0.64
Reach-1	2.93	Post (March 28 2014)	42.13	94.31	96.83		96.97	0.003288	2.31	46.84	59.48	0.54
Reach-1	2.9	Post (March 28 2014)	42.13	94	96.89	95.02	96.91	0.00014	0.63	126.36	80.2	0.12
Reach-1	2.875		Bridge									
Reach-1	2.85	Post (March 28 2014)	42.13	94	96.29	95.02	96.33	0.000475	1.05	77.8	80.2	0.22
Reach-1	2.83	Post (March 28 2014)	42.13	94	96.28		96.3	0.000558	1.03	94.05	97.81	0.23
Reach-1	2.79	Post (March 28 2014)	42.13	93.78	96.24		96.27	0.000997	1.41	75.79	96	0.31
Reach-1	2.75	Post (March 28 2014)	42.13	93.12	96.23		96.24	0.000387	1.02	146.5	150.82	0.19
Reach-1	2.71	Post (March 28 2014)	42.13	93.35	96.2		96.23	0.000491	0.98	111.42	144.1	0.22
Reach-1	2.701	Post (March 28 2014)	50.25	93.13	96.14	95.8	96.21	0.000157	1.24	66.19	84.68	0.29
Reach-1	2.621		Bridge									
Reach-1	2.541	Post (March 28 2014)	50.25	93.13	95.8	95.8	95.91	0.001703	1.53	41.32	63.22	0.39
Reach-1	2.53	Post (March 28 2014)	50.25	92.66	94.8	94.69	95.22	0.008361	2.94	19.01	20.21	0.83
Reach-1	2.491	Post (March 28 2014)	50.25	92.7	94.59	94.51	94.96	0.007724	2.89	21.6	24.59	0.81
Reach-1	2.44	Post (March 28 2014)	50.25	92.41	94.61		94.71	0.001562	1.68	58.34	59.94	0.39
Reach-1	2.401	Post (March 28 2014)	50.25	92.31	94.52		94.64	0.001985	2	58.03	59.67	0.45
Reach-1	2.36	Post (March 28 2014)	50.25	92.17	94.34		94.54	0.002399	2.14	33.25	24.28	0.49
Reach-1	2.31	Post (March 28 2014)	50.25	92.52	93.86	93.86	94.29	0.011438	3.47	28.42	46.47	1
Reach-1	2.301	Post (March 28 2014)	50.25	91.38	94.05	93.47	94.08	0.000061	0.77	94.74	116.35	0.18
Reach-1	2.291		Bridge									
Reach-1	2.281	Post (March 28 2014)	50.25	91.36	93.5	92.74	93.56	0.001124	1.13	48.46	52.67	0.32
Reach-1	2.25	Post (March 28 2014)	50.25	91.11	92.94	92.94	93.38	0.008226	3.58	28.26	38.14	0.88
Reach-1	2.22	Post (March 28 2014)	53.57	90.75	92.51	92.51	92.78	0.006154	2.69	36.01	74.37	0.74



4.03	107.32	107.32
3.96	106.35	106.33
3.95	106.40	106.38
3.86	105.48	105.49
3.81	105.11	105.07
3.75	104.43	104.47
3.701	103.07	102.77
3.67	102.08	102.04
2.59	97.07	97.07
2.54	96.82	96.82
2.49	96.29	96.29
2.43	95.88	95.88
2.4	94.97	94.97
2.37	94.93	94.93
2.36	94.35	94.36
2.33	93.98	93.98

3.6	101.61	101.61
3.55	101.30	101.31
3.05	101.02	101.02
2.81	101.15	101.16
2.78	100.11	100.12
2.7	99.86	99.87
2.68	99.78	99.79
2.625	97.39	97.40
2.407	95.91	95.91
2.39	94.86	94.86
2.35	94.38	94.39

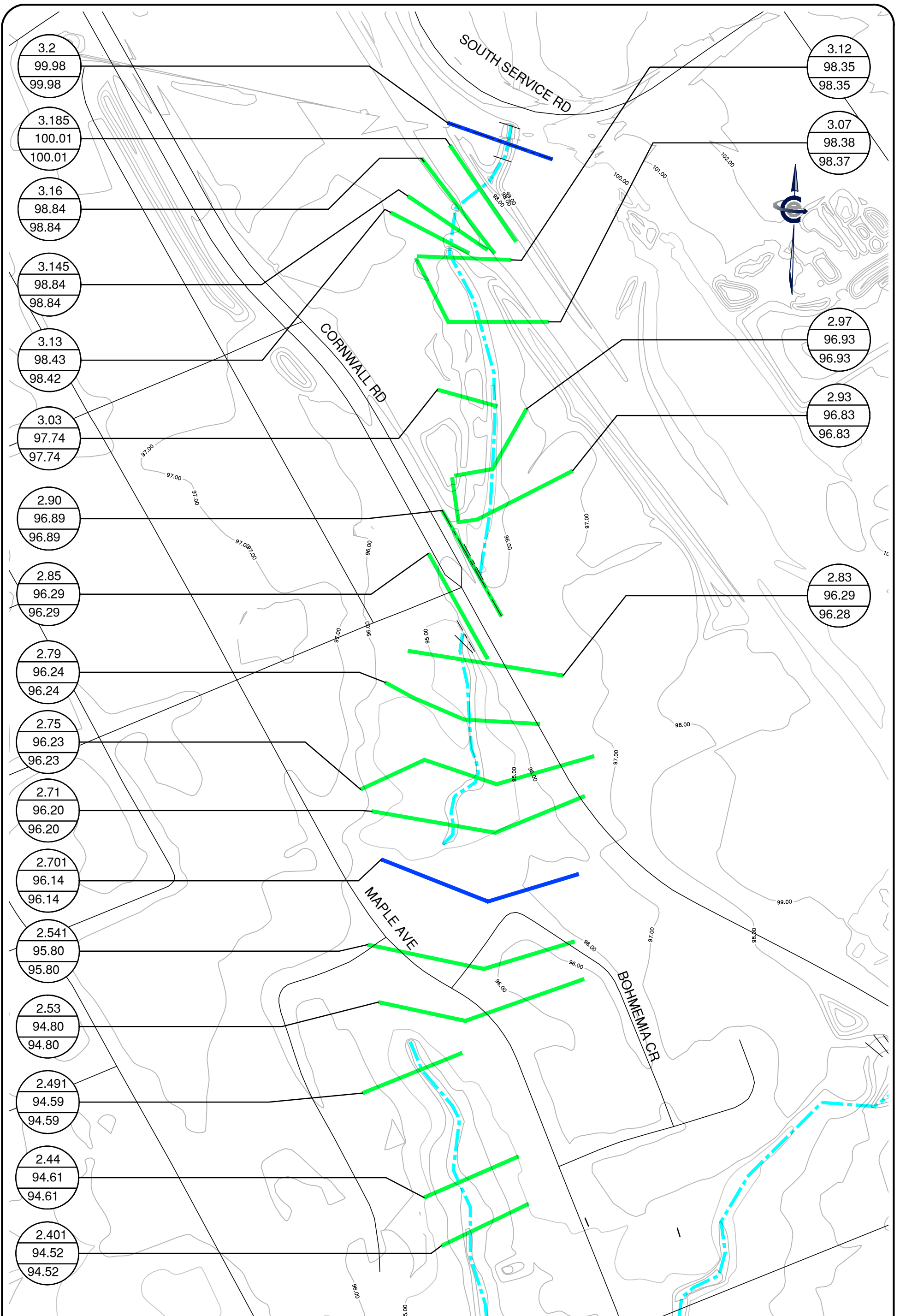


**LEGEND**

- CROSS SECTION
- PRE DEVELOPMENT ELEVATION
- POST DEVELOPMENT ELEVATION
- EXISTING CONTOUR LINE
- CROSS SECTION
- FLOW POINT
- ROADS
- WATERCOURSE

**HEC-RAS CROSS SECTIONS (RIVER 1)**  
 MIDTOWN ENVIRONMENTAL ASSESSMENT  
 TOWN OF OAKVILLE

DATE:	MAY 2014	PROJECT No.:	T11-767
SCALE:	1:2500	FIGURE No.:	S-1



3.2	99.98	99.98
3.185	100.01	100.01
3.16	98.84	98.84
3.145	98.84	98.84
3.13	98.43	98.42
3.03	97.74	97.74
2.90	96.89	96.89
2.85	96.29	96.29
2.79	96.24	96.24
2.75	96.23	96.23
2.71	96.20	96.20
2.701	96.14	96.14
2.541	95.80	95.80
2.53	94.80	94.80
2.491	94.59	94.59
2.44	94.61	94.61
2.401	94.52	94.52

3.12	98.35	98.35
3.07	98.38	98.37
2.97	96.93	96.93
2.93	96.83	96.83
2.83	96.29	96.28

70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5  
T:416.987.6161 / 905.940.6161 F:905.940.2064

**LEGEND**

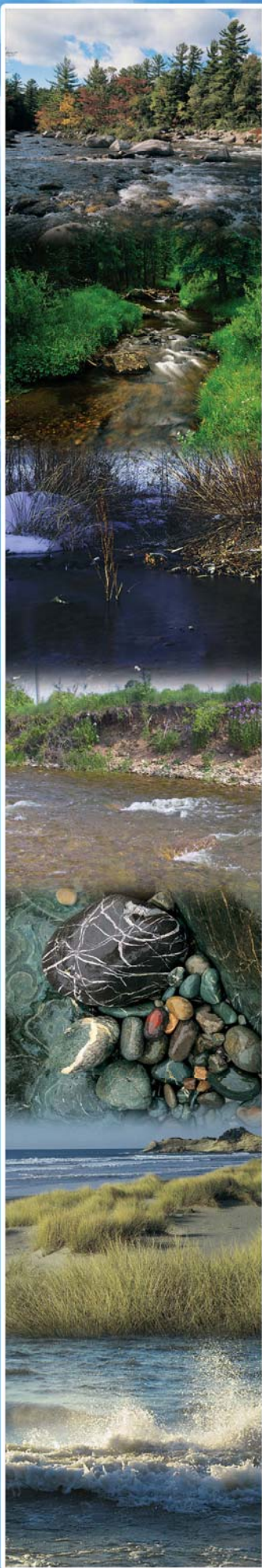
- CROSS SECTION
- PRE DEVELOPMENT ELEVATION
- POST DEVELOPMENT ELEVATION
- EXISTING CONTOUR LINE
- CROSS SECTION
- FLOW POINT
- ROADS
- WATERCOURSE

**HEC-RAS CROSS SECTIONS (RIVER 2)**  
MIDTOWN ENVIRONMENTAL ASSESSMENT  
TOWN OF OAKVILLE

DATE:	MAR 2014	PROJECT No.:	T11-767
SCALE:	1:2500	FIGURE No.:	S-2

**APPENDIX G**  
**Fluvial Geomorphological Assessment**





**Mid-Town Oakville  
Transportation Master Plan**

**Fluvial Geomorphological  
Assessment**

**December 11, 2013**

December 11, 2013  
WE 12043

Mark Bassingthwaite, P. Eng.  
Project Manager  
Cole Engineering Group Ltd.  
70 Valleywood Drive,  
Markham, Ontario  
L3R 4T5

Dear Mr. Bassingthwaite:

**RE: Mid Town Oakville Watercourse Crossings  
Fluvial Geomorphological Assessment**

---

Water's Edge was authorized by Cole Engineering to complete a fluvial assessment of a few watercourses in the Mid Town Oakville area. This report outlines the existing geomorphic conditions of the watercourses particularly in areas of proposed crossings.

We have completed our assessment of the creek in accordance with the approved project Terms of Reference. Data sources for the analysis include:

- Physiography of Southern Ontario by Chapman & Putnam (digital data from Ministry of Northern Development and Mines (MNDM));
- Report #43 of Ontario Soils Survey;
- Creek Erosion Inventory and Assessment Study (AECOM, 2010);
- Site Inspections and Surveys; and,
- Discussions with Cole Engineering, Town of Oakville and CH staff.

Site inspections and a geomorphic and topographic survey of Rambo Creek were completed by Water's Edge staff in January 2013. The site inspection was undertaken after an initial review of the mapping and available literature was completed in order to confirm site and general system characteristics. The Study Area (see Figure 1) is located in Oakville and is bounded by Trafalgar Road to the west, the QEW (east of the North Service Rd E) to the east and Cornwall Road to the south. The study area comprises of five locations of proposed crossings (sites A, B, C, D, and E) within regulated watercourses. The four unregulated watercourses (sites F, G, H, I and J) have not been assessed in this study. The fluvial characteristics of the regulated watercourses in the areas of the proposed crossings have been discussed in this report.

## 1.0 EXISTING CONDITIONS

### Geology & Physiography

Reviewing the site area's surficial materials is important to evaluate active channel processes. Stream channel form and sediment supply are controlled by the region's physiography and underlying surficial geology.

The site is located in the Iroquois Plain physiographic region and specifically, in shale plains. Figure 2 shows the local physiography of the study area. The characteristic feature of this physiographic region is that it was once inundated by glacial Lake Iroquois. Hence, the region has an ancient and a new shoreline belonging to Lake Ontario. The old lake in this area, built barrier beaches which once served as notable sources of sand and gravel. The soils in the study area belong to the Brady, Oneida and Fox series which exhibit a range of drainage conditions, from imperfectly drained to well drained soils. The bedrock geology of this area is of the Ordovician



period and belongs to the Georgian Bay formation which is comprised of alternating gray shale and gray carbonate hardbands. All watercourses studied are situated on shale and dolomite formations. One of the sites (Site A, see Figure 1) is located on an abandoned shoreline of previously existing Lake Iroquois.

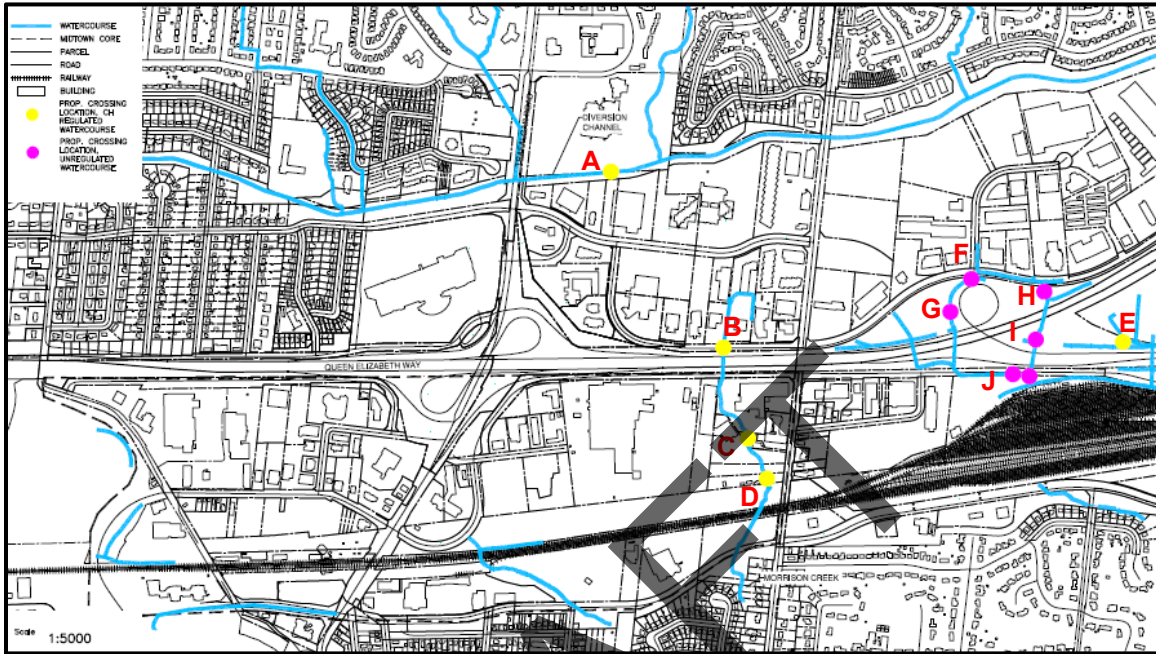


Figure 1: Location of Site (modified from drawing provided by Cole Engineering)

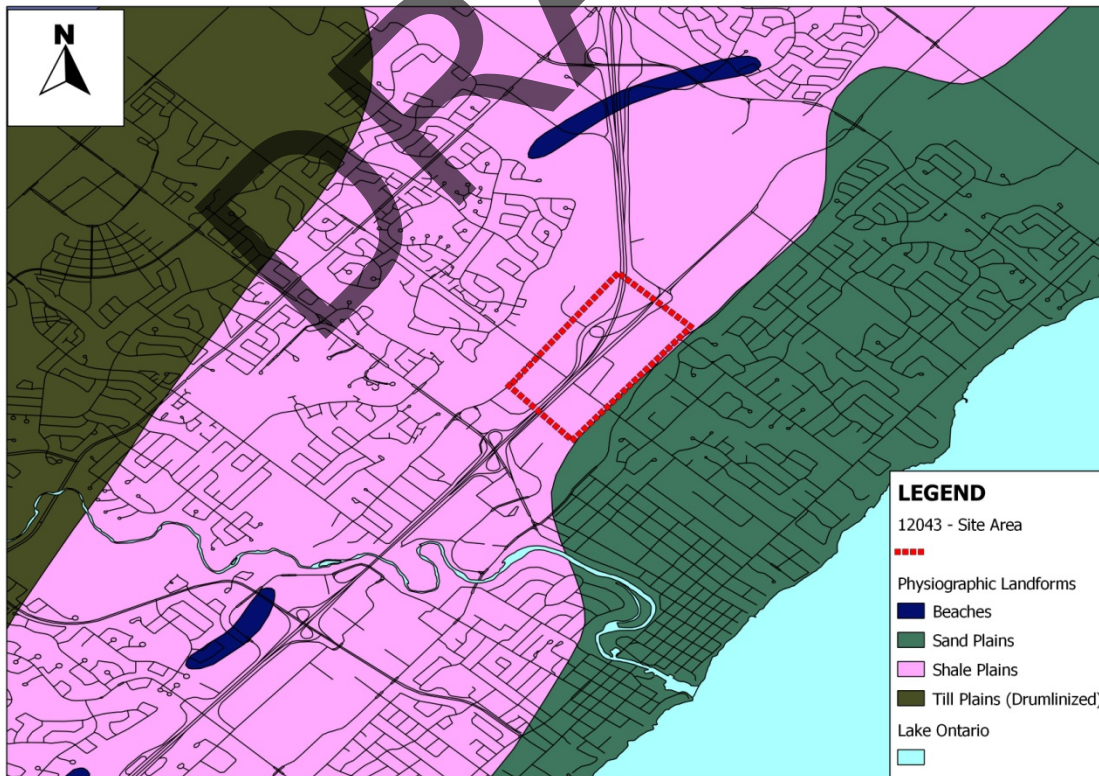


Figure 2: Local Physiography (data from MNM)

### **General Watershed Characteristics**

The study area is located in the Oakville East Urban Creeks Watershed, specifically within the Morrison and the Wedgewood sub-watersheds. The watercourses within these watersheds eventually drain into Lake Ontario. On account of the watershed being urbanized, large sections of the watercourses are enclosed. The surfacewater locations at the proposed crossings studied largely drain the urbanized mid town area of Oakville. The specifics about each site are discussed in the sections below.

### **Channel Characterization and Reach Delineation**

Channel morphology and substrate characteristics can change along a watercourse. Hence, it becomes imperative to account for these changes by delineating lengths of a watercourse that exhibit similar planform, sediment substrate, land use, local geology, valley confinement, hydrology and slope. Typically, reaches span about 200m and include at least two meander bends. Given the nature of this study, reaches were delineated based on the locations of the proposed crossings and on any physical barriers and hydraulic control locations.

A geomorphic survey was performed on all regulated watercourses. Appendix A shows photographs detailing typical channel conditions within the study area. Figures showing the longitudinal profiles and cross sections of the study reaches are provided in Appendix B.

#### **Site A**

This site is located on the Morrison Wedgewood Diversion Canal. The channel through this site is a trapezoidal concrete channel. Since this is an artificially created concrete channel, no bankfull characteristics can be assessed. However, some site characteristics can be assessed. The channel is typically 7.2 m wide and has a mean channel-full depth of 1.2 m. The channel is non-sinuuous and has a bed slope of 0.004m/m. A Rosgen classification cannot be assigned to this watercourse as it is channelized.

#### **Site B**

This site is located northwest of Hwy 403 and Eighth Line. The bankfull width of the channel is 2 m and the bankfull slope is 0.018 m/m. The channel shows moderate entrenchment and a low Width to Depth ratio. This site can be classified as a Rosgen B type channel.  
Classification

#### **Sites C and D**

These sites are located south of Hwy 403/Eighth Line on the same watercourse as the one on which site B is located. The bankfull widths at Site C and D are 2.7 m and 3.7 m, respectively. The bankfull slope through both these sites is 0.014 m/m. Both sites show a moderate entrenchment ratio. However, the Width to Depth ratio of the channel at Site C is lower than that of Site D. These sites can be classified as a Rosgen B type channel.

#### **Site E**

Site E has two identified watercourses (Main Branch and North Branch). However these are not well defined channels. Both branches do not show any bankfull indicators. In fact, they are not well developed watercourses, but largely drainage ditches. Therefore, the channel characteristics assessed are not for bankfull parameter, but for channel-full parameters. The widths associated with the main and the north branches are 9.6 m and 3 m, respectively.

The results of the observed and calculated geomorphic parameters are noted in Table 1. Stream classifications are also presented in Table 1. While classification of stream systems into relatively simple categories can be problematic, classification for the purposes of communicating a general idea of stream conditions is simple and helpful. However, the nature of the watershed and the highly altered channel conditions result in a system that may not be in equilibrium with its classification. Classification is not to be considered as a prediction for the ultimate response to existing erosion treatments. As such, this classification should be considered carefully.

Table 1: Summary of Geomorphic Parameters of Sites at Regulated Watercourses

Parameter	Site A	Site B	Site C	Site D	Site E - Main	Site E - North
<b>Bankfull Width (m)</b>	<b>7.2</b>	<b>2.0</b>	<b>2.7</b>	<b>3.7</b>	<b>9.6</b>	<b>3.0</b>
Bankfull Mean Depth (m)	1.2	0.2	0.3	0.2	0.9	0.2
Bankfull Max Depth (m)	2.0	0.3	0.4	0.4	1.9	0.3
Bankfull Area (m <sup>2</sup> )	8.7	0.4	0.9	0.7	9.0	0.5
Wetted Perimeter (m)	8.4	2.3	3.0	4.0	10.3	3.1
Hydraulic Radius (m)	1.0	0.2	0.3	0.2	0.9	0.2
Width-Depth Ratio	6.0	10.2	8.6	21.2	13.3	18.9
Entrenchment Ratio	2.5	1.8	1.6	1.6	2.1	3.2
Bankfull Slope (m/m)	0.004	0.018	0.014	0.014	0.022	0.002
Channel Substrate	Concrete Channel	Gravels and Cobbles	Gravels and Cobbles	Gravels and Cobbles	Grassed Channel	Grassed Channel
Rosgen Classification	n/a	B	B	B	B	C

## 2.0 STREAM ASSESSMENT SCORES

In addition to classification of a stream system, various techniques for geomorphic assessments are used to better understand general stream conditions (stability, habitat, erosion/degradation, riparian, etc.). In our assessment of Rambo Creek, we used Rapid Geomorphic Assessment and Rapid Stream Assessment Technique. The creek was divided into two sections for this assessment: upstream and downstream of the culvert at Cavendish Drive. The raw worksheets for these assessments can be found in Appendix C.

### Rapid Geomorphic Assessment (RGA)

Creek stability was assessed using a Rapid Geomorphic Assessment (MOE, 2003). The RGA assessment focuses entirely on the geomorphic component of a river system. The RGA method consists of four factors that summarize various components of channel adjustment, specifically: aggradation, degradation, channel widening and plan form adjustment. Each factor is assessed separately and the total score indicates the overall stability of the system. This methodology has been applied to numerous streams and rivers and the following table details the ranking criteria (see Table 2).

RGA was not carried out for Site A since it is completely channelized. RGA for Site E was also not carried as the two branches of watercourses are essentially drains without the definition of a stream. Typically, RGA is performed on natural watercourses. The scores for Sites B, C, and D is 0.25. The watercourses at these sites are "Transitional" or "Stressed". The detailed RGA evaluation is presented in Appendix C.



**Table 2: Interpretation of RGA Score**

Stability Index (SI) Value	Classification	Interpretation
SI ≤ 0.20	In Regime	The channel morphology is within a range of variance for rivers of similar hydrographic characteristics and evidence of instability is isolated or associated with normal river meander processes.
0.21 ≤ SI ≤ 0.40	Transitional/Stressed	<b>Channel morphology is within a range of variance for rivers of similar hydrographic characteristics but the evidence of instability is frequent.</b>
SI ≥ 0.40	In Adjustment	<b>Channel morphology is not within the range of variance and evidence of instability is wide spread.</b>

**Rapid Stream Assessment Technique (RSAT)**

Rapid Stream Assessment Technique was developed by John Galli and other staff of the Metropolitan Washington (DC) Council of Governments (Galli et al, 1996). The RSAT systematically focuses on conditions reflecting aquatic-system response to watershed urbanization. It groups responses into six categories, presumed to adequately evaluate the conditions of the river system at the time of measurement on a reach-by-reach basis. The six categories are:

1. Channel stability;
2. Channel scouring and sediment deposition;
3. Physical in-stream habitat;
4. Water quality;
5. Riparian habitat conditions; and
6. Biological conditions.

River channel stability and cross-sectional characterization is a critical component of RSAT. The entire channel was inspected for signs of instability (such as bank sloughing, recently exposed non-woody tree roots, general absence of vegetation within bottom third of the bank, recent tree falls, etc.) and channel degradation or downcutting (such as high banks in small headwater streams and erosion around man-made structures). Observations were noted and cross-section measurements were made.

A rapid assessment of soil conditions along the river banks is also conducted to determine soil texture and potential erodibility of the watercourse bank. Qualitative water quality measurements were also made (temperature, turbidity, colour and odour) along with an indication of substrate fouling (i.e., the unwanted accumulation of sediment).

RSAT also typically involves a quantitative sampling and evaluation of benthic organisms. As no benthic sampling was undertaken, the score was based on site conditions and general observations of water quality.

Each category was assigned a value which was then summed to provide an overall score and ranking. Table 3 details the range of scores and rankings with a higher score suggesting a healthier system.

Within these broad categories, we evaluated the study area and determined RSAT scores of 25 in Site A and 35 for the remaining sites. Since Site E did not show a well defined channel and

was more of a ditch, RSAT assessment was not performed for this site. The low score for Site A is largely due to the presence of a concrete channel which reduces the physical in-stream habitat score.

The results of the RSAT evaluation are included in Appendix C.

**Table 3: Interpretation of RSAT Score**

<b>RSAT Score</b>	<b>Ranking</b>
41-50	Excellent
<b>31-40</b>	<b>Good</b>
<b>21-30</b>	<b>Fair</b>
11-20	Poor
0-10	Degraded

### **3.0 SUMMARY**

In order to carry out a fluvial assessment, geomorphic surveys of Sites A, B, C, D and E were carried out. As such, all sites area was determined to show characteristics of a Rosgen B channel. Two assessment tools, namely, RSAT and RGA, were used to assess stream condition. RSAT scores show that the stream is generally in a good state for all sites except Site A which was determined to be in a fair state. RGA scores for Sites B, C, and D indicates that these sites are in transition as is the case with most urban stream trying to achieve quasi-equilibrium.

Our field investigations indicate that the bankfull/channel-full widths for Sites A, B, C, D, E-Main Branch and E – North Branch are 7.2 m, 2 m, 2.7 m, 3.7 m, 9.6 m, and 3 m, respectively

Respectfully submitted,

Ed Gazendam, M.Eng., P.Eng.,  
President, Sr. Geomorphologist

**Water's Edge Environmental Solutions Team Ltd.**

**References:**

Galli, J. 1996, *Rapid Stream Assessment Technique (RSAT) field methods*. 36 pp. Metropolitan Washington Council of Governments, Department of Environmental Programs, Washington, DC.

Ontario Ministry of Environment. March 2003. *Stormwater Management Planning and Design Manual*. Chapter 3.

Platts, W.S., W.F. Megahan, and G.W. Minshall. 1983. *Methods for evaluating stream, riparian, and biotic conditions*. U.S. Department of Agriculture, Forest Service, General Technical Report INT-138.

**Attachments:**

- Appendix A: Photographs
- Appendix B: Profile and Cross Sections
- Appendix C: Stream Assessment Worksheets

DRAFT





Fluvial Geomorphology

Natural Channel Design

Stream Restoration

Monitoring

Erosion Assessment

Sediment Transport

DRRAFT

## APPENDIX A: Photographs

### Oakville Mid- Town, Various Watercourses



PHOTOGRAPH NO.: 1  
FROM: Site A  
LOOKING: Upstream  
COMMENT:



PHOTOGRAPH NO.: 2  
FROM: Site A  
LOOKING: Downstream  
COMMENT:





PHOTOGRAPH NO.: 3  
FROM: Site B  
LOOKING: Downstream  
COMMENT:



PHOTOGRAPH NO.: 4  
FROM: Site B  
LOOKING: Upstream  
COMMENT:





PHOTOGRAPH NO.: 5  
FROM: Site C  
LOOKING: North of the parking lot  
COMMENT: Reach 1



PHOTOGRAPH NO.: 6  
FROM: Site C  
LOOKING: North towards culvert  
COMMENT:





PHOTOGRAPH NO.: 7  
FROM: Site D  
LOOKING:  
COMMENT:



PHOTOGRAPH NO.: 8  
FROM: Site D  
LOOKING:  
COMMENT:





PHOTOGRAPH NO.: 9  
FROM: Site E  
LOOKING: at confluence of Main and North Branch  
COMMENT:



PHOTOGRAPH NO.: 10  
FROM: Site E  
LOOKING: at Main Branch  
COMMENT:



Fluvial Geomorphology

Natural Channel Design

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Monitoring

Erosion Assessment

Sediment Transport

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## **APPENDIX B: Profile, Cross Sections**

## **Oakville Mid- Town, Various Watercourses**



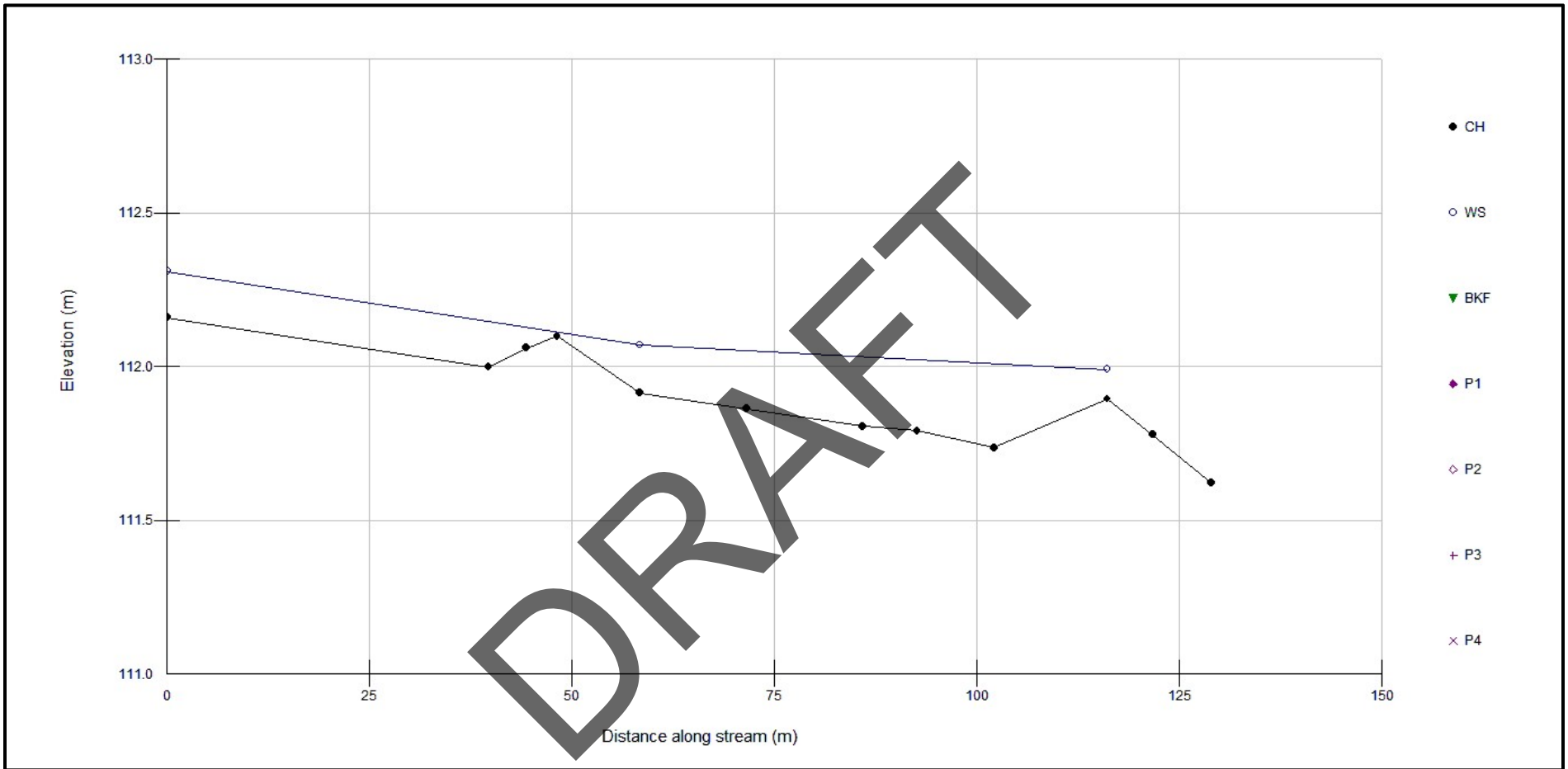


Figure 1: Longitudinal Profile Watercourse at Site A



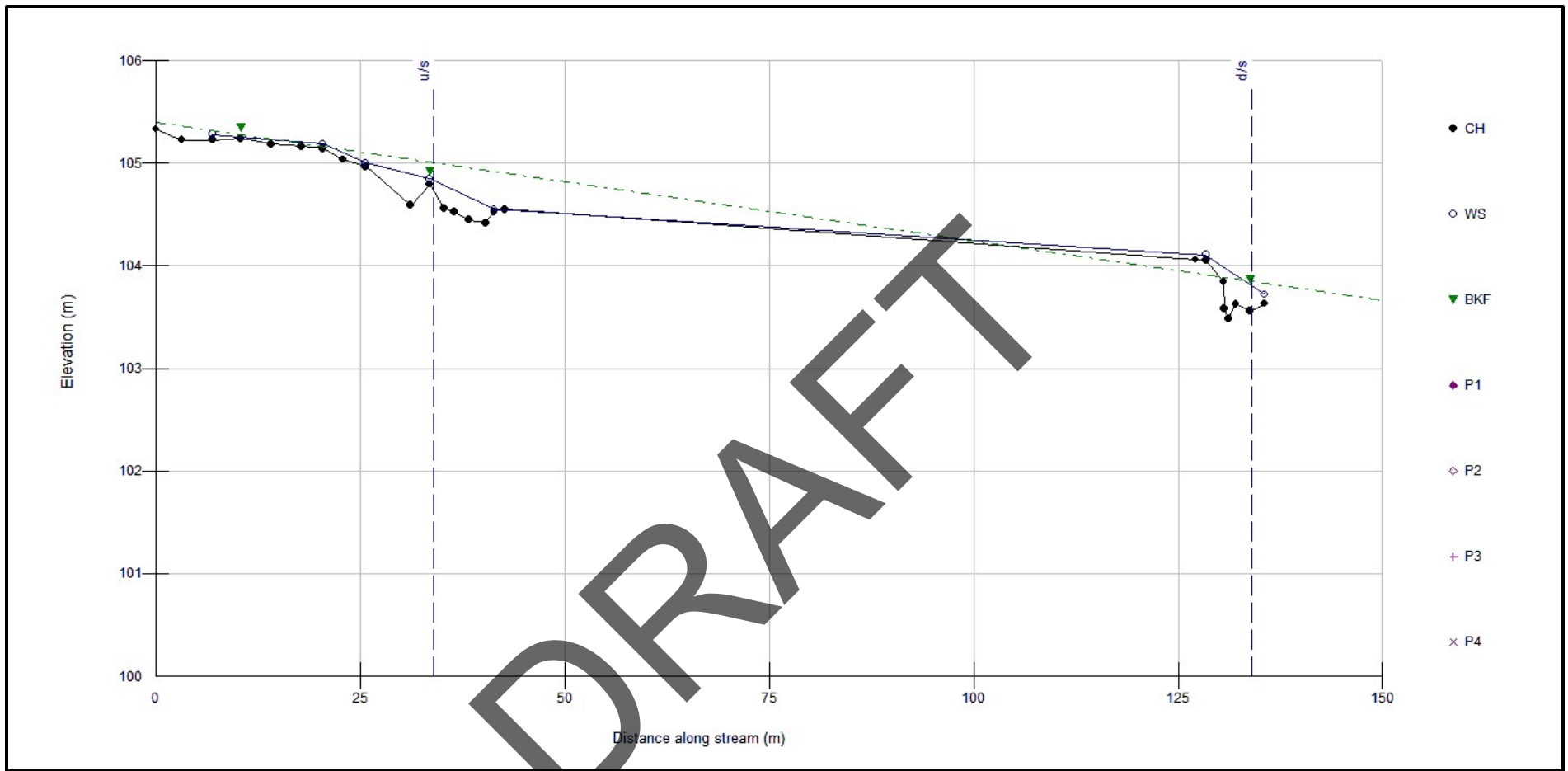


Figure 2: Longitudinal Profile Watercourse at Site B

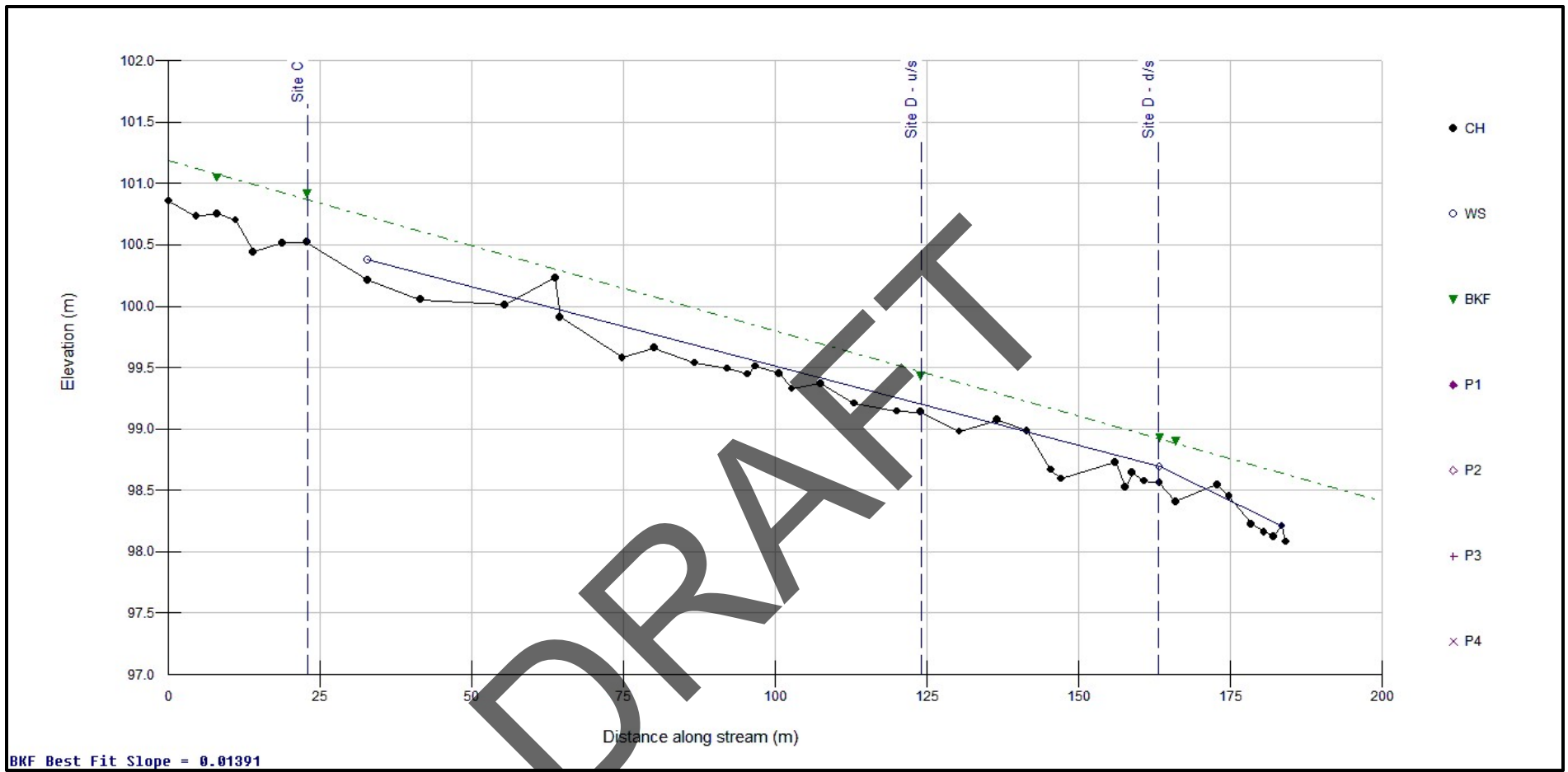


Figure 3: Longitudinal Profile Watercourse at Site C and D

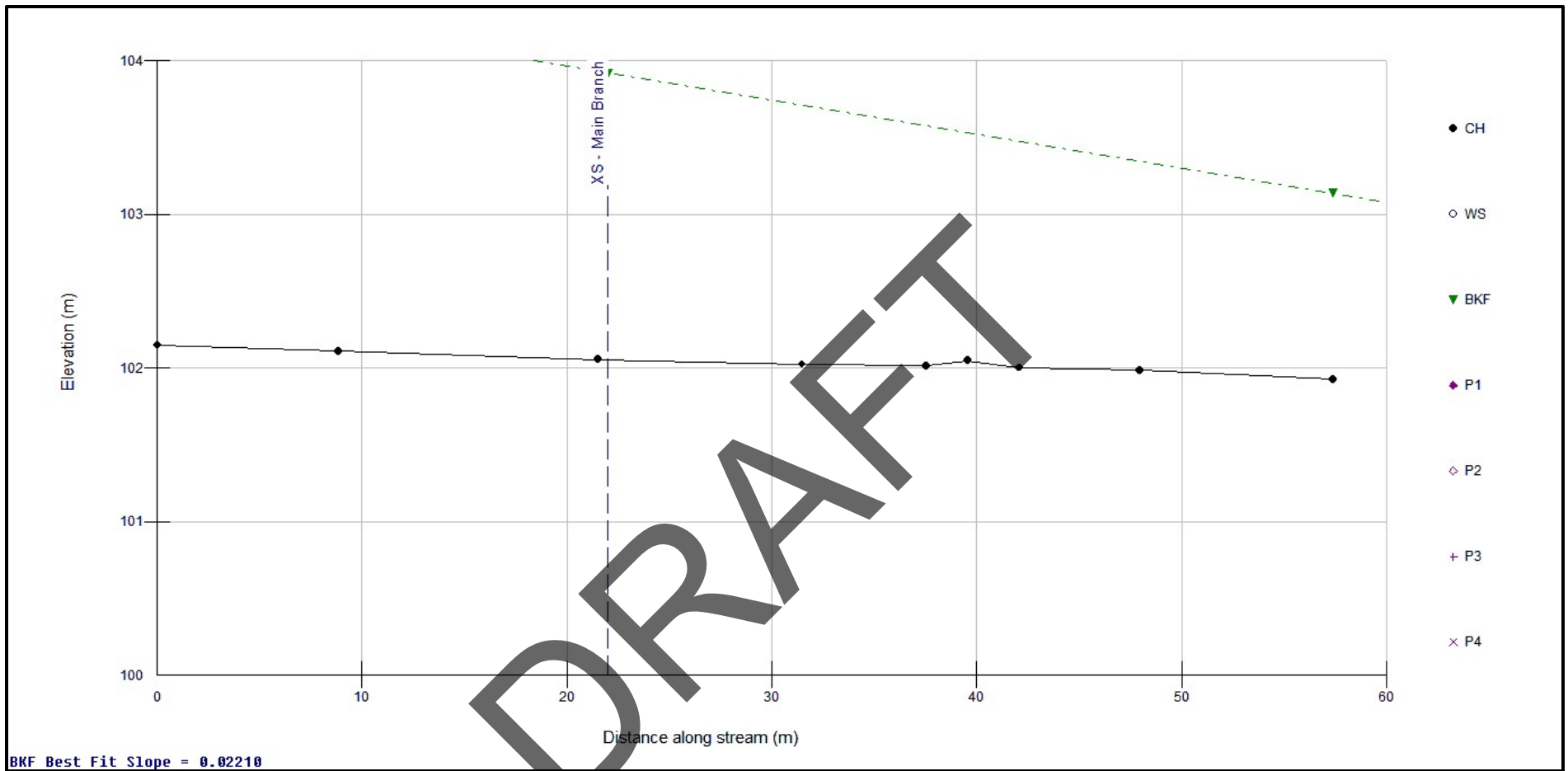


Figure 4: Longitudinal Profile Watercourse at Site E - Main Branch

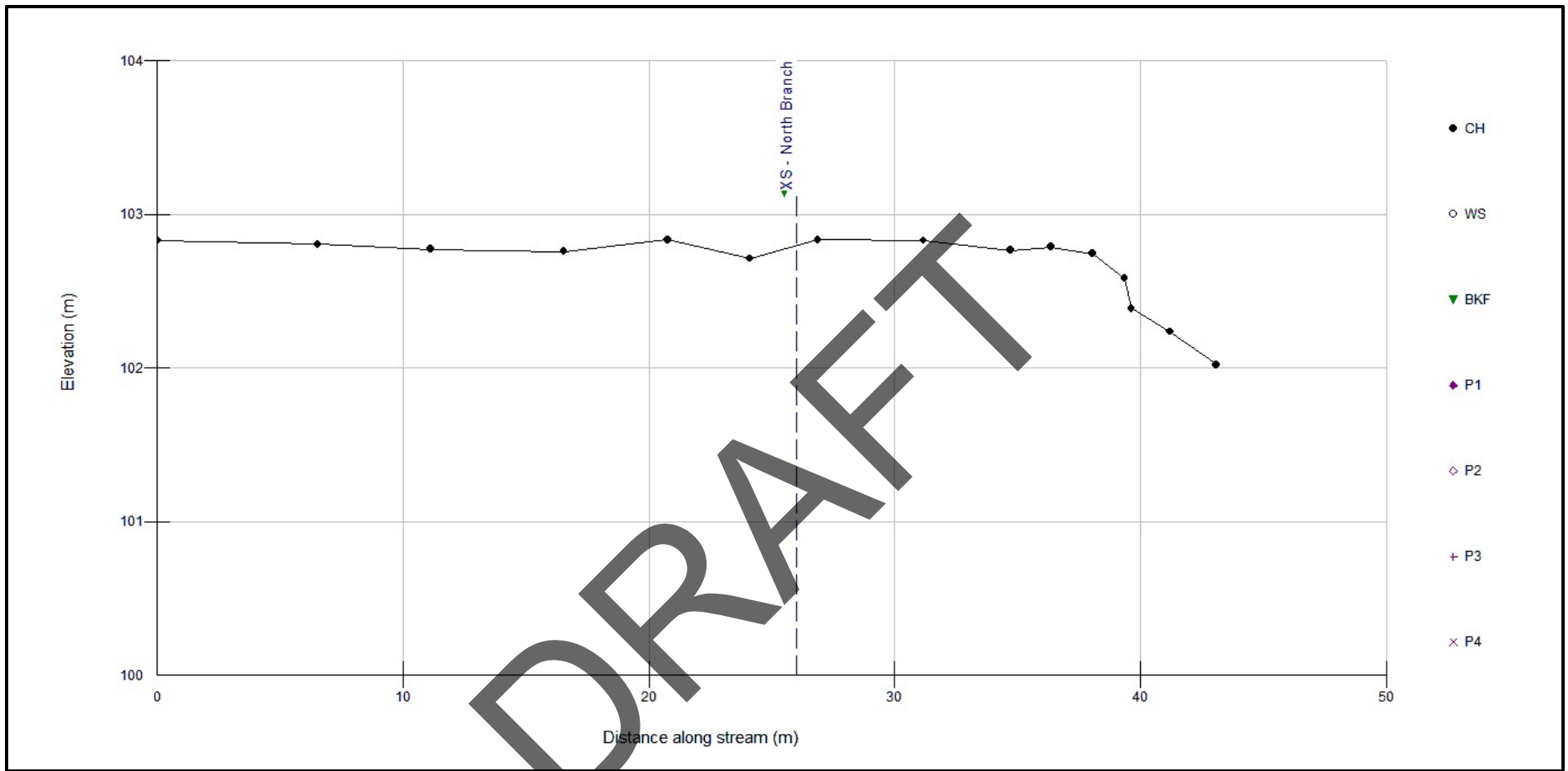


Figure 5: Longitudinal Profile Watercourse at Site E – North Branch

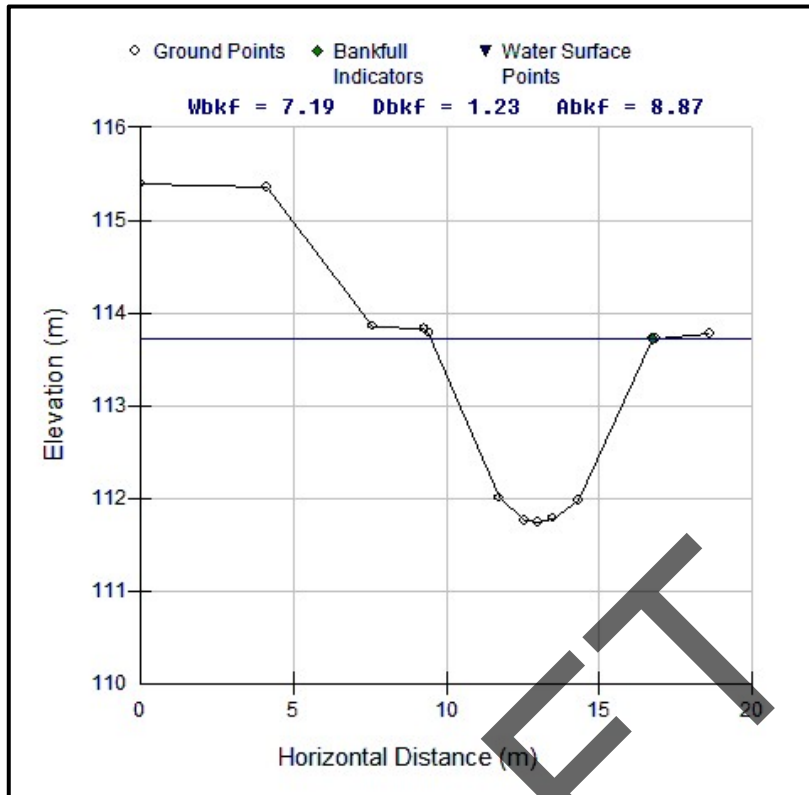


Figure 6: Site A XS DS

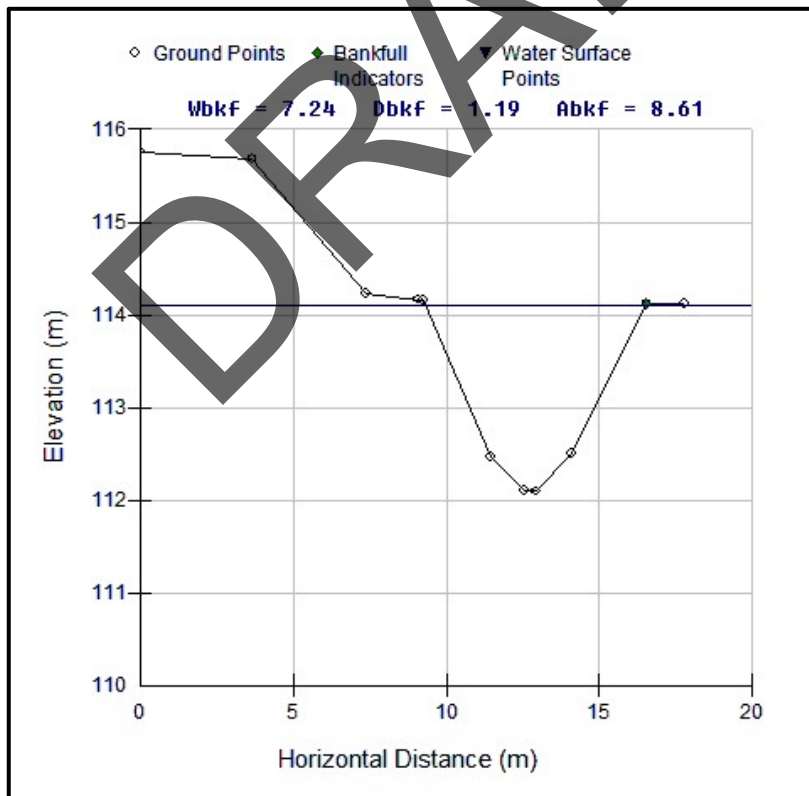


Figure 7: Site A XS US

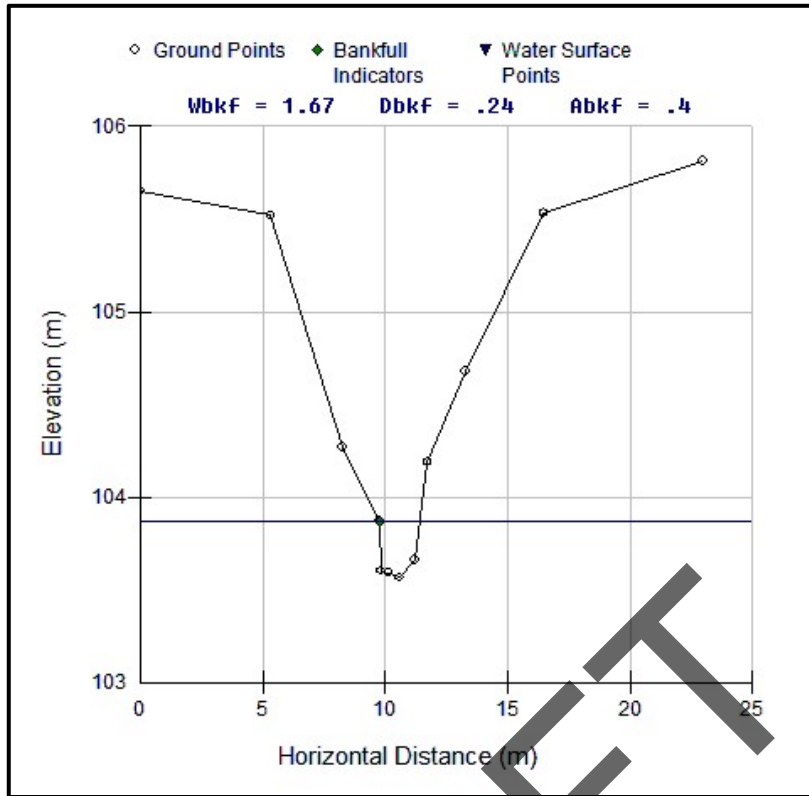


Figure 8: Site B XS DS

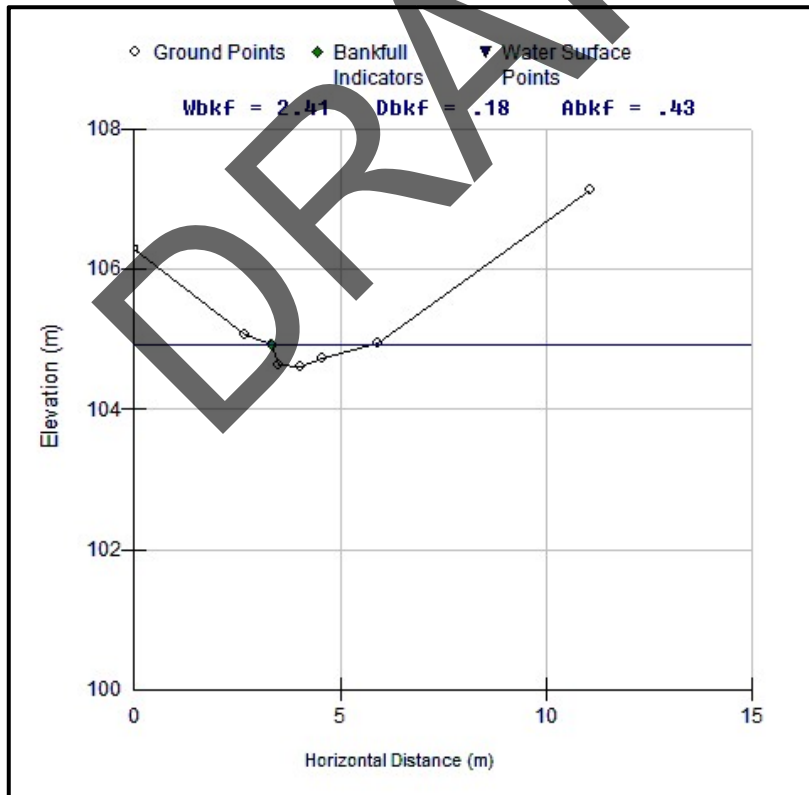


Figure 9: Site B XS US

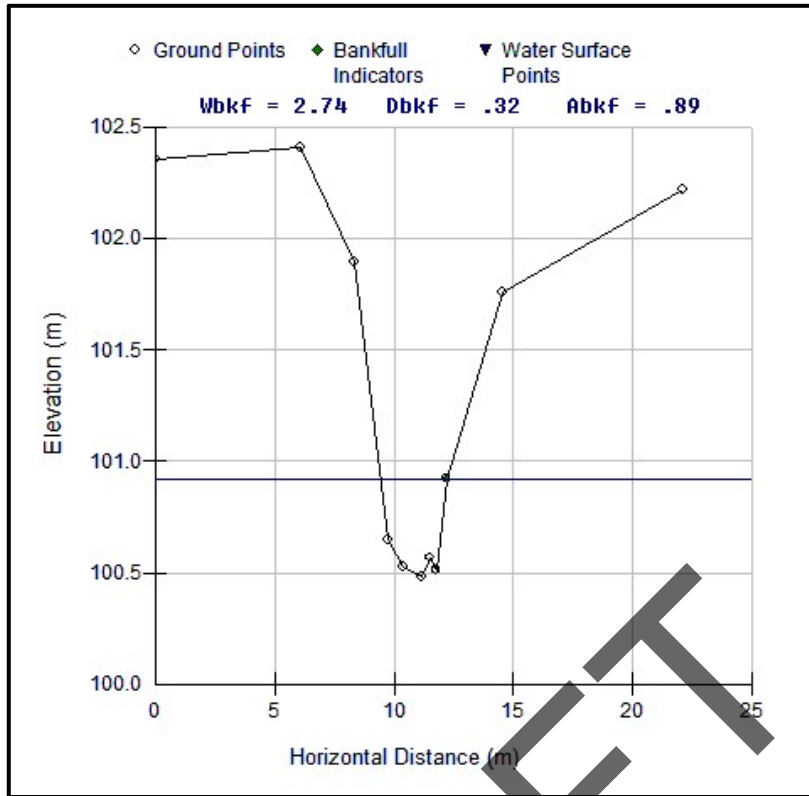


Figure 10: Site C XS

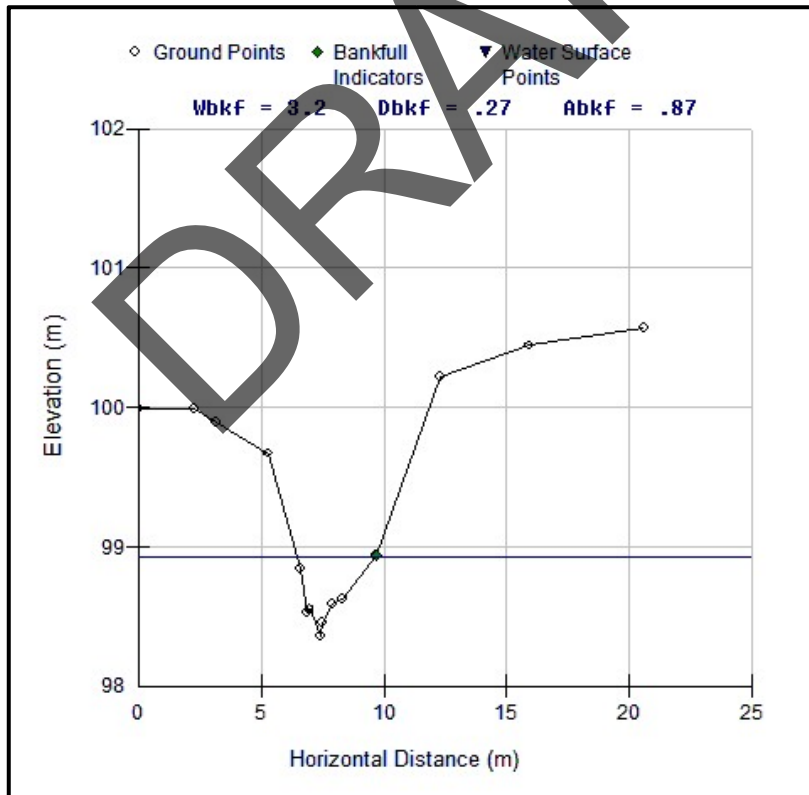


Figure 11: Site D XS US

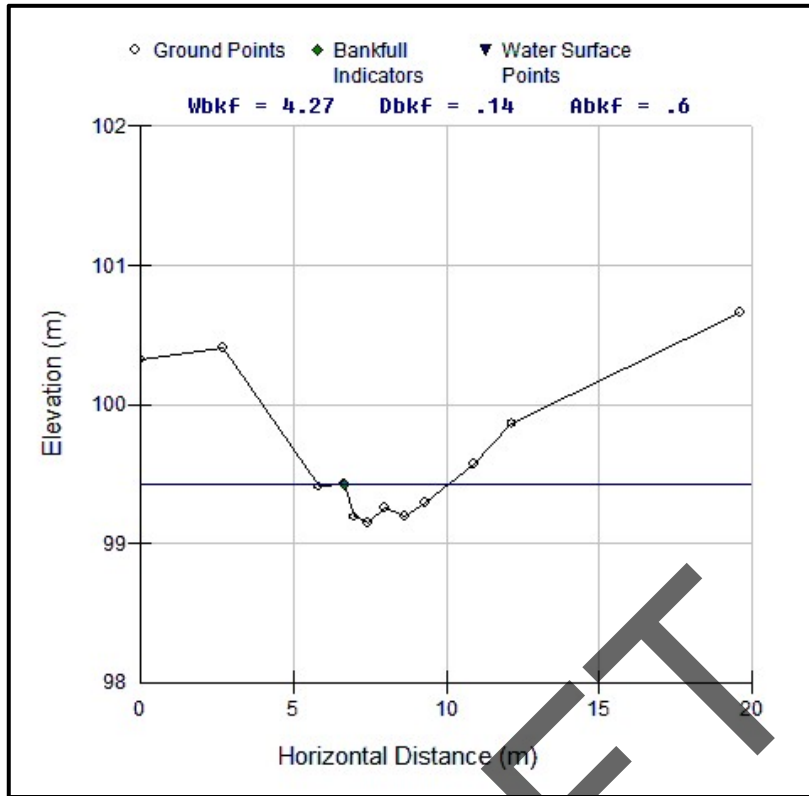


Figure 12: Site D XS DS

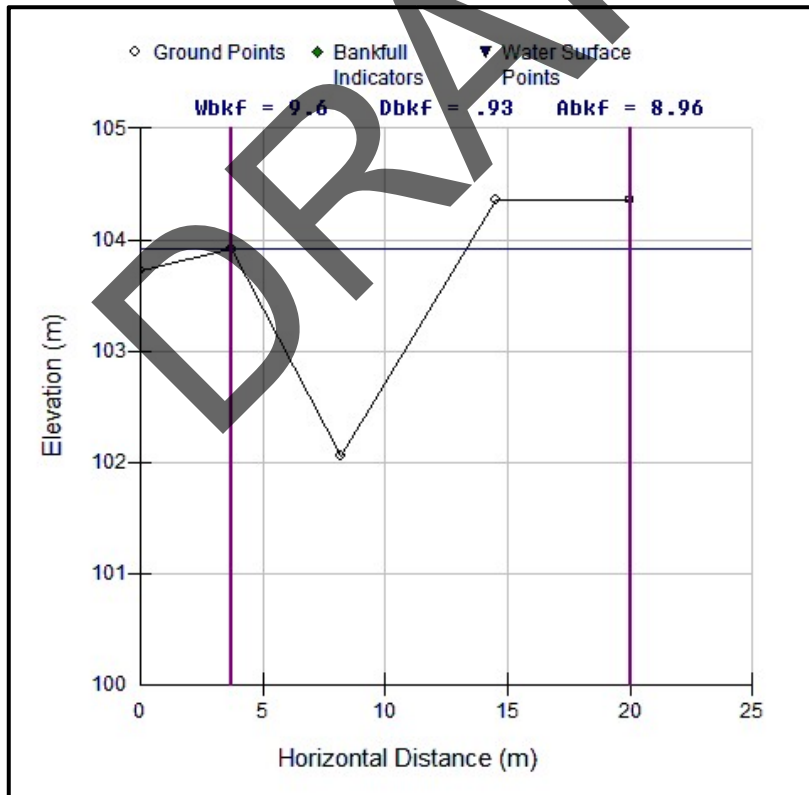


Figure 13: Site E XS Main Branch



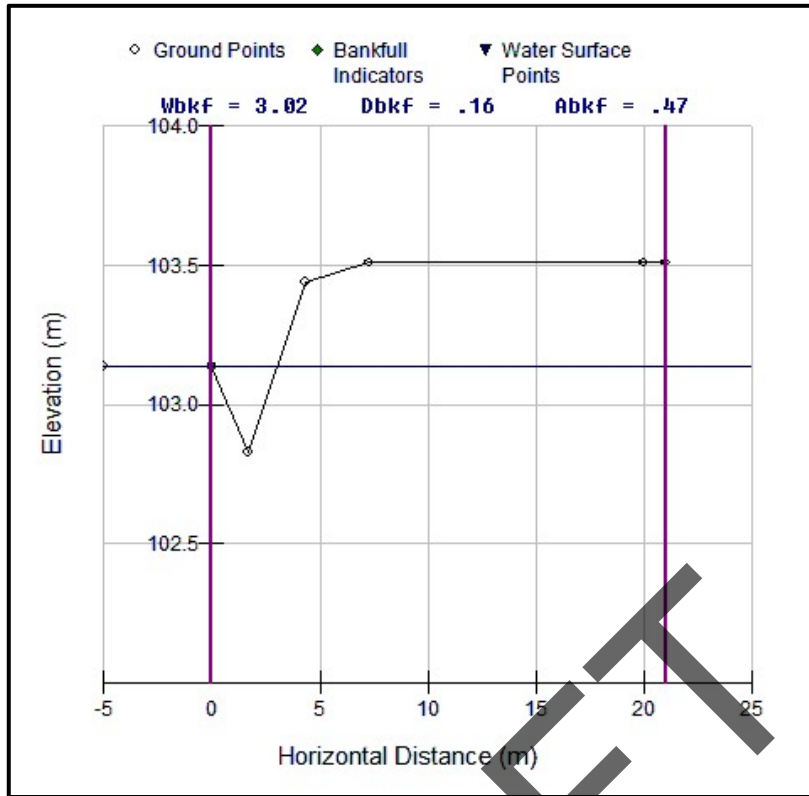


Figure 14: Site E XS North Branch

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## APPENDIX C:

### Rapid Field Assessments

### Oakville Mid- Town, Various Watercourses

# RAPID STREAM ASSESSMENT TECHNIQUE



Creek Name: Various Watercourses, Oakville

Assessor: CB

RSAT Evaluation Category	General Verbal Rating Categories and Associated Point Range				
	Excellent	Good	Fair	Poor	Points
1. Channel Stability	9-11	6-8	3-5	0-2	7
2. Channel Scouring/Deposition	7-8	5-6	3-4	0-2	4
3. Physical Instream Habitat	7-8	5-6	3-4	0-2	6
4. Water Quality	7-8	5-6	3-4	0-2	6
5. Riparian Habitat Conditions	6-7	4-5	2-3	0-2	5
6. Biological Indicators	7-8	5-6	3-4	0-2	8

RSAT Score	Ranking
41-50	Excellent
31-40	Good
21-30	Fair
11-20	Poor
0-10	Degraded

Evaluation Category

Site A Site B Site C Site D Site E

1 Channel Stability

9	9	9	9	n/a				
---	---	---	---	-----	--	--	--	--

2 Channel Scour and Sediment Deposition

7	8	8	8	n/a				
---	---	---	---	-----	--	--	--	--

3 Physical In-stream Habitat

2	6	6	6	n/a				
---	---	---	---	-----	--	--	--	--

4 Water Quality

5	6	6	6	n/a				
---	---	---	---	-----	--	--	--	--

5 Riparian Habitat Conditions

2	2	2	2	n/a				
---	---	---	---	-----	--	--	--	--

6 Biological Indicators

0	4	4	4	n/a				
---	---	---	---	-----	--	--	--	--

<b>Total Score:</b>	25	35	35	35	n/a			
---------------------	----	----	----	----	-----	--	--	--

<b>Verbal Ranking:</b>	Fair	Good	Good	Good	n/a			
------------------------	------	------	------	------	-----	--	--	--

# Rapid Geomorphic Assessment



Evaluator: CB  
Stream: Various Sites in Oakville

Form / Process	Geomorphic Indicator		Site Number:					
	No	Description	A	B	C	D	E-Main	E-North
Evidence of Aggradation (AI)	1	Lobate bar	0	0	0	0	0	0
	2	Coarse material in riffles embedded	0	1	1	1	0	0
	3	Siltation in pools	0	1	1	1	0	0
	4	Medial bars	0	0	0	0	0	0
	5	Accretion on point bars	0	1	1	1	0	0
	6	Poor longitudinal sorting of bed materials	0	1	1	1	0	0
	7	Deposition in the overbank zone	0	1	1	1	0	0
		<b>Sum of Indices</b>	0.00	0.71	0.71	0.71	0.00	0.00
Evidence of Degradation (DI)	1	Exposed bridge footing(s)	0	0	0	0	0	0
	2	Exposed sanitary/storm sewer/pipeline/etc.	0	0	0	0	0	0
	3	Elevated storm sewer outfall(s)	0	0	0	0	0	0
	4	Undermined gabion baskets/concrete aprons/etc.	0	0	0	0	0	0
	5	Scour pools d/s of culverts/storm sewer outlets	0	0	0	0	0	0
	6	Cut face on bar forms	0	0	0	0	0	0
	7	Head cutting due to knick point migration	0	0	0	0	0	0
	8	Terrace cut through older bar material	0	0	0	0	0	0
	9	Suspended armour layer visible in bank	0	0	0	0	0	0
	10	Channel worn into undisturbed overburden/bedrock	0	0	0	0	0	0
	<b>Sum of Indices</b>	0.00	0.00	0.00	0.00	0.00	0.00	
Evidence of Widening (WI)	1	Fallen/leaning trees/fence posts/etc.	0	1	1	1	0	0
	2	Occurrence of large organic debris	0	1	1	1	0	0
	3	Exposed tree roots	0	1	1	1	0	0
	4	Basal scour on inside meander bends	0	0	0	0	0	0
	5	Basal scour on both sides of channel through riffle	0	0	0	0	0	0
	6	Gabion baskets/concrete walls/etc. out flanked	0	0	0	0	0	0
	7	Length of basal scour >50% through subject reach	0	0	0	0	0	0
	8	Exposed length of previously buried pipe/cable/etc.	0	0	0	0	0	0
	9	Fracture lines along top of bank	0	0	0	0	0	0
	10	Exposed building foundation	0	0	0	0	0	0
	<b>Sum of Indices</b>	0.00	0.30	0.30	0.30	0.00	0.00	
Evidence of Planimetric Form Adjustment (PI)	1	Formation of cut (s)	0	0	0	0	0	0
	2	Single thread channel to multiple channel	0	0	0	0	0	0
	3	Evolution of pool-riffle form to low bed relief form	0	0	0	0	0	0
	4	Cutoff channel(s)	0	0	0	0	0	0
	5	Formation of island(s)	0	0	0	0	0	0
	6	Thalweg alignment out of phase meander form	0	0	0	0	0	0
	7	Bar forms poorly formed/reworked/removed	0	0	0	0	0	0
	<b>Sum of Indices</b>	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Stability Index (SI) = ( AI + DI+ WI+ PI) /m</b>			n/a	0.25	0.25	0.25	0.00	0.00

General Comments:

**APPENDIX H**  
**Natural Heritage Report**

# DRAFT NATURAL HERITAGE REPORT

## MIDTOWN OAKVILLE CLASS ENVIRONMENTAL ASSESSMENT

*prepared for:*



*prepared by:*



March 2014

**TABLE 4. SUMMARY OF IMPACTS AND SITE-SPECIFIC MITIGATION**

Name	Fish Habitat	Existing Works	Proposed Works	Net Environmental Effects	DFO Screening	Site Specific Mitigation
					require alteration of indirect fish habitat.	conveyance measures or low impact stormwater options.
Morrison Wedgewood Diversion Channel	Direct, Warmwater	None	<ul style="list-style-type: none"> <li>• Crossing Structure</li> </ul>	<ul style="list-style-type: none"> <li>• Alteration of direct fish habitat resulting from the installation of a new crossing structure</li> </ul>	<ul style="list-style-type: none"> <li>• Likely to be exempt, given the new structure design follows the site specific mitigation measures.</li> <li>• May be subject to MNR Screening for effects to Species at Risk.</li> </ul>	<ul style="list-style-type: none"> <li>• Crossing structure should clear span the watercourse.</li> <li>• No earth fill placed below the high water mark.</li> </ul>

### **Tributary 1 of Lower Morrison Creek**

The proposed footprint of the road may encroach on the riparian habitat of this tributary. This may affect or have the potential to affect direct warmwater fish habitat of low sensitivity. The footprint does not appear to also affect the ditch feature which contributes flow from east of the channel. Proposed works adjacent to this feature will be subject to mitigation measures described below, beginning in **Section 4.2.1**. Works are likely subject to DFO screening to determine if “*Serious Harm*” to fish will occur from the proposed works depending on the nature of the work being done in the vicinity of the channel. Site specific mitigation in addition to general mitigation measures at Tributary 1 of Lower Morrison Creek should include maintaining the existing seasonal groundwater or wetland surface flows. If works are to directly affect the channel and realignment is required, natural channel design should be incorporated.

The wetted depression and CH regulated areas which occur to the northeast of this channel are expected to be affected by the road improvements. As shown in **Figure 2**, and described above in **Section 2.2.1**, there is a circular area in the centre of Midtown Oakville that is within the Conservation Halton Regulation Limit and a small, wet depression is also present within this area, which is not fish habitat. According to the preferred design, a road will cross this depression and regulation limit, and a permit will likely be required under O. Reg. 162/06. Environmental mitigation measures would be at the discretion of Conservation Halton and depend on the nature of the regulated area.

### **Tributary 2 of Lower Morrison Creek**

The proposed road footprint appears to directly affect Tributary 2 of Lower Morrison Creek. The proposed work will cross this feature and will result in alterations to indirect warmwater fish habitat. The alteration to this watercourse will likely not affect downstream fish habitat given mitigation measures described below, beginning in **Section 4.2.1** are followed. Works also are likely to be exempt from DFO screening to determine if “*Serious Harm*” to fish will occur from the proposed works due to the indirect habitat classification. Site specific mitigation in addition to general mitigation measures at Tributary 2 of Lower Morrison Creek should include maintaining the form and flow of the watercourse feature.

### **Tributary 1 of Lower Wedgewood Creek**

The proposed new road structures have the potential to affect the west (upstream) section of Tributary 1 of Lower Wedgewood. It is unknown what the specific impacts will be (if any), however, based on the EA design drawings, the new road footprint will encroach on this watercourse. This tributary is direct warmwater fish habitat and therefore, any work has the potential to result in a “*Serious Harm*” to fish and will therefore will be subject to mitigation measures described below, beginning in **Section 4.2.1**. Works also are likely subject to DFO screening and site specific mitigation measures. Site specific mitigation in addition to general mitigation measures at Tributary 1 of Lower Wedgewood Creek should include maintaining existing seasonal groundwater or wetland surface flows. If realignment is required for works, natural channel design measures should be incorporated.

### **QEW Ditch System (Ditch Feature 3)**

The proposed new road structure has the potential to affect the Tributary of Lower Wedgewood Creek Ditch Feature 3. It is unknown what the specific impacts will be (if any). However, this tributary is classified as indirect warmwater fish habitat and therefore, any work has the potential to result in “*Serious Harm*” to fish and will therefore be subject to mitigation measures described below, beginning in **Section 4.2.1**. Works also are likely to be exempt from DFO screening to determine if “*Serious Harm*” to fish will occur from the proposed works due to the indirect habitat classification. Site specific mitigation in



addition to general mitigation measures at this watercourse should include the replication of functions via lot level conveyance measures or the implementation of low impact stormwater options.

### **Morrison-Wedgewood Diversion Channel**

The proposed new road structure appears to directly affect the Morrison-Wedgewood Diversion Channel. The proposed work will cross this feature and will result the alteration of direct warmwater fish habitat; therefore it has the potential to result in “*Serious Harm*” to fish. As described above in **Section 2.2.3.**, the Morrison-Wedgewood Diversion Channel within the study area is warmwater fish habitat of low sensitivity; however, this channel indirectly contributes flow to Sixteen Mile Creek which is managed as Redside Dace (*Clinostomus elongatus*) and Silver Shiner (*Notropis photogenis*) habitat.

Works at this crossing are likely to be exempt from DFO screening to determine if “*Serious Harm*” to fish will occur from the proposed works, given the following conditions are met; the crossing structure should clear span the watercourse, and no earth fill is to be placed below the high water mark. This crossing is also subject to general mitigation measures described below, beginning in **Section 4.2.1.**

The proposed works should be reviewed by MNR to determine if an ESA 17(2)(c) Permit will be required under the Endangered Species Act, 2007 due to the presence of Redside Dace downstream in Sixteen Mile Creek. The fish community found in this section of the Morrison-Wedgewood Diversion Channel is isolated from the downstream fishery by a large drop occurring at Trafalgar Road.

### **Process for Determination of Serious Harm to Fish**

“*Serious Harm*” to fish can be assessed based on the following effects:

- temporary disruption or permanent loss of site-specific habitat;
- changes to water quality and quantity;
- changes in water temperature; and,
- barriers to fish passage.

In cases where DFO Screening is not required, the following best management practices are still to be followed to avoid “*Serious Harm*” to fish.

#### **4.2.1 Temporary Disruption or Permanent Loss of Site-Specific Habitat**

Some of the proposed improvement works may involve in-water work. At all locations where in-water work is proposed, cofferdams (pea gravel bags, sheetpiles, etc.) will be used to isolate the work area from the watercourse to enable work to be done in-the-dry. Flow will be maintained through either damming and pumping or a flume. If possible, work should be done during the driest part of the year when no flow is present. This will minimize disturbance to fish habitat at the site and downstream. To further reduce the potential for Serious Harm, the following environmental protection measures will be implemented:

- no in-water work (or work on watercourse banks) will be permitted from April 1 to June 30 to protect spawning warmwater fish, incubating eggs and fry emergence;
- work areas will be delineated with construction fencing to minimize the area of disturbance;
- best management practices and special provisions will be employed to reduce impacts during construction;

- appropriate sediment control structures will be installed prior to and maintained during construction to prevent entry of sediments into the watercourse: these controls will be dynamic and may evolve with the project if site conditions warrant;
- where cofferdams are to be employed, dewatering effluent will be treated prior to discharge to receiving watercourse;
- cofferdams will be constructed using pea gravel bags, sheet piling or other appropriate material to isolate the work area: flow will be maintained at all stations;
- only clean material free of particulate matter will be placed in the watercourse;
- fish isolated by construction activities (if present) will be captured and safely released to the watercourse;
- good housekeeping practices related to materials storage/stockpiling, equipment fuelling/maintenance, etc. will be implemented during construction;
- disturbed riparian areas will be vegetated and/or covered with an erosion control blanket as quickly as possible to stabilize the banks and minimize the potential for erosion and sedimentation;
- no construction machinery or vehicles will cross any watercourse at any time during construction; and,
- all debris/materials associated with works will be contained and prevented from entering the watercourse.

These environmental protection measures will greatly reduce the potential for adverse effects to fish and fish habitat resulting from construction activities and are in addition to those outlined in **Table 4**.

#### **4.2.2 Temporary Change to Water Quality**

The construction associated with the proposed works has the potential to alter water quality through on-site erosion of exposed materials and the subsequent impairment of downstream water quality with sediments and other contaminants.

Changes to water quality will be mitigated through the isolation of the works areas behind cofferdams, the treatment of effluent from dewatering prior to its release back into the receiving watercourses and the deployment and maintenance of standard erosion and sediment controls (silt fencing, straw bale flow checks, etc.) which will prevent sediments from reaching the watercourses from exposed soils upslope. In addition, all exposed areas will be vegetated as quickly as possible once work is completed.

#### **4.2.3 Changes in Water Temperature**

The thermal regime of a receiving watercourse may be altered by removal of riparian vegetation that shades the watercourse. Coldwater or coolwater streams are usually considered more sensitive to changes in water temperature than warmwater streams. All watercourses affected within this study area are classified as warmwater.

As stated above, any riparian vegetation that is negatively affected by the proposed works will be replaced as soon as possible following completion of works. It is expected that temperatures will not increase as a result of the proposed works.

#### **4.2.4 Barriers to Fish Passage**

All new culverts/bridges will be designed to maintain fish passage within the watercourse.

**TABLE 6. KEY WILDLIFE MOVEMENT AREAS**

<b>Location</b>	<b>Watercourse</b>	<b>Description</b>	<b>Target Wildlife Group</b>	<b>Target OR</b>
North of Iroquois Shore Road and East of Trafalgar Road	Morrison Creek/Wedgewood Creek Diversion Channel	East-west oriented concrete lined diversion channel. Vegetated riparian areas provide wildlife habitat. Morrison Creek valleylands (east of White Oaks Boulevard) contribute to local wildlife assemblage.	Small and large animals (northern racoon, Virginia opossum, coyote etc.)	0.6
South of South Service Road and west of Chartwell Road	Tributary 2 of Lower Morrison Creek	North-south oriented channel; however, additional natural areas (e.g., cultural woodland, cultural meadow) found in the vicinity of this crossing.	Small animals (northern racoon, Virginia opossum etc.)	0.05

**4.4.2.1 Wildlife Passage Design Consideration**

Openness ratio (OR) is a calculation which is used to determine the tunnel effect created by a structure and thus the likelihood wildlife species would utilize that structure. This evaluation is completed by analysing a structure’s component measurements (i.e., height x width / structure length). Generally, a greater openness ratio value is expected to increase the likelihood of wildlife utilization of a given structure or culvert. To maximize the openness ratio, structures should be designed to have a larger opening and the shortest length as possible, since wildlife species are more likely to enter a culvert if they can see light at the other end.

Minimum OR was determined by a review of secondary source data regarding wildlife passage at road crossings (Clevenger et al. 2001). The minimum OR for small animals should be 0.05 and the minimum OR for large animals (e.g., coyote and deer) should be 0.6. In addition, natural substrates should be used to encourage wildlife to utilize crossing structures. Ground cover should be continuous with the substrates found outside and adjacent to the structural entrances thereby encouraging animals to pass through the structure (Yanes et al. 1995).

Funnel and/or barrier fencing, in conjunction with an appropriately sized crossing structure can be used to guide wildlife to a given crossing structure and reduce road-mortality. However, some studies have found increases in road-mortality when funnel/barrier fencing was utilized (Mccollister and Van Manen 2010). Given the complexities of fence erection in heavily urbanized areas (such as the study area) installation of funnel/barrier fencing may not be feasible; however, the feasibility of funnel/barrier fencing should be further explored during the detail design phase of the project.

**4.4.3 Wildlife/Vehicle Conflicts**

The proposed improvements to the transportation network in Midtown Oakville will result in an increase in the extent of road network and consequently an increased risk of mortality for wildlife that elects to cross roads. The existing road network poses a potential barrier to wildlife movement. While the increase in extent of road network will result in increased exposure of wildlife to vehicle conflicts, the potential increase in wildlife mortality above existing conditions is considered minor.

## **APPENDIX I**

### **Statement of Limiting Conditions and Assumptions**

## Statement of Limiting Conditions and Assumptions

1. This Report/Study (the “Work”) has been prepared at the request of, and for the exclusive use of, the Owner, and its affiliates (the “Intended Users”). No one other than the Intended Users has the right to use and rely on the Work without first obtaining the written authorization of Cole Engineering Group Ltd. (Cole Engineering) and its Owner.
2. Cole Engineering expressly excludes liability to any party except the Intended Users for any use of, and/or reliance upon, the Work.
3. Cole Engineering notes that the following assumptions were made in completing the Work:
  - a) the land use description(s) supplied to us are correct;
  - b) the surveys and data supplied to Cole Engineering by the Owner are accurate;
  - c) market timing, approval delivery and secondary source information is within the control of Parties other than Cole Engineering; and
  - d) there are no encroachments, leases, covenants, binding agreements, restrictions, pledges, charges, liens or special assessments outstanding, or encumbrances which would significantly affect the use or servicing.

Investigations have not been carried out to verify these assumptions. Cole Engineering deems the sources of data and statistical information contained herein to be reliable, but we extend no guarantee of accuracy in these respects.

4. Cole Engineering accepts no responsibility for legal interpretations, questions of survey, opinion of title, hidden or inconspicuous conditions of the property, toxic wastes or contaminated materials, soil or sub-soil conditions, environmental, engineering or other factual and technical matters disclosed by the Owner, the Client, or any public agency, which by their nature, may change the outcome of the Work. Such factors, beyond the scope of this Work, could affect the findings, conclusions and opinions rendered in the Work. We have made disclosure of related potential problems that have come to our attention. Responsibility for diligence with respect to all matters of fact reported herein rests with the Intended Users.
5. Cole Engineering practices engineering in the general areas of infrastructure and transportation. It is not qualified to and is not providing legal or planning advice in this Work.
6. The legal description of the property and the area of the site were based upon surveys and data supplied to us by the Owner. The plans, photographs, and sketches contained in this report are included solely to aide in visualizing the location of the property, the configuration and boundaries of the site, and the relative position of the improvements on the said lands.
7. We have made investigations from secondary sources as documented in the Work, but we have not checked for compliance with by-laws, codes, agency and governmental regulations, etc., unless specifically noted in the Work.
8. Because conditions, including capacity, allocation, economic, social, and political factors change rapidly and, on occasion, without notice or warning, the findings of the Work expressed herein, are as of the date of the Work and cannot necessarily be relied upon as of any other date without subsequent advice from Cole Engineering.
9. The value of proposed improvements should be applied only with regard to the purpose and function of the Work, as outlined in the body of this Work. Any cost estimates set out in the Work are based on construction averages and subject to change.
10. Neither possession of the Work, nor a copy of it, carries the right of publication. All copyright in the Work is reserved to Cole Engineering. The Work shall not be disclosed, produced or reproduced, quoted from, or referred to, in whole or in part, or published in any manner, without the express written consent of Cole Engineering and the Owner.
11. The Work is only valid if it bears the professional engineer’s seal and original signature of the author, and if considered in its entirety. Responsibility for unauthorized alteration to the Work is denied.