WILMOT EMPLOYMENT LANDS INDUSTRIAL SUBDIVISION

Preliminary

Stormwater Management Report

Project Location:
Part of Lot 20, Concession North of Bleams Road and
Part Lot 19, Concession North Bleams Road,
North of Highway 7 & 8
Township of Wilmot
Regional Municipality of Waterloo

Prepared for:
Badenview Developments Inc.
P.O. Box 249
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and
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December 17, 2018

MTE File No.: 34896-104
39219-104

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1.0 INTRODUCTION

1.1 Overview

MTE Consultants Inc. (MTE) was retained by Badenview Developments Inc. and New Hamburglrs Inc. to prepare the following Preliminary Stormwater Management Report in support of two Draft Plan of Subdivision applications. The Badenview and New Hamburglrs properties are referred to herein as the 'subject lands'. For the purposes of this report the two draft plans will be reviewed as one cohesive development. The subject lands are located within what is commonly referred to as the Wilmot Employment Lands in the Town of New Hamburg, Township of Wilmot.

The Wilmot Employment Lands (WEL) are comprised of 2 parcels of land, formerly known as the Good Lands and the Schneider Lands. The Good Lands is owned by Badenview Developments Inc. (BDI) and the Schneider Lands is owned by New Hamburglrs Inc. (NHI). Refer to **Figure 1.1** for the location of the subject lands.

The subject lands comprise a total area of approximately 55.38ha, of which 42.07ha represents the BDI lands, 9.90ha represents the NHI lands, 2.70ha represents additional lands owned by NHI (potential MTO interchange), and 0.71ha of unopened road allowance. It should be noted that approximately 11.50ha of woodlot was recently transferred to the Township of Wilmot. The subject lands are proposed to be developed as an industrial subdivision with approximately 19 industrial blocks, municipal right-of-way's, and a stormwater management block. A Draft Plan of Subdivision for each of the proposed developments has been prepared by MHBC Planning (dated November 22, 2018 – Good Lands and dated November 22, 2018 – Schneider Lands) and forms the basis for the proposed servicing concepts (See **Appendix A**).

This report presents the stormwater management quality, quantity and erosion control measures that are proposed to be provided for the development. This report should also be read in conjunction with the *Wilmot Employment Lands – Functional Servicing Repor*t (December 17, 2018 prepared by MTE).

1.2 Background Information

An *Enhanced Master Drainage Plan* (EMDP) was undertaken for the Wilmot Employment Lands by the Township of Wilmot. The EMDP was completed in May 2012 and approved by the Township of Wilmot, Region of Waterloo, the Grand River Conservation Authority and the Ministry of Transportation of Ontario. Prior to the EMDP, a holding provision on the zoning was implemented by the Township of Wilmot and the GRCA due to floodplain constraints within the subject lands. The purpose of the EMDP was to release this holding provision and prepare a comprehensive stormwater management (SWM) strategy for the contributing subwatershed. While the EMDP was not completed under an Environmental Assessment (EA) process, one Public Information Centre (PIC) was held to inform the general public of the study.

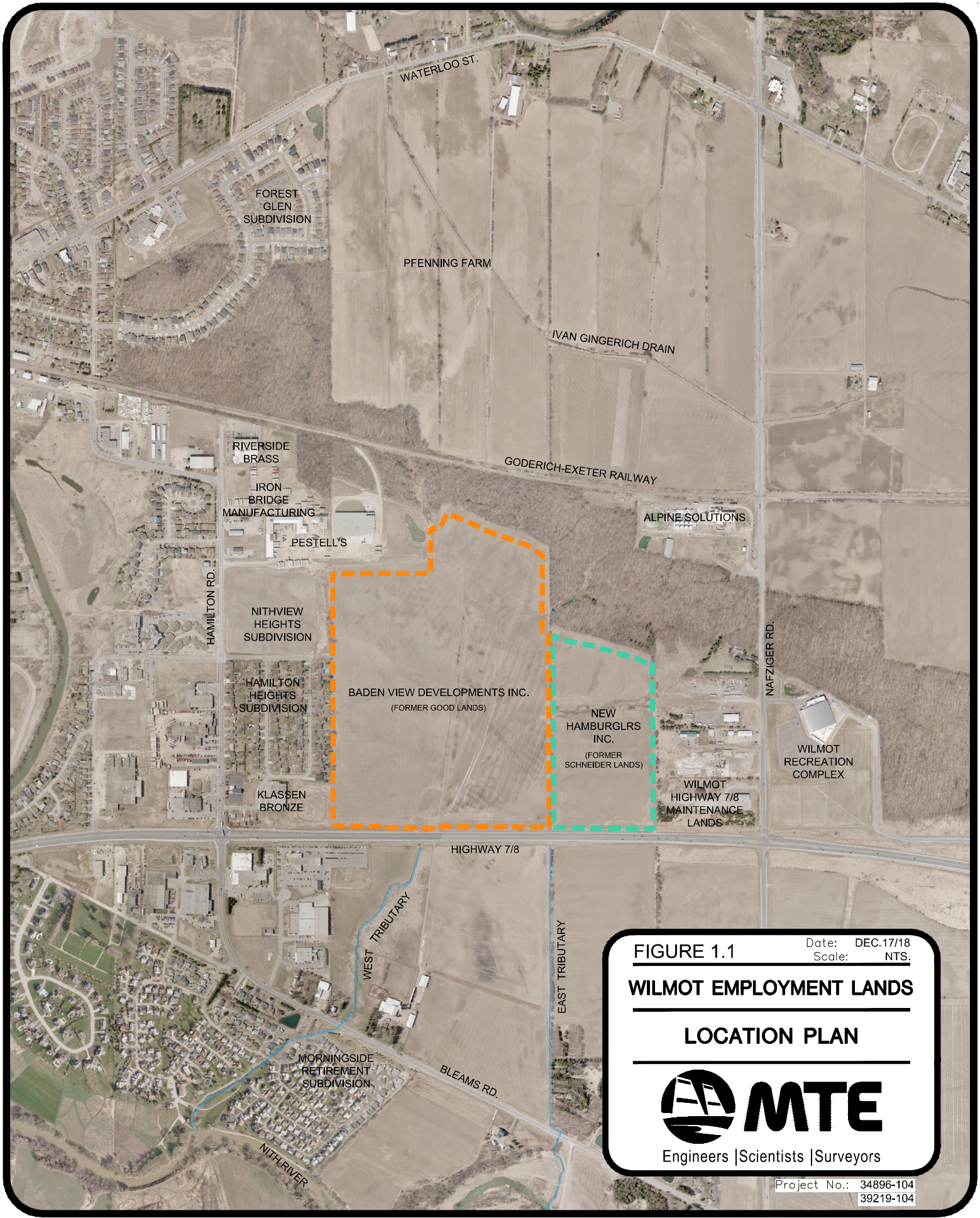

FIGURE 1.1

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WILMOT EMPLOYMENT LANDS

LOCATION PLAN

MTE
Engineers | Scientists | Surveyors

Project No.: 34896-104
39219-104

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Purpose of Study

The purpose of this report is to prepare a Stormwater Management strategy for the subject lands which implements the approved *Wilmot Employment Lands - Enhanced Master Drainage Plan,* taking the findings of previous studies into consideration, and that is acceptable to the Township of Wilmot, Region of Waterloo (Region), the Grand River Conservation Authority (GRCA), Ministry of the Environment, Conservation and Parks (MECP), and the Ministry of Transportation of Ontario (MTO).

Objectives

The objective of this stormwater management plan is to ensure that the proposed development includes the necessary controls to protect the hydrology and water quality of the receiving water systems. Further, this plan also ensures that the proposed draft plan provides the necessary blocks and corridors for stormwater management measures. The primary objectives of this study are as follows:

- Document criteria for the management of stormwater runoff from the study area.
- Recommend a comprehensive plan for controlling the quality of stormwater runoff from the study area.
- Recommend a comprehensive plan for controlling the quantity of stormwater runoff from the study area.
- Prepare preliminary designs for the recommended stormwater management infrastructure.

2.0 EXISTING CONDITIONS AND BACKGROUND INFORMATION

2.1 Topographical Information

The subject lands consist of approximately 55.38ha and are generally bounded by existing industrial and residential lands to the west, Highway 7&8 to the south, industrial lands and the Wilmot Recreation Complex facility to the east, and a woodlot / Goderich-Exeter Railway corridor to the north. An unopened road allowance that connects to Nafziger Road bisects the NHI lands. Currently, the majority of the WEL is under interim agricultural use pending development. MTE conducted a detailed topographical survey of the WEL lands in 2018. Existing site conditions and topography for the subject property is shown on Error! Reference source not found., as well as the enclosed MTE Drawing No. **EC1.1**.

The subject lands are moderately sloped, generally ranging from 0.5% to 10%. Existing elevations within the lands range from 332.6m at the south end of the property to approximately 344.0m. There are currently 2 culverts along the southern property line of the WEL that cross Highway 7&8. The western culvert is a 1.5m x 1.5m concrete box which discharges runoff across Highway 7&8 to the West Tributary, and the eastern culvert is a 1.2m x 1.2m concrete box that discharges to the East Tributary. Both of these watercourses are tributary to the Nith River.

LEGEND

- PROPERTY BOUNDARY
- EXISTING CONTOURS (326.0)
- EXISTING DRIPLINE
- EXISTING WATERMAIN
- EXISTING SANITARY
- EXISTING STORM
- HAND HOLE (HH#0A8)
- MONITORING WELL (MW101-10)
- BOREHOLE (BH 4)
- TEST PIT (TP 202)
- EXISTING REGULATORY FLOODPLAIN (GRCA)
- EXISTING REGULATION LIMIT (GRCA)
- EXISTING WATERCOURSE (GRCA)
- EXISTING WETLAND (GRCA)

RIVERSIDE BRASS

IRON BRIDGE MANUFACTURING

PESTELL'S

PFENNING FARM

GODERICH-EXETER RAILWAY

EX. WETLAND

ALPINE SOLUTIONS

STREMMA DEVELOPMENTS

NAFZIGER ROAD

CAPTAIN McCARLUM DRIVE

NITHVIEW HEIGHTS SUBDIVISION

BOULLEE STREET

BADENVIEW DEVELOPMENTS INC.
(FORMER GOOD LANDS)

HAMILTON HEIGHTS SUBDIVISION

HAMILTON ROAD

GOOD STREET

MAURICE STREET

KLASSEN BRONZE

NEW HAMBURGLRS INC.
(FORMER SCHNEIDER LANDS)

WILMOT RECREATION COMPLEX

WILMOT HIGHWAY 7/8 MAINTENANCE LANDS

HIGHWAY 7 & 8

HAMILTON CULVERT
900mmØ

WESTERN CULVERT
1530x1530mm

EASTERN CULVERT
1200x1200mm

WEST TRIBUTARY

EAST TRIBUTARY

MPZ-1
MPZ-2
MPZ-3
MW1-10
MW101-10
MW102-18
Piez. Elev.=336.763
Ground Elev.=336.06
MW103-18
Piez. Elev.=335.726
Ground Elev.=339.60
MW104-18
Piez. Elev.=339.722
Ground Elev.=339.03
MW105-18
Piez. Elev.=341.273
Ground Elev.=340.48
MW106-18
Piez. Elev.=340.731
Ground Elev.=339.81
MW107-18
Piez. Elev.=339.190
Ground Elev.=338.379
MW203-18
Piez. Elev.=333.72
Ground Elev.=334.19
MW204-18
Piez.Elev.=341.572
Ground Elev.=340.79
MW205-18
Piez. Elev.=339.889
Ground Elev.=339.03
BH1-11
BH2-11
BH3-11
BH4-11
BH5-11
BH6-11
BH7-11
BH8-11
BH9-11
BH10-11
BH11-11
BH12-11
BH12-18
Elev.=344.255
BH111-18
BH108-18
Elev.=340.048
BH109-18
Elev.=337.869
BH111-18
Elev.=340.113
BH115-18
Elev.=336.824
BH117-18
Elev.=339.577
BH118-18
Elev.=338.957
BH119-18
Elev.=345.297
BH205-18
Elev.=343.309
BH206-18
Elev.=338.894
TT1-11
TT2-11
TT3-11
TT4-11
TT5-11
TT6-11
TT7-11
TT8-11
TT9-11
TT10-11
TT11-11

FIGURE 2.1

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WILMOT EMPLOYMENT LANDS

EXISTING CONDITIONS PLAN

MTE
Engineers | Scientists | Surveyors

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2.2 Pre-Development Conditions

The subject lands drain to two surface water tributaries named the West Tributary and the East tributary. As described in the EMDP, the West Tributary was the primary focus of that study following its' entire path from headwaters to ultimate discharge point. Whereas, only the northern portion of the Eastern Tributary was studied. This report will continue with the same approach. Refer to **Figure 2.2** and **Figure 2.2** for exact locations of the tributaries including pre-development catchment areas.

The headwaters of the West Tributary start north of the GEXR rail line and also include properties to the east of Nafziger Road. Runoff from these external lands is conveyed through the subject lands by a series of tile drains discharging into a 1.5m x 1.5m concrete box culvert under Highway 7&8, located near the southwest corner of the BDI Lands. This Tributary is then conveyed through a natural channel, across agricultural lands, crossing Bleams Road and through the Morningside Retirement Community before finally discharging into the Nith River.

The West Tributary has a total catchment area of approximately 210.18ha, and consists of agricultural, commercial, industrial, residential, and open space land uses. Of this total area approximately 161ha are located upstream (north) of Highway 7&8. Stormwater runoff from the northern lands is conveyed through various 'watercourses' which eventually confluence at the subject lands through six inlet points. Following is a description of each inlet point:

Inlet #1
This watercourse conveys approximately 38.29ha (catchments 101 to 109) of land consisting of agricultural, future residential, industrial lands, a large woodlot and wetland area. At the top of this inlet are future residential lands (Pfenning Farm) north of the GEXR railway in which runoff is conveyed through a 900mm diameter culvert under the GEXR rail corridor. Storm water runoff generated from the neighboring Pestell's industrial is conveyed to an on-site SWM facility, which outlets to an existing ditch inlet catchbasin (DICB) located at the southeast corner of the property. This DICB is connected to an existing 300mm diameter tile drain which flows through the subject lands.

Inlet #2
This watercourse consists primarily of a large woodlot and the western side of the Alpine Solutions industrial property, totaling 15.15ha (catchments 110 & 111). Alpine Solution has an existing on-site SWM facility which discharges into the woodlot. Storm water runoff is conveyed overland through the woodlot through a drainage channel and drains to an existing ditch inlet catchbasin (DICB) located near the northeastern corner of the BDI and NHI border. This DICB is connected to an existing 200mm diameter tile drain.

Inlet #3
This is another watercourse which conveys approximately 35.99ha (Catchments 112 to 116) of existing agricultural lands, woodlot, and the Wilmot Recreation Complex on the east side of Nafziger Road. Storm water runoff from these areas are conveyed through existing culverts under Nafziger Road, one to the north near the GEXR and the other to the south near the Recreation Complex entrance. These areas confluence with the east side of Alpine Solutions Industrial site, a woodlot and additional industrial lots bisecting the NHI Lands to an existing catchbasin (CB) located at roughly the midway point along the eastern property line of the BDI Lands. This CB is connected to an existing 250mm diameter tile drain. The east side of Alpine Solutions (catchment 113) and the Wilmot Recreation Complex (catchment 115) both have an on-site SWM facility, prior to discharge into the watercourse.

Note:
Inlet #1 through Inlet #3 are connected to a large network of tile drains located within the BDI Lands. Alpine Solutions has recently hired R.J. Burnside and Associates Limited to undertake a study to establish municipal drains upstream of Inlet # 2 and Inlet #3.

Inlet #4
This inlet is located on the western side of the subject lands with an approximate area of 1.22ha (catchments 118 & 119). Overland flow from a portion of the future road allowance from Hamilton Road and a small area of the Nithview Heights Subdivision discharge overland onto the subject lands.

Inlet #5
This inlet is located at the dead end of Boullee Street on the west limit of the BDI Lands. It conveys a small area of 1.08ha (catchment 120) consisting of rear yards from the neighbouring Hamilton Heights Subdivision through overland flow onto the subject lands.

Inlet #6
This inlet consists of approximately 10.51ha (catchments 160 & 161) and includes the Hamilton Heights Subdivision and Klassen Bronze industrial property. These properties are collected through an internal storm sewer network and conveyed via a 600mm diameter storm sewer. This outlet is located in a servicing easement at the southwest corner of the BDI Lands and discharges into the roadside ditch which runs toward the western culvert at Highway 7&8. It should be noted that catchment 170 contributes some additional flow for storm events greater than the 50 year. Inlet #6 by-passes the subject lands for minor storm events.

The headwaters of the East Tributary start east of Nafziger Road in which runoff is conveyed through a drainage ditch, in parallel with Highway 7&8, through the NHI Lands and discharging into a 1.2m x 1.2m concrete box culvert under Highway 7&8. The runoff continues down a natural channel, though agricultural lands, crossing Bleams Road and ultimately discharging into the Nith River.

As mentioned previously, the East Tributary was only studied north of Highway 7&8. The catchment area north of Highway 7&8 is approximately 17.84 ha (catchments 150 to 152), consisting of the recreational fields located east of Nafziger Road; industrial lands located at the northeast corner of Nafziger Road and Highway 7&8 intersection; the southern portion of the NHI Lands; and the southeast corner of the BDI Lands.

A hydrologic model was created for the WEL as part of the EMDP using SYMHYMO modeling platform. Quantitative estimated flows were simulated for the 4 hour-25mm and Regional (48 hour) storm events, along with 2 through 100 year return period 3 hour Chicago design storms. The EMDP used the Region of Waterloo's (DGSSMS) intensity-duration-frequency (IDF) parameters for analysis of the 12 hour SCS Type II rainfall distribution. However, through discussion with the Township of Wilmot it was requested to use the IDF parameters of the City of Kitchener. The model was re-analyzed for each of the storm events listed above with the City of Kitchener parameters, using the MIDUSS modeling platform, to create a new baseline. A summary of pre-development peak runoff rates for the EMDP model and updated model is shown on **Table 2.1**.

TABLE 2.1 – ATTENUATED PRE-DEVELOPMENT PEAK RUNOFF RATES (M^3/S)

Storm Event	Western Tributary				Eastern Tributary	
	EMDP		MTE 2018		EMDP	MTE 2018
	Culvert	Split east	Culvert	Split east	Culvert incl. split	Culvert incl. split
25 mm	1.630		**1.305**		0.400	**0.157**
2 Year	3.450		**1.659**		0.900	**0.274**
5 Year	4.960		**3.079**		1.420	**0.515**
10 Year	5.700		**3.931**		1.740	**0.740**
25 Year	6.770		**4.905**		2.170	**1.050**
50 Year	7.080	2.550	**5.518**		2.740	**1.290**
100 Year	7.220	5.590	**6.593**		4.230	**1.534**
Regional	7.500	11.100	**7.170**	**9.491**	12.680	**10.291**

The table above shows the attenuated flows for the respective culvert (under Highway 7&8) of the West and East Tributaries. As seen above, the pre-development peak flow rates using the City of Kitchener IDF parameters are lower than the EMDP model.

A summary of the pre-development catchment parameters and *MIDUSS* modelling has been included in **Appendix B**.

LEGEND

- PROPERTY BOUNDARY
- EXISTING CONTOURS (326.0)
- EXISTING REGULATORY FLOODPLAIN (GRCA)
- EXISTING REGULATION LIMIT (GRCA)
- EXISTING WATERCOURSE (GRCA)
- WEST TRIBUTARY CATCHMENT AREA
- EAST TRIBUTARY CATCHMENT AREA
- EXISTING INLETS
- 112 / 7.31 — SUB-CATCHMENT NUMBER / AREA (ha.)

102 12.07
103 2.08
104 2.02
RIVERSIDE BRASS
105 3.57
IRON BRIDGE MANUFACTURING
106 1.28
107 2.85
108 5.92
109 5.53
PESTELL'S
PFENNING FARM
GODERICH-EXETER RAILWAY
900mmØ CULVERT
EXTERNAL INLET #1
101 2.97
ALPINE SOLUTIONS
110 1.92
111 13.23
EXTERNAL INLET #2
112 7.31
113 2.56
114 13.46
115 4.95
116 7.71
117 7.45
EXTERNAL INLET #3
600mmØ CULVERT
WILMOT RECREATION COMPLEX
118 0.50
119 0.72
EXTERNAL INLET #4
NITHVIEW HEIGHTS SUBDIVISION
120 1.08
EXTERNAL INLET #5
121 43.24
BADENVIEW DEVELOPMENTS INC. (FORMER GOOD LANDS)
HAMILTON HEIGHTS SUBDIVISION
160 8.16
NEW HAMBURGLRS INC. (FORMER SCHNEIDER LANDS)
152 8.56
151 5.77
WILMOT HIGHWAY 7/8 MAINTENANCE LANDS
150 3.51
170 8.45
KLASSEN BRONZE
161 2.35
EXTERNAL INLET #6
HAMILTON RD CULVERT (900mmØ)
WEST CULVERT
EAST CULVERT
NODE 'A'
1.5m x 1.5m CULVERT
1.2m x 1.2m CULVERT
180 0.70
182 1.21
SEE FIG 2.3
HWY 7/8
HAMILTON ROAD
NITHVIEW DRIVE
NITHVIEW COURT
CAPTAIN McCALLUM DRIVE
SOULLIE STREET
GOOD STREET
MAURICE STREET
MARVIN STREET
MASTER ROAD

FIGURE 2.2
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Scale: 1:6000

WILMOT EMPLOYMENT LANDS

EXISTING DRAINAGE AREA PLAN (NORTH HWY 7/8)

MTE
Engineers | Scientists | Surveyors

Project No.: 34896-104
39219-104

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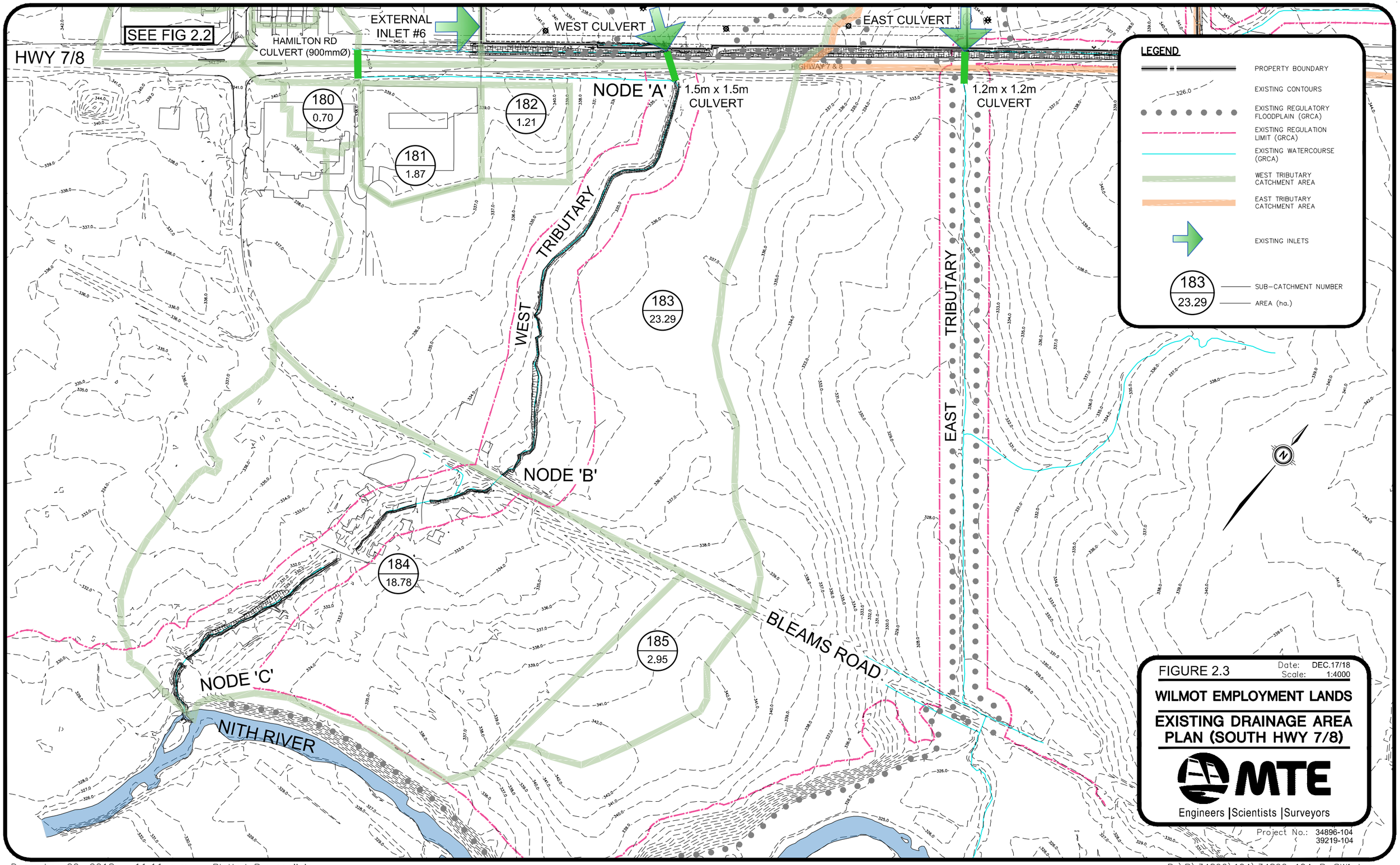

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2.3 Geotechnical and Hydrogeological Information

Several geotechnical investigations have been completed for the subject lands. The first investigation was completed in 2010 as part of the EMDP and most recently two investigations were completed in 2018, one for the BDI Lands and the other for the NHI Lands.

All-Terrain Drilling completed the work in 2010 as part of the EMDP. A total of 12 boreholes and 11 test pits were advanced to depths of 3.3m to 9.7m.

A comprehensive geotechnical investigation for the subject lands has been prepared by Peto MacCallum Limited (PML) in 2018. Two separate reports entitled *Geotechnical Investigation Proposed Development Wilmot Employment Lands* and *Geotechnical Investigation Proposed Development Highway 7/8 New Hamburg* for the BDI Lands and NHI Lands, respectively have been prepared.

Boreholes and test pits were dug throughout the subject lands and examined in order to define soil and groundwater conditions. Between March and June of 2018, PML completed 18 boreholes to depths ranging from 3.6m to 11.1m within the BDI Lands and 6 boreholes to a depth of 6.7m within the NHI Lands.

Based on the results of PML's preliminary geotechnical investigation, subsurface soil conditions on the site are generally described as being "comprised of surficial topsoil and localized fill, underlain by an extensive clayey silt deposit containing silt, sandy silt and silty sand layers". Surface topsoil and fill depths range between 400mm to 750mm thick. The cohesive clayey silt deposits were generally very firm to stiff. Localized layers of wet to saturated material were also encountered. For further information refer to **Appendix E** for PML Geotechnical Reports.

A hydrogeological investigation was completed for the subject lands by MTE. The investigation is documented within the Hydrogeological Investigation dated December 17, 2018. This report documents the field investigation and associated hydrogeological analysis completed.

3.0 STORMWATER MANAGEMENT CRITERIA

New developments are required to provide stormwater management in accordance with provincial and municipal policies. Relevant documents have been referenced in the design of the stormwater management plan for the subject site including:

- Stormwater Management Planning and Design Manual (MOE, 2003).
- Enhanced Master Drainage Plan – Wilmot Employment Lands (MTE, May 2012).
- GRCA Policies for the Administration of Ontario Regulation 150/06 (GRCA, October 2015).
- City of Kitchener Stormwater Management Policies and Guidelines (2015).

Based on the above policies and relevant documents, the following stormwater management criteria have been established for this study area:

- **Water Quality** – Provide an *Enhanced* (MOE, 2003) level of stormwater quality treatment for all lands upstream of the WEL prior to discharge to respective tributaries.

- **Water Quantity and Erosion Control** – Control peak flow rates for all storms up to and including the Regional storm event to the allowable rates; preserve hydraulic and hydrologic functions. Provide erosion control by maintaining existing flow duration characteristics.

- **Water Balance**
  - *Infiltration* – The EMDP recommended that lot level infiltration be implemented where possible.

- **Regional Flood Control** – Provide a SWM solution which will replicate the existing hydrologic function of the existing storage area upstream of the Highway 7&8 culvert crossing.

3.1 Water Quality

As per the EMDP, the SWM facility proposed for the development will need to provide an Enhanced Level of water quality protection for the subject lands as well as approximately 97.94ha of upstream external lands. The requirements for this level of quality control are established in Table 3.2 of the MOE *Stormwater Management Planning and Design Manual* (MOE, 2003).

3.2 Water Quantity and Erosion Control

SWM Facility

The EMDP requires that the proposed SWM facility maintain post-development peak flows at existing levels for all storms up to and including the Regional storm event. Additionally, flows from upstream external drainage areas must be accounted for in the proposed pond as well as ensuring the future uncontrolled peak flows for the greater of the Regional or 100 year event from the external areas can be successfully conveyed to the proposed pond without impacting the development itself.

Erosion Control

A continuous hydrologic model and erosion exceedance analysis was completed in the EMDP. The proposed solution should provide at least a 24 hour extended detention drawdown and a 48 hour drawdown for the 25mm storm event to ensure that the threshold flow durations do not exceed pre-development levels.

3.3 Regional Flood Control

The existing floodplain will be contained within the proposed SWM facility block considering ultimate build out conditions of all upstream lands. The proposed SWM facility will have no impact on the Regulatory Floodplain downstream of Highway 7&8.

4.0 PROPOSED DEVELOPMENT AND STORMWATER MANAGEMENT STRATEGY

4.1 Proposed Area Grading

The grading design of the site was controlled by many factors which include servicing constraints (both sanitary and storm), match existing and proposed boundary grades around the perimeter of the property, ensure major storm event overland flows are directed towards the existing road right-of-way where applicable, or towards the proposed SWM facility, as well as minimizing the cut/fill deficit for the development. A preliminary finished grade contour plan **MTE Drawing 34896-104 AG1.1** illustrating site grading is enclosed.

4.2 Post-Development Conditions

The preferred stormwater management solution for the subject lands was developed within the EMDP. The solution will require implementation of a proposed stormwater management facility. The plan has been designed to meet the criteria presented in Section 3.0 of this report.

The proposed development lands are comprised primarily of industrial land use with road right-of-ways, and a proposed SWM facility. It should be noted that the majority of the blocks within the proposed Plan of Subdivision for the subject lands will be developed through a Site Plan Approval process.

The location of the proposed SWM facility along with contributing drainage areas is illustrated on **Figure 4.1**. Minor system runoff from the contributing areas will be conveyed through the proposed storm sewer system to the proposed SWM facility. Excess runoff from the major storms will flow overland to the SWM facility via the proposed right-of-ways and designated overland flow routes. Conveyance of upstream external drainage (Inlet #1, Inlet #2, and Inlet #3) will be through drainage channels sized to accept both minor and major storm runoff. Refer to MTE's *Functional Servicing Report* (December 17, 2018) for further details of the storm sewer network.

The proposed SWM facility will utilize a wetpond design providing quality control and quantity control of runoff prior to discharge from the subject lands. Development plans for the proposed SWM scheme include approximately 153.71ha of lands.

The post-development catchments are detailed on **Figure 4.1**, and the post-development modeling and impervious calculations have been included in **Appendix D**.

Descriptions of the drainage catchments and their respective drainage patterns are listed below:

Western Forebay Inlet

Catchments 201, 202 & 203
These catchments consist of 23.56ha of agricultural lands (2.97ha), woodlot (2.08ha) and future residential lands (also known as Pfenning Farm Subdivision – 18.51ha) located north of the GEXR rail corridor. These catchments are conveyed through an existing 900mm diameter culvert under the GEXR towards Inlet #1.

Catchments 204, 205 & 206
These catchments consist of 6.06ha of the Riverside Brass (2.02ha) Industrial site, a portion of the Iron Bridge Industrial site (1.19ha) and additional external industrial lands (2.85ha) located at the terminus of Hamilton Road. Riverside Brass has an on-site dry pond providing quantity control and discharges into a drainage ditch which runs in parallel with the GEXR. The undeveloped portion of the Iron Bridge property is an existing woodlot which drains overland. The terminus of Hamilton Road and a portion of the surrounding industrial lands are conveyed overland through roadside ditches before flowing along the GEXR drainage ditch. All these areas are conveyed to a double ditch inlet, located near the railway siding on the Pestell's property, whereupon a 600mm diameter storm sewer conveys the runoff to another drainage ditch and ultimately to Inlet #1.

Catchments 207 & 208
These two catchments are the existing woodlot/wetland area (5.92ha) and neighbouring Pestell's industrial site (5.53ha). The Pestell's property has an on-site dry pond facility for quantity control. This dry pond outlet's directly into the existing ditch inlet catchbasin which is the confluence of Inlet #1. Runoff generated from the existing woodlot is conveyed overland into the wetland area and ultimately discharges into the same ditch inlet catchbasin as the Pestell's property.

Catchments 218 & 219
These catchments consists of the developed portion of the Iron Bridge Industrial property (2.06ha) and existing Pestell Office property (1.28ha). The Iron Bridge SWM report has been obtained by MTE and proposed catchments have been incorporated into the WEL SWM solution. Runoff generated from these properties will be conveyed to on-site SWM controls via an online orifice and parking lot ponding and will outlet via a 600mm diameter storm sewer which divides the two existing Pestell's buildings. This sewer outlet's into the proposed storm sewer network underneath Street One, which is the confluence of Inlet #4.

Catchment 220
This catchment consists of the northeastern corner of the Nithview Heights Subdivision (0.50ha). Runoff is conveyed to an existing catchbasin and discharges into proposed storm sewer network underneath Street One, which is the confluence of Inlet #4.

Catchment 221
This catchment (0.81ha) is a portion of the proposed Street One roadway corridor that connects to Hamilton Road. Runoff generated from this catchment is conveyed overland and through the proposed storm sewer network which is the confluence of Inlet #4.

Catchment 222
This catchment (1.08ha) is rear yards of the neighbouring Hamilton Heights Subdivision and is considered Inlet #5. Stormwater runoff is conveyed overland directly into the rear lots on the west side of Street Two.

Catchment 224
This catchment consists of the proposed development for the BDI Lands (43.20ha). Runoff generated from this catchment is conveyed through the municipal right-of-ways as well as the proposed storm sewer network into the proposed SWM facility.

Total = 90.00ha

Eastern Forebay Inlet

Catchments 209 & 210
These catchments include a portion of the Alpine Solutions industrial property and existing woodlot. Runoff generated from the western side of the Alpine Solutions (1.92ha) property is conveyed to an existing dry pond providing quantity control before discharging to the woodlot. The existing woodlot (13.23ha) runoff is conveyed overland into Inlet #2.

Catchment 211
This catchment (7.31ha), located on the east side of Nafziger Road, is currently being used for agricultural purposes; however, this property is intended to be developed in the future. Runoff is conveyed overland to an existing 600mm diameter culvert under Nafziger Road, located near the Alpine Solution industrial property, before running along the roadside ditch and ultimately into Inlet #3.

Catchments 212 & 213
These catchments consist of industrial properties and woodlot. Catchment 212 (2.56ha) is the east side of the Alpine Solutions industrial property. Runoff generated from this property is conveyed to an existing on-site dry pond providing quantity control before discharging into an existing stream and ultimately to Inlet #3. Catchment 213 (13.46ha) consists of the existing woodlot (east and west of Nafziger Road) which surrounds the existing stream and ultimately discharges into Inlet #3.

Catchments 214 & 215
These catchments comprise a portion of the Wilmot Recreation Complex (4.95ha) and vacant industrial lands (2.86ha). Runoff from catchment 214 is conveyed to an existing on-site wetpond providing stormwater quality and quantity control before being conveyed overland to a roadside ditch along Nafziger Road and discharged through an existing 600mm diameter culvert underneath Nafziger Road where it combines with runoff from catchment 215 and ultimately into Inlet #3.

Catchment 216 & 217
Catchment 216 (4.12ha) and catchment 217 (0.73ha) are industrial lands and a portion of the proposed Street Three roadway corridor that connects to Nafziger Road. Runoff generated from these catchments is conveyed overland and through the proposed storm sewer network which ultimately discharges into the proposed SWM facility.

Catchment 223
This catchment consists of the proposed development for the NHI Lands (12.57ha). Runoff generated from this catchment is conveyed overland through the municipal right-of-ways as well as the proposed storm sewer network into the proposed SWM facility. Note: Part of these lands are planned to be expropriated for MTO on/off-ramps.

Total = 63.71ha

West Tributary

Catchment 225
This catchment (1.67ha) consists of the existing runoff generated from Highway 7&8. Runoff from this catchment is conveyed overland from the centerline of the highway into the existing north roadside ditch. This stormwater is uncontrolled, by-passing the proposed SWM facility, and out letting into the western culvert.

Catchments 260 & 261
These catchments consist of the neighbouring Hamilton Heights Subdivision (8.16ha) and Klassen Bronze Industrial property (2.35ha). Runoff generated from the Hamilton Heights Subdivision is conveyed overland and through an existing storm sewer network. This network is conveyed into a 6.0m wide servicing easement located at the southwestern corner of the BDI Lands and discharges into an existing swale along the southern property line.

Runoff from the Klassen Bronze property is conveyed overland into a roadside ditch along Highway 7&8. Both of these catchments do not require any SWM controls as they by-pass the proposed SWM facility and ultimately discharge into the western culvert.

Catchments 270
This catchment consists of 8.45ha of existing commercial, industrial, and residential lands on a portion of Hamilton Road. Stormwater runoff is conveyed overland and through an existing storm sewer network located on Hamilton Road which outlet's into the roadside ditch along Highway 7&8. A 900mm diamter culvert, located just south of Klassen Bronze, conveys majority of the flow under Highway 7&8 to the south; however, the culvert is not size to convey the flow for all storm events. Once the culvert has reached capacity, the extra flow will continue along the Highway 7&8 roadside ditch and ultimately discharge into the western culvert.

Total = 20.63ha

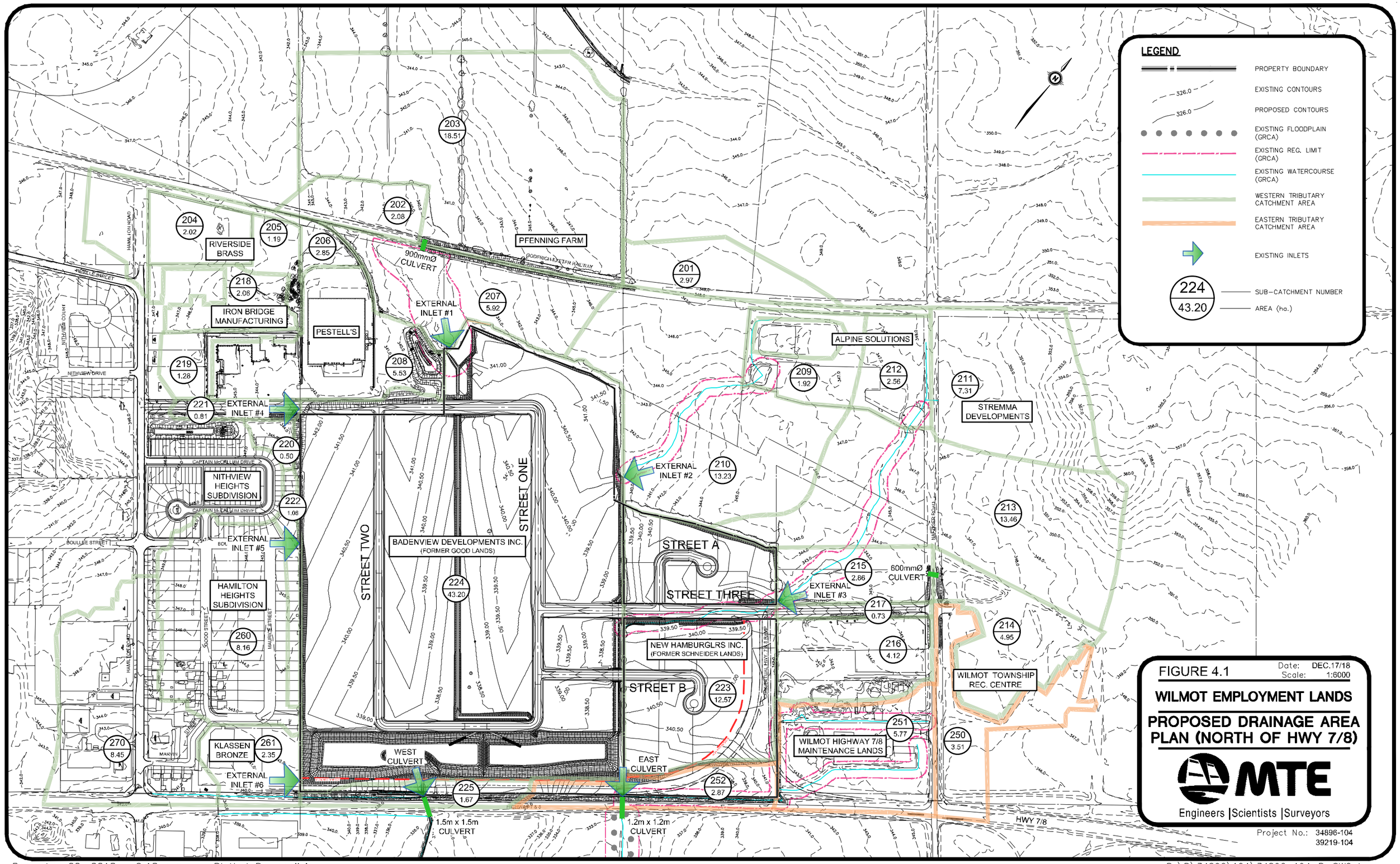
East Tributary

Catchment 250
This catchment consists of the exterior sports fields for the Recreation Complex located on the east side of Nafziger Road (3.51ha). Runoff is conveyed overland towards the roadside ditch and cross Nafziger Road through a 900mm diameter culvert ultimately discharging into the eastern culvert.

Catchments 251 & 252
These catchments are made up of existing industrial lands (5.77ha) located on the west side of Nafziger Road and future MTO lands (2.87ha). Runoff generated from the industrial lands will be conveyed overland through existing on-site ditches into the roadside ditch along Highway 7&8 and into the eastern culvert.

A proposed swale will be constructed along the 14.0m MTO setback line to temporarily convey runoff from these lands into the eastern culvert. Upon completion of the final design of the future on-ramp stormwater controls will be required to match peak flows set forth by this catchment.

Total = 12.15ha



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5.0 STORMWATER MANAGEMENT DESIGN

5.1 Hydrologic Modeling

As previously noted, as part of the EMDP study a hydrologic model was prepared using the SWMHYMO modeling platform. This model was further refined as part of this study, however both existing and proposed conditions models were completed using the MIDUSS modeling platform.

Both existing conditions and proposed development conditions were modeled for the:

- Quality event (25mm depth, 4hr Chicago distribution)
- 2yr, 5yr, 10yr, 25yr, 50yr, and 100yr return period rainfall events (3hr Chicago distribution derived from the Region of Waterloo's Intensity-Duration-Frequency parameters)
- Regional storm event (48hr, 285mm depth – Hurricane Hazel)

The IDF parameters, hydrologic parameters, and MIDUSS model output for each of the pre- and post-development catchment areas are included in **Appendix C** and **Appendix D**, respectively.

5.2 Water Quality

The proposed SWM facility has been designed as a wet pond with a permanent pool depth of 1.5m and will incorporate a sediment forebay with a depth of 2.0m, which offer benefits of dilution and settling of sediment. A planting scheme will be prepared that carefully selects plant species and their location in and around the basins to stabilize banks, mitigate temperature increases, deter waterfowl from nesting within the area, and provide aesthetics and safety benefits.

The forebay design is based on classic particle settling and flow dispersion equations as presented in the MOE 2003 *Stormwater Management Planning and Design Manual*. The methodology presented in that document suggests that the design flow for the forebay should be taken as the peak outflow from the facility. A forebay is typically designed to treat minor storm flows. Therefore, the main pond will essentially be empty (or at its permanent pool level) and there will be no mass of water at the outlet of the forebay that would control the flow through the forebay to the main pond's discharge rate.

This being the case, the design of the forebay should be based on the notion that the flow into the forebay equals the flow through the forebay, which equals the flow out of the forebay. In using this approach, the recommended settling velocity of 0.0003m/s (from MOE 2003) results in extremely large and un-achievable forebay lengths. Therefore, the forebay is designed to satisfy the following four conditions:

- Settling length based on a settling velocity of 0.0003m/s using the main pond peak discharge for the 25mm event (as per MOE 2003).
- Settling length based on a settling velocity of 0.0055m/s using the forebay inflow/outflow for the 5 yr event.

- Dispersion length such that, based on flow and depth of water, the velocity through the forebay is less than 0.5m/s.

- Velocity based on flow divided by cross-sectional area is less than 0.15m/s to prevent scouring.

The 2003 MOE document suggests that the clean-out frequency for a stormwater management facility be based on the sediment loading within the entire pond, however, it is recommended that the clean-out frequency be based on the loadings within the forebay only. While this typically results in more frequent clean-out, it is restricted to the forebay area only and avoids disturbance of the main pond. The clean-out frequency for the proposed SWM facility can be found in the respective forebay design calculations in **Appendix D**.

The total drainage area for the proposed facility is 153.71ha at 57.9% imperviousness. According to Table 3.2 from MOE's 2003 Stormwater Management Guidelines, an enhanced level of protection in a constructed wetpond therefore requires 196.85m^3/ha of storage, 40m^3/ha of which is extended detention and the remainder of which is the permanent pool. The required permanent pool and extended detention volumes are therefore 24,109m^3 and 6,148m^3, respectively.

There are two conveyances of runoff from the proposed lands into the forebay. The western forebay accepts the minor storm events for 90.00ha of upstream lands. Included in these lands is the runoff conveyed from Inlet #1, Inlet #4, and Inlet #5. The eastern forebay accepts the minor storms events for 63.71ha of upstream lands and includes runoff conveyed from Inlet #2 and Inlet #3. Due to the location and size of the proposed SWM facility these two forebays have been amalgamated into one larger forebay designed according to the required characteristics for the western and eastern forebay.

The forebay has a permanent pool volume of 17,008m^3, which combined with a 16,201m^3 of permanent pool within the wetpond makes for a total permanent pool volume of 33,209m^3. In order to provide a minimum 24 hour extended detention (maximum 48 hour) for the 6,148m^3 of storage, a 300mm diameter orifice has been used. Similarly, the 12.5mm Storm Event (6,500m^3) also uses this orifice.

The proposed SWM facility design characteristics are summarized in **Table 5.1**. Refer to **Appendix D** for the relevant design sheets and calculations (catchment parameters, imperviousness calculations, stage-storage discharge curves, drawdown calculations, etc.). Refer to **Figure 5.1** to **Figure 2.3** for details of the proposed SWM facility.

TABLE 5.1 - DESIGN CHARACTERISTICS

General	Facility Characteristics
Stormwater Management Facility Type	Wet Pond
Required MOE Water Quality Protection	Level 1 (Enhanced)
Total Contributing Area	153.71 ha
Imperviousness	57.9 %
Bottom Elevation (Wet pond)	333.05m
Storage	
Unit Area Storage Volume Requirements as per SWMMP (MOE 2003)	196.85 m^3/ha
Required Total Volume	30,257m^3
Permanent Pool	
Required Permanent Pool Volume	24,109m^3
Permanent Pool Volume Provided	33,209m^3
Permanent Pool Elevation	334.55m
Extended Detention	
Minimum Required Volume (40m^3/ha)	6,148m^3
Approximate Drawdown Time (40m^3/ha)	35.1 Hr
Extended Detention Elevation (40m^3/ha)	334.81m
Peak Release Rate for Extended Detention (40m^3/ha)	0.064m^3/s
Western Forebay (2 pipes and 1 channel)	
Required Forebay Length	96.0m
Actual Forebay Length	96.0m
Permanent Pool Elevation	334.55m
Bottom Elevation	332.55m
Eastern Forebay (1 channel and small surface flow)	
Required Forebay Length	36.7m
Actual Forebay Length	220m
Permanent Pool Elevation	334.55m
Bottom Elevation	332.55m
Outlet Controls	
Bottom Draw, Reverse slope pipe (MH 38)	
Orifice 1 Diameter (Extended Detention)	300mm
Orifice 1 Elevation (Extended Detention)	334.55m

LEGEND

- PROPERTY BOUNDARY
- 313.5 — EXISTING CONTOURS
- 313.5 — FINISHED GRADE CONTOURS
- (326.00)EX × — EXISTING SPOT ELEVATIONS
- (326.00) × — PROPOSED SPOT ELEVATIONS
- GABION MAT
- PERMANENT POOL ELEV=334.55
- MAJOR OVERLAND FLOW ROUTE
- MAINTENANCE ACCESS
- DIRECTION OF DRAINAGE

CHANNEL OF EXTERNAL INLET #1 FLOWS + ON-SITE DRAINAGE

INLET #2 AND #3 FLOWS + ON-SITE DRAINAGE

STREET TWO

STREET B

MH16

CBMH17

90.0m–1725x1090mm STM. @ 0.30%

17.5m–1725x1090mm STM. @ 0.30%

75.3m–1725x1090mm STM. @ 0.30%

90.0m–1725x1090mm STM. @ 0.30%

78.0m–1725x1090mm STM. @ 0.30%

MH18 MH19 DCBMH20 MH21

27.0m–1350mmø STM. @ 0.30%

48.0m–1200mmø STM. @ 0.30%

70.6m–1200mmø STM. @ 0.30%

30.8m–1200mmø STM. @ 0.30%

12.0m–450mmø STM. @ 2.00%

27.6m–750mmø STM. @ 0.50%

16.5m–1200mmø STM. @ 0.30%

MH34 CBMH33 CBMH35 MH57

HW37 HW22

Blk. 2 Industrial

Blk. 5 Stormwater Management Facility

WETPOND
PERM. POOL=334.55m
BOTTOM=333.05m

FOREBAY
BOTTOM=332.55m
PERM. POOL=334.55

30m EMERGENCY WEIR

30m EMERGENCY WEIR

SEE DETAIL 5.4

14.0m MTO SETBACK

MH38 BOX MH39

Blk. 7 Road Widening

HIGHWAY 7 & 8

WEST TRIBUTARY

EAST TRIBUTARY

Ex. 1530x1530mm Conc. Box Culvert

Ex. 1200x1200mm Conc. Box Culvert

Ex. 450mmø SAN. (Approx. Location)

Ex. 150mmø CMP

Ex. 375mmø SAN.

Ex. 300mmø SAN. Inv.=333.74

Ex. 200mmø SAN.

Ex. 600mmø STM.

Ex. 600mmø SAN.

Ex. MH

Ex. Headwall

Ex. Hydro MH T/G=333.65

Ex. MH T/G=341.02

Ex. MH Inv.=330.13 v.=330.16

Ex. MH Inv.=332.792

Ex. MH Inv.=332.768

Ex. MH Inv.=332.11

Ex. MH Inv.=332.09

Ex. 60mmø T/G=334.88

FIGURE 5.1 — Date: DEC.17/18 — Scale: 1:1500

WILMOT EMPLOYMENT LANDS

PROPOSED SWM FACILITY LOCATION PLAN

MTE
Engineers | Scientists | Surveyors

Project No.: 34896-104
39219-104

December 20, 2018 — 10:58 a.m. — Plotted By: ndamaren

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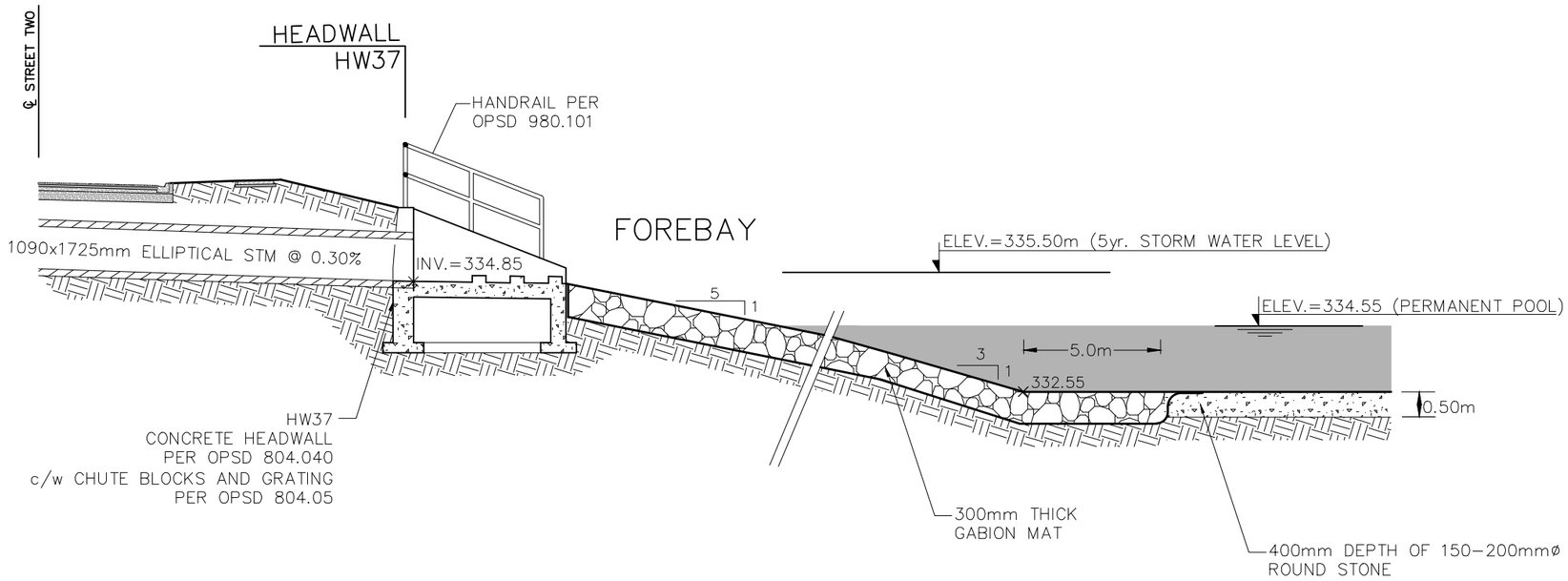

FOREBAY INLET (PIPED)

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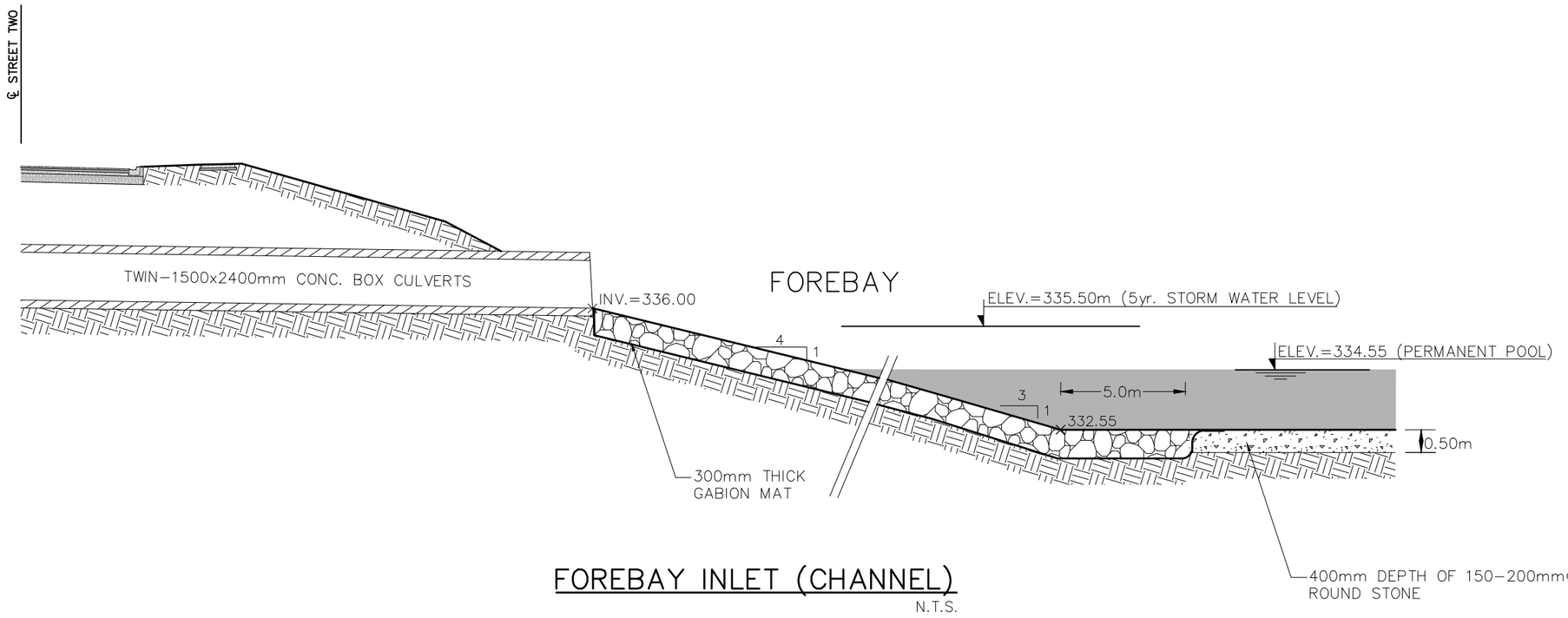

FOREBAY INLET (CHANNEL)

N.T.S.

FIGURE 5.2 Date: DEC.17/18 Scale: N.T.S

WILMOT EMPLOYMENT LANDS

SWM FACILITY DETAILS 1

MTE
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Project No.: 34896-104
39219-104

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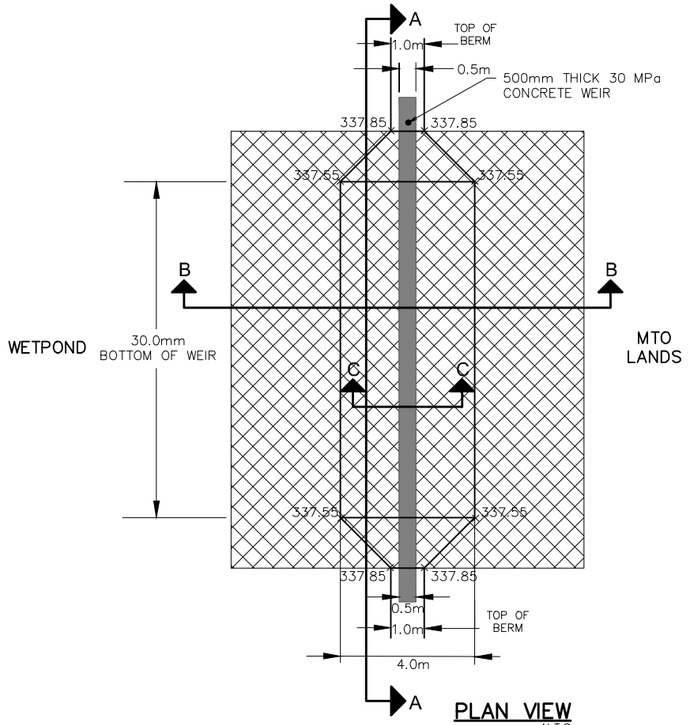
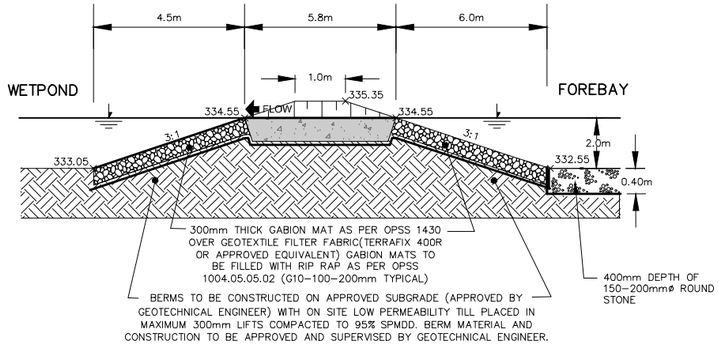
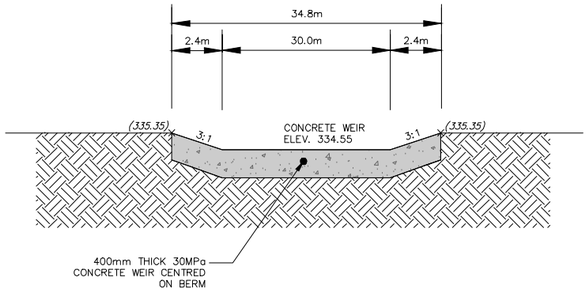


PLAN VIEW
N.T.S.

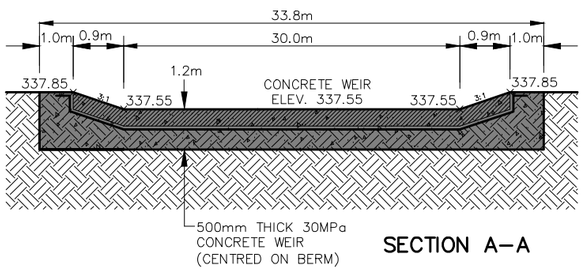
CONTRACTOR TO PROVIDE STAMPED SHOP DRAWINGS c/w REINFORCING DETAILS FOR CONCRETE WEIR



SECTION B-B



SECTION A-A



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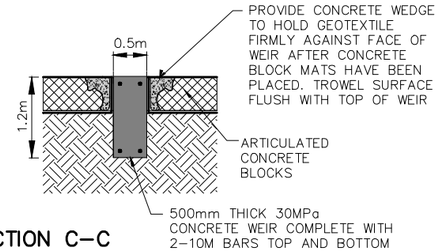
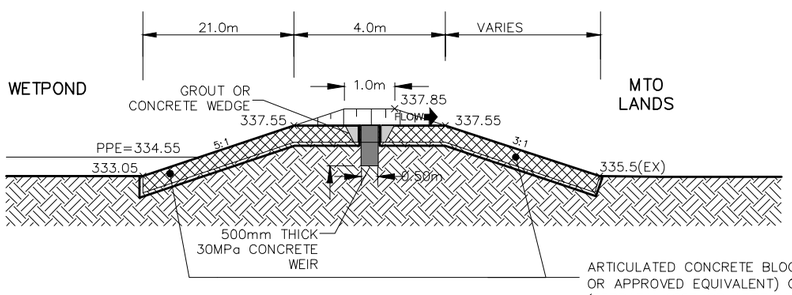


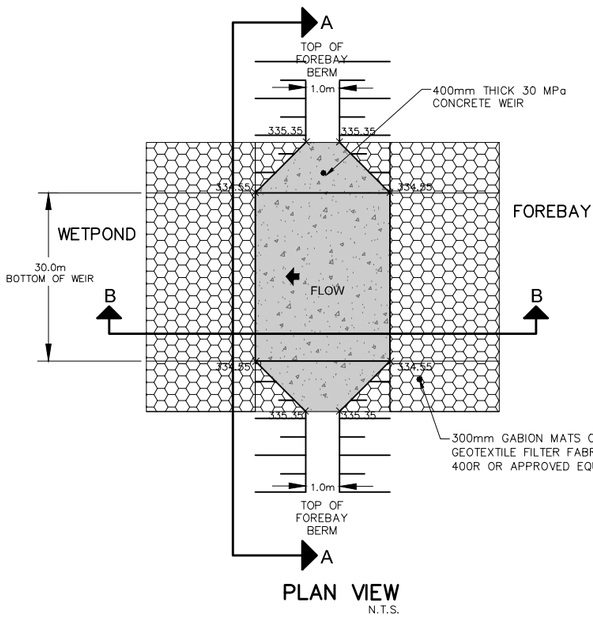
SECTION C-C



ARTICULATED CONCRETE BLOCK MATS. (CABLE CONCRETE CC35 OR APPROVED EQUIVALENT) OVER GEOTEXTILE FILTER FABRIC (TERRAFIX 400R OR APPROVED EQUIVALENT). VOID SPACES TO BE BACKFILLED WITH TOPSOIL AND SEEDED.

SECTION B-B

EMERGENCY OVERFLOW WEIR
N.T.S.



PLAN VIEW
N.T.S.

CONCRETE FOREBAY WEIR
N.T.S.

CONTRACTOR TO PROVIDE STAMPED SHOP DRAWINGS c/w REINFORCING DETAILS FOR CONCRETE WEIR

FIGURE 5.3

Date: DEC.17/18
Scale: N.T.S

WILMOT EMPLOYMENT LANDS

SWM FACILITY DETAILS 2

MTE
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Project No.: 34896-104
39219-104

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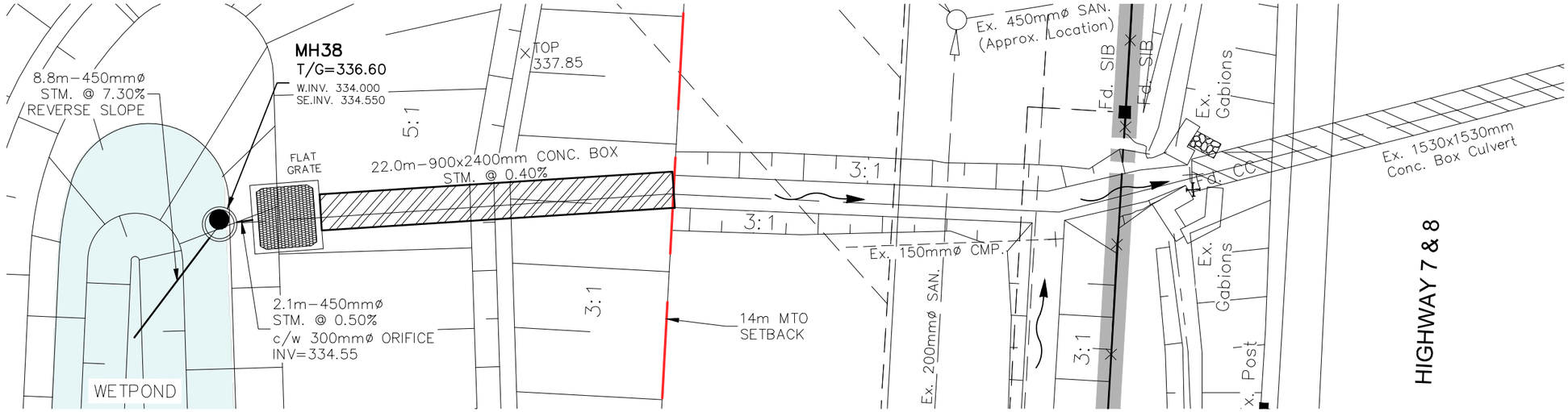
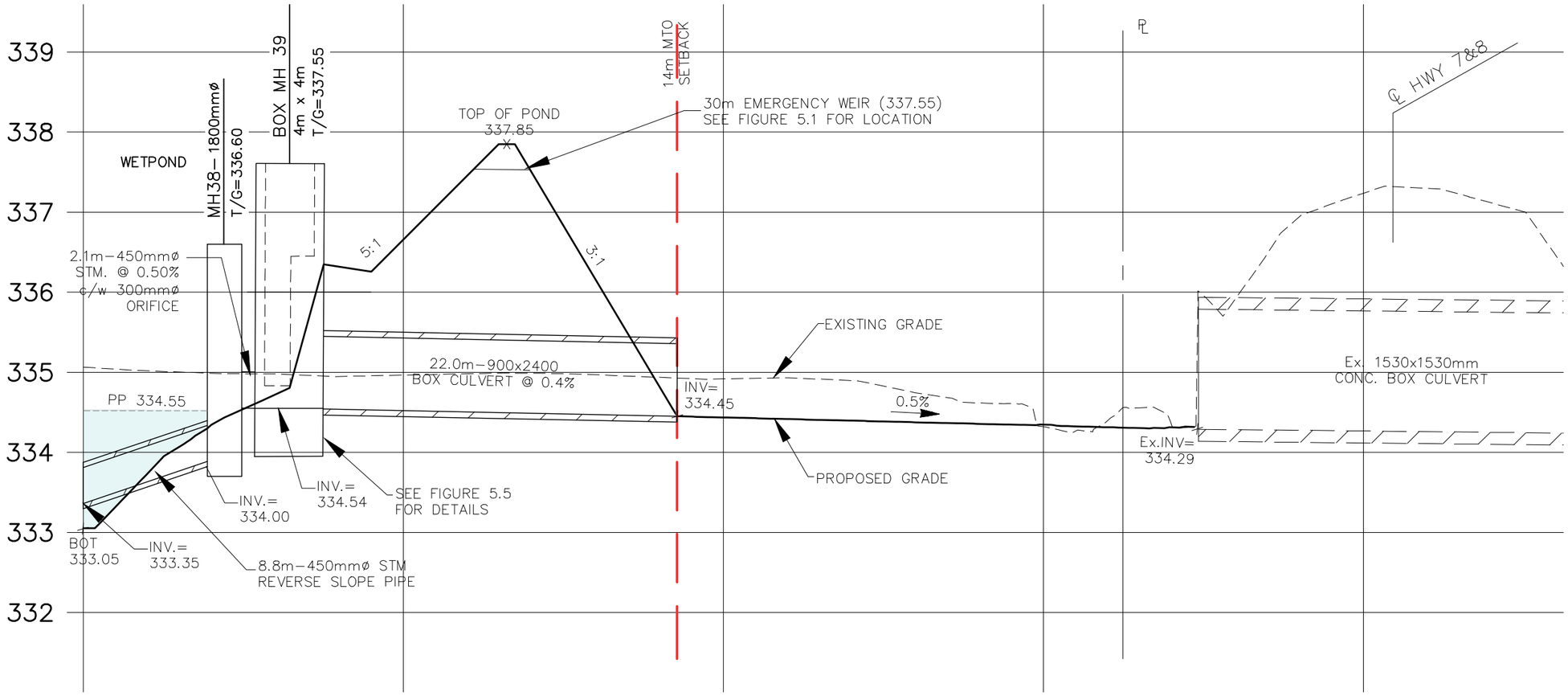


STORM OUTLET PLAN



STORM OUTLET PROFILE

FIGURE 5.4

Date: DEC.17/18
Scale: H-1:300, V-1:60

WILMOT EMPLOYMENT LANDS

SWM FACILITY DETAILS 3

MTE
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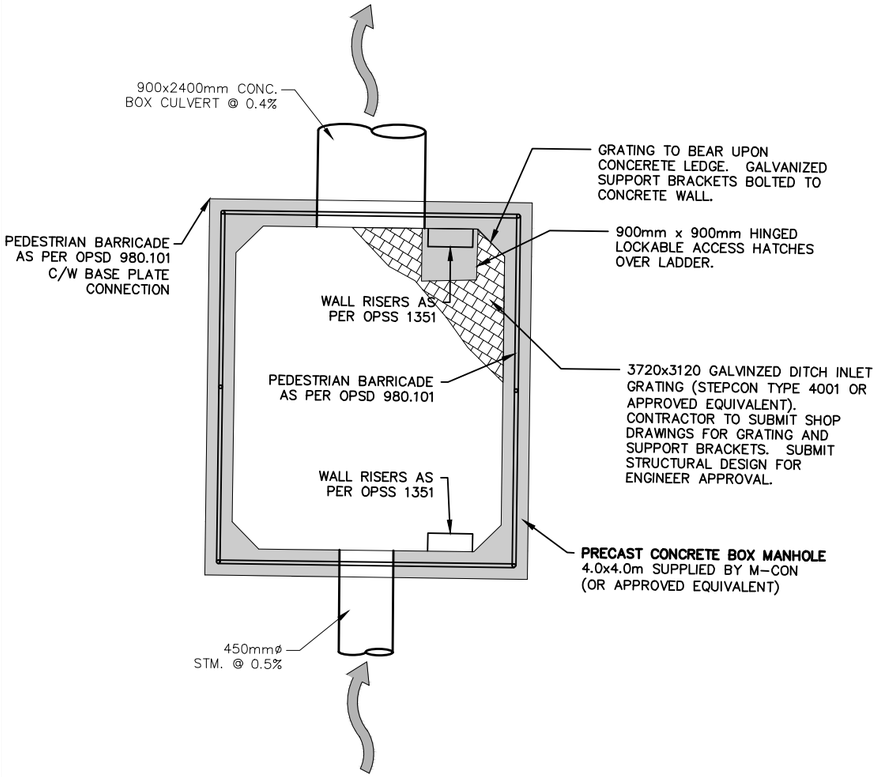
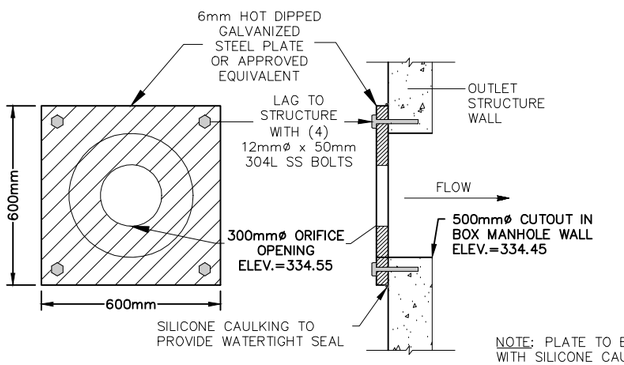
Project No.: 34896-104
39219-104





ORIFICE PLATE DETAIL FOR MH38

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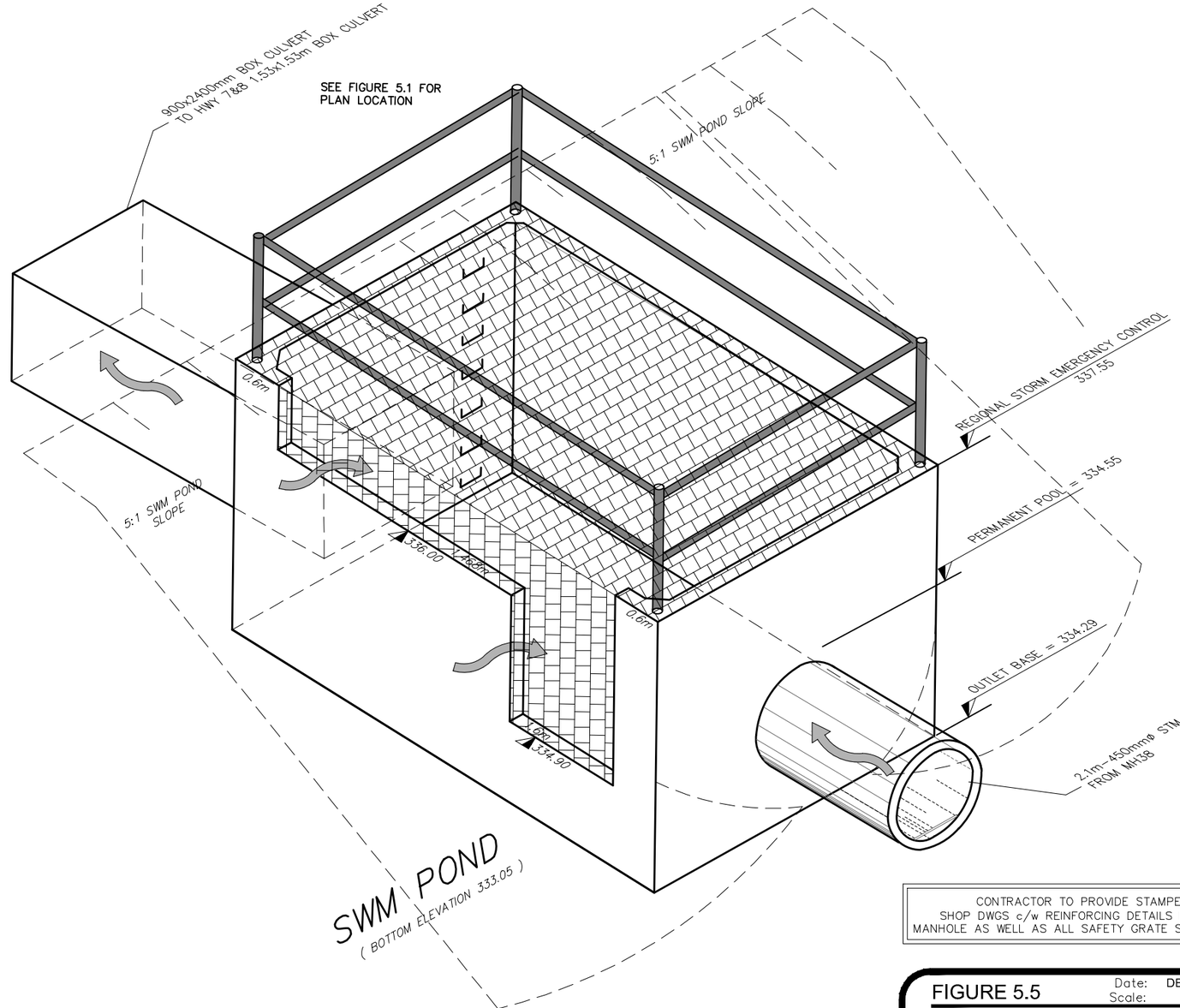


CONTRACTOR TO PROVIDE STAMPED SHOP DWGS c/w REINFORCING DETAILS FOR BOX MANHOLE AS WELL AS ALL SAFETY GRATE STRUCTURES.

FIGURE 5.5

Date: DEC.17/18
Scale: N.T.S

WILMOT EMPLOYMENT LANDS

SWM FACILITY DETAILS 4

MTE
Engineers | Scientists | Surveyors

Project No.: 34896-104
39219-104

5.3 Water Quantity

Flows for all storm events will be conveyed to the proposed SWM facilitiy by a combination of storm sewer, drainage channels and overland flow route (road right-of-way). The post-development MIDUSS design event modeling output is included in **Appendix D**.

Discharge from the Facility will be controlled via multi-staged outlet which includes; a 450mm diameter reverse sloped outlet pipe and a single 300mm orifice plate at elevation 334.55m in MH38, followed by a 4mx4m precast concrete box manhole (MH39) with two notched weirs and an open top, to control peak design flows for all storm durations to suit the targets set forth by the EMDP. The constructed wet pond portion of the proposed Facility has storage sufficient to hold the Regional storm event to an elevation of 337.525m. The Facility has a total active storage capacity of 98,022m^3 to an elevation of 337.55m. A Summary of the preliminary stage-storage-discharge relationship for the proposed SWM Facility is shown in **Table 5.2** below.

TABLE 5.2 – STAGE-STORAGE-DISCHARGE SUMMARY

Elevation (m)	Discharge (m^3/s)	Volume (m^3)	Remarks
334.55	0	0	Permanent Pool
334.81	0.064	6,148	Maximum Extended Detention
335.00	0.188	11,246	Contour
336.00	2.966	40,851	Contour
336.34	4.763	51,518	100 year ponding level
337.00	9.690	75,920	Contour
337.53	14.496	96,960	Regional Storm ponding level
337.55	14.746	98,022	Invert of Emergency Overflow
337.85	28.277	110,810	Top of Pond

A summary of the peak flows and the associated maximum water levels from the SWM facility under post-development conditions are summarized in **Table 5.3** below. Enough volume has been provided to store the Regional storm event to a maximum elevation of 337.525 m, or 2.975m above the permanent pool level. Refer to **Appendix D** for detailed MIDUSS output of the post-development model.

TABLE 5.3 – SUMMARY OF PEAK FLOWS AND MAXIMUM PONDING ELEVATIONS

Storm Event	Peak Outflow (m^3/s)	Maximum Ponding Volume (m^3)	Maximum Ponding Elevation (m)
25 mm Storm Event	0.257	12,441	335.045
2 Year Storm Event	0.627	17,799	335.241
5 Year Storm Event	1.272	25,097	335.495
10 Year Storm Event	1.816	30,478	335.673
25 Year Storm Event	2.641	38,018	335.913
50 Year Storm Event	3.555	44,286	336.124
100 Year Storm Event	4.763	51,518	336.335
Regional Storm Event	14.496	96,960	337.525

* NOTE: Release rates for the 25mm and 2 year storm events are governed by drawdown time requirements

The pre and post-development peak flows which outlet into the respective culverts for the West and East Tributaries are summarized in **Table 5.4**.

TABLE 5.4 – PRE & POST-DEVELOPMENT PEAK RUNOFF RATES

Storm Event	Western Tributary Peak Runoff Rates		Eastern Tributary Peak Runoff Rates	
	Pre-development (m^3/s)	Post Development (m^3/s)	Pre-development (m^3/s)	Post Development (m^3/s)
25 mm Storm Event	1.305	0.573	0.157	0.151
2 Year Storm Event	1.659	0.960	0.274	0.251
5 Year Storm Event	3.079	1.491	0.515	0.393
10 Year Storm Event	3.931	2.050	0.740	0.557
25 Year Storm Event	4.905	2.930	1.050	0.795
50 Year Storm Event	5.518	3.764	1.290	1.023
100 Year Storm Event	6.593	4.970	1.534	1.257
Regional Storm Event	7.170	7.170	10.291	9.687

5.4 Water Balance

The EMDP established that due to the fine grained nature of the subsurface material within the study area that infiltration will not be feasible as an end-of-pip stormwater management system, however that lot level infiltration should be reviewed and implemented where possible. As part of the geotechnical investigation completed by PML, particle size distribution analysis were completed on soil samples from the boreholes to determine approximate hydraulic conductivity of the existing soils. Based on this analysis the majority of the underlying soils within the subject lands have an infiltration rate that ranges between 0.04 mm/hr to 5 mm/hr. Cognizant of the low permeability of the existing soils, it was determined that lot level infiltration within the subjects lands was not required.

5.5 Erosion Assessment

As previously discussed, a continuous hydrologic model and erosion exceedance analysis was completed as part of the EMDP. Furthermore, the EMDP recommended that the proposed solution should provide at least a 24 hour extended detention drawdown and a 48 hour drawdown for the 25mm storm event to ensure that the threshold flow durations do not exceed pre-development levels. The proposed SWM facility has been designed to provide a 36 hour extended detention drawdown time for the 12.5mm storm event, and a 50 hour drawdown time for the 25mm storm event.

5.6 Landscape Design

A landscape design for the proposed Stormwater Management Facility will be completed during the final design stage of the development. The reasons for landscaping these facilities are aesthetics, erosion protection and long term bank stability, and to limit pedestrian access into their permanent pool components. To that end, the facilities have been designed in accordance to the City of Kitchener's Stormwater Management Policies and Guidelines for aesthetics, landscape and safety of stormwater management facilities.

6.0 MONITORING PROGRAM

A monitoring program will be implemented which will serve to ensure that the stormwater management plan proposed within this report is implemented and performing at an acceptable level.

6.1 During Development Monitoring Program

This stage will begin at the commencement of area grading of the subdivision and will continue until full build out of the subdivision. Monitoring of the Stormwater Management Facility will include:

- Standard inspection of vegetation, structures, and general operation of hydraulic controls (observations of drawdown) within the Stormwater Management facility. These inspections are to occur seasonally and typically after a significant rainfall event.
- Regular inspection and maintenance of erosion and sediment control measures around and within the SWM facility.

Standard inspection and maintenance of the SWM facility will be provided throughout the "During Development" period.

6.2 Post Development Monitoring Program

This period of the monitoring will begin following full build out of the subdivision (ie. roads are urbanized, industrial buildings are constructed, work-yards are paved, lots are sodded/landscaped, and open spaces are stabilized). The purpose of this stage of the monitoring is to ensure that the SWM facility continues to operate as designed. Monitoring during this stage will include:

- Standard inspection of vegetation, structures, and general operation of hydraulic controls (observations of drawdown) within the Stormwater Management Facility. These inspections are to occur seasonally and typically after a significant rainfall event until assumption of the facility by the Township.

It is recommended, that following completion of the developer's portion of the post-development monitoring program and assumption of the SWM facility by the Township, that the Township continues with a post-development inspection and maintenance program to ensure the long term effectiveness of the proposed SWM facility.

7.0 EROSION AND SEDIMENT CONTROL MEASURES

Precautions should be taken during construction to limit erosion and sedimentation. The final details of the erosion and sediment control plan will follow the *Erosion & Sediment Control Guideline for Urban Construction* document and will be provided during final design. The plans will illustrate the erosion and sediment control measures to be implemented during construction, which should limit impacts associated with site development.

Typically, the recommended construction sequence for erosion and sediment control measures will be as follows:

- Placement of all sediment control fencing where required.
- Stripping and strategic placement of topsoil stockpiles. Placement of sediment control fencing around all stockpile areas.
- Construction of temporary sediment control ponds which will serve as sedimentation basins for the site during construction.
- Construction of temporary swales to direct runoff to sedimentation basins, with rock check dams as required to control velocities.
- Re-vegetation of completed areas as soon as possible after construction, including those areas not slated for construction within 60 days.

Where rock check dams are proposed to promote sedimentation and reduce velocities, clean aggregate is to be placed perpendicular to the direction of flow in the swale, with a small volume of excavation on the upstream side to provide storage for accumulated sediment.

Sediment control fencing shall consist of filter fabric attached to page wire fencing and sealed at ground level. It will be installed at the perimeter of the work areas and intermittently on sloped areas where required. Sediment control fencing will be placed around all topsoil stockpiles.

Storage consistent with the GRCA's requirement of 125 m^3/ha of live and dead storage respectively (total 250 m^3/ha), will be provided. This storage will be provided to ensure that suspended material will have ample time to settle out. In addition, the sediment basin will be sized with sufficient capacity to allow flows to pass without breaching. Once the active construction and grading activities have been completed, the sedimentation basins can be cleaned out.

Access to topsoil or fill storage areas will be located on the upstream side of storage piles. This practice will ensure continuity of the sediment control fencing in the downslope direction which is most vulnerable to erosion and sediment deposition. Further, topsoil and hydroseed will be placed on all exposed areas following the completion of grading activities.

It is recommended that during construction, monitoring and inspection of the erosion and sediment controls be conducted to ensure the satisfactory performance of these measures. Reporting of the inspection and monitoring results should be distributed to the Township of Wilmot and the GRCA. If it is found that the erosion and sediment control measures are not working adequately, they shall be augmented to the satisfaction of the Township and the GRCA, based on field decisions.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing analyses, it is concluded that:

1. The stormwater management strategy outlined herein will provide the site with appropriate levels of quality, quantity, erosion, and regulatory floodplain controls to meet the criteria set out for the Wilmot Employment Lands as documented in the *Enhanced Master Drainage Plan, Wilmot Employment Lands, MTE Consultants Inc., May 2012.*

2. 'Enhanced' quality control of stormwater runoff can be provided in the proposed Stormwater Management Facility.

3. Quantity control targets for post-development peak flow rates can be achieved in the proposed Stormwater Management Facility.

4. The Regulatory Floodplain can be contained within the proposed Stormwater Management Facility.

5. Post-development erosion will be mitigated by the use of extended detention for both the 12.5mm and 25mm storm events.

6. Surface water inputs to the East Tributary will be maintained in the post-development condition.

The findings of this report, and the above conclusions, lead to the following recommendations:

1. Upon completion of detailed design, a quality/quantity control Stormwater Management Facility be constructed to provide control of stormwater as described in Sections 4 and 5 of this report.

2. That sediment and erosion controls during construction as described in Section 7 of this report be implemented.

All of which is respectfully submitted,

MTE CONSULTANTS INC.

CERTIFIED ENGINEERING TECHNOLOGIST
20 DEC. 18
OACETT
ONTARIO
MARK S. BROWN
Nº 050607

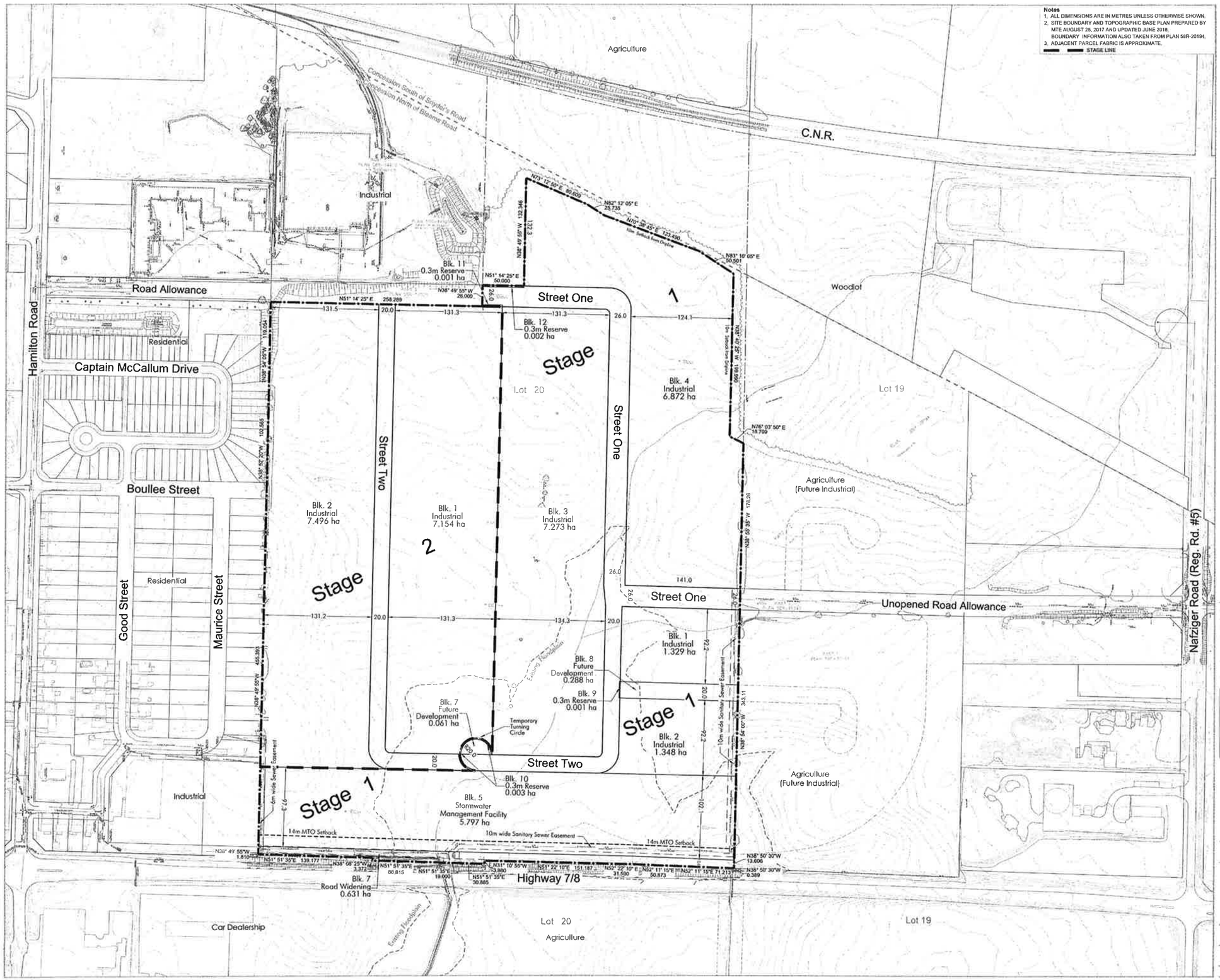
Mark Brown, C.E.T.
Designer

LICENSED PROFESSIONAL ENGINEER
DEC. 20. 18
G. M. KORBER
100042312
PROVINCE OF ONTARIO

Garett Korber, P.Eng.
Design Engineer

APPENDIX A

DRAFT PLAN OF SUBDIVISIONS (REDUCED)



Notes
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. SITE BOUNDARY AND TOPOGRAPHIC BASE PLAN PREPARED BY MTE AUGUST 25, 2017 AND UPDATED JUNE 2018. BOUNDARY INFORMATION ALSO TAKEN FROM PLAN 58R-20194.
3. ADJACENT PARCEL FABRIC IS APPROXIMATE.

STAGE LINE

DRAFT PLAN OF SUBDIVISION

Legal Description

PART OF LOT 20, NORTH OF BLEAMS ROAD
PART OF LOT 20, SOUTH OF SNYDERS ROAD
TOWNSHIP OF WILMOT
REGIONAL MUNICIPALITY OF WATERLOO

Owner's Certificate

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: December 4, 2018 — Patrick George
BADENVIEW DEVELOPMENT INC. (OWNER)

Surveyor's Certificate

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: NOV. 22, 2018 — Trevor McNeil
TREVOR D.A. McNEIL, OLS
(MTE OLS LTD.)

Key Plan

Subject Lands

SCALE: NTS

Source: Region of Waterloo SLRN

Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

A. AS SHOWN	B. AS SHOWN	C. AS SHOWN
D. INDUSTRIAL, STORMWATER MANAGEMENT		
E. AS SHOWN	F. AS SHOWN	
G. AS SHOWN	H. MUNICIPAL WATER SUPPLY	I. SILTY CLAY LOAM
J. AS SHOWN	K. ALL SERVICES AS REQUIRED	L. AS SHOWN

Area Schedule — 30T_____

Description	Stage 1 Blocks	Stage 1 Area (ha)	Stage 2 Blocks	Stage 2 Area (ha)
Industrial	1-4	16.822	1,2	14.650
Stormwater Management Facility	5	5.797		
Road Widening	6	0.631		
Future Development	7,8	0.349		
0.3m Reserve	9-12	0.007		
Roads		2.501		1.317
Sub-Total	12	26.107	2	15.967

Description	Total Blocks	Total Area (ha)
Industrial	6	31.472
Stormwater Management Facility	1	5.797
Road Widening	1	0.631
Future Development	2	0.349
0.3m Reserve	4	0.007
Roads		3.818
	14	42.074

Revision No.	Date	Issued / Revision	By
2.	Nov. 22, 2018	For submission to Region;	DGS
1.	Nov. 5, 2018	For review by surveyor and client;	DGS

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON N2B 3X9 | P: 519.576.3650 | F: 519.576.0121 | WWW.MHBCPLAN.COM

Approval Stamp	
Date	November 22, 2018
File No.	1159A
Plan Scale	1:2,000 (24x36)
Drawn By	D.G.S.
Checked By	P.C.
Project	Wilmot Employment Lands
Applicant	Badenview Developments Inc. P.O. Box 249 Breslau, ON N0B 1M0 P: 519.648.2285
File Name	DRAFT PLAN
Dwg No.	1 of 1
Scale Bar	0 10 25 50 75 100 125 150m

K:\1159A-Industrial Lands New Hamburg\DP\Draft Plan November22 2018.dwg

DRAFT PLAN OF SUBDIVISION

Legal Description

PART OF LOT 19, NORTH OF BLEAMS ROAD
TOWNSHIP OF WILMOT
REGIONAL MUNICIPALITY OF WATERLOO

Owner's Certificate

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: Nov 23/18

NEW HAMBURGIRS INC. (OWNER)

Surveyor's Certificate

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: NOV. 22, 2018

TREVOR D.A. McNEIL, OLS
(MTE OLS LTD.)

Key Plan

Source: Region of Waterloo SLRN

Subject Lands

Additional Lands Owned by Applicant

SCALE: NTS

Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

A. AS SHOWN	B. AS SHOWN	C. AS SHOWN
D. INDUSTRIAL	F. AS SHOWN	E. AS SHOWN
G. AS SHOWN	H. MUNICIPAL WATER SUPPLY	I. SILTY CLAY LOAM
J. AS SHOWN	K. ALL SERVICES AS REQUIRED	L. AS SHOWN

Area Schedule 30T_____

	Stage 1		Stage 2	
Description	**Blocks**	**Area (ha)**	**Blocks**	**Area (ha)**
Industrial	1-7	5.546	1-6	3.373
Emergency Access	8	0.092		
Roads		0.456		0.432
Sub-Total	**8**	**6.094**	**6**	**3.805**

	Total	
Description	**Blocks**	**Area (ha)**
Industrial	13	8.919
Emergency Access	1	0.092
Roads		0.888
	14	**9.899**

Notes

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. SITE BOUNDARY AND TOPOGRAPHIC BASE PLAN PREPARED BY MTE, AUGUST 25, 2017 AND UPDATED JUNE 2018. BOUNDARY INFORMATION ALSO TAKEN FROM PLAN 58R-20194.
3. ADJACENT PARCEL FABRIC IS APPROXIMATE.

Revision No.	Date	Issued / Revision	By
2.	Nov. 22, 2018	For submission to Region;	DGS
1.	Nov. 5, 2018	For review by surveyor and client;	DGS

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON N2B 3X9 | P: 519.576.3650 | F: 519.576.0121 | WWW.MHBCPLAN.COM

Approval Stamp

Date	November 22, 2018
File No.	18157A
Plan Scale	1:1,250 (24x36)
Drawn By	D.G.S.
Checked By	P.C.
Other	

Project Highway 7 and Nafziger Road

Applicant
New Hamburgirs Inc.
675 Riverbend Dr. Kitchener, ON
N2K 3S3
P: 519.571.8800

File Name DRAFT PLAN

Dwg No. 1 of 1

Scale Bar 0 10 25 50 75 100 125 150m

K:\18157A-New Hamburg-New Hamburgirs Inc\DP\Draft Plan November22 2018.dwg

APPENDIX B

Existing Conditions Catchment Parameters and MIDUSS Modeling

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number:	34896-104
Date:	December 12, 2018
Design By:	NED/MSB
File:	Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

IDF PARAMETERS
City of Kitchener - Values used in Current SWM Report

Frequency (Years)	a	b	c	Comment
12.5mm (4hr)	253	6	0.799	
25mm (4hr)	509	6	0.799	
2	743	6	0.799	
5	1,593	11	0.879	
10	2,221	12	0.908	
25	3,158	15	0.936	
50	3,886	16	0.950	
100	4,688	17	0.962	

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number: 34896-104
Date: December 15, 2018
Design By: NED/MSB
File: Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

COMPOSITE CN CALCULATIONS

Soil Group Curve Number (CN)

Land Use	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Woodlot	25	40	55	63	70	74	77
Lawns	58	62	65	71	76	79	81
Pasture	39	50	61	68	74	77	80
Cropland	66	70	74	78	82	84	86
Open Space	39	50	61	67.5	74	77	80

Pre-Development Conditions

Sub-Catchment Number	Hydrologic Soil Group	Woodlot	Lawn	Pasture	Cropland	Open Space	Total	Pervious Composite CN	Comment
101	C				100		100	82.0	
102	C				100		100	82.0	
103	C	100					100	70.0	
104	C							76.0	From M.N. Engineering SWM Report (1994)
105	C	70	30				100	81.0	From Stantec Consulting SWM Approach (2018)
106	C		100				100	76.0	
107	C	50			50		100	76.0	
108	C	95				5	100	70.2	
109	B							75.0	From MTE Consultants SWM Report (2005)
110	C							80.0	From R.J. Burnside SWM Report (1998)
111	C	100					100	70.0	
112	C				100		100	82.0	
113	C							80.0	From R.J. Burnside SWM Report (1998)
114	C	97				3	100	70.1	
115								83.0	From Stantec Consulting SWM Approach (2010)
116	C		100				100	76.0	
117	C	5			95		100	81.4	NHI Lands
118	C							74.0	From Stantec Consulting SWM Approach (2006)
119	C		100				100	76.0	
120	C		100				100	76.0	
121	C				100		100	82.0	GDI Lands
150	C		100					74.0	From Stantec Consulting SWM Approach (2010)
151	C		100				100	76.0	
152	C				100		100	82.0	
160	C		100				100	76.0	
161	C		100				100	76.0	
170	C		100				100	76.0	
180	B							79.0	From Paragon Engineering SWM Report (1994)
181	B		100				100	65.0	
182	B		100				100	65.0	
183	B		20	30	50		100	68.3	
184	B				100		100	74.0	
185	B		85			15	100	64.4	

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number: 34896-104
Date: December 15, 2018
Design By: NED/MSB
File: Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

HYDROLOGIC PARAMETERS
Pre-Development Conditions

Sub-Catchment Number	Area	Percent Impervious	Overland Length	Overland Slope	Pervious Length	Pervious Slope	Pervious IA	Impervious Length	Impervious Slope	SCS Curve Number Pervious (AMC II)	SCS Curve Number Impervious	Land Use	Comment
	(ha)	(%)	(m)	(%)	(m)	(%)	(mm)	(m)	(%)				
Catchments Draining to West Culvert - Inlet #1													
101	2.97	0	80	0.5			5.6			82.0	98	Agricultural	Area North-east of GEXR
102	12.07	0	180	2.5			5.6			82.0	98	Agricultural	Area North of GEXR
103	2.08	0	80	2.5			10.9			70.0	98	Woodlot	North of GEXR
104	2.02	59	35	1.2	60	2.00	8.0	116	0.50	76.0	98	Industrial	Riverside Brass (M.N. Engineering - SWM Report - 1994)
105	3.57	65	90	2.0			5.9			81.0	98	Industrial/Woodlot	Ironbridge Manufacturing (Stantec Consulting - SWM Report - 2018)
106	1.28	85	55	1.5			8.0			76.0	98	Industrial	N.C Pestell's Head Office & other Industrial
107	2.85	40	50	1.0			8.0			76.0	98	Industrial	Industrial at end of Hamilton Road
108	5.92	5	65	3.0			10.8			70.2	98	Woodlot	Woodlot and Ex. Wetland (east of Pestell's)
109	5.53	75	130	2.0	50	3.00	8.5	192	0.75	75.0	98	Industrial	N.C Pestell's (MTE Consultants Inc. - SWM Report - 2005)
Catchments Draining to West Culvert - Inlet #2													
110	1.92	30	150	1.0	150	1.50	6.4	113	1.50	80.0	98	Industrial	Alpine Solutions - West SWMP (R.J. Burnside - SWM Report - 1998)
111	13.23	0	170	2.4			10.9			70.0	98	Woodlot	Northern portion of Good & Schneider Lands
Catchments Draining to West Culvert - Inlet #3													
112	7.31	1	120	3.3			5.6			82.0	98	Agricultural	Area East of Nafziger Road
113	2.56	40	150	1.5	180	1.50	6.4	131	1.50	80.0	98	Industrial	Alpine Solutions - East SWMP (R.J. Burnside - SWM Report - 1998)
114	13.46	3	140	3.6			10.8			70.1	98	Woodlot	Area East of Nafziger Road
115	4.95	73	50	2.8	40	1.50	5.2	182	1.50	83.0	98	Recreational	Recreational Facility draining to SWMP (Stantec Consulting - SWM Report - 2010)
116	7.71	35	140	1.6			8.0			76.0	98	Industrial/Woodlot	West of Nafziger Road

Sub-Catchment Number	Area	Percent Impervious	Overland Length	Overland Slope	Pervious Length	Pervious Slope	Pervious IA	Impervious Length	Impervious Slope	SCS Curve Number Pervious (AMC II)	SCS Curve Number Impervious	Land Use	Comment
	(ha)	(%)	(m)	(%)	(m)	(%)	(mm)	(m)	(%)				
Catchments Draining to West Culvert - Inlet #4													
118	0.50	8	60	5.0			8.9			74.0	98	Residential	Northeast corner of Nithview Heights Subdivision
119	0.72	0	40	2.0			8.0			76.0	98	Road Allowance	Roadway corridor from Hamilton Road
120	1.08	5	20	3.0			8.0			76.0	98	Residential	Eastern part of Hamilton Heights Subdivision
Wilmot Employment Lands - Subject Properties													
117	7.45	0	140	2.0			5.8			81.4	98	Agricultural	Central portion of Schneider Lands
121	43.24	0	230	2.8			5.6			82.0	98	Agricultural	Good Lands
	142.42												
Catchments Draining to West Culvert - Inlet #6													
160	8.16	46	50	1.0	50	3.00	8.0	232	1.50	76.0	98	Residential	Hamilton Heights Subdivision
161	2.35	32	100	2.5	50	2.50	8.0	164	1.50	76.0	98	Industrial	Klassen Bronze Property
170	8.45	55	45	2.0	30	3.00	8.0	235	1.50	76.0	98	Residential/Industrial	Industrial/Residential area along Hamilton Road
Total to West Culvert	**161.38**	**17.2**											
Catchments Draining to East Culvert													
150	3.51	0	95	1.6	100	2.00	8.9	296	2.00	74.0	98	Recreational	Southern part of Recreational Facility (Stantec Consulting - SWM Report - 2010)
151	5.77	33	100	2.0	100	2.00	8.0	296	2.00	76.0	98	Industrial	Northwestern corner of Hwy 7/8 & Nafziger Road
152	8.56	5	170	3.5			5.6			82.0	98	Agricultural	Southern part of Schneider Lands
Total to East Culvert	**17.84**	**13**											
Sub-Total (North Highway 7/8)	**179.22**	**16.8**											
Catchments South of Highway 7/8													
180	0.70	26	45	1.5	20	2.00	6.8	68	1.00	79.0	98	Industrial	Portion of Maple Leaf Foods Property (Paragon Engineering - SWM Report - 1994)
181	1.87	93	120	1.0	20	2.00	13.7	112	1.00	65.0	98	Industrial	Western portion of John Bear Property
182	1.21	69	60	2.5	30	3.00	13.7	90	2.00	65.0	98	Industrial	Eastern portion of John Bear Property (Johnson Engineering - SWM Report - 2005
183	23.29	29	160	2.0	150	2.20	11.8	394	2.00	68.3	98	Agricultural/Industrial	Area south of Highway 7/8
184	2.95	2	80	3.1			8.9			74.0	98	Agricultural	Agricultural area south of Bleams Road
185	18.78	58	190	2.0	25	2.50	14.0	354	2.50	64.4	98	Residential	Residential area south of Bleams Road
Sub-Total (South)	**48.80**	**41.9**											
Grand Total	**228.02**	**22.2**											

Project: 34896-104 CAD: 34896-104-P-F3
December 12, 2018 - 9:48 a.m. - Plotted By: Mbrown

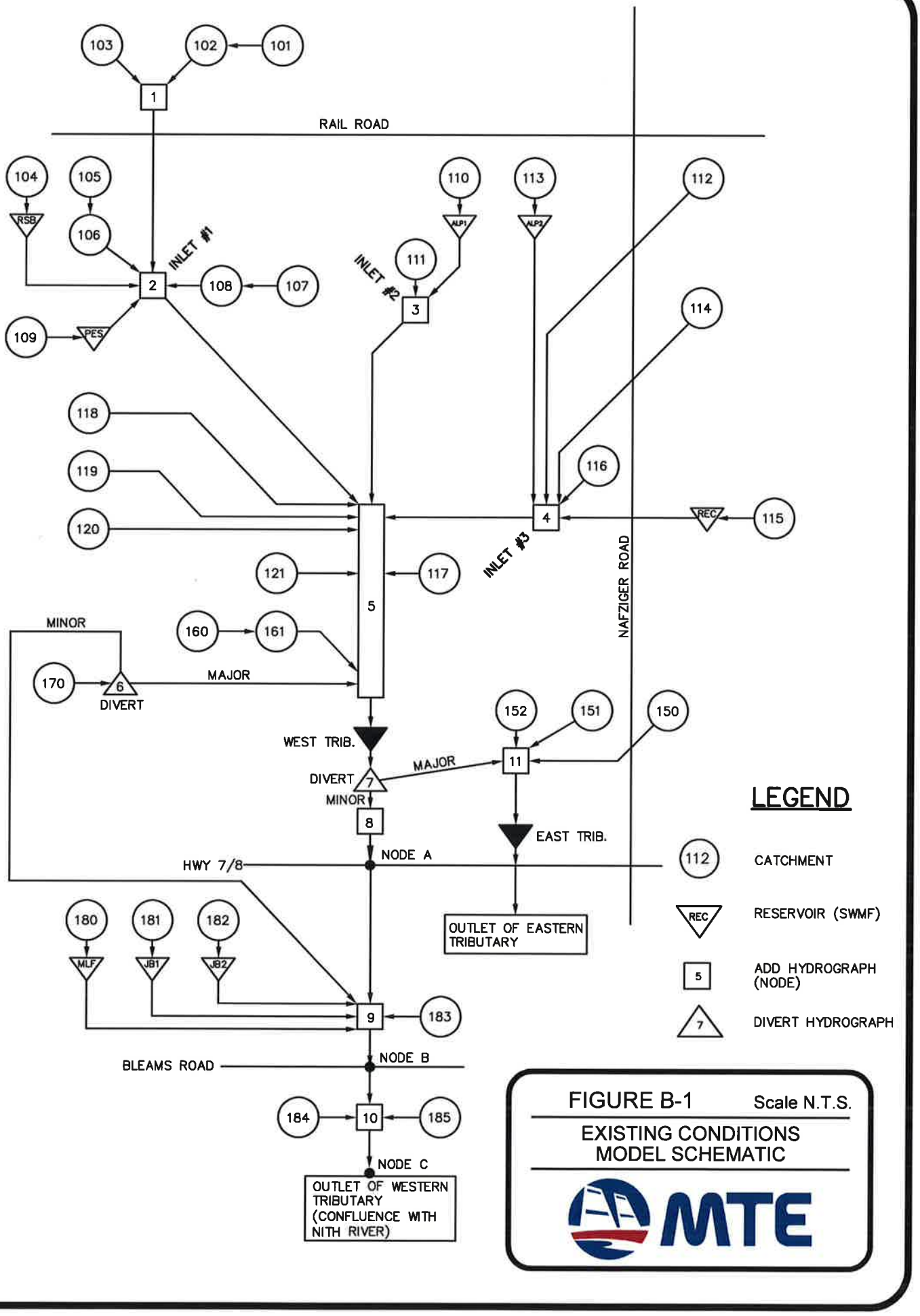


FIGURE B-1 Scale N.T.S.

EXISTING CONDITIONS MODEL SCHEMATIC

MTE

```
*             MIDUSS Output ------------------------------------------------>*
*             MIDUSS version                              Version 2.25  rev. 473*
*             MIDUSS created                            Sunday, February 07, 2010*
*          10 Units used:                                            ie METRIC*
*             Job folder:                           Q:\34896\104\SWM\MIDUSS\Pre*
*             Output filename:                        34896-104_Pre-0025mm.out*
*             Licensee name:                                            admin*
*             Company                                                Microsoft*
*             Date & Time last used:                  12/7/2018 at 11:43:31 AM*
* 81        ADD COMMENT==========================================================*
*         7 Lines of comment*
*           *******************************************
*           Wilmot Employement Lands*
*           New Hamburg, Ontario*
*           25mm Storm Event - Pre-development*
*           Job No.: 34896-104*
*           Calculated by: NED/MSB/GMK*
*           *******************************************
* 31        TIME PARAMETERS*
*       5.000   Time Step*
*     240.000   Max. Storm length*
*    1500.000   Max. Hydrograph*
* 32        STORM Chicago storm*
*           1   Chicago storm*
*     509.000   Coefficient A*
*       6.000   Constant B*
*       0.799   Exponent C*
*       0.400   Fraction R*
*     240.000   Duration*
*       1.000   Time step multiplier*
*           Maximum intensity           71.966    mm/hr*
*           Total depth                 25.028    mm*
*           7   0025hyd   Hydrograph extension used in this file*
* 81        ADD COMMENT==========================================================*
*         3 Lines of comment*
*           ***************************************************
*           Catchments North of GEXR, part of Inlet #1*
*           **************************************************
* 33        CATCHMENT 101*
*           1   Triangular SCS*
*           1   Equal length*
*           1   SCS method*
*         101   Area Northeast of GEXR*
*       0.000   % Impervious*
*       2.970   Total Area*
*      80.000   Flow length*
*       0.500   Overland Slope*
*       2.970   Pervious Area*
*      80.000   Pervious length*
*       0.500   Pervious slope*
*       0.000   Impervious Area*
*      80.000   Impervious length*
*       0.500   Impervious slope*
*       0.250   Pervious Manning 'n'*
*      82.000   Pervious SCS Curve No.*
*       0.201   Pervious Runoff coefficient*
*       0.100   Pervious Ia/S coefficient*
*       5.576   Pervious Initial abstraction*
*       0.015   Impervious Manning 'n'*
*      98.000   Impervious SCS Curve No.*
*       0.000   Impervious Runoff coefficient*
*       0.100   Impervious Ia/S coefficient*
*       0.518   Impervious Initial abstraction*
*                 0.015     0.000     0.000     0.000 c.m/sec*
*           Catchment 101          Pervious   Impervious Total Area *
*           Surface Area           2.970      0.000      2.970      hectare*
*           Time of concentration  74.150     7.228      74.150     minutes*
```



```
*           Time to Centroid       237.478    128.682    237.478    minutes*
*           Rainfall depth         25.028     25.028     25.028     mm*
*           Rainfall volume        743.32     0.00       743.32     c.m*
*           Rainfall losses        19.997     4.960      19.997     mm*
*           Runoff depth           5.031      20.068     5.031      mm*
*           Runoff volume          149.42     0.00       149.42     c.m*
*           Runoff coefficient     0.201      0.000      0.201      *
*           Maximum flow           0.015      0.000      0.015      c.m/sec*
* 40        HYDROGRAPH Add Runoff *
*         4 Add Runoff *
*                 0.015     0.015     0.000     0.000*
* 33        CATCHMENT 102*
*           1   Triangular SCS*
*           1   Equal length*
*           1   SCS method*
*         102   Pfenning Farm Development - north of GEXR*
*       0.000   % Impervious*
*      12.070   Total Area*
*     180.000   Flow length*
*       2.500   Overland Slope*
*      12.070   Pervious Area*
*     180.000   Pervious length*
*       2.500   Pervious slope*
*       0.000   Impervious Area*
*     180.000   Impervious length*
*       2.500   Impervious slope*
*       0.250   Pervious Manning 'n'*
*      82.000   Pervious SCS Curve No.*
*       0.201   Pervious Runoff coefficient*
*       0.100   Pervious Ia/S coefficient*
*       5.576   Pervious Initial abstraction*
*       0.015   Impervious Manning 'n'*
*      98.000   Impervious SCS Curve No.*
*       0.000   Impervious Runoff coefficient*
*       0.100   Impervious Ia/S coefficient*
*       0.518   Impervious Initial abstraction*
*                 0.062     0.015     0.000     0.000 c.m/sec*
*           Catchment 102          Pervious   Impervious Total Area *
*           Surface Area           12.070     0.000      12.070     hectare*
*           Time of concentration  74.427     7.255      74.427     minutes*
*           Time to Centroid       237.863    128.722    237.862    minutes*
*           Rainfall depth         25.028     25.028     25.028     mm*
*           Rainfall volume        3020.84    0.00       3020.84    c.m*
*           Rainfall losses        19.997     4.952      19.997     mm*
*           Runoff depth           5.031      20.076     5.031      mm*
*           Runoff volume          607.22     0.00       607.22     c.m*
*           Runoff coefficient     0.201      0.000      0.201      *
*           Maximum flow           0.062      0.000      0.062      c.m/sec*
* 40        HYDROGRAPH Add Runoff *
*         4 Add Runoff *
*                 0.062     0.077     0.000     0.000*
* 40        HYDROGRAPH Copy to Outflow*
*         8 Copy to Outflow*
*                 0.062     0.077     0.077     0.000*
* 40        HYDROGRAPH   Combine    1*
*         6 Combine *
*         1 Node #*
*           u/s of GEXR*
*           Maximum flow                 0.077    c.m/sec*
*           Hydrograph volume            756.641  c.m*
*                 0.062     0.077     0.077     0.077*
* 40        HYDROGRAPH Start - New Tributary*
*         2 Start - New Tributary*
*                 0.062     0.000     0.077     0.077*
* 33        CATCHMENT 103*
*           1   Triangular SCS*
*           1   Equal length*
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.065   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*              0.003     0.000     0.077     0.077 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  93.348     4.460      93.347     minutes"
*           Time to Centroid       251.972    124.266    251.971    minutes"
*           Rainfall depth         25.028     25.028     25.028     mm"
*           Rainfall volume        520.58     0.00       520.58     c.m"
*           Rainfall losses        23.402     4.987      23.402     mm"
*           Runoff depth           1.626      20.041     1.626      mm"
*           Runoff volume          33.82      0.00       33.82      c.m"
*           Runoff coefficient     0.065      0.000      0.065      "
*           Maximum flow           0.003      0.000      0.003      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*              0.003     0.003     0.077     0.077"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*              0.003     0.003     0.003     0.077"
* 40        HYDROGRAPH   Combine    1"
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                  0.080    c.m/sec"
*           Hydrograph volume           790.459    c.m"
*              0.003     0.003     0.003     0.080"
* 40        HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                  0.080    c.m/sec"
*           Hydrograph volume           790.459    c.m"
*              0.003     0.080     0.003     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*              0.003     0.080     0.080     0.000"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.080    c.m/sec"
*           Hydrograph volume           790.459    c.m"
*              0.003     0.080     0.080     0.080"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*              0.003     0.000     0.080     0.080"
```



```
* 81          ADD COMMENT==================================================="
*            3  Lines of comment"
*               ************************************************"
*               Catchments South of GEXR, part of Inlet #1"
*               ************************************************"
* 33          CATCHMENT 104"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           104   Riverside Brass"
*        59.000   % Impervious"
*         2.020   Total Area"
*        35.000   Flow length"
*         1.200   Overland Slope"
*         0.828   Pervious Area"
*        60.000   Pervious length"
*         2.000   Pervious slope"
*         1.192   Impervious Area"
*       116.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.805   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.140     0.000     0.080     0.080 c.m/sec"
*              Catchment 104          Pervious   Impervious Total Area "
*              Surface Area           0.828      1.192      2.020      hectare"
*              Time of concentration  57.064     9.033      13.503     minutes"
*              Time to Centroid       211.602    131.429    138.889    minutes"
*              Rainfall depth         25.028     25.028     25.028     mm"
*              Rainfall volume        207.28     298.28     505.56     c.m"
*              Rainfall losses        22.053     4.884      11.923     mm"
*              Runoff depth           2.974      20.144     13.104     mm"
*              Runoff volume          24.63      240.07     264.71     c.m"
*              Runoff coefficient     0.119      0.805      0.524      "
*              Maximum flow           0.003      0.139      0.140      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                 0.140     0.140     0.080     0.080"
* 54           POND DESIGN"
*          0.140   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*          264.7   Hydrograph volume    c.m"
*             4.   Number of stages"
*          0.000   Minimum water level    metre"
*          0.910   Maximum water level    metre"
*          0.000   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.3100   0.03090   782.000"
*                   0.6100    0.1232  1619.000"
*                   0.9100    0.2769  2511.000"
*              Peak outflow                  0.008    c.m/sec"
*              Maximum level                 0.076    metre"
*              Maximum storage             192.103    c.m"
*              Centroidal lag                9.249    hours"
*                   0.140     0.140     0.008     0.080 c.m/sec"
* 40           HYDROGRAPH   Combine    2"
*             6   Combine "
*             2   Node #"
```

```
*             INLET 1"
*            Maximum flow                  0.087    c.m/sec"
*            Hydrograph volume          1044.640    c.m"
*                   0.140     0.140     0.008     0.087"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.140     0.000     0.008     0.087"
* 33         CATCHMENT 105"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         105   Iron Bridge Manufacturing Property"
*      65.000   % Impervious"
*       3.570   Total Area"
*      90.000   Flow length"
*       2.000   Overland Slope"
*       1.250   Pervious Area"
*      90.000   Pervious length"
*       2.000   Pervious slope"
*       2.320   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.000   Pervious SCS Curve No."
*       0.185   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.958   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.804   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.314     0.000     0.008     0.087 c.m/sec"
*            Catchment 105          Pervious   Impervious Total Area "
*            Surface Area           1.250      2.320      3.570      hectare"
*            Time of concentration  54.996     5.118      10.608     minutes"
*            Time to Centroid       210.933    125.283    134.712    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        312.72     580.77     893.49     c.m"
*            Rainfall losses        20.404     4.901      10.327     mm"
*            Runoff depth           4.623      20.126     14.700     mm"
*            Runoff volume          57.77      467.03     524.80     c.m"
*            Runoff coefficient     0.185      0.804      0.587      "
*            Maximum flow           0.007      0.313      0.314      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.314     0.314     0.008     0.087"
* 33         CATCHMENT 106"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         106   N.C. Pestell Head Office and other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      55.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      55.000   Pervious length"
*       1.500   Pervious slope"
*       1.088   Impervious Area"
*      55.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
```



```
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.800   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.142     0.314     0.008     0.087 c.m/sec"
*            Catchment 106          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  59.043     4.152      5.555      minutes"
*            Time to Centroid       214.093    123.773    126.082    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        48.05      272.30     320.35     c.m"
*            Rainfall losses        22.053     5.018      7.573      mm"
*            Runoff depth           2.975      20.010     17.455     mm"
*            Runoff volume          5.71       217.71     223.42     c.m"
*            Runoff coefficient     0.119      0.800      0.697      "
*            Maximum flow           0.001      0.142      0.142      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.142     0.456     0.008     0.087"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.142     0.456     0.456     0.087"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.466    c.m/sec"
*            Hydrograph volume          1792.867    c.m"
*                   0.142     0.456     0.456     0.466"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.142     0.000     0.456     0.466"
* 33         CATCHMENT 107"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         107   Industrial properties at end of Hamilton Road"
*      40.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.710   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       1.140   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.801   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.152     0.000     0.456     0.466 c.m/sec"
*            Catchment 107          Pervious   Impervious Total Area "
*            Surface Area           1.710      1.140      2.850      hectare"
*            Time of concentration  62.974     4.428      15.088     minutes"
*            Time to Centroid       219.049    124.213    141.481    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        427.97     285.32     713.29     c.m"
*            Rainfall losses        22.053     4.986      15.227     mm"
*            Runoff depth           2.974      20.041     9.801      mm"
```

```
*            Runoff volume          50.86      228.47      279.33      c.m"
*            Runoff coefficient     0.119      0.801       0.392       "
*            Maximum flow           0.006      0.151       0.152       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.152     0.152     0.456     0.466"
* 33         CATCHMENT 108"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         108   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.066   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.793   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.038     0.152     0.456     0.466 c.m/sec"
*            Catchment 108          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920       hectare"
*            Time of concentration  77.117     3.728      48.800      minutes"
*            Time to Centroid       233.588    123.194    190.992     minutes"
*            Rainfall depth         25.028     25.028     25.028      mm"
*            Rainfall volume        1407.56    74.08      1481.64     c.m"
*            Rainfall losses        23.365     5.185      22.456      mm"
*            Runoff depth           1.662      19.842     2.571       mm"
*            Runoff volume          93.49      58.73      152.22      c.m"
*            Runoff coefficient     0.066      0.793      0.103       "
*            Maximum flow           0.009      0.038      0.038       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.038     0.189     0.456     0.466"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.038     0.189     0.189     0.466"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*               Maximum flow              0.656    c.m/sec"
*               Hydrograph volume      2224.419    c.m"
*                 0.038     0.189     0.189     0.656"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.038     0.000     0.189     0.656"
* 33         CATCHMENT 109"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         109   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
```



```
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.108   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.806   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.426     0.000     0.189     0.656 c.m/sec"
*            Catchment 109          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530       hectare"
*            Time of concentration  48.732     10.822     12.446      minutes"
*            Time to Centroid       200.128    134.265    137.085     minutes"
*            Rainfall depth         25.028     25.028     25.028      mm"
*            Rainfall volume        346.01     1038.02    1384.03     c.m"
*            Rainfall losses        22.319     4.844      9.213       mm"
*            Runoff depth           2.709      20.183     15.815      mm"
*            Runoff volume          37.45      837.11     874.56      c.m"
*            Runoff coefficient     0.108      0.806      0.632       "
*            Maximum flow           0.005      0.425      0.426       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.426     0.426     0.189     0.656"
* 54         POND DESIGN"
*       0.426   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       874.6   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*               Peak outflow                  0.017    c.m/sec"
*               Maximum level                 0.338    metre"
*               Maximum storage             729.270    c.m"
*               Centroidal lag               18.414    hours"
*                 0.426     0.426     0.017     0.656 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*               Maximum flow                  0.658    c.m/sec"
*               Hydrograph volume          2853.068    c.m"
*                 0.426     0.426     0.017     0.658"
* 81         ADD COMMENT==================================================="
*           3   Lines of comment"
*               **************************************************"
*               Catchments South of GEXR, part of Inlet #2"
```

```
*          ***************************************************
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.426     0.000     0.017     0.658"
* 33        CATCHMENT 110"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       110   Alpine Solutions - west SMWP"
*    30.000   % Impervious"
*     1.920   Total Area"
*   150.000   Flow length"
*     1.000   Overland Slope"
*     1.344   Pervious Area"
*   150.000   Pervious length"
*     1.500   Pervious slope"
*     0.576   Impervious Area"
*   113.000   Impervious length"
*     1.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    80.000   Pervious SCS Curve No."
*     0.170   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     6.350   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.802   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.081     0.000     0.017     0.658 c.m/sec"
*          Catchment 110          Pervious   Impervious Total Area "
*          Surface Area           1.344      0.576      1.920      hectare"
*          Time of concentration  85.517     6.395      32.540     minutes"
*          Time to Centroid       252.590    127.322    168.715    minutes"
*          Rainfall depth         25.028     25.028     25.028     mm"
*          Rainfall volume        336.37     144.16     480.53     c.m"
*          Rainfall losses        20.783     4.959      16.036     mm"
*          Runoff depth           4.245      20.069     8.992      mm"
*          Runoff volume          57.05      115.60     172.65     c.m"
*          Runoff coefficient     0.170      0.802      0.359      "
*          Maximum flow           0.005      0.080      0.081      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.081     0.081     0.017     0.658"
* 54        POND DESIGN"
*      0.081   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
*      172.6   Hydrograph volume    c.m"
*         7.   Number of stages"
*      0.000   Minimum water level    metre"
*      1.100   Maximum water level    metre"
*      0.000   Starting water level    metre"
*          0   Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                0.000     0.000     0.000"
*               0.2500   0.04200     7.000"
*               0.5000   0.09000    71.000"
*               0.7500    0.1250   220.000"
*               0.9000    0.1400   346.000"
*                1.000    0.3110   445.000"
*                1.100    0.6160   557.000"
*          Peak outflow                  0.050    c.m/sec"
*          Maximum level                 0.294    metre"
*          Maximum storage              18.231    c.m"
*          Centroidal lag                2.868    hours"
*               0.081     0.081     0.050     0.658 c.m/sec"
* 40        HYDROGRAPH   Combine    3"
```



```
*         6   Combine "
*         3   Node #"
*             INLET 2"
*          Maximum flow                  0.050    c.m/sec"
*          Hydrograph volume           172.946    c.m"
*                0.081     0.081     0.050     0.050"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.081     0.000     0.050     0.050"
* 33        CATCHMENT 111"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       111   Woodlot north of Schneider/Good lands"
*     0.000   % Impervious"
*    13.230   Total Area"
*   170.000   Flow length"
*     2.400   Overland Slope"
*    13.230   Pervious Area"
*   170.000   Pervious length"
*     2.400   Pervious slope"
*     0.000   Impervious Area"
*   170.000   Impervious length"
*     2.400   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    70.000   Pervious SCS Curve No."
*     0.065   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    10.886   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.000   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.014     0.000     0.050     0.050 c.m/sec"
*          Catchment 111          Pervious   Impervious Total Area "
*          Surface Area           13.230     0.000      13.230     hectare"
*          Time of concentration  148.538    7.097      148.537    minutes"
*          Time to Centroid       314.035    128.488    314.032    minutes"
*          Rainfall depth         25.028     25.028     25.028     mm"
*          Rainfall volume        3311.16    0.00       3311.16    c.m"
*          Rainfall losses        23.402     4.997      23.402     mm"
*          Runoff depth           1.626      20.031     1.626      mm"
*          Runoff volume          215.11     0.00       215.12     c.m"
*          Runoff coefficient     0.065      0.000      0.065      "
*          Maximum flow           0.014      0.000      0.014      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.014     0.014     0.050     0.050"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.014     0.014     0.014     0.050"
* 40        HYDROGRAPH   Combine    3"
*         6   Combine "
*         3   Node #"
*             INLET 2"
*          Maximum flow                  0.051    c.m/sec"
*          Hydrograph volume           388.062    c.m"
*                0.014     0.014     0.014     0.051"
* 81        ADD COMMENT==========================================================="
*       3  Lines of comment"
*          ************************************************"
*          South of GEXR along Nafziger Rd, part of Inlet #3"
*          ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.014     0.000     0.014     0.051"
```

```
* 33         CATCHMENT 112"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         112   Culivated lands east of Nafziger Road"
*       1.000   % Impervious"
*       7.310   Total Area"
*     120.000   Flow length"
*       3.300   Overland Slope"
*       7.237   Pervious Area"
*     120.000   Pervious length"
*       3.300   Pervious slope"
*       0.073   Impervious Area"
*     120.000   Impervious length"
*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.201   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.805   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.049     0.000     0.014     0.051 c.m/sec"
*            Catchment 112          Pervious   Impervious Total Area "
*            Surface Area           7.237      0.073      7.310      hectare"
*            Time of concentration  53.691     5.234      51.807     minutes"
*            Time to Centroid       208.980    125.465    205.732    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        1811.23    18.30      1829.52    c.m"
*            Rainfall losses        19.998     4.880      19.847     mm"
*            Runoff depth           5.029      20.148     5.181      mm"
*            Runoff volume          363.98     14.73      378.71     c.m"
*            Runoff coefficient     0.201      0.805      0.207      "
*            Maximum flow           0.049      0.010      0.049      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.049     0.049     0.014     0.051"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.049     0.049     0.049     0.051"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                 0.049    c.m/sec"
*               Hydrograph volume          378.707    c.m"
*                 0.049     0.049     0.049     0.049"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.049     0.000     0.049     0.049"
* 33         CATCHMENT 113"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         113   Alpine Solutions - East SMWP"
*      40.000   % Impervious"
*       2.560   Total Area"
*     150.000   Flow length"
*       1.500   Overland Slope"
*       1.536   Pervious Area"
*     180.000   Pervious length"
*       1.500   Pervious slope"
*       1.024   Impervious Area"
*     131.000   Impervious length"
```



```
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.170   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.800   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.142     0.000     0.049     0.049 c.m/sec"
*            Catchment 113          Pervious   Impervious Total Area "
*            Surface Area           1.536      1.024      2.560      hectare"
*            Time of concentration  95.403     6.988      28.327     minutes"
*            Time to Centroid       266.081    128.320    161.569    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        384.43     256.28     640.71     c.m"
*            Rainfall losses        20.783     5.012      14.475     mm"
*            Runoff depth           4.245      20.015     10.553     mm"
*            Runoff volume          65.20      204.96     270.16     c.m"
*            Runoff coefficient     0.170      0.800      0.422      "
*            Maximum flow           0.005      0.142      0.142      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.142     0.142     0.049     0.049"
* 54         POND DESIGN"
*       0.142   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       270.2   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*               Peak outflow                   0.044    c.m/sec"
*               Maximum level                  0.259    metre"
*               Maximum storage               73.537    c.m"
*               Centroidal lag                 2.960    hours"
*                 0.142     0.142     0.044     0.049 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                 0.086    c.m/sec"
*               Hydrograph volume          648.842    c.m"
*                 0.142     0.142     0.044     0.086"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.142     0.000     0.044     0.086"
* 33         CATCHMENT 114"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         114   Woodlot East and West of Nafziger Road"
*       3.000   % Impervious"
*      13.460   Total Area"
*     140.000   Flow length"
*       3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.066   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.806   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.055     0.000     0.044     0.086 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  116.375    5.593      85.904     minutes"
*            Time to Centroid       277.843    126.027    236.085    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        3267.66    101.06     3368.72    c.m"
*            Rainfall losses        23.384     4.859      22.828     mm"
*            Runoff depth           1.644      20.169     2.200      mm"
*            Runoff volume          214.65     81.44      296.09     c.m"
*            Runoff coefficient     0.066      0.806      0.088      "
*            Maximum flow           0.016      0.055      0.055      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.055     0.055     0.044     0.086"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.055     0.055     0.055     0.086"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.105    c.m/sec"
*            Hydrograph volume           944.935    c.m"
*                 0.055     0.055     0.055     0.105"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.055     0.000     0.055     0.105"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.219   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.807   Impervious Runoff coefficient"
```



```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.441     0.000     0.055     0.105 c.m/sec"
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  33.652     8.513      10.801     minutes"
*            Time to Centroid       180.684    130.578    135.139    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        334.49     904.37     1238.87    c.m"
*            Rainfall losses        19.559     4.826      8.804      mm"
*            Runoff depth           5.469      20.202     16.224     mm"
*            Runoff volume          73.09      729.98     803.07     c.m"
*            Runoff coefficient     0.219      0.807      0.648      "
*            Maximum flow           0.014      0.437      0.441      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.441     0.441     0.055     0.105"
* 54         POND DESIGN"
*       0.441   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       803.1   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00700   248.000"
*                0.2500   0.00900   418.000"
*                0.3500   0.01100   593.000"
*                0.4500   0.01300   775.000"
*                0.5500   0.01500   964.000"
*                0.6500   0.01600  1161.000"
*                0.7500   0.01700  1364.000"
*                0.8500   0.01900  1575.000"
*                0.9500   0.02000  1795.000"
*                 1.050   0.05600  2025.000"
*                 1.150    0.2080  2263.000"
*                 1.250    0.4600  2511.000"
*                 1.350     2.766  2768.000"
*                 1.450     6.856  3033.000"
*            Peak outflow                    0.012    c.m/sec"
*            Maximum level                   0.397    metre"
*            Maximum storage               678.481    c.m"
*            Centroidal lag                 14.260    hours"
*                 0.441     0.441     0.012     0.105 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.110    c.m/sec"
*            Hydrograph volume          1630.375    c.m"
*                 0.441     0.441     0.012     0.110"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.441     0.000     0.012     0.110"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.119   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.801   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.374     0.000     0.012     0.110 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  101.442    7.133      27.517     minutes"
*             Time to Centroid       267.522    128.542    158.581    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        1254.26    675.37     1929.63    c.m"
*             Rainfall losses        22.053     4.990      16.081     mm"
*             Runoff depth           2.975      20.037     8.947      mm"
*             Runoff volume          149.09     540.71     689.79     c.m"
*             Runoff coefficient     0.119      0.801      0.357      "
*             Maximum flow           0.012      0.373      0.374      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.374     0.374     0.012     0.110"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.374     0.374     0.374     0.110"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.483    c.m/sec"
*            Hydrograph volume          2320.169    c.m"
*                   0.374     0.374     0.374     0.483"
* 40          HYDROGRAPH   Confluence    2"
*           7   Confluence "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.658    c.m/sec"
*            Hydrograph volume          2853.068    c.m"
*                   0.374     0.658     0.374     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.374     0.658     0.658     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.658    c.m/sec"
*            Hydrograph volume          2853.068    c.m"
*                   0.374     0.658     0.658     0.658"
* 40          HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.051    c.m/sec"
*            Hydrograph volume           388.062    c.m"
*                   0.374     0.051     0.658     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.374     0.051     0.051     0.000"
```



```
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.704    c.m/sec"
*            Hydrograph volume          3241.129    c.m"
*                   0.374     0.051     0.051     0.704"
* 40          HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.483    c.m/sec"
*            Hydrograph volume          2320.169    c.m"
*                   0.374     0.483     0.051     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.374     0.483     0.483     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  1.188    c.m/sec"
*            Hydrograph volume          5561.297    c.m"
*                   0.374     0.483     0.483     1.188"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.374     0.000     0.483     1.188"
* 33          CATCHMENT 117"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         117   Cultivated Schneider central lands"
*       0.000   % Impervious"
*       7.450   Total Area"
*     140.000   Flow length"
*       2.000   Overland Slope"
*       7.450   Pervious Area"
*     140.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     140.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.400   Pervious SCS Curve No."
*       0.191   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.804   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.038     0.000     0.483     1.188 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  70.355     6.671      70.355     minutes"
*             Time to Centroid       232.174    127.812    232.173    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        1864.56    0.00       1864.56    c.m"
*             Rainfall losses        20.245     5.022      20.245     mm"
*             Runoff depth           4.783      20.005     4.783      mm"
*             Runoff volume          356.32     0.00       356.32     c.m"
*             Runoff coefficient     0.191      0.000      0.191      "
*             Maximum flow           0.038      0.000      0.038      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.038     0.038     0.483     1.188"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.038     0.038     0.038     1.188"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  1.192    c.m/sec"
*             Hydrograph volume          5917.612    c.m"
*                   0.038     0.038     0.038     1.192"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments east of Hamilton Road, part of Inlet #4"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.038     0.000     0.038     1.192"
* 33          CATCHMENT 118"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          118   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.098   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.796   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.005     0.000     0.038     1.192 c.m/sec"
*             Catchment 118          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  50.584     3.048      30.948     minutes"
*             Time to Centroid       201.260    122.026    168.529    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        115.13     10.01      125.14     c.m"
*             Rainfall losses        22.567     5.111      21.170     mm"
*             Runoff depth           2.461      19.917     3.857      mm"
*             Runoff volume          11.32      7.97       19.29      c.m"
*             Runoff coefficient     0.098      0.796      0.154      "
*             Maximum flow           0.002      0.005      0.005      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.005     0.005     0.038     1.192"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.005     0.005     0.005     1.192"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  1.197    c.m/sec"
*             Hydrograph volume          5936.899    c.m"
```



```
*                   0.005     0.005     0.005     1.197"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.005     0.000     0.005     1.197"
* 33          CATCHMENT 119"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          119   Existing ROW from Hamilton Road"
*        0.000   % Impervious"
*        0.720   Total Area"
*       40.000   Flow length"
*        2.000   Overland Slope"
*        0.720   Pervious Area"
*       40.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*       40.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.119   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.003     0.000     0.005     1.197 c.m/sec"
*             Catchment 119          Pervious   Impervious Total Area "
*             Surface Area           0.720      0.000      0.720      hectare"
*             Time of concentration  44.741     3.146      44.741     minutes"
*             Time to Centroid       196.074    122.195    196.074    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        180.20     0.00       180.20     c.m"
*             Rainfall losses        22.053     5.124      22.053     mm"
*             Runoff depth           2.974      19.904     2.974      mm"
*             Runoff volume          21.41      0.00       21.42      c.m"
*             Runoff coefficient     0.119      0.000      0.119      "
*             Maximum flow           0.003      0.000      0.003      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.003     0.003     0.005     1.197"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.003     0.003     0.003     1.197"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  1.197    c.m/sec"
*             Hydrograph volume          5958.311    c.m"
*                   0.003     0.003     0.003     1.197"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchment to Inlet #5"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.003     0.000     0.003     1.197"
* 33          CATCHMENT 120"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          120   Rear yards from Hamilton Heights Subdivision"
```

```
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.798   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.009     0.000     0.003     1.197 c.m/sec"
*            Catchment 120          Pervious   Impervious Total Area "
*            Surface Area           1.026      0.054      1.080      hectare"
*            Time of concentration  26.137     1.838      19.789     minutes"
*            Time to Centroid       172.629    119.953    158.868    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        256.78     13.51      270.30     c.m"
*            Rainfall losses        22.055     5.055      21.205     mm"
*            Runoff depth           2.972      19.973     3.822      mm"
*            Runoff volume          30.50      10.79      41.28      c.m"
*            Runoff coefficient     0.119      0.798      0.153      "
*            Maximum flow           0.006      0.008      0.009      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.009     0.009     0.003     1.197"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.009     0.009     0.009     1.197"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 1.204    c.m/sec"
*            Hydrograph volume         5999.594    c.m"
*                 0.009     0.009     0.009     1.204"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            **************************************************"
*            Good Lands"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.009     0.000     0.009     1.204"
* 33         CATCHMENT 121"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         121   Good Lands"
*       0.000   % Impervious"
*      43.240   Total Area"
*     230.000   Flow length"
*       2.800   Overland Slope"
*      43.240   Pervious Area"
*     230.000   Pervious length"
*       2.800   Pervious slope"
*       0.000   Impervious Area"
*     230.000   Impervious length"
```



```
*       2.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.201   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.203     0.000     0.009     1.204 c.m/sec"
*            Catchment 121          Pervious   Impervious Total Area "
*            Surface Area           43.240     0.000      43.240     hectare"
*            Time of concentration  83.337     8.123      83.337     minutes"
*            Time to Centroid       250.276    130.044    250.275    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        1.0822     0.0000     1.0822     ha-m"
*            Rainfall losses        19.997     4.816      19.997     mm"
*            Runoff depth           5.031      20.212     5.031      mm"
*            Runoff volume          2175.34    0.01       2175.35    c.m"
*            Runoff coefficient     0.201      0.000      0.201      "
*            Maximum flow           0.203      0.000      0.203      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.203     0.203     0.009     1.204"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.203     0.203     0.203     1.204"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 1.223    c.m/sec"
*            Hydrograph volume         8174.944    c.m"
*                 0.203     0.203     0.203     1.223"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments to Inlet #6"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.203     0.000     0.203     1.223"
* 33         CATCHMENT 160"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         160   Hamilton Heights Subdivision"
*      46.000   % Impervious"
*       8.160   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       4.406   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       3.754   Impervious Area"
*     232.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.804   Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.417     0.000     0.203     1.223 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  45.292     9.847      15.090     minutes"
*            Time to Centroid       196.766    132.772    142.238    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        1102.82    939.44     2042.26    c.m"
*            Rainfall losses        22.053     4.915      14.170     mm"
*            Runoff depth           2.974      20.113     10.858     mm"
*            Runoff volume          131.07     754.96     886.02     c.m"
*            Runoff coefficient     0.119      0.804      0.434      "
*            Maximum flow           0.019      0.414      0.417      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.417     0.417     0.203     1.223"
* 33         CATCHMENT 161"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        161   Klassen Bronze Property"
*     32.000   % Impervious"
*      2.350   Total Area"
*    100.000   Flow length"
*      2.500   Overland Slope"
*      1.598   Pervious Area"
*     50.000   Pervious length"
*      2.500   Pervious slope"
*      0.752   Impervious Area"
*    164.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.119   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.807   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*               0.103     0.417     0.203     1.223 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  47.839     7.997      17.490     minutes"
*            Time to Centroid       199.975    129.846    146.555    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        399.94     188.21     588.15     c.m"
*            Rainfall losses        22.053     4.821      16.539     mm"
*            Runoff depth           2.974      20.207     8.489      mm"
*            Runoff volume          47.53      151.95     199.48     c.m"
*            Runoff coefficient     0.119      0.807      0.339      "
*            Maximum flow           0.007      0.102      0.103      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.103     0.520     0.203     1.223"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               0.103     0.520     0.520     1.223"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                1.743    c.m/sec"
*           Hydrograph volume        9260.451    c.m"
*               0.103     0.520     0.520     1.743"
```



```
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             ************************************************"
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               0.103     0.000     0.520     1.743"
* 33         CATCHMENT 170"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        170   Industrial/Residential area along Hamilton Road"
*     55.000   % Impervious"
*      8.450   Total Area"
*     45.000   Flow length"
*      2.000   Overland Slope"
*      3.802   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      4.648   Impervious Area"
*    235.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.119   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.804   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*               0.514     0.000     0.520     1.743 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  33.336     9.923      12.450     minutes"
*            Time to Centroid       181.695    132.892    138.160    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        951.68     1163.16    2114.84    c.m"
*            Rainfall losses        22.053     4.914      12.626     mm"
*            Runoff depth           2.975      20.114     12.401     mm"
*            Runoff volume          113.11     934.80     1047.91    c.m"
*            Runoff coefficient     0.119      0.804      0.496      "
*            Maximum flow           0.020      0.510      0.514      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.514     0.514     0.520     1.743"
* 56         DIVERSION"
*          6   Node number"
*       1.560   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow          0.000    c.m/sec"
*            Volume of diverted flow        0.000    c.m"
*            DIV00006.0025hyd"
*            Major flow at 6"
*               0.514     0.514     0.514     1.743 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*            Maximum flow                   0.514    c.m/sec"
*            Hydrograph volume           1047.909    c.m"
*               0.514     0.514     0.514     0.514"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
```

```
*                  0.514     0.000     0.514     0.514"
* 47          FILEI_O Read/Open DIV00006.0025hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00006.0025hyd"
*            Major flow at 6"
*            Total volume                0.000    c.m"
*            Maximum flow                0.000    c.m/sec"
*                 0.000     0.000     0.514     0.514 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.000     0.000     0.514     0.514"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.000     0.000     0.000     0.514"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                1.743    c.m/sec"
*            Hydrograph volume        9260.450    c.m"
*                  0.000     0.000     0.000     1.743"
* 40          HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                1.743    c.m/sec"
*            Hydrograph volume        9260.450    c.m"
*                  0.000     1.743     0.000     0.000"
* 54          POND DESIGN"
*        1.743   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       9260.5   Hydrograph volume    c.m"
*           7.   Number of stages"
*      334.290   Minimum water level    metre"
*      336.800   Maximum water level    metre"
*      334.290   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                 334.290     0.000     0.000"
*                 334.500    0.2540     5.000"
*                 335.000     1.303   390.000"
*                 335.500     2.800  3269.000"
*                 336.000     4.639  13030.00"
*                 336.400     6.109  30065.00"
*                 336.800    18.376  57257.00"
*            Peak outflow                1.305    c.m/sec"
*            Maximum level             335.001    metre"
*            Maximum storage           393.871    c.m"
*            Centroidal lag              4.628    hours"
*                 0.000     1.743     1.305     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*           5   Next link "
*                  0.000     1.305     1.305     0.000"
* 56          DIVERSION"
*           7   Node number"
*        7.170   Overflow threshold"
*        1.000   Required diverted fraction"
*            0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow       0.000    c.m/sec"
*            Volume of diverted flow     0.000    c.m"
*            DIV00007.0025hyd"
*            Major flow at 7"
*                  0.000     1.305     1.305     0.000 c.m/sec"
* 40          HYDROGRAPH   Combine    8"
*           6   Combine "
```



```
*           8   Node #"
*               NODE A"
*            Maximum flow                1.305    c.m/sec"
*            Hydrograph volume        9256.892    c.m"
*                  0.000     1.305     1.305     1.305"
* 81          ADD COMMENT==========================================================*
*           3   Lines of comment"
*               ************************************************"
*               Catchments South of Hwy 7/8"
*               ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.000     0.000     1.305     1.305"
* 33          CATCHMENT 180"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         180   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.155   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.805   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.026     0.000     1.305     1.305 c.m/sec"
*            Catchment 180          Pervious   Impervious Total Area "
*            Surface Area           0.518      0.182      0.700      hectare"
*            Time of concentration  24.655     5.325      12.178     minutes"
*            Time to Centroid       169.975    125.607    141.338    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        129.64     45.55      175.19     c.m"
*            Rainfall losses        21.137     4.869      16.908     mm"
*            Runoff depth           3.890      20.158     8.120      mm"
*            Runoff volume          20.15      36.69      56.84      c.m"
*            Runoff coefficient     0.155      0.805      0.324      "
*            Maximum flow           0.004      0.025      0.026      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.026     0.026     1.305     1.305"
* 54          POND DESIGN"
*       0.026   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        56.8   Hydrograph volume    c.m"
*           8.  Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
```

```
*               0.4500   0.00800    69.000"
*               0.6500   0.01000   178.000"
*               0.7000    0.1060   208.000"
*               0.7500    0.2810   240.000"
*            Peak outflow                  0.006    c.m/sec"
*            Maximum level                 0.299    metre"
*            Maximum storage              18.314    c.m"
*            Centroidal lag                2.830   hours"
*                 0.026     0.026     0.006     1.305 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.520    c.m/sec"
*            Hydrograph volume          1104.749    c.m"
*                  0.026     0.026     0.006     0.520"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.026     0.000     0.006     0.520"
* 33         CATCHMENT 181"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         181   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.035   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.801   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.240     0.000     0.006     0.520 c.m/sec"
*            Catchment 181          Pervious   Impervious Total Area "
*            Surface Area           0.131      1.739      1.870      hectare"
*            Time of concentration  65.090     7.184      7.373      minutes"
*            Time to Centroid       219.733    128.615    128.912    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        32.76      435.26     468.02     c.m"
*            Rainfall losses        24.158     4.975      6.318      mm"
*            Runoff depth           0.870      20.053     18.710     mm"
*            Runoff volume          1.14       348.74     349.87     c.m"
*            Runoff coefficient     0.035      0.801      0.748      "
*            Maximum flow           0.000      0.240      0.240      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.240     0.240     0.006     0.520"
* 54         POND DESIGN"
*        0.240   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*        349.9   Hydrograph volume    c.m"
*           7.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.800   Maximum water level    metre"
*        0.000   Starting water level    metre"
```



```
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.111    c.m/sec"
*            Maximum level                 0.517    metre"
*            Maximum storage              72.364    c.m"
*            Centroidal lag                2.232   hours"
*                 0.240     0.240     0.111     0.520 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.620    c.m/sec"
*            Hydrograph volume          1454.777    c.m"
*                  0.240     0.240     0.111     0.620"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.240     0.000     0.111     0.620"
* 33         CATCHMENT 182"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         182   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.035   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.804   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.112     0.000     0.111     0.620 c.m/sec"
*            Catchment 182          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  73.509     5.118      6.420      minutes"
*            Time to Centroid       227.975    125.283    127.239    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        93.88      208.96     302.83     c.m"
*            Rainfall losses        24.158     4.901      10.871     mm"
*            Runoff depth           0.870      20.126     14.157     mm"
*            Runoff volume          3.26       168.04     171.30     c.m"
*            Runoff coefficient     0.035      0.804      0.566      "
*            Maximum flow           0.000      0.112      0.112      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.112     0.112     0.111     0.620"
* 54         POND DESIGN"
*        0.112   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
```

```
*       171.3   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.015    c.m/sec"
*            Maximum level                 0.113    metre"
*            Maximum storage              97.471    c.m"
*            Centroidal lag                3.904   hours"
*                 0.112     0.112     0.015     0.620 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.629    c.m/sec"
*            Hydrograph volume          1626.073    c.m"
*                 0.112     0.112     0.015     0.629"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.112     0.000     0.015     0.629"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.053   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.807   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.663     0.000     0.015     0.629 c.m/sec"
*            Catchment 183          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  158.013    12.412     32.723     minutes"
*            Time to Centroid       323.063    136.779    162.765    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        4138.55    1690.39    5828.95    c.m"
*            Rainfall losses        23.691     4.842      18.225     mm"
*            Runoff depth           1.337      20.186     6.803      mm"
*            Runoff volume          221.02     1363.35    1584.37    c.m"
*            Runoff coefficient     0.053      0.807      0.272      "
*            Maximum flow           0.014      0.663      0.663      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.663     0.663     0.015     0.629"
```



```
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.663     0.663     0.663     0.629"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.272    c.m/sec"
*            Hydrograph volume          3210.438    c.m"
*                 0.663     0.663     0.663     1.272"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  1.305    c.m/sec"
*            Hydrograph volume          9256.890    c.m"
*                 0.663     1.305     0.663     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.663     1.305     1.305     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.577    c.m/sec"
*            Hydrograph volume         12467.332    c.m"
*                 0.663     1.305     1.305     2.577"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.663     0.000     1.305     2.577"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.098   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.800   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.008     0.000     1.305     2.577 c.m/sec"
*            Catchment 184          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  69.384     4.181      60.103     minutes"
*            Time to Centroid       223.349    123.816    209.181    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        723.55     14.77      738.32     c.m"
*            Rainfall losses        22.567     5.012      22.215     mm"
*            Runoff depth           2.461      20.015     2.812      mm"
*            Runoff volume          71.15      11.81      82.96      c.m"
*            Runoff coefficient     0.098      0.800      0.112      "
*            Maximum flow           0.008      0.008      0.008      c.m/sec"
```

```
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.008     0.008     1.305     2.577"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.008     0.008     0.008     2.577"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*            Maximum flow                  2.582    c.m/sec"
*            Hydrograph volume         12550.296    c.m"
*                    0.008     0.008     0.008     2.582"
* 40          HYDROGRAPH   Confluence    9"
*            7   Confluence "
*            9   Node #"
*                NODE B"
*            Maximum flow                  2.582    c.m/sec"
*            Hydrograph volume         12550.297    c.m"
*                    0.008     2.582     0.008     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.008     2.582     2.582     0.000"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*            Maximum flow                  2.582    c.m/sec"
*            Hydrograph volume         12550.297    c.m"
*                    0.008     2.582     2.582     2.582"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.008     0.000     2.582     2.582"
* 33          CATCHMENT 185"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          185   Morningside Retirement Community lands"
*       58.000   % Impervious"
*       18.780   Total Area"
*      190.000   Flow length"
*        2.000   Overland Slope"
*        7.888   Pervious Area"
*       25.000   Pervious length"
*        2.500   Pervious slope"
*       10.892   Impervious Area"
*      354.000   Impervious length"
*        2.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       64.400   Pervious SCS Curve No."
*        0.032   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.807   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    1.111     0.000     2.582     2.582 c.m/sec"
*             Catchment 185          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  73.186     10.886     12.618     minutes"
*             Time to Centroid       227.867    134.366    136.966    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        1974.08    2726.11    4700.20    c.m"
*             Rainfall losses        24.231     4.842      12.985     mm"
*             Runoff depth           0.797      20.186     12.043     mm"
```



```
*             Runoff volume          62.88      2198.71    2261.59    c.m"
*             Runoff coefficient     0.032      0.807      0.481      "
*             Maximum flow           0.007      1.111      1.111      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    1.111     1.111     2.582     2.582"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    1.111     1.111     1.111     2.582"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*            Maximum flow                  3.668    c.m/sec"
*            Hydrograph volume         14811.887    c.m"
*                    1.111     1.111     1.111     3.668"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             **********************************************************
*             Catchments north of Hwy 7/8, towards Eastern Tributary"
*             **********************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    1.111     0.000     1.111     3.668"
* 33          CATCHMENT 150"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          150   Southern portion of Rec Centre fields"
*        0.000   % Impervious"
*        3.510   Total Area"
*       95.000   Flow length"
*        1.600   Overland Slope"
*        3.510   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.098   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.008     0.000     1.111     3.668 c.m/sec"
*             Catchment 150          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  90.470     10.455     90.470     minutes"
*             Time to Centroid       248.117    133.696    248.116    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        878.47     0.00       878.47     c.m"
*             Rainfall losses        22.566     4.857      22.566     mm"
*             Runoff depth           2.461      20.171     2.461      mm"
*             Runoff volume          86.39      0.00       86.40      c.m"
*             Runoff coefficient     0.098      0.000      0.098      "
*             Maximum flow           0.008      0.000      0.008      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.008     0.008     1.111     3.668"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.008     0.008     0.008     3.668"
```

```
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  0.008    c.m/sec"
*              Hydrograph volume            86.395    c.m"
*                     0.008     0.008     0.008     0.008"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                     0.008     0.000     0.008     0.008"
* 33          CATCHMENT 151"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.806   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                     0.202     0.000     0.008     0.008 c.m/sec"
*               Catchment 151          Pervious   Impervious Total Area "
*               Surface Area           3.866      1.904      5.770      hectare"
*               Time of concentration  77.530     10.455     25.911     minutes"
*               Time to Centroid       237.391    133.696    157.592    minutes"
*               Rainfall depth         25.028     25.028     25.028     mm"
*               Rainfall volume        967.54     476.55     1444.10    c.m"
*               Rainfall losses        22.053     4.857      16.378     mm"
*               Runoff depth           2.975      20.171     8.649      mm"
*               Runoff volume          115.01     384.07     499.08     c.m"
*               Runoff coefficient     0.119      0.806      0.346      *
*               Maximum flow           0.012      0.201      0.202      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     0.202     0.202     0.008     0.008"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     0.202     0.202     0.202     0.008"
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  0.202    c.m/sec"
*              Hydrograph volume           585.471    c.m"
*                     0.202     0.202     0.202     0.202"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                     0.202     0.000     0.202     0.202"
* 33          CATCHMENT 152"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
```



```
*           152   Southern portion of Schneider lands"
*         5.000   % Impervious"
*         8.560   Total Area"
*       170.000   Flow length"
*         3.500   Overland Slope"
*         8.132   Pervious Area"
*       170.000   Pervious length"
*         3.500   Pervious slope"
*         0.428   Impervious Area"
*       170.000   Impervious length"
*         3.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.201   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.802   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                     0.065     0.000     0.202     0.202 c.m/sec"
*               Catchment 152          Pervious   Impervious Total Area "
*               Surface Area           8.132      0.428      8.560      hectare"
*               Time of concentration  65.013     6.337      54.827     minutes"
*               Time to Centroid       224.749    127.221    207.817    minutes"
*               Rainfall depth         25.028     25.028     25.028     mm"
*               Rainfall volume        2035.25    107.12     2142.37    c.m"
*               Rainfall losses        19.997     4.947      19.244     mm"
*               Runoff depth           5.031      20.081     5.783      mm"
*               Runoff volume          409.11     85.94      495.06     c.m"
*               Runoff coefficient     0.201      0.802      0.231      *
*               Maximum flow           0.047      0.060      0.065      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     0.065     0.065     0.202     0.202"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     0.065     0.065     0.065     0.202"
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  0.267    c.m/sec"
*              Hydrograph volume          1080.530    c.m"
*                     0.065     0.065     0.065     0.267"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                     0.065     0.000     0.065     0.267"
* 47          FILEI_O Read/Open DIV00007.0025hyd"
*             1   1=read/open; 2=write/save"
*             2   1=rainfall; 2=hydrograph"
*             1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*              DIV00007.0025hyd"
*              Major flow at 7"
*              Total volume                  0.000    c.m"
*              Maximum flow                  0.000    c.m/sec"
*                   0.000     0.000     0.065     0.267 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     0.000     0.000     0.065     0.267"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     0.000     0.000     0.000     0.267"
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
```

```
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.267    c.m/sec"
*            Hydrograph volume          1080.530    c.m"
*                   0.000     0.000      0.000     0.267"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.267    c.m/sec"
*            Hydrograph volume          1080.530    c.m"
*                   0.000     0.267      0.000     0.000"
* 54         POND DESIGN"
*       0.267   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1080.5   Hydrograph volume    c.m"
*          9.   Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   266.000"
*               333.500     1.168  1814.000"
*               334.000     2.325  4798.000"
*               334.500     3.132  9073.000"
*               335.000     3.780  14775.00"
*               335.500     4.332  22251.00"
*               335.750     4.583  26742.00"
*               336.000    21.985  31757.00"
*            Peak outflow                  0.157    c.m/sec"
*            Maximum level               332.839    metre"
*            Maximum storage             140.204    c.m"
*            Centroidal lag                3.376   hours"
*                 0.000     0.267     0.157     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                  0.000     0.157     0.157     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                  228.020    hectare"
*            Total Impervious area                  50.613    hectare"
*            Total % impervious                     22.197"
" 19         EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*          10 Units used:                                          ie METRIC"
*             Job folder:                       Q:\34896\104\SWM\MIDUSS\Pre"
*             Output filename:                      34896-104_Pre-002yr.out"
*             Licensee name:                                          admin"
*             Company                                              Microsoft"
*             Date & Time last used:              12/7/2018 at 11:50:00 AM"
* 81        ADD COMMENT==========================================================*
*           7 Lines of comment"
*             ******************************************"
*             Wilmot Employement Lands"
*             New Hamburg, Ontario"
*             2 year Storm Event - Pre-development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB/GMK"
*             ******************************************"
* 31          TIME PARAMETERS"
*        5.000  Time Step"
*      240.000  Max. Storm length"
*     1500.000  Max. Hydrograph"
* 32          STORM Chicago storm"
*           1   Chicago storm"
*      743.000  Coefficient A"
*        6.000  Constant B"
*        0.799  Exponent C"
*        0.400  Fraction R"
*      180.000  Duration"
*        1.000  Time step multiplier"
*             Maximum intensity          109.374    mm/hr"
*             Total depth                 34.259    mm"
*           6   002hyd   Hydrograph extension used in this file"
* 81        ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 101"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         101   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.284   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.044     0.000     0.000     0.000 c.m/sec"
*             Catchment 101          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  54.522     6.033      54.522     minutes"
```



```
*             Time to Centroid       171.264    97.071     171.264    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        1017.48    0.00       1017.48    c.m"
*             Rainfall losses        24.517     5.180      24.517     mm"
*             Runoff depth           9.742      29.079     9.742      mm"
*             Runoff volume          289.33     0.00       289.34     c.m"
*             Runoff coefficient     0.284      0.000      0.284      "
*             Maximum flow           0.044      0.000      0.044      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.044     0.044     0.000     0.000"
* 33          CATCHMENT 102"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         102   Pfenning Farm Development - north of GEXR"
*       0.000   % Impervious"
*      12.070   Total Area"
*     180.000   Flow length"
*       2.500   Overland Slope"
*      12.070   Pervious Area"
*     180.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*     180.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.284   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.177     0.044     0.000     0.000 c.m/sec"
*             Catchment 102          Pervious   Impervious Total Area "
*             Surface Area           12.070     0.000      12.070     hectare"
*             Time of concentration  54.725     6.055      54.725     minutes"
*             Time to Centroid       171.532    97.107     171.532    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        4135.00    0.00       4135.01    c.m"
*             Rainfall losses        24.516     5.185      24.516     mm"
*             Runoff depth           9.742      29.074     9.742      mm"
*             Runoff volume          1175.87    0.00       1175.87    c.m"
*             Runoff coefficient     0.284      0.000      0.284      "
*             Maximum flow           0.177      0.000      0.177      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.177     0.220     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.177     0.220     0.220     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                  0.220    c.m/sec"
*             Hydrograph volume          1465.209    c.m"
*                 0.177     0.220     0.220     0.220"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.177     0.000     0.220     0.220"
* 33          CATCHMENT 103"
*           1   Triangular SCS"
*           1   Equal length"
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.121   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*              0.013     0.000     0.220     0.220 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  56.918     3.722      56.918     minutes"
*           Time to Centroid       169.776    93.696     169.775    minutes"
*           Rainfall depth         34.259     34.259     34.259     mm"
*           Rainfall volume        712.58     0.00       712.58     c.m"
*           Rainfall losses        30.128     5.618      30.128     mm"
*           Runoff depth           4.130      28.641     4.130      mm"
*           Runoff volume          85.91      0.00       85.91      c.m"
*           Runoff coefficient     0.121      0.000      0.121      "
*           Maximum flow           0.013      0.000      0.013      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*             0.013     0.013     0.220     0.220"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*             0.013     0.013     0.013     0.220"
* 40        HYDROGRAPH   Combine    1"
*         6   Combine "
*         1   Node #"
*             u/s of GEXR"
*           Maximum flow                0.233    c.m/sec"
*           Hydrograph volume        1551.121    c.m"
*             0.013     0.013     0.013     0.233"
* 40        HYDROGRAPH   Confluence    1"
*         7   Confluence "
*         1   Node #"
*             u/s of GEXR"
*           Maximum flow                0.233    c.m/sec"
*           Hydrograph volume        1551.121    c.m"
*             0.013     0.233     0.013     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*             0.013     0.233     0.233     0.000"
* 40        HYDROGRAPH   Combine    2"
*         6   Combine "
*         2   Node #"
*             INLET 1"
*           Maximum flow                0.233    c.m/sec"
*           Hydrograph volume        1551.121    c.m"
*             0.013     0.233     0.233     0.233"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*             0.013     0.000     0.233     0.233"
```



```
* 81          ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchments South of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 104"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         104   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.850   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.248     0.000     0.233     0.233 c.m/sec"
*            Catchment 104          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  38.115     7.539      11.625     minutes"
*            Time to Centroid       149.857    99.373     106.120    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        283.73     408.29     692.02     c.m"
*            Rainfall losses        27.795     5.138      14.427     mm"
*            Runoff depth           6.464      29.121     19.831     mm"
*            Runoff volume          53.53      347.06     400.59     c.m"
*            Runoff coefficient     0.189      0.850      0.579      "
*            Maximum flow           0.010      0.246      0.248      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.248     0.248     0.233     0.233"
* 54          POND DESIGN"
*        0.248   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*        400.6   Hydrograph volume    c.m"
*           4.   Number of stages"
*        0.000   Minimum water level    metre"
*        0.910   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3100   0.03090   782.000"
*                 0.6100    0.1232  1619.000"
*                 0.9100    0.2769  2511.000"
*              Peak outflow                  0.012    c.m/sec"
*              Maximum level                 0.122    metre"
*              Maximum storage             308.035    c.m"
*              Centroidal lag                8.710    hours"
*                   0.248     0.248     0.012     0.233 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
```

```
*              INLET 1"
*            Maximum flow                  0.244     c.m/sec"
*            Hydrograph volume           1937.027    c.m"
*                   0.248     0.248     0.012     0.244"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.248     0.000     0.012     0.244"
* 33         CATCHMENT 105"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         105   Iron Bridge Manufacturing Property"
*      65.000   % Impervious"
*       3.570   Total Area"
*      90.000   Flow length"
*       2.000   Overland Slope"
*       1.250   Pervious Area"
*      90.000   Pervious length"
*       2.000   Pervious slope"
*       2.320   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.000   Pervious SCS Curve No."
*       0.266   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.958   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.843   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.487     0.000     0.012     0.244 c.m/sec"
*            Catchment 105          Pervious   Impervious Total Area "
*            Surface Area           1.250      2.320      3.570      hectare"
*            Time of concentration  39.995     4.271      9.456      minutes"
*            Time to Centroid       152.243    94.478     102.862    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        428.06     794.97     1223.03    c.m"
*            Rainfall losses        25.148     5.363      12.287     mm"
*            Runoff depth           9.111      28.896     21.971     mm"
*            Runoff volume          113.84     670.53     784.37     c.m"
*            Runoff coefficient     0.266      0.843      0.641      "
*            Maximum flow           0.022      0.482      0.487      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.487     0.487     0.012     0.244"
* 33         CATCHMENT 106"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         106   N.C. Pestell Head Office and other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      55.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      55.000   Pervious length"
*       1.500   Pervious slope"
*       1.088   Impervious Area"
*      55.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
```



```
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.837   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.219     0.487     0.012     0.244 c.m/sec"
*            Catchment 106          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  39.437     3.465      4.841      minutes"
*            Time to Centroid       151.482    93.287     95.512     minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        65.78      372.73     438.51     c.m"
*            Rainfall losses        27.794     5.569      8.902      mm"
*            Runoff depth           6.465      28.690     25.356     mm"
*            Runoff volume          12.41      312.15     324.56     c.m"
*            Runoff coefficient     0.189      0.837      0.740      "
*            Maximum flow           0.002      0.219      0.219      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.219     0.706     0.012     0.244"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.219     0.706     0.706     0.244"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*              INLET 1"
*            Maximum flow                  0.742     c.m/sec"
*            Hydrograph volume          3045.955     c.m"
*                   0.219     0.706     0.706     0.742"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.219     0.000     0.706     0.742"
* 33         CATCHMENT 107"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         107   Industrial properties at end of Hamilton Road"
*      40.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.710   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       1.140   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.836   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.235     0.000     0.706     0.742 c.m/sec"
*            Catchment 107          Pervious   Impervious Total Area "
*            Surface Area           1.710      1.140      2.850      hectare"
*            Time of concentration  42.063     3.696      13.405     minutes"
*            Time to Centroid       154.727    93.661     109.115    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        585.82     390.55     976.37     c.m"
*            Rainfall losses        27.794     5.636      18.930     mm"
*            Runoff depth           6.465      28.623     15.328     mm"
```

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*            Runoff volume          110.55      326.30      436.85      c.m"
*            Runoff coefficient     0.189       0.836       0.447       "
*            Maximum flow           0.020       0.232       0.235       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.235     0.235     0.706     0.742"
* 33         CATCHMENT 108"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         108   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.122   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.840   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.062     0.235     0.706     0.742 c.m/sec"
*            Catchment 108          Pervious    Impervious Total Area "
*            Surface Area           5.624       0.296       5.920       hectare"
*            Time of concentration  47.251      3.111       35.545      minutes"
*            Time to Centroid       158.856     92.675      141.304     minutes"
*            Rainfall depth         34.259      34.259      34.259      mm"
*            Rainfall volume        1926.70     101.41      2028.11     c.m"
*            Rainfall losses        30.063      5.482       28.833      mm"
*            Runoff depth           4.196       28.777      5.425       mm"
*            Runoff volume          235.99      85.18       321.16      c.m"
*            Runoff coefficient     0.122       0.840       0.158       "
*            Maximum flow           0.039       0.058       0.062       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.062     0.298     0.706     0.742"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.062     0.298     0.298     0.742"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 1.040    c.m/sec"
*            Hydrograph volume         3803.970    c.m"
*                 0.062     0.298     0.298     1.040"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.062     0.000     0.298     1.040"
* 33         CATCHMENT 109"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         109   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
```



```
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.176   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.851   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.723     0.000     0.298     1.040 c.m/sec"
*            Catchment 109          Pervious    Impervious Total Area "
*            Surface Area           1.383       4.148       5.530       hectare"
*            Time of concentration  31.632      9.032       10.487      minutes"
*            Time to Centroid       141.833     101.527     104.121     minutes"
*            Rainfall depth         34.259      34.259      34.259      mm"
*            Rainfall volume        473.62      1420.87     1894.50     c.m"
*            Rainfall losses        28.243      5.116       10.897      mm"
*            Runoff depth           6.016       29.143      23.361      mm"
*            Runoff volume          83.17       1208.70     1291.87     c.m"
*            Runoff coefficient     0.176       0.851       0.682       "
*            Maximum flow           0.018       0.719       0.723       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.723     0.723     0.298     1.040"
* 54         POND DESIGN"
*       0.723   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1291.9   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*            Peak outflow                    0.037    c.m/sec"
*            Maximum level                   0.462    metre"
*            Maximum storage              1037.071    c.m"
*            Centroidal lag                 14.806   hours"
*                 0.723     0.723     0.037     1.040 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 1.043    c.m/sec"
*            Hydrograph volume         4823.914    c.m"
*                 0.723     0.723     0.037     1.043"
* 81         ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
```

```
*          ***************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.723     0.000     0.037     1.043"
* 33        CATCHMENT 110"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        110   Alpine Solutions - west SMWP"
*     30.000   % Impervious"
*      1.920   Total Area"
*    150.000   Flow length"
*      1.000   Overland Slope"
*      1.344   Pervious Area"
*    150.000   Pervious length"
*      1.500   Pervious slope"
*      0.576   Impervious Area"
*    113.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     80.000   Pervious SCS Curve No."
*      0.249   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.350   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.851   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.122     0.000     0.037     1.043 c.m/sec"
*           Catchment 110          Pervious   Impervious Total Area "
*           Surface Area           1.344      0.576      1.920      hectare"
*           Time of concentration  61.427     5.338      28.077     minutes"
*           Time to Centroid       179.909    96.036     130.039    minutes"
*           Rainfall depth         34.259     34.259     34.259     mm"
*           Rainfall volume        460.44     197.33     657.76     c.m"
*           Rainfall losses        25.739     5.103      19.548     mm"
*           Runoff depth           8.520      29.155     14.710     mm"
*           Runoff volume          114.50     167.94     282.44     c.m"
*           Runoff coefficient     0.249      0.851      0.429      "
*           Maximum flow           0.016      0.120      0.122      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.122     0.122     0.037     1.043"
* 54        POND DESIGN"
*       0.122   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       282.4   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*           Peak outflow                  0.065    c.m/sec"
*           Maximum level                 0.376    metre"
*           Maximum storage              39.380    c.m"
*           Centroidal lag                2.248   hours"
*                0.122     0.122     0.065     1.043 c.m/sec"
* 40        HYDROGRAPH   Combine    3"
```



```
*          6   Combine "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  0.065    c.m/sec"
*           Hydrograph volume           282.481    c.m"
*                0.122     0.122     0.065     0.065"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.122     0.000     0.065     0.065"
* 33        CATCHMENT 111"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        111   Woodlot north of Schneider/Good lands"
*      0.000   % Impervious"
*     13.230   Total Area"
*    170.000   Flow length"
*      2.400   Overland Slope"
*     13.230   Pervious Area"
*    170.000   Pervious length"
*      2.400   Pervious slope"
*      0.000   Impervious Area"
*    170.000   Impervious length"
*      2.400   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.121   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.057     0.000     0.065     0.065 c.m/sec"
*           Catchment 111          Pervious   Impervious Total Area "
*           Surface Area           13.230     0.000      13.230     hectare"
*           Time of concentration  90.570     5.923      90.569     minutes"
*           Time to Centroid       207.254    96.935     207.253    minutes"
*           Rainfall depth         34.259     34.259     34.259     mm"
*           Rainfall volume        4532.40    0.00       4532.41    c.m"
*           Rainfall losses        30.128     5.160      30.128     mm"
*           Runoff depth           4.131      29.098     4.131      mm"
*           Runoff volume          546.54     0.00       546.54     c.m"
*           Runoff coefficient     0.121      0.000      0.121      "
*           Maximum flow           0.057      0.000      0.057      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.057     0.057     0.065     0.065"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.057     0.057     0.057     0.065"
* 40        HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  0.078    c.m/sec"
*           Hydrograph volume           829.020    c.m"
*                0.057     0.057     0.057     0.078"
* 81        ADD COMMENT==================================================="
*          3  Lines of comment"
*           **************************************************
*           South of GEXR along Nafziger Rd, part of Inlet #3"
*           **************************************************
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.057     0.000     0.057     0.078"
```

```
* 33         CATCHMENT 112"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          112   Cultivated lands east of Nafziger Road"
*        1.000   % Impervious"
*        7.310   Total Area"
*      120.000   Flow length"
*        3.300   Overland Slope"
*        7.237   Pervious Area"
*      120.000   Pervious length"
*        3.300   Pervious slope"
*        0.073   Impervious Area"
*      120.000   Impervious length"
*        3.300   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.284   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.844   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.137     0.000     0.057     0.078 c.m/sec"
*             Catchment 112          Pervious   Impervious Total Area "
*             Surface Area           7.237      0.073      7.310      hectare"
*             Time of concentration  39.479     4.368      38.456     minutes"
*             Time to Centroid       151.498    94.627     149.842    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        2479.26    25.04      2504.30    c.m"
*             Rainfall losses        24.518     5.341      24.327     mm"
*             Runoff depth           9.740      28.917     9.932      mm"
*             Runoff volume          704.89     21.14      726.03     c.m"
*             Runoff coefficient     0.284      0.844      0.290      "
*             Maximum flow           0.135      0.015      0.137      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.137     0.137     0.057     0.078"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.137     0.137     0.137     0.078"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                  0.137    c.m/sec"
*             Hydrograph volume           726.026    c.m"
*                  0.137     0.137     0.137     0.137"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.137     0.000     0.137     0.137"
* 33          CATCHMENT 113"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          113   Alpine Solutions - East SMWP"
*       40.000   % Impervious"
*        2.560   Total Area"
*      150.000   Flow length"
*        1.500   Overland Slope"
*        1.536   Pervious Area"
*      180.000   Pervious length"
*        1.500   Pervious slope"
*        1.024   Impervious Area"
*      131.000   Impervious length"
```



```
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.249   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.850   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.213     0.000     0.137     0.137 c.m/sec"
*             Catchment 113          Pervious   Impervious Total Area "
*             Surface Area           1.536      1.024      2.560      hectare"
*             Time of concentration  68.528     5.833      24.957     minutes"
*             Time to Centroid       189.072    96.789     124.938    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        526.21     350.81     877.02     c.m"
*             Rainfall losses        25.738     5.140      17.499     mm"
*             Runoff depth           8.520      29.118     16.759     mm"
*             Runoff volume          130.87     298.17     429.04     c.m"
*             Runoff coefficient     0.249      0.850      0.489      "
*             Maximum flow           0.016      0.212      0.213      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.213     0.213     0.137     0.137"
* 54          POND DESIGN"
*        0.213   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*        429.0   Hydrograph volume    c.m"
*           7.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.000   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1000   0.02000     7.000"
*                 0.2500   0.04200    64.000"
*                 0.5000   0.09000   343.000"
*                 0.7500    0.1250   877.000"
*                 0.8000    0.1360  1014.000"
*                  1.000    0.7880  1667.000"
*             Peak outflow                    0.054    c.m/sec"
*             Maximum level                   0.311    metre"
*             Maximum storage               131.699    c.m"
*             Centroidal lag                  2.531    hours"
*                  0.213     0.213     0.054     0.137 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                    0.189    c.m/sec"
*             Hydrograph volume            1155.306    c.m"
*                  0.213     0.213     0.054     0.189"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.213     0.000     0.054     0.189"
* 33          CATCHMENT 114"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          114   Woodlot East and West of Nafziger Road"
*        3.000   % Impervious"
*       13.460   Total Area"
*      140.000   Flow length"
*        3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.122   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.847   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.089     0.000     0.054     0.189 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  71.133     4.668      59.353     minutes"
*            Time to Centroid       185.523    95.053     169.488    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        4472.87    138.34     4611.20    c.m"
*            Rainfall losses        30.095     5.255      29.350     mm"
*            Runoff depth           4.164      29.003     4.909      mm"
*            Runoff volume          543.63     117.12     660.75     c.m"
*            Runoff coefficient     0.122      0.847      0.143      "
*            Maximum flow           0.068      0.084      0.089      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.089     0.089     0.054     0.189"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.089     0.089     0.089     0.189"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.246    c.m/sec"
*            Hydrograph volume          1816.054    c.m"
*                 0.089     0.089     0.089     0.246"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.089     0.000     0.089     0.246"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.304   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.846   Impervious Runoff coefficient"
```



```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.768     0.000     0.089     0.246 c.m/sec"
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  24.992     7.105      9.203      minutes"
*            Time to Centroid       132.216    98.734     102.661    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        457.87     1237.93    1695.80    c.m"
*            Rainfall losses        23.854     5.292      10.304     mm"
*            Runoff depth           10.405     28.966     23.955     mm"
*            Runoff volume          139.06     1046.70    1185.76    c.m"
*            Runoff coefficient     0.304      0.846      0.699      "
*            Maximum flow           0.037      0.755      0.768      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.768     0.768     0.089     0.246"
* 54         POND DESIGN"
*       0.768   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*     1185.8    Hydrograph volume    c.m"
*        15.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*            Peak outflow                  0.015    c.m/sec"
*            Maximum level                 0.597    metre"
*            Maximum storage            1055.949    c.m"
*            Centroidal lag               15.380    hours"
*                 0.768     0.768     0.015     0.246 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.261    c.m/sec"
*            Hydrograph volume          2773.038    c.m"
*                 0.768     0.768     0.015     0.261"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.768     0.000     0.015     0.261"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.849   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.559     0.000     0.015     0.261 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  67.758     5.954      24.010     minutes"
*             Time to Centroid       186.467    96.985     123.128    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        1716.87    924.47     2641.34    c.m"
*             Rainfall losses        27.793     5.164      19.873     mm"
*             Runoff depth           6.466      29.094     14.386     mm"
*             Runoff volume          324.04     785.10     1109.15    c.m"
*             Runoff coefficient     0.189      0.849      0.420      "
*             Maximum flow           0.041      0.555      0.559      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.559     0.559     0.015     0.261"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.559     0.559     0.559     0.261"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*             Maximum flow                 0.742    c.m/sec"
*             Hydrograph volume         3882.184    c.m"
*                    0.559     0.559     0.559     0.742"
* 40          HYDROGRAPH   Confluence    2"
*           7   Confluence "
*           2   Node #"
*               INLET 1"
*             Maximum flow                 1.043    c.m/sec"
*             Hydrograph volume         4823.914    c.m"
*                    0.559     1.043     0.559     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.559     1.043     1.043     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                 1.043    c.m/sec"
*             Hydrograph volume         4823.914    c.m"
*                    0.559     1.043     1.043     1.043"
* 40          HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*             Maximum flow                 0.078    c.m/sec"
*             Hydrograph volume          829.020    c.m"
*                    0.559     0.078     1.043     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.559     0.078     0.078     0.000"
```



```
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                 1.102    c.m/sec"
*             Hydrograph volume         5652.935    c.m"
*                    0.559     0.078     0.078     1.102"
* 40          HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*             Maximum flow                 0.742    c.m/sec"
*             Hydrograph volume         3882.184    c.m"
*                    0.559     0.742     0.078     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.559     0.742     0.742     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                 1.844    c.m/sec"
*             Hydrograph volume         9535.115    c.m"
*                    0.559     0.742     0.742     1.844"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.559     0.000     0.742     1.844"
* 33          CATCHMENT 117"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         117   Cultivated Schneider central lands"
*       0.000   % Impervious"
*       7.450   Total Area"
*     140.000   Flow length"
*       2.000   Overland Slope"
*       7.450   Pervious Area"
*     140.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     140.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.400   Pervious SCS Curve No."
*       0.273   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.804   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.109     0.000     0.742     1.844 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  51.398     5.568      51.398     minutes"
*             Time to Centroid       167.128    96.358     167.128    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        2552.26    0.00       2552.26    c.m"
*             Rainfall losses        24.899     5.120      24.899     mm"
*             Runoff depth           9.360      29.138     9.360      mm"
*             Runoff volume          697.30     0.00       697.30     c.m"
*             Runoff coefficient     0.273      0.000      0.273      "
*             Maximum flow           0.109      0.000      0.109      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.109     0.109     0.742     1.844"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.109     0.109     0.109     1.844"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  1.861    c.m/sec"
*             Hydrograph volume         10232.413    c.m"
*                    0.109     0.109     0.109     1.861"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchments east of Hamilton Road, part of Inlet #4"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.109     0.000     0.109     1.861"
* 33          CATCHMENT 118"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          118   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.163   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.839   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.009     0.000     0.109     1.861 c.m/sec"
*             Catchment 118          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  31.745     2.544      22.729     minutes"
*             Time to Centroid       141.881    91.780     126.413    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        157.59     13.70      171.29     c.m"
*             Rainfall losses        28.662     5.515      26.811     mm"
*             Runoff depth           5.596      28.743     7.448      mm"
*             Runoff volume          25.74      11.50      37.24      c.m"
*             Runoff coefficient     0.163      0.839      0.217      "
*             Maximum flow           0.006      0.008      0.009      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.009     0.009     0.109     1.861"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.009     0.009     0.009     1.861"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  1.869    c.m/sec"
*             Hydrograph volume         10269.655    c.m"
```



```
*                    0.009     0.009     0.009     1.869"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.009     0.000     0.009     1.869"
* 33          CATCHMENT 119"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          119   Existing ROW from Hamilton Road"
*        0.000   % Impervious"
*        0.720   Total Area"
*       40.000   Flow length"
*        2.000   Overland Slope"
*        0.720   Pervious Area"
*       40.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*       40.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.011     0.000     0.009     1.869 c.m/sec"
*             Catchment 119          Pervious   Impervious Total Area "
*             Surface Area           0.720      0.000      0.720      hectare"
*             Time of concentration  29.884     2.626      29.884     minutes"
*             Time to Centroid       139.679    91.908     139.679    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        246.66     0.00       246.66     c.m"
*             Rainfall losses        27.793     5.525      27.793     mm"
*             Runoff depth           6.465      28.734     6.465      mm"
*             Runoff volume          46.55      0.00       46.55      c.m"
*             Runoff coefficient     0.189      0.000      0.189      "
*             Maximum flow           0.011      0.000      0.011      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.011     0.011     0.009     1.869"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.011     0.011     0.011     1.869"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  1.872    c.m/sec"
*             Hydrograph volume         10316.208    c.m"
*                    0.011     0.011     0.011     1.872"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchment to Inlet #5"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.011     0.000     0.011     1.872"
* 33          CATCHMENT 120"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          120   Rear yards from Hamilton Heights Subdivision"
```

```
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.841   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.024     0.000     0.011     1.872 c.m/sec"
*            Catchment 120          Pervious   Impervious Total Area "
*            Surface Area           1.026      0.054      1.080      hectare"
*            Time of concentration  17.458     1.534      14.432     minutes"
*            Time to Centroid       124.332    90.156     117.837    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        351.49     18.50      369.99     c.m"
*            Rainfall losses        27.800     5.461      26.683     mm"
*            Runoff depth           6.459      28.797     7.576      mm"
*            Runoff volume          66.27      15.55      81.82      c.m"
*            Runoff coefficient     0.189      0.841      0.221      "
*            Maximum flow           0.021      0.012      0.024      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.024     0.024     0.011     1.872"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.024     0.024     0.024     1.872"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  1.890    c.m/sec"
*            Hydrograph volume         10398.021    c.m"
*                 0.024     0.024     0.024     1.890"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **************************************************"
*            Good Lands"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.024     0.000     0.024     1.890"
* 33         CATCHMENT 121"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         121   Good Lands"
*       0.000   % Impervious"
*      43.240   Total Area"
*     230.000   Flow length"
*       2.800   Overland Slope"
*      43.240   Pervious Area"
*     230.000   Pervious length"
*       2.800   Pervious slope"
*       0.000   Impervious Area"
*     230.000   Impervious length"
```



```
*       2.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.284   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.577     0.000     0.024     1.890 c.m/sec"
*            Catchment 121          Pervious   Impervious Total Area "
*            Surface Area           43.240     0.000      43.240     hectare"
*            Time of concentration  61.277     6.780      61.277     minutes"
*            Time to Centroid       180.139    98.265     180.139    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        1.4813     0.0000     1.4813     ha-m"
*            Rainfall losses        24.516     5.367      24.516     mm"
*            Runoff depth           9.743      28.892     9.743      mm"
*            Runoff volume          4212.74    0.01       4212.75    c.m"
*            Runoff coefficient     0.284      0.000      0.284      "
*            Maximum flow           0.577      0.000      0.577      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.577     0.577     0.024     1.890"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.577     0.577     0.577     1.890"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  1.963    c.m/sec"
*            Hydrograph volume         14610.775    c.m"
*                 0.577     0.577     0.577     1.963"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments to Inlet #6"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.577     0.000     0.577     1.963"
* 33         CATCHMENT 160"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         160   Hamilton Heights Subdivision"
*      46.000   % Impervious"
*       8.160   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       4.406   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       3.754   Impervious Area"
*     232.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.852   Impervious Runoff coefficient"
```

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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.773     0.000     0.577     1.963 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  30.253     8.219      12.765     minutes"
*            Time to Centroid       140.138    100.395    108.595    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        1509.57    1285.93    2795.50    c.m"
*            Rainfall losses        27.793     5.063      17.337     mm"
*            Runoff depth           6.465      29.195     16.921     mm"
*            Runoff volume          284.89     1095.88    1380.76    c.m"
*            Runoff coefficient     0.189      0.852      0.494      "
*            Maximum flow           0.065      0.758      0.773      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.773     0.773     0.577     1.963"
* 33         CATCHMENT 161"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         161   Klassen Bronze Property"
*      32.000   % Impervious"
*       2.350   Total Area"
*     100.000   Flow length"
*       2.500   Overland Slope"
*       1.598   Pervious Area"
*      50.000   Pervious length"
*       2.500   Pervious slope"
*       0.752   Impervious Area"
*     164.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.844   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.164     0.773     0.577     1.963 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  31.953     6.675      14.813     minutes"
*            Time to Centroid       142.248    98.096     112.311    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        547.45     257.62     805.08     c.m"
*            Rainfall losses        27.796     5.336      20.609     mm"
*            Runoff depth           6.462      28.922     13.650     mm"
*            Runoff volume          103.27     217.50     320.77     c.m"
*            Runoff coefficient     0.189      0.844      0.398      "
*            Maximum flow           0.022      0.159      0.164      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.164     0.937     0.577     1.963"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.164     0.937     0.937     1.963"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.900    c.m/sec"
*            Hydrograph volume        16312.300    c.m"
*                 0.164     0.937     0.937     2.900"
```



```
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            ************************************************************"
*            Western catchment along Hamilton Road, diverted to Inlet #6"
*            ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.164     0.000     0.937     2.900"
* 33         CATCHMENT 170"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         170   Industrial/Residential area along Hamilton Road"
*      55.000   % Impervious"
*       8.450   Total Area"
*      45.000   Flow length"
*       2.000   Overland Slope"
*       3.802   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       4.648   Impervious Area"
*     235.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.852   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.959     0.000     0.937     2.900 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  22.267     8.282      10.425     minutes"
*            Time to Centroid       130.295    100.493    105.060    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        1302.68    1592.17    2894.85    c.m"
*            Rainfall losses        27.801     5.066      15.296     mm"
*            Runoff depth           6.458      29.193     18.962     mm"
*            Runoff volume          245.56     1356.75    1602.30    c.m"
*            Runoff coefficient     0.189      0.852      0.554      "
*            Maximum flow           0.069      0.936      0.959      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.959     0.959     0.937     2.900"
* 56         DIVERSION"
*           6   Node number"
*       1.560   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow          0.000    c.m/sec"
*            Volume of diverted flow        0.000    c.m"
*            DIV00006.002hyd"
*            Major flow at 6"
*                 0.959     0.959     0.959     2.900 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                   0.959    c.m/sec"
*            Hydrograph volume          1602.304     c.m"
*                 0.959     0.959     0.959     0.959"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
```

```
*                  0.959     0.000     0.959     0.959"
* 47          FILEI_O Read/Open DIV00006.002hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00006.002hyd"
*            Major flow at 6"
*            Total volume                0.000    c.m"
*            Maximum flow                0.000    c.m/sec"
*                 0.000     0.000     0.959     0.959 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.000     0.000     0.959     0.959"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.000     0.000     0.000     0.959"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                2.900    c.m/sec"
*            Hydrograph volume       16312.300    c.m"
*                  0.000     0.000     0.000     2.900"
* 40         HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                2.900    c.m/sec"
*            Hydrograph volume       16312.300    c.m"
*                  0.000     2.900     0.000     0.000"
* 54         POND DESIGN"
*       2.900   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*     16312.3   Hydrograph volume    c.m"
*          7.   Number of stages"
*     334.290   Minimum water level    metre"
*     336.800   Maximum water level    metre"
*     334.290   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               334.290     0.000     0.000"
*               334.500    0.2540     5.000"
*               335.000     1.303   390.000"
*               335.500     2.800  3269.000"
*               336.000     4.639 13030.00"
*               336.400     6.109 30065.00"
*               336.800    18.376 57257.00"
*            Peak outflow                1.659    c.m/sec"
*            Maximum level             335.119    metre"
*            Maximum storage          1075.522    c.m"
*            Centroidal lag              3.697    hours"
*                 0.000     2.900     1.659     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                  0.000     1.659     1.659     0.000"
* 56         DIVERSION"
*           7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow       0.000    c.m/sec"
*            Volume of diverted flow     0.000    c.m"
*            DIV00007.002hyd"
*            Major flow at 7"
*                  0.000     1.659     1.659     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    8"
*           6   Combine "
```



```
*           8   Node #"
*               NODE A"
*            Maximum flow                1.659    c.m/sec"
*            Hydrograph volume       16293.044    c.m"
*                  0.000     1.659     1.659     1.659"
* 81         ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchments South of Hwy 7/8"
*              ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.000     0.000     1.659     1.659"
* 33         CATCHMENT 180"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         180   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.232   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.845   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.044     0.000     1.659     1.659 c.m/sec"
*               Catchment 180          Pervious   Impervious Total Area "
*               Surface Area           0.518      0.182      0.700      hectare"
*               Time of concentration  17.462     4.445      10.159     minutes"
*               Time to Centroid       123.464    94.734     107.346    minutes"
*               Rainfall depth         34.259     34.259     34.259     mm"
*               Rainfall volume        177.46     62.35      239.81     c.m"
*               Rainfall losses        26.301     5.315      20.845     mm"
*               Runoff depth           7.957      28.943     13.414     mm"
*               Runoff volume          41.22      52.68      93.90      c.m"
*               Runoff coefficient     0.232      0.845      0.392      "
*               Maximum flow           0.013      0.038      0.044      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.044     0.044     1.659     1.659"
* 54         POND DESIGN"
*       0.044   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        93.9   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
```

```
*               0.4500   0.00800    69.000"
*               0.6500   0.01000   178.000"
*               0.7000    0.1060   208.000"
*               0.7500    0.2810   240.000"
*          Peak outflow                  0.007    c.m/sec"
*          Maximum level                 0.391    metre"
*          Maximum storage              45.378    c.m"
*          Centroidal lag                2.925   hours"
*               0.044     0.044     0.007     1.659 c.m/sec"
* 40       HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*          Maximum flow                  0.965    c.m/sec"
*          Hydrograph volume          1696.154    c.m"
*                0.044     0.044     0.007     0.965"
* 40       HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.044     0.000     0.007     0.965"
* 33       CATCHMENT 181"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        181   Western portion of John Bear property"
*     93.000   % Impervious"
*      1.870   Total Area"
*    120.000   Flow length"
*      1.000   Overland Slope"
*      0.131   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      1.739   Impervious Area"
*    112.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     65.000   Pervious SCS Curve No."
*      0.079   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     13.677   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.849   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.372     0.000     0.007     0.965 c.m/sec"
*          Catchment 181          Pervious   Impervious Total Area "
*          Surface Area           0.131      1.739      1.870      hectare"
*          Time of concentration  32.274     5.996      6.178      minutes"
*          Time to Centroid       146.000    97.011     97.350     minutes"
*          Rainfall depth         34.259     34.259     34.259     mm"
*          Rainfall volume        44.84      595.79     640.64     c.m"
*          Rainfall losses        31.568     5.172      7.020      mm"
*          Runoff depth           2.690      29.086     27.239     mm"
*          Runoff volume          3.52       505.84     509.36     c.m"
*          Runoff coefficient     0.079      0.849      0.795      "
*          Maximum flow           0.001      0.372      0.372      c.m/sec"
* 40       HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.372     0.372     0.007     0.965"
* 54       POND DESIGN"
*      0.372   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
*      509.4   Hydrograph volume    c.m"
*         7.   Number of stages"
*      0.000   Minimum water level    metre"
*      1.800   Maximum water level    metre"
*      0.000   Starting water level    metre"
```



```
*          0   Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                0.000     0.000     0.000"
*               0.3000   0.09000     8.000"
*               0.6000    0.1200    97.000"
*               0.9000    0.1300   167.000"
*                1.200    0.1400   254.000"
*                1.500    0.1500   358.000"
*                1.800     1.000   400.000"
*          Peak outflow                  0.128    c.m/sec"
*          Maximum level                 0.845    metre"
*          Maximum storage             154.133    c.m"
*          Centroidal lag                1.797   hours"
*               0.372     0.372     0.128     0.965 c.m/sec"
* 40       HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*          Maximum flow                  1.080    c.m/sec"
*          Hydrograph volume          2204.880    c.m"
*                0.372     0.372     0.128     1.080"
* 40       HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.372     0.000     0.128     1.080"
* 33       CATCHMENT 182"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        182   Eastern portion of John Bear property"
*     69.000   % Impervious"
*      1.210   Total Area"
*     60.000   Flow length"
*      2.500   Overland Slope"
*      0.375   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      0.835   Impervious Area"
*     90.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     65.000   Pervious SCS Curve No."
*      0.079   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     13.677   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.843   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.174     0.000     0.128     1.080 c.m/sec"
*          Catchment 182          Pervious   Impervious Total Area "
*          Surface Area           0.375      0.835      1.210      hectare"
*          Time of concentration  36.449     4.271      5.564      minutes"
*          Time to Centroid       150.621    94.478     96.733     minutes"
*          Rainfall depth         34.259     34.259     34.259     mm"
*          Rainfall volume        128.50     286.02     414.53     c.m"
*          Rainfall losses        31.567     5.363      13.486     mm"
*          Runoff depth           2.691      28.896     20.773     mm"
*          Runoff volume          10.10      241.25     251.35     c.m"
*          Runoff coefficient     0.079      0.843      0.606      "
*          Maximum flow           0.002      0.174      0.174      c.m/sec"
* 40       HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.174     0.174     0.128     1.080"
* 54       POND DESIGN"
*      0.174   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
```

```
*       251.3   Hydrograph volume    c.m"
*         5.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.023    c.m/sec"
*            Maximum level                 0.173    metre"
*            Maximum storage             148.884    c.m"
*            Centroidal lag                3.395   hours"
*                 0.174     0.174     0.023     1.080 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.093    c.m/sec"
*            Hydrograph volume          2456.225    c.m"
*                 0.174     0.174     0.023     1.093"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.174     0.000     0.023     1.093"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.105   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.850   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.058     0.000     0.023     1.093 c.m/sec"
*            Catchment 183          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  91.656     10.359     29.232     minutes"
*            Time to Centroid       209.842    103.557    128.230    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        5664.96    2313.86    7978.82    c.m"
*            Rainfall losses        30.662     5.132      23.258     mm"
*            Runoff depth           3.597      29.127     11.000     mm"
*            Runoff volume          594.75     1967.26    2562.01    c.m"
*            Runoff coefficient     0.105      0.850      0.321      "
*            Maximum flow           0.060      1.053      1.058      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.058     1.058     0.023     1.093"
```



```
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.058     1.058     1.058     1.093"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.149    c.m/sec"
*            Hydrograph volume          5018.236    c.m"
*                 1.058     1.058     1.058     2.149"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  1.659    c.m/sec"
*            Hydrograph volume         16293.044    c.m"
*                 1.058     1.659     1.058     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.058     1.659     1.659     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  3.561    c.m/sec"
*            Hydrograph volume         21311.287    c.m"
*                 1.058     1.659     1.659     3.561"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.058     0.000     1.659     3.561"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.163   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.837   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.030     0.000     1.659     3.561 c.m/sec"
*            Catchment 184          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  43.543     3.490      39.753     minutes"
*            Time to Centroid       155.988    93.332     150.059    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        990.42     20.21      1010.63    c.m"
*            Rainfall losses        28.659     5.580      28.197     mm"
*            Runoff depth           5.600      28.678     6.061      mm"
*            Runoff volume          161.89     16.92      178.81     c.m"
*            Runoff coefficient     0.163      0.837      0.177      "
*            Maximum flow           0.029      0.012      0.030      c.m/sec"
```

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* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.030     0.030     1.659     3.561"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.030     0.030     0.030     3.561"
* 40          HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*           Maximum flow                  3.574    c.m/sec"
*           Hydrograph volume         21490.094    c.m"
*                   0.030     0.030     0.030     3.574"
* 40          HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*           Maximum flow                  3.574    c.m/sec"
*           Hydrograph volume         21490.092    c.m"
*                   0.030     3.574     0.030     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.030     3.574     3.574     0.000"
* 40          HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*           Maximum flow                  3.574    c.m/sec"
*           Hydrograph volume         21490.092    c.m"
*                   0.030     3.574     3.574     3.574"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.030     0.000     3.574     3.574"
* 33          CATCHMENT 185"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         185   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      64.400   Pervious SCS Curve No."
*       0.074   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      14.041   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.850   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   1.883     0.000     3.574     3.574 c.m/sec"
*            Catchment 185          Pervious   Impervious Total Area "
*            Surface Area           7.888      10.892     18.780     hectare"
*            Time of concentration  35.504     9.086      10.656     minutes"
*            Time to Centroid       149.968    101.609    104.484    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        2702.18    3731.58    6433.76    c.m"
*            Rainfall losses        31.715     5.123      16.292     mm"
*            Runoff depth           2.543      29.136     17.967     mm"
```



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*            Runoff volume          200.61     3173.59    3374.20    c.m"
*            Runoff coefficient     0.074      0.850      0.524      "
*            Maximum flow           0.037      1.880      1.883      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.883     1.883     3.574     3.574"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.883     1.883     1.883     3.574"
* 40          HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*           Maximum flow                  5.446    c.m/sec"
*           Hydrograph volume         24864.297    c.m"
*                   1.883     1.883     1.883     5.446"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ****************************************************"
*              Catchments north of Hwy 7/8, towards Eastern Tributary"
*              ****************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.883     0.000     1.883     5.446"
* 33          CATCHMENT 150"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         150   Southern portion of Rec Centre fields"
*       0.000   % Impervious"
*       3.510   Total Area"
*      95.000   Flow length"
*       1.600   Overland Slope"
*       3.510   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.163   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.028     0.000     1.883     5.446 c.m/sec"
*            Catchment 150          Pervious   Impervious Total Area "
*            Surface Area           3.510      0.000      3.510      hectare"
*            Time of concentration  56.775     8.726      56.775     minutes"
*            Time to Centroid       171.820    101.065    171.819    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        1202.47    0.00       1202.48    c.m"
*            Rainfall losses        28.658     5.078      28.658     mm"
*            Runoff depth           5.600      29.180     5.600      mm"
*            Runoff volume          196.56     0.00       196.56     c.m"
*            Runoff coefficient     0.163      0.000      0.163      "
*            Maximum flow           0.028      0.000      0.028      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.028     0.028     1.883     5.446"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.028     0.028     0.028     5.446"
```

```
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.028    c.m/sec"
*            Hydrograph volume           196.564    c.m"
*                   0.028     0.028     0.028     0.028"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.028     0.000     0.028     0.028"
* 33          CATCHMENT 151"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*       33.000  % Impervious"
*        5.770  Total Area"
*      100.000  Flow length"
*        2.000  Overland Slope"
*        3.866  Pervious Area"
*      100.000  Pervious length"
*        2.000  Pervious slope"
*        1.904  Impervious Area"
*      296.000  Impervious length"
*        2.000  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.189  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.852  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                   0.343     0.000     0.028     0.028 c.m/sec"
*              Catchment 151          Pervious   Impervious Total Area "
*              Surface Area           3.866      1.904      5.770      hectare"
*              Time of concentration  51.785     8.726      22.087     minutes"
*              Time to Centroid       166.741    101.065    121.444    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        1324.40    652.32     1976.72    c.m"
*              Rainfall losses        27.792     5.078      20.297     mm"
*              Runoff depth           6.466      29.180     13.962     mm"
*              Runoff volume          249.98     555.62     805.61     c.m"
*              Runoff coefficient     0.189      0.852      0.408      "
*              Maximum flow           0.039      0.338      0.343      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.343     0.343     0.028     0.028"
* 40           HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.343     0.343     0.343     0.028"
* 40           HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.346    c.m/sec"
*             Hydrograph volume          1002.170    c.m"
*                   0.343     0.343     0.343     0.346"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.343     0.000     0.343     0.346"
* 33          CATCHMENT 152"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
```



```
*         152   Southern portion of Schneider lands"
*       5.000   % Impervious"
*       8.560   Total Area"
*     170.000   Flow length"
*       3.500   Overland Slope"
*       8.132   Pervious Area"
*     170.000   Pervious length"
*       3.500   Pervious slope"
*       0.428   Impervious Area"
*     170.000   Impervious length"
*       3.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.284   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.851   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.141     0.000     0.343     0.346 c.m/sec"
*              Catchment 152          Pervious   Impervious Total Area "
*              Surface Area           8.132      0.428      8.560      hectare"
*              Time of concentration  47.803     5.289      42.018     minutes"
*              Time to Centroid       162.440    95.959     153.393    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        2785.91    146.63     2932.53    c.m"
*              Rainfall losses        24.518     5.106      23.548     mm"
*              Runoff depth           9.740      29.152     10.711     mm"
*              Runoff volume          792.08     124.77     916.85     c.m"
*              Runoff coefficient     0.284      0.851      0.313      "
*              Maximum flow           0.132      0.089      0.141      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.141     0.141     0.343     0.346"
* 40           HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.141     0.141     0.141     0.346"
* 40           HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.457    c.m/sec"
*             Hydrograph volume          1919.023    c.m"
*                   0.141     0.141     0.141     0.457"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.141     0.000     0.141     0.457"
* 47          FILEI_O Read/Open DIV00007.002hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*               DIV00007.002hyd"
*               Major flow at 7"
*               Total volume                  0.000    c.m"
*               Maximum flow                  0.000    c.m/sec"
*                    0.000     0.000     0.141     0.457 c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.000     0.000     0.141     0.457"
* 40           HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.000     0.000     0.000     0.457"
* 40           HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
```

```
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.457    c.m/sec"
*            Hydrograph volume          1919.023    c.m"
*                  0.000     0.000     0.000     0.457"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.457    c.m/sec"
*            Hydrograph volume          1919.023    c.m"
*                  0.000     0.457     0.000     0.000"
* 54         POND DESIGN"
*       0.457   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1919.0   Hydrograph volume    c.m"
*          9.   Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   266.000"
*               333.500     1.168  1814.000"
*               334.000     2.325  4798.000"
*               334.500     3.132  9073.000"
*               335.000     3.780  14775.00"
*               335.500     4.332  22251.00"
*               335.750     4.583  26742.00"
*               336.000    21.985  31757.00"
*            Peak outflow                  0.274    c.m/sec"
*            Maximum level               332.971    metre"
*            Maximum storage             242.984    c.m"
*            Centroidal lag                2.610   hours"
*                 0.000     0.457     0.274     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 0.000     0.274     0.274     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                  228.020    hectare"
*            Total Impervious area                  50.613    hectare"
*            Total % impervious                     22.197"
* 19         EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>"
*             MIDUSS version                              Version 2.25  rev. 473"
*             MIDUSS created                            Sunday, February 07, 2010"
*          10 Units used:                                              ie METRIC"
*             Job folder:                             Q:\34896\104\SWM\MIDUSS\Pre"
*             Output filename:                            34896-104_Pre-005yr.out"
*             Licensee name:                                                admin"
*             Company                                                  Microsoft"
*             Date & Time last used:                   12/7/2018 at 11:53:27 AM"
* 81        ADD COMMENT=========================================================="
*          7 Lines of comment"
*            ********************************************"
*            Wilmot Employement Lands"
*            New Hamburg, Ontario"
*            5 year Storm Event - Pre-development"
*            Job No.: 34896-104"
*            Calculated by: NED/MSB/GMK"
*            ********************************************"
* 31         TIME PARAMETERS"
*       5.000   Time Step"
*     240.000   Max. Storm length"
*    1500.000   Max. Hydrograph"
* 32         STORM Chicago storm"
*           1   Chicago storm"
*    1593.000   Coefficient A"
*      11.000   Constant B"
*       0.879   Exponent C"
*       0.400   Fraction R"
*     180.000   Duration"
*       1.000   Time step multiplier"
*             Maximum intensity          139.250    mm/hr"
*             Total depth                 47.240    mm"
*           6   005hyd   Hydrograph extension used in this file"
* 81        ADD COMMENT=========================================================="
*          3 Lines of comment"
*            ************************************************"
*            Catchments North of GEXR, part of Inlet #1"
*            ************************************************"
* 33         CATCHMENT 101"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         101   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.107     0.000     0.000     0.000 c.m/sec"
*             Catchment 101          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  42.921     5.407      42.921     minutes"
```



```
*             Time to Centroid       150.959    93.831     150.959    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        1403.02    0.00       1403.02    c.m"
*             Rainfall losses        29.424     5.418      29.424     mm"
*             Runoff depth           17.816     41.822     17.816     mm"
*             Runoff volume          529.13     0.00       529.13     c.m"
*             Runoff coefficient     0.377      0.000      0.377      "
*             Maximum flow           0.107      0.000      0.107      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.107     0.107     0.000     0.000"
* 33          CATCHMENT 102"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          102   Pfenning Farm Development - north of GEXR"
*        0.000   % Impervious"
*       12.070   Total Area"
*      180.000   Flow length"
*        2.500   Overland Slope"
*       12.070   Pervious Area"
*      180.000   Pervious length"
*        2.500   Pervious slope"
*        0.000   Impervious Area"
*      180.000   Impervious length"
*        2.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.377   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.434     0.107     0.000     0.000 c.m/sec"
*             Catchment 102          Pervious   Impervious Total Area "
*             Surface Area           12.070     0.000      12.070     hectare"
*             Time of concentration  43.081     5.428      43.081     minutes"
*             Time to Centroid       151.165    93.862     151.165    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        5701.85    0.01       5701.85    c.m"
*             Rainfall losses        29.425     5.409      29.425     mm"
*             Runoff depth           17.815     41.830     17.815     mm"
*             Runoff volume          2150.28    0.01       2150.29    c.m"
*             Runoff coefficient     0.377      0.000      0.377      "
*             Maximum flow           0.434      0.000      0.434      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.434     0.542     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.434     0.542     0.542     0.000"
* 40          HYDROGRAPH   Combine    1"
*            6   Combine "
*            1   Node #"
*                u/s of GEXR"
*             Maximum flow                 0.542    c.m/sec"
*             Hydrograph volume         2679.419    c.m"
*                  0.434     0.542     0.542     0.542"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.434     0.000     0.542     0.542"
* 33          CATCHMENT 103"
*            1   Triangular SCS"
*            1   Equal length"
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.193   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*              0.041     0.000     0.542     0.542 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  38.094     3.337      38.093     minutes"
*           Time to Centroid       145.176    90.888     145.176    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        982.59     0.00       982.59     c.m"
*           Rainfall losses        38.144     5.976      38.144     mm"
*           Runoff depth           9.096      41.264     9.096      mm"
*           Runoff volume          189.20     0.00       189.20     c.m"
*           Runoff coefficient     0.193      0.000      0.193      "
*           Maximum flow           0.041      0.000      0.041      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*              0.041     0.041     0.542     0.542"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*              0.041     0.041     0.041     0.542"
* 40        HYDROGRAPH   Combine    1"
*         6   Combine "
*         1   Node #"
*             u/s of GEXR"
*           Maximum flow                 0.582    c.m/sec"
*           Hydrograph volume         2868.618    c.m"
*              0.041     0.041     0.041     0.582"
* 40        HYDROGRAPH   Confluence    1"
*         7   Confluence "
*         1   Node #"
*             u/s of GEXR"
*           Maximum flow                 0.582    c.m/sec"
*           Hydrograph volume         2868.618    c.m"
*              0.041     0.582     0.041     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*              0.041     0.582     0.582     0.000"
* 40        HYDROGRAPH   Combine    2"
*         6   Combine "
*         2   Node #"
*             INLET 1"
*           Maximum flow                 0.582    c.m/sec"
*           Hydrograph volume         2868.618    c.m"
*              0.041     0.582     0.582     0.582"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*              0.041     0.000     0.582     0.582"
```



```
* 81          ADD COMMENT==================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchments South of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 104"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         104   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.880   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.362     0.000     0.582     0.582 c.m/sec"
*            Catchment 104          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  28.151     6.758      10.546     minutes"
*            Time to Centroid       132.819    95.789     102.346    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        391.24     563.00     954.25     c.m"
*            Rainfall losses        34.371     5.681      17.444     mm"
*            Runoff depth           12.869     41.558     29.796     mm"
*            Runoff volume          106.58     495.29     601.87     c.m"
*            Runoff coefficient     0.272      0.880      0.631      "
*            Maximum flow           0.029      0.355      0.362      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.362     0.362     0.582     0.582"
* 54          POND DESIGN"
*       0.362   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       601.9   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*             Peak outflow                 0.019    c.m/sec"
*             Maximum level                0.186    metre"
*             Maximum storage            470.022    c.m"
*             Centroidal lag               8.648    hours"
*                  0.362     0.362     0.019     0.582 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
```

```
*             INLET 1"
*            Maximum flow                  0.598    c.m/sec"
*            Hydrograph volume          3448.642    c.m"
*                  0.362     0.362     0.019     0.598"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.362     0.000     0.019     0.598"
* 33         CATCHMENT 105"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         105   Iron Bridge Manufacturing Property"
*      65.000   % Impervious"
*       3.570   Total Area"
*      90.000   Flow length"
*       2.000   Overland Slope"
*       1.250   Pervious Area"
*      90.000   Pervious length"
*       2.000   Pervious slope"
*       2.320   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.000   Pervious SCS Curve No."
*       0.357   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.958   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.876   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.671     0.000     0.019     0.598 c.m/sec"
*            Catchment 105          Pervious   Impervious Total Area "
*            Surface Area           1.250      2.320      3.570      hectare"
*            Time of concentration  31.209     3.829      8.763      minutes"
*            Time to Centroid       135.969    91.603     99.598     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        590.26     1096.20    1686.46    c.m"
*            Rainfall losses        30.353     5.873      14.441     mm"
*            Runoff depth           16.887     41.366     32.799     mm"
*            Runoff volume          211.00     959.91     1170.91    c.m"
*            Runoff coefficient     0.357      0.876      0.694      "
*            Maximum flow           0.053      0.657      0.671      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.671     0.671     0.019     0.598"
* 33         CATCHMENT 106"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         106   N.C. Pestell Head Office and other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      55.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      55.000   Pervious length"
*       1.500   Pervious slope"
*       1.088   Impervious Area"
*      55.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
```



```
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.874   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.301     0.671     0.019     0.598 c.m/sec"
*            Catchment 106          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  29.128     3.106      4.462      minutes"
*            Time to Centroid       134.035    90.514     92.783     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        90.70      513.97     604.67     c.m"
*            Rainfall losses        34.373     5.943      10.207     mm"
*            Runoff depth           12.867     41.297     37.032     mm"
*            Runoff volume          24.71      449.31     474.02     c.m"
*            Runoff coefficient     0.272      0.874      0.784      "
*            Maximum flow           0.007      0.301      0.301      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.301     0.967     0.019     0.598"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.301     0.967     0.967     0.598"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  1.077    c.m/sec"
*            Hydrograph volume          5093.567    c.m"
*                  0.301     0.967     0.967     1.077"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.301     0.000     0.967     1.077"
* 33         CATCHMENT 107"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         107   Industrial properties at end of Hamilton Road"
*      40.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.710   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       1.140   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.874   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.325     0.000     0.967     1.077 c.m/sec"
*            Catchment 107          Pervious   Impervious Total Area "
*            Surface Area           1.710      1.140      2.850      hectare"
*            Time of concentration  31.067     3.313      12.157     minutes"
*            Time to Centroid       136.445    90.849     105.379    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        807.80     538.53     1346.34    c.m"
*            Rainfall losses        34.371     5.968      23.010     mm"
*            Runoff depth           12.869     41.271     24.230     mm"
```

```
*           Runoff volume          220.05     470.49     690.55     c.m"
*           Runoff coefficient     0.272      0.874      0.513      "
*           Maximum flow           0.055      0.312      0.325      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.325     0.325     0.967     1.077"
* 33        CATCHMENT 108"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        108   Woodlot and Wetland east of Pestells"
*      5.000   % Impervious"
*      5.920   Total Area"
*     65.000   Flow length"
*      3.000   Overland Slope"
*      5.624   Pervious Area"
*     65.000   Pervious length"
*      3.000   Pervious slope"
*      0.296   Impervious Area"
*     65.000   Impervious length"
*      3.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.200   Pervious SCS Curve No."
*      0.195   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.782   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.871   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.142     0.325     0.967     1.077 c.m/sec"
*           Catchment 108          Pervious   Impervious Total Area "
*           Surface Area           5.624      0.296      5.920      hectare"
*           Time of concentration  31.608     2.789      26.117     minutes"
*           Time to Centroid       137.527    90.032     128.478    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        2656.77    139.83     2796.60    c.m"
*           Rainfall losses        38.034     6.073      36.436     mm"
*           Runoff depth           9.205      41.167     10.804     mm"
*           Runoff volume          517.72     121.85     639.57     c.m"
*           Runoff coefficient     0.195      0.871      0.229      "
*           Maximum flow           0.127      0.084      0.142      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.142     0.428     0.967     1.077"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.142     0.428     0.428     1.077"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                1.505    c.m/sec"
*           Hydrograph volume        6423.682    c.m"
*                 0.142     0.428     0.428     1.505"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.142     0.000     0.428     1.505"
* 33        CATCHMENT 109"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        109   N.C. Pestell site"
*     75.000   % Impervious"
*      5.530   Total Area"
*    130.000   Flow length"
```



```
*      2.000   Overland Slope"
*      1.383   Pervious Area"
*     50.000   Pervious length"
*      3.000   Pervious slope"
*      4.148   Impervious Area"
*    192.000   Impervious length"
*      0.750   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     75.000   Pervious SCS Curve No."
*      0.257   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.467   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.888   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                1.209     0.000     0.428     1.505 c.m/sec"
*           Catchment 109          Pervious   Impervious Total Area "
*           Surface Area           1.383      4.148      5.530      hectare"
*           Time of concentration  23.025     8.096      9.412      minutes"
*           Time to Centroid       126.613    97.690     100.239    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        653.09     1959.27    2612.36    c.m"
*           Rainfall losses        35.076     5.299      12.744     mm"
*           Runoff depth           12.164     41.940     34.496     mm"
*           Runoff volume          168.17     1739.48    1907.65    c.m"
*           Runoff coefficient     0.257      0.888      0.730      "
*           Maximum flow           0.051      1.193      1.209      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                1.209     1.209     0.428     1.505"
* 54        POND DESIGN"
*       1.209   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1907.6   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*           Peak outflow                   0.052    c.m/sec"
*           Maximum level                  0.647    metre"
*           Maximum storage             1543.705    c.m"
*           Centroidal lag                12.880   hours"
*                1.209     1.209     0.052     1.505 c.m/sec"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                   1.512    c.m/sec"
*           Hydrograph volume           8017.083    c.m"
*                 1.209     1.209     0.052     1.512"
* 81        ADD COMMENT==================================================="
*          3   Lines of comment"
*              **************************************************"
*           Catchments South of GEXR, part of Inlet #2"
```

```
*          ****************************************************
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                1.209     0.000     0.052     1.512"
* 33        CATCHMENT 110"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        110   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.339   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.883   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.175     0.000     0.052     1.512 c.m/sec"
*             Catchment 110          Pervious   Impervious Total Area "
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  47.489     4.785      24.965     minutes"
*             Time to Centroid       156.896    92.959     123.174    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        634.90     272.10     907.01     c.m"
*             Rainfall losses        31.231     5.549      23.527     mm"
*             Runoff depth           16.009     41.691     23.713     mm"
*             Runoff volume          215.16     240.14     455.30     c.m"
*             Runoff coefficient     0.339      0.883      0.502      "
*             Maximum flow           0.040      0.168      0.175      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.175     0.175     0.052     1.512"
* 54        POND DESIGN"
*       0.175   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       455.3   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*             Peak outflow                 0.088    c.m/sec"
*             Maximum level                0.489    metre"
*             Maximum storage             68.189    c.m"
*             Centroidal lag               2.187   hours"
*                0.175     0.175     0.088     1.512 c.m/sec"
* 40        HYDROGRAPH   Combine    3"
```



```
*          6   Combine "
*          3   Node #"
*              INLET 2"
*             Maximum flow                 0.088    c.m/sec"
*             Hydrograph volume          454.849    c.m"
*                0.175     0.175     0.088     0.088"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.175     0.000     0.088     0.088"
* 33        CATCHMENT 111"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        111   Woodlot north of Schneider/Good lands"
*        0.000   % Impervious"
*       13.230   Total Area"
*      170.000   Flow length"
*        2.400   Overland Slope"
*       13.230   Pervious Area"
*      170.000   Pervious length"
*        2.400   Pervious slope"
*        0.000   Impervious Area"
*      170.000   Impervious length"
*        2.400   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.000   Pervious SCS Curve No."
*        0.193   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.886   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.183     0.000     0.088     0.088 c.m/sec"
*             Catchment 111          Pervious   Impervious Total Area "
*             Surface Area           13.230     0.000      13.230     hectare"
*             Time of concentration  60.616     5.309      60.616     minutes"
*             Time to Centroid       171.753    93.685     171.752    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        6249.83    0.01       6249.83    c.m"
*             Rainfall losses        38.141     5.461      38.141     mm"
*             Runoff depth           9.099      41.779     9.099      mm"
*             Runoff volume          1203.79    0.01       1203.80    c.m"
*             Runoff coefficient     0.193      0.000      0.193      "
*             Maximum flow           0.183      0.000      0.183      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.183     0.183     0.088     0.088"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.183     0.183     0.183     0.088"
* 40        HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*             Maximum flow                 0.249    c.m/sec"
*             Hydrograph volume         1658.643    c.m"
*                0.183     0.183     0.183     0.249"
* 81        ADD COMMENT==================================================="
*          3  Lines of comment"
*             ************************************************"
*             South of GEXR along Nafziger Rd, part of Inlet #3"
*             ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.183     0.000     0.183     0.249"
```

```
* 33          CATCHMENT 112"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           112   Culivated lands east of Nafziger Road"
*         1.000   % Impervious"
*         7.310   Total Area"
*       120.000   Flow length"
*         3.300   Overland Slope"
*         7.237   Pervious Area"
*       120.000   Pervious length"
*         3.300   Pervious slope"
*         0.073   Impervious Area"
*       120.000   Impervious length"
*         3.300   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.377   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.877   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.331     0.000     0.183     0.249 c.m/sec"
*              Catchment 112          Pervious   Impervious Total Area "
*              Surface Area           7.237      0.073      7.310      hectare"
*              Time of concentration  31.078     3.915      30.455     minutes"
*              Time to Centroid       135.638    91.724     134.630    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        3418.70    34.53      3453.23    c.m"
*              Rainfall losses        29.431     5.805      29.195     mm"
*              Runoff depth           17.809     41.435     18.045     mm"
*              Runoff volume          1288.79    30.29      1319.08    c.m"
*              Runoff coefficient     0.377      0.877      0.382      "
*              Maximum flow           0.328      0.021      0.331      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.331     0.331     0.183     0.249"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   0.331     0.331     0.331     0.249"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                  0.331    c.m/sec"
*              Hydrograph volume          1319.079    c.m"
*                   0.331     0.331     0.331     0.331"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.331     0.000     0.331     0.331"
* 33          CATCHMENT 113"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           113   Alpine Solutions - East SMWP"
*        40.000   % Impervious"
*         2.560   Total Area"
*       150.000   Flow length"
*         1.500   Overland Slope"
*         1.536   Pervious Area"
*       180.000   Pervious length"
*         1.500   Pervious slope"
*         1.024   Impervious Area"
*       131.000   Impervious length"
```



```
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        80.000   Pervious SCS Curve No."
*         0.339   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         6.350   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.883   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.306     0.000     0.331     0.331 c.m/sec"
*              Catchment 113          Pervious   Impervious Total Area "
*              Surface Area           1.536      1.024      2.560      hectare"
*              Time of concentration  52.979     5.228      22.671     minutes"
*              Time to Centroid       163.903    93.568     119.261    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        725.60     483.74     1209.34    c.m"
*              Rainfall losses        31.227     5.505      20.938     mm"
*              Runoff depth           16.013     41.735     26.302     mm"
*              Runoff volume          245.96     427.37     673.33     c.m"
*              Runoff coefficient     0.339      0.883      0.557      "
*              Maximum flow           0.041      0.300      0.306      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.306     0.306     0.331     0.331"
* 54           POND DESIGN"
*         0.306   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         673.3   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.000   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.1000   0.02000     7.000"
*                   0.2500   0.04200    64.000"
*                   0.5000   0.09000   343.000"
*                   0.7500    0.1250   877.000"
*                   0.8000    0.1360  1014.000"
*                    1.000    0.7880  1667.000"
*              Peak outflow                  0.071    c.m/sec"
*              Maximum level                 0.401    metre"
*              Maximum storage             232.104    c.m"
*              Centroidal lag                2.670    hours"
*                   0.306     0.306     0.071     0.331 c.m/sec"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                  0.401    c.m/sec"
*              Hydrograph volume          1992.557    c.m"
*                   0.306     0.306     0.071     0.401"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.306     0.000     0.071     0.401"
* 33          CATCHMENT 114"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           114   Woodlot East and West of Nafziger Road"
*         3.000   % Impervious"
*        13.460   Total Area"
*       140.000   Flow length"
*         3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.194   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.880   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.232     0.000     0.071     0.401 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  47.595     4.184      42.247     minutes"
*            Time to Centroid       156.414    92.097     148.490    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        6167.73    190.75     6358.49    c.m"
*            Rainfall losses        38.086     5.652      37.113     mm"
*            Runoff depth           9.154      41.588     10.127     mm"
*            Runoff volume          1195.13    167.93     1363.06    c.m"
*            Runoff coefficient     0.194      0.880      0.214      "
*            Maximum flow           0.219      0.116      0.232      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                  0.232     0.232     0.071     0.401"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                  0.232     0.232     0.232     0.401"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.614    c.m/sec"
*           Hydrograph volume          3355.621    c.m"
*                  0.232     0.232     0.232     0.614"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                  0.232     0.000     0.232     0.614"
* 33         CATCHMENT 115"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        115   Rec Centre - SWMP"
*       73.000   % Impervious"
*        4.950   Total Area"
*       50.000   Flow length"
*        2.800   Overland Slope"
*        1.336   Pervious Area"
*       40.000   Pervious length"
*        1.500   Pervious slope"
*        3.613   Impervious Area"
*      182.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       83.000   Pervious SCS Curve No."
*        0.397   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.202   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.883   Impervious Runoff coefficient"
```



```
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    1.074     0.000     0.232     0.614 c.m/sec"
*             Catchment 115          Pervious   Impervious Total Area "
*             Surface Area           1.336      3.613      4.950      hectare"
*             Time of concentration  19.839     6.369      8.289      minutes"
*             Time to Centroid       120.657    95.242     98.894     minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        631.36     1707.01    2338.37    c.m"
*             Rainfall losses        28.477     5.507      11.709     mm"
*             Runoff depth           18.763     41.733     35.531     mm"
*             Runoff volume          250.76     1508.02    1758.79    c.m"
*             Runoff coefficient     0.397      0.883      0.752      "
*             Maximum flow           0.087      1.037      1.074      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.074     1.074     0.232     0.614"
* 54          POND DESIGN"
*        1.074   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      1758.8   Hydrograph volume    c.m"
*         15.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.450   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1500   0.00700   248.000"
*                  0.2500   0.00900   418.000"
*                  0.3500   0.01100   593.000"
*                  0.4500   0.01300   775.000"
*                  0.5500   0.01500   964.000"
*                  0.6500   0.01600  1161.000"
*                  0.7500   0.01700  1364.000"
*                  0.8500   0.01900  1575.000"
*                  0.9500   0.02000  1795.000"
*                   1.050   0.05600  2025.000"
*                   1.150    0.2080  2263.000"
*                   1.250    0.4600  2511.000"
*                   1.350     2.766  2768.000"
*                   1.450     6.856  3033.000"
*             Peak outflow                  0.019    c.m/sec"
*             Maximum level                 0.862    metre"
*             Maximum storage            1600.533    c.m"
*             Centroidal lag               18.149    hours"
*                  1.074     1.074     0.019     0.614 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*             Maximum flow                  0.630    c.m/sec"
*             Hydrograph volume          4624.574    c.m"
*                   1.074     1.074     0.019     0.630"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.074     0.000     0.019     0.630"
* 33          CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*        35.000   % Impervious"
*         7.710   Total Area"
*       140.000   Flow length"
*         1.600   Overland Slope"
*         5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.273   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.885   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.806     0.000     0.019     0.630 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  50.045     5.337      21.608     minutes"
*             Time to Centroid       160.066    93.724     117.869    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        2367.43    1274.77    3642.19    c.m"
*             Rainfall losses        34.364     5.449      24.244     mm"
*             Runoff depth           12.876     41.791     22.996     mm"
*             Runoff volume          645.26     1127.73    1772.99    c.m"
*             Runoff coefficient     0.273      0.885      0.487      "
*             Maximum flow           0.114      0.791      0.806      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.806     0.806     0.019     0.630"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.806     0.806     0.806     0.630"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                 1.118    c.m/sec"
*             Hydrograph volume         6397.556    c.m"
*                  0.806     0.806     0.806     1.118"
* 40          HYDROGRAPH   Confluence    2"
*            7   Confluence "
*            2   Node #"
*                INLET 1"
*             Maximum flow                 1.512    c.m/sec"
*             Hydrograph volume         8017.083    c.m"
*                  0.806     1.512     0.806     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.806     1.512     1.512     0.000"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 1.512    c.m/sec"
*             Hydrograph volume         8017.083    c.m"
*                  0.806     1.512     1.512     1.512"
* 40          HYDROGRAPH   Confluence    3"
*            7   Confluence "
*            3   Node #"
*                INLET 2"
*             Maximum flow                 0.249    c.m/sec"
*             Hydrograph volume         1658.643    c.m"
*                  0.806     0.249     1.512     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.806     0.249     0.249     0.000"
```



```
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 1.603    c.m/sec"
*             Hydrograph volume         9675.727    c.m"
*                  0.806     0.249     0.249     1.603"
* 40          HYDROGRAPH   Confluence    4"
*            7   Confluence "
*            4   Node #"
*                INLET 3"
*             Maximum flow                 1.118    c.m/sec"
*             Hydrograph volume         6397.555    c.m"
*                  0.806     1.118     0.249     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.806     1.118     1.118     0.000"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 2.721    c.m/sec"
*             Hydrograph volume        16073.286    c.m"
*                  0.806     1.118     1.118     2.721"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.806     0.000     1.118     2.721"
* 33          CATCHMENT 117"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          117   Cultivated Schneider central lands"
*        0.000   % Impervious"
*        7.450   Total Area"
*      140.000   Flow length"
*        2.000   Overland Slope"
*        7.450   Pervious Area"
*      140.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      140.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       81.400   Pervious SCS Curve No."
*        0.365   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.804   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.270     0.000     1.118     2.721 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  40.251     4.991      40.251     minutes"
*             Time to Centroid       147.567    93.252     147.567    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        3519.37    0.00       3519.37    c.m"
*             Rainfall losses        29.983     5.528      29.983     mm"
*             Runoff depth           17.256     41.712     17.256     mm"
*             Runoff volume          1285.60    0.00       1285.60    c.m"
*             Runoff coefficient     0.365      0.000      0.365      "
*             Maximum flow           0.270      0.000      0.270      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.270     0.270     1.118     2.721"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.270     0.270     0.270     2.721"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.773    c.m/sec"
*            Hydrograph volume         17358.893   c.m"
*                 0.270     0.270     0.270     2.773"
* 81          ADD COMMENT==================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchments east of Hamilton Road, part of Inlet #4"
*            ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.270     0.000     0.270     2.773"
* 33          CATCHMENT 118"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         118   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.243   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.876   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.019     0.000     0.270     2.773 c.m/sec"
*            Catchment 118          Pervious   Impervious Total Area "
*            Surface Area           0.460      0.040      0.500      hectare"
*            Time of concentration  22.730     2.280      17.854     minutes"
*            Time to Centroid       126.407    89.228     117.543    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        217.30     18.90      236.20     c.m"
*            Rainfall losses        35.746     5.862      33.355     mm"
*            Runoff depth           11.494     41.378     13.885     mm"
*            Runoff volume          52.87      16.55      69.42      c.m"
*            Runoff coefficient     0.243      0.876      0.294      "
*            Maximum flow           0.016      0.012      0.019      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.019     0.019     0.270     2.773"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.019     0.019     0.019     2.773"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.788    c.m/sec"
*            Hydrograph volume         17428.314   c.m"
```



```
*                 0.019     0.019     0.019     2.788"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.019     0.000     0.019     2.788"
* 33          CATCHMENT 119"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         119   Existing ROW from Hamilton Road"
*       0.000   % Impervious"
*       0.720   Total Area"
*      40.000   Flow length"
*       2.000   Overland Slope"
*       0.720   Pervious Area"
*      40.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*      40.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.030     0.000     0.019     2.788 c.m/sec"
*            Catchment 119          Pervious   Impervious Total Area "
*            Surface Area           0.720      0.000      0.720      hectare"
*            Time of concentration  22.072     2.354      22.072     minutes"
*            Time to Centroid       125.258    89.353     125.257    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        340.13     0.00       340.13     c.m"
*            Rainfall losses        34.378     5.879      34.378     mm"
*            Runoff depth           12.862     41.361     12.862     mm"
*            Runoff volume          92.61      0.00       92.61      c.m"
*            Runoff coefficient     0.272      0.000      0.272      "
*            Maximum flow           0.030      0.000      0.030      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.030     0.030     0.019     2.788"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.030     0.030     0.030     2.788"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.798    c.m/sec"
*            Hydrograph volume         17520.918   c.m"
*                 0.030     0.030     0.030     2.798"
* 81          ADD COMMENT==================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchment to Inlet #5"
*            ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.030     0.000     0.030     2.798"
* 33          CATCHMENT 120"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         120   Rear yards from Hamilton Heights Subdivision"
```

```
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.875   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.060     0.000     0.030     2.798 c.m/sec"
*            Catchment 120          Pervious   Impervious Total Area "
*            Surface Area           1.026      0.054      1.080      hectare"
*            Time of concentration  12.894     1.375      11.224     minutes"
*            Time to Centroid       113.857    87.892     110.092    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        484.68     25.51      510.19     c.m"
*            Rainfall losses        34.405     5.888      32.979     mm"
*            Runoff depth           12.835     41.352     14.261     mm"
*            Runoff volume          131.69     22.33      154.02     c.m"
*            Runoff coefficient     0.272      0.875      0.302      "
*            Maximum flow           0.056      0.017      0.060      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.060     0.060     0.030     2.798"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.060     0.060     0.060     2.798"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.843    c.m/sec"
*            Hydrograph volume        17674.932    c.m"
*                 0.060     0.060     0.060     2.843"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            ************************************************"
*            Good Lands"
*            ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.060     0.000     0.060     2.843"
* 33         CATCHMENT 121"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         121   Good Lands"
*       0.000   % Impervious"
*      43.240   Total Area"
*     230.000   Flow length"
*       2.800   Overland Slope"
*      43.240   Pervious Area"
*     230.000   Pervious length"
*       2.800   Pervious slope"
*       0.000   Impervious Area"
*     230.000   Impervious length"
```



```
*       2.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.411     0.000     0.060     2.843 c.m/sec"
*            Catchment 121          Pervious   Impervious Total Area "
*            Surface Area           43.240     0.000      43.240     hectare"
*            Time of concentration  48.238     6.077      48.238     minutes"
*            Time to Centroid       157.836    94.784     157.836    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        2.0426     0.0000     2.0427     ha-m"
*            Rainfall losses        29.424     5.425      29.424     mm"
*            Runoff depth           17.815     41.815     17.815     mm"
*            Runoff volume          7703.39    0.02       7703.40    c.m"
*            Runoff coefficient     0.377      0.000      0.377      "
*            Maximum flow           1.411      0.000      1.411      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.411     1.411     0.060     2.843"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.411     1.411     1.411     2.843"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 3.794    c.m/sec"
*            Hydrograph volume        25378.355    c.m"
*                 1.411     1.411     1.411     3.794"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchments to Inlet #6"
*            ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.411     0.000     1.411     3.794"
* 33         CATCHMENT 160"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         160   Hamilton Heights Subdivision"
*      46.000   % Impervious"
*       8.160   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       4.406   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       3.754   Impervious Area"
*     232.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.884   Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.161     0.000     1.411     3.794 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  22.344     7.367      11.342     minutes"
*            Time to Centroid       125.604    96.644     104.330    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        2081.58    1773.20    3854.77    c.m"
*            Rainfall losses        34.383     5.462      21.079     mm"
*            Runoff depth           12.857     41.778     26.160     mm"
*            Runoff volume          566.52     1568.18    2134.70    c.m"
*            Runoff coefficient     0.272      0.884      0.554      "
*            Maximum flow           0.181      1.102      1.161      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 1.161     1.161     1.411     3.794"
* 33         CATCHMENT 161"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        161   Klassen Bronze Property"
*     32.000   % Impervious"
*      2.350   Total Area"
*    100.000   Flow length"
*      2.500   Overland Slope"
*      1.598   Pervious Area"
*     50.000   Pervious length"
*      2.500   Pervious slope"
*      0.752   Impervious Area"
*    164.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.272   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.886   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.238     1.161     1.411     3.794 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  23.600     5.983      12.947     minutes"
*            Time to Centroid       127.153    94.642     107.493    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        754.89     355.24     1110.14    c.m"
*            Rainfall losses        34.371     5.404      25.101     mm"
*            Runoff depth           12.869     41.836     22.138     mm"
*            Runoff volume          205.65     314.60     520.25     c.m"
*            Runoff coefficient     0.272      0.886      0.469      "
*            Maximum flow           0.062      0.218      0.238      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.238     1.399     1.411     3.794"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.238     1.399     1.399     3.794"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                 4.470    c.m/sec"
*           Hydrograph volume         28033.303   c.m"
*                 0.238     1.399     1.399     4.470"
```



```
* 81         ADD COMMENT==================================================="
*          3  Lines of comment"
*             ************************************************************"
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.238     0.000     1.399     4.470"
* 33         CATCHMENT 170"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        170   Industrial/Residential area along Hamilton Road"
*     55.000   % Impervious"
*      8.450   Total Area"
*     45.000   Flow length"
*      2.000   Overland Slope"
*      3.802   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      4.648   Impervious Area"
*    235.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.272   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.885   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 1.439     0.000     1.399     4.470 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  16.446     7.424      9.238      minutes"
*            Time to Centroid       118.279    96.726     101.059    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        1796.30    2195.47    3991.77    c.m"
*            Rainfall losses        34.389     5.449      18.472     mm"
*            Runoff depth           12.851     41.791     28.768     mm"
*            Runoff volume          488.65     1942.25    2430.90    c.m"
*            Runoff coefficient     0.272      0.885      0.609      "
*            Maximum flow           0.182      1.363      1.439      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 1.439     1.439     1.399     4.470"
* 56         DIVERSION"
*          6   Node number"
*       1.560   Overflow threshold"
*       1.000   Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow          0.000    c.m/sec"
*           Volume of diverted flow        0.000    c.m"
*           DIV00006.005hyd"
*           Major flow at 6"
*                 1.439     1.439     1.439     4.470 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.439    c.m/sec"
*           Hydrograph volume          2430.902    c.m"
*                 1.439     1.439     1.439     1.439"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
```

```
*                  1.439     0.000     1.439     1.439"
* 47         FILEI_O Read/Open DIV00006.005hyd"
*          1   1=read/open; 2=write/save"
*          2   1=rainfall; 2=hydrograph"
*          1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*           DIV00006.005hyd"
*           Major flow at 6"
*           Total volume                0.000    c.m"
*           Maximum flow                0.000    c.m/sec"
*                0.000     0.000     1.439     1.439 c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.000     0.000     1.439     1.439"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.000     0.000     0.000     1.439"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                4.470    c.m/sec"
*           Hydrograph volume         28033.303    c.m"
*                0.000     0.000     0.000     4.470"
* 40        HYDROGRAPH   Confluence    5"
*          7   Confluence "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                4.470    c.m/sec"
*           Hydrograph volume         28033.303    c.m"
*                0.000     4.470     0.000     0.000"
* 54        POND DESIGN"
*       4.470   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*     28033.3   Hydrograph volume    c.m"
*          7.   Number of stages"
*     334.290   Minimum water level    metre"
*     336.800   Maximum water level    metre"
*     334.290   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               334.290     0.000     0.000"
*               334.500    0.2540     5.000"
*               335.000     1.303   390.000"
*               335.500     2.800  3269.000"
*               336.000     4.639  13030.00"
*               336.400     6.109  30065.00"
*               336.800    18.376  57257.00"
*           Peak outflow                3.079    c.m/sec"
*           Maximum level             335.576    metre"
*           Maximum storage          4752.075    c.m"
*           Centroidal lag              3.437    hours"
*                0.000     4.470     3.079     0.000 c.m/sec"
* 40        HYDROGRAPH Next link "
*          5   Next link "
*                0.000     3.079     3.079     0.000"
* 56        DIVERSION"
*          7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow       0.000    c.m/sec"
*           Volume of diverted flow     0.000    c.m"
*           DIV00007.005hyd"
*           Major flow at 7"
*                0.000     3.079     3.079     0.000 c.m/sec"
* 40        HYDROGRAPH   Combine    8"
*          6   Combine "
```



```
*          8   Node #"
*              NODE A"
*           Maximum flow                3.079    c.m/sec"
*           Hydrograph volume         28048.670    c.m"
*                0.000     3.079     3.079     3.079"
* 81        ADD COMMENT==========================================================*
*        3  Lines of comment"
*           *************************************************
*           Catchments South of Hwy 7/8"
*           *************************************************
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.000     0.000     3.079     3.079"
* 33        CATCHMENT 180"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        180   Northeast portion of Maple Leaf Foods property"
*     26.000   % Impervious"
*      0.700   Total Area"
*     45.000   Flow length"
*      1.500   Overland Slope"
*      0.518   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      0.182   Impervious Area"
*     68.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     79.000   Pervious SCS Curve No."
*      0.320   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.752   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.878   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.072     0.000     3.079     3.079 c.m/sec"
*           Catchment 180          Pervious   Impervious Total Area *
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  13.366     3.984      8.764      minutes"
*           Time to Centroid       113.606    91.817     102.919    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        244.70     85.98      330.68     c.m"
*           Rainfall losses        32.102     5.764      25.254     mm"
*           Runoff depth           15.138     41.476     21.986     mm"
*           Runoff volume          78.41      75.49      153.90     c.m"
*           Runoff coefficient     0.320      0.878      0.465      "
*           Maximum flow           0.034      0.052      0.072      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.072     0.072     3.079     3.079"
* 54        POND DESIGN"
*       0.072   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       153.9   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
```

```
*               0.4500   0.00800    69.000"
*               0.6500   0.01000   178.000"
*               0.7000    0.1060   208.000"
*               0.7500    0.2810   240.000"
*            Peak outflow                  0.008    c.m/sec"
*            Maximum level                 0.498    metre"
*            Maximum storage              95.201    c.m"
*            Centroidal lag                3.728   hours"
*                 0.072     0.072     0.008     3.079 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.446    c.m/sec"
*            Hydrograph volume          2584.698    c.m"
*                 0.072     0.072     0.008     1.446"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.072     0.000     0.008     1.446"
* 33         CATCHMENT 181"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         181   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.140   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.885   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.510     0.000     0.008     1.446 c.m/sec"
*            Catchment 181          Pervious   Impervious Total Area "
*            Surface Area           0.131      1.739      1.870      hectare"
*            Time of concentration  21.064     5.375      5.559      minutes"
*            Time to Centroid       126.420    93.781     94.165     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        61.84      821.55     883.39     c.m"
*            Rainfall losses        40.632     5.432      7.896      mm"
*            Runoff depth           6.608      41.808     39.344     mm"
*            Runoff volume          8.65       727.09     735.74     c.m"
*            Runoff coefficient     0.140      0.885      0.833      "
*            Maximum flow           0.003      0.509      0.510      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.510     0.510     0.008     1.446"
* 54         POND DESIGN"
*       0.510   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       735.7   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
```



```
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.143    c.m/sec"
*            Maximum level                 1.280    metre"
*            Maximum storage             281.788    c.m"
*            Centroidal lag                1.883   hours"
*                 0.510     0.510     0.143     1.446 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.574    c.m/sec"
*            Hydrograph volume          3323.812    c.m"
*                 0.510     0.510     0.143     1.574"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.510     0.000     0.143     1.574"
* 33         CATCHMENT 182"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         182   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.140   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.876   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.238     0.000     0.143     1.574 c.m/sec"
*            Catchment 182          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  23.789     3.829      5.166      minutes"
*            Time to Centroid       129.513    91.603     94.142     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        177.20     394.41     571.60     c.m"
*            Rainfall losses        40.631     5.873      16.648     mm"
*            Runoff depth           6.609      41.366     30.592     mm"
*            Runoff volume          24.79      345.37     370.16     c.m"
*            Runoff coefficient     0.140      0.876      0.648      "
*            Maximum flow           0.007      0.237      0.238      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.238     0.238     0.143     1.574"
* 54         POND DESIGN"
*       0.238   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
```

```
*       370.2   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.035    c.m/sec"
*            Maximum level                 0.263    metre"
*            Maximum storage             227.248    c.m"
*            Centroidal lag                3.352   hours"
*                 0.238     0.238     0.035     1.574 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.596    c.m/sec"
*            Hydrograph volume          3693.965    c.m"
*                 0.238     0.238     0.035     1.596"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.238     0.000     0.035     1.596"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.173   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.887   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.670     0.000     0.035     1.596 c.m/sec"
*              Catchment 183          Pervious   Impervious Total Area "
*              Surface Area           16.536     6.754      23.290     hectare"
*              Time of concentration  61.650     9.286      26.246     minutes"
*              Time to Centroid       172.132    99.328     122.908    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        0.7812     0.3191     1.1002     ha-m"
*              Rainfall losses        39.045     5.359      29.276     mm"
*              Runoff depth           8.195      41.881     17.964     mm"
*              Runoff volume          1355.09    2828.69    4183.78    c.m"
*              Runoff coefficient     0.173      0.887      0.380      "
*              Maximum flow           0.205      1.651      1.670      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.670     1.670     0.035     1.596"
```



```
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.670     1.670     1.670     1.596"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  3.266    c.m/sec"
*            Hydrograph volume          7877.743    c.m"
*                 1.670     1.670     1.670     3.266"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  3.079    c.m/sec"
*            Hydrograph volume         28048.668    c.m"
*                 1.670     3.079     1.670     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.670     3.079     3.079     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  5.089    c.m/sec"
*            Hydrograph volume         35926.422    c.m"
*                 1.670     3.079     3.079     5.089"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.670     0.000     3.079     5.089"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.244   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.874   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.085     0.000     3.079     5.089 c.m/sec"
*              Catchment 184          Pervious   Impervious Total Area "
*              Surface Area           2.891      0.059      2.950      hectare"
*              Time of concentration  31.177     3.128      29.262     minutes"
*              Time to Centroid       136.740    90.552     133.587    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        1365.70    27.87      1393.58    c.m"
*              Rainfall losses        35.737     5.939      35.141     mm"
*              Runoff depth           11.503     41.301     12.099     mm"
*              Runoff volume          332.56     24.37      356.92     c.m"
*              Runoff coefficient     0.244      0.874      0.256      "
*              Maximum flow           0.082      0.016      0.085      c.m/sec"
```

```
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.085     0.085     3.079     5.089"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.085     0.085     0.085     5.089"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*            Maximum flow                  5.134    c.m/sec"
*            Hydrograph volume         36283.340    c.m"
*                    0.085     0.085     0.085     5.134"
* 40          HYDROGRAPH   Confluence    9"
*            7   Confluence "
*            9   Node #"
*                NODE B"
*            Maximum flow                  5.134    c.m/sec"
*            Hydrograph volume         36283.344    c.m"
*                    0.085     5.134     0.085     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.085     5.134     5.134     0.000"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*            Maximum flow                  5.134    c.m/sec"
*            Hydrograph volume         36283.344    c.m"
*                    0.085     5.134     5.134     5.134"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.085     0.000     5.134     5.134"
* 33          CATCHMENT 185"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          185   Morningside Retirement Community lands"
*       58.000   % Impervious"
*       18.780   Total Area"
*      190.000   Flow length"
*        2.000   Overland Slope"
*        7.888   Pervious Area"
*       25.000   Pervious length"
*        2.500   Pervious slope"
*       10.892   Impervious Area"
*      354.000   Impervious length"
*        2.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       64.400   Pervious SCS Curve No."
*        0.134   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.888   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    3.162     0.000     5.134     5.134 c.m/sec"
*             Catchment 185          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  22.917     8.144      9.602      minutes"
*             Time to Centroid       128.820    97.761     100.827    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        3726.09    5145.56    8871.65    c.m"
*             Rainfall losses        40.896     5.290      20.244     mm"
*             Runoff depth           6.344      41.950     26.996     mm"
```



```
*             Runoff volume          500.38     4569.37    5069.74    c.m"
*             Runoff coefficient     0.134      0.888      0.571      "
*             Maximum flow           0.144      3.129      3.162      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    3.162     3.162     5.134     5.134"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    3.162     3.162     3.162     5.134"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*            Maximum flow                  8.153    c.m/sec"
*            Hydrograph volume         41353.105    c.m"
*                    3.162     3.162     3.162     8.153"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************************"
*             Catchments north of Hwy 7/8, towards Eastern Tributary"
*             ************************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    3.162     0.000     3.162     8.153"
* 33          CATCHMENT 150"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          150   Southern portion of Rec Centre fields"
*        0.000   % Impervious"
*        3.510   Total Area"
*       95.000   Flow length"
*        1.600   Overland Slope"
*        3.510   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.243   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.083     0.000     3.162     8.153 c.m/sec"
*             Catchment 150          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  40.652     7.822      40.652     minutes"
*             Time to Centroid       148.337    97.287     148.337    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        1658.12    0.00       1658.12    c.m"
*             Rainfall losses        35.737     5.363      35.737     mm"
*             Runoff depth           11.503     41.877     11.503     mm"
*             Runoff volume          403.75     0.00       403.75     c.m"
*             Runoff coefficient     0.243      0.000      0.243      "
*             Maximum flow           0.083      0.000      0.083      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.083     0.083     3.162     8.153"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.083     0.083     0.083     8.153"
```

```
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.083    c.m/sec"
*            Hydrograph volume           403.748    c.m"
*                   0.083     0.083     0.083     0.083"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.083     0.000     0.083     0.083"
* 33          CATCHMENT 151"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*      33.000   % Impervious"
*       5.770   Total Area"
*     100.000   Flow length"
*       2.000   Overland Slope"
*       3.866   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       1.904   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.886   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.572     0.000     0.083     0.083 c.m/sec"
*            Catchment 151          Pervious   Impervious Total Area "
*            Surface Area           3.866      1.904      5.770      hectare"
*            Time of concentration  38.248     7.822      19.514     minutes"
*            Time to Centroid       145.388    97.287     115.771    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        1826.25    899.49     2725.74    c.m"
*            Rainfall losses        34.367     5.363      24.796     mm"
*            Runoff depth           12.872     41.877     22.444     mm"
*            Runoff volume          497.63     797.37     1295.01    c.m"
*            Runoff coefficient     0.272      0.886      0.475      "
*            Maximum flow           0.107      0.552      0.572      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.572     0.572     0.083     0.083"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.572     0.572     0.572     0.083"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.586    c.m/sec"
*            Hydrograph volume          1698.744    c.m"
*                   0.572     0.572     0.572     0.586"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.572     0.000     0.572     0.586"
* 33          CATCHMENT 152"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
```



```
*         152   Southern portion of Schneider lands"
*       5.000   % Impervious"
*       8.560   Total Area"
*     170.000   Flow length"
*       3.500   Overland Slope"
*       8.132   Pervious Area"
*     170.000   Pervious length"
*       3.500   Pervious slope"
*       0.428   Impervious Area"
*     170.000   Impervious length"
*       3.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.883   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.338     0.000     0.572     0.586 c.m/sec"
*            Catchment 152          Pervious   Impervious Total Area "
*            Surface Area           8.132      0.428      8.560      hectare"
*            Time of concentration  37.632     4.741      34.024     minutes"
*            Time to Centroid       144.114    92.895     138.496    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        3841.55    202.19     4043.73    c.m"
*            Rainfall losses        29.430     5.545      28.236     mm"
*            Runoff depth           17.810     41.694     19.004     mm"
*            Runoff volume          1448.29    178.45     1626.75    c.m"
*            Runoff coefficient     0.377      0.883      0.402      "
*            Maximum flow           0.321      0.125      0.338      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.338     0.338     0.572     0.586"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.338     0.338     0.338     0.586"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.779    c.m/sec"
*            Hydrograph volume          3325.491    c.m"
*                   0.338     0.338     0.338     0.779"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.338     0.000     0.338     0.779"
* 47          FILEI_O Read/Open DIV00007.005hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00007.005hyd"
*            Major flow at 7"
*            Total volume                  0.000    c.m"
*            Maximum flow                  0.000    c.m/sec"
*               0.000     0.000     0.338     0.779 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.000     0.000     0.338     0.779"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.000     0.000     0.000     0.779"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
```

```
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                    0.779    c.m/sec"
*             Hydrograph volume            3325.491    c.m"
*                    0.000     0.000      0.000     0.779"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                    0.779    c.m/sec"
*             Hydrograph volume            3325.491    c.m"
*                    0.000     0.779      0.000     0.000"
* 54          POND DESIGN"
*        0.779   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       3325.5   Hydrograph volume    c.m"
*           9.   Number of stages"
*      332.660   Minimum water level    metre"
*      336.000   Maximum water level    metre"
*      332.660   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                332.660     0.000     0.000"
*                333.000    0.3010   266.000"
*                333.500     1.168  1814.000"
*                334.000     2.325  4798.000"
*                334.500     3.132  9073.000"
*                335.000     3.780  14775.00"
*                335.500     4.332  22251.00"
*                335.750     4.583  26742.00"
*                336.000    21.985  31757.00"
*             Peak outflow                    0.515    c.m/sec"
*             Maximum level                 333.123    metre"
*             Maximum storage               647.685    c.m"
*             Centroidal lag                  2.480   hours"
*                  0.000     0.779     0.515     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                  0.000     0.515     0.515     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                  228.020    hectare"
*             Total Impervious area                  50.613    hectare"
*             Total % impervious                     22.197"
* 19          EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>*
*             MIDUSS version                              Version 2.25  rev. 473"
*             MIDUSS created                            Sunday, February 07, 2010"
*          10 Units used:                                              ie METRIC"
*             Job folder:                             Q:\34896\104\SWM\MIDUSS\Pre"
*             Output filename:                           34896-104_Pre-010yr.out"
*             Licensee name:                                              admin"
*             Company                                                  Microsoft"
*             Date & Time last used:                   12/7/2018 at 1:01:33 PM"
* 81          ADD COMMENT============================================================"
*           7 Lines of comment"
*             ****************************************"
*             Wilmot Employement Lands"
*             New Hamburg, Ontario"
*             10 year Storm Event - Pre-development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB/GMK"
*             ****************************************"
* 31          TIME PARAMETERS"
*        5.000  Time Step"
*      240.000  Max. Storm length"
*     1500.000  Max. Hydrograph"
* 32          STORM Chicago storm"
*           1   Chicago storm"
*     2221.000  Coefficient A"
*       12.000  Constant B"
*        0.908  Exponent C"
*        0.400  Fraction R"
*      180.000  Duration"
*        1.000  Time step multiplier"
*             Maximum intensity          169.551    mm/hr"
*             Total depth                 56.290    mm"
*           6 010hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT============================================================"
*           3 Lines of comment"
*             ************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 101"
*           1 Triangular SCS"
*           1 Equal length"
*           1 SCS method"
*         101 Area Northeast of GEXR"
*       0.000 % Impervious"
*       2.970 Total Area"
*      80.000 Flow length"
*       0.500 Overland Slope"
*       2.970 Pervious Area"
*      80.000 Pervious length"
*       0.500 Pervious slope"
*       0.000 Impervious Area"
*      80.000 Impervious length"
*       0.500 Impervious slope"
*       0.250 Pervious Manning 'n'"
*      82.000 Pervious SCS Curve No."
*       0.429 Pervious Runoff coefficient"
*       0.100 Pervious Ia/S coefficient"
*       5.576 Pervious Initial abstraction"
*       0.015 Impervious Manning 'n'"
*      98.000 Impervious SCS Curve No."
*       0.000 Impervious Runoff coefficient"
*       0.100 Impervious Ia/S coefficient"
*       0.518 Impervious Initial abstraction"
*               0.167     0.000     0.000     0.000 c.m/sec"
*             Catchment 101          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  37.216     4.974      37.216     minutes"
```



```
*             Time to Centroid       141.929    92.233     141.929    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        1671.82    0.00       1671.82    c.m"
*             Rainfall losses        32.141     5.688      32.141     mm"
*             Runoff depth           24.149     50.602     24.149     mm"
*             Runoff volume          717.23     0.00       717.23     c.m"
*             Runoff coefficient     0.429      0.000      0.429      "
*             Maximum flow           0.167      0.000      0.167      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4 Add Runoff "
*                   0.167     0.167     0.000     0.000"
* 33          CATCHMENT 102"
*           1 Triangular SCS"
*           1 Equal length"
*           1 SCS method"
*         102 Pfenning Farm Development - north of GEXR"
*       0.000 % Impervious"
*      12.070 Total Area"
*     180.000 Flow length"
*       2.500 Overland Slope"
*      12.070 Pervious Area"
*     180.000 Pervious length"
*       2.500 Pervious slope"
*       0.000 Impervious Area"
*     180.000 Impervious length"
*       2.500 Impervious slope"
*       0.250 Pervious Manning 'n'"
*      82.000 Pervious SCS Curve No."
*       0.429 Pervious Runoff coefficient"
*       0.100 Pervious Ia/S coefficient"
*       5.576 Pervious Initial abstraction"
*       0.015 Impervious Manning 'n'"
*      98.000 Impervious SCS Curve No."
*       0.000 Impervious Runoff coefficient"
*       0.100 Impervious Ia/S coefficient"
*       0.518 Impervious Initial abstraction"
*               0.674     0.167     0.000     0.000 c.m/sec"
*             Catchment 102          Pervious   Impervious Total Area "
*             Surface Area           12.070     0.000      12.070     hectare"
*             Time of concentration  37.355     4.993      37.355     minutes"
*             Time to Centroid       142.108    92.259     142.108    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        6794.21    0.01       6794.22    c.m"
*             Rainfall losses        32.144     5.689      32.144     mm"
*             Runoff depth           24.146     50.601     24.146     mm"
*             Runoff volume          2914.41    0.01       2914.42    c.m"
*             Runoff coefficient     0.429      0.000      0.429      "
*             Maximum flow           0.674      0.000      0.674      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4 Add Runoff "
*                   0.674     0.841     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8 Copy to Outflow"
*                   0.674     0.841     0.841     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6 Combine "
*           1 Node #"
*             u/s of GEXR"
*             Maximum flow                  0.841    c.m/sec"
*             Hydrograph volume          3631.645    c.m"
*                   0.674     0.841     0.841     0.841"
* 40          HYDROGRAPH Start - New Tributary"
*           2 Start - New Tributary"
*                   0.674     0.000     0.841     0.841"
* 33          CATCHMENT 103"
*           1 Triangular SCS"
*           1 Equal length"
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.237   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*              0.071     0.000     0.841     0.841 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  31.163     3.069      31.163     minutes"
*           Time to Centroid       135.358    89.471     135.358    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        1170.83    0.00       1170.83    c.m"
*           Rainfall losses        42.931     6.208      42.931     mm"
*           Runoff depth           13.359     50.082     13.359     mm"
*           Runoff volume          277.86     0.00       277.86     c.m"
*           Runoff coefficient     0.237      0.000      0.237      "
*           Maximum flow           0.071      0.000      0.071      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*              0.071     0.071     0.841     0.841"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*              0.071     0.071     0.071     0.841"
* 40        HYDROGRAPH   Combine    1"
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 0.911    c.m/sec"
*           Hydrograph volume         3909.511    c.m"
*              0.071     0.071     0.071     0.911"
* 40        HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 0.911    c.m/sec"
*           Hydrograph volume         3909.511    c.m"
*              0.071     0.911     0.071     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*              0.071     0.911     0.911     0.000"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                 0.911    c.m/sec"
*           Hydrograph volume         3909.511    c.m"
*              0.071     0.911     0.911     0.911"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*              0.071     0.000     0.911     0.911"
```



```
* 81          ADD COMMENT==========================================================="
*            3  Lines of comment"
*               ************************************************"
*               Catchments South of GEXR, part of Inlet #1"
*               ************************************************"
* 33          CATCHMENT 104"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           104   Riverside Brass"
*        59.000   % Impervious"
*         2.020   Total Area"
*        35.000   Flow length"
*         1.200   Overland Slope"
*         0.828   Pervious Area"
*        60.000   Pervious length"
*         2.000   Pervious slope"
*         1.192   Impervious Area"
*       116.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.322   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.901   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.441     0.000     0.911     0.911 c.m/sec"
*              Catchment 104          Pervious   Impervious Total Area "
*              Surface Area           0.828      1.192      2.020      hectare"
*              Time of concentration  23.839     6.216      9.723      minutes"
*              Time to Centroid       125.573    93.996     100.279    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        466.19     670.87     1137.06    c.m"
*              Rainfall losses        38.162     5.581      18.939     mm"
*              Runoff depth           18.128     50.709     37.351     mm"
*              Runoff volume          150.14     604.35     754.49     c.m"
*              Runoff coefficient     0.322      0.901      0.664      "
*              Maximum flow           0.047      0.426      0.441      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                 0.441     0.441     0.911     0.911"
* 54          POND DESIGN"
*          0.441   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*          754.5   Hydrograph volume    c.m"
*             4.   Number of stages"
*          0.000   Minimum water level    metre"
*          0.910   Maximum water level    metre"
*          0.000   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.3100   0.03090   782.000"
*                   0.6100    0.1232  1619.000"
*                   0.9100    0.2769  2511.000"
*              Peak outflow                  0.024    c.m/sec"
*              Maximum level                 0.236    metre"
*              Maximum storage             595.098    c.m"
*              Centroidal lag                8.614    hours"
*                   0.441     0.441     0.024     0.911 c.m/sec"
* 40           HYDROGRAPH   Combine    2"
*             6   Combine "
*             2   Node #"
```

```
*              INLET 1"
*           Maximum flow                  0.931    c.m/sec"
*           Hydrograph volume          4636.752    c.m"
*                 0.441     0.441     0.024     0.931"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.441     0.000     0.024     0.931"
* 33        CATCHMENT 105"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        105   Iron Bridge Manufacturing Property"
*     65.000   % Impervious"
*      3.570   Total Area"
*     90.000   Flow length"
*      2.000   Overland Slope"
*      1.250   Pervious Area"
*     90.000   Pervious length"
*      2.000   Pervious slope"
*      2.320   Impervious Area"
*     90.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     81.000   Pervious SCS Curve No."
*      0.409   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      5.958   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.888   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.822     0.000     0.024     0.931 c.m/sec"
*           Catchment 105          Pervious   Impervious Total Area "
*           Surface Area           1.250      2.320      3.570      hectare"
*           Time of concentration  26.964     3.522      8.183      minutes"
*           Time to Centroid       128.728    90.164     97.832     minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        703.35     1306.21    2009.56    c.m"
*           Rainfall losses        33.257     6.320      15.748     mm"
*           Runoff depth           23.033     49.970     40.542     mm"
*           Runoff volume          287.80     1159.57    1447.36    c.m"
*           Runoff coefficient     0.409      0.888      0.720      "
*           Maximum flow           0.085      0.797      0.822      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.822     0.822     0.024     0.931"
* 33        CATCHMENT 106"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        106   N.C. Pestell Head Office and other Industrial"
*     85.000   % Impervious"
*      1.280   Total Area"
*     55.000   Flow length"
*      1.500   Overland Slope"
*      0.192   Pervious Area"
*     55.000   Pervious length"
*      1.500   Pervious slope"
*      1.088   Impervious Area"
*     55.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.322   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
```



```
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.888   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.382     0.822     0.024     0.931 c.m/sec"
*           Catchment 106          Pervious   Impervious Total Area "
*           Surface Area           0.192      1.088      1.280      hectare"
*           Time of concentration  24.666     2.857      4.169      minutes"
*           Time to Centroid       126.619    89.144     91.399     minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        108.08     612.44     720.51     c.m"
*           Rainfall losses        38.166     6.322      11.098     mm"
*           Runoff depth           18.125     49.968     45.192     mm"
*           Runoff volume          34.80      543.66     578.46     c.m"
*           Runoff coefficient     0.322      0.888      0.803      "
*           Maximum flow           0.011      0.381      0.382      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.382     1.180     0.024     0.931"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.382     1.180     1.180     0.931"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  1.387    c.m/sec"
*           Hydrograph volume          6662.573    c.m"
*                 0.382     1.180     1.180     1.387"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.382     0.000     1.180     1.387"
* 33        CATCHMENT 107"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        107   Industrial properties at end of Hamilton Road"
*     40.000   % Impervious"
*      2.850   Total Area"
*     50.000   Flow length"
*      1.000   Overland Slope"
*      1.710   Pervious Area"
*     50.000   Pervious length"
*      1.000   Pervious slope"
*      1.140   Impervious Area"
*     50.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.322   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.890   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.405     0.000     1.180     1.387 c.m/sec"
*           Catchment 107          Pervious   Impervious Total Area "
*           Surface Area           1.710      1.140      2.850      hectare"
*           Time of concentration  26.308     3.047      11.232     minutes"
*           Time to Centroid       128.687    89.435     103.247    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        962.56     641.71     1604.27    c.m"
*           Rainfall losses        38.166     6.216      25.386     mm"
*           Runoff depth           18.124     50.074     30.904     mm"
```

```
*            Runoff volume          309.91     570.84     880.76     c.m"
*            Runoff coefficient     0.322      0.890      0.549      "
*            Maximum flow           0.091      0.393      0.405      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.405     0.405     1.180     1.387"
* 33         CATCHMENT 108"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         108   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.240   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.888   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.237     0.405     1.180     1.387 c.m/sec"
*            Catchment 108          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  25.895     2.565      22.088     minutes"
*            Time to Centroid       128.931    88.717     122.367    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        3165.76    166.62     3332.38    c.m"
*            Rainfall losses        42.796     6.281      40.970     mm"
*            Runoff depth           13.494     50.009     15.320     mm"
*            Runoff volume          758.91     148.03     906.93     c.m"
*            Runoff coefficient     0.240      0.888      0.272      "
*            Maximum flow           0.216      0.106      0.237      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.237     0.557     1.180     1.387"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.237     0.557     0.557     1.387"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                1.944     c.m/sec"
*            Hydrograph volume        8450.264     c.m"
*                 0.237     0.557     0.557     1.944"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.237     0.000     0.557     1.944"
* 33         CATCHMENT 109"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         109   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
```



```
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.306   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.540     0.000     0.557     1.944 c.m/sec"
*            Catchment 109          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  19.407     7.447      8.664      minutes"
*            Time to Centroid       120.174    95.744     98.229     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        778.21     2334.63    3112.85    c.m"
*            Rainfall losses        39.063     5.579      13.950     mm"
*            Runoff depth           17.227     50.711     42.340     mm"
*            Runoff volume          238.16     2103.25    2341.41    c.m"
*            Runoff coefficient     0.306      0.901      0.752      "
*            Maximum flow           0.084      1.507      1.540      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.540     1.540     0.557     1.944"
* 54         POND DESIGN"
*       1.540   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2341.4   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*            Peak outflow                   0.061    c.m/sec"
*            Maximum level                  0.773    metre"
*            Maximum storage             1919.889    c.m"
*            Centroidal lag                12.280   hours"
*                 1.540     1.540     0.061     1.944 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                   1.954    c.m/sec"
*            Hydrograph volume          10447.711    c.m"
*                 1.540     1.540     0.061     1.954"
* 81         ADD COMMENT==================================================="
*           3   Lines of comment"
*               **************************************************"
*               Catchments South of GEXR, part of Inlet #2"
```

```
*          ************************************************
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               1.540     0.000     0.061     1.954"
* 33        CATCHMENT 110"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       110   Alpine Solutions - west SMWP"
*    30.000   % Impervious"
*     1.920   Total Area"
*   150.000   Flow length"
*     1.000   Overland Slope"
*     1.344   Pervious Area"
*   150.000   Pervious length"
*     1.500   Pervious slope"
*     0.576   Impervious Area"
*   113.000   Impervious length"
*     1.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    80.000   Pervious SCS Curve No."
*     0.390   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     6.350   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.899   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*               0.219     0.000     0.061     1.954 c.m/sec"
*          Catchment 110          Pervious   Impervious Total Area "
*          Surface Area           1.344      0.576      1.920      hectare"
*          Time of concentration  40.878     4.401      22.762     minutes"
*          Time to Centroid       146.877    91.383     119.317    minutes"
*          Rainfall depth         56.290     56.290     56.290     mm"
*          Rainfall volume        756.54     324.23     1080.77    c.m"
*          Rainfall losses        34.319     5.708      25.735     mm"
*          Runoff depth           21.972     50.582     30.555     mm"
*          Runoff volume          295.30     291.35     586.65     c.m"
*          Runoff coefficient     0.390      0.899      0.543      "
*          Maximum flow           0.064      0.206      0.219      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.219     0.219     0.061     1.954"
* 54        POND DESIGN"
*     0.219   Current peak flow    c.m/sec"
*     0.070   Target outflow    c.m/sec"
*     586.6   Hydrograph volume    c.m"
*       7.    Number of stages"
*     0.000   Minimum water level    metre"
*     1.100   Maximum water level    metre"
*     0.000   Starting water level    metre"
*         0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*               0.000     0.000     0.000"
*              0.2500   0.04200     7.000"
*              0.5000   0.09000    71.000"
*              0.7500    0.1250   220.000"
*              0.9000    0.1400   346.000"
*               1.000    0.3110   445.000"
*               1.100    0.6160   557.000"
*          Peak outflow                  0.097    c.m/sec"
*          Maximum level                 0.551    metre"
*          Maximum storage             101.655    c.m"
*          Centroidal lag                2.180    hours"
*               0.219     0.219     0.097     1.954 c.m/sec"
* 40        HYDROGRAPH   Combine    3"
```



```
*         6   Combine "
*         3   Node #"
*             INLET 2"
*          Maximum flow                  0.097    c.m/sec"
*          Hydrograph volume           587.274    c.m"
*               0.219     0.219     0.097     0.097"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               0.219     0.000     0.097     0.097"
* 33        CATCHMENT 111"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       111   Woodlot north of Schneider/Good lands"
*     0.000   % Impervious"
*    13.230   Total Area"
*   170.000   Flow length"
*     2.400   Overland Slope"
*    13.230   Pervious Area"
*   170.000   Pervious length"
*     2.400   Pervious slope"
*     0.000   Impervious Area"
*   170.000   Impervious length"
*     2.400   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    70.000   Pervious SCS Curve No."
*     0.237   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    10.886   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.000   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*               0.323     0.000     0.097     0.097 c.m/sec"
*          Catchment 111          Pervious   Impervious Total Area "
*          Surface Area           13.230     0.000      13.230     hectare"
*          Time of concentration  49.587     4.884      49.587     minutes"
*          Time to Centroid       157.759    92.103     157.759    minutes"
*          Rainfall depth         56.290     56.290     56.290     mm"
*          Rainfall volume        7447.18    0.01       7447.19    c.m"
*          Rainfall losses        42.930     5.698      42.930     mm"
*          Runoff depth           13.360     50.593     13.360     mm"
*          Runoff volume          1767.58    0.01       1767.58    c.m"
*          Runoff coefficient     0.237      0.000      0.237      "
*          Maximum flow           0.323      0.000      0.323      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.323     0.323     0.097     0.097"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*               0.323     0.323     0.323     0.097"
* 40        HYDROGRAPH   Combine    3"
*         6   Combine "
*         3   Node #"
*             INLET 2"
*          Maximum flow                  0.418    c.m/sec"
*          Hydrograph volume          2354.856    c.m"
*               0.323     0.323     0.323     0.418"
* 81        ADD COMMENT==================================================="
*         3 Lines of comment"
*          **********************************************"
*          South of GEXR along Nafziger Rd, part of Inlet #3"
*          **********************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               0.323     0.000     0.323     0.418"
```

```
* 33          CATCHMENT 112"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           112   Culivated lands east of Nafziger Road"
*         1.000   % Impervious"
*         7.310   Total Area"
*       120.000   Flow length"
*         3.300   Overland Slope"
*         7.237   Pervious Area"
*       120.000   Pervious length"
*         3.300   Pervious slope"
*         0.073   Impervious Area"
*       120.000   Impervious length"
*         3.300   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.429   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.887   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.522     0.000     0.323     0.418 c.m/sec"
*              Catchment 112          Pervious   Impervious Total Area "
*              Surface Area           7.237      0.073      7.310      hectare"
*              Time of concentration  26.948     3.602      26.470     minutes"
*              Time to Centroid       128.542    90.293     127.759    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        4073.66    41.15      4114.81    c.m"
*              Rainfall losses        32.150     6.344      31.892     mm"
*              Runoff depth           24.140     49.947     24.398     mm"
*              Runoff volume          1747.01    36.51      1783.52    c.m"
*              Runoff coefficient     0.429      0.887      0.433      "
*              Maximum flow           0.517      0.025      0.522      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.522     0.522     0.323     0.418"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   0.522     0.522     0.522     0.418"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                    0.522    c.m/sec"
*              Hydrograph volume            1783.521    c.m"
*                   0.522     0.522     0.522     0.522"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.522     0.000     0.522     0.522"
* 33          CATCHMENT 113"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           113   Alpine Solutions - East SMWP"
*        40.000   % Impervious"
*         2.560   Total Area"
*       150.000   Flow length"
*         1.500   Overland Slope"
*         1.536   Pervious Area"
*       180.000   Pervious length"
*         1.500   Pervious slope"
*         1.024   Impervious Area"
*       131.000   Impervious length"
```



```
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        80.000   Pervious SCS Curve No."
*         0.391   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         6.350   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.899   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.382     0.000     0.522     0.522 c.m/sec"
*              Catchment 113          Pervious   Impervious Total Area "
*              Surface Area           1.536      1.024      2.560      hectare"
*              Time of concentration  45.604     4.809      20.909     minutes"
*              Time to Centroid       152.977    91.996     116.063    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        864.62     576.41     1441.03    c.m"
*              Rainfall losses        34.307     5.712      22.869     mm"
*              Runoff depth           21.983     50.578     33.421     mm"
*              Runoff volume          337.66     517.92     855.58     c.m"
*              Runoff coefficient     0.391      0.899      0.594      "
*              Maximum flow           0.066      0.370      0.382      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.382     0.382     0.522     0.522"
* 54           POND DESIGN"
*         0.382   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         855.6   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.000   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1000   0.02000     7.000"
*                  0.2500   0.04200    64.000"
*                  0.5000   0.09000   343.000"
*                  0.7500    0.1250   877.000"
*                  0.8000    0.1360  1014.000"
*                   1.000    0.7880  1667.000"
*              Peak outflow                    0.088    c.m/sec"
*              Maximum level                   0.489    metre"
*              Maximum storage               330.576    c.m"
*              Centroidal lag                  2.743    hours"
*                   0.382     0.382     0.088     0.522 c.m/sec"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                    0.606    c.m/sec"
*              Hydrograph volume            2638.950    c.m"
*                   0.382     0.382     0.088     0.606"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.382     0.000     0.088     0.606"
* 33          CATCHMENT 114"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           114   Woodlot East and West of Nafziger Road"
*         3.000   % Impervious"
*        13.460   Total Area"
*       140.000   Flow length"
*         3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.239   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.892   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.402     0.000     0.088     0.606 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  38.965     3.849      35.326     minutes"
*            Time to Centroid       144.843    90.632     139.225    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        7349.35    227.30     7576.65    c.m"
*            Rainfall losses        42.859     6.082      41.755     mm"
*            Runoff depth           13.431     50.208     14.535     mm"
*            Runoff volume          1753.62    202.74     1956.36    c.m"
*            Runoff coefficient     0.239      0.892      0.258      "
*            Maximum flow           0.383      0.142      0.402      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.402     0.402     0.088     0.606"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.402     0.402     0.402     0.606"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.985    c.m/sec"
*            Hydrograph volume          4595.315    c.m"
*                 0.402     0.402     0.402     0.985"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.402     0.000     0.402     0.985"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.449   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.902   Impervious Runoff coefficient"
```



```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.369     0.000     0.402     0.985 c.m/sec"
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  17.262     5.858      7.632      minutes"
*            Time to Centroid       115.692    93.486     96.940     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        752.32     2034.04    2786.36    c.m"
*            Rainfall losses        30.997     5.497      12.382     mm"
*            Runoff depth           25.294     50.793     43.908     mm"
*            Runoff volume          338.05     1835.40    2173.45    c.m"
*            Runoff coefficient     0.449      0.902      0.780      "
*            Maximum flow           0.134      1.303      1.369      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.369     1.369     0.402     0.985"
* 54         POND DESIGN"
*       1.369   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*     2173.5    Hydrograph volume    c.m"
*        15.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*            Peak outflow                    0.041    c.m/sec"
*            Maximum level                   1.009    metre"
*            Maximum storage              1930.151    c.m"
*            Centroidal lag                 18.348    hours"
*                 1.369     1.369     0.041     0.985 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                    1.004    c.m/sec"
*            Hydrograph volume            6132.250    c.m"
*                 1.369     1.369     0.041     1.004"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.369     0.000     0.041     1.004"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.322   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.899   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                1.011     0.000     0.041     1.004 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  42.379     4.909      19.880     minutes"
*             Time to Centroid       148.997    92.139     114.857    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        2820.98    1518.99    4339.97    c.m"
*             Rainfall losses        38.161     5.693      26.797     mm"
*             Runoff depth           18.129     50.597     29.493     mm"
*             Runoff volume          908.53     1365.37    2273.90    c.m"
*             Runoff coefficient     0.322      0.899      0.524      "
*             Maximum flow           0.189      0.978      1.011      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                1.011     1.011     0.041     1.004"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.011     1.011     1.011     1.004"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                 1.473    c.m/sec"
*             Hydrograph volume         8406.153    c.m"
*                1.011     1.011     1.011     1.473"
* 40          HYDROGRAPH   Confluence    2"
*            7   Confluence "
*            2   Node #"
*                INLET 1"
*             Maximum flow                 1.954    c.m/sec"
*             Hydrograph volume        10447.711    c.m"
*                1.011     1.954     1.011     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.011     1.954     1.954     0.000"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 1.954    c.m/sec"
*             Hydrograph volume        10447.711    c.m"
*                1.011     1.954     1.954     1.954"
* 40          HYDROGRAPH   Confluence    3"
*            7   Confluence "
*            3   Node #"
*                INLET 2"
*             Maximum flow                 0.418    c.m/sec"
*             Hydrograph volume         2354.856    c.m"
*                1.011     0.418     1.954     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.011     0.418     0.418     0.000"
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* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 2.084    c.m/sec"
*             Hydrograph volume        12802.568    c.m"
*                1.011     0.418     0.418     2.084"
* 40          HYDROGRAPH   Confluence    4"
*            7   Confluence "
*            4   Node #"
*                INLET 3"
*             Maximum flow                 1.473    c.m/sec"
*             Hydrograph volume         8406.154    c.m"
*                1.011     1.473     0.418     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.011     1.473     1.473     0.000"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 3.556    c.m/sec"
*             Hydrograph volume        21208.709    c.m"
*                1.011     1.473     1.473     3.556"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                1.011     0.000     1.473     3.556"
* 33          CATCHMENT 117"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          117   Cultivated Schneider central lands"
*        0.000   % Impervious"
*        7.450   Total Area"
*      140.000   Flow length"
*        2.000   Overland Slope"
*        7.450   Pervious Area"
*      140.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      140.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       81.400   Pervious SCS Curve No."
*        0.417   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.804   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.431     0.000     1.473     3.556 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  34.827     4.591      34.827     minutes"
*             Time to Centroid       138.883    91.669     138.883    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        4193.61    0.00       4193.62    c.m"
*             Rainfall losses        32.822     5.670      32.822     mm"
*             Runoff depth           23.468     50.620     23.468     mm"
*             Runoff volume          1748.35    0.00       1748.35    c.m"
*             Runoff coefficient     0.417      0.000      0.417      "
*             Maximum flow           0.431      0.000      0.431      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                0.431     0.431     1.473     3.556"
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* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.431     0.431     0.431     3.556"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 3.731    c.m/sec"
*            Hydrograph volume         22957.066    c.m"
*                 0.431     0.431     0.431     3.731"
* 81          ADD COMMENT==========================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchments east of Hamilton Road, part of Inlet #4"
*            ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.431     0.000     0.431     3.731"
* 33          CATCHMENT 118"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         118   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.291   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.894   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.030     0.000     0.431     3.731 c.m/sec"
*            Catchment 118          Pervious   Impervious Total Area "
*            Surface Area           0.460      0.040      0.500      hectare"
*            Time of concentration  19.062     2.098      15.488     minutes"
*            Time to Centroid       119.935    87.960     113.198    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        258.93     22.52      281.45     c.m"
*            Rainfall losses        39.898     5.968      37.183     mm"
*            Runoff depth           16.392     50.322     19.107     mm"
*            Runoff volume          75.40      20.13      95.53      c.m"
*            Runoff coefficient     0.291      0.894      0.339      "
*            Maximum flow           0.027      0.015      0.030      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.030     0.030     0.431     3.731"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.030     0.030     0.030     3.731"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 3.757    c.m/sec"
*            Hydrograph volume         23052.598    c.m"
```



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*                 0.030     0.030     0.030     3.757"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.030     0.000     0.030     3.757"
* 33          CATCHMENT 119"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         119   Existing ROW from Hamilton Road"
*       0.000   % Impervious"
*       0.720   Total Area"
*      40.000   Flow length"
*       2.000   Overland Slope"
*       0.720   Pervious Area"
*      40.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*      40.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.047     0.000     0.030     3.757 c.m/sec"
*            Catchment 119          Pervious   Impervious Total Area "
*            Surface Area           0.720      0.000      0.720      hectare"
*            Time of concentration  18.691     2.165      18.691     minutes"
*            Time to Centroid       119.061    88.064     119.061    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        405.29     0.00       405.29     c.m"
*            Rainfall losses        38.178     6.018      38.178     mm"
*            Runoff depth           18.112     50.272     18.112     mm"
*            Runoff volume          130.41     0.00       130.41     c.m"
*            Runoff coefficient     0.322      0.000      0.322      "
*            Maximum flow           0.047      0.000      0.047      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.047     0.047     0.030     3.757"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.047     0.047     0.047     3.757"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 3.798    c.m/sec"
*            Hydrograph volume         23183.004    c.m"
*                 0.047     0.047     0.047     3.798"
* 81          ADD COMMENT==========================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchment to Inlet #5"
*            ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.047     0.000     0.047     3.798"
* 33          CATCHMENT 120"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         120   Rear yards from Hamilton Heights Subdivision"
```

```
*        5.000   % Impervious"
*        1.080   Total Area"
*       20.000   Flow length"
*        3.000   Overland Slope"
*        1.026   Pervious Area"
*       20.000   Pervious length"
*        3.000   Pervious slope"
*        0.054   Impervious Area"
*       20.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.322   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.889   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.097     0.000     0.047     3.798 c.m/sec"
*             Catchment 120          Pervious   Impervious Total Area "
*             Surface Area           1.026      0.054      1.080      hectare"
*             Time of concentration  10.919     1.265      9.693      minutes"
*             Time to Centroid       109.232    86.789     106.382    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        577.54     30.40      607.93     c.m"
*             Rainfall losses        38.191     6.254      36.594     mm"
*             Runoff depth           18.099     50.036     19.696     mm"
*             Runoff volume          185.70     27.02      212.72     c.m"
*             Runoff coefficient     0.322      0.889      0.350      "
*             Maximum flow           0.089      0.021      0.097      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.097     0.097     0.047     3.798"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.097     0.097     0.097     3.798"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  3.847    c.m/sec"
*             Hydrograph volume         23395.723    c.m"
*                  0.097     0.097     0.097     3.847"
* 81          ADD COMMENT==================================================="
*         3   Lines of comment"
*             **************************************************"
*             Good Lands"
*             **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.097     0.000     0.097     3.847"
* 33          CATCHMENT 121"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         121   Good Lands"
*       0.000   % Impervious"
*      43.240   Total Area"
*     230.000   Flow length"
*       2.800   Overland Slope"
*      43.240   Pervious Area"
*     230.000   Pervious length"
*       2.800   Pervious slope"
*       0.000   Impervious Area"
*     230.000   Impervious length"
```



```
*        2.800   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.429   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  2.231     0.000     0.097     3.847 c.m/sec"
*             Catchment 121          Pervious   Impervious Total Area "
*             Surface Area           43.240     0.000      43.240     hectare"
*             Time of concentration  41.827     5.590      41.827     minutes"
*             Time to Centroid       147.937    93.100     147.937    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        2.4340     0.0000     2.4340     ha-m"
*             Rainfall losses        32.141     5.492      32.141     mm"
*             Runoff depth           24.149     50.798     24.149     mm"
*             Runoff volume          1.0442     0.0000     1.0442     ha-m"
*             Runoff coefficient     0.429      0.000      0.429      "
*             Maximum flow           2.231      0.000      2.231      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  2.231     2.231     0.097     3.847"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  2.231     2.231     2.231     3.847"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  5.948    c.m/sec"
*             Hydrograph volume         33837.750    c.m"
*                  2.231     2.231     2.231     5.948"
* 81          ADD COMMENT==================================================="
*         3   Lines of comment"
*             **************************************************"
*             Catchments to Inlet #6"
*             **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  2.231     0.000     2.231     5.948"
* 33          CATCHMENT 160"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         160   Hamilton Heights Subdivision"
*      46.000   % Impervious"
*       8.160   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       4.406   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       3.754   Impervious Area"
*     232.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.896   Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.504     0.000     2.231     5.948 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  18.921     6.776      10.377     minutes"
*            Time to Centroid       119.354    94.798     102.079    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        2480.37    2112.91    4593.28    c.m"
*            Rainfall losses        38.185     5.862      23.316     mm"
*            Runoff depth           18.105     50.428     32.974     mm"
*            Runoff volume          797.79     1892.86    2690.65    c.m"
*            Runoff coefficient     0.322      0.896      0.586      "
*            Maximum flow           0.285      1.384      1.504      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 1.504     1.504     2.231     5.948"
* 33         CATCHMENT 161"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        161   Klassen Bronze Property"
*     32.000   % Impervious"
*      2.350   Total Area"
*    100.000   Flow length"
*      2.500   Overland Slope"
*      1.598   Pervious Area"
*     50.000   Pervious length"
*      2.500   Pervious slope"
*      0.752   Impervious Area"
*    164.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.322   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.902   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.312     1.504     2.231     5.948 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  19.985     5.503      11.746     minutes"
*            Time to Centroid       120.699    92.974     104.926    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        899.52     423.30     1322.82    c.m"
*            Rainfall losses        38.185     5.520      27.732     mm"
*            Runoff depth           18.105     50.770     28.558     mm"
*            Runoff volume          289.32     381.79     671.11     c.m"
*            Runoff coefficient     0.322      0.902      0.507      "
*            Maximum flow           0.102      0.273      0.312      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.312     1.816     2.231     5.948"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.312     1.816     1.816     5.948"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                 6.511    c.m/sec"
*            Hydrograph volume         37199.508   c.m"
*                 0.312     1.816     1.816     6.511"
```



```
* 81         ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************************"
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.312     0.000     1.816     6.511"
* 33         CATCHMENT 170"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        170   Industrial/Residential area along Hamilton Road"
*     55.000   % Impervious"
*      8.450   Total Area"
*     45.000   Flow length"
*      2.000   Overland Slope"
*      3.802   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      4.648   Impervious Area"
*    235.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.321   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.896   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 1.879     0.000     1.816     6.511 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  13.927     6.829      8.439      minutes"
*            Time to Centroid       113.054    94.875     98.998     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        2140.43    2616.08    4756.52    c.m"
*            Rainfall losses        38.197     5.830      20.395     mm"
*            Runoff depth           18.093     50.460     35.895     mm"
*            Runoff volume          687.99     2345.12    3033.11    c.m"
*            Runoff coefficient     0.321      0.896      0.638      "
*            Maximum flow           0.302      1.712      1.879      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 1.879     1.879     1.816     6.511"
* 56         DIVERSION"
*          6   Node number"
*      1.560   Overflow threshold"
*      1.000   Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*              Peak of diverted flow          0.319    c.m/sec"
*              Volume of diverted flow      100.876    c.m"
*              DIV00006.010hyd"
*              Major flow at 6"
*                 1.879     1.879     1.560     6.511 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*              Maximum flow                   1.560    c.m/sec"
*              Hydrograph volume           2932.235    c.m"
*                 1.879     1.879     1.560     1.560"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
```

```
*                  1.879     0.000     1.560     1.560"
* 47          FILEI_O Read/Open DIV00006.010hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*           DIV00006.010hyd"
*           Major flow at 6"
*           Total volume               100.876    c.m"
*           Maximum flow                 0.319    c.m/sec"
*                0.319     0.000     1.560     1.560 c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.319     0.319     1.560     1.560"
* 40        HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.319     0.319     0.319     1.560"
* 40        HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*           Maximum flow                 6.511    c.m/sec"
*           Hydrograph volume        37300.383    c.m"
*                0.319     0.319     0.319     6.511"
* 40        HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*           Maximum flow                 6.511    c.m/sec"
*           Hydrograph volume        37300.383    c.m"
*                0.319     6.511     0.319     0.000"
* 54        POND DESIGN"
*      6.511   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
*    37300.4   Hydrograph volume    c.m"
*         7.   Number of stages"
*     334.290   Minimum water level    metre"
*     336.800   Maximum water level    metre"
*     334.290   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               334.290     0.000     0.000"
*               334.500    0.2540     5.000"
*               335.000     1.303   390.000"
*               335.500     2.800  3269.000"
*               336.000     4.639 13030.00"
*               336.400     6.109 30065.00"
*               336.800    18.376 57257.00"
*           Peak outflow                 3.931    c.m/sec"
*           Maximum level              335.807    metre"
*           Maximum storage           9272.186    c.m"
*           Centroidal lag               3.423    hours"
*                0.319     6.511     3.931     0.000 c.m/sec"
* 40        HYDROGRAPH Next link "
*           5   Next link "
*                0.319     3.931     3.931     0.000"
* 56        DIVERSION"
*           7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow        0.000    c.m/sec"
*           Volume of diverted flow      0.000    c.m"
*           DIV00007.010hyd"
*           Major flow at 7"
*                0.319     3.931     3.931     0.000 c.m/sec"
* 40        HYDROGRAPH   Combine    8"
*           6   Combine "
```



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*           8   Node #"
*               NODE A"
*           Maximum flow                 3.931    c.m/sec"
*           Hydrograph volume        37287.613    c.m"
*                0.319     3.931     3.931     3.931"
* 81        ADD COMMENT==========================================================="
*         3   Lines of comment"
*           **************************************************"
*           Catchments South of Hwy 7/8"
*           **************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.319     0.000     3.931     3.931"
* 33        CATCHMENT 180"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         180   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.371   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.887   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.101     0.000     3.931     3.931 c.m/sec"
*           Catchment 180          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  11.461     3.665      7.902      minutes"
*           Time to Centroid       109.158    90.388     100.590    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        291.58     102.45     394.03     c.m"
*           Rainfall losses        35.394     6.336      27.839     mm"
*           Runoff depth           20.897     49.954     28.452     mm"
*           Runoff volume          108.24     90.92      199.16     c.m"
*           Runoff coefficient     0.371      0.887      0.505      "
*           Maximum flow           0.052      0.063      0.101      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.101     0.101     3.931     3.931"
* 54        POND DESIGN"
*       0.101   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       199.2   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
```

```
*              0.4500    0.00800     69.000"
*              0.6500    0.01000    178.000"
*              0.7000     0.1060    208.000"
*              0.7500     0.2810    240.000"
*           Peak outflow                  0.009    c.m/sec"
*           Maximum level                 0.571    metre"
*           Maximum storage             134.704    c.m"
*           Centroidal lag                4.279   hours"
*                0.101      0.101      0.009      3.931 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*         6   Combine "
*         9   Node #"
*             NODE B"
*           Maximum flow                  1.568    c.m/sec"
*           Hydrograph volume          3131.366    c.m"
*                0.101      0.101      0.009      1.568"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.101      0.000      0.009      1.568"
* 33        CATCHMENT 181"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       181   Western portion of John Bear property"
*    93.000   % Impervious"
*     1.870   Total Area"
*   120.000   Flow length"
*     1.000   Overland Slope"
*     0.131   Pervious Area"
*    20.000   Pervious length"
*     2.000   Pervious slope"
*     1.739   Impervious Area"
*   112.000   Impervious length"
*     1.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    65.000   Pervious SCS Curve No."
*     0.180   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    13.677   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.899   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.632      0.000      0.009      1.568 c.m/sec"
*          Catchment 181          Pervious   Impervious Total Area "
*          Surface Area           0.131      1.739      1.870      hectare"
*          Time of concentration  17.090     4.944      5.124      minutes"
*          Time to Centroid       119.153    92.190     92.590     minutes"
*          Rainfall depth         56.290     56.290     56.290     mm"
*          Rainfall volume        73.68      978.94     1052.63    c.m"
*          Rainfall losses        46.176     5.689      8.523      mm"
*          Runoff depth           10.114     50.601     47.767     mm"
*          Runoff volume          13.24      880.01     893.24     c.m"
*          Runoff coefficient     0.180      0.899      0.849      "
*          Maximum flow           0.005      0.630      0.632      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.632      0.632      0.009      1.568"
* 54        POND DESIGN"
*     0.632   Current peak flow    c.m/sec"
*     0.070   Target outflow    c.m/sec"
*     893.2   Hydrograph volume    c.m"
*        7.   Number of stages"
*     0.000   Minimum water level    metre"
*     1.800   Maximum water level    metre"
*     0.000   Starting water level    metre"
```



```
*         0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*               0.000     0.000     0.000"
*              0.3000   0.09000     8.000"
*              0.6000    0.1200    97.000"
*              0.9000    0.1300   167.000"
*               1.200    0.1400   254.000"
*               1.500    0.1500   358.000"
*               1.800     1.000   400.000"
*           Peak outflow                  0.255    c.m/sec"
*           Maximum level                 1.537    metre"
*           Maximum storage             363.182    c.m"
*           Centroidal lag                1.920   hours"
*                0.632      0.632      0.255      1.568 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*         6   Combine "
*         9   Node #"
*             NODE B"
*           Maximum flow                  1.715    c.m/sec"
*           Hydrograph volume          4027.971    c.m"
*                0.632      0.632      0.255      1.715"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.632      0.000      0.255      1.715"
* 33        CATCHMENT 182"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       182   Eastern portion of John Bear property"
*    69.000   % Impervious"
*     1.210   Total Area"
*    60.000   Flow length"
*     2.500   Overland Slope"
*     0.375   Pervious Area"
*    30.000   Pervious length"
*     3.000   Pervious slope"
*     0.835   Impervious Area"
*    90.000   Impervious length"
*     2.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    65.000   Pervious SCS Curve No."
*     0.179   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    13.677   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.888   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.291      0.000      0.255      1.715 c.m/sec"
*          Catchment 182          Pervious   Impervious Total Area "
*          Surface Area           0.375      0.835      1.210      hectare"
*          Time of concentration  19.301     3.522      4.835      minutes"
*          Time to Centroid       121.735    90.164     92.792     minutes"
*          Rainfall depth         56.290     56.290     56.290     mm"
*          Rainfall volume        211.14     469.97     681.11     c.m"
*          Rainfall losses        46.193     6.320      18.681     mm"
*          Runoff depth           10.097     49.970     37.610     mm"
*          Runoff volume          37.87      417.20     455.08     c.m"
*          Runoff coefficient     0.179      0.888      0.668      "
*          Maximum flow           0.013      0.287      0.291      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.291      0.291      0.255      1.715"
* 54        POND DESIGN"
*     0.291   Current peak flow    c.m/sec"
*     0.070   Target outflow    c.m/sec"
```

```
*       455.1   Hydrograph volume    c.m"
*         5.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.046    c.m/sec"
*            Maximum level                 0.382    metre"
*            Maximum storage             284.251    c.m"
*            Centroidal lag                3.322   hours"
*                 0.291     0.291     0.046     1.715 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.751    c.m/sec"
*            Hydrograph volume          4483.037    c.m"
*                 0.291     0.291     0.046     1.751"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.291     0.000     0.046     1.751"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.217   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.905   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.204     0.000     0.046     1.751 c.m/sec"
*            Catchment 183          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  49.728     8.541      23.756     minutes"
*            Time to Centroid       157.772    97.221     119.589    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        0.9308     0.3802     1.3110     ha-m"
*            Rainfall losses        44.097     5.333      32.855     mm"
*            Runoff depth           12.193     50.957     23.435     mm"
*            Runoff volume          2016.24    3441.69    5457.94    c.m"
*            Runoff coefficient     0.217      0.905      0.416      "
*            Maximum flow           0.368      2.157      2.204      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 2.204     2.204     0.046     1.751"
```



```
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 2.204     2.204     2.204     1.751"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  3.934    c.m/sec"
*            Hydrograph volume          9940.976    c.m"
*                 2.204     2.204     2.204     3.934"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  3.931    c.m/sec"
*            Hydrograph volume         37287.613    c.m"
*                 2.204     3.931     2.204     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 2.204     3.931     3.931     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  6.395    c.m/sec"
*            Hydrograph volume         47228.551    c.m"
*                 2.204     3.931     3.931     6.395"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 2.204     0.000     3.931     6.395"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.291   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.888   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.141     0.000     3.931     6.395 c.m/sec"
*            Catchment 184          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  26.147     2.877      24.784     minutes"
*            Time to Centroid       128.777    89.177     126.459    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        1627.35    33.21      1660.56    c.m"
*            Rainfall losses        39.887     6.301      39.215     mm"
*            Runoff depth           16.404     49.989     17.075     mm"
*            Runoff volume          474.23     29.49      503.72     c.m"
*            Runoff coefficient     0.291      0.888      0.303      "
*            Maximum flow           0.138      0.021      0.141      c.m/sec"
```

```
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.141     0.141     3.931     6.395"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.141     0.141     0.141     6.395"
* 40          HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 6.481    c.m/sec"
*            Hydrograph volume         47732.270    c.m"
*                   0.141     0.141     0.141     6.481"
* 40          HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                 6.481    c.m/sec"
*            Hydrograph volume         47732.270    c.m"
*                   0.141     6.481     0.141     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.141     6.481     6.481     0.000"
* 40          HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                 6.481    c.m/sec"
*            Hydrograph volume         47732.270    c.m"
*                   0.141     6.481     6.481     6.481"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.141     0.000     6.481     6.481"
* 33          CATCHMENT 185"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         185   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      64.400   Pervious SCS Curve No."
*       0.173   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      14.041   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   4.045     0.000     6.481     6.481 c.m/sec"
*            Catchment 185          Pervious   Impervious Total Area "
*            Surface Area           7.888      10.892     18.780     hectare"
*            Time of concentration  18.691     7.491      8.860      minutes"
*            Time to Centroid       121.080    95.806     98.894     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        0.4440     0.6131     1.0571     ha-m"
*            Rainfall losses        46.540     5.571      22.778     mm"
*            Runoff depth           9.750      50.719     33.512     mm"
```



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*            Runoff volume          769.03     5524.52    6293.55    c.m"
*            Runoff coefficient     0.173      0.901      0.595      "
*            Maximum flow           0.264      3.952      4.045      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   4.045     4.045     6.481     6.481"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   4.045     4.045     4.045     6.481"
* 40          HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                10.040    c.m/sec"
*            Hydrograph volume         54025.816    c.m"
*                   4.045     4.045     4.045    10.040"
* 61          ADD COMMENT==================================================="
*           3   Lines of comment"
*               ****************************************************
*               Catchments north of Hwy 7/8, towards Eastern Tributary"
*               ****************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   4.045     0.000     4.045    10.040"
* 33          CATCHMENT 150"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         150   Southern portion of Rec Centre fields"
*       0.000   % Impervious"
*       3.510   Total Area"
*      95.000   Flow length"
*       1.600   Overland Slope"
*       3.510   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.292   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.140     0.000     4.045    10.040 c.m/sec"
*            Catchment 150          Pervious   Impervious Total Area "
*            Surface Area           3.510      0.000      3.510      hectare"
*            Time of concentration  34.093     7.195      34.093     minutes"
*            Time to Centroid       138.712    95.385     138.712    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        1975.78    0.00       1975.78    c.m"
*            Rainfall losses        39.876     5.668      39.876     mm"
*            Runoff depth           16.414     50.622     16.415     mm"
*            Runoff volume          576.15     0.00       576.15     c.m"
*            Runoff coefficient     0.292      0.000      0.292      "
*            Maximum flow           0.140      0.000      0.140      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.140     0.140     4.045    10.040"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.140     0.140     0.140    10.040"
```

```
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.140    c.m/sec"
*            Hydrograph volume           576.150    c.m"
*                   0.140     0.140     0.140     0.140"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.140     0.000     0.140     0.140"
* 33          CATCHMENT 151"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*      33.000   % Impervious"
*       5.770   Total Area"
*     100.000   Flow length"
*       2.000   Overland Slope"
*       3.866   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       1.904   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.899   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.737     0.000     0.140     0.140 c.m/sec"
*            Catchment 151          Pervious   Impervious Total Area "
*            Surface Area           3.866      1.904      5.770      hectare"
*            Time of concentration  32.389     7.195      17.800     minutes"
*            Time to Centroid       136.372    95.385     112.638    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        2176.12    1071.82    3247.94    c.m"
*            Rainfall losses        38.166     5.668      27.441     mm"
*            Runoff depth           18.124     50.622     28.849     mm"
*            Runoff volume          700.67     963.90     1664.57    c.m"
*            Runoff coefficient     0.322      0.899      0.513      "
*            Maximum flow           0.176      0.696      0.737      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.737     0.737     0.140     0.140"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.737     0.737     0.737     0.140"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.767    c.m/sec"
*            Hydrograph volume          2240.720    c.m"
*                   0.737     0.737     0.737     0.767"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.737     0.000     0.737     0.767"
* 33          CATCHMENT 152"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
```



```
*         152   Southern portion of Schneider lands"
*       5.000   % Impervious"
*       8.560   Total Area"
*     170.000   Flow length"
*       3.500   Overland Slope"
*       8.132   Pervious Area"
*     170.000   Pervious length"
*       3.500   Pervious slope"
*       0.428   Impervious Area"
*     170.000   Impervious length"
*       3.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.429   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.898   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.523     0.000     0.737     0.767 c.m/sec"
*            Catchment 152          Pervious   Impervious Total Area "
*            Surface Area           8.132      0.428      8.560      hectare"
*            Time of concentration  32.630     4.361      29.823     minutes"
*            Time to Centroid       135.961    91.328     131.529    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        4577.51    240.92     4818.44    c.m"
*            Rainfall losses        32.149     5.721      30.827     mm"
*            Runoff depth           24.141     50.569     25.463     mm"
*            Runoff volume          1963.18    216.43     2179.62    c.m"
*            Runoff coefficient     0.429      0.898      0.452      "
*            Maximum flow           0.502      0.153      0.523      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.523     0.523     0.737     0.767"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.523     0.523     0.523     0.767"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.047    c.m/sec"
*            Hydrograph volume          4420.338    c.m"
*                   0.523     0.523     0.523     1.047"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.523     0.000     0.523     1.047"
* 47          FILEI_O Read/Open DIV00007.010hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00007.010hyd"
*            Major flow at 7"
*            Total volume                  0.000    c.m"
*            Maximum flow                  0.000    c.m/sec"
*                0.000     0.000     0.523     1.047 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.000     0.000     0.523     1.047"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.000     0.000     0.000     1.047"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
```

```
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.047    c.m/sec"
*            Hydrograph volume          4420.338    c.m"
*                   0.000     0.000      0.000     1.047"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.047    c.m/sec"
*            Hydrograph volume          4420.338    c.m"
*                   0.000     1.047      0.000     0.000"
* 54         POND DESIGN"
*       1.047   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      4420.3   Hydrograph volume    c.m"
*          9.   Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   266.000"
*               333.500     1.168  1814.000"
*               334.000     2.325  4798.000"
*               334.500     3.132  9073.000"
*               335.000     3.780  14775.00"
*               335.500     4.332  22251.00"
*               335.750     4.583  26742.00"
*               336.000    21.985  31757.00"
*            Peak outflow                  0.740    c.m/sec"
*            Maximum level               333.254    metre"
*            Maximum storage            1052.500    c.m"
*            Centroidal lag                2.425   hours"
*                 0.000     1.047     0.740     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                  0.000     0.740     0.740     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                  228.020    hectare"
*            Total Impervious area                  50.613    hectare"
*            Total % impervious                     22.197"
* 19         EXIT"
```

```
*              MIDUSS Output ------------------------------------------------>*
*              MIDUSS version                              Version 2.25  rev. 473"
*              MIDUSS created                            Sunday, February 07, 2010"
*           10 Units used:                                              ie METRIC"
*              Job folder:                             Q:\34896\104\SWM\MIDUSS\Pre"
*              Output filename:                            34896-104_Pre-025yr.out"
*              Licensee name:                                                admin"
*              Company                                                   Microsoft"
*              Date & Time last used:                    12/7/2018 at 1:21:38 PM"
* 81         ADD COMMENT==========================================================="
*          7  Lines of comment"
*             ******************************************"
*             Wilmot Employement Lands"
*             New Hamburg, Ontario"
*             25 year Storm Event - Pre-development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB/GMK"
*             ******************************************"
* 31          TIME PARAMETERS"
*        5.000   Time Step"
*      240.000   Max. Storm length"
*     1500.000   Max. Hydrograph"
* 32          STORM Chicago storm"
*           1   Chicago storm"
*     3158.000   Coefficient A"
*       15.000   Constant B"
*        0.936   Exponent C"
*        0.400   Fraction R"
*      180.000   Duration"
*        1.000   Time step multiplier"
*              Maximum intensity          191.271    mm/hr"
*              Total depth                 68.087    mm"
*           6   025hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ****************************************************"
*              Catchments North of GEXR, part of Inlet #1"
*              ****************************************************"
* 33          CATCHMENT 101"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           101   Area Northeast of GEXR"
*         0.000   % Impervious"
*         2.970   Total Area"
*        80.000   Flow length"
*         0.500   Overland Slope"
*         2.970   Pervious Area"
*        80.000   Pervious length"
*         0.500   Pervious slope"
*         0.000   Impervious Area"
*        80.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.485   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.252     0.000     0.000     0.000 c.m/sec"
*              Catchment 101          Pervious   Impervious Total Area "
*              Surface Area           2.970      0.000      2.970      hectare"
*              Time of concentration  33.434     4.721      33.434     minutes"
```



```
*              Time to Centroid       135.456    91.254     135.456    minutes"
*              Rainfall depth         68.087     68.087     68.087     mm"
*              Rainfall volume        2022.17    0.00       2022.17    c.m"
*              Rainfall losses        35.056     5.784      35.056     mm"
*              Runoff depth           33.030     62.303     33.030     mm"
*              Runoff volume          981.00     0.00       981.00     c.m"
*              Runoff coefficient     0.485      0.000      0.485      "
*              Maximum flow           0.252      0.000      0.252      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.252     0.252     0.000     0.000"
* 33           CATCHMENT 102"
*              1   Triangular SCS"
*              1   Equal length"
*              1   SCS method"
*            102   Pfenning Farm Development - north of GEXR"
*          0.000   % Impervious"
*         12.070   Total Area"
*        180.000   Flow length"
*          2.500   Overland Slope"
*         12.070   Pervious Area"
*        180.000   Pervious length"
*          2.500   Pervious slope"
*          0.000   Impervious Area"
*        180.000   Impervious length"
*          2.500   Impervious slope"
*          0.250   Pervious Manning 'n'"
*         82.000   Pervious SCS Curve No."
*          0.485   Pervious Runoff coefficient"
*          0.100   Pervious Ia/S coefficient"
*          5.576   Pervious Initial abstraction"
*          0.015   Impervious Manning 'n'"
*         98.000   Impervious SCS Curve No."
*          0.000   Impervious Runoff coefficient"
*          0.100   Impervious Ia/S coefficient"
*          0.518   Impervious Initial abstraction"
*                    1.023     0.252     0.000     0.000 c.m/sec"
*               Catchment 102          Pervious   Impervious Total Area "
*               Surface Area           12.070     0.000      12.070     hectare"
*               Time of concentration  33.558     4.739      33.558     minutes"
*               Time to Centroid       135.617    91.280     135.617    minutes"
*               Rainfall depth         68.087     68.087     68.087     mm"
*               Rainfall volume        8218.03    0.01       8218.04    c.m"
*               Rainfall losses        35.055     5.782      35.055     mm"
*               Runoff depth           33.031     62.305     33.031     mm"
*               Runoff volume          3986.87    0.01       3986.88    c.m"
*               Runoff coefficient     0.485      0.000      0.485      "
*               Maximum flow           1.023      0.000      1.023      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    1.023     1.275     0.000     0.000"
* 40           HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    1.023     1.275     1.275     0.000"
* 40           HYDROGRAPH   Combine    1"
*            6   Combine "
*            1   Node #"
*                u/s of GEXR"
*               Maximum flow                  1.275    c.m/sec"
*               Hydrograph volume          4967.877    c.m"
*                    1.023     1.275     1.275     1.275"
* 40           HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    1.023     0.000     1.275     1.275"
* 33           CATCHMENT 103"
*            1   Triangular SCS"
*            1   Equal length"
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.289   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.119     0.000     1.275     1.275 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  26.728     2.913      26.728     minutes"
*           Time to Centroid       128.563    88.712     128.563    minutes"
*           Rainfall depth         68.087     68.087     68.087     mm"
*           Rainfall volume        1416.20    0.00       1416.20    c.m"
*           Rainfall losses        48.398     6.764      48.398     mm"
*           Runoff depth           19.689     61.323     19.689     mm"
*           Runoff volume          409.53     0.00       409.53     c.m"
*           Runoff coefficient     0.289      0.000      0.289      "
*           Maximum flow           0.119      0.000      0.119      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.119     0.119     1.275     1.275"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.119     0.119     0.119     1.275"
* 40        HYDROGRAPH   Combine    1"
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 1.389    c.m/sec"
*           Hydrograph volume         5377.406    c.m"
*                0.119     0.119     0.119     1.389"
* 40        HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 1.389    c.m/sec"
*           Hydrograph volume         5377.406    c.m"
*                0.119     1.389     0.119     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.119     1.389     1.389     0.000"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                 1.389    c.m/sec"
*           Hydrograph volume         5377.406    c.m"
*                0.119     1.389     1.389     1.389"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.119     0.000     1.389     1.389"
```



```
* 81          ADD COMMENT==================================================="
*            3  Lines of comment"
*               ************************************************"
*               Catchments South of GEXR, part of Inlet #1"
*               ************************************************"
* 33          CATCHMENT 104"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           104   Riverside Brass"
*        59.000   % Impervious"
*         2.020   Total Area"
*        35.000   Flow length"
*         1.200   Overland Slope"
*         0.828   Pervious Area"
*        60.000   Pervious length"
*         2.000   Pervious slope"
*         1.192   Impervious Area"
*       116.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.378   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.917   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.533     0.000     1.389     1.389 c.m/sec"
*              Catchment 104          Pervious   Impervious Total Area "
*              Surface Area           0.828      1.192      2.020      hectare"
*              Time of concentration  20.985     5.900      9.256      minutes"
*              Time to Centroid       120.566    92.933     99.081     minutes"
*              Rainfall depth         68.087     68.087     68.087     mm"
*              Rainfall volume        563.89     811.45     1375.35    c.m"
*              Rainfall losses        42.380     5.660      20.716     mm"
*              Runoff depth           25.706     62.426     47.371     mm"
*              Runoff volume          212.90     743.99     956.89     c.m"
*              Runoff coefficient     0.378      0.917      0.696      "
*              Maximum flow           0.075      0.505      0.533      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.533     0.533     1.389     1.389"
* 54           POND DESIGN"
*          0.533   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*          956.9   Hydrograph volume    c.m"
*             4.   Number of stages"
*          0.000   Minimum water level    metre"
*          0.910   Maximum water level    metre"
*          0.000   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.3100   0.03090   782.000"
*                   0.6100    0.1232  1619.000"
*                   0.9100    0.2769  2511.000"
*              Peak outflow                  0.030    c.m/sec"
*              Maximum level                 0.302    metre"
*              Maximum storage             760.596    c.m"
*              Centroidal lag                8.594    hours"
*                   0.533     0.533     0.030     1.389 c.m/sec"
* 40           HYDROGRAPH   Combine    2"
*             6   Combine "
*             2   Node #"
```

```
*             INLET 1"
*            Maximum flow                 1.415    c.m/sec"
*            Hydrograph volume          6299.856    c.m"
*                  0.533     0.533     0.030     1.415"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.533     0.000     0.030     1.415"
* 33         CATCHMENT 105"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         105   Iron Bridge Manufacturing Property"
*      65.000   % Impervious"
*       3.570   Total Area"
*      90.000   Flow length"
*       2.000   Overland Slope"
*       1.250   Pervious Area"
*      90.000   Pervious length"
*       2.000   Pervious slope"
*       2.320   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.000   Pervious SCS Curve No."
*       0.466   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.958   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.904   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.961     0.000     0.030     1.415 c.m/sec"
*            Catchment 105          Pervious   Impervious Total Area "
*            Surface Area           1.250      2.320      3.570      hectare"
*            Time of concentration  24.146     3.343      7.860      minutes"
*            Time to Centroid       123.696    89.341     96.800     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        850.74     1579.95    2430.69    c.m"
*            Rainfall losses        36.381     6.531      16.978     mm"
*            Runoff depth           31.706     61.556     51.108     mm"
*            Runoff volume          396.16     1428.40    1824.57    c.m"
*            Runoff coefficient     0.466      0.904      0.751      "
*            Maximum flow           0.128      0.918      0.961      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.961     0.961     0.030     1.415"
* 33         CATCHMENT 106"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         106   N.C. Pestell Head Office and other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      55.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      55.000   Pervious length"
*       1.500   Pervious slope"
*       1.088   Impervious Area"
*      55.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
```



```
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.453     0.961     0.030     1.415 c.m/sec"
*            Catchment 106          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  21.713     2.712      4.019      minutes"
*            Time to Centroid       121.489    88.418     90.693     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        130.73     740.78     871.51     c.m"
*            Rainfall losses        42.390     6.713      12.065     mm"
*            Runoff depth           25.696     61.373     56.022     mm"
*            Runoff volume          49.34      667.74     717.08     c.m"
*            Runoff coefficient     0.377      0.901      0.823      "
*            Maximum flow           0.017      0.451      0.453      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.453     1.385     0.030     1.415"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.453     1.385     1.385     1.415"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*             INLET 1"
*            Maximum flow                 1.787    c.m/sec"
*            Hydrograph volume          8841.498    c.m"
*                  0.453     1.385     1.385     1.787"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.453     0.000     1.385     1.787"
* 33         CATCHMENT 107"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         107   Industrial properties at end of Hamilton Road"
*      40.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.710   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       1.140   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.900   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.481     0.000     1.385     1.787 c.m/sec"
*            Catchment 107          Pervious   Impervious Total Area "
*            Surface Area           1.710      1.140      2.850      hectare"
*            Time of concentration  23.158     2.892      10.715     minutes"
*            Time to Centroid       123.297    88.679     102.041    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1164.28    776.19     1940.47    c.m"
*            Rainfall losses        42.393     6.782      28.149     mm"
*            Runoff depth           25.693     61.304     39.937     mm"
```

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*            Runoff volume          439.35     698.87     1138.22    c.m"
*            Runoff coefficient     0.377      0.900      0.587      "
*            Maximum flow           0.144      0.465      0.481      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.481     0.481     1.385     1.787"
* 33         CATCHMENT 108"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         108   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.292   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.905   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.399     0.481     1.385     1.787 c.m/sec"
*            Catchment 108          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  22.233     2.435      19.452     minutes"
*            Time to Centroid       123.078    87.981     118.149    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        3829.18    201.54     4030.72    c.m"
*            Rainfall losses        48.230     6.445      46.141     mm"
*            Runoff depth           19.856     61.641     21.946     mm"
*            Runoff volume          1116.72    182.46     1299.18    c.m"
*            Runoff coefficient     0.292      0.905      0.322      "
*            Maximum flow           0.373      0.125      0.399      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.399     0.708     1.385     1.787"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.399     0.708     0.708     1.787"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 2.432    c.m/sec"
*            Hydrograph volume        11278.902    c.m"
*                  0.399     0.708     0.708     2.432"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.399     0.000     0.708     2.432"
* 33         CATCHMENT 109"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         109   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
```



```
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.361   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.913   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  1.861     0.000     0.708     2.432 c.m/sec"
*            Catchment 109          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  17.019     7.069      8.227      minutes"
*            Time to Centroid       115.786    94.541     97.014     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        941.30     2823.89    3765.18    c.m"
*            Rainfall losses        43.502     5.893      15.295     mm"
*            Runoff depth           24.584     62.193     52.791     mm"
*            Runoff volume          339.88     2579.47    2919.35    c.m"
*            Runoff coefficient     0.361      0.913      0.775      "
*            Maximum flow           0.133      1.799      1.861      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.861     1.861     0.708     2.432"
* 54         POND DESIGN"
*       1.861   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2919.4   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*            Peak outflow                   0.109    c.m/sec"
*            Maximum level                  0.913    metre"
*            Maximum storage             2376.069    c.m"
*            Centroidal lag                11.644   hours"
*                  1.861     1.861     0.109     2.432 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                   2.476    c.m/sec"
*            Hydrograph volume          13821.893    c.m"
*                  1.861     1.861     0.109     2.476"
* 81         ADD COMMENT==================================================="
*           3   Lines of comment"
*               ************************************************"
*               Catchments South of GEXR, part of Inlet #2"
```

```
*           ************************************************
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.861     0.000     0.109     2.476"
* 33         CATCHMENT 110"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         110   Alpine Solutions - west SMWP"
*      30.000   % Impervious"
*       1.920   Total Area"
*     150.000   Flow length"
*       1.000   Overland Slope"
*       1.344   Pervious Area"
*     150.000   Pervious length"
*       1.500   Pervious slope"
*       0.576   Impervious Area"
*     113.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.447   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.259     0.000     0.109     2.476 c.m/sec"
*            Catchment 110          Pervious   Impervious Total Area "
*            Surface Area           1.344      0.576      1.920      hectare"
*            Time of concentration  36.487     4.177      21.412     minutes"
*            Time to Centroid       139.623    90.510     116.708    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        915.08     392.18     1307.26    c.m"
*            Rainfall losses        37.663     5.996      28.163     mm"
*            Runoff depth           30.424     62.090     39.924     mm"
*            Runoff volume          408.89     357.64     766.53     c.m"
*            Runoff coefficient     0.447      0.912      0.586      "
*            Maximum flow           0.100      0.238      0.259      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.259     0.259     0.109     2.476"
* 54         POND DESIGN"
*       0.259   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       766.5   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*            Peak outflow                  0.114    c.m/sec"
*            Maximum level                 0.673    metre"
*            Maximum storage             174.140    c.m"
*            Centroidal lag                2.233    hours"
*                 0.259     0.259     0.114     2.476 c.m/sec"
* 40         HYDROGRAPH   Combine    3"
```



```
*           6   Combine "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.114    c.m/sec"
*            Hydrograph volume           766.134    c.m"
*                 0.259     0.259     0.114     0.114"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.259     0.000     0.114     0.114"
* 33         CATCHMENT 111"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         111   Woodlot north of Schneider/Good lands"
*       0.000   % Impervious"
*      13.230   Total Area"
*     170.000   Flow length"
*       2.400   Overland Slope"
*      13.230   Pervious Area"
*     170.000   Pervious length"
*       2.400   Pervious slope"
*       0.000   Impervious Area"
*     170.000   Impervious length"
*       2.400   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.289   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.547     0.000     0.114     0.114 c.m/sec"
*            Catchment 111          Pervious   Impervious Total Area "
*            Surface Area           13.230     0.000      13.230     hectare"
*            Time of concentration  42.530     4.635      42.530     minutes"
*            Time to Centroid       147.776    91.129     147.776    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        9007.83    0.01       9007.84    c.m"
*            Rainfall losses        48.386     5.789      48.386     mm"
*            Runoff depth           19.701     62.297     19.701     mm"
*            Runoff volume          2606.43    0.01       2606.44    c.m"
*            Runoff coefficient     0.289      0.000      0.289      "
*            Maximum flow           0.547      0.000      0.547      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.547     0.547     0.114     0.114"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.547     0.547     0.547     0.114"
* 40         HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.661    c.m/sec"
*            Hydrograph volume          3372.573    c.m"
*                 0.547     0.547     0.547     0.661"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **************************************************"
*            South of GEXR along Nafziger Rd, part of Inlet #3"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.547     0.000     0.547     0.661"
```

```
* 33         CATCHMENT 112"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          112   Culivated lands east of Nafziger Road"
*        1.000   % Impervious"
*        7.310   Total Area"
*      120.000   Flow length"
*        3.300   Overland Slope"
*        7.237   Pervious Area"
*      120.000   Pervious length"
*        3.300   Pervious slope"
*        0.073   Impervious Area"
*      120.000   Impervious length"
*        3.300   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.485   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.904   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.780     0.000     0.547     0.661 c.m/sec"
*             Catchment 112          Pervious   Impervious Total Area "
*             Surface Area           7.237      0.073      7.310      hectare"
*             Time of concentration  24.209     3.418      23.825     minutes"
*             Time to Centroid       123.586    89.462     122.956    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        4927.35    49.77      4977.12    c.m"
*             Rainfall losses        35.059     6.553      34.774     mm"
*             Runoff depth           33.027     61.534     33.312     mm"
*             Runoff volume          2390.16    44.98      2435.14    c.m"
*             Runoff coefficient     0.485      0.904      0.489      "
*             Maximum flow           0.772      0.029      0.780      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.780     0.780     0.547     0.661"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.780     0.780     0.780     0.661"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                  0.780    c.m/sec"
*             Hydrograph volume          2435.138    c.m"
*                    0.780     0.780     0.780     0.780"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.780     0.000     0.780     0.780"
* 33         CATCHMENT 113"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          113   Alpine Solutions - East SMWP"
*       40.000   % Impervious"
*        2.560   Total Area"
*      150.000   Flow length"
*        1.500   Overland Slope"
*        1.536   Pervious Area"
*      180.000   Pervious length"
*        1.500   Pervious slope"
*        1.024   Impervious Area"
*      131.000   Impervious length"
```



```
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.447   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.915   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.449     0.000     0.780     0.780 c.m/sec"
*             Catchment 113          Pervious   Impervious Total Area "
*             Surface Area           1.536      1.024      2.560      hectare"
*             Time of concentration  40.705     4.565      19.846     minutes"
*             Time to Centroid       145.013    91.029     113.855    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        1045.81    697.21     1743.01    c.m"
*             Rainfall losses        37.663     5.794      24.915     mm"
*             Runoff depth           30.423     62.293     43.171     mm"
*             Runoff volume          467.30     637.88     1105.18    c.m"
*             Runoff coefficient     0.447      0.915      0.634      "
*             Maximum flow           0.103      0.429      0.449      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.449     0.449     0.780     0.780"
* 54          POND DESIGN"
*        0.449   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       1105.2   Hydrograph volume    c.m"
*           7.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.000   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1000   0.02000     7.000"
*                  0.2500   0.04200    64.000"
*                  0.5000   0.09000   343.000"
*                  0.7500    0.1250   877.000"
*                  0.8000    0.1360  1014.000"
*                   1.000    0.7880  1667.000"
*             Peak outflow                    0.099    c.m/sec"
*             Maximum level                   0.568    metre"
*             Maximum storage               487.205    c.m"
*             Centroidal lag                  2.894    hours"
*                  0.449     0.449     0.099     0.780 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                    0.873    c.m/sec"
*             Hydrograph volume            3539.936    c.m"
*                    0.449     0.449     0.099     0.873"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.449     0.000     0.099     0.873"
* 33         CATCHMENT 114"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          114   Woodlot East and West of Nafziger Road"
*        3.000   % Impervious"
*       13.460   Total Area"
*      140.000   Flow length"
*        3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.291   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.667     0.000     0.099     0.873 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  33.436     3.653      30.830     minutes"
*            Time to Centroid       136.715    89.805     132.611    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        8889.51    274.93     9164.44    c.m"
*            Rainfall losses        48.294     6.717      47.046     mm"
*            Runoff depth           19.793     61.370     21.040     mm"
*            Runoff volume          2584.19    247.81     2832.00    c.m"
*            Runoff coefficient     0.291      0.901      0.309      "
*            Maximum flow           0.644      0.162      0.667      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.667     0.667     0.099     0.873"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.667     0.667     0.667     0.873"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.511    c.m/sec"
*            Hydrograph volume          6371.938    c.m"
*                 0.667     0.667     0.667     1.511"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.667     0.000     0.667     1.511"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.504   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.915   Impervious Runoff coefficient"
```



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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.638     0.000     0.667     1.511 c.m/sec"
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  15.557     5.560      7.253      minutes"
*            Time to Centroid       112.209    92.435     95.783     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        909.98     2460.31    3370.28    c.m"
*            Rainfall losses        33.745     5.768      13.322     mm"
*            Runoff depth           34.341     62.318     54.764     mm"
*            Runoff volume          458.97     2251.87    2710.84    c.m"
*            Runoff coefficient     0.504      0.915      0.804      "
*            Maximum flow           0.196      1.535      1.638      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.638     1.638     0.667     1.511"
* 54         POND DESIGN"
*       1.638   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2710.8   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*            Peak outflow                    0.142    c.m/sec"
*            Maximum level                   1.107    metre"
*            Maximum storage              2159.934    c.m"
*            Centroidal lag                 15.631    hours"
*                 1.638     1.638     0.142     1.511 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                    1.551    c.m/sec"
*            Hydrograph volume            8422.059    c.m"
*                 1.638     1.638     0.142     1.551"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.638     0.000     0.142     1.551"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.378   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.915   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                1.193     0.000     0.142     1.551 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  37.305     4.659      18.824     minutes"
*             Time to Centroid       141.029    91.162     112.799    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        3412.16    1837.31    5249.47    c.m"
*             Rainfall losses        42.377     5.790      29.571     mm"
*             Runoff depth           25.709     62.297     38.515     mm"
*             Runoff volume          1288.43    1681.08    2969.51    c.m"
*             Runoff coefficient     0.378      0.915      0.566      "
*             Maximum flow           0.301      1.133      1.193      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                1.193     1.193     0.142     1.551"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.193     1.193     1.193     1.551"
* 40          HYDROGRAPH   Combine    4"
*            6   Combine "
*            4   Node #"
*                INLET 3"
*             Maximum flow                  2.044    c.m/sec"
*             Hydrograph volume         11391.565    c.m"
*                1.193     1.193     1.193     2.044"
* 40          HYDROGRAPH   Confluence    2"
*            7   Confluence "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  2.476    c.m/sec"
*             Hydrograph volume         13821.895    c.m"
*                1.193     2.476     1.193     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.193     2.476     2.476     0.000"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  2.476    c.m/sec"
*             Hydrograph volume         13821.895    c.m"
*                1.193     2.476     2.476     2.476"
* 40          HYDROGRAPH   Confluence    3"
*            7   Confluence "
*            3   Node #"
*                INLET 2"
*             Maximum flow                  0.661    c.m/sec"
*             Hydrograph volume          3372.573    c.m"
*                1.193     0.661     2.476     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.193     0.661     0.661     0.000"
```



```
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  3.033    c.m/sec"
*             Hydrograph volume         17194.467    c.m"
*                1.193     0.661     0.661     3.033"
* 40          HYDROGRAPH   Confluence    4"
*            7   Confluence "
*            4   Node #"
*                INLET 3"
*             Maximum flow                  2.044    c.m/sec"
*             Hydrograph volume         11391.565    c.m"
*                1.193     2.044     0.661     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                1.193     2.044     2.044     0.000"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  5.078    c.m/sec"
*             Hydrograph volume         28586.029    c.m"
*                1.193     2.044     2.044     5.078"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                1.193     0.000     2.044     5.078"
* 33          CATCHMENT 117"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          117   Cultivated Schneider central lands"
*        0.000   % Impervious"
*        7.450   Total Area"
*      140.000   Flow length"
*        2.000   Overland Slope"
*        7.450   Pervious Area"
*      140.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      140.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       81.400   Pervious SCS Curve No."
*        0.473   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.804   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.648     0.000     2.044     5.078 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  31.227     4.358      31.227     minutes"
*             Time to Centroid       132.705    90.763     132.705    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        5072.44    0.01       5072.44    c.m"
*             Rainfall losses        35.868     5.903      35.868     mm"
*             Runoff depth           32.218     62.183     32.218     mm"
*             Runoff volume          2400.25    0.00       2400.25    c.m"
*             Runoff coefficient     0.473      0.000      0.473      "
*             Maximum flow           0.648      0.000      0.648      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                0.648     0.648     2.044     5.078"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.648     0.648     0.648     5.078"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*            Maximum flow                  5.726    c.m/sec"
*            Hydrograph volume         30986.281    c.m"
*                    0.648     0.648     0.648     5.726"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************"
*             Catchments east of Hamilton Road, part of Inlet #4"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.648     0.000     0.648     5.726"
* 33          CATCHMENT 118"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          118   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.346   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.908   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.048     0.000     0.648     5.726 c.m/sec"
*             Catchment 118          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  16.651     1.991      13.924     minutes"
*             Time to Centroid       115.546    87.300     110.293    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        313.20     27.23      340.43     c.m"
*             Rainfall losses        44.551     6.253      41.487     mm"
*             Runoff depth           23.535     61.833     26.599     mm"
*             Runoff volume          108.26     24.73      133.00     c.m"
*             Runoff coefficient     0.346      0.908      0.391      "
*             Maximum flow           0.043      0.017      0.048      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.048     0.048     0.648     5.726"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.048     0.048     0.048     5.726"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*            Maximum flow                  5.763    c.m/sec"
*            Hydrograph volume         31119.275    c.m"
```



```
*                    0.048     0.048     0.048     5.763"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.048     0.000     0.048     5.763"
* 33          CATCHMENT 119"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          119   Existing ROW from Hamilton Road"
*        0.000   % Impervious"
*        0.720   Total Area"
*       40.000   Flow length"
*        2.000   Overland Slope"
*        0.720   Pervious Area"
*       40.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*       40.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.377   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.074     0.000     0.048     5.763 c.m/sec"
*             Catchment 119          Pervious   Impervious Total Area "
*             Surface Area           0.720      0.000      0.720      hectare"
*             Time of concentration  16.453     2.055      16.453     minutes"
*             Time to Centroid       114.904    87.397     114.904    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        490.22     0.00       490.22     c.m"
*             Rainfall losses        42.440     6.232      42.440     mm"
*             Runoff depth           25.646     61.855     25.646     mm"
*             Runoff volume          184.65     0.00       184.65     c.m"
*             Runoff coefficient     0.377      0.000      0.377      "
*             Maximum flow           0.074      0.000      0.074      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.074     0.074     0.048     5.763"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.074     0.074     0.074     5.763"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*            Maximum flow                  5.822    c.m/sec"
*            Hydrograph volume         31303.930    c.m"
*                    0.074     0.074     0.074     5.822"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************"
*             Catchment to Inlet #5"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.074     0.000     0.074     5.822"
* 33          CATCHMENT 120"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          120   Rear yards from Hamilton Heights Subdivision"
```

```
*        5.000   % Impervious"
*        1.080   Total Area"
*       20.000   Flow length"
*        3.000   Overland Slope"
*        1.026   Pervious Area"
*       20.000   Pervious length"
*        3.000   Pervious slope"
*        0.054   Impervious Area"
*       20.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.376   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.902   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.147     0.000     0.074     5.822 c.m/sec"
*             Catchment 120          Pervious   Impervious Total Area "
*             Surface Area           1.026      0.054      1.080      hectare"
*             Time of concentration  9.612      1.200      8.668      minutes"
*             Time to Centroid       106.340    86.234     104.084    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        698.57     36.77      735.33     c.m"
*             Rainfall losses        42.515     6.669      40.722     mm"
*             Runoff depth           25.572     61.417     27.364     mm"
*             Runoff volume          262.37     33.17      295.53     c.m"
*             Runoff coefficient     0.376      0.902      0.402      "
*             Maximum flow           0.136      0.024      0.147      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.147     0.147     0.074     5.822"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.147     0.147     0.147     5.822"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  5.885    c.m/sec"
*             Hydrograph volume         31599.463    c.m"
*                  0.147     0.147     0.147     5.885"
* 81          ADD COMMENT==========================================================="
*         3   Lines of comment"
*             ************************************************"
*             Good Lands"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.147     0.000     0.147     5.885"
* 33          CATCHMENT 121"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           121   Good Lands"
*         0.000   % Impervious"
*        43.240   Total Area"
*       230.000   Flow length"
*         2.800   Overland Slope"
*        43.240   Pervious Area"
*       230.000   Pervious length"
*         2.800   Pervious slope"
*         0.000   Impervious Area"
*       230.000   Impervious length"
```



```
*         2.800   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.485   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   3.370     0.000     0.147     5.885 c.m/sec"
*             Catchment 121          Pervious   Impervious Total Area "
*             Surface Area           43.240     0.000      43.240     hectare"
*             Time of concentration  37.576     5.306      37.576     minutes"
*             Time to Centroid       140.791    92.096     140.791    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        2.9441     0.0000     2.9441     ha-m"
*             Rainfall losses        35.059     5.885      35.059     mm"
*             Runoff depth           33.028     62.201     33.028     mm"
*             Runoff volume          1.4281     0.0000     1.4281     ha-m"
*             Runoff coefficient     0.485      0.000      0.485      "
*             Maximum flow           3.370      0.000      3.370      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   3.370     3.370     0.147     5.885"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   3.370     3.370     3.370     5.885"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  9.077    c.m/sec"
*             Hydrograph volume         45880.566    c.m"
*                   3.370     3.370     3.370     9.077"
* 81          ADD COMMENT==========================================================="
*         3   Lines of comment"
*             ************************************************"
*             Catchments to Inlet #6"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   3.370     0.000     3.370     9.077"
* 33          CATCHMENT 160"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           160   Hamilton Heights Subdivision"
*        46.000   % Impervious"
*         8.160   Total Area"
*        50.000   Flow length"
*         1.000   Overland Slope"
*         4.406   Pervious Area"
*        50.000   Pervious length"
*         3.000   Pervious slope"
*         3.754   Impervious Area"
*       232.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.377   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.915   Impervious Runoff coefficient"
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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.768     0.000     3.370     9.077 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  16.656     6.432      9.764      minutes"
*            Time to Centroid       115.158    93.663     100.668    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        3000.16    2555.69    5555.86    c.m"
*            Rainfall losses        42.435     5.798      25.582     mm"
*            Runoff depth           25.651     62.288     42.504     mm"
*            Runoff volume          1130.29    2338.05    3468.34    c.m"
*            Runoff coefficient     0.377      0.915      0.624      "
*            Maximum flow           0.450      1.574      1.768      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 1.768     1.768     3.370     9.077"
* 33         CATCHMENT 161"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        161   Klassen Bronze Property"
*     32.000   % Impervious"
*      2.350   Total Area"
*    100.000   Flow length"
*      2.500   Overland Slope"
*      1.598   Pervious Area"
*     50.000   Pervious length"
*      2.500   Pervious slope"
*      0.752   Impervious Area"
*    164.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.377   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.914   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.390     1.768     3.370     9.077 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  17.592     5.223      11.005     minutes"
*            Time to Centroid       116.320    91.982     103.358    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1088.02    512.01     1600.03    c.m"
*            Rainfall losses        42.388     5.859      30.699     mm"
*            Runoff depth           25.698     62.228     37.388     mm"
*            Runoff volume          410.66     467.95     878.61     c.m"
*            Runoff coefficient     0.377      0.914      0.549      "
*            Maximum flow           0.157      0.319      0.390      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.390     2.158     3.370     9.077"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.390     2.158     2.158     9.077"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                 9.960    c.m/sec"
*            Hydrograph volume        50227.523    c.m"
*                 0.390     2.158     2.158     9.960"
```



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* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             ************************************************************"
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.390     0.000     2.158     9.960"
* 33         CATCHMENT 170"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        170   Industrial/Residential area along Hamilton Road"
*     55.000   % Impervious"
*      8.450   Total Area"
*     45.000   Flow length"
*      2.000   Overland Slope"
*      3.802   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      4.648   Impervious Area"
*    235.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.377   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.915   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 2.247     0.000     2.158     9.960 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  12.259     6.482      7.938      minutes"
*            Time to Centroid       109.638    93.737     97.744     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        2588.99    3164.32    5753.31    c.m"
*            Rainfall losses        42.444     5.817      22.299     mm"
*            Runoff depth           25.643     62.270     45.788     mm"
*            Runoff volume          975.07     2893.99    3869.06    c.m"
*            Runoff coefficient     0.377      0.915      0.672      "
*            Maximum flow           0.439      1.946      2.247      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 2.247     2.247     2.158     9.960"
* 56         DIVERSION"
*          6   Node number"
*      1.560   Overflow threshold"
*      1.000   Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow          0.687    c.m/sec"
*            Volume of diverted flow      347.180    c.m"
*            DIV00006.025hyd"
*            Major flow at 6"
*                 2.247     2.247     1.560     9.960 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*            Maximum flow                 1.560    c.m/sec"
*            Hydrograph volume         3521.876    c.m"
*                 2.247     2.247     1.560     1.560"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
```

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*                   2.247     0.000     1.560     1.560"
* 47          FILEI_O Read/Open DIV00006.025hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00006.025hyd"
*             Major flow at 6"
*             Total volume                347.180    c.m"
*             Maximum flow                  0.687    c.m/sec"
*                  0.687     0.000     1.560     1.560 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.687     0.687     1.560     1.560"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.687     0.687     0.687     1.560"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  9.960    c.m/sec"
*             Hydrograph volume         50574.699    c.m"
*                   0.687     0.687     0.687     9.960"
* 40          HYDROGRAPH   Confluence    5"
*            7   Confluence "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  9.960    c.m/sec"
*             Hydrograph volume         50574.699    c.m"
*                   0.687     9.960     0.687     0.000"
* 54          POND DESIGN"
*         9.960   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*       50574.7   Hydrograph volume    c.m"
*           7.    Number of stages"
*       334.290   Minimum water level    metre"
*       336.800   Maximum water level    metre"
*       334.290   Starting water level    metre"
*            0    Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 334.290     0.000     0.000"
*                 334.500    0.2540     5.000"
*                 335.000     1.303   390.000"
*                 335.500     2.800  3269.000"
*                 336.000     4.639  13030.00"
*                 336.400     6.109  30065.00"
*                 336.800    18.376  57257.00"
*             Peak outflow                  4.905    c.m/sec"
*             Maximum level               336.073    metre"
*             Maximum storage           16121.412    c.m"
*             Centroidal lag                3.414   hours"
*                  0.687     9.960     4.905     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                   0.687     4.905     4.905     0.000"
* 56          DIVERSION"
*            7   Node number"
*         7.170   Overflow threshold"
*         1.000   Required diverted fraction"
*            0    Conduit type; 1=Pipe;2=Channel"
*             Peak of diverted flow         0.000    c.m/sec"
*             Volume of diverted flow       0.000    c.m"
*             DIV00007.025hyd"
*             Major flow at 7"
*                   0.687     4.905     4.905     0.000 c.m/sec"
* 40          HYDROGRAPH   Combine    8"
*            6   Combine "
```



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*            8   Node #"
*                NODE A"
*             Maximum flow                  4.905    c.m/sec"
*             Hydrograph volume         50562.629    c.m"
*                   0.687     4.905     4.905     4.905"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchments South of Hwy 7/8"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.687     0.000     4.905     4.905"
* 33          CATCHMENT 180"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          180   Northeast portion of Maple Leaf Foods property"
*       26.000   % Impervious"
*        0.700   Total Area"
*       45.000   Flow length"
*        1.500   Overland Slope"
*        0.518   Pervious Area"
*       20.000   Pervious length"
*        2.000   Pervious slope"
*        0.182   Impervious Area"
*       68.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       79.000   Pervious SCS Curve No."
*        0.427   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.752   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.903   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.134     0.000     4.905     4.905 c.m/sec"
*             Catchment 180          Pervious   Impervious Total Area "
*             Surface Area           0.518      0.182      0.700      hectare"
*             Time of concentration  10.196     3.478      7.332      minutes"
*             Time to Centroid       106.319    89.555     99.171     minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        352.69     123.92     476.61     c.m"
*             Rainfall losses        39.020     6.588      30.587     mm"
*             Runoff depth           29.067     61.498     37.499     mm"
*             Runoff volume          150.57     111.93     262.49     c.m"
*             Runoff coefficient     0.427      0.903      0.551      "
*             Maximum flow           0.077      0.073      0.134      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.134     0.134     4.905     4.905"
* 54          POND DESIGN"
*         0.134   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         262.5   Hydrograph volume    c.m"
*            8.   Number of stages"
*         0.000   Minimum water level    metre"
*         0.750   Maximum water level    metre"
*         0.000   Starting water level    metre"
*            0    Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400     1.000"
*                 0.2500   0.00600     8.000"
*                 0.3500   0.00700    29.000"
```

```
*               0.4500    0.00800     69.000"
*               0.6500    0.01000    178.000"
*               0.7000     0.1060    208.000"
*               0.7500     0.2810    240.000"
*            Peak outflow                  0.019    c.m/sec"
*            Maximum level                 0.655    metre"
*            Maximum storage             180.740    c.m"
*            Centroidal lag                4.706   hours"
*                 0.134     0.134     0.019     4.905 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.568    c.m/sec"
*            Hydrograph volume          3784.227    c.m"
*                  0.134     0.134     0.019     1.568"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.134     0.000     0.019     1.568"
* 33         CATCHMENT 181"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         181   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.227   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.915   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.735     0.000     0.019     1.568 c.m/sec"
*            Catchment 181          Pervious   Impervious Total Area "
*            Surface Area           0.131      1.739      1.870      hectare"
*            Time of concentration  14.185     4.693      4.867      minutes"
*            Time to Centroid       114.335    91.211     91.635     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        89.13      1184.09    1273.22    c.m"
*            Rainfall losses        52.618     5.788      9.066      mm"
*            Runoff depth           15.468     62.298     59.020     mm"
*            Runoff volume          20.25      1083.43    1103.68    c.m"
*            Runoff coefficient     0.227      0.915      0.867      "
*            Maximum flow           0.008      0.731      0.735      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.735     0.735     0.019     1.568"
* 54         POND DESIGN"
*        0.735   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       1103.7   Hydrograph volume    c.m"
*           7.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.800   Maximum water level    metre"
*        0.000   Starting water level    metre"
```



```
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.481    c.m/sec"
*            Maximum level                 1.626    metre"
*            Maximum storage             375.668    c.m"
*            Centroidal lag                1.876   hours"
*                 0.735     0.735     0.481     1.568 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.049    c.m/sec"
*            Hydrograph volume          4893.313    c.m"
*                  0.735     0.735     0.481     2.049"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.735     0.000     0.481     2.049"
* 33         CATCHMENT 182"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         182   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.227   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.904   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.339     0.000     0.481     2.049 c.m/sec"
*            Catchment 182          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  16.020     3.343      4.626      minutes"
*            Time to Centroid       116.535    89.341     92.093     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        255.39     568.45     823.85     c.m"
*            Rainfall losses        52.658     6.531      20.830     mm"
*            Runoff depth           15.428     61.556     47.256     mm"
*            Runoff volume          57.87      513.93     571.80     c.m"
*            Runoff coefficient     0.227      0.904      0.694      "
*            Maximum flow           0.023      0.330      0.339      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.339     0.339     0.481     2.049"
* 54         POND DESIGN"
*        0.339   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
```

```
*       571.8   Hydrograph volume    c.m"
*         5.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.072    c.m/sec"
*            Maximum level                 0.915    metre"
*            Maximum storage             344.420    c.m"
*            Centroidal lag                3.189   hours"
*                 0.339     0.339     0.072     2.049 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.097    c.m/sec"
*            Hydrograph volume          5465.156    c.m"
*                   0.339     0.339     0.072     2.097"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.339     0.000     0.072     2.097"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.267   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.919   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   2.962     0.000     0.072     2.097 c.m/sec"
*            Catchment 183          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  42.247     8.107      22.307     minutes"
*            Time to Centroid       147.414    95.971     117.368    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1.1259     0.4599     1.5857     ha-m"
*            Rainfall losses        49.895     5.548      37.035     mm"
*            Runoff depth           18.191     62.539     31.052     mm"
*            Runoff volume          3008.07    4223.92    7231.98    c.m"
*            Runoff coefficient     0.267      0.919      0.456      "
*            Maximum flow           0.632      2.863      2.962      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   2.962     2.962     0.072     2.097"
```



```
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   2.962     2.962     2.962     2.097"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  4.707    c.m/sec"
*            Hydrograph volume         12697.145    c.m"
*                   2.962     2.962     2.962     4.707"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  4.905    c.m/sec"
*            Hydrograph volume         50562.629    c.m"
*                   2.962     4.905     2.962     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   2.962     4.905     4.905     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  7.635    c.m/sec"
*            Hydrograph volume         63259.777    c.m"
*                   2.962     4.905     4.905     7.635"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   2.962     0.000     4.905     7.635"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.346   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.230     0.000     4.905     7.635 c.m/sec"
*            Catchment 184          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  22.839     2.731      21.824     minutes"
*            Time to Centroid       123.209    88.446     121.454    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1968.38    40.17      2008.55    c.m"
*            Rainfall losses        44.536     6.713      43.780     mm"
*            Runoff depth           23.550     61.373     24.307     mm"
*            Runoff volume          680.84     36.21      717.05     c.m"
*            Runoff coefficient     0.346      0.901      0.357      "
*            Maximum flow           0.224      0.024      0.230      c.m/sec"
```

```
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.230     0.230     4.905     7.635"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.230     0.230     0.230     7.635"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*             Maximum flow                  7.788    c.m/sec"
*             Hydrograph volume         63976.836    c.m"
*                    0.230     0.230     0.230     7.788"
* 40          HYDROGRAPH   Confluence    9"
*            7   Confluence "
*            9   Node #"
*                NODE B"
*             Maximum flow                  7.788    c.m/sec"
*             Hydrograph volume         63976.836    c.m"
*                    0.230     7.788     0.230     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.230     7.788     7.788     0.000"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                  7.788    c.m/sec"
*             Hydrograph volume         63976.836    c.m"
*                    0.230     7.788     7.788     7.788"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.230     0.000     7.788     7.788"
* 33          CATCHMENT 185"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          185   Morningside Retirement Community lands"
*       58.000   % Impervious"
*       18.780   Total Area"
*      190.000   Flow length"
*        2.000   Overland Slope"
*        7.888   Pervious Area"
*       25.000   Pervious length"
*        2.500   Pervious slope"
*       10.892   Impervious Area"
*      354.000   Impervious length"
*        2.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       64.400   Pervious SCS Curve No."
*        0.220   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.914   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    4.916     0.000     7.788     7.788 c.m/sec"
*             Catchment 185          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  15.433     7.110      8.346      minutes"
*             Time to Centroid       115.949    94.598     97.768     minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        0.5370     0.7416     1.2787     ha-m"
*             Rainfall losses        53.104     5.869      25.707     mm"
*             Runoff depth           14.983     62.218     42.379     mm"
```



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*             Runoff volume          1181.79    6777.00    7958.79    c.m"
*             Runoff coefficient     0.220      0.914      0.622      "
*             Maximum flow           0.476      4.722      4.916      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    4.916     4.916     7.788     7.788"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    4.916     4.916     4.916     7.788"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                 12.106    c.m/sec"
*             Hydrograph volume         71935.617    c.m"
*                    4.916     4.916     4.916    12.106"
* 81          ADD COMMENT==================================================="
*          3  Lines of comment"
*             ***************************************************"
*             Catchments north of Hwy 7/8, towards Eastern Tributary"
*             ***************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    4.916     0.000     4.916    12.106"
* 33          CATCHMENT 150"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          150   Southern portion of Rec Centre fields"
*        0.000   % Impervious"
*        3.510   Total Area"
*       95.000   Flow length"
*        1.600   Overland Slope"
*        3.510   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.346   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.230     0.000     4.916    12.106 c.m/sec"
*             Catchment 150          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  29.780     6.829      29.780     minutes"
*             Time to Centroid       131.824    94.200     131.824    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        2389.83    0.00       2389.84    c.m"
*             Rainfall losses        44.508     5.986      44.508     mm"
*             Runoff depth           23.579     62.100     23.579     mm"
*             Runoff volume          827.61     0.00       827.61     c.m"
*             Runoff coefficient     0.346      0.000      0.346      "
*             Maximum flow           0.230      0.000      0.230      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.230     0.230     4.916    12.106"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.230     0.230     0.230    12.106"
```

```
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  0.230    c.m/sec"
*              Hydrograph volume           827.614    c.m"
*                     0.230     0.230     0.230     0.230"
* 40          HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                     0.230     0.000     0.230     0.230"
* 33          CATCHMENT 151"
*              1   Triangular SCS"
*              3   Specify values"
*              1   SCS method"
*            151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*         33.000   % Impervious"
*          5.770   Total Area"
*        100.000   Flow length"
*          2.000   Overland Slope"
*          3.866   Pervious Area"
*        100.000   Pervious length"
*          2.000   Pervious slope"
*          1.904   Impervious Area"
*        296.000   Impervious length"
*          2.000   Impervious slope"
*          0.250   Pervious Manning 'n'"
*         76.000   Pervious SCS Curve No."
*          0.377   Pervious Runoff coefficient"
*          0.100   Pervious Ia/S coefficient"
*          8.021   Pervious Initial abstraction"
*          0.015   Impervious Manning 'n'"
*         98.000   Impervious SCS Curve No."
*          0.912   Impervious Runoff coefficient"
*          0.100   Impervious Ia/S coefficient"
*          0.518   Impervious Initial abstraction"
*                     0.905     0.000     0.230     0.230 c.m/sec"
*               Catchment 151          Pervious   Impervious Total Area *
*               Surface Area           3.866      1.904      5.770      hectare*
*               Time of concentration  28.511     6.829      16.725     minutes*
*               Time to Centroid       130.003    94.200     110.540    minutes*
*               Rainfall depth         68.087     68.087     68.087     mm*
*               Rainfall volume        2632.16    1296.44    3928.59    c.m*
*               Rainfall losses        42.407     5.986      30.388     mm*
*               Runoff depth           25.680     62.100     37.699     mm*
*               Runoff volume          992.75     1162.45    2175.20    c.m*
*               Runoff coefficient     0.377      0.912      0.554      *
*               Maximum flow           0.286      0.829      0.905      c.m/sec*
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     0.905     0.905     0.230     0.230"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     0.905     0.905     0.905     0.230"
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  0.961    c.m/sec"
*              Hydrograph volume          3002.818    c.m"
*                     0.905     0.905     0.905     0.961"
* 40          HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                     0.905     0.000     0.905     0.961"
* 33          CATCHMENT 152"
*              1   Triangular SCS"
*              1   Equal length"
*              1   SCS method"
```



```
*            152   Southern portion of Schneider lands"
*           5.000   % Impervious"
*           8.560   Total Area"
*         170.000   Flow length"
*           3.500   Overland Slope"
*           8.132   Pervious Area"
*         170.000   Pervious length"
*           3.500   Pervious slope"
*           0.428   Impervious Area"
*         170.000   Impervious length"
*           3.500   Impervious slope"
*           0.250   Pervious Manning 'n'"
*          82.000   Pervious SCS Curve No."
*           0.485   Pervious Runoff coefficient"
*           0.100   Pervious Ia/S coefficient"
*           5.576   Pervious Initial abstraction"
*           0.015   Impervious Manning 'n'"
*          98.000   Impervious SCS Curve No."
*           0.912   Impervious Runoff coefficient"
*           0.100   Impervious Ia/S coefficient"
*           0.518   Impervious Initial abstraction"
*                     0.796     0.000     0.905     0.961 c.m/sec"
*               Catchment 152          Pervious   Impervious Total Area "
*               Surface Area           8.132      0.428      8.560      hectare"
*               Time of concentration  29.314     4.139      27.047     minutes"
*               Time to Centroid       130.143    90.457     126.570    minutes"
*               Rainfall depth         68.087     68.087     68.087     mm"
*               Rainfall volume        5536.79    291.41     5828.20    c.m"
*               Rainfall losses        35.071     6.014      33.618     mm"
*               Runoff depth           33.016     62.072     34.469     mm"
*               Runoff volume          2684.85    265.67     2950.52    c.m"
*               Runoff coefficient     0.485      0.912      0.506      "
*               Maximum flow           0.765      0.177      0.796      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     0.796     0.796     0.905     0.961"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     0.796     0.796     0.796     0.961"
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  1.481    c.m/sec"
*              Hydrograph volume          5953.338    c.m"
*                     0.796     0.796     0.796     1.481"
* 40          HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                     0.796     0.000     0.796     1.481"
* 47          FILEI_O Read/Open DIV00007.025hyd"
*             1   1=read/open; 2=write/save"
*             2   1=rainfall; 2=hydrograph"
*             1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*              DIV00007.025hyd"
*              Major flow at 7"
*              Total volume                  0.000    c.m"
*              Maximum flow                  0.000    c.m/sec"
*                   0.000     0.000     0.796     1.481 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     0.000     0.000     0.796     1.481"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     0.000     0.000     0.000     1.481"
* 40          HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
```

```
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.481    c.m/sec"
*            Hydrograph volume          5953.338    c.m"
*                  0.000     0.000     0.000     1.481"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.481    c.m/sec"
*            Hydrograph volume          5953.338    c.m"
*                  0.000     1.481     0.000     0.000"
* 54         POND DESIGN"
*       1.481   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      5953.3   Hydrograph volume    c.m"
*         9.    Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*             332.660     0.000     0.000"
*             333.000    0.3010   266.000"
*             333.500     1.168  1814.000"
*             334.000     2.325  4798.000"
*             334.500     3.132  9073.000"
*             335.000     3.780  14775.00"
*             335.500     4.332  22251.00"
*             335.750     4.563  26742.00"
*             336.000    21.985  31757.00"
*            Peak outflow                  1.050    c.m/sec"
*            Maximum level               333.433    metre"
*            Maximum storage            1605.137    c.m"
*            Centroidal lag                2.392   hours"
*                 0.000     1.481     1.050     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 0.000     1.050     1.050     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                  228.020    hectare"
*            Total Impervious area                  50.613    hectare"
*            Total % impervious                     22.197"
* 19         EXIT"
```

```
*              MIDUSS Output ------------------------------------------------>"
*              MIDUSS version                              Version 2.25  rev. 473"
*              MIDUSS created                            Sunday, February 07, 2010"
*         10   Units used:                                            ie METRIC"
*              Job folder:                           Q:\34896\104\SWM\MIDUSS\Pre"
*              Output filename:                          34896-104_Pre-050yr.out"
*              Licensee name:                                              admin"
*              Company                                                 Microsoft"
*              Date & Time last used:                   12/7/2018 at 1:44:19 PM"
* 81           ADD COMMENT==========================================================="
*          7   Lines of comment"
*              ******************************************"
*              Wilmot Employement Lands"
*              New Hamburg, Ontario"
*              50 year Storm Event - Pre-development"
*              Job No.: 34896-104"
*              Calculated by: NED/MSB/GMK"
*              ******************************************"
* 31           TIME PARAMETERS"
*        5.000   Time Step"
*      240.000   Max. Storm length"
*     1500.000   Max. Hydrograph"
* 32           STORM Chicago storm"
*           1   Chicago storm"
*     3886.000   Coefficient A"
*       16.000   Constant B"
*        0.950   Exponent C"
*        0.400   Fraction R"
*      180.000   Duration"
*        1.000   Time step multiplier"
*              Maximum intensity          215.474    mm/hr"
*              Total depth                 77.443    mm"
*            6   050hyd   Hydrograph extension used in this file"
* 81           ADD COMMENT=======================================================""
*          3   Lines of comment"
*              **************************************************"
*              Catchments North of GEXR, part of Inlet #1"
*              **************************************************"
* 33           CATCHMENT 101"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           101   Area Northeast of GEXR"
*         0.000   % Impervious"
*         2.970   Total Area"
*        80.000   Flow length"
*         0.500   Overland Slope"
*         2.970   Pervious Area"
*        80.000   Pervious length"
*         0.500   Pervious slope"
*         0.000   Impervious Area"
*        80.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.522   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.334     0.000     0.000     0.000 c.m/sec"
*              Catchment 101          Pervious   Impervious Total Area "
*              Surface Area           2.970      0.000      2.970      hectare"
*              Time of concentration  30.768     4.492      30.768     minutes"
```



```
*              Time to Centroid       131.220    90.546     131.220    minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        2300.05    0.00       2300.05    c.m"
*              Rainfall losses        36.991     5.932      36.991     mm"
*              Runoff depth           40.452     71.510     40.452     mm"
*              Runoff volume          1201.42    0.00       1201.43    c.m"
*              Runoff coefficient     0.522      0.000      0.522      "
*              Maximum flow           0.334      0.000      0.334      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.334     0.334     0.000     0.000"
* 33           CATCHMENT 102"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           102   Pfenning Farm Development - north of GEXR"
*         0.000   % Impervious"
*        12.070   Total Area"
*       180.000   Flow length"
*         2.500   Overland Slope"
*        12.070   Pervious Area"
*       180.000   Pervious length"
*         2.500   Pervious slope"
*         0.000   Impervious Area"
*       180.000   Impervious length"
*         2.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.522   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   1.353     0.334     0.000     0.000 c.m/sec"
*              Catchment 102          Pervious   Impervious Total Area "
*              Surface Area           12.070     0.000      12.070     hectare"
*              Time of concentration  30.883     4.509      30.883     minutes"
*              Time to Centroid       131.369    90.570     131.369    minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        9347.33    0.01       9347.34    c.m"
*              Rainfall losses        36.991     5.923      36.991     mm"
*              Runoff depth           40.452     71.520     40.452     mm"
*              Runoff volume          4882.52    0.01       4882.53    c.m"
*              Runoff coefficient     0.522      0.000      0.522      "
*              Maximum flow           1.353      0.000      1.353      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   1.353     1.687     0.000     0.000"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   1.353     1.687     1.687     0.000"
* 40           HYDROGRAPH   Combine    1"
*             6   Combine "
*             1   Node #"
*                 u/s of GEXR"
*              Maximum flow                    1.687    c.m/sec"
*              Hydrograph volume            6083.960    c.m"
*                   1.353     1.687     1.687     1.687"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   1.353     0.000     1.687     1.687"
* 33           CATCHMENT 103"
*             1   Triangular SCS"
*             1   Equal length"
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.326   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*              0.167     0.000     1.687     1.687 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area *
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  23.957     2.772      23.957     minutes"
*           Time to Centroid       124.301    88.103     124.301    minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        1610.81    0.00       1610.81    c.m"
*           Rainfall losses        52.205     6.990      52.205     mm"
*           Runoff depth           25.238     70.453     25.238     mm"
*           Runoff volume          524.95     0.00       524.95     c.m"
*           Runoff coefficient     0.326      0.000      0.326      "
*           Maximum flow           0.167      0.000      0.167      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*              0.167     0.167     1.687     1.687"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*              0.167     0.167     0.167     1.687"
* 40        HYDROGRAPH   Combine    1"
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 1.851    c.m/sec"
*           Hydrograph volume         6608.908    c.m"
*              0.167     0.167     0.167     1.851"
* 40        HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 1.851    c.m/sec"
*           Hydrograph volume         6608.908    c.m"
*              0.167     1.851     0.167     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*              0.167     1.851     1.851     0.000"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                 1.851    c.m/sec"
*           Hydrograph volume         6608.908    c.m"
*              0.167     1.851     1.851     1.851"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*              0.167     0.000     1.851     1.851"
```



```
* 81          ADD COMMENT==================================================="
*            3  Lines of comment"
*               ************************************************"
*               Catchments South of GEXR, part of Inlet #1"
*               ************************************************"
* 33          CATCHMENT 104"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           104   Riverside Brass"
*        59.000   % Impervious"
*         2.020   Total Area"
*        35.000   Flow length"
*         1.200   Overland Slope"
*         0.828   Pervious Area"
*        60.000   Pervious length"
*         2.000   Pervious slope"
*         1.192   Impervious Area"
*       116.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.415   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.924   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.619     0.000     1.851     1.851 c.m/sec"
*              Catchment 104          Pervious   Impervious Total Area *
*              Surface Area           0.828      1.192      2.020      hectare"
*              Time of concentration  19.079     5.614      8.817      minutes"
*              Time to Centroid       117.291    92.090     98.084     minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        641.38     922.96     1564.34    c.m"
*              Rainfall losses        45.307     5.882      22.046     mm"
*              Runoff depth           32.136     71.561     55.397     mm"
*              Runoff volume          266.15     852.87     1119.02    c.m"
*              Runoff coefficient     0.415      0.924      0.715      "
*              Maximum flow           0.098      0.577      0.619      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                 0.619     0.619     1.851     1.851"
* 54           POND DESIGN"
*          0.619   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*         1119.0   Hydrograph volume    c.m"
*             4.   Number of stages"
*          0.000   Minimum water level    metre"
*          0.910   Maximum water level    metre"
*          0.000   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.3100   0.03090   782.000"
*                   0.6100    0.1232  1619.000"
*                   0.9100    0.2769  2511.000"
*              Peak outflow                  0.042    c.m/sec"
*              Maximum level                 0.345    metre"
*              Maximum storage             880.598    c.m"
*              Centroidal lag                8.363    hours"
*                   0.619     0.619     0.042     1.851 c.m/sec"
* 40           HYDROGRAPH   Combine    2"
*             6   Combine "
*             2   Node #"
```

```
*             INLET 1"
*          Maximum flow                  1.880    c.m/sec"
*          Hydrograph volume          7689.150    c.m"
*                0.619     0.619     0.042     1.880"
* 40       HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.619     0.000     0.042     1.880"
* 33       CATCHMENT 105"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        105   Iron Bridge Manufacturing Property"
*     65.000   % Impervious"
*      3.570   Total Area"
*     90.000   Flow length"
*      2.000   Overland Slope"
*      1.250   Pervious Area"
*     90.000   Pervious length"
*      2.000   Pervious slope"
*      2.320   Impervious Area"
*     90.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     81.000   Pervious SCS Curve No."
*      0.502   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      5.958   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.912   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                1.095     0.000     0.042     1.880 c.m/sec"
*          Catchment 105          Pervious   Impervious Total Area "
*          Surface Area           1.250      2.320      3.570      hectare"
*          Time of concentration  22.178     3.181      7.526      minutes"
*          Time to Centroid       120.332    88.692     95.929     minutes"
*          Rainfall depth         77.443     77.443     77.443     mm"
*          Rainfall volume        967.65     1797.06    2764.71    c.m"
*          Rainfall losses        38.535     6.798      17.906     mm"
*          Runoff depth           38.908     70.645     59.537     mm"
*          Runoff volume          486.16     1639.31    2125.46    c.m"
*          Runoff coefficient     0.502      0.912      0.769      "
*          Maximum flow           0.169      1.061      1.095      c.m/sec"
* 40       HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                1.095     1.095     0.042     1.880"
* 33       CATCHMENT 106"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        106   N.C. Pestell Head Office and other Industrial"
*     85.000   % Impervious"
*      1.280   Total Area"
*     55.000   Flow length"
*      1.500   Overland Slope"
*      0.192   Pervious Area"
*     55.000   Pervious length"
*      1.500   Pervious slope"
*      1.088   Impervious Area"
*     55.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.415   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
```



```
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.912   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.522     1.095     0.042     1.880 c.m/sec"
*          Catchment 106          Pervious   Impervious Total Area "
*          Surface Area           0.192      1.088      1.280      hectare"
*          Time of concentration  19.741     2.580      3.856      minutes"
*          Time to Centroid       118.131    87.808     90.062     minutes"
*          Rainfall depth         77.443     77.443     77.443     mm"
*          Rainfall volume        148.69     842.58     991.27     c.m"
*          Rainfall losses        45.292     6.781      12.558     mm"
*          Runoff depth           32.151     70.661     64.885     mm"
*          Runoff volume          61.73      768.79     830.52     c.m"
*          Runoff coefficient     0.415      0.912      0.838      "
*          Maximum flow           0.022      0.519      0.522      c.m/sec"
* 40       HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.522     1.605     0.042     1.880"
* 40       HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.522     1.605     1.605     1.880"
* 40       HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*          Maximum flow                  2.352    c.m/sec"
*          Hydrograph volume         10645.146    c.m"
*                0.522     1.605     1.605     2.352"
* 40       HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.522     0.000     1.605     2.352"
* 33       CATCHMENT 107"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        107   Industrial properties at end of Hamilton Road"
*     40.000   % Impervious"
*      2.850   Total Area"
*     50.000   Flow length"
*      1.000   Overland Slope"
*      1.710   Pervious Area"
*     50.000   Pervious length"
*      1.000   Pervious slope"
*      1.140   Impervious Area"
*     50.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.416   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.910   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.561     0.000     1.605     2.352 c.m/sec"
*          Catchment 107          Pervious   Impervious Total Area "
*          Surface Area           1.710      1.140      2.850      hectare"
*          Time of concentration  21.055     2.752      10.195     minutes"
*          Time to Centroid       119.783    88.078     100.971    minutes"
*          Rainfall depth         77.443     77.443     77.443     mm"
*          Rainfall volume        1324.27    882.85     2207.12    c.m"
*          Rainfall losses        45.253     6.990      29.948     mm"
*          Runoff depth           32.190     70.452     47.495     mm"
```

```
*            Runoff volume          550.44     803.16     1353.60    c.m"
*            Runoff coefficient     0.416      0.910      0.613      "
*            Maximum flow           0.196      0.537      0.561      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.561     0.561     1.605     2.352"
* 33         CATCHMENT 108"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        108   Woodlot and Wetland east of Pestells"
*      5.000   % Impervious"
*      5.920   Total Area"
*     65.000   Flow length"
*      3.000   Overland Slope"
*      5.624   Pervious Area"
*     65.000   Pervious length"
*      3.000   Pervious slope"
*      0.296   Impervious Area"
*     65.000   Impervious length"
*      3.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.200   Pervious SCS Curve No."
*      0.328   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.782   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.915   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.539     0.561     1.605     2.352 c.m/sec"
*           Catchment 108          Pervious   Impervious Total Area "
*           Surface Area           5.624      0.296      5.920      hectare"
*           Time of concentration  19.939     2.317      17.685     minutes"
*           Time to Centroid       119.350    87.394     115.263    minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        4355.38    229.23     4584.61    c.m"
*           Rainfall losses        52.010     6.583      49.738     mm"
*           Runoff depth           25.433     70.860     27.704     mm"
*           Runoff volume          1430.35    209.74     1640.10    c.m"
*           Runoff coefficient     0.328      0.915      0.358      "
*           Maximum flow           0.510      0.143      0.539      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.539     0.874     1.605     2.352"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.539     0.874     0.874     2.352"
* 40         HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*              Maximum flow              3.211    c.m/sec"
*              Hydrograph volume     13638.847    c.m"
*                0.539     0.874     0.874     3.211"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.539     0.000     0.874     3.211"
* 33         CATCHMENT 109"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        109   N.C. Pestell site"
*     75.000   % Impervious"
*      5.530   Total Area"
*    130.000   Flow length"
```



```
*      2.000   Overland Slope"
*      1.383   Pervious Area"
*     50.000   Pervious length"
*      3.000   Pervious slope"
*      4.148   Impervious Area"
*    192.000   Impervious length"
*      0.750   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     75.000   Pervious SCS Curve No."
*      0.399   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.467   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.922   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                2.155     0.000     0.874     3.211 c.m/sec"
*           Catchment 109          Pervious   Impervious Total Area "
*           Surface Area           1.383      4.148      5.530      hectare"
*           Time of concentration  15.440     6.726      7.826      minutes"
*           Time to Centroid       112.945    93.621     96.061     minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        1070.65    3211.94    4282.58    c.m"
*           Rainfall losses        46.511     6.075      16.184     mm"
*           Runoff depth           30.931     71.368     61.259     mm"
*           Runoff volume          427.63     2959.99    3387.62    c.m"
*           Runoff coefficient     0.399      0.922      0.791      "
*           Maximum flow           0.180      2.066      2.155      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                2.155     2.155     0.874     3.211"
* 54         POND DESIGN"
*       2.155   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      3387.6   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*              Peak outflow                  0.248    c.m/sec"
*              Maximum level                 0.960    metre"
*              Maximum storage            2536.727    c.m"
*              Centroidal lag               10.367    hours"
*                2.155     2.155     0.248     3.211 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*              Maximum flow                  3.277    c.m/sec"
*              Hydrograph volume         16649.268    c.m"
*                2.155     2.155     0.248     3.277"
* 81         ADD COMMENT==========================================================="
*          3   Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
```

```
*          **************************************************
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                2.155     0.000     0.248     3.277"
* 33        CATCHMENT 110"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        110   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.485   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.918   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.300     0.000     0.248     3.277 c.m/sec"
*            Catchment 110          Pervious   Impervious Total Area "
*            Surface Area           1.344      0.576      1.920      hectare"
*            Time of concentration  33.446     3.975      20.238     minutes"
*            Time to Centroid       134.917    89.837     114.714    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1040.83    446.07     1486.90    c.m"
*            Rainfall losses        39.907     6.317      29.830     mm"
*            Runoff depth           37.535     71.125     47.612     mm"
*            Runoff volume          504.47     409.68     914.16     c.m"
*            Runoff coefficient     0.485      0.918      0.615      "
*            Maximum flow           0.131      0.268      0.300      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.300     0.300     0.248     3.277"
* 54        POND DESIGN"
*        0.300   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*        914.2   Hydrograph volume    c.m"
*           7.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.100   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.2500   0.04200     7.000"
*                 0.5000   0.09000    71.000"
*                 0.7500    0.1250   220.000"
*                 0.9000    0.1400   346.000"
*                  1.000    0.3110   445.000"
*                  1.100    0.6160   557.000"
*            Peak outflow                  0.129    c.m/sec"
*            Maximum level                 0.787    metre"
*            Maximum storage             251.403    c.m"
*            Centroidal lag                2.276    hours"
*                0.300     0.300     0.129     3.277 c.m/sec"
* 40        HYDROGRAPH   Combine    3"
```



```
*          6   Combine "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  0.129    c.m/sec"
*           Hydrograph volume           913.591    c.m"
*                 0.300     0.300     0.129     0.129"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.300     0.000     0.129     0.129"
* 33        CATCHMENT 111"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        111   Woodlot north of Schneider/Good lands"
*        0.000   % Impervious"
*       13.230   Total Area"
*      170.000   Flow length"
*        2.400   Overland Slope"
*       13.230   Pervious Area"
*      170.000   Pervious length"
*        2.400   Pervious slope"
*        0.000   Impervious Area"
*      170.000   Impervious length"
*        2.400   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.000   Pervious SCS Curve No."
*        0.326   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.886   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.779     0.000     0.129     0.129 c.m/sec"
*            Catchment 111          Pervious   Impervious Total Area "
*            Surface Area           13.230     0.000      13.230     hectare"
*            Time of concentration  38.121     4.411      38.121     minutes"
*            Time to Centroid       141.640    90.426     141.640    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1.0246     0.0000     1.0246     ha-m"
*            Rainfall losses        52.208     5.993      52.208     mm"
*            Runoff depth           25.235     71.450     25.235     mm"
*            Runoff volume          3338.60    0.01       3338.61    c.m"
*            Runoff coefficient     0.326      0.000      0.326      "
*            Maximum flow           0.779      0.000      0.779      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.779     0.779     0.129     0.129"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.779     0.779     0.779     0.129"
* 40        HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  0.905    c.m/sec"
*           Hydrograph volume          4252.199    c.m"
*                 0.779     0.779     0.779     0.905"
* 81        ADD COMMENT==================================================="
*         3  Lines of comment"
*           **********************************************"
*           South of GEXR along Nafziger Rd, part of Inlet #3"
*           **********************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.779     0.000     0.779     0.905"
```

```
* 33          CATCHMENT 112"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           112   Culivated lands east of Nafziger Road"
*         1.000   % Impervious"
*         7.310   Total Area"
*       120.000   Flow length"
*         3.300   Overland Slope"
*         7.237   Pervious Area"
*       120.000   Pervious length"
*         3.300   Pervious slope"
*         0.073   Impervious Area"
*       120.000   Impervious length"
*         3.300   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.521   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.912   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   1.024     0.000     0.779     0.905 c.m/sec"
*              Catchment 112          Pervious   Impervious Total Area "
*              Surface Area           7.237      0.073      7.310      hectare"
*              Time of concentration  22.279     3.253      21.949     minutes"
*              Time to Centroid       120.281    88.790     119.734    minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        5604.45    56.61      5661.07    c.m"
*              Rainfall losses        37.060     6.780      36.757     mm"
*              Runoff depth           40.383     70.663     40.685     mm"
*              Runoff volume          2922.45    51.65      2974.10    c.m"
*              Runoff coefficient     0.521      0.912      0.525      "
*              Maximum flow           1.016      0.033      1.024      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   1.024     1.024     0.779     0.905"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   1.024     1.024     1.024     0.905"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                    1.024    c.m/sec"
*              Hydrograph volume            2974.100    c.m"
*                   1.024     1.024     1.024     1.024"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   1.024     0.000     1.024     1.024"
* 33          CATCHMENT 113"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           113   Alpine Solutions - East SMWP"
*        40.000   % Impervious"
*         2.560   Total Area"
*       150.000   Flow length"
*         1.500   Overland Slope"
*         1.536   Pervious Area"
*       180.000   Pervious length"
*         1.500   Pervious slope"
*         1.024   Impervious Area"
*       131.000   Impervious length"
```



```
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        80.000   Pervious SCS Curve No."
*         0.485   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         6.350   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.922   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.514     0.000     1.024     1.024 c.m/sec"
*              Catchment 113          Pervious   Impervious Total Area "
*              Surface Area           1.536      1.024      2.560      hectare"
*              Time of concentration  37.313     4.343      18.881     minutes"
*              Time to Centroid       139.862    90.328     112.170    minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        1189.52    793.01     1982.53    c.m"
*              Rainfall losses        39.904     6.056      26.364     mm"
*              Runoff depth           37.539     71.387     51.078     mm"
*              Runoff volume          576.60     731.00     1307.61    c.m"
*              Runoff coefficient     0.485      0.922      0.660      "
*              Maximum flow           0.138      0.484      0.514      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.514     0.514     1.024     1.024"
* 54           POND DESIGN"
*         0.514   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        1307.6   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.000   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                    0.000    0.000     0.000"
*                   0.1000   0.02000     7.000"
*                   0.2500   0.04200    64.000"
*                   0.5000   0.09000   343.000"
*                   0.7500    0.1250   877.000"
*                   0.8000    0.1360  1014.000"
*                    1.000    0.7880  1667.000"
*              Peak outflow                    0.109    c.m/sec"
*              Maximum level                   0.635    metre"
*              Maximum storage               631.360    c.m"
*              Centroidal lag                  3.031    hours"
*                   0.514     0.514     0.109     1.024 c.m/sec"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                    1.122    c.m/sec"
*              Hydrograph volume            4281.934    c.m"
*                   0.514     0.514     0.109     1.122"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.514     0.000     0.109     1.122"
* 33          CATCHMENT 114"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           114   Woodlot East and West of Nafziger Road"
*         3.000   % Impervious"
*        13.460   Total Area"
*       140.000   Flow length"
*         3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.327   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.956     0.000     0.109     1.122 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  29.978     3.476      27.876     minutes"
*            Time to Centroid       131.659    89.142     128.286    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1.0111     0.0313     1.0424     ha-m"
*            Rainfall losses        52.093     6.805      50.734     mm"
*            Runoff depth           25.350     70.637     26.709     mm"
*            Runoff volume          3309.74    285.23     3594.97    c.m"
*            Runoff coefficient     0.327      0.912      0.345      "
*            Maximum flow           0.921      0.183      0.956      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.956     0.956     0.109     1.122"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.956     0.956     0.956     1.122"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.011    c.m/sec"
*            Hydrograph volume          7876.904    c.m"
*                 0.956     0.956     0.956     2.011"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.956     0.000     0.956     2.011"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.541   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.923   Impervious Runoff coefficient"
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```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.900     0.000     0.956     2.011 c.m/sec"
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  14.345     5.291      6.906      minutes"
*            Time to Centroid       109.846    91.657     94.901     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1035.02    2798.39    3833.42    c.m"
*            Rainfall losses        35.508     5.995      13.963     mm"
*            Runoff depth           41.935     71.448     63.480     mm"
*            Runoff volume          560.46     2581.78    3142.24    c.m"
*            Runoff coefficient     0.541      0.923      0.820      "
*            Maximum flow           0.259      1.746      1.900      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.900     1.900     0.956     2.011"
* 54         POND DESIGN"
*       1.900   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      3142.2   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*            Peak outflow                  0.263    c.m/sec"
*            Maximum level                 1.172    metre"
*            Maximum storage            2318.544    c.m"
*            Centroidal lag               13.769    hours"
*                 1.900     1.900     0.263     2.011 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.191    c.m/sec"
*            Hydrograph volume         10359.007    c.m"
*                 1.900     1.900     0.263     2.191"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.900     0.000     0.263     2.191"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.416   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.923   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                1.373     0.000     0.263     2.191 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  33.917     4.433      17.862     minutes"
*             Time to Centroid       135.944    90.460     111.176    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        3881.04    2089.79    5970.84    c.m"
*             Rainfall losses        45.254     5.973      31.506     mm"
*             Runoff depth           32.189     71.470     45.937     mm"
*             Runoff volume          1613.13    1928.62    3541.75    c.m"
*             Runoff coefficient     0.416      0.923      0.593      "
*             Maximum flow           0.412      1.280      1.373      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.373     1.373     0.263     2.191"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.373     1.373     1.373     2.191"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                 2.821    c.m/sec"
*               Hydrograph volume        13900.763    c.m"
*                   1.373     1.373     1.373     2.821"
* 40          HYDROGRAPH   Confluence    2"
*           7   Confluence "
*           2   Node #"
*               INLET 1"
*               Maximum flow                 3.277    c.m/sec"
*               Hydrograph volume        16649.268    c.m"
*                   1.373     3.277     1.373     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.373     3.277     3.277     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*               Maximum flow                 3.277    c.m/sec"
*               Hydrograph volume        16649.268    c.m"
*                   1.373     3.277     3.277     3.277"
* 40          HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*               Maximum flow                 0.905    c.m/sec"
*               Hydrograph volume         4252.199    c.m"
*                   1.373     0.905     3.277     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.373     0.905     0.905     0.000"
```



```
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*               Maximum flow                 4.052    c.m/sec"
*               Hydrograph volume        20901.461    c.m"
*                   1.373     0.905     0.905     4.052"
* 40          HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*               Maximum flow                 2.821    c.m/sec"
*               Hydrograph volume        13900.764    c.m"
*                   1.373     2.821     0.905     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.373     2.821     2.821     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*               Maximum flow                 6.873    c.m/sec"
*               Hydrograph volume        34802.242    c.m"
*                   1.373     2.821     2.821     6.873"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.373     0.000     2.821     6.873"
* 33          CATCHMENT 117"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         117   Cultivated Schneider central lands"
*       0.000   % Impervious"
*       7.450   Total Area"
*     140.000   Flow length"
*       2.000   Overland Slope"
*       7.450   Pervious Area"
*     140.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     140.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.400   Pervious SCS Curve No."
*       0.511   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.804   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.871     0.000     2.821     6.873 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  28.704     4.146      28.704     minutes"
*             Time to Centroid       128.663    90.057     128.663    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        5769.48    0.01       5769.49    c.m"
*             Rainfall losses        37.903     6.136      37.903     mm"
*             Runoff depth           39.540     71.307     39.540     mm"
*             Runoff volume          2945.72    0.01       2945.72    c.m"
*             Runoff coefficient     0.511      0.000      0.511      "
*             Maximum flow           0.871      0.000      0.871      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.871     0.871     2.821     6.873"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.871     0.871     0.871     6.873"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  7.744    c.m/sec"
*             Hydrograph volume         37747.945    c.m"
*                   0.871     0.871     0.871     7.744"
* 81          ADD COMMENT=======================================================*
*          3  Lines of comment"
*             ***************************************************"
*             Catchments east of Hamilton Road, part of Inlet #4"
*             ***************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.871     0.000     0.871     7.744"
* 33          CATCHMENT 118"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          118   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.384   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.918   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.064     0.000     0.871     7.744 c.m/sec"
*             Catchment 118          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  15.072     1.894      12.802     minutes"
*             Time to Centroid       112.666    86.772     108.204    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        356.24     30.98      387.21     c.m"
*             Rainfall losses        47.736     6.331      44.424     mm"
*             Runoff depth           29.707     71.112     33.019     mm"
*             Runoff volume          136.65     28.44      165.10     c.m"
*             Runoff coefficient     0.384      0.918      0.426      "
*             Maximum flow           0.058      0.020      0.064      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.064     0.064     0.871     7.744"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.064     0.064     0.064     7.744"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  7.789    c.m/sec"
*             Hydrograph volume         37913.035    c.m"
```



```
*                   0.064     0.064     0.064     7.789"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.064     0.000     0.064     7.789"
* 33          CATCHMENT 119"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          119   Existing ROW from Hamilton Road"
*        0.000   % Impervious"
*        0.720   Total Area"
*       40.000   Flow length"
*        2.000   Overland Slope"
*        0.720   Pervious Area"
*       40.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*       40.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.415   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.099     0.000     0.064     7.789 c.m/sec"
*             Catchment 119          Pervious   Impervious Total Area "
*             Surface Area           0.720      0.000      0.720      hectare"
*             Time of concentration  14.959     1.955      14.959     minutes"
*             Time to Centroid       112.122    86.858     112.122    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        557.59     0.00       557.59     c.m"
*             Rainfall losses        45.278     6.397      45.278     mm"
*             Runoff depth           32.165     71.045     32.165     mm"
*             Runoff volume          231.59     0.00       231.59     c.m"
*             Runoff coefficient     0.415      0.000      0.415      "
*             Maximum flow           0.099      0.000      0.099      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.099     0.099     0.064     7.789"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.099     0.099     0.099     7.789"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  7.859    c.m/sec"
*             Hydrograph volume         38144.621    c.m"
*                   0.099     0.099     0.099     7.859"
* 81          ADD COMMENT=======================================================*
*          3  Lines of comment"
*             ***************************************************"
*             Catchment to Inlet #5"
*             ***************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.099     0.000     0.099     7.859"
* 33          CATCHMENT 120"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          120   Rear yards from Hamilton Heights Subdivision"
```

```
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.414   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.908   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.192     0.000     0.099     7.859 c.m/sec"
*            Catchment 120          Pervious   Impervious Total Area "
*            Surface Area           1.026      0.054      1.080      hectare"
*            Time of concentration  8.739      1.142      7.953      minutes"
*            Time to Centroid       104.291    85.784     102.375    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        794.56     41.82      836.38     c.m"
*            Rainfall losses        45.378     7.102      43.464     mm"
*            Runoff depth           32.065     70.341     33.978     mm"
*            Runoff volume          328.98     37.98      366.97     c.m"
*            Runoff coefficient     0.414      0.908      0.439      "
*            Maximum flow           0.180      0.028      0.192      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.192     0.192     0.099     7.859"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.192     0.192     0.192     7.859"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  7.930    c.m/sec"
*            Hydrograph volume         38511.598    c.m"
*               0.192     0.192     0.192     7.930"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **************************************************"
*            Good Lands"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.192     0.000     0.192     7.930"
* 33         CATCHMENT 121"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         121   Good Lands"
*       0.000   % Impervious"
*      43.240   Total Area"
*     230.000   Flow length"
*       2.800   Overland Slope"
*      43.240   Pervious Area"
*     230.000   Pervious length"
*       2.800   Pervious slope"
*       0.000   Impervious Area"
*     230.000   Impervious length"
```



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*       2.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.522   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               4.477     0.000     0.192     7.930 c.m/sec"
*            Catchment 121          Pervious   Impervious Total Area "
*            Surface Area           43.240     0.000      43.240     hectare"
*            Time of concentration  34.580     5.049      34.580     minutes"
*            Time to Centroid       136.143    91.318     136.142    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        3.3486     0.0000     3.3486     ha-m"
*            Rainfall losses        36.995     5.982      36.995     mm"
*            Runoff depth           40.448     71.460     40.448     mm"
*            Runoff volume          1.7490     0.0000     1.7490     ha-m"
*            Runoff coefficient     0.522      0.000      0.522      "
*            Maximum flow           4.477      0.000      4.477      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               4.477     4.477     0.192     7.930"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               4.477     4.477     4.477     7.930"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 12.242    c.m/sec"
*            Hydrograph volume         56001.172    c.m"
*               4.477     4.477     4.477    12.242"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments to Inlet #6"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               4.477     0.000     4.477    12.242"
* 33         CATCHMENT 160"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         160   Hamilton Heights Subdivision"
*      46.000   % Impervious"
*       8.160   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       4.406   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       3.754   Impervious Area"
*     232.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.415   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.925   Impervious Runoff coefficient"
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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.122     0.000     4.477    12.242 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  15.144     6.120      9.235      minutes"
*            Time to Centroid       112.357    92.817     99.561     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        3412.44    2906.89    6319.33    c.m"
*            Rainfall losses        45.272     5.794      27.112     mm"
*            Runoff depth           32.171     71.649     50.331     mm"
*            Runoff volume          1417.59    2689.42    4107.00    c.m"
*            Runoff coefficient     0.415      0.925      0.650      "
*            Maximum flow           0.605      1.809      2.122      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 2.122     2.122     4.477    12.242"
* 33         CATCHMENT 161"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        161   Klassen Bronze Property"
*     32.000   % Impervious"
*      2.350   Total Area"
*    100.000   Flow length"
*      2.500   Overland Slope"
*      1.598   Pervious Area"
*     50.000   Pervious length"
*      2.500   Pervious slope"
*      0.752   Impervious Area"
*    164.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.415   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.923   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.463     2.122     4.477    12.242 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  15.995     4.970      10.355     minutes"
*            Time to Centroid       113.448    91.205     102.069    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1237.54    582.37     1819.90    c.m"
*            Rainfall losses        45.309     5.928      32.707     mm"
*            Runoff depth           32.133     71.515     44.735     mm"
*            Runoff volume          513.49     537.79     1051.28    c.m"
*            Runoff coefficient     0.415      0.923      0.578      "
*            Maximum flow           0.213      0.362      0.463      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.463     2.585     4.477    12.242"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.463     2.585     2.585    12.242"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                13.283    c.m/sec"
*            Hydrograph volume        61159.461    c.m"
*                 0.463     2.585     2.585    13.283"
```



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* 81         ADD COMMENT=============================================================*
*          3  Lines of comment"
*             ************************************************************
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.463     0.000     2.585    13.283"
* 33         CATCHMENT 170"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         170   Industrial/Residential area along Hamilton Road"
*      55.000   % Impervious"
*       8.450   Total Area"
*      45.000   Flow length"
*       2.000   Overland Slope"
*       3.802   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       4.648   Impervious Area"
*     235.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.415   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.925   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.684     0.000     2.585    13.283 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  11.146     6.167      7.504      minutes"
*            Time to Centroid       107.313    92.882     96.757     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        2944.76    3599.15    6543.91    c.m"
*            Rainfall losses        45.302     5.811      23.582     mm"
*            Runoff depth           32.141     71.631     53.861     mm"
*            Runoff volume          1222.17    3329.07    4551.24    c.m"
*            Runoff coefficient     0.415      0.925      0.695      "
*            Maximum flow           0.597      2.238      2.684      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 2.684     2.684     2.585    13.283"
* 56         DIVERSION"
*          6   Node number"
*       1.560   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow          1.124    c.m/sec"
*            Volume of diverted flow      630.529    c.m"
*            DIV00006.050hyd"
*            Major flow at 6"
*                 2.684     2.684     1.560    13.283 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*            Maximum flow                   1.560    c.m/sec"
*            Hydrograph volume           3920.709    c.m"
*                 2.684     2.684     1.560     1.560"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
```

```
*                    2.684     0.000     1.560     1.560"
* 47          FILEI_O Read/Open DIV00006.050hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00006.050hyd"
*             Major flow at 6"
*             Total volume               630.529    c.m"
*             Maximum flow                 1.124    c.m/sec"
*                  1.124     0.000     1.560     1.560 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  1.124     1.124     1.560     1.560"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  1.124     1.124     1.124     1.560"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                13.283    c.m/sec"
*             Hydrograph volume         61789.988    c.m"
*                  1.124     1.124     1.124    13.283"
* 40          HYDROGRAPH   Confluence    5"
*            7   Confluence "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                13.283    c.m/sec"
*             Hydrograph volume         61789.988    c.m"
*                  1.124    13.283     1.124     0.000"
* 54          POND DESIGN"
*       13.283   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      61790.0   Hydrograph volume    c.m"
*          7.    Number of stages"
*      334.290   Minimum water level    metre"
*      336.800   Maximum water level    metre"
*      334.290   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                334.290     0.000     0.000"
*                334.500    0.2540     5.000"
*                335.000     1.303   390.000"
*                335.500     2.800  3269.000"
*                336.000     4.639  13030.00"
*                336.400     6.109  30065.00"
*                336.800    18.376  57257.00"
*             Peak outflow                 5.518    c.m/sec"
*             Maximum level              336.240    metre"
*             Maximum storage          23235.170    c.m"
*             Centroidal lag               3.419    hours"
*                  1.124    13.283     5.518     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                  1.124     5.518     5.518     0.000"
* 56          DIVERSION"
*            7   Node number"
*         7.170   Overflow threshold"
*         1.000   Required diverted fraction"
*            0   Conduit type; 1=Pipe;2=Channel"
*             Peak of diverted flow        0.000    c.m/sec"
*             Volume of diverted flow      0.000    c.m"
*             DIV00007.050hyd"
*             Major flow at 7"
*                  1.124     5.518     5.518     0.000 c.m/sec"
* 40          HYDROGRAPH   Combine    8"
*            6   Combine "
```



```
*            8   Node #"
*                NODE A"
*             Maximum flow                 5.518    c.m/sec"
*             Hydrograph volume        61813.508    c.m"
*                  1.124     5.518     5.518     5.518"
* 81          ADD COMMENT================================================="
*           3   Lines of comment"
*             ************************************************"
*             Catchments South of Hwy 7/8"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  1.124     0.000     5.518     5.518"
* 33          CATCHMENT 180"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          180   Northeast portion of Maple Leaf Foods property"
*       26.000   % Impervious"
*        0.700   Total Area"
*       45.000   Flow length"
*        1.500   Overland Slope"
*        0.518   Pervious Area"
*       20.000   Pervious length"
*        2.000   Pervious slope"
*        0.182   Impervious Area"
*       68.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       79.000   Pervious SCS Curve No."
*        0.465   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.752   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.913   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.169     0.000     5.518     5.518 c.m/sec"
*             Catchment 180          Pervious   Impervious Total Area "
*             Surface Area           0.518      0.182      0.700      hectare"
*             Time of concentration  9.328      3.310      6.871      minutes"
*             Time to Centroid       104.332    88.880     98.024     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        401.15     140.95     542.10     c.m"
*             Rainfall losses        41.454     6.765      32.435     mm"
*             Runoff depth           35.989     70.678     45.008     mm"
*             Runoff volume          186.42     128.63     315.06     c.m"
*             Runoff coefficient     0.465      0.913      0.581      "
*             Maximum flow           0.101      0.082      0.169      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.169     0.169     5.518     5.518"
* 54          POND DESIGN"
*        0.169   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*        315.1   Hydrograph volume    c.m"
*           8.   Number of stages"
*        0.000   Minimum water level    metre"
*        0.750   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400     1.000"
*                 0.2500   0.00600     8.000"
*                 0.3500   0.00700    29.000"
```

```
*              0.4500    0.00800     69.000"
*              0.6500    0.01000    178.000"
*              0.7000     0.1060    208.000"
*              0.7500     0.2810    240.000"
*           Peak outflow                  0.048    c.m/sec"
*           Maximum level                 0.670    metre"
*           Maximum storage             189.902    c.m"
*           Centroidal lag                4.278   hours"
*                0.169     0.169     0.048     5.518 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.569    c.m/sec"
*           Hydrograph volume          4234.677    c.m"
*                0.169     0.169     0.048     1.569"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.169     0.000     0.048     1.569"
* 33        CATCHMENT 181"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        181   Western portion of John Bear property"
*     93.000   % Impervious"
*      1.870   Total Area"
*    120.000   Flow length"
*      1.000   Overland Slope"
*      0.131   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      1.739   Impervious Area"
*    112.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     65.000   Pervious SCS Curve No."
*      0.261   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     13.677   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.923   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.832     0.000     0.048     1.569 c.m/sec"
*           Catchment 181          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration  12.513     4.465      4.632      minutes"
*           Time to Centroid       111.346    90.506     90.940     minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        101.37     1346.81    1448.18    c.m"
*           Rainfall losses        57.250     5.949      9.540      mm"
*           Runoff depth           20.193     71.493     67.902     mm"
*           Runoff volume          26.43      1243.34    1269.78    c.m"
*           Runoff coefficient     0.261      0.923      0.877      "
*           Maximum flow           0.012      0.826      0.832      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.832     0.832     0.048     1.569"
* 54        POND DESIGN"
*      0.832   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
*     1269.8   Hydrograph volume    c.m"
*         7.   Number of stages"
*      0.000   Minimum water level    metre"
*      1.800   Maximum water level    metre"
*      0.000   Starting water level    metre"
```



```
*          0   Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*           Peak outflow                  0.548    c.m/sec"
*           Maximum level                 1.694    metre"
*           Maximum storage             385.161    c.m"
*           Centroidal lag                1.872   hours"
*                0.832     0.832     0.548     1.569 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  2.116    c.m/sec"
*           Hydrograph volume          5436.226    c.m"
*                0.832     0.832     0.548     2.116"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.832     0.000     0.548     2.116"
* 33        CATCHMENT 182"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        182   Eastern portion of John Bear property"
*     69.000   % Impervious"
*      1.210   Total Area"
*     60.000   Flow length"
*      2.500   Overland Slope"
*      0.375   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      0.835   Impervious Area"
*     90.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     65.000   Pervious SCS Curve No."
*      0.262   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     13.677   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.912   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.387     0.000     0.548     2.116 c.m/sec"
*           Catchment 182          Pervious   Impervious Total Area "
*           Surface Area           0.375      0.835      1.210      hectare"
*           Time of concentration  14.132     3.181      4.430      minutes"
*           Time to Centroid       113.260    88.692     91.496     minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        290.49     646.57     937.06     c.m"
*           Rainfall losses        57.190     6.798      22.419     mm"
*           Runoff depth           20.253     70.645     55.023     mm"
*           Runoff volume          75.97      589.81     665.78     c.m"
*           Runoff coefficient     0.262      0.912      0.711      "
*           Maximum flow           0.032      0.382      0.387      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.387     0.387     0.548     2.116"
* 54        POND DESIGN"
*      0.387   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
```

```
*       665.8   Hydrograph volume    c.m"
*         5.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                 0.133    c.m/sec"
*            Maximum level                1.313    metre"
*            Maximum storage            374.697    c.m"
*            Centroidal lag               3.055    hours"
*                 0.387     0.387     0.133     2.116 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 2.183    c.m/sec"
*            Hydrograph volume         6098.461    c.m"
*                 0.387     0.387     0.133     2.183"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.387     0.000     0.133     2.183"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.303   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.926   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 3.473     0.000     0.133     2.183 c.m/sec"
*            Catchment 183          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  37.685     7.714      21.048     minutes"
*            Time to Centroid       141.218    94.989     115.557    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1.2806     0.5231     1.8036     ha-m"
*            Rainfall losses        53.971     5.749      39.987     mm"
*            Runoff depth           23.471     71.694     37.456     mm"
*            Runoff volume          3881.20    4842.30    8723.50    c.m"
*            Runoff coefficient     0.303      0.926      0.484      "
*            Maximum flow           0.908      3.308      3.473      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 3.473     3.473     0.133     2.183"
```



```
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 3.473     3.473     3.473     2.183"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 5.231    c.m/sec"
*            Hydrograph volume        14821.966    c.m"
*                 3.473     3.473     3.473     5.231"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                 5.518    c.m/sec"
*            Hydrograph volume        61813.508    c.m"
*                 3.473     5.518     3.473     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 3.473     5.518     5.518     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 8.454    c.m/sec"
*            Hydrograph volume        76635.461    c.m"
*                 3.473     5.518     5.518     8.454"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 3.473     0.000     5.518     8.454"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.384   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.312     0.000     5.518     8.454 c.m/sec"
*            Catchment 184          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  20.674     2.599      19.838     minutes"
*            Time to Centroid       119.645    87.828     118.173    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        2238.87    45.69      2284.56    c.m"
*            Rainfall losses        47.708     6.806      46.890     mm"
*            Runoff depth           29.735     70.637     30.553     mm"
*            Runoff volume          859.64     41.68      901.31     c.m"
*            Runoff coefficient     0.384      0.912      0.395      "
*            Maximum flow           0.306      0.028      0.312      c.m/sec"
```

```
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.312     0.312     5.518     8.454"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.312     0.312     0.312     8.454"
* 40          HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  8.686    c.m/sec"
*            Hydrograph volume         77536.797    c.m"
*                   0.312     0.312     0.312     8.686"
* 40          HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                  8.686    c.m/sec"
*            Hydrograph volume         77536.797    c.m"
*                   0.312     8.686     0.312     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.312     8.686     8.686     0.000"
* 40          HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                  8.686    c.m/sec"
*            Hydrograph volume         77536.797    c.m"
*                   0.312     8.686     8.686     8.686"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.312     0.000     8.686     8.686"
* 33          CATCHMENT 185"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         185   Morningside Retirement Community lands"
*       58.000  % Impervious"
*       18.780  Total Area"
*      190.000  Flow length"
*        2.000  Overland Slope"
*        7.888  Pervious Area"
*       25.000  Pervious length"
*        2.500  Pervious slope"
*       10.892  Impervious Area"
*      354.000  Impervious length"
*        2.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       64.400  Pervious SCS Curve No."
*        0.254  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*       14.041  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.921  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                   5.768     0.000     8.686     8.686 c.m/sec"
*             Catchment 185          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  13.582     6.766      7.900      minutes"
*             Time to Centroid       112.718    93.679     96.848     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        0.6108     0.8435     1.4544     ha-m"
*             Rainfall losses        57.769     6.109      27.806     mm"
*             Runoff depth           19.674     71.334     49.637     mm"
```



```
*             Runoff volume          1551.82    7769.97    9321.79    c.m"
*             Runoff coefficient     0.254      0.921      0.641      "
*             Maximum flow           0.670      5.424      5.768      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   5.768     5.768     8.686     8.686"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   5.768     5.768     5.768     8.686"
* 40          HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                 13.944    c.m/sec"
*            Hydrograph volume         86858.641    c.m"
*                   5.768     5.768     5.768    13.944"
* 81          ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ***********************************************************"
*             Catchments north of Hwy 7/8, towards Eastern Tributary"
*             ***********************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   5.768     0.000     5.768    13.944"
* 33          CATCHMENT 150"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         150   Southern portion of Rec Centre fields"
*       0.000   % Impervious"
*       3.510   Total Area"
*      95.000   Flow length"
*       1.600   Overland Slope"
*       3.510   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.384   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.311     0.000     5.768    13.944 c.m/sec"
*             Catchment 150          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  26.957     6.498      26.957     minutes"
*             Time to Centroid       127.483    93.327     127.483    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        2718.24    0.00       2718.24    c.m"
*             Rainfall losses        47.693     5.933      47.692     mm"
*             Runoff depth           29.750     71.509     29.750     mm"
*             Runoff volume          1044.23    0.00       1044.23    c.m"
*             Runoff coefficient     0.384      0.000      0.384      "
*             Maximum flow           0.311      0.000      0.311      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.311     0.311     5.768    13.944"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.311     0.311     0.311    13.944"
```

```
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.311    c.m/sec"
*            Hydrograph volume          1044.235    c.m"
*                   0.311     0.311     0.311     0.311"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.311     0.000     0.311     0.311"
* 33          CATCHMENT 151"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*      33.000   % Impervious"
*       5.770   Total Area"
*     100.000   Flow length"
*       2.000   Overland Slope"
*       3.866   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       1.904   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.415   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.923   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   1.027     0.000     0.311     0.311 c.m/sec"
*            Catchment 151          Pervious   Impervious Total Area "
*            Surface Area           3.866      1.904      5.770      hectare"
*            Time of concentration  25.922     6.498      15.770     minutes"
*            Time to Centroid       125.891    93.327     108.872    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        2993.86    1474.59    4468.45    c.m"
*            Rainfall losses        45.275     5.933      32.292     mm"
*            Runoff depth           32.168     71.509     45.150     mm"
*            Runoff volume          1243.57    1361.61    2605.18    c.m"
*            Runoff coefficient     0.415      0.923      0.583      "
*            Maximum flow           0.379      0.911      1.027      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.027     1.027     0.311     0.311"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.027     1.027     1.027     0.311"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.131    c.m/sec"
*            Hydrograph volume          3649.413    c.m"
*                   1.027     1.027     1.027     1.131"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.027     0.000     1.027     1.131"
* 33          CATCHMENT 152"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
```



```
*         152   Southern portion of Schneider lands"
*        5.000   % Impervious"
*        8.560   Total Area"
*      170.000   Flow length"
*        3.500   Overland Slope"
*        8.132   Pervious Area"
*      170.000   Pervious length"
*        3.500   Pervious slope"
*        0.428   Impervious Area"
*      170.000   Impervious length"
*        3.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.522   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.918   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    1.040     0.000     1.027     1.131 c.m/sec"
*             Catchment 152          Pervious   Impervious Total Area "
*             Surface Area           8.132      0.428      8.560      hectare"
*             Time of concentration  26.977     3.939      25.027     minutes"
*             Time to Centroid       126.332    89.786     123.239    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        6297.65    331.46     6629.10    c.m"
*             Rainfall losses        36.993     6.373      35.462     mm"
*             Runoff depth           40.449     71.070     41.980     mm"
*             Runoff volume          3289.34    304.18     3593.52    c.m"
*             Runoff coefficient     0.522      0.918      0.542      "
*             Maximum flow           1.001      0.199      1.040      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.040     1.040     1.027     1.131"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.040     1.040     1.040     1.131"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.969    c.m/sec"
*            Hydrograph volume          7242.929    c.m"
*                   1.040     1.040     1.040     1.969"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.040     0.000     1.040     1.969"
* 47          FILEI_O Read/Open DIV00007.050hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00007.050hyd"
*            Major flow at 7"
*            Total volume                  0.000    c.m"
*            Maximum flow                  0.000    c.m/sec"
*               0.000     0.000     1.040     1.969 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.000     0.000     1.040     1.969"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.000     0.000     0.000     1.969"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
```

```
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.969    c.m/sec"
*            Hydrograph volume          7242.930    c.m"
*                  0.000     0.000      0.000     1.969"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.969    c.m/sec"
*            Hydrograph volume          7242.930    c.m"
*                  0.000     1.969      0.000     0.000"
* 54         POND DESIGN"
*       1.969   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      7242.9   Hydrograph volume    c.m"
*         9.    Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   266.000"
*               333.500     1.168  1814.000"
*               334.000     2.325  4798.000"
*               334.500     3.132  9073.000"
*               335.000     3.780  14775.00"
*               335.500     4.332  22251.00"
*               335.750     4.583  26742.00"
*               336.000    21.985  31757.00"
*            Peak outflow                  1.290    c.m/sec"
*            Maximum level               333.553    metre"
*            Maximum storage            2129.068    c.m"
*            Centroidal lag                2.369   hours"
*                 0.000     1.969     1.290     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 0.000     1.290     1.290     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                  228.020    hectare"
*            Total Impervious area                  50.613    hectare"
*            Total % impervious                     22.197"
* 19         EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>"
*             MIDUSS version                              Version 2.25  rev. 473"
*             MIDUSS created                            Sunday, February 07, 2010"
*          10 Units used:                                              ie METRIC"
*             Job folder:                           Q:\34896\104\SWM\MIDUSS\Pre"
*             Output filename:                          34896-104_Pre-100yr.out"
*             Licensee name:                                              admin"
*             Company                                                  Microsoft"
*             Date & Time last used:                   12/7/2018 at 1:48:35 PM"
* 81          ADD COMMENT=============================================="
*           7 Lines of comment"
*             ******************************************"
*             Wilmot Employement Lands"
*             New Hamburg, Ontario"
*             100 year Storm Event - Pre-development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB/GMK"
*             ******************************************"
* 31          TIME PARAMETERS"
*        5.000  Time Step"
*      240.000  Max. Storm length"
*     1500.000  Max. Hydrograph"
* 32          STORM Chicago storm"
*           1  Chicago storm"
*     4688.000  Coefficient A"
*       17.000  Constant B"
*        0.962  Exponent C"
*        0.400  Fraction R"
*      180.000  Duration"
*        1.000  Time step multiplier"
*             Maximum intensity          239.650    mm/hr"
*             Total depth                 87.263    mm"
*           6  100hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT==================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 101"
*           1  Triangular SCS"
*           1  Equal length"
*           1  SCS method"
*         101  Area Northeast of GEXR"
*       0.000  % Impervious"
*       2.970  Total Area"
*      80.000  Flow length"
*       0.500  Overland Slope"
*       2.970  Pervious Area"
*      80.000  Pervious length"
*       0.500  Pervious slope"
*       0.000  Impervious Area"
*      80.000  Impervious length"
*       0.500  Impervious slope"
*       0.250  Pervious Manning 'n'"
*      82.000  Pervious SCS Curve No."
*       0.556  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*       5.576  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*      98.000  Impervious SCS Curve No."
*       0.000  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
*                0.431     0.000     0.000     0.000 c.m/sec"
*             Catchment 101          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  28.626     4.298      28.626     minutes"
```



```
*             Time to Centroid       127.786    89.937     127.786    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        2591.72    0.00       2591.72    c.m"
*             Rainfall losses        38.763     6.170      38.763     mm"
*             Runoff depth           48.500     81.093     48.500     mm"
*             Runoff volume          1440.46    0.00       1440.46    c.m"
*             Runoff coefficient     0.556      0.000      0.556      "
*             Maximum flow           0.431      0.000      0.431      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4  Add Runoff "
*                0.431     0.431     0.000     0.000"
* 33          CATCHMENT 102"
*           1  Triangular SCS"
*           1  Equal length"
*           1  SCS method"
*         102  Pfenning Farm Development - north of GEXR"
*       0.000  % Impervious"
*      12.070  Total Area"
*     180.000  Flow length"
*       2.500  Overland Slope"
*      12.070  Pervious Area"
*     180.000  Pervious length"
*       2.500  Pervious slope"
*       0.000  Impervious Area"
*     180.000  Impervious length"
*       2.500  Impervious slope"
*       0.250  Pervious Manning 'n'"
*      82.000  Pervious SCS Curve No."
*       0.556  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*       5.576  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*      98.000  Impervious SCS Curve No."
*       0.000  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
*                1.750     0.431     0.000     0.000 c.m/sec"
*             Catchment 102          Pervious   Impervious Total Area "
*             Surface Area           12.070     0.000      12.070     hectare"
*             Time of concentration  28.733     4.314      28.733     minutes"
*             Time to Centroid       127.923    89.959     127.923    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1.0533     0.0000     1.0533     ha-m"
*             Rainfall losses        38.762     6.163      38.762     mm"
*             Runoff depth           48.502     81.100     48.502     mm"
*             Runoff volume          5854.17    0.01       5854.18    c.m"
*             Runoff coefficient     0.556      0.000      0.556      "
*             Maximum flow           1.750      0.000      1.750      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4  Add Runoff "
*                1.750     2.181     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8  Copy to Outflow"
*                1.750     2.181     2.181     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6  Combine "
*           1  Node #"
*              u/s of GEXR"
*             Maximum flow                 2.181    c.m/sec"
*             Hydrograph volume         7294.638    c.m"
*                1.750     2.181     2.181     2.181"
* 40          HYDROGRAPH Start - New Tributary"
*           2  Start - New Tributary"
*                1.750     0.000     2.181     2.181"
* 33          CATCHMENT 103"
*           1  Triangular SCS"
*           1  Equal length"
```

```
*          1   SCS method"
*        103   Woodlot - north of GEXR"
*      0.000   % Impervious"
*      2.080   Total Area"
*     80.000   Flow length"
*      2.500   Overland Slope"
*      2.080   Pervious Area"
*     80.000   Pervious length"
*      2.500   Pervious slope"
*      0.000   Impervious Area"
*     80.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.361   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.228     0.000     2.181     2.181 c.m/sec"
*           Catchment 103          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  21.812     2.652      21.812     minutes"
*           Time to Centroid       120.953    87.600     120.953    minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        1815.08    0.00       1815.08    c.m"
*           Rainfall losses        55.802     7.109      55.802     mm"
*           Runoff depth           31.462     80.154     31.462     mm"
*           Runoff volume          654.40     0.00       654.40     c.m"
*           Runoff coefficient     0.361      0.000      0.361      "
*           Maximum flow           0.228      0.000      0.228      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.228     0.228     2.181     2.181"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.228     0.228     0.228     2.181"
* 40        HYDROGRAPH   Combine    1"
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 2.394    c.m/sec"
*           Hydrograph volume         7949.044    c.m"
*                0.228     0.228     0.228     2.394"
* 40        HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 2.394    c.m/sec"
*           Hydrograph volume         7949.044    c.m"
*                0.228     2.394     0.228     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.228     2.394     2.394     0.000"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                 2.394    c.m/sec"
*           Hydrograph volume         7949.044    c.m"
*                0.228     2.394     2.394     2.394"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.228     0.000     2.394     2.394"
```



```
* 81          ADD COMMENT==========================================================="
*            3  Lines of comment"
*               ************************************************"
*               Catchments South of GEXR, part of Inlet #1"
*               ************************************************"
* 33          CATCHMENT 104"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           104   Riverside Brass"
*        59.000   % Impervious"
*         2.020   Total Area"
*        35.000   Flow length"
*         1.200   Overland Slope"
*         0.828   Pervious Area"
*        60.000   Pervious length"
*         2.000   Pervious slope"
*         1.192   Impervious Area"
*       116.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.451   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.930   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.707     0.000     2.394     2.394 c.m/sec"
*              Catchment 104          Pervious   Impervious Total Area "
*              Surface Area           0.828      1.192      2.020      hectare"
*              Time of concentration  17.571     5.372      8.447      minutes"
*              Time to Centroid       114.679    91.434     97.293     minutes"
*              Rainfall depth         87.263     87.263     87.263     mm"
*              Rainfall volume        722.72     1040.01    1762.72    c.m"
*              Rainfall losses        47.922     6.142      23.272     mm"
*              Runoff depth           39.341     81.122     63.992     mm"
*              Runoff volume          325.82     966.81     1292.64    c.m"
*              Runoff coefficient     0.451      0.930      0.733      "
*              Maximum flow           0.129      0.647      0.707      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.707     0.707     2.394     2.394"
* 54           POND DESIGN"
*          0.707   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*        1292.6    Hydrograph volume    c.m"
*             4.   Number of stages"
*          0.000   Minimum water level    metre"
*          0.910   Maximum water level    metre"
*          0.000   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.3100   0.03090   782.000"
*                   0.6100    0.1232  1619.000"
*                   0.9100    0.2769  2511.000"
*              Peak outflow                   0.055    c.m/sec"
*              Maximum level                  0.389    metre"
*              Maximum storage             1002.651    c.m"
*              Centroidal lag                 8.024    hours"
*                   0.707     0.707     0.055     2.394 c.m/sec"
* 40           HYDROGRAPH   Combine    2"
*             6   Combine "
*             2   Node #"
```

```
*              INLET 1"
*            Maximum flow                  2.434    c.m/sec"
*            Hydrograph volume          9199.539    c.m"
*                  0.707     0.707     0.055     2.434"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.707     0.000     0.055     2.434"
* 33         CATCHMENT 105"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         105   Iron Bridge Manufacturing Property"
*      65.000   % Impervious"
*       3.570   Total Area"
*      90.000   Flow length"
*       2.000   Overland Slope"
*       1.250   Pervious Area"
*      90.000   Pervious length"
*       2.000   Pervious slope"
*       2.320   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.000   Pervious SCS Curve No."
*       0.537   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.958   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.918   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  1.234     0.000     0.055     2.434 c.m/sec"
*            Catchment 105          Pervious   Impervious Total Area *
*            Surface Area           1.250      2.320      3.570      hectare"
*            Time of concentration  20.599     3.043      7.252      minutes"
*            Time to Centroid       117.627    88.184     95.242     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1090.36    2024.95    3115.30    c.m"
*            Rainfall losses        40.380     7.190      18.807     mm"
*            Runoff depth           46.883     80.073     68.457     mm"
*            Runoff volume          585.81     1858.09    2443.90    c.m"
*            Runoff coefficient     0.537      0.918      0.784      "
*            Maximum flow           0.216      1.202      1.234      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.234     1.234     0.055     2.434"
* 33         CATCHMENT 106"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         106   N.C. Pestell Head Office and other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      55.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      55.000   Pervious length"
*       1.500   Pervious slope"
*       1.088   Impervious Area"
*      55.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.451   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
```



```
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.921   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.591     1.234     0.055     2.434 c.m/sec"
*            Catchment 106          Pervious   Impervious Total Area *
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  18.180     2.469      3.719      minutes"
*            Time to Centroid       115.452    87.314     89.553     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        167.55     949.43     1116.97    c.m"
*            Rainfall losses        47.911     6.904      13.055     mm"
*            Runoff depth           39.352     80.359     74.208     mm"
*            Runoff volume          75.56      874.31     949.87     c.m"
*            Runoff coefficient     0.451      0.921      0.850      "
*            Maximum flow           0.029      0.586      0.591      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.591     1.825     0.055     2.434"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.591     1.825     1.825     2.434"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  2.984    c.m/sec"
*            Hydrograph volume         12593.299    c.m"
*                  0.591     1.825     1.825     2.984"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.591     0.000     1.825     2.984"
* 33         CATCHMENT 107"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         107   Industrial properties at end of Hamilton Road"
*      40.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.710   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       1.140   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.450   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.919   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.647     0.000     1.825     2.984 c.m/sec"
*            Catchment 107          Pervious   Impervious Total Area *
*            Surface Area           1.710      1.140      2.850      hectare"
*            Time of concentration  19.391     2.633      9.732      minutes"
*            Time to Centroid       116.983    87.574     100.032    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1492.20    994.80     2487.01    c.m"
*            Rainfall losses        47.973     7.079      31.616     mm"
*            Runoff depth           39.290     80.185     55.648     mm"
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*            Runoff volume          671.86     914.10     1585.96    c.m"
*            Runoff coefficient     0.450      0.919      0.638      "
*            Maximum flow           0.249      0.609      0.647      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.647     0.647     1.825     2.984"
* 33         CATCHMENT 108"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         108   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.363   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.924   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.721     0.647     1.825     2.984 c.m/sec"
*            Catchment 108          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  18.161     2.217      16.280     minutes"
*            Time to Centroid       116.426    86.942     112.948    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        4907.70    258.30     5166.00    c.m"
*            Rainfall losses        55.550     6.662      53.106     mm"
*            Runoff depth           31.713     80.602     34.158     mm"
*            Runoff volume          1783.55    238.58     2022.13    c.m"
*            Runoff coefficient     0.363      0.924      0.391      "
*            Maximum flow           0.671      0.161      0.721      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.721     1.154     1.825     2.984"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.721     1.154     1.154     2.984"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 4.056    c.m/sec"
*            Hydrograph volume        16201.398    c.m"
*                 0.721     1.154     1.154     4.056"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.721     0.000     1.154     4.056"
* 33         CATCHMENT 109"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         109   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
```



```
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.434   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.931   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.370     0.000     1.154     4.056 c.m/sec"
*            Catchment 109          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  14.194     6.436      7.480      minutes"
*            Time to Centroid       110.640    92.886     95.275     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1206.42    3619.25    4825.67    c.m"
*            Rainfall losses        49.377     6.039      16.874     mm"
*            Runoff depth           37.887     81.224     70.390     mm"
*            Runoff volume          523.78     3368.77    3892.55    c.m"
*            Runoff coefficient     0.434      0.931      0.807      "
*            Maximum flow           0.238      2.237      2.370      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 2.370     2.370     1.154     4.056"
* 54         POND DESIGN"
*       2.370   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      3892.5   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*            Peak outflow                     0.403    c.m/sec"
*            Maximum level                    1.011    metre"
*            Maximum storage               2715.837    c.m"
*            Centroidal lag                   9.340    hours"
*                 2.370     2.370     0.403     4.056 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 4.299    c.m/sec"
*            Hydrograph volume        19713.098    c.m"
*                 2.370     2.370     0.403     4.299"
* 81         ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
```

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*             ***************************************************
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    2.370     0.000     0.403     4.299"
* 33          CATCHMENT 110"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          110   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.519   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.921   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.342     0.000     0.403     4.299 c.m/sec"
*             Catchment 110          Pervious   Impervious Total Area "
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  31.013     3.803      19.260     minutes"
*             Time to Centroid       131.131    89.275     113.050    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1172.82    502.64     1675.46    c.m"
*             Rainfall losses        41.950     6.859      31.423     mm"
*             Runoff depth           45.313     80.404     55.841     mm"
*             Runoff volume          609.01     463.13     1072.14    c.m"
*             Runoff coefficient     0.519      0.921      0.640      "
*             Maximum flow           0.169      0.297      0.342      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.342     0.342     0.403     4.299"
* 54          POND DESIGN"
*         0.342   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        1072.1   Hydrograph volume    c.m"
*           7.    Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.2500   0.04200     7.000"
*                  0.5000   0.09000    71.000"
*                  0.7500    0.1250   220.000"
*                  0.9000    0.1400   346.000"
*                   1.000    0.3110   445.000"
*                   1.100    0.6160   557.000"
*             Peak outflow                  0.141    c.m/sec"
*             Maximum level                 0.901    metre"
*             Maximum storage             346.549    c.m"
*             Centroidal lag                2.338    hours"
*                  0.342     0.342     0.141     4.299 c.m/sec"
* 40          HYDROGRAPH   Combine    3"
```



```
*            6   Combine "
*            3   Node #"
*                INLET 2"
*             Maximum flow                  0.141    c.m/sec"
*             Hydrograph volume          1072.464    c.m"
*                  0.342     0.342     0.141     0.141"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.342     0.000     0.141     0.141"
* 33          CATCHMENT 111"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          111   Woodlot north of Schneider/Good lands"
*        0.000   % Impervious"
*       13.230   Total Area"
*      170.000   Flow length"
*        2.400   Overland Slope"
*       13.230   Pervious Area"
*      170.000   Pervious length"
*        2.400   Pervious slope"
*        0.000   Impervious Area"
*      170.000   Impervious length"
*        2.400   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.000   Pervious SCS Curve No."
*        0.361   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.886   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.047     0.000     0.141     0.141 c.m/sec"
*             Catchment 111          Pervious   Impervious Total Area "
*             Surface Area           13.230     0.000      13.230     hectare"
*             Time of concentration  34.708     4.220      34.708     minutes"
*             Time to Centroid       136.800    89.831     136.800    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1.1545     0.0000     1.1545     ha-m"
*             Rainfall losses        55.800     6.208      55.800     mm"
*             Runoff depth           31.463     81.055     31.463     mm"
*             Runoff volume          4162.61    0.01       4162.62    c.m"
*             Runoff coefficient     0.361      0.000      0.361      "
*             Maximum flow           1.047      0.000      1.047      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  1.047     1.047     0.141     0.141"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  1.047     1.047     1.047     0.141"
* 40          HYDROGRAPH   Combine    3"
*            6   Combine "
*            3   Node #"
*                INLET 2"
*             Maximum flow                  1.183    c.m/sec"
*             Hydrograph volume          5235.080    c.m"
*                  1.047     1.047     1.047     1.183"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************"
*             South of GEXR along Nafziger Rd, part of Inlet #3"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  1.047     0.000     1.047     1.183"
```

```
* 33         CATCHMENT 112"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           112   Culivated lands east of Nafziger Road"
*         1.000   % Impervious"
*         7.310   Total Area"
*       120.000   Flow length"
*         3.300   Overland Slope"
*         7.237   Pervious Area"
*       120.000   Pervious length"
*         3.300   Pervious slope"
*         0.073   Impervious Area"
*       120.000   Impervious length"
*         3.300   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.556   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.918   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   1.306     0.000     1.047     1.183 c.m/sec"
*              Catchment 112          Pervious   Impervious Total Area "
*              Surface Area           7.237      0.073      7.310      hectare"
*              Time of concentration  20.728     3.112      20.439     minutes"
*              Time to Centroid       117.597    88.279     117.116    minutes"
*              Rainfall depth         87.263     87.263     87.263     mm"
*              Rainfall volume        6315.17    63.79      6378.96    c.m"
*              Rainfall losses        38.745     7.115      38.429     mm"
*              Runoff depth           48.518     80.148     48.834     mm"
*              Runoff volume          3511.20    58.59      3569.79    c.m"
*              Runoff coefficient     0.556      0.918      0.560      *
*              Maximum flow           1.297      0.038      1.306      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   1.306     1.306     1.047     1.183"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   1.306     1.306     1.306     1.183"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                    1.306    c.m/sec"
*              Hydrograph volume            3569.791    c.m"
*                   1.306     1.306     1.306     1.306"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   1.306     0.000     1.306     1.306"
* 33           CATCHMENT 113"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           113   Alpine Solutions - East SMWP"
*        40.000   % Impervious"
*         2.560   Total Area"
*       150.000   Flow length"
*         1.500   Overland Slope"
*         1.536   Pervious Area"
*       180.000   Pervious length"
*         1.500   Pervious slope"
*         1.024   Impervious Area"
*       131.000   Impervious length"
```



```
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        80.000   Pervious SCS Curve No."
*         0.519   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         6.350   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.928   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.581     0.000     1.306     1.306 c.m/sec"
*              Catchment 113          Pervious   Impervious Total Area "
*              Surface Area           1.536      1.024      2.560      hectare"
*              Time of concentration  34.599     4.156      18.044     minutes"
*              Time to Centroid       135.716    89.748     110.719    minutes"
*              Rainfall depth         87.263     87.263     87.263     mm"
*              Rainfall volume        1340.37    893.58     2233.94    c.m"
*              Rainfall losses        41.957     6.255      27.676     mm"
*              Runoff depth           45.306     81.008     59.587     mm"
*              Runoff volume          695.90     829.53     1525.43    c.m"
*              Runoff coefficient     0.519      0.928      0.683      *
*              Maximum flow           0.179      0.539      0.581      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.581     0.581     1.306     1.306"
* 54           POND DESIGN"
*         0.581   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*       1525.4   Hydrograph volume    c.m"
*           7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.000   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                    0.000     0.000     0.000"
*                   0.1000   0.02000     7.000"
*                   0.2500   0.04200    64.000"
*                   0.5000   0.09000   343.000"
*                   0.7500    0.1250   877.000"
*                   0.8000    0.1360  1014.000"
*                    1.000    0.7880  1667.000"
*              Peak outflow                    0.119    c.m/sec"
*              Maximum level                   0.709    metre"
*              Maximum storage               788.718    c.m"
*              Centroidal lag                  3.165    hours"
*                   0.581     0.581     0.119     1.306 c.m/sec"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                    1.410    c.m/sec"
*              Hydrograph volume            5095.293    c.m"
*                   0.581     0.581     0.119     1.410"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.581     0.000     0.119     1.410"
* 33           CATCHMENT 114"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           114   Woodlot East and West of Nafziger Road"
*         3.000   % Impervious"
*        13.460   Total Area"
*       140.000   Flow length"
*         3.600   Overland Slope"
```

```
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.362   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.920   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.266     0.000     0.119     1.410 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  27.300     3.326      25.554     minutes"
*            Time to Centroid       127.677    88.586     124.830    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1.1393     0.0352     1.1746     ha-m"
*            Rainfall losses        55.661     7.005      54.201     mm"
*            Runoff depth           31.603     80.258     33.062     mm"
*            Runoff volume          4126.11    324.08     4450.19    c.m"
*            Runoff coefficient     0.362      0.920      0.379      "
*            Maximum flow           1.226      0.206      1.266      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.266     1.266     0.119     1.410"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.266     1.266     1.266     1.410"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.638    c.m/sec"
*            Hydrograph volume          9545.471    c.m"
*                 1.266     1.266     1.266     2.638"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.266     0.000     1.266     2.638"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.574   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.930   Impervious Runoff coefficient"
```



```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.166     0.000     1.266     2.638 c.m/sec"
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  13.369     5.062      6.605      minutes"
*            Time to Centroid       107.903    91.005     94.142     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1166.28    3153.26    4319.54    c.m"
*            Rainfall losses        37.213     6.070      14.478     mm"
*            Runoff depth           50.051     81.193     72.785     mm"
*            Runoff volume          668.93     2933.93    3602.85    c.m"
*            Runoff coefficient     0.574      0.930      0.834      "
*            Maximum flow           0.315      1.953      2.166      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 2.166     2.166     1.266     2.638"
* 54         POND DESIGN"
*       2.166   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      3602.9   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00700   248.000"
*                0.2500   0.00900   418.000"
*                0.3500   0.01100   593.000"
*                0.4500   0.01300   775.000"
*                0.5500   0.01500   964.000"
*                0.6500   0.01600  1161.000"
*                0.7500   0.01700  1364.000"
*                0.8500   0.01900  1575.000"
*                0.9500   0.02000  1795.000"
*                 1.050   0.05600  2025.000"
*                 1.150    0.2080  2263.000"
*                 1.250    0.4600  2511.000"
*                 1.350     2.766  2768.000"
*                 1.450     6.856  3033.000"
*            Peak outflow                  0.427    c.m/sec"
*            Maximum level                 1.237    metre"
*            Maximum storage            2478.470    c.m"
*            Centroidal lag               12.276   hours"
*                 2.166     2.166     0.427     2.638 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.949    c.m/sec"
*            Hydrograph volume         12486.763    c.m"
*                 2.166     2.166     0.427     2.949"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 2.166     0.000     0.427     2.949"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
```

```
*      140.000   Pervious length"
*        1.600   Pervious slope"
*        2.698   Impervious Area"
*      140.000   Impervious length"
*        1.600   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.451   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.929   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                1.562     0.000     0.427     2.949 c.m/sec"
*             Catchment 116          Pervious   Impervious Total Area "
*             Surface Area           5.012      2.698      7.710      hectare"
*             Time of concentration  31.236     4.242      17.040     minutes"
*             Time to Centroid       131.908    89.859     109.795    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        4373.21    2354.80    6728.01    c.m"
*             Rainfall losses        47.912     6.197      33.312     mm"
*             Runoff depth           39.352     81.066     53.952     mm"
*             Runoff volume          1972.12    2187.57    4159.69    c.m"
*             Runoff coefficient     0.451      0.929      0.618      "
*             Maximum flow           0.539      1.425      1.562      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.562     1.562     0.427     2.949"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.562     1.562     1.562     2.949"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                  3.848    c.m/sec"
*               Hydrograph volume         16646.459    c.m"
*                   1.562     1.562     1.562     3.848"
* 40          HYDROGRAPH   Confluence    2"
*           7   Confluence "
*           2   Node #"
*               INLET 1"
*               Maximum flow                  4.299    c.m/sec"
*               Hydrograph volume         19713.098    c.m"
*                   1.562     4.299     1.562     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.562     4.299     4.299     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*               Maximum flow                  4.299    c.m/sec"
*               Hydrograph volume         19713.098    c.m"
*                   1.562     4.299     4.299     4.299"
* 40          HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*               Maximum flow                  1.183    c.m/sec"
*               Hydrograph volume          5235.080    c.m"
*                   1.562     1.183     4.299     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.562     1.183     1.183     0.000"
```



```
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*               Maximum flow                  5.435    c.m/sec"
*               Hydrograph volume         24948.180    c.m"
*                   1.562     1.183     1.183     5.435"
* 40          HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*               Maximum flow                  3.848    c.m/sec"
*               Hydrograph volume         16646.459    c.m"
*                   1.562     3.848     1.183     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.562     3.848     3.848     0.000"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*               Maximum flow                  9.184    c.m/sec"
*               Hydrograph volume         41594.637    c.m"
*                   1.562     3.848     3.848     9.184"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.562     0.000     3.848     9.184"
* 33          CATCHMENT 117"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         117   Cultivated Schneider central lands"
*       0.000   % Impervious"
*       7.450   Total Area"
*     140.000   Flow length"
*       2.000   Overland Slope"
*       7.450   Pervious Area"
*     140.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     140.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.400   Pervious SCS Curve No."
*       0.545   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.804   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                1.090     0.000     3.848     9.184 c.m/sec"
*             Catchment 117          Pervious   Impervious Total Area "
*             Surface Area           7.450      0.000      7.450      hectare"
*             Time of concentration  26.679     3.967      26.679     minutes"
*             Time to Centroid       125.368    89.504     125.368    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        6501.12    0.01       6501.13    c.m"
*             Rainfall losses        39.716     6.500      39.716     mm"
*             Runoff depth           47.548     80.764     47.548     mm"
*             Runoff volume          3542.31    0.01       3542.31    c.m"
*             Runoff coefficient     0.545      0.000      0.545      "
*             Maximum flow           1.090      0.000      1.090      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.090     1.090     3.848     9.184"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    1.090     1.090     1.090     9.184"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 10.274    c.m/sec"
*             Hydrograph volume          45136.914    c.m"
*                    1.090     1.090     1.090    10.274"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchments east of Hamilton Road, part of Inlet #4"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    1.090     0.000     1.090    10.274"
* 33          CATCHMENT 118"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          118   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.419   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.926   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.083     0.000     1.090    10.274 c.m/sec"
*             Catchment 118          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  13.831     1.813      11.893     minutes"
*             Time to Centroid       110.380    86.352     106.506    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        401.41     34.91      436.32     c.m"
*             Rainfall losses        50.709     6.442      47.168     mm"
*             Runoff depth           36.554     80.821     40.095     mm"
*             Runoff volume          168.15     32.33      200.48     c.m"
*             Runoff coefficient     0.419      0.926      0.459      "
*             Maximum flow           0.076      0.022      0.083      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.083     0.083     1.090    10.274"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.083     0.083     0.083    10.274"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 10.326    c.m/sec"
*             Hydrograph volume          45337.402    c.m"
```



```
*                    0.083     0.083     0.083    10.326"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.083     0.000     0.083    10.326"
* 33          CATCHMENT 119"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          119   Existing ROW from Hamilton Road"
*        0.000   % Impervious"
*        0.720   Total Area"
*       40.000   Flow length"
*        2.000   Overland Slope"
*        0.720   Pervious Area"
*       40.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*       40.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.450   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.130     0.000     0.083    10.326 c.m/sec"
*             Catchment 119          Pervious   Impervious Total Area "
*             Surface Area           0.720      0.000      0.720      hectare"
*             Time of concentration  13.776     1.871      13.776     minutes"
*             Time to Centroid       109.926    86.432     109.926    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        628.30     0.00       628.30     c.m"
*             Rainfall losses        47.971     6.470      47.971     mm"
*             Runoff depth           39.293     80.793     39.293     mm"
*             Runoff volume          282.91     0.00       282.91     c.m"
*             Runoff coefficient     0.450      0.000      0.450      "
*             Maximum flow           0.130      0.000      0.130      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.130     0.130     0.083    10.326"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.130     0.130     0.130    10.326"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 10.416    c.m/sec"
*             Hydrograph volume          45620.305    c.m"
*                    0.130     0.130     0.130    10.416"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchment to Inlet #5"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.130     0.000     0.130    10.416"
* 33          CATCHMENT 120"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          120   Rear yards from Hamilton Heights Subdivision"
```

```
*        5.000   % Impervious"
*        1.080   Total Area"
*       20.000   Flow length"
*        3.000   Overland Slope"
*        1.026   Pervious Area"
*       20.000   Pervious length"
*        3.000   Pervious slope"
*        0.054   Impervious Area"
*       20.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.450   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.913   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.248     0.000     0.130    10.416 c.m/sec"
*             Catchment 120          Pervious   Impervious Total Area "
*             Surface Area           1.026      0.054      1.080      hectare"
*             Time of concentration  8.048      1.093      7.376      minutes"
*             Time to Centroid       102.747    85.426     101.074    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        895.32     47.12      942.45     c.m"
*             Rainfall losses        48.019     7.569      45.997     mm"
*             Runoff depth           39.244     79.694     41.267     mm"
*             Runoff volume          402.64     43.03      445.68     c.m"
*             Runoff coefficient     0.450      0.913      0.473      "
*             Maximum flow           0.227      0.031      0.248      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.248     0.248     0.130    10.416"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.248     0.248     0.248    10.416"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                 10.537    c.m/sec"
*             Hydrograph volume         46065.977    c.m"
*                  0.248     0.248     0.248    10.537"
* 81          ADD COMMENT==========================================================="
*         3   Lines of comment"
*             ************************************************"
*             Good Lands"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.248     0.000     0.248    10.537"
* 33          CATCHMENT 121"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         121   Good Lands"
*       0.000   % Impervious"
*      43.240   Total Area"
*     230.000   Flow length"
*       2.800   Overland Slope"
*      43.240   Pervious Area"
*     230.000   Pervious length"
*       2.800   Pervious slope"
*       0.000   Impervious Area"
*     230.000   Impervious length"
```



```
*        2.800   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.556   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  5.669     0.000     0.248    10.537 c.m/sec"
*             Catchment 121          Pervious   Impervious Total Area "
*             Surface Area           43.240     0.000      43.240     hectare"
*             Time of concentration  32.173     4.831      32.173     minutes"
*             Time to Centroid       132.351    90.668     132.351    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        3.7733     0.0000     3.7733     ha-m"
*             Rainfall losses        38.746     5.976      38.746     mm"
*             Runoff depth           48.518     81.288     48.518     mm"
*             Runoff volume          2.0979     0.0000     2.0979     ha-m"
*             Runoff coefficient     0.556      0.000      0.556      "
*             Maximum flow           5.669      0.000      5.669      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  5.669     5.669     0.248    10.537"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  5.669     5.669     5.669    10.537"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                 16.161    c.m/sec"
*             Hydrograph volume         67045.117    c.m"
*                  5.669     5.669     5.669    16.161"
* 81          ADD COMMENT==========================================================="
*         3   Lines of comment"
*             ************************************************"
*             Catchments to Inlet #6"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  5.669     0.000     5.669    16.161"
* 33          CATCHMENT 160"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         160   Hamilton Heights Subdivision"
*      46.000   % Impervious"
*       8.160   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       4.406   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       3.754   Impervious Area"
*     232.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.450   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.932   Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.502     0.000     5.669    16.161 c.m/sec"
*            Catchment 160          Pervious   Impervious Total Area "
*            Surface Area           4.406      3.754      8.160      hectare"
*            Time of concentration  13.946     5.856      8.783      minutes"
*            Time to Centroid       110.138    92.108     98.631     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        3845.18    3275.52    7120.70    c.m"
*            Rainfall losses        47.979     5.905      28.625     mm"
*            Runoff depth           39.285     81.358     58.639     mm"
*            Runoff volume          1731.05    3053.86    4784.91    c.m"
*            Runoff coefficient     0.450      0.932      0.672      "
*            Maximum flow           0.791      2.041      2.502      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 2.502     2.502     5.669    16.161"
* 33         CATCHMENT 161"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        161   Klassen Bronze Property"
*     32.000   % Impervious"
*      2.350   Total Area"
*    100.000   Flow length"
*      2.500   Overland Slope"
*      1.598   Pervious Area"
*     50.000   Pervious length"
*      2.500   Pervious slope"
*      0.752   Impervious Area"
*    164.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.451   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.932   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.554     2.502     5.669    16.161 c.m/sec"
*            Catchment 161          Pervious   Impervious Total Area "
*            Surface Area           1.598      0.752      2.350      hectare"
*            Time of concentration  14.730     4.756      9.811      minutes"
*            Time to Centroid       111.127    90.555     100.982    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1394.47    656.22     2050.69    c.m"
*            Rainfall losses        47.948     5.974      34.517     mm"
*            Runoff depth           39.315     81.289     52.747     mm"
*            Runoff volume          628.25     611.30     1239.55    c.m"
*            Runoff coefficient     0.451      0.932      0.604      "
*            Maximum flow           0.284      0.404      0.554      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.554     3.056     5.669    16.161"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.554     3.056     3.056    16.161"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                17.396    c.m/sec"
*           Hydrograph volume        73069.609    c.m"
*                 0.554     3.056     3.056    17.396"
```



```
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             ************************************************"
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.554     0.000     3.056    17.396"
* 33         CATCHMENT 170"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        170   Industrial/Residential area along Hamilton Road"
*     55.000   % Impervious"
*      8.450   Total Area"
*     45.000   Flow length"
*      2.000   Overland Slope"
*      3.802   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      4.648   Impervious Area"
*    235.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.449   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.932   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 3.151     0.000     3.056    17.396 c.m/sec"
*            Catchment 170          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  10.265     5.901      7.135      minutes"
*            Time to Centroid       105.500    92.173     95.941     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        3318.19    4055.57    7373.76    c.m"
*            Rainfall losses        48.050     5.893      24.863     mm"
*            Runoff depth           39.214     81.371     62.400     mm"
*            Runoff volume          1491.10    3781.70    5272.79    c.m"
*            Runoff coefficient     0.449      0.932      0.715      "
*            Maximum flow           0.773      2.526      3.151      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 3.151     3.151     3.056    17.396"
* 56         DIVERSION"
*          6   Node number"
*      1.560   Overflow threshold"
*      1.000   Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow          1.591    c.m/sec"
*           Volume of diverted flow     1002.011    c.m"
*           DIV00006.100hyd"
*           Major flow at 6"
*                 3.151     3.151     1.560    17.396 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.560    c.m/sec"
*           Hydrograph volume          4270.783    c.m"
*                 3.151     3.151     1.560     1.560"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
```

```
*                    3.151     0.000     1.560     1.560"
* 47          FILEI_O Read/Open DIV00006.100hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*           DIV00006.100hyd"
*           Major flow at 6"
*           Total volume              1002.011    c.m"
*           Maximum flow                 1.591    c.m/sec"
*                1.591     0.000     1.560     1.560 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                1.591     1.591     1.560     1.560"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                1.591     1.591     1.591     1.560"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*           Maximum flow                17.396    c.m/sec"
*           Hydrograph volume         74071.625    c.m"
*                1.591     1.591     1.591    17.396"
* 40          HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*           Maximum flow                17.396    c.m/sec"
*           Hydrograph volume         74071.625    c.m"
*                1.591    17.396     1.591     0.000"
* 54          POND DESIGN"
*       17.396   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      74071.6   Hydrograph volume    c.m"
*           7.   Number of stages"
*      334.290   Minimum water level    metre"
*      336.800   Maximum water level    metre"
*      334.290   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               334.290     0.000     0.000"
*               334.500    0.2540     5.000"
*               335.000     1.303   390.000"
*               335.500     2.800  3269.000"
*               336.000     4.639  13030.00"
*               336.400     6.109  30065.00"
*               336.800    18.376  57257.00"
*           Peak outflow                 6.593    c.m/sec"
*           Maximum level              336.416    metre"
*           Maximum storage          31138.162    c.m"
*           Centroidal lag               3.469   hours"
*                1.591    17.396     6.593     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*           5   Next link "
*                1.591     6.593     6.593     0.000"
* 56          DIVERSION"
*           7   Node number"
*        7.170   Overflow threshold"
*        1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow        0.000    c.m/sec"
*           Volume of diverted flow      0.000    c.m"
*           DIV00007.100hyd"
*           Major flow at 7"
*                1.591     6.593     6.593     0.000 c.m/sec"
* 40          HYDROGRAPH   Combine    8"
*           6   Combine "
```



```
*           8   Node #"
*               NODE A"
*           Maximum flow                 6.593    c.m/sec"
*           Hydrograph volume        74062.672    c.m"
*                1.591     6.593     6.593     6.593"
* 81          ADD COMMENT==========================================================*
*         3   Lines of comment"
*           ****************************************************
*           Catchments South of Hwy 7/8"
*           ****************************************************
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                1.591     0.000     6.593     6.593"
* 33          CATCHMENT 180"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         180   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.499   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.919   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.205     0.000     6.593     6.593 c.m/sec"
*           Catchment 180          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  8.635      3.167      6.487      minutes"
*           Time to Centroid       102.727    88.360     97.085     minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        452.02     158.82     610.84     c.m"
*           Rainfall losses        43.691     7.069      34.169     mm"
*           Runoff depth           43.572     80.194     53.094     mm"
*           Runoff volume          225.71     145.95     371.66     c.m"
*           Runoff coefficient     0.499      0.919      0.608      "
*           Maximum flow           0.127      0.094      0.205      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.205     0.205     6.593     6.593"
* 54          POND DESIGN"
*       0.205   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       371.7   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
```

```
*              0.4500   0.00800    69.000"
*              0.6500   0.01000   178.000"
*              0.7000    0.1060   208.000"
*              0.7500    0.2810   240.000"
*           Peak outflow                  0.080    c.m/sec"
*           Maximum level                 0.687    metre"
*           Maximum storage             200.227    c.m"
*           Centroidal lag                3.907    hours"
*               0.205     0.205     0.080     6.593 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*         6   Combine "
*         9   Node #"
*             NODE B"
*           Maximum flow                  1.595    c.m/sec"
*           Hydrograph volume          4642.584    c.m"
*                0.205     0.205     0.080     1.595"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.205     0.000     0.080     1.595"
* 33        CATCHMENT 181"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       181   Western portion of John Bear property"
*    93.000   % Impervious"
*     1.870   Total Area"
*   120.000   Flow length"
*     1.000   Overland Slope"
*     0.131   Pervious Area"
*    20.000   Pervious length"
*     2.000   Pervious slope"
*     1.739   Impervious Area"
*   112.000   Impervious length"
*     1.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    65.000   Pervious SCS Curve No."
*     0.294   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    13.677   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.929   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.930     0.000     0.080     1.595 c.m/sec"
*           Catchment 181          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration  11.258     4.272      4.435      minutes"
*           Time to Centroid       108.968    89.899     90.343     minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        114.23     1517.60    1631.83    c.m"
*           Rainfall losses        61.569     6.185      10.062     mm"
*           Runoff depth           25.695     81.079     77.202     mm"
*           Runoff volume          33.63      1410.04    1443.68    c.m"
*           Runoff coefficient     0.294      0.929      0.885      "
*           Maximum flow           0.015      0.920      0.930      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.930     0.930     0.080     1.595"
* 54        POND DESIGN"
*     0.930   Current peak flow    c.m/sec"
*     0.070   Target outflow    c.m/sec"
*    1443.7   Hydrograph volume    c.m"
*       7.    Number of stages"
*     0.000   Minimum water level    metre"
*     1.800   Maximum water level    metre"
*     0.000   Starting water level    metre"
```



```
*         0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*               0.000     0.000     0.000"
*               0.3000   0.09000     8.000"
*               0.6000    0.1200    97.000"
*               0.9000    0.1300   167.000"
*                1.200    0.1400   254.000"
*                1.500    0.1500   358.000"
*                1.800     1.000   400.000"
*           Peak outflow                  0.827    c.m/sec"
*           Maximum level                 1.756    metre"
*           Maximum storage             393.788    c.m"
*           Centroidal lag                1.798    hours"
*               0.930     0.930     0.827     1.595 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*         6   Combine "
*         9   Node #"
*             NODE B"
*           Maximum flow                  2.396    c.m/sec"
*           Hydrograph volume          6143.625    c.m"
*                0.930     0.930     0.827     2.396"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.930     0.000     0.827     2.396"
* 33        CATCHMENT 182"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       182   Eastern portion of John Bear property"
*    69.000   % Impervious"
*     1.210   Total Area"
*    60.000   Flow length"
*     2.500   Overland Slope"
*     0.375   Pervious Area"
*    30.000   Pervious length"
*     3.000   Pervious slope"
*     0.835   Impervious Area"
*    90.000   Impervious length"
*     2.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    65.000   Pervious SCS Curve No."
*     0.294   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    13.677   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.918   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.440     0.000     0.827     2.396 c.m/sec"
*           Catchment 182          Pervious   Impervious Total Area "
*           Surface Area           0.375      0.835      1.210      hectare"
*           Time of concentration  12.714     3.043      4.260      minutes"
*           Time to Centroid       110.760    88.184     91.023     minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        327.33     728.56     1055.89    c.m"
*           Rainfall losses        61.626     7.190      24.065     mm"
*           Runoff depth           25.638     80.073     63.198     mm"
*           Runoff volume          96.17      668.53     764.70     c.m"
*           Runoff coefficient     0.294      0.918      0.724      "
*           Maximum flow           0.042      0.433      0.440      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.440     0.440     0.827     2.396"
* 54        POND DESIGN"
*     0.440   Current peak flow    c.m/sec"
*     0.070   Target outflow    c.m/sec"
```

```
*        764.7   Hydrograph volume     c.m"
*          5.    Number of stages"
*        0.000   Minimum water level    metre"
*        1.400   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3200   0.04300   276.000"
*                 0.7500   0.06600   333.000"
*                  1.300   0.08700   371.000"
*                  1.400    0.5000   400.000"
*              Peak outflow                 0.200    c.m/sec"
*              Maximum level                1.337    metre"
*              Maximum storage            381.694    c.m"
*              Centroidal lag               2.883   hours"
*                   0.440     0.440     0.200     2.396 c.m/sec"
* 40           HYDROGRAPH   Combine    9"
*             6   Combine "
*             9   Node #"
*                 NODE B"
*              Maximum flow                 2.448    c.m/sec"
*              Hydrograph volume         6910.331    c.m"
*                   0.440     0.440     0.200     2.448"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.440     0.000     0.200     2.448"
* 33           CATCHMENT 183"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           183   Area along western tributary, south of Hwy 7/8"
*        29.000   % Impervious"
*        23.290   Total Area"
*       160.000   Flow length"
*         2.000   Overland Slope"
*        16.536   Pervious Area"
*       150.000   Pervious length"
*         2.200   Pervious slope"
*         6.754   Impervious Area"
*       394.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        68.300   Pervious SCS Curve No."
*         0.337   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*        11.789   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.931   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   4.012     0.000     0.200     2.448 c.m/sec"
*                Catchment 183          Pervious   Impervious Total Area "
*                Surface Area           16.536     6.754      23.290     hectare"
*                Time of concentration  34.184     7.381      19.979     minutes"
*                Time to Centroid       136.252    94.189     113.960    minutes"
*                Rainfall depth         87.263     87.263     87.263     mm"
*                Rainfall volume        1.4430     0.5894     2.0324     ha-m"
*                Rainfall losses        57.821     5.992      42.791     mm"
*                Runoff depth           29.442     81.271     44.473     mm"
*                Runoff volume          0.4869     0.5489     1.0358     ha-m"
*                Runoff coefficient     0.337      0.931      0.510      "
*                Maximum flow           1.231      3.757      4.012      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   4.012     4.012     0.200     2.448"
```



```
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   4.012     4.012     4.012     2.448"
* 40           HYDROGRAPH   Combine    9"
*             6   Combine "
*             9   Node #"
*                 NODE B"
*              Maximum flow                 6.460    c.m/sec"
*              Hydrograph volume        17267.979    c.m"
*                   4.012     4.012     4.012     6.460"
* 40           HYDROGRAPH   Confluence    8"
*             7   Confluence "
*             8   Node #"
*                 NODE A"
*              Maximum flow                 6.593    c.m/sec"
*              Hydrograph volume        74062.672    c.m"
*                   4.012     6.593     4.012     0.000"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   4.012     6.593     6.593     0.000"
* 40           HYDROGRAPH   Combine    9"
*             6   Combine "
*             9   Node #"
*                 NODE B"
*              Maximum flow                 9.453    c.m/sec"
*              Hydrograph volume        91330.625    c.m"
*                   4.012     6.593     6.593     9.453"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   4.012     0.000     6.593     9.453"
* 33           CATCHMENT 184"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           184   Agricultural lands south of Bleams Road"
*         2.000   % Impervious"
*         2.950   Total Area"
*        80.000   Flow length"
*         3.100   Overland Slope"
*         2.891   Pervious Area"
*        80.000   Pervious length"
*         3.100   Pervious slope"
*         0.059   Impervious Area"
*        80.000   Impervious length"
*         3.100   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        74.000   Pervious SCS Curve No."
*         0.419   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.924   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.921   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.400     0.000     6.593     9.453 c.m/sec"
*                Catchment 184          Pervious   Impervious Total Area "
*                Surface Area           2.891      0.059      2.950      hectare"
*                Time of concentration  18.971     2.486      18.263     minutes"
*                Time to Centroid       116.786    87.343     115.522    minutes"
*                Rainfall depth         87.263     87.263     87.263     mm"
*                Rainfall volume        2522.79    51.49      2574.27    c.m"
*                Rainfall losses        50.707     6.917      49.832     mm"
*                Runoff depth           36.556     80.346     37.432     mm"
*                Runoff volume          1056.84    47.40      1104.24    c.m"
*                Runoff coefficient     0.419      0.921      0.429      "
*                Maximum flow           0.392      0.032      0.400      c.m/sec"
```

```
" 40          HYDROGRAPH Add Runoff "
"           4   Add Runoff "
                  0.400     0.400     6.593     9.453"
" 40          HYDROGRAPH Copy to Outflow"
"           8   Copy to Outflow"
                  0.400     0.400     0.400     9.453"
" 40          HYDROGRAPH   Combine    9"
"           6   Combine "
"           9   Node #"
"               NODE B"
"           Maximum flow                 9.780    c.m/sec"
"           Hydrograph volume         92434.875    c.m"
                  0.400     0.400     0.400     9.780"
" 40          HYDROGRAPH   Confluence    9"
"           7   Confluence "
"           9   Node #"
"               NODE B"
"           Maximum flow                 9.780    c.m/sec"
"           Hydrograph volume         92434.875    c.m"
                  0.400     9.780     0.400     0.000"
" 40          HYDROGRAPH Copy to Outflow"
"           8   Copy to Outflow"
                  0.400     9.780     9.780     0.000"
" 40          HYDROGRAPH   Combine    10"
"           6   Combine "
"          10   Node #"
"               NODE C"
"           Maximum flow                 9.780    c.m/sec"
"           Hydrograph volume         92434.875    c.m"
                  0.400     9.780     9.780     9.780"
" 40          HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
                  0.400     0.000     9.780     9.780"
" 33          CATCHMENT 185"
"           1   Triangular SCS"
"           3   Specify values"
"           1   SCS method"
"         185   Morningside Retirement Community lands"
"      58.000   % Impervious"
"      18.780   Total Area"
"     190.000   Flow length"
"       2.000   Overland Slope"
"       7.888   Pervious Area"
"      25.000   Pervious length"
"       2.500   Pervious slope"
"      10.892   Impervious Area"
"     354.000   Impervious length"
"       2.500   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      64.400   Pervious SCS Curve No."
"       0.287   Pervious Runoff coefficient"
"       0.100   Pervious Ia/S coefficient"
"      14.041   Pervious Initial abstraction"
"       0.015   Impervious Manning 'n'"
"      98.000   Impervious SCS Curve No."
"       0.931   Impervious Runoff coefficient"
"       0.100   Impervious Ia/S coefficient"
"       0.518   Impervious Initial abstraction"
                  6.412     0.000     9.780     9.780 c.m/sec"
            Catchment 185          Pervious   Impervious Total Area "
            Surface Area           7.888      10.892     18.780     hectare"
            Time of concentration  12.199     6.474      7.517      minutes"
            Time to Centroid       110.243    92.945     96.098     minutes"
            Rainfall depth         87.263     87.263     87.263     mm"
            Rainfall volume        0.6883     0.9505     1.6388     ha-m"
            Rainfall losses        62.261     6.045      29.656     mm"
            Runoff depth           25.003     81.219     57.608     mm"
```



```
            Runoff volume          0.1972     0.8847     1.0819     ha-m"
            Runoff coefficient     0.287      0.931      0.660      "
            Maximum flow           0.876      5.869      6.412      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"           4   Add Runoff "
                  6.412     6.412     9.780     9.780"
" 40          HYDROGRAPH Copy to Outflow"
"           8   Copy to Outflow"
                  6.412     6.412     6.412     9.780"
" 40          HYDROGRAPH   Combine    10"
"           6   Combine "
"          10   Node #"
"               NODE C"
"           Maximum flow                16.061    c.m/sec"
"           Hydrograph volume        103253.609    c.m"
                  6.412     6.412     6.412    16.061"
" 61          ADD COMMENT==========================================================="
"           3   Lines of comment"
                ****************************************************"
                Catchments north of Hwy 7/8, towards Eastern Tributary"
                ****************************************************"
" 40          HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
                  6.412     0.000     6.412    16.061"
" 33          CATCHMENT 150"
"           1   Triangular SCS"
"           3   Specify values"
"           1   SCS method"
"         150   Southern portion of Rec Centre fields"
"       0.000   % Impervious"
"       3.510   Total Area"
"      95.000   Flow length"
"       1.600   Overland Slope"
"       3.510   Pervious Area"
"     100.000   Pervious length"
"       2.000   Pervious slope"
"       0.000   Impervious Area"
"     296.000   Impervious length"
"       2.000   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      74.000   Pervious SCS Curve No."
"       0.419   Pervious Runoff coefficient"
"       0.100   Pervious Ia/S coefficient"
"       8.924   Pervious Initial abstraction"
"       0.015   Impervious Manning 'n'"
"      98.000   Impervious SCS Curve No."
"       0.000   Impervious Runoff coefficient"
"       0.100   Impervious Ia/S coefficient"
"       0.518   Impervious Initial abstraction"
                  0.409     0.000     6.412    16.061 c.m/sec"
            Catchment 150          Pervious   Impervious Total Area "
            Surface Area           3.510      0.000      3.510      hectare"
            Time of concentration  24.737     6.217      24.736     minutes"
            Time to Centroid       124.000    92.616     124.000    minutes"
            Rainfall depth         87.263     87.263     87.263     mm"
            Rainfall volume        3062.94    0.00       3062.95    c.m"
            Rainfall losses        50.668     5.932      50.668     mm"
            Runoff depth           36.595     81.331     36.595     mm"
            Runoff volume          1284.50    0.00       1284.50    c.m"
            Runoff coefficient     0.419      0.000      0.419      "
            Maximum flow           0.409      0.000      0.409      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"           4   Add Runoff "
                  0.409     0.409     6.412    16.061"
" 40          HYDROGRAPH Copy to Outflow"
"           8   Copy to Outflow"
                  0.409     0.409     0.409    16.061"
```

```
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.409    c.m/sec"
*            Hydrograph volume          1284.501    c.m"
*                   0.409     0.409     0.409     0.409"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.409     0.000     0.409     0.409"
* 33          CATCHMENT 151"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*       33.000   % Impervious"
*        5.770   Total Area"
*      100.000   Flow length"
*        2.000   Overland Slope"
*        3.866   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        1.904   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.451   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.932   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   1.199     0.000     0.409     0.409 c.m/sec"
*             Catchment 151          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  23.873     6.217      14.968     minutes"
*             Time to Centroid       122.633    92.616     107.493    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        3373.52    1661.58    5035.10    c.m"
*             Rainfall losses        47.899     5.932      34.050     mm"
*             Runoff depth           39.365     81.331     53.214     mm"
*             Runoff volume          1521.80    1548.62    3070.43    c.m"
*             Runoff coefficient     0.451      0.932      0.610      "
*             Maximum flow           0.501      1.031      1.199      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   1.199     1.199     0.409     0.409"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   1.199     1.199     1.199     0.409"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.347    c.m/sec"
*            Hydrograph volume          4354.928    c.m"
*                   1.199     1.199     1.199     1.347"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   1.199     0.000     1.199     1.347"
* 33          CATCHMENT 152"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
```



```
*          152   Southern portion of Schneider lands"
*        5.000   % Impervious"
*        8.560   Total Area"
*      170.000   Flow length"
*        3.500   Overland Slope"
*        8.132   Pervious Area"
*      170.000   Pervious length"
*        3.500   Pervious slope"
*        0.428   Impervious Area"
*      170.000   Impervious length"
*        3.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.556   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.920   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   1.328     0.000     1.199     1.347 c.m/sec"
*             Catchment 152          Pervious   Impervious Total Area "
*             Surface Area           8.132      0.428      8.560      hectare"
*             Time of concentration  25.099     3.769      23.388     minutes"
*             Time to Centroid       123.224    89.227     120.498    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        7096.26    373.49     7469.75    c.m"
*             Rainfall losses        38.780     6.942      37.188     mm"
*             Runoff depth           48.483     80.322     50.075     mm"
*             Runoff volume          3942.65    343.78     4286.43    c.m"
*             Runoff coefficient     0.556      0.920      0.574      "
*             Maximum flow           1.268      0.220      1.328      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   1.328     1.328     1.199     1.347"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   1.328     1.328     1.328     1.347"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                  2.529    c.m/sec"
*            Hydrograph volume          8641.354    c.m"
*                   1.328     1.328     1.328     2.529"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   1.328     0.000     1.328     2.529"
* 47          FILEI_O Read/Open DIV00007.100hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00007.100hyd"
*             Major flow at 7"
*             Total volume                  0.000    c.m"
*             Maximum flow                  0.000    c.m/sec"
*                0.000     0.000     1.328     2.529 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.000     0.000     1.328     2.529"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.000     0.000     0.000     2.529"
* 40          HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
```

```
*               u/s of east culvert of HWY 7&8"
*             Maximum flow                  2.529    c.m/sec"
*             Hydrograph volume          8641.354    c.m"
*                    0.000     0.000      0.000     2.529"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*               u/s of east culvert of HWY 7&8"
*             Maximum flow                  2.529    c.m/sec"
*             Hydrograph volume          8641.354    c.m"
*                    0.000     2.529      0.000     0.000"
* 54          POND DESIGN"
*        2.529   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       8641.4   Hydrograph volume    c.m"
*           9.   Number of stages"
*      332.660   Minimum water level    metre"
*      336.000   Maximum water level    metre"
*      332.660   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   266.000"
*               333.500     1.168  1814.000"
*               334.000     2.325  4798.000"
*               334.500     3.132  9073.000"
*               335.000     3.780  14775.00"
*               335.500     4.332  22251.00"
*               335.750     4.583  26742.00"
*               336.000    21.985  31757.00"
*             Peak outflow                  1.534    c.m/sec"
*             Maximum level               333.658    metre"
*             Maximum storage            2758.176    c.m"
*             Centroidal lag                2.359   hours"
*                  0.000     2.529     1.534     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                  0.000     1.534     1.534     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                  228.020    hectare"
*             Total Impervious area                  50.613    hectare"
*             Total % impervious                     22.197"
" 19          EXIT"
```

```
*             MIDUSS Output ------------------------------------------->"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*          10 Units used:                                        ie METRIC"
*             Job folder:                        Q:\34896\104\SWM\MIDUSS\Pre"
*             Output filename:                    34896-104_Pre-Regional.out"
*             Licensee name:                                          admin"
*             Company                                             Microsoft"
*             Date & Time last used:              12/7/2018 at 2:04:24 PM"
* 81          ADD COMMENT==========================================================="
*           7 Lines of comment"
*             ****************************************"
*             Wilmot Employement Lands"
*             New Hamburg, Ontario"
*             Regional Storm Event - Pre-development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB/GMK"
*             ****************************************"
* 31          TIME PARAMETERS"
*        5.000  Time Step"
*     2880.000  Max. Storm length"
*     5760.000  Max. Hydrograph"
* 32          STORM Mass Curve"
*           3   Mass Curve"
*      285.000  Rainfall depth"
*     2880.000  Duration"
*          38   Q:\TOOLS\SWM\Hazel entire 48 hours.mrd   Hurricane Hazel (entire 48 h)"
*             Maximum intensity           53.012    mm/hr"
*             Total depth                285.000    mm"
*           6   250hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ****************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ****************************************************"
* 33          CATCHMENT 101"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         101   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.817   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.442     0.000     0.000     0.000 c.m/sec"
*             Catchment 101          Pervious   Impervious Total Area *
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  42.907     7.809      42.907     minutes"
*             Time to Centroid       2494.869   2277.147   2494.868   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        8464.49    0.01       8464.50    c.m"
```



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*             Rainfall losses        52.081     6.444      52.081     mm"
*             Runoff depth           232.919    278.556    232.919    mm"
*             Runoff volume          6917.67    0.01       6917.68    c.m"
*             Runoff coefficient     0.817      0.000      0.817      *
*             Maximum flow           0.442      0.000      0.442      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.442     0.442     0.000     0.000"
* 33          CATCHMENT 102"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         102   Pfenning Farm Development - north of GEXR"
*       0.000   % Impervious"
*      12.070   Total Area"
*     180.000   Flow length"
*       2.500   Overland Slope"
*      12.070   Pervious Area"
*     180.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*     180.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.817   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.795     0.442     0.000     0.000 c.m/sec"
*             Catchment 102          Pervious   Impervious Total Area *
*             Surface Area           12.070     0.000      12.070     hectare"
*             Time of concentration  43.067     7.838      43.067     minutes"
*             Time to Centroid       2495.091   2277.173   2495.091   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        3.4399     0.0000     3.4399     ha-m"
*             Rainfall losses        52.082     6.395      52.082     mm"
*             Runoff depth           232.918    278.605    232.918    mm"
*             Runoff volume          2.8113     0.0000     2.8113     ha-m"
*             Runoff coefficient     0.817      0.000      0.817      *
*             Maximum flow           1.795      0.000      1.795      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.795     2.238     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.795     2.238     2.238     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                  2.238    c.m/sec"
*             Hydrograph volume         35030.832    c.m"
*                 1.795     2.238     2.238     2.238"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.795     0.000     2.238     2.238"
* 33          CATCHMENT 103"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         103   Woodlot - north of GEXR"
*       0.000   % Impervious"
```

```
*       2.080   Total Area"
*      80.000   Flow length"
*       2.500   Overland Slope"
*       2.080   Pervious Area"
*      80.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.688   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.285     0.000     2.238     2.238 c.m/sec"
*            Catchment 103          Pervious   Impervious Total Area "
*            Surface Area           2.080      0.000      2.080      hectare"
*            Time of concentration  27.287     4.818      27.287     minutes"
*            Time to Centroid       2546.806   2272.282   2546.806   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        5927.99    0.01       5928.00    c.m"
*            Rainfall losses        88.888     6.718      88.888     mm"
*            Runoff depth           196.112    278.282    196.112    mm"
*            Runoff volume          4079.13    0.01       4079.14    c.m"
*            Runoff coefficient     0.688      0.000      0.688      "
*            Maximum flow           0.285      0.000      0.285      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.285     0.285     2.238     2.238"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.285     0.285     0.285     2.238"
* 40         HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                 2.511    c.m/sec"
*            Hydrograph volume        39109.953    c.m"
*               0.285     0.285     0.285     2.511"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                 2.511    c.m/sec"
*            Hydrograph volume        39109.953    c.m"
*               0.285     2.511     0.285     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.285     2.511     2.511     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 2.511    c.m/sec"
*            Hydrograph volume        39109.953    c.m"
*               0.285     2.511     2.511     2.511"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.285     0.000     2.511     2.511"
* 81         ADD COMMENT==================================================="
*         3   Lines of comment"
*             ************************************************"
```



```
*             Catchments South of GEXR, part of Inlet #1"
*             ************************************************
* 33          CATCHMENT 104"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         104   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.753   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.976   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.291     0.000     2.511     2.511 c.m/sec"
*            Catchment 104          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  24.130     9.759      14.775     minutes"
*            Time to Centroid       2507.916   2278.793   2358.770   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2360.37    3396.63    5757.00    c.m"
*            Rainfall losses        70.315     6.777      32.828     mm"
*            Runoff depth           214.685    278.223    252.172    mm"
*            Runoff volume          1778.02    3315.86    5093.88    c.m"
*            Runoff coefficient     0.753      0.976      0.885      "
*            Maximum flow           0.119      0.184      0.291      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.291     0.291     2.511     2.511"
* 54         POND DESIGN"
*       0.291   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*     5093.9    Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*            Peak outflow                 0.172    c.m/sec"
*            Maximum level                0.706    metre"
*            Maximum storage           1904.559    c.m"
*            Centroidal lag              44.467   hours"
*               0.291     0.291     0.172     2.511 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 2.649    c.m/sec"
*            Hydrograph volume        44202.363    c.m"
```

```
*                  0.291     0.291     0.172     2.649"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.291     0.000     0.172     2.649"
* 33          CATCHMENT 105"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          105   Iron Bridge Manufacturing Property"
*       65.000   % Impervious"
*        3.570   Total Area"
*       90.000   Flow length"
*        2.000   Overland Slope"
*        1.250   Pervious Area"
*       90.000   Pervious length"
*        2.000   Pervious slope"
*        2.320   Impervious Area"
*       90.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       81.000   Pervious SCS Curve No."
*        0.806   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.958   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.973   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.527     0.000     0.172     2.649 c.m/sec"
*             Catchment 105          Pervious   Impervious Total Area *
*             Surface Area           1.250      2.320      3.570      hectare"
*             Time of concentration  30.438     5.529      13.215     minutes"
*             Time to Centroid       2484.011   2271.599   2337.139   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        0.3561     0.6613     1.0174     ha-m"
*             Rainfall losses        55.182     7.681      24.306     mm"
*             Runoff depth           229.818    277.319    260.694    mm"
*             Runoff volume          2871.57    6435.19    9306.77    c.m"
*             Runoff coefficient     0.806      0.973      0.915      "
*             Maximum flow           0.186      0.354      0.527      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.527     0.527     0.172     2.649"
* 33          CATCHMENT 106"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          106   N.C. Pestell Head Office and other Industrial"
*       85.000   % Impervious"
*        1.280   Total Area"
*       55.000   Flow length"
*        1.500   Overland Slope"
*        0.192   Pervious Area"
*       55.000   Pervious length"
*        1.500   Pervious slope"
*        1.088   Impervious Area"
*       55.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.753   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.974   Impervious Runoff coefficient"
```



```
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.186     0.527     0.172     2.649 c.m/sec"
*             Catchment 106          Pervious   Impervious Total Area "
*             Surface Area           0.192      1.088      1.280      hectare"
*             Time of concentration  24.967     4.485      6.943      minutes"
*             Time to Centroid       2508.820   2271.816   2300.254   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        547.20     3100.80    3648.00    c.m"
*             Rainfall losses        70.499     7.398      16.863     mm"
*             Runoff depth           214.501    277.602    268.137    mm"
*             Runoff volume          411.84     3020.31    3432.15    c.m"
*             Runoff coefficient     0.753      0.974      0.941      "
*             Maximum flow           0.028      0.161      0.186      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.186     0.713     0.172     2.649"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.186     0.713     0.713     2.649"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*                Maximum flow                 3.318    c.m/sec"
*                Hydrograph volume        56941.270    c.m"
*                  0.186     0.713     0.713     3.318"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.186     0.000     0.713     3.318"
* 33          CATCHMENT 107"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          107   Industrial properties at end of Hamilton Road"
*       40.000   % Impervious"
*        2.850   Total Area"
*       50.000   Flow length"
*        1.000   Overland Slope"
*        1.710   Pervious Area"
*       50.000   Pervious length"
*        1.000   Pervious slope"
*        1.140   Impervious Area"
*       50.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.753   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.976   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.413     0.000     0.713     3.318 c.m/sec"
*             Catchment 107          Pervious   Impervious Total Area *
*             Surface Area           1.710      1.140      2.850      hectare"
*             Time of concentration  26.629     4.784      16.502     minutes"
*             Time to Centroid       2511.443   2272.190   2400.531   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        4873.50    3249.00    8122.50    c.m"
*             Rainfall losses        70.314     6.701      44.869     mm"
*             Runoff depth           214.686    278.299    240.131    mm"
*             Runoff volume          3671.13    3172.61    6843.74    c.m"
*             Runoff coefficient     0.753      0.976      0.843      "
*             Maximum flow           0.246      0.171      0.413      c.m/sec"
```

```
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.413     0.413     0.713     3.318"
* 33          CATCHMENT 108"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          108   Woodlot and Wetland east of Pestells"
*        5.000   % Impervious"
*        5.920   Total Area"
*       65.000   Flow length"
*        3.000   Overland Slope"
*        5.624   Pervious Area"
*       65.000   Pervious length"
*        3.000   Pervious slope"
*        0.296   Impervious Area"
*       65.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.200   Pervious SCS Curve No."
*        0.690   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.782   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.966   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.810     0.413     0.713     3.318 c.m/sec"
*             Catchment 108          Pervious   Impervious Total Area "
*             Surface Area           5.624      0.296      5.920      hectare"
*             Time of concentration  22.793     4.027      21.505     minutes"
*             Time to Centroid       2539.290   2267.086   2520.600   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1.6028     0.0844     1.6872     ha-m"
*             Rainfall losses        88.411     9.617      84.471     mm"
*             Runoff depth           196.589    275.383    200.529    mm"
*             Runoff volume          1.1056     0.0815     1.1871     ha-m"
*             Runoff coefficient     0.690      0.966      0.704      "
*             Maximum flow           0.768      0.043      0.810      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.810     1.219     0.713     3.318"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.810     1.219     1.219     3.318"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  4.507    c.m/sec"
*             Hydrograph volume         75656.320    c.m"
*                    0.810     1.219     1.219     4.507"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.810     0.000     1.219     4.507"
* 33          CATCHMENT 109"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          109   N.C. Pestell site"
*       75.000   % Impervious"
*        5.530   Total Area"
*      130.000   Flow length"
*        2.000   Overland Slope"
*        1.383   Pervious Area"
*       50.000   Pervious length"
```



```
*        3.000   Pervious slope"
*        4.148   Impervious Area"
*      192.000   Impervious length"
*        0.750   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       75.000   Pervious SCS Curve No."
*        0.741   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.467   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.978   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.817     0.000     1.219     4.507 c.m/sec"
*             Catchment 109          Pervious   Impervious Total Area "
*             Surface Area           1.383      4.148      5.530      hectare"
*             Time of concentration  19.201     11.692     13.206     minutes"
*             Time to Centroid       2506.556   2282.697   2327.829   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        0.3940     1.1820     1.5761     ha-m"
*             Rainfall losses        73.774     6.180      23.078     mm"
*             Runoff depth           211.226    278.820    261.922    mm"
*             Runoff volume          0.2920     1.1564     1.4484     ha-m"
*             Runoff coefficient     0.741      0.978      0.919      "
*             Maximum flow           0.196      0.642      0.817      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.817     0.817     1.219     4.507"
* 54          POND DESIGN"
*        0.817   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      14484.3   Hydrograph volume    c.m"
*           9.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.200   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*             Peak outflow                  0.811    c.m/sec"
*             Maximum level                 1.125    metre"
*             Maximum storage            2876.116    c.m"
*             Centroidal lag               44.039    hours"
*                  0.817     0.817     0.811     4.507 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  5.303    c.m/sec"
*             Hydrograph volume         90041.180    c.m"
*                    0.817     0.817     0.811     5.303"
* 81          ADD COMMENT==================================================="
*            3   Lines of comment"
*                ************************************************
*                Catchments South of GEXR, part of Inlet #2"
*                ************************************************
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
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*                0.817     0.000     0.811     5.303"
* 33         CATCHMENT 110"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        110   Alpine Solutions - west SMWP"
*     30.000   % Impervious"
*      1.920   Total Area"
*    150.000   Flow length"
*      1.000   Overland Slope"
*      1.344   Pervious Area"
*    150.000   Pervious length"
*      1.500   Pervious slope"
*      0.576   Impervious Area"
*    113.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     80.000   Pervious SCS Curve No."
*      0.796   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.350   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.972   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.274     0.000     0.811     5.303 c.m/sec"
*           Catchment 110          Pervious   Impervious Total Area "
*           Surface Area           1.344      0.576      1.920      hectare"
*           Time of concentration  45.172     6.909      32.027     minutes"
*           Time to Centroid       2512.022   2273.901   2430.219   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        3830.40    1641.60    5472.00    c.m"
*           Rainfall losses        58.094     7.933      43.046     mm"
*           Runoff depth           226.906    277.067    241.954    mm"
*           Runoff volume          3049.62    1595.90    4645.52    c.m"
*           Runoff coefficient     0.796      0.972      0.849      "
*           Maximum flow           0.197      0.087      0.274      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.274     0.274     0.811     5.303"
* 54         POND DESIGN"
*       0.274   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      4645.5   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*           Peak outflow                  0.240    c.m/sec"
*           Maximum level                 0.959    metre"
*           Maximum storage             404.004    c.m"
*           Centroidal lag               40.792    hours"
*                0.274     0.274     0.240     5.303 c.m/sec"
* 40        HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
```



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*           Maximum flow                  0.240    c.m/sec"
*           Hydrograph volume          4644.540    c.m"
*                0.274     0.274     0.240     0.240"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.274     0.000     0.240     0.240"
* 33         CATCHMENT 111"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        111   Woodlot north of Schneider/Good lands"
*      0.000   % Impervious"
*     13.230   Total Area"
*    170.000   Flow length"
*      2.400   Overland Slope"
*     13.230   Pervious Area"
*    170.000   Pervious length"
*      2.400   Pervious slope"
*      0.000   Impervious Area"
*    170.000   Impervious length"
*      2.400   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.688   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                1.805     0.000     0.240     0.240 c.m/sec"
*           Catchment 111          Pervious   Impervious Total Area "
*           Surface Area           13.230     0.000      13.230     hectare"
*           Time of concentration  43.420     7.667      43.420     minutes"
*           Time to Centroid       2569.298   2276.816   2569.298   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        3.7705     0.0000     3.7705     ha-m"
*           Rainfall losses        88.871     6.688      88.871     mm"
*           Runoff depth           196.129    278.312    196.129    mm"
*           Runoff volume          2.5948     0.0000     2.5948     ha-m"
*           Runoff coefficient     0.688      0.000      0.688      "
*           Maximum flow           1.805      0.000      1.805      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                1.805     1.805     0.240     0.240"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                1.805     1.805     1.805     0.240"
* 40        HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  2.023    c.m/sec"
*           Hydrograph volume         30592.369    c.m"
*                1.805     1.805     1.805     2.023"
* 81        ADD COMMENT==========================================================="
*          3   Lines of comment"
*              ************************************************"
*              South of GEXR along Nafziger Rd, part of Inlet #3"
*              ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                1.805     0.000     1.805     2.023"
* 33         CATCHMENT 112"
*          1   Triangular SCS"
*          1   Equal length"
```

```
*          1   SCS method"
*        112   Culivated lands east of Nafziger Road"
*      1.000   % Impervious"
*      7.310   Total Area"
*    120.000   Flow length"
*      3.300   Overland Slope"
*      7.237   Pervious Area"
*    120.000   Pervious length"
*      3.300   Pervious slope"
*      0.073   Impervious Area"
*    120.000   Impervious length"
*      3.300   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     82.000   Pervious SCS Curve No."
*      0.817   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      5.576   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.972   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                1.097     0.000     1.805     2.023 c.m/sec"
*           Catchment 112          Pervious   Impervious Total Area "
*           Surface Area           7.237      0.073      7.310      hectare"
*           Time of concentration  31.069     5.654      30.767     minutes"
*           Time to Centroid       2477.782   2271.151   2475.328   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        2.0625     0.0208     2.0833     ha-m"
*           Rainfall losses        52.223     8.092      51.781     mm"
*           Runoff depth           232.777    276.908    233.219    mm"
*           Runoff volume          1.6846     0.0202     1.7048     ha-m"
*           Runoff coefficient     0.817      0.972      0.818      "
*           Maximum flow           1.086      0.011      1.097      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                1.097     1.097     1.805     2.023"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                1.097     1.097     1.097     2.023"
* 40        HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  1.097    c.m/sec"
*           Hydrograph volume         17048.285    c.m"
*                1.097     1.097     1.097     1.097"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                1.097     0.000     1.097     1.097"
* 33        CATCHMENT 113"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        113   Alpine Solutions - East SWMP"
*     40.000   % Impervious"
*      2.560   Total Area"
*    150.000   Flow length"
*      1.500   Overland Slope"
*      1.536   Pervious Area"
*    180.000   Pervious length"
*      1.500   Pervious slope"
*      1.024   Impervious Area"
*    131.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     80.000   Pervious SCS Curve No."
```



```
*      0.796   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.350   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.976   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.362     0.000     1.097     1.097 c.m/sec"
*           Catchment 113          Pervious   Impervious Total Area "
*           Surface Area           1.536      1.024      2.560      hectare"
*           Time of concentration  50.393     7.550      31.125     minutes"
*           Time to Centroid       2519.385   2276.079   2409.962   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        4377.60    2918.40    7296.00    c.m"
*           Rainfall losses        58.154     6.895      37.650     mm"
*           Runoff depth           226.846    278.105    247.350    mm"
*           Runoff volume          3484.36    2847.79    6332.15    c.m"
*           Runoff coefficient     0.796      0.976      0.868      "
*           Maximum flow           0.220      0.154      0.362      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.362     0.362     1.097     1.097"
* 54        POND DESIGN"
*      0.362   Current peak flow    c.m/sec"
*      0.070   Target outflow    c.m/sec"
*     6332.2   Hydrograph volume    c.m"
*         7.   Number of stages"
*      0.000   Minimum water level    metre"
*      1.000   Maximum water level    metre"
*      0.000   Starting water level    metre"
*          0   Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                0.000     0.000     0.000"
*               0.1000   0.02000     7.000"
*               0.2500   0.04200    64.000"
*               0.5000   0.09000   343.000"
*               0.7500    0.1250   877.000"
*               0.8000    0.1360  1014.000"
*                1.000    0.7880  1667.000"
*           Peak outflow                    0.289    c.m/sec"
*           Maximum level                   0.847    metre"
*           Maximum storage              1168.009    c.m"
*           Centroidal lag                 41.204   hours"
*                0.362     0.362     0.289     1.097 c.m/sec"
* 40        HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  1.226    c.m/sec"
*           Hydrograph volume         23380.988    c.m"
*                0.362     0.362     0.289     1.226"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.362     0.000     0.289     1.226"
* 33        CATCHMENT 114"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        114   Woodlot East and West of Nafziger Road"
*      3.000   % Impervious"
*     13.460   Total Area"
*    140.000   Flow length"
*      3.600   Overland Slope"
*     13.056   Pervious Area"
*    140.000   Pervious length"
*      3.600   Pervious slope"
```

```
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.689   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.972   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.868     0.000     0.289     1.226 c.m/sec"
*            Catchment 114          Pervious   Impervious Total Area *
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  34.208     6.042      33.031     minutes"
*            Time to Centroid       2555.880   2272.527   2544.038   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        3.7210     0.1151     3.8361     ha-m"
*            Rainfall losses        88.597     8.043      86.181     mm"
*            Runoff depth           196.403    276.957    198.819    mm"
*            Runoff volume          2.5643     0.1118     2.6761     ha-m"
*            Runoff coefficient     0.689      0.972      0.698      *
*            Maximum flow           1.809      0.062      1.868      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.868     1.868     0.289     1.226"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.868     1.868     1.868     1.226"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  3.082    c.m/sec"
*            Hydrograph volume         50142.059    c.m"
*                 1.868     1.868     1.868     3.082"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.868     0.000     1.868     3.082"
* 33         CATCHMENT 115"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         115   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.827   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.975   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.728     0.000     1.868     3.082 c.m/sec"
```



```
*            Catchment 115          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  20.324     9.197      11.855     minutes"
*            Time to Centroid       2455.064   2277.819   2320.160   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        0.3809     1.0298     1.4107     ha-m"
*            Rainfall losses        49.235     7.174      18.531     mm"
*            Runoff depth           235.765    277.826    266.469    mm"
*            Runoff volume          0.3151     1.0039     1.3190     ha-m"
*            Runoff coefficient     0.827      0.975      0.935      *
*            Maximum flow           0.199      0.558      0.728      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.728     0.728     1.868     3.082"
* 54         POND DESIGN"
*        0.728   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*     13190.2   Hydrograph volume    c.m"
*          15.  Number of stages"
*        0.000   Minimum water level    metre"
*        1.450   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1500   0.00700   248.000"
*                  0.2500   0.00900   418.000"
*                  0.3500   0.01100   593.000"
*                  0.4500   0.01300   775.000"
*                  0.5500   0.01500   964.000"
*                  0.6500   0.01600  1161.000"
*                  0.7500   0.01700  1364.000"
*                  0.8500   0.01900  1575.000"
*                  0.9500   0.02000  1795.000"
*                   1.050   0.05600  2025.000"
*                   1.150    0.2080  2263.000"
*                   1.250    0.4600  2511.000"
*                   1.350     2.766  2768.000"
*                   1.450     6.856  3033.000"
*            Peak outflow                  0.727    c.m/sec"
*            Maximum level                 1.262    metre"
*            Maximum storage            2540.762    c.m"
*            Centroidal lag               45.309    hours"
*                 0.728     0.728     0.727     3.082 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  3.800    c.m/sec"
*            Hydrograph volume         63275.117    c.m"
*                   0.728     0.728     0.727     3.800"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.728     0.000     0.727     3.800"
* 33         CATCHMENT 116"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         116   Industrial lands west of Nafziger Road"
*      35.000   % Impervious"
*       7.710   Total Area"
*     140.000   Flow length"
*       1.600   Overland Slope"
*       5.012   Pervious Area"
*     140.000   Pervious length"
*       1.600   Pervious slope"
*       2.698   Impervious Area"
```

```
*     140.000   Impervious length"
*       1.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.754   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.977   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               1.106     0.000     0.727     3.800 c.m/sec"
*            Catchment 116          Pervious   Impervious Total Area "
*            Surface Area           5.012      2.698      7.710      hectare"
*            Time of concentration  42.896     7.706      28.431     minutes"
*            Time to Centroid       2534.450   2276.989   2428.618   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1.4283     0.7691     2.1974     ha-m"
*            Rainfall losses        70.243     6.632      47.979     mm"
*            Runoff depth           214.757    278.368    237.021    mm"
*            Runoff volume          1.0763     0.7512     1.8274     ha-m"
*            Runoff coefficient     0.754      0.977      0.832      "
*            Maximum flow           0.719      0.408      1.106      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               1.106     1.106     0.727     3.800"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.106     1.106     1.106     3.800"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                 4.902    c.m/sec"
*            Hydrograph volume        81549.648    c.m"
*               1.106     1.106     1.106     4.902"
* 40         HYDROGRAPH   Confluence    2"
*           7   Confluence "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 5.303    c.m/sec"
*            Hydrograph volume        90041.164    c.m"
*               1.106     5.303     1.106     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.106     5.303     5.303     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 5.303    c.m/sec"
*            Hydrograph volume        90041.164    c.m"
*               1.106     5.303     5.303     5.303"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                 2.023    c.m/sec"
*            Hydrograph volume        30592.369    c.m"
*               1.106     2.023     5.303     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.106     2.023     2.023     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
```



```
*               u/s of HWY 7&8"
*            Maximum flow                 7.208    c.m/sec"
*            Hydrograph volume       120633.516    c.m"
*               1.106     2.023     2.023     7.208"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                 4.902    c.m/sec"
*            Hydrograph volume        81549.648    c.m"
*               1.106     4.902     2.023     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.106     4.902     4.902     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                12.109    c.m/sec"
*            Hydrograph volume       202182.938    c.m"
*               1.106     4.902     4.902    12.109"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               1.106     0.000     4.902    12.109"
* 33         CATCHMENT 117"
*           1   Triangular SCS'
*           1   Equal length"
*           1   SCS method"
*         117   Cultivated Schneider central lands"
*       0.000   % Impervious"
*       7.450   Total Area"
*     140.000   Flow length"
*       2.000   Overland Slope"
*       7.450   Pervious Area"
*     140.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*     140.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      81.400   Pervious SCS Curve No."
*       0.811   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.804   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               1.114     0.000     4.902    12.109 c.m/sec"
*            Catchment 117          Pervious   Impervious Total Area "
*            Surface Area           7.450      0.000      7.450      hectare"
*            Time of concentration  39.647     7.207      39.647     minutes"
*            Time to Centroid       2494.457   2274.493   2494.457   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2.1232     0.0000     2.1233     ha-m"
*            Rainfall losses        53.900     7.352      53.899     mm"
*            Runoff depth           231.100    277.648    231.101    mm"
*            Runoff volume          1.7217     0.0000     1.7217     ha-m"
*            Runoff coefficient     0.811      0.000      0.811      "
*            Maximum flow           1.114      0.000      1.114      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               1.114     1.114     4.902    12.109"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.114     1.114     1.114    12.109"
```

```
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 13.217    c.m/sec"
*            Hydrograph volume         219399.969    c.m"
*                  1.114     1.114     1.114    13.217"
* 81          ADD COMMENT================================================="
*          3  Lines of comment"
*             **************************************************"
*             Catchments east of Hamilton Road, part of Inlet #4"
*             **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.114     0.000     1.114    13.217"
* 33          CATCHMENT 118"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         118   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.731   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.962   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.070     0.000     1.114    13.217 c.m/sec"
*              Catchment 118          Pervious   Impervious Total Area "
*              Surface Area           0.460      0.040      0.500      hectare"
*              Time of concentration  18.427     3.293      16.873     minutes"
*              Time to Centroid       2511.791   2263.920   2486.343   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        1311.00    114.00     1425.00    c.m"
*              Rainfall losses        76.545     10.723     71.280     mm"
*              Runoff depth           208.455    274.277    213.720    mm"
*              Runoff volume          958.89     109.71     1068.60    c.m"
*              Runoff coefficient     0.731      0.962      0.750      "
*              Maximum flow           0.065      0.006      0.070      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.070     0.070     1.114    13.217"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.070     0.070     0.070    13.217"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 13.284    c.m/sec"
*            Hydrograph volume         220468.594    c.m"
*                  0.070     0.070     0.070    13.284"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
```



```
*                 0.070     0.000     0.070    13.284"
* 33          CATCHMENT 119"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         119   Existing ROW from Hamilton Road"
*       0.000   % Impervious"
*       0.720   Total Area"
*      40.000   Flow length"
*       2.000   Overland Slope"
*       0.720   Pervious Area"
*      40.000   Pervious length"
*       2.000   Pervious slope"
*       0.000   Impervious Area"
*      40.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.752   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.103     0.000     0.070    13.284 c.m/sec"
*              Catchment 119          Pervious   Impervious Total Area "
*              Surface Area           0.720      0.000      0.720      hectare"
*              Time of concentration  18.919     3.399      18.919     minutes"
*              Time to Centroid       2500.229   2264.844   2500.229   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        2052.00    0.00       2052.00    c.m"
*              Rainfall losses        70.590     11.084     70.590     mm"
*              Runoff depth           214.410    273.916    214.410    mm"
*              Runoff volume          1543.75    0.00       1543.75    c.m"
*              Runoff coefficient     0.752      0.000      0.752      "
*              Maximum flow           0.103      0.000      0.103      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.103     0.103     0.070    13.284"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.103     0.103     0.103    13.284"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 13.382    c.m/sec"
*            Hydrograph volume         222012.359    c.m"
*                  0.103     0.103     0.103    13.382"
* 81          ADD COMMENT================================================="
*          3  Lines of comment"
*             **************************************************"
*             Catchment to Inlet #5"
*             **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.103     0.000     0.103    13.382"
* 33          CATCHMENT 120"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         120   Rear yards from Hamilton Heights Subdivision"
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
```

```
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.751   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.962   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.152     0.000     0.103    13.382 c.m/sec"
*            Catchment 120          Pervious   Impervious Total Area "
*            Surface Area           1.026      0.054      1.080      hectare"
*            Time of concentration  11.052     1.986      10.480     minutes"
*            Time to Centroid       2488.823   2266.183   2474.766   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2924.10    153.90     3078.00    c.m"
*            Rainfall losses        70.882     10.824     67.879     mm"
*            Runoff depth           214.118    274.176    217.121    mm"
*            Runoff volume          2196.85    148.05     2344.91    c.m"
*            Runoff coefficient     0.751      0.962      0.762      "
*            Maximum flow           0.144      0.008      0.152      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   0.152     0.152     0.103    13.382"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   0.152     0.152     0.152    13.382"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                 13.530    c.m/sec"
*           Hydrograph volume        224357.266    c.m"
*                   0.152     0.152     0.152    13.530"
* 81         ADD COMMENT==========================================="
*        3  Lines of comment"
*           ************************************************"
*           Good Lands"
*           ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                   0.152     0.000     0.152    13.530"
* 33         CATCHMENT 121"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        121   Good Lands"
*      0.000   % Impervious"
*     43.240   Total Area"
*    230.000   Flow length"
*      2.800   Overland Slope"
*     43.240   Pervious Area"
*    230.000   Pervious length"
*      2.800   Pervious slope"
*      0.000   Impervious Area"
*    230.000   Impervious length"
*      2.800   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     82.000   Pervious SCS Curve No."
```



```
*       0.817   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   6.329     0.000     0.152    13.530 c.m/sec"
*            Catchment 121          Pervious   Impervious Total Area "
*            Surface Area           43.240     0.000      43.240     hectare"
*            Time of concentration  48.223     8.776      48.223     minutes"
*            Time to Centroid       2502.464   2277.522   2502.464   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        12.3234    0.0000     12.3234    ha-m"
*            Rainfall losses        52.089     6.693      52.089     mm"
*            Runoff depth           232.911    278.307    232.911    mm"
*            Runoff volume          10.0710    0.0000     10.0711    ha-m"
*            Runoff coefficient     0.817      0.000      0.817      "
*            Maximum flow           6.329      0.000      6.329      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   6.329     6.329     0.152    13.530"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   6.329     6.329     6.329    13.530"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                 19.719    c.m/sec"
*           Hydrograph volume        325067.875    c.m"
*                   6.329     6.329     6.329    19.719"
* 81         ADD COMMENT==========================================="
*        3  Lines of comment"
*           ************************************************"
*           Catchments to Inlet #6"
*           ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                   6.329     0.000     6.329    19.719"
* 33         CATCHMENT 160"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        160   Hamilton Heights Subdivision"
*     46.000   % Impervious"
*      8.160   Total Area"
*     50.000   Flow length"
*      1.000   Overland Slope"
*      4.406   Pervious Area"
*     50.000   Pervious length"
*      3.000   Pervious slope"
*      3.754   Impervious Area"
*    232.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.752   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.978   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                  1.180     0.000     6.329    19.719 c.m/sec"
```

```
*           Catchment 160          Pervious   Impervious Total Area "
*           Surface Area           4.406      3.754      8.160      hectare"
*           Time of concentration  19.152     10.638     14.677     minutes"
*           Time to Centroid       2500.401   2280.953   2385.057   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        1.2558     1.0698     2.3256     ha-m"
*           Rainfall losses        70.711     6.284      41.075     mm"
*           Runoff depth           214.289    278.716    243.925    mm"
*           Runoff volume          0.9442     1.0462     1.9904     ha-m"
*           Runoff coefficient     0.752      0.978      0.856      "
*           Maximum flow           0.630      0.575      1.180      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                1.180     1.180     6.329     19.719"
* 33        CATCHMENT 161"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       161   Klassen Bronze Property"
*    32.000   % Impervious"
*     2.350   Total Area"
*   100.000   Flow length"
*     2.500   Overland Slope"
*     1.598   Pervious Area"
*    50.000   Pervious length"
*     2.500   Pervious slope"
*     0.752   Impervious Area"
*   164.000   Impervious length"
*     1.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.753   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.976   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.338     1.180     6.329     19.719 c.m/sec"
*           Catchment 161          Pervious   Impervious Total Area "
*           Surface Area           1.598      0.752      2.350      hectare"
*           Time of concentration  20.229     8.640      15.837     minutes"
*           Time to Centroid       2502.276   2277.514   2417.098   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        4554.30    2143.20    6697.50    c.m"
*           Rainfall losses        70.406     6.727      50.029     mm"
*           Runoff depth           214.594    278.273    234.971    mm"
*           Runoff volume          3429.21    2092.61    5521.83    c.m"
*           Runoff coefficient     0.753      0.976      0.824      "
*           Maximum flow           0.228      0.116      0.338      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.338     1.518     6.329     19.719"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.338     1.518     1.518     19.719"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                21.146    c.m/sec"
*           Hydrograph volume        350493.969   c.m"
*                0.338     1.518     1.518     21.146"
* 81        ADD COMMENT==========================================================="
*         3   Lines of comment"
*             ************************************************************"
```



```
*           Western catchment along Hamilton Road, diverted to Inlet #6"
*           ************************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.338     0.000     1.518     21.146"
* 33        CATCHMENT 170"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       170   Industrial/Residential area along Hamilton Road"
*    55.000   % Impervious"
*     8.450   Total Area"
*    45.000   Flow length"
*     2.000   Overland Slope"
*     3.802   Pervious Area"
*    30.000   Pervious length"
*     3.000   Pervious slope"
*     4.648   Impervious Area"
*   235.000   Impervious length"
*     1.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.752   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.978   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                1.241     0.000     1.518     21.146 c.m/sec"
*           Catchment 170          Pervious   Impervious Total Area "
*           Surface Area           3.802      4.648      8.450      hectare"
*           Time of concentration  14.097     10.721     12.024     minutes"
*           Time to Centroid       2493.259   2281.054   2363.002   minutes"
*           Rainfall depth         285.000    285.000    285.000    mm"
*           Rainfall volume        1.0837     1.3245     2.4082     ha-m"
*           Rainfall losses        70.705     6.312      35.289     mm"
*           Runoff depth           214.295    278.688    249.711    mm"
*           Runoff volume          0.8149     1.2952     2.1101     ha-m"
*           Runoff coefficient     0.752      0.978      0.876      "
*           Maximum flow           0.536      0.711      1.241      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                1.241     1.241     1.518     21.146"
* 56        DIVERSION"
*         6   Node number"
*     1.560   Overflow threshold"
*     1.000   Required diverted fraction"
*         0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow          0.000    c.m/sec"
*           Volume of diverted flow        0.000    c.m"
*           DIV00006.250hyd"
*           Major flow at 6"
*                1.241     1.241     1.241     21.146 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*         6   Combine "
*         9   Node #"
*             NODE B"
*           Maximum flow                    1.241    c.m/sec"
*           Hydrograph volume           21100.600    c.m"
*                1.241     1.241     1.241     1.241"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                1.241     0.000     1.241     1.241"
* 47        FILEI_O Read/Open DIV00006.250hyd"
*         1   1=read/open; 2=write/save"
```

```
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00006.250hyd"
*            Major flow at 6"
*            Total volume                  0.000    c.m"
*            Maximum flow                  0.000    c.m/sec"
*                 0.000     0.000     1.241     1.241 c.m/sec*
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.000     0.000     1.241     1.241"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.000     0.000     0.000     1.241"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 21.146    c.m/sec"
*            Hydrograph volume        350493.969    c.m"
*                 0.000     0.000     0.000    21.146"
* 40          HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 21.146    c.m/sec"
*            Hydrograph volume        350493.969    c.m"
*                 0.000    21.146     0.000     0.000"
* 54          POND DESIGN"
*       21.146   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*     350494.0   Hydrograph volume    c.m"
*           7.   Number of stages"
*      334.290   Minimum water level    metre"
*      336.800   Maximum water level    metre"
*      334.290   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                334.290     0.000     0.000"
*                334.500    0.2540     5.000"
*                335.000     1.303   390.000"
*                335.500     2.800  3269.000"
*                336.000     4.639  13030.00"
*                336.400     6.109  30065.00"
*                336.800    18.376  57257.00"
*            Peak outflow                 16.661    c.m/sec"
*            Maximum level               336.744    metre"
*            Maximum storage           53455.402    c.m"
*            Centroidal lag               42.478   hours"
*                 0.000    21.146    16.661     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*           5   Next link "
*                 0.000    16.661    16.661     0.000"
* 56          DIVERSION"
*           7   Node number"
*        7.170  Overflow threshold"
*        1.000  Required diverted fraction"
*            0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow         9.491    c.m/sec"
*            Volume of diverted flow   61558.906    c.m"
*            DIV00007.250hyd"
*            Major flow at 7"
*                 0.000    16.661     7.170     0.000 c.m/sec"
* 40          HYDROGRAPH   Combine    8"
*           6   Combine "
*           8   Node #"
*               NODE A"
*            Maximum flow                  7.170    c.m/sec"
```



```
*            Hydrograph volume        288969.156    c.m"
*                 0.000    16.661     7.170     7.170"
* 81          ADD COMMENT==========================================================*
*           3  Lines of comment"
*              ************************************************"
*              Catchments South of Hwy 7/8"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.000     0.000     7.170     7.170"
* 33          CATCHMENT 180"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         180   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.784   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.972   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.102     0.000     7.170     7.170 c.m/sec"
*              Catchment 180          Pervious   Impervious Total Area *
*              Surface Area           0.518      0.182      0.700      hectare*
*              Time of concentration  12.395     5.753      10.380     minutes*
*              Time to Centroid       2471.649   2271.438   2410.898   minutes*
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        1476.30    518.70     1995.00    c.m"
*              Rainfall losses        61.623     8.047      47.694     mm"
*              Runoff depth           223.377    276.953    237.306    mm"
*              Runoff volume          1157.09    504.05     1661.14    c.m"
*              Runoff coefficient     0.784      0.972      0.833      "
*              Maximum flow           0.075      0.028      0.102      c.m/sec*
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.102     0.102     7.170     7.170"
* 54          POND DESIGN"
*       0.102   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1661.1   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400     1.000"
*                 0.2500   0.00600     8.000"
*                 0.3500   0.00700    29.000"
*                 0.4500   0.00800    69.000"
*                 0.6500   0.01000   178.000"
*                 0.7000    0.1060   208.000"
```

```
*                0.7500    0.2810   240.000"
*             Peak outflow                  0.098    c.m/sec"
*             Maximum level                 0.696    metre"
*             Maximum storage             205.634    c.m"
*             Centroidal lag               41.432    hours"
*                0.102     0.102     0.098     7.170 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*             Maximum flow                  1.335    c.m/sec"
*             Hydrograph volume         22761.686    c.m"
*                0.102     0.102     0.098     1.335"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.102     0.000     0.098     1.335"
* 33         CATCHMENT 181"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         181   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.630   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.977   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.279     0.000     0.098     1.335 c.m/sec"
*            Catchment 181          Pervious   Impervious Total Area "
*            Surface Area           0.131      1.739      1.870      hectare"
*            Time of concentration  12.932     7.761      8.001      minutes"
*            Time to Centroid       2552.368   2277.105   2289.851   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        373.07     4956.44    5329.50    c.m"
*            Rainfall losses        105.367    6.536      13.454     mm"
*            Runoff depth           179.633    278.464    271.546    mm"
*            Runoff volume          235.14     4842.77    5077.91    c.m"
*            Runoff coefficient     0.630      0.977      0.953      "
*            Maximum flow           0.017      0.264      0.279      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.279     0.279     0.098     1.335"
* 54         POND DESIGN"
*       0.279   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      5077.9   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
```



```
*                0.3000    0.09000     8.000"
*                0.6000    0.1200     97.000"
*                0.9000    0.1300    167.000"
*                 1.200    0.1400    254.000"
*                 1.500    0.1500    358.000"
*                 1.800     1.000    400.000"
*             Peak outflow                  0.271    c.m/sec"
*             Maximum level                 1.543    metre"
*             Maximum storage             363.985    c.m"
*             Centroidal lag               38.335    hours"
*                0.279     0.279     0.271     1.335 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*             Maximum flow                  1.570    c.m/sec"
*             Hydrograph volume         27826.746    c.m"
*                0.279     0.279     0.271     1.570"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.279     0.000     0.271     1.570"
* 33         CATCHMENT 182"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         182   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.632   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.973   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.170     0.000     0.271     1.570 c.m/sec"
*            Catchment 182          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  14.605     5.529      7.579      minutes"
*            Time to Centroid       2555.069   2271.599   2335.622   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1069.04    2379.47    3448.50    c.m"
*            Rainfall losses        104.915    7.681      37.823     mm"
*            Runoff depth           180.085    277.319    247.177    mm"
*            Runoff volume          675.50     2315.34    2990.84    c.m"
*            Runoff coefficient     0.632      0.973      0.867      "
*            Maximum flow           0.048      0.127      0.170      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.170     0.170     0.271     1.570"
* 54         POND DESIGN"
*       0.170   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2990.8   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
```

```
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                 0.3200    0.04300   276.000"
*                 0.7500    0.06600   333.000"
*                  1.300    0.08700   371.000"
*                  1.400    0.5000    400.000"
*            Peak outflow                  0.170    c.m/sec"
*            Maximum level                 1.320    metre"
*            Maximum storage             376.845    c.m"
*            Centroidal lag               40.352   hours"
*                 0.170     0.170     0.170     1.570 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.739    c.m/sec"
*            Hydrograph volume          30817.129    c.m"
*                   0.170     0.170     0.170     1.739"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.170     0.000     0.170     1.739"
* 33         CATCHMENT 183"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         183   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.669   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.978   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   3.188     0.000     0.170     1.739 c.m/sec"
*            Catchment 183          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  41.583     13.409     31.052     minutes"
*            Time to Centroid       2575.672   2285.137   2467.080   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        4.7127     1.9249     6.6377     ha-m"
*            Rainfall losses        94.226     6.233      68.708     mm"
*            Runoff depth           190.774    278.767    216.292    mm"
*            Runoff volume          3.1546     1.8828     5.0374     ha-m"
*            Runoff coefficient     0.669      0.978      0.759      "
*            Maximum flow           2.236      1.048      3.188      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   3.188     3.188     0.170     1.739"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   3.188     3.188     3.188     1.739"
```



```
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  4.924    c.m/sec"
*            Hydrograph volume          81191.539    c.m"
*                   3.188     3.188     3.188     4.924"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  7.170    c.m/sec"
*            Hydrograph volume         288969.156    c.m"
*                   3.188     7.170     3.188     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   3.188     7.170     7.170     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 12.094    c.m/sec"
*            Hydrograph volume         370161.094    c.m"
*                   3.188     7.170     7.170    12.094"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   3.188     0.000     7.170    12.094"
* 33         CATCHMENT 184"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         184   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.731   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.975   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.419     0.000     7.170    12.094 c.m/sec"
*            Catchment 184          Pervious   Impervious Total Area *
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  25.276     4.517      24.726     minutes"
*            Time to Centroid       2521.159   2271.813   2514.554   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        8239.35    168.15     8407.50    c.m"
*            Rainfall losses        76.690     7.247      75.301     mm"
*            Runoff depth           208.310    277.753    209.699    mm"
*            Runoff volume          6022.25    163.87     6186.13    c.m"
*            Runoff coefficient     0.731      0.975      0.736      *
*            Maximum flow           0.410      0.009      0.419      c.m/sec*
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.419     0.419     7.170    12.094"
```

```
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.419     0.419     0.419    12.094"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*             Maximum flow                12.498    c.m/sec"
*             Hydrograph volume        376347.250    c.m"
*                   0.419     0.419     0.419    12.498"
* 40          HYDROGRAPH   Confluence    9"
*            7   Confluence "
*            9   Node #"
*                NODE B"
*             Maximum flow                12.498    c.m/sec"
*             Hydrograph volume        376347.250    c.m"
*                   0.419    12.498     0.419     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.419    12.498    12.498     0.000"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                12.498    c.m/sec"
*             Hydrograph volume        376347.250    c.m"
*                   0.419    12.498    12.498    12.498"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.419     0.000    12.498    12.498"
* 33          CATCHMENT 185"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          185   Morningside Retirement Community lands"
*       58.000   % Impervious"
*       18.780   Total Area"
*      190.000   Flow length"
*        2.000   Overland Slope"
*        7.888   Pervious Area"
*       25.000   Pervious length"
*        2.500   Pervious slope"
*       10.892   Impervious Area"
*      354.000   Impervious length"
*        2.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       64.400   Pervious SCS Curve No."
*        0.625   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.978   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   2.671     0.000    12.498    12.498 c.m/sec"
*             Catchment 185          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  13.861     11.761     12.425     minutes"
*             Time to Centroid       2556.982   2282.928   2369.608   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        2.2480     3.1043     5.3523     ha-m"
*             Rainfall losses        106.859    6.146      48.445     mm"
*             Runoff depth           178.141    278.854    236.555    mm"
*             Runoff volume          1.4051     3.0374     4.4425     ha-m"
*             Runoff coefficient     0.625      0.978      0.830      "
*             Maximum flow           0.991      1.688      2.671      c.m/sec"
```



```
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   2.671     2.671    12.498    12.498"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   2.671     2.671     2.671    12.498"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                15.075    c.m/sec"
*             Hydrograph volume        420772.156    c.m"
*                   2.671     2.671     2.671    15.075"
* 81          ADD COMMENT==========================================================="
*            3   Lines of comment"
*                ************************************************"
*                Catchments north of Hwy 7/8, towards Eastern Tributary"
*                ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   2.671     0.000     2.671    15.075"
* 33          CATCHMENT 150"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          150   Southern portion of Rec Centre fields"
*        0.000   % Impervious"
*        3.510   Total Area"
*       95.000   Flow length"
*        1.600   Overland Slope"
*        3.510   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.732   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.501     0.000     2.671    15.075 c.m/sec"
*             Catchment 150          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  32.957     11.295     32.957     minutes"
*             Time to Centroid       2532.309   2281.667   2532.308   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1.0003     0.0000     1.0003     ha-m"
*             Rainfall losses        76.445     6.416      76.445     mm"
*             Runoff depth           208.555    278.584    208.555    mm"
*             Runoff volume          7320.26    0.01       7320.27    c.m"
*             Runoff coefficient     0.732      0.000      0.732      "
*             Maximum flow           0.501      0.000      0.501      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.501     0.501     2.671    15.075"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.501     0.501     0.501    15.075"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
```

```
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.501    c.m/sec"
*            Hydrograph volume          7320.275    c.m"
*                 0.501     0.501     0.501     0.501"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.501     0.000     0.501     0.501"
* 33         CATCHMENT 151"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         151   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*      33.000   % Impervious"
*       5.770   Total Area"
*     100.000   Flow length"
*       2.000   Overland Slope"
*       3.866   Pervious Area"
*     100.000   Pervious length"
*       2.000   Pervious slope"
*       1.904   Impervious Area"
*     296.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.753   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.977   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.840     0.000     0.501     0.501 c.m/sec"
*            Catchment 151          Pervious   Impervious Total Area "
*            Surface Area           3.866      1.904      5.770      hectare"
*            Time of concentration  32.784     11.295     24.405     minutes"
*            Time to Centroid       2520.113   2281.666   2427.142   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1.1018     0.5427     1.6445     ha-m"
*            Rainfall losses        70.298     6.416      49.217     mm"
*            Runoff depth           214.702    278.584    235.783    mm"
*            Runoff volume          0.8300     0.5305     1.3605     ha-m"
*            Runoff coefficient     0.753      0.977      0.827      "
*            Maximum flow           0.560      0.293      0.840      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.840     0.840     0.501     0.501"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.840     0.840     0.840     0.501"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.341    c.m/sec"
*            Hydrograph volume         20924.961    c.m"
*                 0.840     0.840     0.840     1.341"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.840     0.000     0.840     1.341"
* 33         CATCHMENT 152"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         152   Southern portion of Schneider lands"
*       5.000   % Impervious"
*       8.560   Total Area"
```



```
*     170.000   Flow length"
*       3.500   Overland Slope"
*       8.132   Pervious Area"
*     170.000   Pervious length"
*       3.500   Pervious slope"
*       0.428   Impervious Area"
*     170.000   Impervious length"
*       3.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.817   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.972   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.282     0.000     0.840     1.341 c.m/sec"
*            Catchment 152          Pervious   Impervious Total Area "
*            Surface Area           8.132      0.428      8.560      hectare"
*            Time of concentration  37.620     6.846      35.807     minutes"
*            Time to Centroid       2487.191   2273.686   2474.610   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2.3176     0.1220     2.4396     ha-m"
*            Rainfall losses        52.177     8.059      49.971     mm"
*            Runoff depth           232.823    276.941    235.029    mm"
*            Runoff volume          1.8933     0.1185     2.0118     ha-m"
*            Runoff coefficient     0.817      0.972      0.825      "
*            Maximum flow           1.221      0.065      1.282      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.282     1.282     0.840     1.341"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.282     1.282     1.282     1.341"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                  2.621    c.m/sec"
*            Hydrograph volume         41043.434    c.m"
*                 1.282     1.282     1.282     2.621"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.282     0.000     1.282     2.621"
* 47         FILEI_O Read/Open DIV00007.250hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00007.250hyd"
*            Major flow at 7"
*            Total volume              61558.906    c.m"
*            Maximum flow                  9.491    c.m/sec"
*                 9.491     0.000     1.282     2.621 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 9.491     9.491     1.282     2.621"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 9.491     9.491     9.491     2.621"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                 11.391    c.m/sec"
*            Hydrograph volume        102602.313    c.m"
```

```
*                   9.491     9.491     9.491    11.391"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  11.391    c.m/sec"
*             Hydrograph volume         102602.313    c.m"
*                   9.491    11.391     9.491     0.000"
* 54          POND DESIGN"
*       11.391   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*     102602.3   Hydrograph volume    c.m"
*           9.   Number of stages"
*      332.660   Minimum water level    metre"
*      336.000   Maximum water level    metre"
*      332.660   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                332.660     0.000     0.000"
*                333.000    0.3010   266.000"
*                333.500     1.168  1814.000"
*                334.000     2.325  4798.000"
*                334.500     3.132  9073.000"
*                335.000     3.780  14775.00"
*                335.500     4.332  22251.00"
*                335.750     4.583  26742.00"
*                336.000    21.985  31757.00"
*             Peak outflow                  10.291    c.m/sec"
*             Maximum level                335.870    metre"
*             Maximum storage            29156.398    c.m"
*             Centroidal lag                45.451   hours"
*                  9.491    11.391    10.291     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                   9.491    10.291    10.291     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                    228.020    hectare"
*             Total Impervious area                    50.613    hectare"
*             Total % impervious                       22.197"
* 19          EXIT"
```

APPENDIX C

Proposed Conditions Catchment Parameters and MIDUSS Modeling

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number: 34896-104
Date: December 15, 2018
Design By: NED/MSB
File: Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

COMPOSITE CN CALCULATIONS

Soil Group Curve Number (CN)

Land Use	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Woodlot	25	40	55	63	70	74	77
Lawns	58	62	65	71	76	79	81
Pasture	39	50	61	68	74	77	80
Cropland	66	70	74	78	82	84	86
Open Space	39	50	61	67.5	74	77	80

Post-Development Conditions

Sub-Catchment Number	HYDROLOGIC SOIL GROUP	Woodlot	Lawn	Pasture	Cropland	Open Space	Total	Pervious CN	Comment
201	C				100		100	82.0	Agricultural north of GEXR
202	C	100					100	70.0	Woodlot north of GEXR
203	C		100				100	76.0	developed Pfenning Farm
204	C		100					76.0	From M.N. Engineering SWM Report (1994)
205	C	100					100	70.0	
206	C	50			50		100	76.0	
207	C	95				5	100	70.2	
208	B		100					75.0	From MTE Consultants SWM Report (2005).
209	C		100					80.0	From R.J. Burnside SWM Report (1998).
210	C	100					100	70.0	
211	C		100				100	76.0	Furture STREMMA
212	C		100					80.0	From R.J. Burnside SWM Report (1998).
213	C	97				3	100	70.1	
214	B		100					83.0	From Stantec Consulting SWM Approach (2010).
215	C		100				100	76.0	
216	C		100				100	76.0	
217	C		100				100	76.0	
218	C		100				100	76.0	From Stantec Consulting SWM Approach (2018).
219	C		100				100	76.0	Ex. Pestell's Head Office
220	C		100					74.0	From Stantec Consulting SWM Approach (2006).
221	C		100				100	76.0	
222	C		100				100	76.0	
223	C		100				100	76.0	NHI Lands
224	C		100				100	76.0	BDI Lands
225	C					100		74.0	MTO
260	C		100				100	76.0	
261	C		100				100	76.0	
270	C		100				100	76.0	
250	C		100					76.0	From Stantec Consulting SWM Approach (2010).
251	C		100				100	76.0	
252	C					100	100	74.0	
280	B							79.0	Report (1994)
281	B		100				100	65.0	
282	B		100				100	65.0	
283	B		20	30	50		100	68.3	
284	B				100		100	74.0	
285	B		85			15	100	64.4	

Wilmot Employment Lands
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HYDROLOGIC PARAMETERS
Post Development Conditions

Sub-Catchment Number	Area	Percent Impervious	Percent Impervious (Quality)	Overland Length	Overland Slope	Pervious Length	Pervious Slope	Pervious IA	Impervious Length	Impervious Slope	SCS Curve Number Pervious (AMC II)	SCS Curve Number Impervious	Land Use	Comment
	(ha)	(%)	(%)	(m)	(%)	(m)	(%)	(mm)	(m)	(%)				
Catchments Draining to Western Forebay														
Catchments Draining to Inlet #1														
201	2.97	0	0	80	0.5			5.6			82.0	98	Agricultural	Area North of GEXR
202	2.08	0	0	80	2.5			10.9			70.0	98	Woodlot	Area North of GEXR
203	18.51	60	60	90	1.0			4.0			76.0	98	Agricultural	(Part of Pfenning Farm Subdivision)
204	2.02	59	85	35	1.2	60	2.00	8.0	116	0.50	76.0	98	Industrial	Riverside Brass (M.N. Engineering - SWM Report - 1994)
205	1.19	5	5	255	1.8			10.9			70.0	98	Woodlot	Ex. Uncontrolled Iron Bridge Property (woodlot) (Stantec Consulting - SWM Report - 2018)
206	2.85	35	35	50	1.0			8.0			76.0	98	Industrial	Ex. Industrial along Hamilton Road
207	5.92	5	5	65	3.0			10.8			70.2	98	Woodlot	Woodlot and Ex. Wetland (east of Pestills)
208	5.53	75	75	130	2.0	50	3.00	8.5	192	0.75	75.0	98	Industrial	N.C Pestill's (MTE Consultants Inc. - SWM Report - 2005)
Catchments Draining to Inlet #4														
218	2.06	85	85	230	1.7			3.6			76.0	98	Industrial	Ex. Controlled Iron Bridge Property (Stantec Consulting - SWM Report - 2018)
219	1.28	85	85	75	1.5			22.5			76.0	98	Industrial	Ex. Pestell's Head Office
220	0.50	8	8	60	5.0			8.9			74.0	98	Residential	Northeast corner of Nithview Heights Subdivision
221	0.81	81.5	81.5	40	2.0			8.0			76.0	98	Road Allowance	Roadway corridor from Hamilton Road
Catchments Draining to Inlet #5														
222	1.08	5	5	20	3.0			8.0			76.0	98	Residential	Eastern part of Hamilton Heights Subdivision
224	43.20	85	85	90	1.0			8.0			76.0	98	Agricultural	BDI Lands
Total to Western Forebay	**90.00**													
Catchments Draining to Eastern Forebay														
Catchments Draining to Inlet #2														
209	1.92	30	85	150	1.5	150	1.50	6.4	113	1.50	80.0	98	Industrial	Alpine Solutions - West SWMP (R.J. Burnside - SWM Report - 1998)
210	13.23	5	5	170	2.4			10.9			70.0	98	Woodlot	Northern portion of Good Schneider Lands

Sub-Catchment Number	Area	Percent Impervious	Percent Impervious (Quality)	Overland Length	Overland Slope	Pervious Length	Pervious Slope	Pervious IA	Impervious Length	Impervious Slope	SCS Curve Number Pervious (AMC II)	SCS Curve Number Impervious	Land Use	Comment
	(ha)	*(%)*	*(%)*	*(m)*	*(%)*	*(m)*	*(%)*	*(mm)*	*(m)*	*(%)*				
Catchments Draining to Inlet #3														
211	7.31	1	85	120	3.3			5.6			76.0	98	Agricultural	Area East of Nafziger Road
212	2.56	40	85	150	1.5	180	1.50	6.4	131	1.50	80.0	98	Industrial	Alpine Solutions - East SWMP (R.J. Burnside - SWM Report - 1998)
213	13.46	3	0	140	3.6			10.8			70.1	98	Woodlot	Area East of Nafziger Road
214	4.95	73	75	50	2.8	40	1.50	5.2	182	1.50	83.0	98	Recreational	Recreational Facility draining to SWMP (Stantec Consulting - SWM Report - 2010)
215	2.86	45	45	105	2.0			8.0			76.0	98	Industrial/Woodlot	Woodlot North of proposed Street
216	4.12	45	85	110	2.0			8.0			76.0	98	Industrial	Industrial lands south of Street 3
217	0.73	75	75	90	2.1			8.0			76.0	98	Agricultural	Roadway corridor from Nafziger Road
223	12.57	85	85	90	1.0			8.0			76.0	98	Agricultural	Developable portion of NHI Lands
Total to Eastern Forebay	**63.71**													
Total to SWM Facility	**153.71**		**57.9**											
Catchments Draining to West Culvert - Uncontrolled														
225	1.67	30	N/A	75	2.0			8.0			74.0	98	Residential	Uncontrolled Flow from highway 7/8
Catchments Draining to West Culvert - Inlet #6														
260	8.16	46	N/A	50	1.0	50	3.00	8.0	232	1.50	76.0	98	Residential	Hamilton Heights Subdivision
261	2.35	32	N/A	100	2.5	50	2.50	8.0	164	1.50	76.0	98	Industrial	Klassen Bronze Property
270	8.45	55	N/A	45	2.0	30	3.00	8.0	235	1.50	76.0	98	Residential/Industrial	Industrial/Residential area along Hamilton Road
Total to West Culvert	**174.34**													
Catchments Draining to East Culvert														
250	3.51	25	N/A	95	1.6	100	2.00	8.9	296	2.00	76.0	98	Recreational	Southern part of Recreational Facility (Stantec Consulting - SWM Report - 2010)
251	5.77	33	N/A	100	2.0	100	2.00	6.3	296	2.00	76.0	98	Industrial	Northwestern corner of Hwy 7/8 & Nafziger Road
252	2.87	5	N/A	65	1.5			3.5			74.0	98	Roadway	MTO Expropriated Lands
Total to East Culvert	**12.15**													
Grand Total (North Hwy 7/8)	**186.49**													

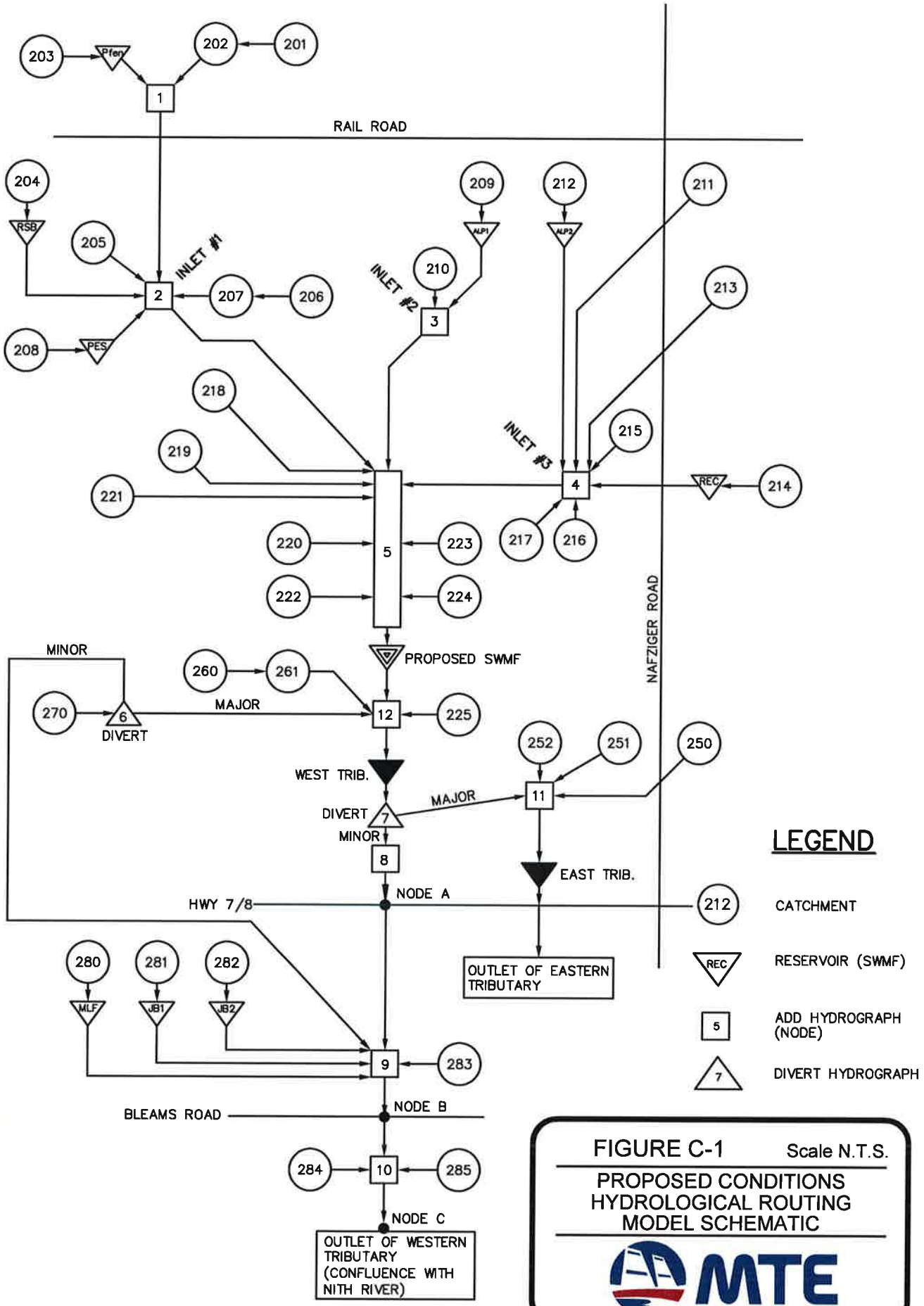

FIGURE C-1 Scale N.T.S.

PROPOSED CONDITIONS HYDROLOGICAL ROUTING MODEL SCHEMATIC

MTE

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*             MIDUSS Output ------------------------------------------->"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*       10    Units used:                                        ie METRIC"
*             Job folder:                     Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                  34896-104_Post-0012mm.out"
*             Licensee name:                                          admin"
*             Company                                              Microsoft"
*             Date & Time last used:              12/17/2018 at 2:52:26 PM"
* 81        ADD COMMENT============================================="
*       7   Lines of comment"
*           ************************************************************"
*           Wilmot Employment Lands"
*           New Hamburg, Ontario"
*           12.5mm Storm Event - Post development"
*           Job No.: 34896-104"
*           Calculated by: NED/MSB"
*           ************************************************************"
* 31        TIME PARAMETERS"
*     5.000   Time Step"
*   240.000   Max. Storm length"
*  1500.000   Max. Hydrograph"
* 32        STORM Chicago storm"
*       1   Chicago storm"
*   253.000   Coefficient A"
*     6.000   Constant B"
*     0.799   Exponent C"
*     0.400   Fraction R"
*   240.000   Duration"
*     1.000   Time step multiplier"
*           Maximum intensity           35.771    mm/hr"
*           Total depth                 12.440    mm"
*         7   0012hyd   Hydrograph extension used in this file"
* 81        ADD COMMENT============================================="
*       3   Lines of comment"
*           ************************************************"
*           Catchments North of GEXR, part of Inlet #1"
*           ************************************************"
* 33        CATCHMENT 201"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       201   Area Northeast of GEXR"
*     0.000   % Impervious"
*     2.970   Total Area"
*    80.000   Flow length"
*     0.500   Overland Slope"
*     2.970   Pervious Area"
*    80.000   Pervious length"
*     0.500   Pervious slope"
*     0.000   Impervious Area"
*    80.000   Impervious length"
*     0.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    82.000   Pervious SCS Curve No."
*     0.060   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     5.576   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.000   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*               0.001     0.000     0.000     0.000 c.m/sec"
*           Catchment 201          Pervious   Impervious Total Area "
*           Surface Area           2.970      0.000      2.970      hectare"
*           Time of concentration  208.014    10.280     208.011    minutes"
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*           Time to Centroid       380.216    136.771    380.213    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        369.47     0.00       369.47     c.m"
*           Rainfall losses        11.688     4.159      11.688     mm"
*           Runoff depth           0.752      8.281      0.752      mm"
*           Runoff volume          22.35      0.00       22.35      c.m"
*           Runoff coefficient     0.060      0.000      0.060      "
*           Maximum flow           0.001      0.000      0.001      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.001     0.001     0.000     0.000"
* 33        CATCHMENT 202"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       202   Woodlot - north of GEXR"
*     0.000   % Impervious"
*     2.080   Total Area"
*    80.000   Flow length"
*     2.500   Overland Slope"
*     2.080   Pervious Area"
*    80.000   Pervious length"
*     2.500   Pervious slope"
*     0.000   Impervious Area"
*    80.000   Impervious length"
*     2.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    70.000   Pervious SCS Curve No."
*     0.002   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    10.886   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.000   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*               0.000     0.001     0.000     0.000 c.m/sec"
*           Catchment 202          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  621.075    6.343      620.843    minutes"
*           Time to Centroid       700.979    130.697    700.764    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        258.75     0.00       258.75     c.m"
*           Rainfall losses        12.418     4.194      12.418     mm"
*           Runoff depth           0.022      8.246      0.022      mm"
*           Runoff volume          0.45       0.00       0.45       c.m"
*           Runoff coefficient     0.002      0.000      0.002      "
*           Maximum flow           0.000      0.000      0.000      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.000     0.001     0.000     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*               0.000     0.001     0.001     0.000"
* 40        HYDROGRAPH   Combine    1"
*         6   Combine "
*         1   Node #"
*             u/s of GEXR"
*           Maximum flow                 0.001    c.m/sec"
*           Hydrograph volume           22.802    c.m"
*               0.000     0.001     0.001     0.001"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               0.000     0.000     0.001     0.001"
* 33        CATCHMENT 203"
*         1   Triangular SCS"
*         1   Equal length"
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*          1   SCS method"
*        203   Pfenning Farm Residential Development"
*     60.000   % Impervious"
*     18.510   Total Area"
*     90.000   Flow length"
*      1.000   Overland Slope"
*      7.404   Pervious Area"
*     90.000   Pervious length"
*      1.000   Pervious slope"
*     11.106   Impervious Area"
*     90.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.064   Pervious Runoff coefficient"
*      0.050   Pervious Ia/S coefficient"
*      4.011   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.665   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.512     0.000     0.001     0.001 c.m/sec"
*           Catchment 203          Pervious   Impervious Total Area "
*           Surface Area           7.404      11.106     18.510     hectare"
*           Time of concentration  155.200    8.962      17.832     minutes"
*           Time to Centroid       332.534    134.696    146.696    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        921.06     1381.60    2302.66    c.m"
*           Rainfall losses        11.639     4.165      7.155      mm"
*           Runoff depth           0.802      8.275      5.286      mm"
*           Runoff volume          59.34      919.02     978.36     c.m"
*           Runoff coefficient     0.064      0.665      0.425      "
*           Maximum flow           0.003      0.512      0.512      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.512     0.512     0.001     0.001"
* 54        POND DESIGN"
*       0.512   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*       978.4   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               341.500     0.000     0.000"
*               342.000    0.1541  1746.000"
*               342.500    0.2669  3784.000"
*               343.000    0.3446  6114.000"
*               343.300    0.3837  7652.000"
*               343.600     2.941  9295.000"
*          1.   WEIRS"
*                 Crest      Weir      Crest      Left      Right"
*             elevation coefficie   breadth sideslope sideslope"
*               343.300     0.900    10.000     0.000     0.000"
*          1.   ORIFICES"
*               Orifice   Orifice   Orifice Number of"
*                invert coefficie  diameter  orifices"
*               341.500     0.630    0.3750     1.000"
*           Peak outflow                  0.051    c.m/sec"
*           Maximum level               341.666    metre"
*           Maximum storage             580.955    c.m"
*           Centroidal lag                5.573   hours"
*                0.512     0.512     0.051     0.001 c.m/sec"
* 40        HYDROGRAPH   Combine    1"
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```
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                  0.052    c.m/sec"
*           Hydrograph volume          1000.315    c.m"
*                 0.512     0.512     0.051     0.052"
* 40        HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                  0.052    c.m/sec"
*           Hydrograph volume          1000.315    c.m"
*                 0.512     0.052     0.051     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.512     0.052     0.052     0.000"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.052    c.m/sec"
*           Hydrograph volume          1000.315    c.m"
*                 0.512     0.052     0.052     0.052"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.512     0.000     0.052     0.052"
* 81        ADD COMMENT==========================================================="
*        3  Lines of comment"
*           **************************************************"
*           Catchments South of GEXR, part of Inlet #1"
*           **************************************************"
* 33        CATCHMENT 204"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        204   Riverside Brass"
*     59.000   % Impervious"
*      2.020   Total Area"
*     35.000   Flow length"
*      1.200   Overland Slope"
*      0.828   Pervious Area"
*     60.000   Pervious length"
*      2.000   Pervious slope"
*      1.192   Impervious Area"
*    116.000   Impervious length"
*      0.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.019   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.665   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.046     0.000     0.052     0.052 c.m/sec"
*           Catchment 204          Pervious   Impervious Total Area "
*           Surface Area           0.828      1.192      2.020      hectare"
*           Time of concentration  244.389    12.848     17.248     minutes"
*           Time to Centroid       375.656    140.760    145.225    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        103.03     148.26     251.29     c.m"
*           Rainfall losses        12.209     4.164      7.463      mm"
*           Runoff depth           0.231      8.276      4.977      mm"
*           Runoff volume          1.91       98.63      100.54     c.m"
*           Runoff coefficient     0.019      0.665      0.400      "
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*           Maximum flow          0.000      0.046      0.046      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.046     0.046     0.052     0.052"
* 54        POND DESIGN"
*       0.046   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       100.5   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*           Peak outflow                  0.003    c.m/sec"
*           Maximum level                 0.029    metre"
*           Maximum storage              72.639    c.m"
*           Centroidal lag                9.353    hours"
*                 0.046     0.046     0.003     0.052 c.m/sec"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.054    c.m/sec"
*           Hydrograph volume          1096.791    c.m"
*                 0.046     0.046     0.003     0.054"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.046     0.000     0.003     0.054"
* 33        CATCHMENT 205"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        205   Iron Bridge Manufacturing Property - Woodlot"
*      5.000   % Impervious"
*      1.190   Total Area"
*    255.000   Flow length"
*      1.800   Overland Slope"
*      1.131   Pervious Area"
*    255.000   Pervious length"
*      1.800   Pervious slope"
*      0.060   Impervious Area"
*    255.000   Impervious length"
*      1.800   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.001   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.667   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.002     0.000     0.003     0.054 c.m/sec"
*           Catchment 205          Pervious   Impervious Total Area "
*           Surface Area           1.131      0.060      1.190      hectare"
*           Time of concentration  1374.088   14.034     57.950     minutes"
*           Time to Centroid       1011.902   142.584    170.654    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        140.64     7.40       148.04     c.m"
*           Rainfall losses        12.426     4.140      12.011     mm"
*           Runoff depth           0.015      8.300      0.429      mm"
```



```
*           Runoff volume          0.16       4.94       5.10       c.m"
*           Runoff coefficient     0.001      0.667      0.034      "
*           Maximum flow           0.000      0.002      0.002      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.002     0.002     0.003     0.054"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.002     0.002     0.002     0.054"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.055    c.m/sec"
*           Hydrograph volume          1101.893    c.m"
*                 0.002     0.002     0.002     0.055"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.002     0.000     0.002     0.055"
* 33        CATCHMENT 206"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        206   Industrial properties at end of Hamilton Road"
*     35.000   % Impervious"
*      2.850   Total Area"
*     50.000   Flow length"
*      1.000   Overland Slope"
*      1.852   Pervious Area"
*     50.000   Pervious length"
*      1.000   Pervious slope"
*      0.997   Impervious Area"
*     50.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.019   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.663   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.056     0.000     0.002     0.055 c.m/sec"
*           Catchment 206          Pervious   Impervious Total Area "
*           Surface Area           1.852      0.997      2.850      hectare"
*           Time of concentration  269.698    6.298      19.303     minutes"
*           Time to Centroid       397.343    130.618    143.787    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        230.45     124.09     354.54     c.m"
*           Rainfall losses        12.209     4.189      9.402      mm"
*           Runoff depth           0.231      8.251      3.038      mm"
*           Runoff volume          4.27       82.30      86.58      c.m"
*           Runoff coefficient     0.019      0.663      0.244      "
*           Maximum flow           0.000      0.056      0.056      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.056     0.056     0.002     0.055"
* 33        CATCHMENT 207"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        207   Woodlot and Wetland east of Pestells"
*      5.000   % Impervious"
*      5.920   Total Area"
*     65.000   Flow length"
```

```
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.002   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.666   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.016     0.056     0.002     0.055 c.m/sec"
*            Catchment 207          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  504.098    5.302      32.432     minutes"
*            Time to Centroid       604.336    129.030    154.882    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        699.63     36.82      736.45     c.m"
*            Rainfall losses        12.415     4.159      12.002     mm"
*            Runoff depth           0.025      8.281      0.438      mm"
*            Runoff volume          1.41       24.51      25.92      c.m"
*            Runoff coefficient     0.002      0.666      0.035      "
*            Maximum flow           0.000      0.016      0.016      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.016     0.073     0.002     0.055"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.016     0.073     0.073     0.055"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.090    c.m/sec"
*            Hydrograph volume          1214.392    c.m"
*                 0.016     0.073     0.073     0.090"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.016     0.000     0.073     0.090"
* 33         CATCHMENT 208"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         208   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.014   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```



```
*       0.667   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.148     0.000     0.073     0.090 c.m/sec"
*            Catchment 208          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  223.483    15.392     16.871     minutes"
*            Time to Centroid       353.812    144.719    146.205    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        171.98     515.95     687.94     c.m"
*            Rainfall losses        12.262     4.146      6.175      mm"
*            Runoff depth           0.178      8.294      6.265      mm"
*            Runoff volume          2.46       343.98     346.44     c.m"
*            Runoff coefficient     0.014      0.667      0.504      "
*            Maximum flow           0.000      0.148      0.148      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.148     0.148     0.073     0.090"
* 54         POND DESIGN"
*       0.148   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       346.4   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*            Peak outflow                  0.004    c.m/sec"
*            Maximum level                 0.152    metre"
*            Maximum storage             302.024    c.m"
*            Centroidal lag               20.735    hours"
*                 0.148     0.148     0.004     0.090 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.091    c.m/sec"
*            Hydrograph volume          1444.971    c.m"
*                 0.148     0.148     0.004     0.091"
* 81         ADD COMMENT==========================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
*              **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.148     0.000     0.004     0.091"
* 33         CATCHMENT 209"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         209   Alpine Solutions - west SMWP"
*      30.000   % Impervious"
*       1.920   Total Area"
*     150.000   Flow length"
*       1.000   Overland Slope"
*       1.344   Pervious Area"
```

```
*     150.000   Pervious length"
*       1.500   Pervious slope"
*       0.576   Impervious Area"
*     113.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.043   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.665   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.026     0.000     0.004     0.091 c.m/sec"
*            Catchment 209          Pervious   Impervious Total Area "
*            Surface Area           1.344      0.576      1.920      hectare"
*            Time of concentration  271.389    9.096      43.382     minutes"
*            Time to Centroid       435.468    134.908    174.196    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        167.19     71.65      238.85     c.m"
*            Rainfall losses        11.907     4.170      9.586      mm"
*            Runoff depth           0.533      8.270      2.854      mm"
*            Runoff volume          7.16       47.64      54.80      c.m"
*            Runoff coefficient     0.043      0.665      0.229      "
*            Maximum flow           0.000      0.026      0.026      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.026     0.026     0.004     0.091"
* 54         POND DESIGN"
*       0.026   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        54.8   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*            Peak outflow                  0.024    c.m/sec"
*            Maximum level                 0.143    metre"
*            Maximum storage               4.007    c.m"
*            Centroidal lag                2.950    hours"
*                 0.026     0.026     0.024     0.091 c.m/sec"
* 40         HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*            Maximum flow                  0.024    c.m/sec"
*            Hydrograph volume            54.798    c.m"
*                 0.026     0.026     0.024     0.024"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.026     0.000     0.024     0.024"
* 33         CATCHMENT 210"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        210   Woodlot north of Hamburglr/Badenview lands"
```



```
*       5.000   % Impervious"
*      13.230   Total Area"
*     170.000   Flow length"
*       2.400   Overland Slope"
*      12.568   Pervious Area"
*     170.000   Pervious length"
*       2.400   Pervious slope"
*       0.661   Impervious Area"
*     170.000   Impervious length"
*       2.400   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.002   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.665   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.028     0.000     0.024     0.024 c.m/sec"
*            Catchment 210          Pervious   Impervious Total Area "
*            Surface Area           12.568     0.661      13.230     hectare"
*            Time of concentration  988.276    10.094     52.356     minutes"
*            Time to Centroid       919.320    136.494    170.316    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        1563.53    82.29      1645.82    c.m"
*            Rainfall losses        12.420     4.168      12.008     mm"
*            Runoff depth           0.020      8.272      0.432      mm"
*            Runoff volume          2.47       54.72      57.19      c.m"
*            Runoff coefficient     0.002      0.665      0.035      "
*            Maximum flow           0.000      0.028      0.028      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.028     0.028     0.024     0.024"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.028     0.028     0.028     0.024"
* 40         HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*            Maximum flow                  0.051    c.m/sec"
*            Hydrograph volume           111.992    c.m"
*                 0.028     0.028     0.028     0.051"
* 81         ADD COMMENT==========================================================="
*        3   Lines of comment"
*            ************************************************"
*            South of GEXR along Nafziger Rd, part of Inlet #3"
*            ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.028     0.000     0.028     0.051"
* 33         CATCHMENT 211"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        211   Culivated lands east of Nafziger Road"
*      1.000   % Impervious"
*      7.310   Total Area"
*    120.000   Flow length"
*      3.300   Overland Slope"
*      7.237   Pervious Area"
*    120.000   Pervious length"
*      3.300   Pervious slope"
*      0.073   Impervious Area"
*    120.000   Impervious length"
```

```
*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.019   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.665   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.004     0.000     0.028     0.051 c.m/sec"
*           Catchment 211          Pervious   Impervious Total Area "
*           Surface Area           7.237      0.073      7.310      hectare"
*           Time of concentration  318.750    7.444      236.022    minutes"
*           Time to Centroid       439.375    132.405    357.799    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        900.28     9.09       909.37     c.m"
*           Rainfall losses        12.209     4.172      12.129     mm"
*           Runoff depth           0.231      8.268      0.311      mm"
*           Runoff volume          16.70      6.04       22.74      c.m"
*           Runoff coefficient     0.019      0.665      0.025      "
*           Maximum flow           0.001      0.004      0.004      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.004     0.004     0.028     0.051"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*               0.004     0.004     0.004     0.051"
* 40        HYDROGRAPH   Combine    4"
*         6   Combine "
*         4   Node #"
*             INLET 3"
*           Maximum flow                 0.004    c.m/sec"
*           Hydrograph volume            22.742   c.m"
*               0.004     0.004     0.004     0.004"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               0.004     0.000     0.004     0.004"
* 33        CATCHMENT 212"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       212   Alpine Solutions - East SMWP"
*     40.000  % Impervious"
*      2.560  Total Area"
*    150.000  Flow length"
*      1.500  Overland Slope"
*      1.536  Pervious Area"
*    180.000  Pervious length"
*      1.500  Pervious slope"
*      1.024  Impervious Area"
*    131.000  Impervious length"
*      1.500  Impervious slope"
*      0.250  Pervious Manning 'n'"
*     80.000  Pervious SCS Curve No."
*      0.043  Pervious Runoff coefficient"
*      0.100  Pervious Ia/S coefficient"
*      6.350  Pervious Initial abstraction"
*      0.015  Impervious Manning 'n'"
*     98.000  Impervious SCS Curve No."
*      0.664  Impervious Runoff coefficient"
*      0.100  Impervious Ia/S coefficient"
*      0.518  Impervious Initial abstraction"
*               0.044     0.000     0.004     0.004 c.m/sec"
*           Catchment 212          Pervious   Impervious Total Area "
*           Surface Area           1.536      1.024      2.560      hectare"
```



```
*           Time of concentration  302.762    9.940      35.775     minutes"
*           Time to Centroid       468.140    136.266    165.546    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        191.08     127.39     318.47     c.m"
*           Rainfall losses        11.907     4.178      8.816      mm"
*           Runoff depth           0.533      8.262      3.624      mm"
*           Runoff volume          8.19       84.60      92.79      c.m"
*           Runoff coefficient     0.043      0.664      0.291      "
*           Maximum flow           0.000      0.044      0.044      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.044     0.044     0.004     0.004"
* 54        POND DESIGN"
*       0.044   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        92.8   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*           Peak outflow                   0.024    c.m/sec"
*           Maximum level                  0.132    metre"
*           Maximum storage                19.037   c.m"
*           Centroidal lag                 2.893    hours"
*               0.044     0.044     0.024     0.004 c.m/sec"
* 40        HYDROGRAPH   Combine    4"
*         6   Combine "
*         4   Node #"
*             INLET 3"
*           Maximum flow                   0.026    c.m/sec"
*           Hydrograph volume              115.536  c.m"
*               0.044     0.044     0.024     0.026"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               0.044     0.000     0.024     0.026"
* 33        CATCHMENT 213"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       213   Woodlot East and West of Nafziger Road"
*       3.000 % Impervious"
*      13.460 Total Area"
*     140.000 Flow length"
*       3.600 Overland Slope"
*      13.056 Pervious Area"
*     140.000 Pervious length"
*       3.600 Pervious slope"
*       0.404 Impervious Area"
*     140.000 Impervious length"
*       3.600 Impervious slope"
*       0.250 Pervious Manning 'n'"
*      70.100 Pervious SCS Curve No."
*       0.002 Pervious Runoff coefficient"
*       0.100 Pervious Ia/S coefficient"
*      10.834 Pervious Initial abstraction"
*       0.015 Impervious Manning 'n'"
*      98.000 Impervious SCS Curve No."
*       0.667 Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.022     0.000     0.024     0.026 c.m/sec"
*            Catchment 213          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  767.313    7.955      70.815     minutes"
*            Time to Centroid       806.813    133.171    188.935    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        1624.20    50.23      1674.44    c.m"
*            Rainfall losses        12.417     4.144      12.169     mm"
*            Runoff depth           0.023      8.296      0.271      mm"
*            Runoff volume          3.02       33.50      36.52      c.m"
*            Runoff coefficient     0.002      0.667      0.022      "
*            Maximum flow           0.000      0.022      0.022      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.022     0.022     0.024     0.026"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.022     0.022     0.022     0.026"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.046    c.m/sec"
*            Hydrograph volume           152.059    c.m"
*                 0.022     0.022     0.022     0.046"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.022     0.000     0.022     0.046"
* 33         CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.071   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.667   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.142     0.000     0.022     0.046 c.m/sec"
*            Catchment 214          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  90.626     12.107     15.083     minutes"
*            Time to Centroid       248.400    139.571    143.696    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        166.26     449.52     615.78     c.m"
*            Rainfall losses        11.556     4.141      6.143      mm"
*            Runoff depth           0.884      8.300      6.297      mm"
*            Runoff volume          11.81      299.90     311.72     c.m"
*            Runoff coefficient     0.071      0.667      0.506      "
*            Maximum flow           0.001      0.142      0.142      c.m/sec"
```



```
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.142     0.142     0.022     0.046"
* 54         POND DESIGN"
*       0.142   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       311.7   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*            Peak outflow                  0.007    c.m/sec"
*            Maximum level                 0.147    metre"
*            Maximum storage             242.871    c.m"
*            Centroidal lag               11.899   hours"
*                 0.142     0.142     0.007     0.046 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.047    c.m/sec"
*            Hydrograph volume           432.436    c.m"
*                 0.142     0.142     0.007     0.047"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.142     0.000     0.007     0.047"
* 33         CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.019   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.667   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*        0.518   Impervious Initial abstraction"
*                  0.069     0.000     0.007     0.047 c.m/sec"
*              Catchment 215          Pervious   Impervious Total Area "
*              Surface Area           1.573      1.287      2.860      hectare"
*              Time of concentration  341.901    7.984      18.961     minutes"
*              Time to Centroid       459.181    133.218    143.933    minutes"
*              Rainfall depth         12.440     12.440     12.440     mm"
*              Rainfall volume        195.68     160.10     355.79     c.m"
*              Rainfall losses        12.209     4.143      8.580      mm"
*              Runoff depth           0.231      8.297      3.860      mm"
*              Runoff volume          3.63       106.78     110.41     c.m"
*              Runoff coefficient     0.019      0.667      0.310      "
*              Maximum flow           0.000      0.069      0.069      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    0.069     0.069     0.007     0.047"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                    0.069     0.069     0.069     0.047"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                  0.117    c.m/sec"
*              Hydrograph volume           542.845    c.m"
*                    0.069     0.069     0.069     0.117"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    0.069     0.000     0.069     0.117"
* 33           CATCHMENT 216"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           216   Industrial lands west of Nafziger Road"
*        45.000   % Impervious"
*         2.860   Total Area"
*       110.000   Flow length"
*         2.000   Overland Slope"
*         1.573   Pervious Area"
*       110.000   Pervious length"
*         2.000   Pervious slope"
*         1.287   Impervious Area"
*       110.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.019   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.667   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.069     0.000     0.069     0.117 c.m/sec"
*              Catchment 216          Pervious   Impervious Total Area "
*              Surface Area           1.573      1.287      2.860      hectare"
*              Time of concentration  351.582    8.210      19.493     minutes"
*              Time to Centroid       467.444    133.579    144.550    minutes"
*              Rainfall depth         12.440     12.440     12.440     mm"
*              Rainfall volume        195.68     160.10     355.79     c.m"
*              Rainfall losses        12.209     4.140      8.578      mm"
*              Runoff depth           0.231      8.300      3.862      mm"
*              Runoff volume          3.63       106.82     110.45     c.m"
*              Runoff coefficient     0.019      0.667      0.310      "
*              Maximum flow           0.000      0.069      0.069      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
```



```
*             4   Add Runoff "
*                    0.069     0.069     0.069     0.117"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                    0.069     0.069     0.069     0.117"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                  0.185    c.m/sec"
*              Hydrograph volume           653.294    c.m"
*                    0.069     0.069     0.069     0.185"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    0.069     0.000     0.069     0.185"
* 33           CATCHMENT 217"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           217   Existing ROW west of Nafziger Road"
*        75.000   % Impervious"
*         0.730   Total Area"
*        90.000   Flow length"
*         2.100   Overland Slope"
*         0.183   Pervious Area"
*        90.000   Pervious length"
*         2.100   Pervious slope"
*         0.548   Impervious Area"
*        90.000   Impervious length"
*         2.100   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.019   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.663   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.030     0.000     0.069     0.185 c.m/sec"
*              Catchment 217          Pervious   Impervious Total Area "
*              Surface Area           0.183      0.548      0.730      hectare"
*              Time of concentration  307.171    7.173      9.947      minutes"
*              Time to Centroid       429.453    132.025    134.775    minutes"
*              Rainfall depth         12.440     12.440     12.440     mm"
*              Rainfall volume        22.70      68.11      90.81      c.m"
*              Rainfall losses        12.209     4.198      6.201      mm"
*              Runoff depth           0.231      8.242      6.239      mm"
*              Runoff volume          0.42       45.12      45.54      c.m"
*              Runoff coefficient     0.019      0.663      0.502      "
*              Maximum flow           0.000      0.030      0.030      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    0.030     0.030     0.069     0.185"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                    0.030     0.030     0.030     0.185"
* 40           HYDROGRAPH   Combine    4"
*             6   Combine "
*             4   Node #"
*                 INLET 3"
*              Maximum flow                  0.216    c.m/sec"
*              Hydrograph volume           698.838    c.m"
*                    0.030     0.030     0.030     0.216"
* 40           HYDROGRAPH   Confluence    2"
*             7   Confluence "
```

```
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.091    c.m/sec"
*           Hydrograph volume          1444.971    c.m"
*                  0.030     0.091     0.030     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                  0.030     0.091     0.091     0.000"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  0.091    c.m/sec"
*           Hydrograph volume          1444.971    c.m"
*                  0.030     0.091     0.091     0.091"
* 40        HYDROGRAPH   Confluence    3"
*          7   Confluence "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  0.051    c.m/sec"
*           Hydrograph volume           111.992    c.m"
*                  0.030     0.051     0.091     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                  0.030     0.051     0.051     0.000"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  0.138    c.m/sec"
*           Hydrograph volume          1556.964    c.m"
*                  0.030     0.051     0.051     0.138"
* 40        HYDROGRAPH   Confluence    4"
*          7   Confluence "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.216    c.m/sec"
*           Hydrograph volume           698.838    c.m"
*                  0.030     0.216     0.051     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                  0.030     0.216     0.216     0.000"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  0.353    c.m/sec"
*           Hydrograph volume          2255.803    c.m"
*                  0.030     0.216     0.216     0.353"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                  0.030     0.000     0.216     0.353"
* 33        CATCHMENT 223"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        223   New Hamburglr Inc. lands"
*     85.000   % Impervious"
*     12.570   Total Area"
*     90.000   Flow length"
*      1.000   Overland Slope"
*      1.885   Pervious Area"
*     90.000   Pervious length"
*      1.000   Pervious slope"
*     10.684   Impervious Area"
*     90.000   Impervious length"
*      1.000   Impervious slope"
```



```
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.019   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.665   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.493     0.000     0.216     0.353 c.m/sec"
*           Catchment 223          Pervious   Impervious Total Area "
*           Surface Area           1.885      10.684     12.570     hectare"
*           Time of concentration  383.748    8.962      10.796     minutes"
*           Time to Centroid       494.853    134.696    136.459    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        234.56     1329.16    1563.72    c.m"
*           Rainfall losses        12.209     4.165      5.372      mm"
*           Runoff depth           0.231      8.275      7.068      mm"
*           Runoff volume          4.35       884.14     888.49     c.m"
*           Runoff coefficient     0.019      0.665      0.568      "
*           Maximum flow           0.000      0.493      0.493      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.493     0.493     0.216     0.353"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.493     0.493     0.493     0.353"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  0.846    c.m/sec"
*           Hydrograph volume          3144.286    c.m"
*                 0.493     0.493     0.493     0.846"
* 81        ADD COMMENT==========================================================="
*          3   Lines of comment"
*              **************************************************"
*              Catchments east of Hamilton Road, part of Inlet #4"
*              **************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.493     0.000     0.493     0.846"
* 33        CATCHMENT 218"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        218   Ironbridge Manufacturing Property"
*     85.000   % Impervious"
*      2.060   Total Area"
*     230.000  Flow length"
*      1.700   Overland Slope"
*      0.309   Pervious Area"
*     230.000  Pervious length"
*      3.000   Pervious slope"
*      1.751   Impervious Area"
*     230.000  Impervious length"
*      3.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.053   Pervious Runoff coefficient"
*      0.060   Pervious Ia/S coefficient"
*      4.813   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.666   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                   0.069     0.000     0.493     0.846 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  234.471    11.317     14.420     minutes"
*            Time to Centroid       409.930    138.359    142.134    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        38.44      217.83     256.27     c.m"
*            Rainfall losses        11.778     4.150      5.294      mm"
*            Runoff depth           0.662      8.290      7.146      mm"
*            Runoff volume          2.05       145.16     147.21     c.m"
*            Runoff coefficient     0.053      0.666      0.574      "
*            Maximum flow           0.000      0.069      0.069      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.069     0.069     0.493     0.846"
* 54         POND DESIGN"
*       0.069   Current peak flow    c.m/sec"
*       4.094   Target outflow    c.m/sec"
*       147.2   Hydrograph volume    c.m"
*         15.   Number of stages"
*     344.700   Minimum water level    metre"
*     345.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               344.700    0.1250     0.000"
*               344.750    0.1270     9.000"
*               344.800    0.1280    35.000"
*               344.850    0.1300    77.000"
*               344.900    0.1450   136.000"
*               344.950    0.1820   209.000"
*               345.000    0.2220   297.000"
*               345.050    0.2690   400.000"
*               345.100    0.2710   519.000"
*               345.150    0.2740   653.000"
*               345.200    0.2760   804.000"
*               345.250    0.2790   971.000"
*               345.300    0.2820  1154.000"
*               345.350    0.2840  1355.000"
*               345.400    0.2860  1571.000"
*            Peak outflow                  0.068    c.m/sec"
*            Maximum level               344.727    metre"
*            Maximum storage               4.849    c.m"
*            Centroidal lag                2.389    hours"
*                0.069     0.069     0.068     0.846 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.903    c.m/sec"
*            Hydrograph volume          3291.496    c.m"
*                0.069     0.069     0.068     0.903"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.069     0.000     0.068     0.903"
* 33         CATCHMENT 219"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         219   N.C. Pestells Head Office & other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      75.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      75.000   Pervious length"
```



```
*       3.000   Pervious slope"
*       1.088   Impervious Area"
*      75.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.000   Pervious Runoff coefficient"
*       0.281   Pervious Ia/S coefficient"
*      22.539   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.665   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.060     0.000     0.068     0.903 c.m/sec"
*            Catchment 219          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration      ---    5.777      5.777      minutes"
*            Time to Centroid       0.000      129.760    129.760    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        23.88      135.35     159.23     c.m"
*            Rainfall losses        12.440     4.162      5.404      mm"
*            Runoff depth           0.000      8.278      7.036      mm"
*            Runoff volume          0.00       90.07      90.07      c.m"
*            Runoff coefficient     0.000      0.665      0.566      "
*            Maximum flow           0.000      0.060      0.060      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.060     0.060     0.068     0.903"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.060     0.060     0.060     0.903"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.963    c.m/sec"
*            Hydrograph volume          3381.563    c.m"
*                0.060     0.060     0.060     0.963"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.060     0.000     0.060     0.963"
* 33         CATCHMENT 220"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         220   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.011   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.661   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```

```
*                0.002     0.000     0.060     0.963 c.m/sec"
*             Catchment 220          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  246.805    4.335      42.440     minutes"
*             Time to Centroid       370.191    127.600    165.724    minutes"
*             Rainfall depth         12.440     12.440     12.440     mm"
*             Rainfall volume        57.22      4.98       62.20      c.m"
*             Rainfall losses        12.307     4.222      11.660     mm"
*             Runoff depth           0.133      8.218      0.780      mm"
*             Runoff volume          0.61       3.29       3.90       c.m"
*             Runoff coefficient     0.011      0.661      0.063      "
*             Maximum flow           0.000      0.002      0.002      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.002     0.002     0.060     0.963"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.002     0.002     0.002     0.963"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  0.965    c.m/sec"
*             Hydrograph volume          3385.463    c.m"
*                0.002     0.002     0.002     0.965"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.002     0.000     0.002     0.965"
* 33          CATCHMENT 221"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           221   Proposed ROW from Hamilton Road"
*        81.500   % Impervious"
*         0.810   Total Area"
*        40.000   Flow length"
*         2.000   Overland Slope"
*         0.150   Pervious Area"
*        40.000   Pervious length"
*         2.000   Pervious slope"
*         0.660   Impervious Area"
*        40.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.019   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.661   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                0.037     0.000     0.002     0.965 c.m/sec"
*             Catchment 221          Pervious   Impervious Total Area "
*             Surface Area           0.150      0.660      0.810      hectare"
*             Time of concentration  191.612    4.475      5.659      minutes"
*             Time to Centroid       330.432    127.812    129.094    minutes"
*             Rainfall depth         12.440     12.440     12.440     mm"
*             Rainfall volume        18.64      82.12      100.76     c.m"
*             Rainfall losses        12.209     4.217      5.695      mm"
*             Runoff depth           0.231      8.224      6.745      mm"
*             Runoff volume          0.35       54.29      54.63      c.m"
*             Runoff coefficient     0.019      0.661      0.542      "
*             Maximum flow           0.000      0.037      0.037      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
```



```
*                0.037     0.037     0.002     0.965"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.037     0.037     0.037     0.965"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  1.002    c.m/sec"
*             Hydrograph volume          3440.096    c.m"
*                0.037     0.037     0.037     1.002"
* 81          ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchment to Inlet #5"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.037     0.000     0.037     1.002"
* 33          CATCHMENT 222"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           222   Rear yards from Hamilton Heights Subdivision"
*         5.000   % Impervious"
*         1.080   Total Area"
*        20.000   Flow length"
*         3.000   Overland Slope"
*         1.026   Pervious Area"
*        20.000   Pervious length"
*         3.000   Pervious slope"
*         0.054   Impervious Area"
*        20.000   Impervious length"
*         3.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.019   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.656   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                0.003     0.000     0.037     1.002 c.m/sec"
*             Catchment 222          Pervious   Impervious Total Area "
*             Surface Area           1.026      0.054      1.080      hectare"
*             Time of concentration  111.939    2.614      40.828     minutes"
*             Time to Centroid       262.159    124.905    172.880    minutes"
*             Rainfall depth         12.440     12.440     12.440     mm"
*             Rainfall volume        127.64     6.72       134.35     c.m"
*             Rainfall losses        12.209     4.282      11.813     mm"
*             Runoff depth           0.231      8.158      0.627      mm"
*             Runoff volume          2.37       4.41       6.77       c.m"
*             Runoff coefficient     0.019      0.656      0.050      "
*             Maximum flow           0.000      0.003      0.003      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.003     0.003     0.037     1.002"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.003     0.003     0.003     1.002"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  1.004    c.m/sec"
```

```
*            Hydrograph volume          3446.869    c.m"
*                  0.003     0.003     0.003     1.004"
* 81         ADD COMMENT==================================================="
*          3  Lines of comment"
*             **************************************************"
*             Badenview Developments Inc. lands"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.003     0.000     0.003     1.004"
* 33         CATCHMENT 224"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         224   Badenview lands"
*      85.000   % Impervious"
*      43.200   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       6.480   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      36.720   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.019   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.665   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  1.694     0.000     0.003     1.004 c.m/sec"
*            Catchment 224          Pervious   Impervious Total Area "
*            Surface Area           6.480      36.720     43.200     hectare"
*            Time of concentration  383.748    8.962      10.796     minutes"
*            Time to Centroid       494.852    134.696    136.459    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        806.12     4568.00    5374.12    c.m"
*            Rainfall losses        12.209     4.165      5.372      mm"
*            Runoff depth           0.231      8.275      7.068      mm"
*            Runoff volume          14.95      3038.56    3053.51    c.m"
*            Runoff coefficient     0.019      0.665      0.568      "
*            Maximum flow           0.001      1.694      1.694      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.694     1.694     0.003     1.004"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  1.694     1.694     1.694     1.004"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.698    c.m/sec"
*            Hydrograph volume         6500.375    c.m"
*                  1.694     1.694     1.694     2.698"
* 40         HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 2.698    c.m/sec"
*            Hydrograph volume         6500.375    c.m"
*                  1.694     2.698     1.694     0.000"
```



```
* 81         ADD COMMENT==================================================="
*          7  Lines of comment"
*             **************************************************"
*             **************************************************"
*             **                                              ***"
*             **          PROPOSED SWM POND DESIGN            ***"
*             **                                              ***"
*             **************************************************"
*             **************************************************"
* 54         POND DESIGN"
*        2.698   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*       6500.4   Hydrograph volume    c.m"
*          36.   Number of stages"
*      334.550   Minimum water level    metre"
*      337.850   Maximum water level    metre"
*      334.550   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                334.550     0.000     0.000"
*                334.600   0.00400  1187.000"
*                334.700   0.02830  3607.000"
*                334.800   0.06350  6090.000"
*                334.900   0.08900  8636.000"
*                335.000    0.1880  11246.00"
*                335.100    0.3430  13920.00"
*                335.200    0.5360  16658.00"
*                335.300    0.7599  19459.00"
*                335.400     1.011  22323.00"
*                335.500     1.286  25249.00"
*                335.600     1.583  28239.00"
*                335.700     1.901  31294.00"
*                335.800     2.238  34414.00"
*                335.900     2.593  37599.00"
*                336.000     2.966  40851.00"
*                336.100     3.427  43465.00"
*                336.200     3.959  46848.00"
*                336.300     4.543  50286.00"
*                336.400     5.171  53779.00"
*                336.500     5.840  57328.00"
*                336.600     6.544  60933.00"
*                336.700     7.284  64595.00"
*                336.800     8.055  68313.00"
*                336.900     8.858  72088.00"
*                337.000     9.690  75920.00"
*                337.100    10.550  79809.00"
*                337.200    11.437  83755.00"
*                337.300    12.351  87759.00"
*                337.400    13.291  91821.00"
*                337.500    14.255  95940.00"
*                337.550    14.746  98022.00"
*                337.600    16.027  100118.0"
*                337.700    20.027  104352.0"
*                337.800    25.280  108643.0"
*                337.850    28.277  110810.0"
*              Peak outflow                 0.049    c.m/sec"
*              Maximum level              334.759    metre"
*              Maximum storage           5075.638    c.m"
*              Centroidal lag              31.211    hours"
*                   1.694     2.698     0.049     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*              Maximum flow                 0.049    c.m/sec"
*              Hydrograph volume         3173.026    c.m"
*                    1.694     2.698     0.049     0.049"
```

```
* 81          ADD COMMENT==========================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                    1.694     0.000     0.049     0.049"
* 33          CATCHMENT 260"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           260  Hamilton Heights Subdivision"
*        46.000  % Impervious"
*         8.160  Total Area"
*        50.000  Flow length"
*         1.000  Overland Slope"
*         4.406  Pervious Area"
*        50.000  Pervious length"
*         3.000  Pervious slope"
*         3.754  Impervious Area"
*       232.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.019  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.667  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                    0.140     0.000     0.049     0.049 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  193.975    14.006     19.694     minutes"
*              Time to Centroid       332.456    142.541    148.543    minutes"
*              Rainfall depth         12.440     12.440     12.440     mm"
*              Rainfall volume        548.16     466.95     1015.11    c.m"
*              Rainfall losses        12.209     4.141      8.498      mm"
*              Runoff depth           0.231      8.299      3.942      mm"
*              Runoff volume          10.17      311.52     321.69     c.m"
*              Runoff coefficient     0.019      0.667      0.317      "
*              Maximum flow           0.001      0.140      0.140      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                    0.140     0.140     0.049     0.049"
* 33          CATCHMENT 261"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           261  Klassen Bronze Property"
*        32.000  % Impervious"
*         2.350  Total Area"
*       100.000  Flow length"
*         2.500  Overland Slope"
*         1.598  Pervious Area"
*        50.000  Pervious length"
*         2.500  Pervious slope"
*         0.752  Impervious Area"
*       164.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.019  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
```



```
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.667  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                    0.030     0.140     0.049     0.049 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  204.880    11.374     22.178     minutes"
*              Time to Centroid       341.802    138.447    149.801    minutes"
*              Rainfall depth         12.440     12.440     12.440     mm"
*              Rainfall volume        198.79     93.55      292.34     c.m"
*              Rainfall losses        12.209     4.149      9.630      mm"
*              Runoff depth           0.231      8.291      2.810      mm"
*              Runoff volume          3.69       62.35      66.04      c.m"
*              Runoff coefficient     0.019      0.667      0.226      "
*              Maximum flow           0.000      0.030      0.030      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                    0.030     0.170     0.049     0.049"
* 40          HYDROGRAPH Copy to Outflow"
*             8  Copy to Outflow"
*                    0.030     0.170     0.170     0.049"
* 40          HYDROGRAPH   Combine    12"
*             6  Combine "
*            12  Node #"
*                d/s of Proposed SWMF"
*                Maximum flow                  0.179    c.m/sec"
*                Hydrograph volume          3560.750    c.m"
*                    0.030     0.170     0.170     0.179"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                    0.030     0.000     0.170     0.179"
* 33          CATCHMENT 225"
*             1  Triangular SCS"
*             1  Equal length"
*             1  SCS method"
*           225  HWY 7/8 and north ditching"
*        30.000  % Impervious"
*         1.670  Total Area"
*        75.000  Flow length"
*         2.000  Overland Slope"
*         1.169  Pervious Area"
*        75.000  Pervious length"
*         2.000  Pervious slope"
*         0.501  Impervious Area"
*        75.000  Impervious length"
*         2.000  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        74.000  Pervious SCS Curve No."
*         0.011  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.924  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.661  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                    0.028     0.000     0.170     0.179 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  371.435    6.525      19.813     minutes"
*              Time to Centroid       468.336    131.017    143.301    minutes"
*              Rainfall depth         12.440     12.440     12.440     mm"
*              Rainfall volume        145.42     62.32      207.75     c.m"
*              Rainfall losses        12.307     4.213      9.879      mm"
```

```
*            Runoff depth           0.133      8.227      2.561      mm"
*            Runoff volume          1.56       41.22      42.77      c.m"
*            Runoff coefficient     0.011      0.661      0.206      "
*            Maximum flow           0.000      0.028      0.028      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.028      0.028      0.170      0.179"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.028      0.028      0.028      0.179"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                  0.199    c.m/sec"
*            Hydrograph volume          3603.524    c.m"
*                  0.028      0.028      0.028      0.199"
* 81         ADD COMMENT==========================================="
*         3  Lines of comment"
*            ************************************************************"
*            Western catchment along Hamilton Road, diverted to Inlet #6"
*            ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.028      0.000      0.028      0.199"
* 33         CATCHMENT 270"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         270   Industrial/Residential area along Hamilton Road"
*      55.000   % Impervious"
*       8.450   Total Area"
*      45.000   Flow length"
*       2.000   Overland Slope"
*       3.802   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       4.648   Impervious Area"
*     235.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.019   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.667   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.173      0.000      0.028      0.199 c.m/sec"
*            Catchment 270          Pervious   Impervious Total Area *
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  142.768    14.114     16.975     minutes"
*            Time to Centroid       288.576    142.705    145.948    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        473.03     578.15     1051.19    c.m"
*            Rainfall losses        12.209     4.140      7.771      mm"
*            Runoff depth           0.231      8.301      4.669      mm"
*            Runoff volume          8.77       385.77     394.54     c.m"
*            Runoff coefficient     0.019      0.667      0.375      "
*            Maximum flow           0.001      0.173      0.173      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.173      0.173      0.028      0.199"
* 56         DIVERSION"
*           6   Node number"
```



```
*        1.560   Overflow threshold"
*        1.000   Required diverted fraction"
*            0   Conduit type; 1=Pipe;2=Channel"
*                Peak of diverted flow          0.000    c.m/sec"
*                Volume of diverted flow        0.000    c.m"
*                DIV00006.0012hyd"
*                Major flow at 6"
*                       0.173      0.173      0.173      0.199 c.m/sec"
* 40             HYDROGRAPH   Combine    9"
*               6   Combine "
*               9   Node #"
*                   NODE B"
*                Maximum flow                   0.173    c.m/sec"
*                Hydrograph volume            394.542    c.m"
*                       0.173      0.173      0.173      0.173"
* 40             HYDROGRAPH Start - New Tributary"
*               2   Start - New Tributary"
*                       0.173      0.000      0.173      0.173"
* 47             FILEI_O Read/Open DIV00006.0012hyd"
*               1   1=read/open; 2=write/save"
*               2   1=rainfall; 2=hydrograph"
*               1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*                DIV00006.0012hyd"
*                Major flow at 6"
*                Total volume                   0.000    c.m"
*                Maximum flow                   0.000    c.m/sec"
*                     0.000      0.000      0.173      0.173 c.m/sec"
* 40             HYDROGRAPH Add Runoff "
*               4   Add Runoff "
*                       0.000      0.000      0.173      0.173"
* 40             HYDROGRAPH Copy to Outflow"
*               8   Copy to Outflow"
*                       0.000      0.000      0.000      0.173"
* 40             HYDROGRAPH   Combine    12"
*               6   Combine "
*              12   Node #"
*                   d/s of Proposed SWMF"
*                Maximum flow                   0.199    c.m/sec"
*                Hydrograph volume            3603.524    c.m"
*                       0.000      0.000      0.000      0.199"
* 40             HYDROGRAPH   Confluence    12"
*               7   Confluence "
*              12   Node #"
*                   d/s of Proposed SWMF"
*                Maximum flow                   0.199    c.m/sec"
*                Hydrograph volume            3603.524    c.m"
*                       0.000      0.199      0.000      0.000"
* 54             POND DESIGN"
*           0.199   Current peak flow    c.m/sec"
*           0.070   Target outflow    c.m/sec"
*          3603.5   Hydrograph volume    c.m"
*              8.   Number of stages"
*         334.290   Minimum water level    metre"
*         337.000   Maximum water level    metre"
*         334.290   Starting water level    metre"
*               0   Keep Design Data: 1 = True; 0 = False"
*                     Level Discharge    Volume"
*                   334.290     0.000     0.000"
*                   334.500    0.2540     5.000"
*                   335.000     1.303   110.000"
*                   335.500     2.800   674.000"
*                   336.000     4.639  1910.000"
*                   336.500     6.480  3748.000"
*                   336.550     6.665  3967.000"
*                   337.000    23.484  6569.000"
*                Peak outflow                   0.196    c.m/sec"
*                Maximum level                334.452    metre"
```

```
*           Maximum storage              3.849    c.m"
*           Centroidal lag              11.230   hours"
*                0.000     0.199     0.196     0.000 c.m/sec"
* 40        HYDROGRAPH Next link "
*          5   Next link "
*                0.000     0.196     0.196     0.000"
* 56        DIVERSION"
*          7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow        0.000    c.m/sec"
*           Volume of diverted flow      0.000    c.m"
*           DIV00007.0012hyd"
*           Major flow at 7"
*                0.000     0.196     0.196     0.000 c.m/sec"
* 40        HYDROGRAPH   Combine    8"
*          6   Combine "
*          8   Node #"
*              NODE A"
*           Maximum flow                 0.196    c.m/sec"
*           Hydrograph volume         3603.021    c.m"
*                0.000     0.196     0.196     0.196"
* 81        ADD COMMENT==========================================================="
*        3  Lines of comment"
*           ***************************************************"
*           Catchments South of Hwy 7/8"
*           ***************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.000     0.000     0.196     0.196"
* 33        CATCHMENT 280"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        280   Northeast portion of Maple Leaf Foods property"
*      26.000  % Impervious"
*       0.700  Total Area"
*      45.000  Flow length"
*       1.500  Overland Slope"
*       0.518  Pervious Area"
*      20.000  Pervious length"
*       2.000  Pervious slope"
*       0.182  Impervious Area"
*      68.000  Impervious length"
*       1.000  Impervious slope"
*       0.250  Pervious Manning 'n'"
*      79.000  Pervious SCS Curve No."
*       0.036  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*       6.752  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*      98.000  Impervious SCS Curve No."
*       0.666  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
*                0.010     0.000     0.196     0.196 c.m/sec"
*           Catchment 280          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  85.045     7.574      17.791     minutes"
*           Time to Centroid       239.220    132.600    146.661    minutes"
*           Rainfall depth         12.440     12.440     12.440     mm"
*           Rainfall volume        64.44      22.64      87.08      c.m"
*           Rainfall losses        11.998     4.160      9.960      mm"
*           Runoff depth           0.442      8.280      2.480      mm"
*           Runoff volume          2.29       15.07      17.36      c.m"
*           Runoff coefficient     0.036      0.666      0.199      "
```



```
*           Maximum flow           0.000      0.010      0.010      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.010     0.010     0.196     0.196"
* 54        POND DESIGN"
*       0.010   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        17.4   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*          0   Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
*                0.4500   0.00800    69.000"
*                0.6500   0.01000   178.000"
*                0.7000    0.1060   208.000"
*                0.7500    0.2810   240.000"
*           Peak outflow                 0.005    c.m/sec"
*           Maximum level                0.183    metre"
*           Maximum storage              3.336    c.m"
*           Centroidal lag               2.557   hours"
*                0.010     0.010     0.005     0.196 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                 0.177    c.m/sec"
*           Hydrograph volume          411.865    c.m"
*                0.010     0.010     0.005     0.177"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.010     0.000     0.005     0.177"
* 33        CATCHMENT 281"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        281   Western portion of John Bear property"
*       93.000  % Impervious"
*        1.870  Total Area"
*      120.000  Flow length"
*        1.000  Overland Slope"
*        0.131  Pervious Area"
*       20.000  Pervious length"
*        2.000  Pervious slope"
*        1.739  Impervious Area"
*      112.000  Impervious length"
*        1.000  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       65.000  Pervious SCS Curve No."
*        0.000  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*       13.677  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.666  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                0.073     0.000     0.005     0.177 c.m/sec"
*           Catchment 281          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration      ---    10.218     10.218     minutes"
*           Time to Centroid       0.000      136.680    136.680    minutes"
```

```
*            Rainfall depth          12.440      12.440      12.440      mm"
*            Rainfall volume         16.28       216.35      232.63      c.m"
*            Rainfall losses         12.440      4.161       4.741       mm"
*            Runoff depth            0.000       8.279       7.699       mm"
*            Runoff volume           0.00        143.98      143.98      c.m"
*            Runoff coefficient      0.000       0.666       0.619       "
*            Maximum flow            0.000       0.073       0.073       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.073     0.073     0.005     0.177"
* 54         POND DESIGN"
*       0.073   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       144.0   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                 0.3000   0.09000     8.000"
*                 0.6000    0.1200    97.000"
*                 0.9000    0.1300   167.000"
*                  1.200    0.1400   254.000"
*                  1.500    0.1500   358.000"
*                  1.800     1.000   400.000"
*            Peak outflow                  0.071    c.m/sec"
*            Maximum level                 0.237    metre"
*            Maximum storage               6.312    c.m"
*            Centroidal lag                2.303    hours"
*                 0.073     0.073     0.071     0.177 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.248    c.m/sec"
*            Hydrograph volume           555.843    c.m"
*                 0.073     0.073     0.071     0.248"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.073     0.000     0.071     0.248"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.000   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.663   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.046     0.000     0.071     0.248 c.m/sec"
*            Catchment 282           Pervious    Impervious Total Area "
*            Surface Area            0.375       0.835       1.210       hectare"
*            Time of concentration       ---     7.279       7.279       minutes"
*            Time to Centroid        0.000       132.172     132.172     minutes"
*            Rainfall depth          12.440      12.440      12.440      mm"
*            Rainfall volume         46.66       103.86      150.52      c.m"
*            Rainfall losses         12.440      4.187       6.745       mm"
*            Runoff depth            0.000       8.253       5.695       mm"
*            Runoff volume           0.00        68.91       68.91       c.m"
*            Runoff coefficient      0.000       0.663       0.458       "
*            Maximum flow            0.000       0.046       0.046       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.046     0.046     0.071     0.248"
* 54         POND DESIGN"
*       0.046   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        68.9   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.006    c.m/sec"
*            Maximum level                 0.045    metre"
*            Maximum storage              38.386    c.m"
*            Centroidal lag                3.986    hours"
*                 0.046     0.046     0.006     0.248 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.253    c.m/sec"
*            Hydrograph volume           624.748    c.m"
*                 0.046     0.046     0.006     0.253"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.046     0.000     0.006     0.253"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.000   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

```
*       0.667   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.205     0.000     0.006     0.253 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  1383.480   17.653     18.522     minutes"
*            Time to Centroid       1031.692   148.211    148.773    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        2057.08    840.22     2897.30    c.m"
*            Rainfall losses        12.438     4.138      10.031     mm"
*            Runoff depth           0.002      8.302      2.409      mm"
*            Runoff volume          0.36       560.74     561.09     c.m"
*            Runoff coefficient     0.000      0.667      0.194      "
*            Maximum flow           0.000      0.205      0.205      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.205     0.205     0.006     0.253"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.205     0.205     0.205     0.253"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 0.455    c.m/sec"
*            Hydrograph volume          1185.841   c.m"
*               0.205     0.205     0.205     0.455"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                 0.196    c.m/sec"
*            Hydrograph volume          3603.021   c.m"
*               0.205     0.196     0.205     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.205     0.196     0.196     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 0.651    c.m/sec"
*            Hydrograph volume          4788.862   c.m"
*               0.205     0.196     0.196     0.651"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.205     0.000     0.196     0.651"
* 33         CATCHMENT 284"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         284   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.011   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
```



```
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.665   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.003     0.000     0.196     0.651 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  338.532    5.947      152.629    minutes"
*            Time to Centroid       442.425    130.008    267.795    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        359.64     7.34       366.98     c.m"
*            Rainfall losses        12.307     4.165      12.144     mm"
*            Runoff depth           0.133      8.275      0.296      mm"
*            Runoff volume          3.85       4.88       8.73       c.m"
*            Runoff coefficient     0.011      0.665      0.024      "
*            Maximum flow           0.000      0.003      0.003      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.003     0.003     0.196     0.651"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.003     0.003     0.003     0.651"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 0.653    c.m/sec"
*            Hydrograph volume          4797.595   c.m"
*               0.003     0.003     0.003     0.653"
* 40         HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                 0.653    c.m/sec"
*            Hydrograph volume          4797.595   c.m"
*               0.003     0.653     0.003     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.003     0.653     0.653     0.000"
* 40         HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                 0.653    c.m/sec"
*            Hydrograph volume          4797.595   c.m"
*               0.003     0.653     0.653     0.653"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.003     0.000     0.653     0.653"
* 33         CATCHMENT 285"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         285   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
```

```
*       64.400   Pervious SCS Curve No."
*        0.000   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.667   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.387     0.000     0.653     0.653 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration      ---    15.483     15.483     minutes"
*             Time to Centroid       0.000      144.862    144.862    minutes"
*             Rainfall depth         12.440     12.440     12.440     mm"
*             Rainfall volume        981.22     1355.02    2336.25    c.m"
*             Rainfall losses        12.440     4.148      7.631      mm"
*             Runoff depth           0.000      8.292      4.809      mm"
*             Runoff volume          0.00       903.20     903.20     c.m"
*             Runoff coefficient     0.000      0.667      0.387      "
*             Maximum flow           0.000      0.387      0.387      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.387     0.387     0.653     0.653"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.387     0.387     0.387     0.653"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                  1.040    c.m/sec"
*             Hydrograph volume          5700.802    c.m"
*                  0.387     0.387     0.387     1.040"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             **********************************************************"
*             Catchments north of Hwy 7/8, towards Eastern Tributary"
*             **********************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                  0.387     0.000     0.387     1.040"
* 33          CATCHMENT 250"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           250   Southern portion of Rec Centre fields"
*         0.000   % Impervious"
*         3.510   Total Area"
*        95.000   Flow length"
*         1.600   Overland Slope"
*         3.510   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         0.000   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.019   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
```



```
*                  0.000     0.000     0.387     1.040 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  332.037    14.870     332.025    minutes"
*             Time to Centroid       450.750    143.887    450.739    minutes"
*             Rainfall depth         12.440     12.440     12.440     mm"
*             Rainfall volume        436.65     0.00       436.65     c.m"
*             Rainfall losses        12.209     4.136      12.209     mm"
*             Runoff depth           0.231      8.304      0.231      mm"
*             Runoff volume          8.10       0.00       8.10       c.m"
*             Runoff coefficient     0.019      0.000      0.019      "
*             Maximum flow           0.000      0.000      0.000      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.000     0.000     0.387     1.040"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.000     0.000     0.000     1.040"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.000    c.m/sec"
*             Hydrograph volume             8.099    c.m"
*                  0.000     0.000     0.000     0.000"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.000     0.000     0.000     0.000"
* 33          CATCHMENT 251"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.019   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.668   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  0.069     0.000     0.000     0.000 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  332.041    14.870     31.807     minutes"
*             Time to Centroid       450.752    143.887    160.274    minutes"
*             Rainfall depth         12.440     12.440     12.440     mm"
*             Rainfall volume        480.92     236.87     717.79     c.m"
*             Rainfall losses        12.209     4.136      9.545      mm"
*             Runoff depth           0.231      8.304      2.895      mm"
*             Runoff volume          8.92       158.12     167.04     c.m"
*             Runoff coefficient     0.019      0.668      0.233      "
*             Maximum flow           0.000      0.069      0.069      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

```
*                0.069     0.069     0.000     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.069     0.069     0.069     0.000"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                0.069    c.m/sec"
*           Hydrograph volume         175.136    c.m"
*                0.069     0.069     0.069     0.069"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.069     0.000     0.069     0.069"
* 33         CATCHMENT 252"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         252   Southern portion of Hamburglr lands"
*       5.000   % Impervious"
*       2.870   Total Area"
*      65.000   Flow length"
*       1.500   Overland Slope"
*       2.726   Pervious Area"
*      65.000   Pervious length"
*       1.500   Pervious slope"
*       0.144   Impervious Area"
*      65.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.011   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.661   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.008     0.000     0.069     0.069 c.m/sec"
*            Catchment 252          Pervious   Impervious Total Area "
*            Surface Area           2.726      0.144      2.870      hectare"
*            Time of concentration  371.600    6.528      92.439     minutes"
*            Time to Centroid       468.466    131.023    210.432    minutes"
*            Rainfall depth         12.440     12.440     12.440     mm"
*            Rainfall volume        339.18     17.85      357.03     c.m"
*            Rainfall losses        12.307     4.213      11.902     mm"
*            Runoff depth           0.133      8.227      0.538      mm"
*            Runoff volume          3.63       11.81      15.44      c.m"
*            Runoff coefficient     0.011      0.661      0.043      "
*            Maximum flow           0.000      0.008      0.008      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.008     0.008     0.069     0.069"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.008     0.008     0.008     0.069"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                0.075    c.m/sec"
*           Hydrograph volume         190.575    c.m"
*                0.008     0.008     0.008     0.075"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.008     0.000     0.008     0.075"
```



```
* 47         FILEI_0 Read/Open DIV00007.0012hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00007.0012hyd"
*            Major flow at 7"
*            Total volume                0.000    c.m"
*            Maximum flow                0.000    c.m/sec"
*                 0.000     0.000     0.008     0.075 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.000     0.000     0.008     0.075"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.000     0.000     0.000     0.075"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                0.075    c.m/sec"
*           Hydrograph volume         190.575    c.m"
*                0.000     0.000     0.000     0.075"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                0.075    c.m/sec"
*           Hydrograph volume         190.575    c.m"
*                0.000     0.075     0.000     0.000"
* 54         POND DESIGN"
*         0.075   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         190.6   Hydrograph volume    c.m"
*            9.   Number of stages"
*       332.660   Minimum water level    metre"
*       336.000   Maximum water level    metre"
*       332.660   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 332.660     0.000     0.000"
*                 333.000    0.3010   198.000"
*                 333.500     1.168  1165.000"
*                 334.000     2.325  2895.000"
*                 334.500     3.132  5301.000"
*                 335.000     3.780  8376.000"
*                 335.500     4.332  12258.00"
*                 335.750     4.583  14551.00"
*                 336.000    21.985  17113.00"
*            Peak outflow                0.052    c.m/sec"
*            Maximum level             332.718    metre"
*            Maximum storage            34.017    c.m"
*            Centroidal lag              3.127   hours"
*                 0.000     0.075     0.052     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                0.000     0.052     0.052     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                  234.030    hectare"
*            Total Impervious area                 110.433    hectare"
*            Total % impervious                     47.187"
* 19         EXIT"
```

```
*             MIDUSS Output ------------------------------------------->"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*          10 Units used:                                        ie METRIC"
*             Job folder:                      Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                    34896-104_Post-0025mm.out"
*             Licensee name:                                          admin"
*             Company                                             Microsoft"
*             Date & Time last used:              12/17/2018 at 1:27:12 PM"
* 81          ADD COMMENT==========================================================="
*           7 Lines of comment"
*             ****************************************"
*             Wilmot Employement Lands"
*             New Hamburg, Ontario"
*             25mm Storm Event - Post-development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB/GMK"
*             ****************************************"
* 31          TIME PARAMETERS"
*        5.000  Time Step"
*      240.000  Max. Storm length"
*     1500.000  Max. Hydrograph"
* 32          STORM Chicago storm"
*           1   Chicago storm"
*      509.000  Coefficient A"
*        6.000  Constant B"
*        0.799  Exponent C"
*        0.400  Fraction R"
*      240.000  Duration"
*        1.000  Time step multiplier"
*             Maximum intensity          71.966    mm/hr"
*             Total depth                25.028    mm"
*           7   0025hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 201"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         201   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.201   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.015     0.000     0.000     0.000 c.m/sec"
*             Catchment 201          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  74.150     7.228      74.150     minutes"
```



```
*             Time to Centroid       237.478    128.682    237.478    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        743.32     0.00       743.32     c.m"
*             Rainfall losses        19.997     4.960      19.997     mm"
*             Runoff depth           5.031      20.068     5.031      mm"
*             Runoff volume          149.42     0.00       149.42     c.m"
*             Runoff coefficient     0.201      0.000      0.201      "
*             Maximum flow           0.015      0.000      0.015      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.015     0.015     0.000     0.000"
* 33          CATCHMENT 202"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         202   Woodlot - north of GEXR"
*       0.000   % Impervious"
*       2.080   Total Area"
*      80.000   Flow length"
*       2.500   Overland Slope"
*       2.080   Pervious Area"
*      80.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.065   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.003     0.015     0.000     0.000 c.m/sec"
*             Catchment 202          Pervious   Impervious Total Area "
*             Surface Area           2.080      0.000      2.080      hectare"
*             Time of concentration  93.348     4.460      93.347     minutes"
*             Time to Centroid       251.972    124.266    251.971    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        520.58     0.00       520.58     c.m"
*             Rainfall losses        23.402     4.987      23.402     mm"
*             Runoff depth           1.626      20.041     1.626      mm"
*             Runoff volume          33.82      0.00       33.82      c.m"
*             Runoff coefficient     0.065      0.000      0.065      "
*             Maximum flow           0.003      0.000      0.003      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.003     0.018     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.003     0.018     0.018     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                 0.018    c.m/sec"
*             Hydrograph volume          183.235    c.m"
*                 0.003     0.018     0.018     0.018"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.003     0.000     0.018     0.018"
* 33          CATCHMENT 203"
*           1   Triangular SCS"
*           1   Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.174   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.803   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.556     0.000     0.018     0.018 c.m/sec"
*            Catchment 203          Pervious   Impervious Total Area *
*            Surface Area           7.404      11.106     18.510     hectare"
*            Time of concentration  67.455     6.301      14.037     minutes"
*            Time to Centroid       228.396    127.158    139.965    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        1853.05    2779.57    4632.62    c.m"
*            Rainfall losses        20.664     4.941      11.230     mm"
*            Runoff depth           4.363      20.087     13.797     mm"
*            Runoff volume          323.07     2230.84    2553.91    c.m"
*            Runoff coefficient     0.174      0.803      0.551      "
*            Maximum flow           0.036      1.551      1.556      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.556     1.556     0.018     0.018"
* 54         POND DESIGN"
*       1.556   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*      2553.9   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*             341.500     0.000     0.000"
*             342.000    0.1541  1746.000"
*             342.500    0.2669  3784.000"
*             343.000    0.3446  6114.000"
*             343.300    0.3837  7652.000"
*             343.600     2.941  9295.000"
*          1.   WEIRS"
*               Crest      Weir      Crest      Left      Right"
*           elevation coefficie   breadth sideslope sideslope"
*             343.300     0.900    10.000     0.000     0.000"
*          1.   ORIFICES"
*               Orifice   Orifice   Orifice Number of"
*                invert coefficie  diameter  orifices"
*             341.500     0.630    0.3750     1.000"
*           Peak outflow                  0.133    c.m/sec"
*           Maximum level               341.933    metre"
*           Maximum storage            1511.222    c.m"
*           Centroidal lag                5.462   hours"
*                 1.556     1.556     0.133     0.018 c.m/sec"
* 40         HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.151    c.m/sec"
*            Hydrograph volume          2735.136    c.m"
*                  1.556     1.556     0.133     0.151"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.151    c.m/sec"
*            Hydrograph volume          2735.136    c.m"
*                  1.556     0.151     0.133     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  1.556     0.151     0.151     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.151    c.m/sec"
*            Hydrograph volume          2735.136    c.m"
*                  1.556     0.151     0.151     0.151"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  1.556     0.000     0.151     0.151"
* 81         ADD COMMENT==================================================="
*         3   Lines of comment"
*             **************************************************"
*             Catchments South of GEXR, part of Inlet #1"
*             **************************************************"
* 33         CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.805   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.140     0.000     0.151     0.151 c.m/sec"
*            Catchment 204          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  57.064     9.033      13.503     minutes"
*            Time to Centroid       211.602    131.429    138.889    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        207.28     298.28     505.56     c.m"
*            Rainfall losses        22.053     4.884      11.923     mm"
*            Runoff depth           2.974      20.144     13.104     mm"
*            Runoff volume          24.63      240.07     264.71     c.m"
*            Runoff coefficient     0.119      0.805      0.524      "
```

```
*            Maximum flow          0.003      0.139      0.140      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.140     0.140     0.151     0.151"
* 54         POND DESIGN"
*       0.140   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       264.7   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*            Peak outflow                  0.008    c.m/sec"
*            Maximum level                 0.076    metre"
*            Maximum storage             192.103    c.m"
*            Centroidal lag                9.249   hours"
*                 0.140     0.140     0.008     0.151 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.158    c.m/sec"
*            Hydrograph volume          2989.318    c.m"
*                 0.140     0.140     0.008     0.158"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.140     0.000     0.008     0.158"
* 33         CATCHMENT 205"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         205   Iron Bridge Manufacturing Property - Woodlot"
*       5.000   % Impervious"
*       1.190   Total Area"
*     255.000   Flow length"
*       1.800   Overland Slope"
*       1.131   Pervious Area"
*     255.000   Pervious length"
*       1.800   Pervious slope"
*       0.060   Impervious Area"
*     255.000   Impervious length"
*       1.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.065   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.804   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.007     0.000     0.008     0.158 c.m/sec"
*            Catchment 205          Pervious   Impervious Total Area "
*            Surface Area           1.131      0.060      1.190      hectare"
*            Time of concentration  206.526    9.867      128.982    minutes"
*            Time to Centroid       379.239    132.805    282.069    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        282.94     14.89      297.83     c.m"
*            Rainfall losses        23.402     4.916      22.477     mm"
*            Runoff depth           1.626      20.111     2.550      mm"
```



```
*            Runoff volume          18.38      11.97      30.35      c.m"
*            Runoff coefficient     0.065      0.804      0.102      "
*            Maximum flow           0.001      0.007      0.007      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.007     0.007     0.008     0.158"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.007     0.007     0.007     0.158"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.159    c.m/sec"
*            Hydrograph volume          3019.663    c.m"
*                 0.007     0.007     0.007     0.159"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.007     0.000     0.007     0.159"
* 33         CATCHMENT 206"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         206   Industrial properties at end of Hamilton Road"
*      35.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.852   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       0.997   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.801   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.133     0.000     0.007     0.159 c.m/sec"
*            Catchment 206          Pervious   Impervious Total Area "
*            Surface Area           1.852      0.997      2.850      hectare"
*            Time of concentration  62.974     4.428      17.078     minutes"
*            Time to Centroid       219.049    124.213    144.704    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        463.64     249.65     713.29     c.m"
*            Rainfall losses        22.053     4.986      16.080     mm"
*            Runoff depth           2.974      20.041     8.948      mm"
*            Runoff volume          55.10      199.91     255.01     c.m"
*            Runoff coefficient     0.119      0.801      0.358      "
*            Maximum flow           0.006      0.132      0.133      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.133     0.133     0.007     0.159"
* 33         CATCHMENT 207"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         207   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
```

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*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.066   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.793   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.038     0.133     0.007     0.159 c.m/sec"
*            Catchment 207          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  77.117     3.728      48.800     minutes"
*            Time to Centroid       233.588    123.194    190.992    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        1407.56    74.08      1481.64    c.m"
*            Rainfall losses        23.365     5.185      22.456     mm"
*            Runoff depth           1.662      19.842     2.571      mm"
*            Runoff volume          93.49      58.73      152.22     c.m"
*            Runoff coefficient     0.066      0.793      0.103      "
*            Maximum flow           0.009      0.038      0.038      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.038     0.171     0.007     0.159"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.038     0.171     0.171     0.159"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.243    c.m/sec"
*            Hydrograph volume          3426.896    c.m"
*               0.038     0.171     0.171     0.243"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.038     0.000     0.171     0.243"
* 33         CATCHMENT 208"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         208   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.108   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```



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*       0.806   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.426     0.000     0.171     0.243 c.m/sec"
*            Catchment 208          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  48.732     10.822     12.446     minutes"
*            Time to Centroid       200.128    134.265    137.085    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        346.01     1038.02    1384.03    c.m"
*            Rainfall losses        22.319     4.844      9.213      mm"
*            Runoff depth           2.709      20.183     15.815     mm"
*            Runoff volume          37.45      837.11     874.56     c.m"
*            Runoff coefficient     0.108      0.806      0.632      "
*            Maximum flow           0.005      0.425      0.426      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.426     0.426     0.171     0.243"
* 54         POND DESIGN"
*       0.426   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       874.6   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*            Peak outflow                  0.017    c.m/sec"
*            Maximum level                 0.338    metre"
*            Maximum storage             729.270    c.m"
*            Centroidal lag               18.414    hours"
*               0.426     0.426     0.017     0.243 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.245    c.m/sec"
*            Hydrograph volume          4055.545    c.m"
*               0.426     0.426     0.017     0.245"
* 81         ADD COMMENT==================================================="
*          3  Lines of comment"
*             **************************************************"
*             Catchments South of GEXR, part of Inlet #2"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.426     0.000     0.017     0.245"
* 33         CATCHMENT 209"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         209   Alpine Solutions - west SMWP"
*      30.000   % Impervious"
*       1.920   Total Area"
*     150.000   Flow length"
*       1.000   Overland Slope"
*       1.344   Pervious Area"
```

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*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.170   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.802   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.081     0.000     0.017     0.245 c.m/sec"
*             Catchment 209          Pervious   Impervious Total Area "
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  85.517     6.395      32.540     minutes"
*             Time to Centroid       252.590    127.322    168.715    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        336.37     144.16     480.53     c.m"
*             Rainfall losses        20.783     4.959      16.036     mm"
*             Runoff depth           4.245      20.069     8.992      mm"
*             Runoff volume          57.05      115.60     172.65     c.m"
*             Runoff coefficient     0.170      0.802      0.359      "
*             Maximum flow           0.005      0.080      0.081      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.081     0.081     0.017     0.245"
* 54          POND DESIGN"
*         0.081   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         172.6   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.2500   0.04200     7.000"
*                  0.5000   0.09000    71.000"
*                  0.7500    0.1250   220.000"
*                  0.9000    0.1400   346.000"
*                   1.000    0.3110   445.000"
*                   1.100    0.6160   557.000"
*             Peak outflow                  0.050    c.m/sec"
*             Maximum level                 0.294    metre"
*             Maximum storage              18.231    c.m"
*             Centroidal lag                2.868    hours"
*                  0.081     0.081     0.050     0.245 c.m/sec"
* 40          HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*             Maximum flow                  0.050    c.m/sec"
*             Hydrograph volume           172.946    c.m"
*                    0.081     0.081     0.050     0.050"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.081     0.000     0.050     0.050"
* 33          CATCHMENT 210"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         210   Woodlot north of Hamburglr/Badenview lands"
```



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*           5.000   % Impervious"
*          13.230   Total Area"
*         170.000   Flow length"
*           2.400   Overland Slope"
*          12.568   Pervious Area"
*         170.000   Pervious length"
*           2.400   Pervious slope"
*           0.661   Impervious Area"
*         170.000   Impervious length"
*           2.400   Impervious slope"
*           0.250   Pervious Manning 'n'"
*          70.000   Pervious SCS Curve No."
*           0.065   Pervious Runoff coefficient"
*           0.100   Pervious Ia/S coefficient"
*          10.886   Pervious Initial abstraction"
*           0.015   Impervious Manning 'n'"
*          98.000   Impervious SCS Curve No."
*           0.800   Impervious Runoff coefficient"
*           0.100   Impervious Ia/S coefficient"
*           0.518   Impervious Initial abstraction"
*                     0.092     0.000     0.050     0.050 c.m/sec"
*                Catchment 210          Pervious   Impervious Total Area "
*                Surface Area           12.568     0.661      13.230     hectare"
*                Time of concentration  148.538    7.097      92.903     minutes"
*                Time to Centroid       314.035    128.488    241.051    minutes"
*                Rainfall depth         25.028     25.028     25.028     mm"
*                Rainfall volume        3145.60    165.56     3311.16    c.m"
*                Rainfall losses        23.402     4.997      22.481     mm"
*                Runoff depth           1.626      20.031     2.546      mm"
*                Runoff volume          204.36     132.50     336.86     c.m"
*                Runoff coefficient     0.065      0.800      0.102      "
*                Maximum flow           0.013      0.091      0.092      c.m/sec"
* 40             HYDROGRAPH Add Runoff "
*              4   Add Runoff "
*                    0.092     0.092     0.050     0.050"
* 40             HYDROGRAPH Copy to Outflow"
*              8   Copy to Outflow"
*                    0.092     0.092     0.092     0.050"
* 40             HYDROGRAPH   Combine    3"
*              6   Combine "
*              3   Node #"
*                  INLET 2"
*                Maximum flow                  0.138    c.m/sec"
*                Hydrograph volume           509.806    c.m"
*                    0.092     0.092     0.092     0.138"
* 81             ADD COMMENT==================================================="
*           3   Lines of comment"
*               **********************************************"
*               South of GEXR along Nafziger Rd, part of Inlet #3"
*               **********************************************"
* 40             HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                    0.092     0.000     0.092     0.138"
* 33             CATCHMENT 211"
*              1   Triangular SCS"
*              1   Equal length"
*              1   SCS method"
*            211   Culivated lands east of Nafziger Road"
*          1.000   % Impervious"
*          7.310   Total Area"
*        120.000   Flow length"
*          3.300   Overland Slope"
*          7.237   Pervious Area"
*        120.000   Pervious length"
*          3.300   Pervious slope"
*          0.073   Impervious Area"
*        120.000   Impervious length"
```

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*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.805   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.023     0.000     0.092     0.138 c.m/sec"
*            Catchment 211          Pervious   Impervious Total Area "
*            Surface Area           7.237      0.073      7.310      hectare"
*            Time of concentration  74.427     5.234      69.997     minutes"
*            Time to Centroid       233.480    125.465    226.564    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        1811.23    18.30      1829.52    c.m"
*            Rainfall losses        22.053     4.880      21.881     mm"
*            Runoff depth           2.975      20.148     3.147      mm"
*            Runoff volume          215.28     14.73      230.01     c.m"
*            Runoff coefficient     0.119      0.805      0.126      "
*            Maximum flow           0.022      0.010      0.023      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.023     0.023     0.092     0.138"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.023     0.023     0.023     0.138"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                 0.023    c.m/sec"
*            Hydrograph volume            230.012    c.m"
*               0.023     0.023     0.023     0.023"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.023     0.000     0.023     0.023"
* 33         CATCHMENT 212"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         212   Alpine Solutions - East SMWP"
*      40.000   % Impervious"
*       2.560   Total Area"
*     150.000   Flow length"
*       1.500   Overland Slope"
*       1.536   Pervious Area"
*     180.000   Pervious length"
*       1.500   Pervious slope"
*       1.024   Impervious Area"
*     131.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.170   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.800   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.142     0.000     0.023     0.023 c.m/sec"
*            Catchment 212          Pervious   Impervious Total Area "
*            Surface Area           1.536      1.024      2.560      hectare"
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*            Time of concentration  95.403     6.988      28.327     minutes"
*            Time to Centroid       266.081    128.320    161.569    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        384.43     256.28     640.71     c.m"
*            Rainfall losses        20.783     5.012      14.475     mm"
*            Runoff depth           4.245      20.015     10.553     mm"
*            Runoff volume          65.20      204.96     270.16     c.m"
*            Runoff coefficient     0.170      0.800      0.422      "
*            Maximum flow           0.005      0.142      0.142      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.142     0.142     0.023     0.023"
* 54         POND DESIGN"
*       0.142   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       270.2   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*            Peak outflow                    0.044    c.m/sec"
*            Maximum level                   0.259    metre"
*            Maximum storage                73.537    c.m"
*            Centroidal lag                  2.960    hours"
*               0.142     0.142     0.044     0.023 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                   0.056    c.m/sec"
*            Hydrograph volume            500.146    c.m"
*               0.142     0.142     0.044     0.056"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.142     0.000     0.044     0.056"
* 33         CATCHMENT 213"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         213   Woodlot East and West of Nafziger Road"
*       3.000   % Impervious"
*      13.460   Total Area"
*     140.000   Flow length"
*       3.600   Overland Slope"
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.066   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.806   Impervious Runoff coefficient"
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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.055     0.000     0.044     0.056 c.m/sec"
*            Catchment 213          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  116.375    5.593      85.904     minutes"
*            Time to Centroid       277.843    126.027    236.085    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        3267.66    101.06     3368.72    c.m"
*            Rainfall losses        23.384     4.859      22.828     mm"
*            Runoff depth           1.644      20.169     2.200      mm"
*            Runoff volume          214.65     81.44      296.09     c.m"
*            Runoff coefficient     0.066      0.806      0.088      "
*            Maximum flow           0.016      0.055      0.055      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.055     0.055     0.044     0.056"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.055     0.055     0.055     0.056"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.099    c.m/sec"
*           Hydrograph volume           796.239    c.m"
*                 0.055     0.055     0.055     0.099"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.055     0.000     0.055     0.099"
* 33         CATCHMENT 214"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        214   Rec Centre - SWMP"
*     73.000   % Impervious"
*      4.950   Total Area"
*     50.000   Flow length"
*      2.800   Overland Slope"
*      1.336   Pervious Area"
*     40.000   Pervious length"
*      1.500   Pervious slope"
*      3.613   Impervious Area"
*    182.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     83.000   Pervious SCS Curve No."
*      0.219   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      5.202   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.807   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.441     0.000     0.055     0.099 c.m/sec"
*            Catchment 214          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  33.652     8.513      10.801     minutes"
*            Time to Centroid       180.684    130.578    135.139    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        334.49     904.37     1238.87    c.m"
*            Rainfall losses        19.559     4.826      8.804      mm"
*            Runoff depth           5.469      20.202     16.224     mm"
*            Runoff volume          73.09      729.98     803.07     c.m"
*            Runoff coefficient     0.219      0.807      0.648      "
*            Maximum flow           0.014      0.437      0.441      c.m/sec"
```



```
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.441     0.441     0.055     0.099"
* 54         POND DESIGN"
*       0.441   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       803.1   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00700   248.000"
*                0.2500   0.00900   418.000"
*                0.3500   0.01100   593.000"
*                0.4500   0.01300   775.000"
*                0.5500   0.01500   964.000"
*                0.6500   0.01600  1161.000"
*                0.7500   0.01700  1364.000"
*                0.8500   0.01900  1575.000"
*                0.9500   0.02000  1795.000"
*                 1.050   0.05600  2025.000"
*                 1.150    0.2080  2263.000"
*                 1.250    0.4600  2511.000"
*                 1.350     2.766  2768.000"
*                 1.450     6.856  3033.000"
*              Peak outflow                  0.012    c.m/sec"
*              Maximum level                 0.397    metre"
*              Maximum storage             678.481    c.m"
*              Centroidal lag               14.260    hours"
*                   0.441     0.441     0.012     0.099 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*              Maximum flow                  0.104    c.m/sec"
*              Hydrograph volume          1481.678    c.m"
*                    0.441     0.441     0.012     0.104"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.441     0.000     0.012     0.104"
* 33         CATCHMENT 215"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        215   Vacant Industrial lands west of Nafziger Road"
*     45.000   % Impervious"
*      2.860   Total Area"
*    105.000   Flow length"
*      2.000   Overland Slope"
*      1.573   Pervious Area"
*    105.000   Pervious length"
*      2.000   Pervious slope"
*      1.287   Impervious Area"
*    105.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.119   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.806   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                   0.174     0.000     0.012     0.104 c.m/sec"
*            Catchment 215          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  79.833     5.614      16.949     minutes"
*            Time to Centroid       240.291    126.062    143.509    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        393.69     322.11     715.79     c.m"
*            Rainfall losses        22.053     4.858      14.315     mm"
*            Runoff depth           2.975      20.170     10.712     mm"
*            Runoff volume          46.79      259.58     306.38     c.m"
*            Runoff coefficient     0.119      0.806      0.428      "
*            Maximum flow           0.005      0.174      0.174      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.174     0.174     0.012     0.104"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.174     0.174     0.174     0.104"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.278    c.m/sec"
*            Hydrograph volume          1788.056    c.m"
*                   0.174     0.174     0.174     0.278"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.174     0.000     0.174     0.278"
* 33         CATCHMENT 216"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         216   Industrial lands west of Nafziger Road"
*        45.000   % Impervious"
*         2.860   Total Area"
*       110.000   Flow length"
*         2.000   Overland Slope"
*         1.573   Pervious Area"
*       110.000   Pervious length"
*         2.000   Pervious slope"
*         1.287   Impervious Area"
*       110.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.806   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.180     0.000     0.174     0.278 c.m/sec"
*            Catchment 216          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  82.093     5.773      17.429     minutes"
*            Time to Centroid       243.140    126.300    144.145    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        393.69     322.11     715.79     c.m"
*            Rainfall losses        22.053     4.858      14.315     mm"
*            Runoff depth           2.975      20.169     10.712     mm"
*            Runoff volume          46.79      259.58     306.37     c.m"
*            Runoff coefficient     0.119      0.806      0.428      "
*            Maximum flow           0.004      0.180      0.180      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
```



```
*           4   Add Runoff "
*                   0.180     0.180     0.174     0.278"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.180     0.180     0.180     0.278"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.459    c.m/sec"
*            Hydrograph volume          2094.427    c.m"
*                   0.180     0.180     0.180     0.459"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.180     0.000     0.180     0.459"
* 33         CATCHMENT 217"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         217   Existing ROW west of Nafziger Road"
*        75.000   % Impervious"
*         0.730   Total Area"
*        90.000   Flow length"
*         2.100   Overland Slope"
*         0.183   Pervious Area"
*        90.000   Pervious length"
*         2.100   Pervious slope"
*         0.548   Impervious Area"
*        90.000   Impervious length"
*         2.100   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.804   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.074     0.000     0.180     0.459 c.m/sec"
*            Catchment 217          Pervious   Impervious Total Area "
*            Surface Area           0.183      0.548      0.730      hectare"
*            Time of concentration  71.723     5.043      8.177      minutes"
*            Time to Centroid       230.071    125.174    130.103    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        45.68      137.03     182.70     c.m"
*            Rainfall losses        22.053     4.917      9.201      mm"
*            Runoff depth           2.975      20.111     15.827     mm"
*            Runoff volume          5.43       110.11     115.53     c.m"
*            Runoff coefficient     0.119      0.804      0.632      "
*            Maximum flow           0.001      0.074      0.074      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.074     0.074     0.180     0.459"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.074     0.074     0.074     0.459"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.532    c.m/sec"
*            Hydrograph volume          2209.962    c.m"
*                   0.074     0.074     0.074     0.532"
* 40         HYDROGRAPH   Confluence    2"
*           7   Confluence "
```

```
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.245    c.m/sec"
*            Hydrograph volume          4055.545    c.m"
*                   0.074     0.245     0.074     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.074     0.245     0.245     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.245    c.m/sec"
*            Hydrograph volume          4055.545    c.m"
*                   0.074     0.245     0.245     0.245"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.138    c.m/sec"
*            Hydrograph volume           509.806    c.m"
*                   0.074     0.138     0.245     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.074     0.138     0.138     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.383    c.m/sec"
*            Hydrograph volume          4565.351    c.m"
*                   0.074     0.138     0.138     0.383"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.532    c.m/sec"
*            Hydrograph volume          2209.962    c.m"
*                   0.074     0.532     0.138     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.074     0.532     0.532     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.915    c.m/sec"
*            Hydrograph volume          6775.312    c.m"
*                   0.074     0.532     0.532     0.915"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.074     0.000     0.532     0.915"
* 33         CATCHMENT 223"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           223   New Hamburglr Inc. lands"
*        85.000   % Impervious"
*        12.570   Total Area"
*        90.000   Flow length"
*         1.000   Overland Slope"
*         1.885   Pervious Area"
*        90.000   Pervious length"
*         1.000   Pervious slope"
*        10.684   Impervious Area"
*        90.000   Impervious length"
*         1.000   Impervious slope"
```



```
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.803   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   1.493     0.000     0.532     0.915 c.m/sec"
*              Catchment 223          Pervious   Impervious Total Area *
*              Surface Area           1.885      10.684     12.570     hectare"
*              Time of concentration  89.604     6.301      8.422      minutes"
*              Time to Centroid       252.604    127.158    130.353    minutes"
*              Rainfall depth         25.028     25.028     25.028     mm"
*              Rainfall volume        471.90     2674.08    3145.98    c.m"
*              Rainfall losses        22.053     4.941      7.508      mm"
*              Runoff depth           2.975      20.087     17.520     mm"
*              Runoff volume          56.09      2146.18    2202.27    c.m"
*              Runoff coefficient     0.119      0.803      0.700      "
*              Maximum flow           0.005      1.492      1.493      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   1.493     1.493     0.532     0.915"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   1.493     1.493     1.493     0.915"
* 40           HYDROGRAPH   Combine    5"
*             6   Combine "
*             5   Node #"
*                 u/s of HWY 7&8"
*                 Maximum flow                  2.408    c.m/sec"
*                 Hydrograph volume          6977.582    c.m"
*                       1.493     1.493     1.493     2.408"
* 81           ADD COMMENT==========================================================="
*            3   Lines of comment"
*                 ************************************************"
*                 Catchments east of Hamilton Road, part of Inlet #4"
*                 ************************************************"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   1.493     0.000     1.493     2.408"
* 33           CATCHMENT 218"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           218   Ironbridge Manufacturing Property"
*        85.000   % Impervious"
*         2.060   Total Area"
*       230.000   Flow length"
*         1.700   Overland Slope"
*         0.309   Pervious Area"
*       230.000   Pervious length"
*         3.000   Pervious slope"
*         1.751   Impervious Area"
*       230.000   Impervious length"
*         3.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.163   Pervious Runoff coefficient"
*         0.060   Pervious Ia/S coefficient"
*         4.813   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.807   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
```

```
*        0.518   Impervious Initial abstraction"
*                    0.238     0.000     1.493     2.408 c.m/sec"
*             Catchment 218          Pervious   Impervious Total Area "
*             Surface Area           0.309      1.751      2.060      hectare"
*             Time of concentration  88.697     7.957      10.728     minutes"
*             Time to Centroid       258.166    129.790    134.196    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        77.34      438.23     515.57     c.m"
*             Rainfall losses        20.959     4.824      7.244      mm"
*             Runoff depth           4.069      20.204     17.784     mm"
*             Runoff volume          12.57      353.77     366.34     c.m"
*             Runoff coefficient     0.163      0.807      0.711      "
*             Maximum flow           0.001      0.238      0.238      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.238     0.238     1.493     2.408"
* 54          POND DESIGN"
*        0.238   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*        366.3   Hydrograph volume    c.m"
*          15.   Number of stages"
*      344.700   Minimum water level    metre"
*      345.400   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                344.700    0.1250     0.000"
*                344.750    0.1270     9.000"
*                344.800    0.1280    35.000"
*                344.850    0.1300    77.000"
*                344.900    0.1450   136.000"
*                344.950    0.1820   209.000"
*                345.000    0.2220   297.000"
*                345.050    0.2690   400.000"
*                345.100    0.2710   519.000"
*                345.150    0.2740   653.000"
*                345.200    0.2760   804.000"
*                345.250    0.2790   971.000"
*                345.300    0.2820  1154.000"
*                345.350    0.2840  1355.000"
*                345.400    0.2860  1571.000"
*             Peak outflow                  0.129    c.m/sec"
*             Maximum level               344.819    metre"
*             Maximum storage              51.339    c.m"
*             Centroidal lag                2.285   hours"
*                  0.238     0.238     0.129     2.408 c.m/sec"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  2.535    c.m/sec"
*             Hydrograph volume          9345.138    c.m"
*                    0.238     0.238     0.129     2.535"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.238     0.000     0.129     2.535"
* 33          CATCHMENT 219"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          219   N.C. Pestells Head Office & other Industrial"
*       85.000   % Impervious"
*        1.280   Total Area"
*       75.000   Flow length"
*        1.500   Overland Slope"
*        0.192   Pervious Area"
*       75.000   Pervious length"
```



```
*        3.000   Pervious slope"
*        1.088   Impervious Area"
*       75.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.003   Pervious Runoff coefficient"
*        0.281   Pervious Ia/S coefficient"
*       22.539   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.799   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.141     0.000     0.129     2.535 c.m/sec"
*             Catchment 219          Pervious   Impervious Total Area "
*             Surface Area           0.192      1.088      1.280      hectare"
*             Time of concentration  317.189    4.062      4.269      minutes"
*             Time to Centroid       472.737    123.646    123.877    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        48.05      272.30     320.35     c.m"
*             Rainfall losses        24.953     5.036      8.023      mm"
*             Runoff depth           0.075      19.992     17.004     mm"
*             Runoff volume          0.14       217.51     217.65     c.m"
*             Runoff coefficient     0.003      0.799      0.679      "
*             Maximum flow           0.000      0.141      0.141      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.141     0.141     0.129     2.535"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.141     0.141     0.141     2.535"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  2.676    c.m/sec"
*             Hydrograph volume          9562.794    c.m"
*                    0.141     0.141     0.141     2.676"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.141     0.000     0.141     2.676"
* 33          CATCHMENT 220"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          220   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.098   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.796   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
```

```
*                0.005     0.000     0.141     2.676 c.m/sec"
*           Catchment 220          Pervious   Impervious Total Area "
*           Surface Area           0.460      0.040      0.500      hectare"
*           Time of concentration  50.584     3.048      30.948     minutes"
*           Time to Centroid       201.260    122.026    168.529    minutes"
*           Rainfall depth         25.028     25.028     25.028     mm"
*           Rainfall volume        115.13     10.01      125.14     c.m"
*           Rainfall losses        22.567     5.111      21.170     mm"
*           Runoff depth           2.461      19.917     3.857      mm"
*           Runoff volume          11.32      7.97       19.29      c.m"
*           Runoff coefficient     0.098      0.796      0.154      "
*           Maximum flow           0.002      0.005      0.005      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.005     0.005     0.141     2.676"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.005     0.005     0.005     2.676"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  2.681    c.m/sec"
*           Hydrograph volume          9582.080    c.m"
*                0.005     0.005     0.005     2.681"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.005     0.000     0.005     2.681"
* 33        CATCHMENT 221"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        221   Proposed ROW from Hamilton Road"
*       81.500 % Impervious"
*        0.810 Total Area"
*       40.000 Flow length"
*        2.000 Overland Slope"
*        0.150 Pervious Area"
*       40.000 Pervious length"
*        2.000 Pervious slope"
*        0.660 Impervious Area"
*       40.000 Impervious length"
*        2.000 Impervious slope"
*        0.250 Pervious Manning 'n'"
*       76.000 Pervious SCS Curve No."
*        0.119 Pervious Runoff coefficient"
*        0.100 Pervious Ia/S coefficient"
*        8.021 Pervious Initial abstraction"
*        0.015 Impervious Manning 'n'"
*       98.000 Impervious SCS Curve No."
*        0.795 Impervious Runoff coefficient"
*        0.100 Impervious Ia/S coefficient"
*        0.518 Impervious Initial abstraction"
*                0.089     0.000     0.005     2.681 c.m/sec"
*           Catchment 221          Pervious   Impervious Total Area "
*           Surface Area           0.150      0.660      0.810      hectare"
*           Time of concentration  44.741     3.146      4.511      minutes"
*           Time to Centroid       196.074    122.195    124.619    minutes"
*           Rainfall depth         25.028     25.028     25.028     mm"
*           Rainfall volume        37.50      165.22     202.72     c.m"
*           Rainfall losses        22.053     5.124      8.256      mm"
*           Runoff depth           2.974      19.904     16.772     mm"
*           Runoff volume          4.46       131.40     135.85     c.m"
*           Runoff coefficient     0.119      0.795      0.670      "
*           Maximum flow           0.001      0.089      0.089      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
```



```
*                0.089     0.089     0.005     2.681"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.089     0.089     0.089     2.681"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  2.760    c.m/sec"
*           Hydrograph volume          9717.939    c.m"
*                0.089     0.089     0.089     2.760"
* 81        ADD COMMENT================================================="
*          3  Lines of comment"
*             ************************************************"
*             Catchment to Inlet #5"
*             ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.089     0.000     0.089     2.760"
* 33        CATCHMENT 222"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        222   Rear yards from Hamilton Heights Subdivision"
*        5.000 % Impervious"
*        1.080 Total Area"
*       20.000 Flow length"
*        3.000 Overland Slope"
*        1.026 Pervious Area"
*       20.000 Pervious length"
*        3.000 Pervious slope"
*        0.054 Impervious Area"
*       20.000 Impervious length"
*        3.000 Impervious slope"
*        0.250 Pervious Manning 'n'"
*       76.000 Pervious SCS Curve No."
*        0.119 Pervious Runoff coefficient"
*        0.100 Pervious Ia/S coefficient"
*        8.021 Pervious Initial abstraction"
*        0.015 Impervious Manning 'n'"
*       98.000 Impervious SCS Curve No."
*        0.798 Impervious Runoff coefficient"
*        0.100 Impervious Ia/S coefficient"
*        0.518 Impervious Initial abstraction"
*                0.009     0.000     0.089     2.760 c.m/sec"
*           Catchment 222          Pervious   Impervious Total Area "
*           Surface Area           1.026      0.054      1.080      hectare"
*           Time of concentration  26.137     1.838      19.789     minutes"
*           Time to Centroid       172.629    119.953    158.868    minutes"
*           Rainfall depth         25.028     25.028     25.028     mm"
*           Rainfall volume        256.78     13.51      270.30     c.m"
*           Rainfall losses        22.055     5.055      21.205     mm"
*           Runoff depth           2.972      19.973     3.822      mm"
*           Runoff volume          30.50      10.79      41.28      c.m"
*           Runoff coefficient     0.119      0.798      0.153      "
*           Maximum flow           0.006      0.008      0.009      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.009     0.009     0.089     2.760"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.009     0.009     0.009     2.760"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  2.767    c.m/sec"
```

```
*            Hydrograph volume          9759.221    c.m"
*                  0.009     0.009     0.009     2.767"
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             ****************************************************
*             Badenview Developments Inc. lands"
*             ****************************************************
* 40         HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.009     0.000     0.009     2.767"
* 33         CATCHMENT 224"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          224   Badenview lands"
*       85.000   % Impervious"
*       43.200   Total Area"
*       90.000   Flow length"
*        1.000   Overland Slope"
*        6.480   Pervious Area"
*       90.000   Pervious length"
*        1.000   Pervious slope"
*       36.720   Impervious Area"
*       90.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.119   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.803   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  5.130     0.000     0.009     2.767 c.m/sec"
*             Catchment 224          Pervious   Impervious Total Area *
*             Surface Area           6.480      36.720     43.200     hectare"
*             Time of concentration  89.604     6.301      8.422      minutes"
*             Time to Centroid       252.604    127.158    130.353    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        0.1622     0.9190     1.0812     ha-m"
*             Rainfall losses        22.053     4.941      7.508      mm"
*             Runoff depth           2.975      20.087     17.520     mm"
*             Runoff volume          192.77     7375.88    7568.66    c.m"
*             Runoff coefficient     0.119      0.803      0.700      *
*             Maximum flow           0.017      5.129      5.130      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  5.130     5.130     0.009     2.767"
* 40         HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  5.130     5.130     5.130     2.767"
* 40         HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 7.897    c.m/sec"
*             Hydrograph volume        17327.877    c.m"
*                  5.130     5.130     5.130     7.897"
* 40         HYDROGRAPH   Confluence    5"
*            7   Confluence "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 7.897    c.m/sec"
*             Hydrograph volume        17327.879    c.m"
*                  5.130     7.897     5.130     0.000"
```



```
* 81         ADD COMMENT==========================================="
*          7  Lines of comment"
*             ****************************************************
*             ****************************************************
*             **                                                **"
*             **          PROPOSED SWM POND DESIGN              **"
*             **                                                **"
*             ****************************************************
*             ****************************************************
* 54         POND DESIGN"
*         7.897   Current peak flow    c.m/sec"
*         4.094   Target outflow    c.m/sec"
*      17327.9    Hydrograph volume    c.m"
*           36.   Number of stages"
*       334.550   Minimum water level    metre"
*       337.850   Maximum water level    metre"
*       334.550   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 334.550     0.000     0.000"
*                 334.600   0.00400  1187.000"
*                 334.700   0.02830  3607.000"
*                 334.800   0.06350  6090.000"
*                 334.900   0.08900  8636.000"
*                 335.000    0.1880  11246.00"
*                 335.100    0.3430  13920.00"
*                 335.200    0.5360  16658.00"
*                 335.300    0.7599  19459.00"
*                 335.400     1.011  22323.00"
*                 335.500     1.286  25249.00"
*                 335.600     1.583  28239.00"
*                 335.700     1.901  31294.00"
*                 335.800     2.238  34414.00"
*                 335.900     2.593  37599.00"
*                 336.000     2.966  40851.00"
*                 336.100     3.427  43465.00"
*                 336.200     3.959  46848.00"
*                 336.300     4.543  50286.00"
*                 336.400     5.171  53779.00"
*                 336.500     5.840  57328.00"
*                 336.600     6.544  60933.00"
*                 336.700     7.284  64595.00"
*                 336.800     8.055  68313.00"
*                 336.900     8.858  72088.00"
*                 337.000     9.690  75920.00"
*                 337.100    10.550  79809.00"
*                 337.200    11.437  83755.00"
*                 337.300    12.351  87759.00"
*                 337.400    13.291  91821.00"
*                 337.500    14.255  95940.00"
*                 337.550    14.746  98022.00"
*                 337.600    16.027  100118.0"
*                 337.700    20.027  104352.0"
*                 337.800    25.280  108643.0"
*                 337.850    28.277  110810.0"
*             Peak outflow                 0.257    c.m/sec"
*             Maximum level              335.045    metre"
*             Maximum storage          12441.788    c.m"
*             Centroidal lag              22.593    hours"
*                  5.130     7.897     0.257     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*            6   Combine "
*           12   Node #"
*                d/s of Proposed SWMF"
*             Maximum flow                 0.257    c.m/sec"
*             Hydrograph volume        10940.494    c.m"
*                  5.130     7.897     0.257     0.257"
```

```
* 81          ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ****************************************************"
*              Catchments to Inlet #6"
*              ****************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    5.130     0.000     0.257     0.257"
* 33          CATCHMENT 260"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           260   Hamilton Heights Subdivision"
*        46.000   % Impervious"
*         8.160   Total Area"
*        50.000   Flow length"
*         1.000   Overland Slope'
*         4.406   Pervious Area"
*        50.000   Pervious length"
*         3.000   Pervious slope'
*         3.754   Impervious Area"
*       232.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.804   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.417     0.000     0.257     0.257 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  45.292     9.847      15.090     minutes"
*              Time to Centroid       196.766    132.772    142.238    minutes"
*              Rainfall depth         25.028     25.028     25.028     mm"
*              Rainfall volume        1102.82    939.44     2042.26    c.m"
*              Rainfall losses        22.053     4.915      14.170     mm"
*              Runoff depth           2.974      20.113     10.858     mm"
*              Runoff volume          131.07     754.96     886.02     c.m"
*              Runoff coefficient     0.119      0.804      0.434      "
*              Maximum flow           0.019      0.414      0.417      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    0.417     0.417     0.257     0.257"
* 33          CATCHMENT 261"
*             1   Triangular SCS'
*             3   Specify values'
*             1   SCS method"
*           261   Klassen Bronze Property"
*        32.000   % Impervious"
*         2.350   Total Area"
*       100.000   Flow length"
*         2.500   Overland Slope'
*         1.598   Pervious Area"
*        50.000   Pervious length"
*         2.500   Pervious slope'
*         0.752   Impervious Area"
*       164.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.119   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
```



```
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.807   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.103     0.417     0.257     0.257 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  47.839     7.997      17.490     minutes"
*              Time to Centroid       199.975    129.846    146.555    minutes"
*              Rainfall depth         25.028     25.028     25.028     mm"
*              Rainfall volume        399.94     188.21     588.15     c.m"
*              Rainfall losses        22.053     4.821      16.539     mm"
*              Runoff depth           2.974      20.207     8.489      mm"
*              Runoff volume          47.53      151.95     199.48     c.m"
*              Runoff coefficient     0.119      0.807      0.339      "
*              Maximum flow           0.007      0.102      0.103      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    0.103     0.520     0.257     0.257"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                    0.103     0.520     0.520     0.257"
* 40          HYDROGRAPH   Combine    12"
*             6   Combine "
*            12   Node #"
*                 d/s of Proposed SWMF"
*                 Maximum flow                  0.550    c.m/sec"
*                 Hydrograph volume         12026.003    c.m"
*                    0.103     0.520     0.520     0.550"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    0.103     0.000     0.520     0.550"
* 33          CATCHMENT 225"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           225   HWY 7/8 and north ditching"
*        30.000   % Impervious"
*         1.670   Total Area"
*        75.000   Flow length"
*         2.000   Overland Slope"
*         1.169   Pervious Area"
*        75.000   Pervious length"
*         2.000   Pervious slope"
*         0.501   Impervious Area"
*        75.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        74.000   Pervious SCS Curve No."
*         0.098   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.924   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.800   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.067     0.000     0.520     0.550 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  76.128     4.587      20.527     minutes"
*              Time to Centroid       231.268    124.481    148.273    minutes"
*              Rainfall depth         25.028     25.028     25.028     mm"
*              Rainfall volume        292.57     125.39     417.96     c.m"
*              Rainfall losses        22.566     4.995      17.295     mm"
```

```
*            Runoff depth           2.461      20.032      7.733      mm"
*            Runoff volume          28.77      100.36      129.13     c.m"
*            Runoff coefficient     0.098      0.800       0.309      "
*            Maximum flow           0.003      0.067       0.067      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.067     0.067     0.520     0.550"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.067     0.067     0.067     0.550"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                  0.617    c.m/sec"
*            Hydrograph volume         12155.139    c.m"
*                  0.067     0.067     0.067     0.617"
* 81         ADD COMMENT============================================================"
*         3  Lines of comment"
*            ************************************************************"
*            Western catchment along Hamilton Road, diverted to Inlet #6"
*            ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.067     0.000     0.067     0.617"
* 33         CATCHMENT 270"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         270   Industrial/Residential area along Hamilton Road"
*      55.000   % Impervious"
*       8.450   Total Area"
*      45.000   Flow length"
*       2.000   Overland Slope"
*       3.802   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       4.648   Impervious Area"
*     235.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.119   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.804   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.514     0.000     0.067     0.617 c.m/sec"
*            Catchment 270          Pervious   Impervious Total Area *
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  33.336     9.923      12.450     minutes"
*            Time to Centroid       181.695    132.892    138.160    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        951.68     1163.16    2114.84    c.m"
*            Rainfall losses        22.053     4.914      12.626     mm"
*            Runoff depth           2.975      20.114     12.401     mm"
*            Runoff volume          113.11     934.80     1047.91    c.m"
*            Runoff coefficient     0.119      0.804      0.496      *
*            Maximum flow           0.020      0.510      0.514      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.514     0.514     0.067     0.617"
* 56         DIVERSION"
*           6   Node number"
```



```
*         1.560   Overflow threshold"
*         1.000   Required diverted fraction"
*             0   Conduit type; 1=Pipe;2=Channel"
*                  Peak of diverted flow          0.000    c.m/sec"
*                  Volume of diverted flow        0.000    c.m"
*                  DIV00006.0025hyd"
*                  Major flow at 6"
*                         0.514     0.514     0.514     0.617 c.m/sec"
* 40               HYDROGRAPH   Combine    9"
*                 6   Combine "
*                 9   Node #"
*                     NODE B"
*                  Maximum flow                   0.514    c.m/sec"
*                  Hydrograph volume           1047.909    c.m"
*                         0.514     0.514     0.514     0.514"
* 40               HYDROGRAPH Start - New Tributary"
*                 2   Start - New Tributary"
*                         0.514     0.000     0.514     0.514"
* 47               FILEI_O Read/Open DIV00006.0025hyd"
*                 1   1=read/open; 2=write/save"
*                 2   1=rainfall; 2=hydrograph"
*                 1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*                  DIV00006.0025hyd"
*                  Major flow at 6"
*                  Total volume                   0.000    c.m"
*                  Maximum flow                   0.000    c.m/sec"
*                     0.000     0.000     0.514     0.514 c.m/sec"
* 40               HYDROGRAPH Add Runoff "
*                 4   Add Runoff "
*                         0.000     0.000     0.514     0.514"
* 40               HYDROGRAPH Copy to Outflow"
*                 8   Copy to Outflow"
*                         0.000     0.000     0.000     0.514"
* 40               HYDROGRAPH   Combine    12"
*                 6   Combine "
*                12   Node #"
*                     d/s of Proposed SWMF"
*                  Maximum flow                   0.617    c.m/sec"
*                  Hydrograph volume          12155.139    c.m"
*                         0.000     0.000     0.000     0.617"
* 40               HYDROGRAPH   Confluence    12"
*                 7   Confluence "
*                12   Node #"
*                     d/s of Proposed SWMF"
*                  Maximum flow                   0.617    c.m/sec"
*                  Hydrograph volume          12155.139    c.m"
*                         0.000     0.617     0.000     0.000"
* 54               POND DESIGN"
*              0.617   Current peak flow    c.m/sec"
*              0.070   Target outflow    c.m/sec"
*           12155.1   Hydrograph volume    c.m"
*                8.   Number of stages"
*            334.290   Minimum water level    metre"
*            337.000   Maximum water level    metre"
*            334.290   Starting water level    metre"
*                 0   Keep Design Data: 1 = True; 0 = False"
*                       Level Discharge    Volume"
*                     334.290     0.000     0.000"
*                     334.500    0.2540     5.000"
*                     335.000     1.303   110.000"
*                     335.500     2.800   674.000"
*                     336.000     4.639  1910.000"
*                     336.500     6.480  3748.000"
*                     336.550     6.665  3967.000"
*                     337.000    23.484  6569.000"
*                  Peak outflow                   0.573    c.m/sec"
*                  Maximum level                334.660    metre"
```

```
*           Maximum storage              38.660    c.m"
*           Centroidal lag                9.978   hours"
*                0.000     0.617     0.573     0.000 c.m/sec"
* 40        HYDROGRAPH Next link "
*          5   Next link "
*                0.000     0.573     0.573     0.000"
* 56        DIVERSION"
*          7   Node number"
*       7.170  Overflow threshold"
*       1.000  Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow         0.000    c.m/sec"
*           Volume of diverted flow       0.000    c.m"
*           DIV00007.0025hyd"
*           Major flow at 7"
*                0.000     0.573     0.573     0.000 c.m/sec"
* 40        HYDROGRAPH   Combine    8"
*          6   Combine "
*          8   Node #"
*              NODE A"
*           Maximum flow                  0.573    c.m/sec"
*           Hydrograph volume         12153.771    c.m"
*                0.000     0.573     0.573     0.573"
* 81        ADD COMMENT==========================================================="
*        3  Lines of comment"
*           **************************************************"
*           Catchments South of Hwy 7/8"
*           **************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.000     0.000     0.573     0.573"
* 33        CATCHMENT 280"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        280   Northeast portion of Maple Leaf Foods property"
*     26.000   % Impervious"
*      0.700   Total Area"
*     45.000   Flow length"
*      1.500   Overland Slope"
*      0.518   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      0.182   Impervious Area"
*     68.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     79.000   Pervious SCS Curve No."
*      0.155   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.752   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.805   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.026     0.000     0.573     0.573 c.m/sec"
*           Catchment 280          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  24.655     5.325      12.178     minutes"
*           Time to Centroid       169.975    125.607    141.338    minutes"
*           Rainfall depth         25.028     25.028     25.028     mm"
*           Rainfall volume        129.64     45.55      175.19     c.m"
*           Rainfall losses        21.137     4.869      16.908     mm"
*           Runoff depth           3.890      20.158     8.120      mm"
*           Runoff volume          20.15      36.69      56.84      c.m"
*           Runoff coefficient     0.155      0.805      0.324      "
```



```
*           Maximum flow           0.004      0.025      0.026      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.026     0.026     0.573     0.573"
* 54        POND DESIGN"
*       0.026   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        56.8   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
*                0.4500   0.00800    69.000"
*                0.6500   0.01000   178.000"
*                0.7000    0.1060   208.000"
*                0.7500    0.2810   240.000"
*           Peak outflow                  0.006    c.m/sec"
*           Maximum level                 0.299    metre"
*           Maximum storage              18.314    c.m"
*           Centroidal lag                2.830   hours"
*                0.026     0.026     0.006     0.573 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  0.520    c.m/sec"
*           Hydrograph volume          1104.750    c.m"
*                0.026     0.026     0.006     0.520"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.026     0.000     0.006     0.520"
* 33        CATCHMENT 281"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        281   Western portion of John Bear property"
*      93.000  % Impervious"
*       1.870  Total Area"
*     120.000  Flow length"
*       1.000  Overland Slope"
*       0.131  Pervious Area"
*      20.000  Pervious length"
*       2.000  Pervious slope"
*       1.739  Impervious Area"
*     112.000  Impervious length"
*       1.000  Impervious slope"
*       0.250  Pervious Manning 'n'"
*      65.000  Pervious SCS Curve No."
*       0.035  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*      13.677  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*      98.000  Impervious SCS Curve No."
*       0.801  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
*                0.240     0.000     0.006     0.520 c.m/sec"
*           Catchment 281          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration  65.090     7.184      7.373      minutes"
*           Time to Centroid       219.733    128.615    128.912    minutes"
```

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*            Rainfall depth          25.028      25.028      25.028      mm"
*            Rainfall volume         32.76       435.26      468.02      c.m"
*            Rainfall losses         24.158      4.975       6.318       mm"
*            Runoff depth            0.870       20.053      18.710      mm"
*            Runoff volume           1.14        348.74      349.87      c.m"
*            Runoff coefficient      0.035       0.801       0.748       *
*            Maximum flow            0.000       0.240       0.240       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.240     0.240     0.006     0.520"
* 54         PCND DESIGN"
*       0.240   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       349.9   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.111    c.m/sec"
*            Maximum level                 0.517    metre"
*            Maximum storage              72.364    c.m"
*            Centroidal lag                2.232   hours"
*                 0.240     0.240     0.111     0.520 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.620    c.m/sec"
*            Hydrograph volume          1454.778    c.m"
*                 0.240     0.240     0.111     0.620"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.240     0.000     0.111     0.620"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.035   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.804   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.112     0.000     0.111     0.620 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area *
*            Surface Area           0.375      0.835      1.210       hectare"
*            Time of concentration  73.509     5.118      6.420       minutes"
*            Time to Centroid       227.975    125.283    127.239     minutes"
*            Rainfall depth         25.028     25.028     25.028      mm"
*            Rainfall volume        93.88      208.96     302.83      c.m"
*            Rainfall losses        24.158     4.901      10.871      mm"
*            Runoff depth           0.870      20.126     14.157      mm"
*            Runoff volume          3.26       168.04     171.30      c.m"
*            Runoff coefficient     0.035      0.804      0.566       *
*            Maximum flow           0.000      0.112      0.112       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.112     0.112     0.111     0.620"
* 54         POND DESIGN"
*       0.112   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       171.3   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.015    c.m/sec"
*            Maximum level                 0.113    metre"
*            Maximum storage              97.471    c.m"
*            Centroidal lag                3.904   hours"
*                 0.112     0.112     0.015     0.620 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  0.629    c.m/sec"
*            Hydrograph volume          1626.074    c.m"
*                 0.112     0.112     0.015     0.629"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.112     0.000     0.015     0.629"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.053   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

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*       0.807   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.663     0.000     0.015     0.629 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  158.013    12.412     32.723     minutes"
*            Time to Centroid       323.063    136.779    162.765    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        4138.55    1690.39    5828.95    c.m"
*            Rainfall losses        23.691     4.842      18.225     mm"
*            Runoff depth           1.337      20.186     6.803      mm"
*            Runoff volume          221.02     1363.35    1584.37    c.m"
*            Runoff coefficient     0.053      0.807      0.272      "
*            Maximum flow           0.014      0.663      0.663      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.663     0.663     0.015     0.629"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.663     0.663     0.663     0.629"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.272    c.m/sec"
*           Hydrograph volume          3210.439    c.m"
*                 0.663     0.663     0.663     1.272"
* 40         HYDROGRAPH   Confluence    8"
*          7   Confluence "
*          8   Node #"
*              NODE A"
*           Maximum flow                  0.573    c.m/sec"
*           Hydrograph volume         12153.771    c.m"
*                 0.663     0.573     0.663     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.663     0.573     0.573     0.000"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.846    c.m/sec"
*           Hydrograph volume         15364.212    c.m"
*                 0.663     0.573     0.573     1.846"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.663     0.000     0.573     1.846"
* 33         CATCHMENT 284"
*          1   Triangular SCS'
*          1   Equal length"
*          1   SCS method"
*        284   Agricultural lands south of Bleams Road"
*      2.000   % Impervious"
*      2.950   Total Area"
*     80.000   Flow length"
*      3.100   Overland Slope"
*      2.891   Pervious Area"
*     80.000   Pervious length"
*      3.100   Pervious slope"
*      0.059   Impervious Area"
*     80.000   Impervious length"
*      3.100   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     74.000   Pervious SCS Curve No."
*      0.098   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
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*      8.924   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.800   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*              0.008     0.000     0.573     1.846 c.m/sec"
*           Catchment 284          Pervious   Impervious Total Area "
*           Surface Area           2.891      0.059      2.950      hectare"
*           Time of concentration  69.384     4.181      60.103     minutes"
*           Time to Centroid       223.349    123.816    209.181    minutes"
*           Rainfall depth         25.028     25.028     25.028     mm"
*           Rainfall volume        723.55     14.77      738.32     c.m"
*           Rainfall losses        22.567     5.012      22.215     mm"
*           Runoff depth           2.461      20.015     2.812      mm"
*           Runoff volume          71.15      11.81      82.96      c.m"
*           Runoff coefficient     0.098      0.800      0.112      "
*           Maximum flow           0.008      0.008      0.008      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.008     0.008     0.573     1.846"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.008     0.008     0.008     1.846"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.850    c.m/sec"
*           Hydrograph volume         15447.172    c.m"
*                0.008     0.008     0.008     1.850"
* 40         HYDROGRAPH   Confluence    9"
*          7   Confluence "
*          9   Node #"
*              NODE B"
*           Maximum flow                  1.850    c.m/sec"
*           Hydrograph volume         15447.175    c.m"
*                0.008     1.850     0.008     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.008     1.850     1.850     0.000"
* 40         HYDROGRAPH   Combine    10"
*          6   Combine "
*         10   Node #"
*              NODE C"
*           Maximum flow                  1.850    c.m/sec"
*           Hydrograph volume         15447.175    c.m"
*                0.008     1.850     1.850     1.850"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.008     0.000     1.850     1.850"
* 33         CATCHMENT 285"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        285   Morningside Retirement Community lands"
*     58.000   % Impervious"
*     18.780   Total Area"
*    190.000   Flow length"
*      2.000   Overland Slope"
*      7.888   Pervious Area"
*     25.000   Pervious length"
*      2.500   Pervious slope"
*     10.892   Impervious Area"
*    354.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
```

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*       64.400   Pervious SCS Curve No."
*        0.032   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.807   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.111     0.000     1.850     1.850 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  73.186     10.886     12.618     minutes"
*             Time to Centroid       227.867    134.366    136.966    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        1974.08    2726.11    4700.20    c.m"
*             Rainfall losses        24.231     4.842      12.985     mm"
*             Runoff depth           0.797      20.186     12.043     mm"
*             Runoff volume          62.88      2198.71    2261.59    c.m"
*             Runoff coefficient     0.032      0.807      0.481      "
*             Maximum flow           0.007      1.111      1.111      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  1.111     1.111     1.850     1.850"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  1.111     1.111     1.111     1.850"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                  2.937    c.m/sec"
*             Hydrograph volume         17708.766    c.m"
*                  1.111     1.111     1.111     2.937"
* 81          ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ************************************************************"
*              Catchments north of Hwy 7/8, towards Eastern Tributary"
*              ************************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  1.111     0.000     1.111     2.937"
* 33          CATCHMENT 250"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          250   Southern portion of Rec Centre fields"
*        0.000   % Impervious"
*        3.510   Total Area"
*       95.000   Flow length"
*        1.600   Overland Slope"
*        3.510   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.119   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
```



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*                  0.010     0.000     1.111     2.937 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  77.530     10.455     77.529     minutes"
*             Time to Centroid       237.391    133.696    237.391    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        878.47     0.00       878.47     c.m"
*             Rainfall losses        22.053     4.857      22.053     mm"
*             Runoff depth           2.975      20.171     2.975      mm"
*             Runoff volume          104.42     0.00       104.42     c.m"
*             Runoff coefficient     0.119      0.000      0.119      "
*             Maximum flow           0.010      0.000      0.010      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.010     0.010     1.111     2.937"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.010     0.010     0.010     2.937"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.010    c.m/sec"
*             Hydrograph volume           104.420    c.m"
*                  0.010     0.010     0.010     0.010"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.010     0.000     0.010     0.010"
* 33          CATCHMENT 251"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*       33.000   % Impervious"
*        5.770   Total Area"
*      100.000   Flow length"
*        2.000   Overland Slope"
*        3.866   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        1.904   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.119   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.806   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.202     0.000     0.010     0.010 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  77.530     10.455     25.912     minutes"
*             Time to Centroid       237.391    133.696    157.592    minutes"
*             Rainfall depth         25.028     25.028     25.028     mm"
*             Rainfall volume        967.54     476.55     1444.10    c.m"
*             Rainfall losses        22.053     4.857      16.378     mm"
*             Runoff depth           2.975      20.171     8.649      mm"
*             Runoff volume          115.01     384.07     499.08     c.m"
*             Runoff coefficient     0.119      0.806      0.346      "
*             Maximum flow           0.012      0.201      0.202      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

```
*                0.202     0.202     0.010     0.010"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.202     0.202     0.202     0.010"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                0.202    c.m/sec"
*            Hydrograph volume         603.496    c.m"
*                0.202     0.202     0.202     0.202"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.202     0.000     0.202     0.202"
* 33         CATCHMENT 252"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         252   Southern portion of Hamburglr lands"
*       5.000   % Impervious"
*       2.870   Total Area"
*      65.000   Flow length"
*       1.500   Overland Slope"
*       2.726   Pervious Area"
*      65.000   Pervious length"
*       1.500   Pervious slope"
*       0.144   Impervious Area"
*      65.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.098   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.800   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.020     0.000     0.202     0.202 c.m/sec"
*            Catchment 252          Pervious   Impervious Total Area "
*            Surface Area           2.726      0.144      2.870      hectare"
*            Time of concentration  76.162     4.589      54.697     minutes"
*            Time to Centroid       231.308    124.484    199.270    minutes"
*            Rainfall depth         25.028     25.028     25.028     mm"
*            Rainfall volume        682.38     35.91      718.29     c.m"
*            Rainfall losses        22.566     4.995      21.688     mm"
*            Runoff depth           2.461      20.032     3.340      mm"
*            Runoff volume          67.10      28.75      95.85      c.m"
*            Runoff coefficient     0.098      0.800      0.133      "
*            Maximum flow           0.007      0.019      0.020      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.020     0.020     0.202     0.202"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.020     0.020     0.020     0.202"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                0.222    c.m/sec"
*            Hydrograph volume         699.346    c.m"
*                0.020     0.020     0.020     0.222"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.020     0.000     0.020     0.222"
```



```
* 47         FILEI_O Read/Open DIV00007.0025hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00007.0025hyd"
*            Major flow at 7"
*            Total volume                0.000    c.m"
*            Maximum flow                0.000    c.m/sec"
*                0.000     0.000     0.020     0.222 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.000     0.000     0.020     0.222"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.000     0.000     0.000     0.222"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                0.222    c.m/sec"
*            Hydrograph volume         699.346    c.m"
*                0.000     0.000     0.000     0.222"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                0.222    c.m/sec"
*            Hydrograph volume         699.346    c.m"
*                0.000     0.222     0.000     0.000"
* 54         POND DESIGN"
*       0.222   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       699.3   Hydrograph volume    c.m"
*          9.   Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   198.000"
*               333.500     1.168  1165.000"
*               334.000     2.325  2895.000"
*               334.500     3.132  5301.000"
*               335.000     3.780  8376.000"
*               335.500     4.332  12258.00"
*               335.750     4.583  14551.00"
*               336.000    21.985  17113.00"
*            Peak outflow                0.151    c.m/sec"
*            Maximum level             332.830    metre"
*            Maximum storage            99.274    c.m"
*            Centroidal lag              3.103   hours"
*                0.000     0.222     0.151     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                0.000     0.151     0.151     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area              234.030    hectare"
*            Total Impervious area             110.433    hectare"
*            Total % impervious                 47.187"
* 19         EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>"
*             MIDUSS version                              Version 2.25  rev. 473"
*             MIDUSS created                            Sunday, February 07, 2010"
*          10 Units used:                                              ie METRIC"
*             Job folder:                           Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                          34896-104_Post-002yr.out"
*             Licensee name:                                              admin"
*             Company                                                 Microsoft"
*             Date & Time last used:                  12/17/2018 at 2:54:15 PM"
* 81        ADD COMMENT=========================================================="
*         7 Lines of comment"
*           ************************************************************"
*           Wilmot Employment Lands"
*           New Hamburg, Ontario"
*           2 Year Storm Event - Post development"
*           Job No.: 34896-104"
*           Calculated by: NED/MSB"
*           ************************************************************"
* 31        TIME PARAMETERS"
*       5.000   Time Step"
*     240.000   Max. Storm length"
*    1500.000   Max. Hydrograph"
* 32        STORM Chicago storm"
*           1   Chicago storm"
*     743.000   Coefficient A"
*       6.000   Constant B"
*       0.799   Exponent C"
*       0.400   Fraction R"
*     180.000   Duration"
*       1.000   Time step multiplier"
*             Maximum intensity          109.374    mm/hr"
*             Total depth                 34.259    mm"
*           6   002hyd   Hydrograph extension used in this file"
* 81        ADD COMMENT=========================================================="
*         3 Lines of comment"
*           ************************************************"
*           Catchments North of GEXR, part of Inlet #1"
*           ************************************************"
* 33        CATCHMENT 201"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         201   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.284   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.044     0.000     0.000     0.000 c.m/sec"
*             Catchment 201          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  54.522     6.033      54.522     minutes"
```



```
*             Time to Centroid       171.264    97.071     171.264    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        1017.48    0.00       1017.48    c.m"
*             Rainfall losses        24.517     5.180      24.517     mm"
*             Runoff depth           9.742      29.079     9.742      mm"
*             Runoff volume          289.33     0.00       289.34     c.m"
*             Runoff coefficient     0.284      0.000      0.284      *
*             Maximum flow           0.044      0.000      0.044      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.044     0.044     0.000     0.000"
* 33          CATCHMENT 202"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           202   Woodlot - north of GEXR"
*         0.000   % Impervious"
*         2.080   Total Area"
*        80.000   Flow length"
*         2.500   Overland Slope"
*         2.080   Pervious Area"
*        80.000   Pervious length"
*         2.500   Pervious slope"
*         0.000   Impervious Area"
*        80.000   Impervious length"
*         2.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        70.000   Pervious SCS Curve No."
*         0.121   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*        10.886   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.013     0.044     0.000     0.000 c.m/sec"
*             Catchment 202          Pervious   Impervious Total Area "
*             Surface Area           2.080      0.000      2.080      hectare"
*             Time of concentration  56.918     3.722      56.918     minutes"
*             Time to Centroid       169.776    93.696     169.775    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        712.58     0.00       712.58     c.m"
*             Rainfall losses        30.128     5.618      30.128     mm"
*             Runoff depth           4.130      28.641     4.130      mm"
*             Runoff volume          85.91      0.00       85.91      c.m"
*             Runoff coefficient     0.121      0.000      0.121      "
*             Maximum flow           0.013      0.000      0.013      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.013     0.056     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.013     0.056     0.056     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                 0.056    c.m/sec"
*             Hydrograph volume          375.247    c.m"
*                 0.013     0.056     0.056     0.056"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.013     0.000     0.056     0.056"
* 33          CATCHMENT 203"
*           1   Triangular SCS"
*           1   Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.242   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.851   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                2.336     0.000     0.056     0.056 c.m/sec"
*            Catchment 203          Pervious   Impervious Total Area "
*            Surface Area           7.404      11.106     18.510     hectare"
*            Time of concentration  50.679     5.259      12.490     minutes"
*            Time to Centroid       166.543    95.913     107.158    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        2536.50    3804.76    6341.26    c.m"
*            Rainfall losses        25.978     5.108      13.456     mm"
*            Runoff depth           8.280      29.150     20.802     mm"
*            Runoff volume          613.07     3237.45    3850.52    c.m"
*            Runoff coefficient     0.242      0.851      0.607      "
*            Maximum flow           0.096      2.320      2.336      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                2.336     2.336     0.056     0.056"
* 54         POND DESIGN"
*       2.336   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*      3850.5   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               341.500     0.000     0.000"
*               342.000    0.1541  1746.000"
*               342.500    0.2669  3784.000"
*               343.000    0.3446  6114.000"
*               343.300    0.3837  7652.000"
*               343.600     2.941  9295.000"
*           1.  WEIRS"
*                 Crest      Weir      Crest      Left      Right"
*             elevation coefficie   breadth sideslope sideslope"
*               343.300     0.900    10.000     0.000     0.000"
*           1.  ORIFICES"
*               Orifice   Orifice   Orifice Number of"
*                invert coefficie  diameter  orifices"
*               341.500     0.630    0.3750     1.000"
*             Peak outflow                  0.195    c.m/sec"
*             Maximum level               342.180    metre"
*             Maximum storage            2479.268    c.m"
*             Centroidal lag                5.060   hours"
*                 2.336     2.336     0.195     0.056 c.m/sec"
* 40         HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.247    c.m/sec"
*            Hydrograph volume          4223.111    c.m"
*                 2.336     2.336     0.195     0.247"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.247    c.m/sec"
*            Hydrograph volume          4223.111    c.m"
*                 2.336     0.247     0.195     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 2.336     0.247     0.247     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.247    c.m/sec"
*            Hydrograph volume          4223.111    c.m"
*                 2.336     0.247     0.247     0.247"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 2.336     0.000     0.247     0.247"
* 81          ADD COMMENT==========================================================="
*         3   Lines of comment"
*             **************************************************"
*             Catchments South of GEXR, part of Inlet #1"
*             **************************************************"
* 33          CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.850   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.248     0.000     0.247     0.247 c.m/sec"
*            Catchment 204          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  38.115     7.539      11.625     minutes"
*            Time to Centroid       149.858    99.373     106.120    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        283.73     408.29     692.02     c.m"
*            Rainfall losses        27.795     5.138      14.427     mm"
*            Runoff depth           6.464      29.121     19.831     mm"
*            Runoff volume          53.53      347.06     400.59     c.m"
*            Runoff coefficient     0.189      0.850      0.579      "
```

```
*            Maximum flow          0.010      0.246      0.248      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.248     0.248     0.247     0.247"
* 54         POND DESIGN"
*       0.248   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       400.6   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*            Peak outflow                  0.012    c.m/sec"
*            Maximum level                 0.122    metre"
*            Maximum storage             308.035    c.m"
*            Centroidal lag                8.710    hours"
*                 0.248     0.248     0.012     0.247 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.258    c.m/sec"
*            Hydrograph volume          4609.018    c.m"
*                 0.248     0.248     0.012     0.258"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.248     0.000     0.012     0.258"
* 33         CATCHMENT 205"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         205   Iron Bridge Manufacturing Property - Woodlot"
*       5.000   % Impervious"
*       1.190   Total Area"
*     255.000   Flow length"
*       1.800   Overland Slope"
*       1.131   Pervious Area"
*     255.000   Pervious length"
*       1.800   Pervious slope"
*       0.060   Impervious Area"
*     255.000   Impervious length"
*       1.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.121   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.852   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.012     0.000     0.012     0.258 c.m/sec"
*            Catchment 205          Pervious   Impervious Total Area "
*            Surface Area           1.131      0.060      1.190      hectare"
*            Time of concentration  125.928    8.235      94.020     minutes"
*            Time to Centroid       246.629    100.420    206.990    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        387.29     20.38      407.68     c.m"
*            Rainfall losses        30.127     5.064      28.874     mm"
*            Runoff depth           4.131      29.195     5.384      mm"
```



```
*            Runoff volume         46.70      17.37      64.07      c.m"
*            Runoff coefficient    0.121      0.852      0.157      "
*            Maximum flow          0.004      0.012      0.012      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.012     0.012     0.012     0.258"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.012     0.012     0.012     0.258"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.261    c.m/sec"
*            Hydrograph volume          4673.092    c.m"
*                 0.012     0.012     0.012     0.261"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.012     0.000     0.012     0.261"
* 33         CATCHMENT 206"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         206   Industrial properties at end of Hamilton Road"
*      35.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.852   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       0.997   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.836   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.207     0.000     0.012     0.261 c.m/sec"
*            Catchment 206          Pervious   Impervious Total Area "
*            Surface Area           1.852      0.997      2.850      hectare"
*            Time of concentration  42.063     3.696      15.034     minutes"
*            Time to Centroid       154.727    93.661     111.707    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        634.64     341.73     976.37     c.m"
*            Rainfall losses        27.794     5.636      20.038     mm"
*            Runoff depth           6.465      28.623     14.220     mm"
*            Runoff volume          119.76     285.51     405.28     c.m"
*            Runoff coefficient     0.189      0.836      0.415      "
*            Maximum flow           0.022      0.203      0.207      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.207     0.207     0.012     0.261"
* 33         CATCHMENT 207"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         207   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
```

```
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.122   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.840   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.062     0.207     0.012     0.261 c.m/sec"
*            Catchment 207          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  47.251     3.111      35.545     minutes"
*            Time to Centroid       158.856    92.675     141.304    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        1926.70    101.41     2028.11    c.m"
*            Rainfall losses        30.063     5.482      28.833     mm"
*            Runoff depth           4.196      28.777     5.425      mm"
*            Runoff volume          235.99     85.18      321.16     c.m"
*            Runoff coefficient     0.122      0.840      0.158      "
*            Maximum flow           0.039      0.058      0.062      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.062     0.269     0.012     0.261"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.062     0.269     0.269     0.261"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.388    c.m/sec"
*            Hydrograph volume          5399.537    c.m"
*               0.062     0.269     0.269     0.388"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.062     0.000     0.269     0.388"
* 33         CATCHMENT 208"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         208   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.176   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```



```
*       0.851   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.723     0.000     0.269     0.388 c.m/sec"
*            Catchment 208          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  31.632     9.032      10.487     minutes"
*            Time to Centroid       141.833    101.527    104.121    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        473.62     1420.87    1894.50    c.m"
*            Rainfall losses        28.243     5.116      10.897     mm"
*            Runoff depth           6.016      29.143     23.361     mm"
*            Runoff volume          83.17      1208.70    1291.87    c.m"
*            Runoff coefficient     0.176      0.851      0.682      "
*            Maximum flow           0.018      0.719      0.723      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.723     0.723     0.269     0.388"
* 54         POND DESIGN"
*       0.723   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1291.9   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*            Peak outflow                  0.037    c.m/sec"
*            Maximum level                 0.462    metre"
*            Maximum storage            1037.071    c.m"
*            Centroidal lag               14.806    hours"
*               0.723     0.723     0.037     0.388 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.391    c.m/sec"
*            Hydrograph volume          6419.479    c.m"
*               0.723     0.723     0.037     0.391"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments South of GEXR, part of Inlet #2"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.723     0.000     0.037     0.391"
* 33         CATCHMENT 209"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         209   Alpine Solutions - west SMWP"
*      30.000   % Impervious"
*       1.920   Total Area"
*     150.000   Flow length"
*       1.000   Overland Slope"
*       1.344   Pervious Area"
```

```
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.249   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.851   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.122     0.000     0.037     0.391 c.m/sec"
*             Catchment 209          Pervious   Impervious Total Area *
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  61.427     5.338      28.077     minutes"
*             Time to Centroid       179.909    96.036     130.039    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        460.44     197.33     657.76     c.m"
*             Rainfall losses        25.739     5.103      19.548     mm"
*             Runoff depth           8.520      29.155     14.710     mm"
*             Runoff volume          114.50     167.94     282.44     c.m"
*             Runoff coefficient     0.249      0.851      0.429      *
*             Maximum flow           0.016      0.120      0.122      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.122     0.122     0.037     0.391"
* 54          POND DESIGN"
*         0.122   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         282.4   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.2500   0.04200     7.000"
*                  0.5000   0.09000    71.000"
*                  0.7500    0.1250   220.000"
*                  0.9000    0.1400   346.000"
*                   1.000    0.3110   445.000"
*                   1.100    0.6160   557.000"
*             Peak outflow                  0.065    c.m/sec"
*             Maximum level                 0.376    metre"
*             Maximum storage              39.380    c.m"
*             Centroidal lag                2.248   hours"
*                  0.122     0.122     0.065     0.391 c.m/sec"
* 40          HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*             Maximum flow                  0.065    c.m/sec"
*             Hydrograph volume           282.481    c.m"
*                  0.122     0.122     0.065     0.065"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.122     0.000     0.065     0.065"
* 33          CATCHMENT 210"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         210   Woodlot north of Hamburglr/Badenview lands"
```



```
*        5.000   % Impervious"
*       13.230   Total Area"
*      170.000   Flow length"
*        2.400   Overland Slope"
*       12.568   Pervious Area"
*      170.000   Pervious length"
*        2.400   Pervious slope"
*        0.661   Impervious Area"
*      170.000   Impervious length"
*        2.400   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.000   Pervious SCS Curve No."
*        0.121   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.886   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.849   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.139     0.000     0.065     0.065 c.m/sec"
*             Catchment 210          Pervious   Impervious Total Area *
*             Surface Area           12.568     0.661      13.230     hectare"
*             Time of concentration  90.570     5.923      67.676     minutes"
*             Time to Centroid       207.254    96.935     177.417    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        4305.79    226.62     4532.41    c.m"
*             Rainfall losses        30.128     5.160      28.879     mm"
*             Runoff depth           4.131      29.098     5.379      mm"
*             Runoff volume          519.21     192.49     711.69     c.m"
*             Runoff coefficient     0.121      0.849      0.157      *
*             Maximum flow           0.054      0.136      0.139      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.139     0.139     0.065     0.065"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.139     0.139     0.139     0.065"
* 40          HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*             Maximum flow                  0.195    c.m/sec"
*             Hydrograph volume           994.175    c.m"
*                  0.139     0.139     0.139     0.195"
* 81          ADD COMMENT================================================="
*         3   Lines of comment"
*             ************************************************"
*             South of GEXR along Nafziger Rd, part of Inlet #3"
*             ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.139     0.000     0.139     0.195"
* 33          CATCHMENT 211"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         211   Culivated lands east of Nafziger Road"
*       1.000   % Impervious"
*       7.310   Total Area"
*     120.000   Flow length"
*       3.300   Overland Slope"
*       7.237   Pervious Area"
*     120.000   Pervious length"
*       3.300   Pervious slope"
*       0.073   Impervious Area"
*     120.000   Impervious length"
```

```
*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.844   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.076     0.000     0.139     0.195 c.m/sec"
*            Catchment 211          Pervious   Impervious Total Area "
*            Surface Area           7.237      0.073      7.310      hectare"
*            Time of concentration  49.713     4.368      47.753     minutes"
*            Time to Centroid       164.181    94.627     161.175    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        2479.26    25.04      2504.30    c.m"
*            Rainfall losses        27.793     5.341      27.568     mm"
*            Runoff depth           6.466      28.917     6.691      mm"
*            Runoff volume          467.94     21.14      489.08     c.m"
*            Runoff coefficient     0.189      0.844      0.195      "
*            Maximum flow           0.075      0.015      0.076      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.076     0.076     0.139     0.195"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.076     0.076     0.076     0.195"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                 0.076    c.m/sec"
*            Hydrograph volume            489.081    c.m"
*               0.076     0.076     0.076     0.076"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.076     0.000     0.076     0.076"
* 33         CATCHMENT 212"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         212   Alpine Solutions - East SMWP"
*      40.000   % Impervious"
*       2.560   Total Area"
*     150.000   Flow length"
*       1.500   Overland Slope"
*       1.536   Pervious Area"
*     180.000   Pervious length"
*       1.500   Pervious slope"
*       1.024   Impervious Area"
*     131.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.249   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.850   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.213     0.000     0.076     0.076 c.m/sec"
*            Catchment 212          Pervious   Impervious Total Area "
*            Surface Area           1.536      1.024      2.560      hectare"
```



```
*            Time of concentration  68.528     5.833      24.957     minutes"
*            Time to Centroid       189.072    96.789     124.938    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        526.21     350.81     877.02     c.m"
*            Rainfall losses        25.738     5.140      17.499     mm"
*            Runoff depth           8.520      29.118     16.759     mm"
*            Runoff volume          130.87     298.17     429.04     c.m"
*            Runoff coefficient     0.249      0.850      0.489      "
*            Maximum flow           0.016      0.212      0.213      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.213     0.213     0.076     0.076"
* 54         POND DESIGN"
*       0.213   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       429.0   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*            Peak outflow                   0.054    c.m/sec"
*            Maximum level                  0.311    metre"
*            Maximum storage              131.699    c.m"
*            Centroidal lag                 2.531    hours"
*               0.213     0.213     0.054     0.076 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                   0.128    c.m/sec"
*            Hydrograph volume            918.361    c.m"
*               0.213     0.213     0.054     0.128"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.213     0.000     0.054     0.128"
* 33         CATCHMENT 213"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         213   Woodlot East and West of Nafziger Road"
*       3.000   % Impervious"
*      13.460   Total Area"
*     140.000   Flow length"
*       3.600   Overland Slope"
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.122   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.847   Impervious Runoff coefficient"
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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.089     0.000     0.054     0.128 c.m/sec"
*            Catchment 213          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  71.133     4.668      59.353     minutes"
*            Time to Centroid       185.523    95.053     169.488    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        4472.87    138.34     4611.20    c.m"
*            Rainfall losses        30.095     5.255      29.350     mm"
*            Runoff depth           4.164      29.003     4.909      mm"
*            Runoff volume          543.63     117.12     660.75     c.m"
*            Runoff coefficient     0.122      0.847      0.143      "
*            Maximum flow           0.068      0.084      0.089      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.089     0.089     0.054     0.128"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.089     0.089     0.089     0.128"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.196    c.m/sec"
*            Hydrograph volume          1579.110    c.m"
*                 0.089     0.089     0.089     0.196"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.089     0.000     0.089     0.196"
* 33         CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.304   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.846   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.768     0.000     0.089     0.196 c.m/sec"
*            Catchment 214          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  24.992     7.105      9.203      minutes"
*            Time to Centroid       132.216    98.734     102.661    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        457.87     1237.93    1695.80    c.m"
*            Rainfall losses        23.854     5.292      10.304     mm"
*            Runoff depth           10.405     28.966     23.955     mm"
*            Runoff volume          139.06     1046.70    1185.76    c.m"
*            Runoff coefficient     0.304      0.846      0.699      "
*            Maximum flow           0.037      0.755      0.768      c.m/sec"
```



```
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.768     0.768     0.089     0.196"
* 54         POND DESIGN"
*       0.768   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1185.8   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00700   248.000"
*                0.2500   0.00900   418.000"
*                0.3500   0.01100   593.000"
*                0.4500   0.01300   775.000"
*                0.5500   0.01500   964.000"
*                0.6500   0.01600  1161.000"
*                0.7500   0.01700  1364.000"
*                0.8500   0.01900  1575.000"
*                0.9500   0.02000  1795.000"
*                 1.050   0.05600  2025.000"
*                 1.150    0.2080  2263.000"
*                 1.250    0.4600  2511.000"
*                 1.350     2.766  2768.000"
*                 1.450     6.856  3033.000"
*            Peak outflow                  0.015    c.m/sec"
*            Maximum level                 0.597    metre"
*            Maximum storage            1055.949    c.m"
*            Centroidal lag               15.380    hours"
*                 0.768     0.768     0.015     0.196 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.210    c.m/sec"
*            Hydrograph volume          2536.092    c.m"
*                 0.768     0.768     0.015     0.210"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.768     0.000     0.015     0.210"
* 33         CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.189   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.847   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                  0.271     0.000     0.015     0.210 c.m/sec"
*            Catchment 215          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  53.324     4.685      15.099     minutes"
*            Time to Centroid       168.640    95.055     110.809    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        538.89     440.91     979.79     c.m"
*            Rainfall losses        27.793     5.253      17.650     mm"
*            Runoff depth           6.465      29.005     16.608     mm"
*            Runoff volume          101.70     373.30     474.99     c.m"
*            Runoff coefficient     0.189      0.847      0.485      "
*            Maximum flow           0.015      0.269      0.271      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.271     0.271     0.015     0.210"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.271     0.271     0.271     0.210"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.436    c.m/sec"
*           Hydrograph volume          3011.084    c.m"
*                 0.271     0.271     0.271     0.436"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.271     0.000     0.271     0.436"
* 33         CATCHMENT 216"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        216   Industrial lands west of Nafziger Road"
*       45.000   % Impervious"
*        2.860   Total Area"
*      110.000   Flow length"
*        2.000   Overland Slope"
*        1.573   Pervious Area"
*      110.000   Pervious length"
*        2.000   Pervious slope"
*        1.287   Impervious Area"
*      110.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.847   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.271     0.000     0.271     0.436 c.m/sec"
*            Catchment 216          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  54.833     4.818      15.523     minutes"
*            Time to Centroid       170.505    95.252     111.359    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        538.89     440.91     979.79     c.m"
*            Rainfall losses        27.792     5.236      17.642     mm"
*            Runoff depth           6.467      29.023     16.617     mm"
*            Runoff volume          101.72     373.52     475.24     c.m"
*            Runoff coefficient     0.189      0.847      0.485      "
*            Maximum flow           0.015      0.269      0.271      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
```



```
*          4   Add Runoff "
*                 0.271     0.271     0.271     0.436"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.271     0.271     0.271     0.436"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.707    c.m/sec"
*           Hydrograph volume          3486.326    c.m"
*                 0.271     0.271     0.271     0.707"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.271     0.000     0.271     0.707"
* 33         CATCHMENT 217"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        217   Existing ROW west of Nafziger Road"
*       75.000   % Impervious"
*        0.730   Total Area"
*       90.000   Flow length"
*        2.100   Overland Slope"
*        0.183   Pervious Area"
*       90.000   Pervious length"
*        2.100   Pervious slope"
*        0.548   Impervious Area"
*       90.000   Impervious length"
*        2.100   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.843   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.114     0.000     0.271     0.707 c.m/sec"
*            Catchment 217          Pervious   Impervious Total Area "
*            Surface Area           0.183      0.548      0.730      hectare"
*            Time of concentration  47.907     4.209      7.243      minutes"
*            Time to Centroid       161.951    94.385     99.076     minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        62.52      187.57     250.09     c.m"
*            Rainfall losses        27.794     5.373      10.978     mm"
*            Runoff depth           6.465      28.885     23.280     mm"
*            Runoff volume          11.80      158.15     169.95     c.m"
*            Runoff coefficient     0.189      0.843      0.680      "
*            Maximum flow           0.002      0.114      0.114      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.114     0.114     0.271     0.707"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.114     0.114     0.114     0.707"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.821    c.m/sec"
*           Hydrograph volume          3656.272    c.m"
*                 0.114     0.114     0.114     0.821"
* 40         HYDROGRAPH   Confluence    2"
*          7   Confluence "
```

```
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.391    c.m/sec"
*           Hydrograph volume          6419.479    c.m"
*                 0.114     0.391     0.114     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.114     0.391     0.391     0.000"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  0.391    c.m/sec"
*           Hydrograph volume          6419.479    c.m"
*                 0.114     0.391     0.391     0.391"
* 40        HYDROGRAPH   Confluence    3"
*          7   Confluence "
*          3   Node #"
*              INLET 2"
*           Maximum flow                  0.195    c.m/sec"
*           Hydrograph volume           994.175    c.m"
*                 0.114     0.195     0.391     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.114     0.195     0.195     0.000"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  0.587    c.m/sec"
*           Hydrograph volume          7413.651    c.m"
*                 0.114     0.195     0.195     0.587"
* 40        HYDROGRAPH   Confluence    4"
*          7   Confluence "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.821    c.m/sec"
*           Hydrograph volume          3656.271    c.m"
*                 0.114     0.821     0.195     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.114     0.821     0.821     0.000"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  1.408    c.m/sec"
*           Hydrograph volume         11069.923    c.m"
*                 0.114     0.821     0.821     1.408"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.114     0.000     0.821     1.408"
* 33        CATCHMENT 223"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        223   New Hamburglr Inc. lands"
*       85.000   % Impervious"
*       12.570   Total Area"
*       90.000   Flow length"
*        1.000   Overland Slope"
*        1.885   Pervious Area"
*       90.000   Pervious length"
*        1.000   Pervious slope"
*       10.684   Impervious Area"
*       90.000   Impervious length"
*        1.000   Impervious slope"
```



```
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.851   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                2.234     0.000     0.821     1.408 c.m/sec"
*             Catchment 223          Pervious   Impervious Total Area "
*             Surface Area           1.885      10.684     12.570     hectare"
*             Time of concentration  59.850     5.259      7.315      minutes"
*             Time to Centroid       176.700    95.913     98.956     minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        645.95     3660.36    4306.30    c.m"
*             Rainfall losses        27.793     5.108      8.511      mm"
*             Runoff depth           6.465      29.150     25.748     mm"
*             Runoff volume          121.90     3114.58    3236.48    c.m"
*             Runoff coefficient     0.189      0.851      0.752      "
*             Maximum flow           0.017      2.232      2.234      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 2.234     2.234     0.821     1.408"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 2.234     2.234     2.234     1.408"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  3.642    c.m/sec"
*            Hydrograph volume         14306.400    c.m"
*                  2.234     2.234     2.234     3.642"
* 81          ADD COMMENT==================================================="
*           3 Lines of comment"
*             **************************************************"
*             Catchments east of Hamilton Road, part of Inlet #4"
*             **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 2.234     0.000     2.234     3.642"
* 33          CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*       85.000   % Impervious"
*        2.060   Total Area"
*      230.000   Flow length"
*        1.700   Overland Slope"
*        0.309   Pervious Area"
*      230.000   Pervious length"
*        3.000   Pervious slope"
*        1.751   Impervious Area"
*      230.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.231   Pervious Runoff coefficient"
*        0.060   Pervious Ia/S coefficient"
*        4.813   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.845   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                   0.370     0.000     2.234     3.642 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  65.728     6.641      9.359      minutes"
*            Time to Centroid       186.200    98.042     102.098    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        105.86     599.87     705.73     c.m"
*            Rainfall losses        26.353     5.326      8.480      mm"
*            Runoff depth           7.905      28.933     25.779     mm"
*            Runoff volume          24.43      506.61     531.04     c.m"
*            Runoff coefficient     0.231      0.845      0.752      "
*            Maximum flow           0.003      0.370      0.370      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.370     0.370     2.234     3.642"
* 54         PCND DESIGN"
*       0.370   Current peak flow    c.m/sec"
*       4.094   Target outflow    c.m/sec"
*       531.0   Hydrograph volume    c.m"
*         15.   Number of stages"
*     344.700   Minimum water level    metre"
*     345.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               344.700    0.1250     0.000"
*               344.750    0.1270     9.000"
*               344.800    0.1280    35.000"
*               344.850    0.1300    77.000"
*               344.900    0.1450   136.000"
*               344.950    0.1820   209.000"
*               345.000    0.2220   297.000"
*               345.050    0.2690   400.000"
*               345.100    0.2710   519.000"
*               345.150    0.2740   653.000"
*               345.200    0.2760   804.000"
*               345.250    0.2790   971.000"
*               345.300    0.2820  1154.000"
*               345.350    0.2840  1355.000"
*               345.400    0.2860  1571.000"
*            Peak outflow                  0.144    c.m/sec"
*            Maximum level               344.896    metre"
*            Maximum storage             131.763    c.m"
*            Centroidal lag                1.821    hours"
*                 0.370     0.370     0.144     3.642 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  3.771    c.m/sec"
*            Hydrograph volume         14839.653    c.m"
*                   0.370     0.370     0.144     3.771"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.370     0.000     0.144     3.771"
* 33         CATCHMENT 219"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         219   N.C. Pestells Head Office & other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      75.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      75.000   Pervious length"
```



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*       3.000   Pervious slope"
*       1.088   Impervious Area"
*      75.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.044   Pervious Runoff coefficient"
*       0.281   Pervious Ia/S coefficient"
*      22.539   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.838   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.218     0.000     0.144     3.771 c.m/sec"
*            Catchment 219          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  105.590    3.390      4.320      minutes"
*            Time to Centroid       215.973    93.149     94.266     minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        65.78      372.73     438.51     c.m"
*            Rainfall losses        32.765     5.538      9.622      mm"
*            Runoff depth           1.494      28.720     24.636     mm"
*            Runoff volume          2.87       312.47     315.34     c.m"
*            Runoff coefficient     0.044      0.838      0.719      "
*            Maximum flow           0.000      0.218      0.218      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.218     0.218     0.144     3.771"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.218     0.218     0.218     3.771"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  3.989    c.m/sec"
*            Hydrograph volume         15154.996    c.m"
*                   0.218     0.218     0.218     3.989"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.218     0.000     0.218     3.989"
* 33         CATCHMENT 220"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         220   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.163   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.839   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```

```
*                0.009     0.000     0.218     3.989 c.m/sec"
*             Catchment 220          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  31.745     2.544      22.729     minutes"
*             Time to Centroid       141.881    91.780     126.413    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        157.59     13.70      171.29     c.m"
*             Rainfall losses        28.662     5.515      26.811     mm"
*             Runoff depth           5.596      28.743     7.448      mm"
*             Runoff volume          25.74      11.50      37.24      c.m"
*             Runoff coefficient     0.163      0.839      0.217      "
*             Maximum flow           0.006      0.008      0.009      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                0.009     0.009     0.218     3.989"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                0.009     0.009     0.009     3.989"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8'
*             Maximum flow                  3.997    c.m/sec"
*             Hydrograph volume         15192.235    c.m"
*                0.009     0.009     0.009     3.997"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                0.009     0.000     0.009     3.997"
* 33          CATCHMENT 221"
*            1   Triangular SCS'
*            1   Equal length"
*            1   SCS method"
*          221   Proposed ROW from Hamilton Road"
*       81.500   % Impervious"
*        0.810   Total Area"
*       40.000   Flow length"
*        2.000   Overland Slope'
*        0.150   Pervious Area"
*       40.000   Pervious length"
*        2.000   Pervious slope'
*        0.660   Impervious Area"
*       40.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.839   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.137     0.000     0.009     3.997 c.m/sec"
*             Catchment 221          Pervious   Impervious Total Area "
*             Surface Area           0.150      0.660      0.810      hectare"
*             Time of concentration  29.884     2.626      3.950      minutes"
*             Time to Centroid       139.679    91.908     94.229     minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        51.34      226.16     277.49     c.m"
*             Rainfall losses        27.793     5.525      9.645      mm"
*             Runoff depth           6.465      28.734     24.614     mm"
*             Runoff volume          9.69       189.68     199.37     c.m"
*             Runoff coefficient     0.189      0.839      0.718      "
*             Maximum flow           0.002      0.137      0.137      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```



```
*                0.137     0.137     0.009     3.997"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                0.137     0.137     0.137     3.997"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  4.121    c.m/sec"
*             Hydrograph volume         15391.606    c.m"
*                0.137     0.137     0.137     4.121"
* 81          ADD COMMENT================================================="
*            3  Lines of comment"
*               ************************************************"
*               Catchment to Inlet #5"
*               ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                0.137     0.000     0.137     4.121"
* 33          CATCHMENT 222"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          222   Rear yards from Hamilton Heights Subdivision"
*        5.000   % Impervious"
*        1.080   Total Area"
*       20.000   Flow length"
*        3.000   Overland Slope"
*        1.026   Pervious Area"
*       20.000   Pervious length"
*        3.000   Pervious slope"
*        0.054   Impervious Area"
*       20.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.189   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.841   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                0.024     0.000     0.137     4.121 c.m/sec"
*             Catchment 222          Pervious   Impervious Total Area "
*             Surface Area           1.026      0.054      1.080      hectare"
*             Time of concentration  17.458     1.534      14.432     minutes"
*             Time to Centroid       124.332    90.156     117.837    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        351.49     18.50      369.99     c.m"
*             Rainfall losses        27.800     5.461      26.683     mm"
*             Runoff depth           6.459      28.797     7.576      mm"
*             Runoff volume          66.27      15.55      81.82      c.m"
*             Runoff coefficient     0.189      0.841      0.221      "
*             Maximum flow           0.021      0.012      0.024      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                0.024     0.024     0.137     4.121"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                0.024     0.024     0.024     4.121"
* 40          HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                  4.138    c.m/sec"
```

```
*           Hydrograph volume          15473.425    c.m"
*                  0.024     0.024      0.024     4.138"
* 81        ADD COMMENT================================================="
*         3 Lines of comment"
*           **************************************************
*           Badenview Developments Inc. lands"
*           **************************************************
* 40        HYDROGRAPH Start - New Tributary"
*          2  Start - New Tributary"
*                0.024     0.000      0.024     4.138"
* 33        CATCHMENT 224"
*          1  Triangular SCS"
*          1  Equal length"
*          1  SCS method"
*        224  Badenview lands"
*     85.000  % Impervious"
*     43.200  Total Area"
*     90.000  Flow length"
*      1.000  Overland Slope"
*      6.480  Pervious Area"
*     90.000  Pervious length"
*      1.000  Pervious slope"
*     36.720  Impervious Area"
*     90.000  Impervious length"
*      1.000  Impervious slope"
*      0.250  Pervious Manning 'n'"
*     76.000  Pervious SCS Curve No."
*      0.189  Pervious Runoff coefficient"
*      0.100  Pervious Ia/S coefficient"
*      8.021  Pervious Initial abstraction"
*      0.015  Impervious Manning 'n'"
*     98.000  Impervious SCS Curve No."
*      0.851  Impervious Runoff coefficient"
*      0.100  Impervious Ia/S coefficient"
*      0.518  Impervious Initial abstraction"
*                7.678     0.000      0.024     4.138 c.m/sec"
*           Catchment 224          Pervious   Impervious Total Area *
*           Surface Area           6.480      36.720     43.200     hectare"
*           Time of concentration  59.850     5.259      7.315      minutes"
*           Time to Centroid       176.700    95.913     98.956     minutes"
*           Rainfall depth         34.259     34.259     34.259     mm"
*           Rainfall volume        0.2220     1.2580     1.4800     ha-m"
*           Rainfall losses        27.793     5.108      8.511      mm"
*           Runoff depth           6.465      29.150     25.748     mm"
*           Runoff volume          0.0419     1.0704     1.1123     ha-m"
*           Runoff coefficient     0.189      0.851      0.752      *
*           Maximum flow           0.058      7.672      7.678      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4  Add Runoff "
*                7.678     7.678      0.024     4.138"
* 40        HYDROGRAPH Copy to Outflow"
*          8  Copy to Outflow"
*                7.678     7.678      7.678     4.138"
* 40        HYDROGRAPH   Combine    5"
*          6  Combine "
*          5  Node #"
*             u/s of HWY 7&8"
*           Maximum flow                11.817    c.m/sec"
*           Hydrograph volume        26596.412    c.m"
*                7.678     7.678      7.678    11.817"
* 40        HYDROGRAPH   Confluence    5"
*          7  Confluence "
*          5  Node #"
*             u/s of HWY 7&8"
*           Maximum flow                11.817    c.m/sec"
*           Hydrograph volume        26596.412    c.m"
*                7.678    11.817      7.678     0.000"
```



```
* 81        ADD COMMENT================================================="
*         7 Lines of comment"
*           **************************************************
*           **************************************************
*           **                                              **"
*           **          PROPOSED SWM POND DESIGN            **"
*           **                                              **"
*           **************************************************
*           **************************************************
* 54        POND DESIGN"
*      11.817  Current peak flow    c.m/sec"
*       4.094  Target outflow    c.m/sec"
*    26596.4   Hydrograph volume    c.m"
*       36.    Number of stages"
*     334.550  Minimum water level    metre"
*     337.850  Maximum water level    metre"
*     334.550  Starting water level    metre"
*           0  Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                334.550     0.000     0.000"
*                334.600   0.00400  1187.000"
*                334.700   0.02830  3607.000"
*                334.800   0.06350  6090.000"
*                334.900   0.08900  8636.000"
*                335.000    0.1880  11246.00"
*                335.100    0.3430  13920.00"
*                335.200    0.5360  16658.00"
*                335.300    0.7599  19459.00"
*                335.400     1.011  22323.00"
*                335.500     1.286  25249.00"
*                335.600     1.583  28239.00"
*                335.700     1.901  31294.00"
*                335.800     2.238  34414.00"
*                335.900     2.593  37599.00"
*                336.000     2.966  40851.00"
*                336.100     3.427  43465.00"
*                336.200     3.959  46848.00"
*                336.300     4.543  50286.00"
*                336.400     5.171  53779.00"
*                336.500     5.840  57328.00"
*                336.600     6.544  60933.00"
*                336.700     7.284  64595.00"
*                336.800     8.055  68313.00"
*                336.900     8.858  72088.00"
*                337.000     9.690  75920.00"
*                337.100    10.550  79809.00"
*                337.200    11.437  83755.00"
*                337.300    12.351  87759.00"
*                337.400    13.291  91821.00"
*                337.500    14.255  95940.00"
*                337.550    14.746  98022.00"
*                337.600    16.027  100118.0"
*                337.700    20.027  104352.0"
*                337.800    25.280  108643.0"
*                337.850    28.277  110810.0"
*             Peak outflow                  0.627    c.m/sec"
*             Maximum level               335.241    metre"
*             Maximum storage           17799.023    c.m"
*             Centroidal lag               17.720    hours"
*                  7.678    11.817      0.627     0.000 c.m/sec"
* 40          HYDROGRAPH   Combine    12"
*            6  Combine "
*           12  Node #"
*               d/s of Proposed SWMF"
*             Maximum flow                  0.627    c.m/sec"
*             Hydrograph volume         19579.971    c.m"
*                    7.678    11.817      0.627     0.627"
```

```
* 81          ADD COMMENT=================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                    7.678     0.000     0.627     0.627"
* 33          CATCHMENT 260"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           260  Hamilton Heights Subdivision"
*        46.000  % Impervious"
*         8.160  Total Area"
*        50.000  Flow length"
*         1.000  Overland Slope"
*         4.406  Pervious Area"
*        50.000  Pervious length"
*         3.000  Pervious slope"
*         3.754  Impervious Area"
*       232.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.189  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.852  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                    0.773     0.000     0.627     0.627 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  30.253     8.219      12.765     minutes"
*              Time to Centroid       140.138    100.395    108.595    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        1509.57    1285.93    2795.50    c.m"
*              Rainfall losses        27.793     5.063      17.337     mm"
*              Runoff depth           6.465      29.195     16.921     mm"
*              Runoff volume          284.89     1095.88    1380.76    c.m"
*              Runoff coefficient     0.189      0.852      0.494      "
*              Maximum flow           0.065      0.758      0.773      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                    0.773     0.773     0.627     0.627"
* 33          CATCHMENT 261"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           261  Klassen Bronze Property"
*        32.000  % Impervious"
*         2.350  Total Area"
*       100.000  Flow length"
*         2.500  Overland Slope"
*         1.598  Pervious Area"
*        50.000  Pervious length"
*         2.500  Pervious slope"
*         0.752  Impervious Area"
*       164.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.189  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
```



```
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.844  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                    0.164     0.773     0.627     0.627 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  31.953     6.675      14.813     minutes"
*              Time to Centroid       142.248    98.096     112.311    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        547.45     257.62     805.08     c.m"
*              Rainfall losses        27.796     5.336      20.609     mm"
*              Runoff depth           6.462      28.922     13.650     mm"
*              Runoff volume          103.27     217.50     320.77     c.m"
*              Runoff coefficient     0.189      0.844      0.398      "
*              Maximum flow           0.022      0.159      0.164      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                    0.164     0.937     0.627     0.627"
* 40          HYDROGRAPH Copy to Outflow"
*             8  Copy to Outflow"
*                    0.164     0.937     0.937     0.627"
* 40          HYDROGRAPH   Combine    12"
*             6  Combine "
*            12  Node #"
*                d/s of Proposed SWMF"
*                Maximum flow                  0.997    c.m/sec"
*                Hydrograph volume         21281.508    c.m"
*                    0.164     0.937     0.937     0.997"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                    0.164     0.000     0.937     0.997"
* 33          CATCHMENT 225"
*             1  Triangular SCS"
*             1  Equal length"
*             1  SCS method"
*           225  HWY 7/8 and north ditching"
*        30.000  % Impervious"
*         1.670  Total Area"
*        75.000  Flow length"
*         2.000  Overland Slope"
*         1.169  Pervious Area"
*        75.000  Pervious length"
*         2.000  Pervious slope"
*         0.501  Impervious Area"
*        75.000  Impervious length"
*         2.000  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        74.000  Pervious SCS Curve No."
*         0.163  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.924  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.838  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                    0.104     0.000     0.937     0.997 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  47.775     3.829      17.575     minutes"
*              Time to Centroid       161.054    93.827     114.856    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        400.48     171.64     572.12     c.m"
*              Rainfall losses        28.658     5.550      21.726     mm"
```

```
*           Runoff depth           5.600      28.708      12.533      mm"
*           Runoff volume          65.47      143.83      209.29      c.m"
*           Runoff coefficient     0.163      0.838       0.366       "
*           Maximum flow           0.011      0.103       0.104       c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.104      0.104      0.937      0.997"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.104      0.104      0.104      0.997"
* 40        HYDROGRAPH   Combine    12"
*          6   Combine "
*         12   Node #"
*              d/s of Proposed SWMF"
*           Maximum flow                    1.101    c.m/sec"
*           Hydrograph volume           21490.803    c.m"
*                 0.104      0.104      0.104      1.101"
* 81        ADD COMMENT============================================="
*        3  Lines of comment"
*           ************************************************************"
*           Western catchment along Hamilton Road, diverted to Inlet #6"
*           ************************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.104      0.000      0.104      1.101"
* 33        CATCHMENT 270"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        270   Industrial/Residential area along Hamilton Road"
*     55.000   % Impervious"
*      8.450   Total Area"
*     45.000   Flow length"
*      2.000   Overland Slope"
*      3.802   Pervious Area"
*     30.000   Pervious length"
*      3.000   Pervious slope"
*      4.648   Impervious Area"
*    235.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.189   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.852   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                 0.959      0.000      0.104      1.101 c.m/sec"
*           Catchment 270          Pervious   Impervious Total Area "
*           Surface Area           3.802      4.648       8.450       hectare"
*           Time of concentration  22.267     8.282       10.425      minutes"
*           Time to Centroid       130.295    100.493     105.060     minutes"
*           Rainfall depth         34.259     34.259      34.259      mm"
*           Rainfall volume        1302.68    1592.17     2894.85     c.m"
*           Rainfall losses        27.801     5.066       15.296      mm"
*           Runoff depth           6.458      29.193      18.962      mm"
*           Runoff volume          245.56     1356.75     1602.31     c.m"
*           Runoff coefficient     0.189      0.852       0.554       "
*           Maximum flow           0.069      0.936       0.959       c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.959      0.959      0.104      1.101"
* 56        DIVERSION"
*          6   Node number"
```



```
*        1.560   Overflow threshold"
*        1.000   Required diverted fraction"
*            0   Conduit type; 1=Pipe;2=Channel"
*                Peak of diverted flow          0.000    c.m/sec"
*                Volume of diverted flow        0.000    c.m"
*                DIV00006.002hyd"
*                Major flow at 6"
*                      0.959      0.959      0.959      1.101 c.m/sec"
* 40             HYDROGRAPH   Combine    9"
*               6   Combine "
*               9   Node #"
*                   NODE B"
*                Maximum flow                   0.959    c.m/sec"
*                Hydrograph volume           1602.305    c.m"
*                      0.959      0.959      0.959      0.959"
* 40             HYDROGRAPH Start - New Tributary"
*               2   Start - New Tributary"
*                      0.959      0.000      0.959      0.959"
* 47             FILE1_O Read/Open DIV00006.002hyd"
*              1   1=read/open; 2=write/save"
*              2   1=rainfall; 2=hydrograph"
*              1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*                DIV00006.002hyd"
*                Major flow at 6"
*                Total volume                   0.000    c.m"
*                Maximum flow                   0.000    c.m/sec"
*                     0.000      0.000      0.959      0.959 c.m/sec"
* 40             HYDROGRAPH Add Runoff "
*               4   Add Runoff "
*                      0.000      0.000      0.959      0.959"
* 40             HYDROGRAPH Copy to Outflow"
*               8   Copy to Outflow"
*                      0.000      0.000      0.000      0.959"
* 40             HYDROGRAPH   Combine    12"
*               6   Combine "
*              12   Node #"
*                   d/s of Proposed SWMF"
*                Maximum flow                   1.101    c.m/sec"
*                Hydrograph volume          21490.801    c.m"
*                      0.000      0.000      0.000      1.101"
* 40             HYDROGRAPH   Confluence    12"
*               7   Confluence "
*              12   Node #"
*                   d/s of Proposed SWMF"
*                Maximum flow                   1.101    c.m/sec"
*                Hydrograph volume          21490.801    c.m"
*                      0.000      1.101      0.000      0.000"
* 54             POND DESIGN"
*          1.101   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*       21490.8    Hydrograph volume    c.m"
*            8.    Number of stages"
*        334.290   Minimum water level    metre"
*        337.000   Maximum water level    metre"
*        334.290   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                  334.290     0.000     0.000"
*                  334.500    0.2540     5.000"
*                  335.000     1.303   110.000"
*                  335.500     2.800   674.000"
*                  336.000     4.639  1910.000"
*                  336.500     6.480  3748.000"
*                  336.550     6.665  3967.000"
*                  337.000    23.484  6569.000"
*                Peak outflow                   0.960    c.m/sec"
*                Maximum level                334.869    metre"
```

```
*           Maximum storage              82.525    c.m"
*           Centroidal lag                8.127   hours"
*                0.000     1.101     0.960     0.000 c.m/sec"
* 40        HYDROGRAPH Next link "
*          5   Next link "
*                0.000     0.960     0.960     0.000"
* 56        DIVERSION"
*          7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow         0.000    c.m/sec"
*           Volume of diverted flow       0.000    c.m"
*           DIV00007.002hyd"
*           Major flow at 7"
*                0.000     0.960     0.960     0.000 c.m/sec"
* 40        HYDROGRAPH   Combine    8"
*          6   Combine "
*          8   Node #"
*              NODE A"
*           Maximum flow                  0.960    c.m/sec"
*           Hydrograph volume         21484.318    c.m"
*                0.000     0.960     0.960     0.960"
* 81        ADD COMMENT==========================================================="
*        3  Lines of comment"
*           ************************************************"
*           Catchments South of Hwy 7/8"
*           ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.000     0.000     0.960     0.960"
* 33        CATCHMENT 280"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        280   Northeast portion of Maple Leaf Foods property"
*     26.000   % Impervious"
*      0.700   Total Area"
*     45.000   Flow length"
*      1.500   Overland Slope"
*      0.518   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      0.182   Impervious Area"
*     68.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     79.000   Pervious SCS Curve No."
*      0.232   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.752   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.845   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.044     0.000     0.960     0.960 c.m/sec"
*           Catchment 280          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  17.462     4.445      10.159     minutes"
*           Time to Centroid       123.464    94.734     107.346    minutes"
*           Rainfall depth         34.259     34.259     34.259     mm"
*           Rainfall volume        177.46     62.35      239.81     c.m"
*           Rainfall losses        26.301     5.315      20.845     mm"
*           Runoff depth           7.957      28.943     13.414     mm"
*           Runoff volume          41.22      52.68      93.90      c.m"
*           Runoff coefficient     0.232      0.845      0.392      "
```



```
*           Maximum flow          0.013      0.038      0.044      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.044     0.044     0.960     0.960"
* 54        POND DESIGN"
*       0.044   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*        93.9   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400     1.000"
*                 0.2500   0.00600     8.000"
*                 0.3500   0.00700    29.000"
*                 0.4500   0.00800    69.000"
*                 0.6500   0.01000   178.000"
*                 0.7000    0.1060   208.000"
*                 0.7500    0.2810   240.000"
*           Peak outflow                  0.007    c.m/sec"
*           Maximum level                 0.391    metre"
*           Maximum storage              45.378    c.m"
*           Centroidal lag                2.925   hours"
*                0.044     0.044     0.007     0.960 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  0.965    c.m/sec"
*           Hydrograph volume          1696.155    c.m"
*                0.044     0.044     0.007     0.965"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.044     0.000     0.007     0.965"
* 33        CATCHMENT 281"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        281   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.079   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.849   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.372     0.000     0.007     0.965 c.m/sec"
*           Catchment 281          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration  32.274     5.996      6.178      minutes"
*           Time to Centroid       146.000    97.011     97.350     minutes"
```

```
*            Rainfall depth          34.259      34.259      34.259      mm"
*            Rainfall volume         44.84       595.79      640.64      c.m"
*            Rainfall losses         31.568      5.172       7.020       mm"
*            Runoff depth            2.690       29.086      27.239      mm"
*            Runoff volume           3.52        505.84      509.36      c.m"
*            Runoff coefficient      0.079       0.849       0.795       "
*            Maximum flow            0.001       0.372       0.372       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.372     0.372     0.007     0.965"
* 54         POND DESIGN"
*       0.372   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       509.4   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                 0.3000   0.09000     8.000"
*                 0.6000    0.1200    97.000"
*                 0.9000    0.1300   167.000"
*                  1.200    0.1400   254.000"
*                  1.500    0.1500   358.000"
*                  1.800     1.000   400.000"
*            Peak outflow                  0.128    c.m/sec"
*            Maximum level                 0.845    metre"
*            Maximum storage             154.133    c.m"
*            Centroidal lag                1.797   hours"
*                 0.372     0.372     0.128     0.965 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.080    c.m/sec"
*            Hydrograph volume          2204.880    c.m"
*                 0.372     0.372     0.128     1.080"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.372     0.000     0.128     1.080"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.079   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.843   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.174     0.000     0.128     1.080 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  36.449     4.271      5.564      minutes"
*            Time to Centroid       150.621    94.478     96.733     minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        128.50     286.02     414.53     c.m"
*            Rainfall losses        31.567     5.363      13.486     mm"
*            Runoff depth           2.691      28.896     20.773     mm"
*            Runoff volume          10.10      241.25     251.35     c.m"
*            Runoff coefficient     0.079      0.843      0.606      "
*            Maximum flow           0.002      0.174      0.174      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.174     0.174     0.128     1.080"
* 54         POND DESIGN"
*       0.174   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       251.3   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.023    c.m/sec"
*            Maximum level                 0.173    metre"
*            Maximum storage             148.884    c.m"
*            Centroidal lag                3.395   hours"
*                 0.174     0.174     0.023     1.080 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.093    c.m/sec"
*            Hydrograph volume          2456.226    c.m"
*                 0.174     0.174     0.023     1.093"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.174     0.000     0.023     1.093"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.105   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

```
*       0.850   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               1.058     0.000     0.023     1.093 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  91.656     10.359     29.232     minutes"
*            Time to Centroid       209.842    103.557    128.230    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        5664.96    2313.86    7978.82    c.m"
*            Rainfall losses        30.662     5.132      23.258     mm"
*            Runoff depth           3.597      29.127     11.000     mm"
*            Runoff volume          594.75     1967.26    2562.01    c.m"
*            Runoff coefficient     0.105      0.850      0.321      "
*            Maximum flow           0.060      1.053      1.058      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               1.058     1.058     0.023     1.093"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.058     1.058     1.058     1.093"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 2.149    c.m/sec"
*            Hydrograph volume         5018.236    c.m"
*               1.058     1.058     1.058     2.149"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                 0.960    c.m/sec"
*            Hydrograph volume        21484.318    c.m"
*               1.058     0.960     1.058     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               1.058     0.960     0.960     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 3.047    c.m/sec"
*            Hydrograph volume        26502.539    c.m"
*               1.058     0.960     0.960     3.047"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               1.058     0.000     0.960     3.047"
* 33         CATCHMENT 284"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         284   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.163   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
```



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*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.837   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.030     0.000     0.960     3.047 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  43.543     3.490      39.753     minutes"
*            Time to Centroid       155.988    93.332     150.059    minutes"
*            Rainfall depth         34.259     34.259     34.259     mm"
*            Rainfall volume        990.42     20.21      1010.63    c.m"
*            Rainfall losses        28.659     5.580      28.197     mm"
*            Runoff depth           5.600      28.678     6.061      mm"
*            Runoff volume          161.89     16.92      178.81     c.m"
*            Runoff coefficient     0.163      0.837      0.177      "
*            Maximum flow           0.029      0.012      0.030      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.030     0.030     0.960     3.047"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.030     0.030     0.030     3.047"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 3.063    c.m/sec"
*            Hydrograph volume        26681.346    c.m"
*               0.030     0.030     0.030     3.063"
* 40         HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                 3.063    c.m/sec"
*            Hydrograph volume        26681.344    c.m"
*               0.030     3.063     0.030     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.030     3.063     3.063     0.000"
* 40         HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                 3.063    c.m/sec"
*            Hydrograph volume        26681.344    c.m"
*               0.030     3.063     3.063     3.063"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.030     0.000     3.063     3.063"
* 33         CATCHMENT 285"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         285   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
```

```
*       64.400   Pervious SCS Curve No."
*        0.074   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.850   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.883     0.000     3.063     3.063 c.m/sec"
*              Catchment 285          Pervious   Impervious Total Area "
*              Surface Area           7.888      10.892     18.780     hectare"
*              Time of concentration  35.504     9.086      10.656     minutes"
*              Time to Centroid       149.968    101.609    104.484    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        2702.18    3731.58    6433.76    c.m"
*              Rainfall losses        31.715     5.123      16.292     mm"
*              Runoff depth           2.543      29.136     17.967     mm"
*              Runoff volume          200.61     3173.59    3374.20    c.m"
*              Runoff coefficient     0.074      0.850      0.524      *
*              Maximum flow           0.037      1.880      1.883      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   1.883     1.883     3.063     3.063"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   1.883     1.883     1.883     3.063"
* 40           HYDROGRAPH   Combine    10"
*             6   Combine "
*            10   Node #"
*                 NODE C"
*              Maximum flow                  4.946    c.m/sec"
*              Hydrograph volume         30055.555    c.m"
*                   1.883     1.883     1.883     4.946"
* 81           ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ************************************************************"
*              Catchments north of Hwy 7/8, towards Eastern Tributary"
*              ************************************************************"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   1.883     0.000     1.883     4.946"
* 33           CATCHMENT 250"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           250   Southern portion of Rec Centre fields"
*         0.000   % Impervious"
*         3.510   Total Area"
*        95.000   Flow length"
*         1.600   Overland Slope"
*         3.510   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         0.000   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.189   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
```



```
*                 0.035     0.000     1.883     4.946 c.m/sec"
*              Catchment 250          Pervious   Impervious Total Area "
*              Surface Area           3.510      0.000      3.510      hectare"
*              Time of concentration  51.785     8.726      51.785     minutes"
*              Time to Centroid       166.741    101.065    166.741    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        1202.47    0.00       1202.48    c.m"
*              Rainfall losses        27.792     5.078      27.792     mm"
*              Runoff depth           6.466      29.180     6.466      mm"
*              Runoff volume          226.97     0.00       226.97     c.m"
*              Runoff coefficient     0.189      0.000      0.189      *
*              Maximum flow           0.035      0.000      0.035      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.035     0.035     1.883     4.946"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   0.035     0.035     0.035     4.946"
* 40           HYDROGRAPH   Combine    11"
*             6   Combine "
*            11   Node #"
*                 u/s of east culvert of HWY 7&8"
*              Maximum flow                  0.035    c.m/sec"
*              Hydrograph volume           226.970    c.m"
*                   0.035     0.035     0.035     0.035"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.035     0.000     0.035     0.035"
* 33           CATCHMENT 251"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.189   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.852   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  0.343     0.000     0.035     0.035 c.m/sec"
*              Catchment 251          Pervious   Impervious Total Area "
*              Surface Area           3.866      1.904      5.770      hectare"
*              Time of concentration  51.786     8.726      22.087     minutes"
*              Time to Centroid       166.741    101.065    121.444    minutes"
*              Rainfall depth         34.259     34.259     34.259     mm"
*              Rainfall volume        1324.40    652.32     1976.72    c.m"
*              Rainfall losses        27.792     5.078      20.297     mm"
*              Runoff depth           6.466      29.180     13.962     mm"
*              Runoff volume          249.98     555.62     805.61     c.m"
*              Runoff coefficient     0.189      0.852      0.408      *
*              Maximum flow           0.039      0.338      0.343      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
```

```
*                 0.343     0.343     0.035     0.035"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                 0.343     0.343     0.343     0.035"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                0.347    c.m/sec"
*             Hydrograph volume        1032.575    c.m"
*                 0.343     0.343     0.343     0.347"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                 0.343     0.000     0.343     0.347"
* 33          CATCHMENT 252"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          252   Southern portion of Hamburglr lands"
*        5.000   % Impervious"
*        2.870   Total Area"
*       65.000   Flow length"
*        1.500   Overland Slope"
*        2.726   Pervious Area"
*       65.000   Pervious length"
*        1.500   Pervious slope"
*        0.144   Impervious Area"
*       65.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.163   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.838   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                 0.033     0.000     0.343     0.347 c.m/sec"
*             Catchment 252          Pervious   Impervious Total Area "
*             Surface Area           2.726      0.144      2.870      hectare"
*             Time of concentration  47.796     3.831      38.454     minutes"
*             Time to Centroid       161.080    93.830     146.790    minutes"
*             Rainfall depth         34.259     34.259     34.259     mm"
*             Rainfall volume        934.06     49.16      983.22     c.m"
*             Rainfall losses        28.658     5.549      27.503     mm"
*             Runoff depth           5.600      28.709     6.756      mm"
*             Runoff volume          152.69     41.20      193.89     c.m"
*             Runoff coefficient     0.163      0.838      0.197      "
*             Maximum flow           0.025      0.029      0.033      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                 0.033     0.033     0.343     0.347"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                 0.033     0.033     0.033     0.347"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                0.380    c.m/sec"
*             Hydrograph volume        1226.466    c.m"
*                 0.033     0.033     0.033     0.380"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                 0.033     0.000     0.033     0.380"
```



```
* 47          FILEI_O Read/Open DIV00007.002hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00007.002hyd"
*             Major flow at 7"
*             Total volume                0.000    c.m"
*             Maximum flow                0.000    c.m/sec"
*                  0.000     0.000     0.033     0.380 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                 0.000     0.000     0.033     0.380"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                 0.000     0.000     0.000     0.380"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                0.380    c.m/sec"
*             Hydrograph volume        1226.466    c.m"
*                 0.000     0.000     0.000     0.380"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                0.380    c.m/sec"
*             Hydrograph volume        1226.466    c.m"
*                 0.000     0.380     0.000     0.000"
* 54          POND DESIGN"
*          0.380   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*        1226.5    Hydrograph volume    c.m"
*             9.   Number of stages"
*        332.660   Minimum water level    metre"
*        336.000   Maximum water level    metre"
*        332.660   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                  332.660     0.000     0.000"
*                  333.000     0.3010   198.000"
*                  333.500     1.168   1165.000"
*                  334.000     2.325   2895.000"
*                  334.500     3.132   5301.000"
*                  335.000     3.780   8376.000"
*                  335.500     4.332  12258.00"
*                  335.750     4.583  14551.00"
*                  336.000    21.985  17113.00"
*             Peak outflow                0.251    c.m/sec"
*             Maximum level             332.944    metre"
*             Maximum storage           165.435    c.m"
*             Centroidal lag              2.413    hours"
*                  0.000     0.380     0.251     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                 0.000     0.251     0.251     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                  234.030    hectare"
*             Total Impervious area                 110.433    hectare"
*             Total % impervious                     47.187"
" 19          EXIT"
```

```
*             MIDUSS Output ------------------------------------------->"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*       10    Units used:                                        ie METRIC"
*             Job folder:                     Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                   34896-104_Post-005yr.out"
*             Licensee name:                                        admin"
*             Company                                           Microsoft"
*             Date & Time last used:             12/17/2018 at 2:55:27 PM"
* 81        ADD COMMENT==========================================================="
*         7   Lines of comment"
*             ************************************************************"
*             Wilmot Employment Lands"
*             New Hamburg, Ontario"
*             5 Year Storm Event - Post development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB"
*             ************************************************************"
* 31          TIME PARAMETERS"
*       5.000   Time Step"
*     240.000   Max. Storm length"
*    1500.000   Max. Hydrograph"
* 32          STORM Chicago storm"
*           1   Chicago storm"
*    1593.000   Coefficient A"
*      11.000   Constant B"
*       0.879   Exponent C"
*       0.400   Fraction R"
*     180.000   Duration"
*       1.000   Time step multiplier"
*             Maximum intensity          139.250    mm/hr"
*             Total depth                 47.240    mm"
*           6   005hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT==========================================================="
*         3   Lines of comment"
*             ************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 201"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         201   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.107     0.000     0.000     0.000 c.m/sec"
*             Catchment 201          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  42.921     5.407      42.921     minutes"
```



```
*             Time to Centroid       150.959    93.831     150.959    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        1403.02    0.00       1403.02    c.m"
*             Rainfall losses        29.424     5.418      29.424     mm"
*             Runoff depth           17.816     41.822     17.816     mm"
*             Runoff volume          529.13     0.00       529.13     c.m"
*             Runoff coefficient     0.377      0.000      0.377      "
*             Maximum flow           0.107      0.000      0.107      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.107     0.107     0.000     0.000"
* 33          CATCHMENT 202"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         202   Woodlot - north of GEXR"
*       0.000   % Impervious"
*       2.080   Total Area"
*      80.000   Flow length"
*       2.500   Overland Slope"
*       2.080   Pervious Area"
*      80.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.193   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.041     0.107     0.000     0.000 c.m/sec"
*             Catchment 202          Pervious   Impervious Total Area "
*             Surface Area           2.080      0.000      2.080      hectare"
*             Time of concentration  38.094     3.337      38.093     minutes"
*             Time to Centroid       145.176    90.888     145.176    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        982.59     0.00       982.59     c.m"
*             Rainfall losses        38.144     5.976      38.144     mm"
*             Runoff depth           9.096      41.264     9.096      mm"
*             Runoff volume          189.20     0.00       189.20     c.m"
*             Runoff coefficient     0.193      0.000      0.193      "
*             Maximum flow           0.041      0.000      0.041      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.041     0.147     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.041     0.147     0.147     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                 0.147    c.m/sec"
*             Hydrograph volume          718.330    c.m"
*                 0.041     0.147     0.147     0.147"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.041     0.000     0.147     0.147"
* 33          CATCHMENT 203"
*           1   Triangular SCS"
*           1   Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.320   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.883   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 3.285     0.000     0.147     0.147 c.m/sec"
*            Catchment 203          Pervious   Impervious Total Area "
*            Surface Area           7.404      11.106     18.510     hectare"
*            Time of concentration  40.326     4.714      11.652     minutes"
*            Time to Centroid       147.791    92.856     103.559    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        3497.64    5246.46    8744.10    c.m"
*            Rainfall losses        32.105     5.539      16.166     mm"
*            Runoff depth           15.135     41.700     31.074     mm"
*            Runoff volume          1120.59    4631.25    5751.81    c.m"
*            Runoff coefficient     0.320      0.883      0.658      "
*            Maximum flow           0.234      3.240      3.285      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 3.285     3.285     0.147     0.147"
* 54         POND DESIGN"
*       3.285   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*      5751.8   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*             341.500     0.000     0.000"
*             342.000    0.1541  1746.000"
*             342.500    0.2669  3784.000"
*             343.000    0.3446  6114.000"
*             343.300    0.3837  7652.000"
*             343.600     2.941  9295.000"
*           1.   WEIRS"
*                Crest      Weir      Crest      Left      Right"
*             elevation coefficie  breadth sideslope sideslope"
*             343.300     0.900    10.000     0.000     0.000"
*           1.   ORIFICES"
*                Orifice   Orifice   Orifice Number of"
*                invert coefficie  diameter  orifices"
*             341.500     0.630    0.3750     1.000"
*           Peak outflow                  0.272    c.m/sec"
*           Maximum level               342.533    metre"
*           Maximum storage            3938.080    c.m"
*           Centroidal lag                5.270   hours"
*                 3.285     3.285     0.272     0.147 c.m/sec"
* 40         HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.406    c.m/sec"
*            Hydrograph volume          6466.409    c.m"
*                  3.285     3.285     0.272     0.406"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.406    c.m/sec"
*            Hydrograph volume          6466.410    c.m"
*                  3.285     0.406     0.272     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  3.285     0.406     0.406     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.406    c.m/sec"
*            Hydrograph volume          6466.410    c.m"
*                  3.285     0.406     0.406     0.406"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  3.285     0.000     0.406     0.406"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchments South of GEXR, part of Inlet #1"
*            ************************************************"
* 33         CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.272   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.880   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.362     0.000     0.406     0.406 c.m/sec"
*            Catchment 204          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  28.151     6.758      10.546     minutes"
*            Time to Centroid       132.819    95.789     102.346    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        391.24     563.00     954.25     c.m"
*            Rainfall losses        34.371     5.681      17.444     mm"
*            Runoff depth           12.869     41.558     29.796     mm"
*            Runoff volume          106.58     495.29     601.87     c.m"
*            Runoff coefficient     0.272      0.880      0.631      "
```

```
*           Maximum flow          0.029      0.355      0.362      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.362     0.362     0.406     0.406"
* 54        POND DESIGN"
*       0.362   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       601.9   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*           Peak outflow                  0.019    c.m/sec"
*           Maximum level                 0.186    metre"
*           Maximum storage             470.022    c.m"
*           Centroidal lag                8.648    hours"
*                0.362     0.362     0.019     0.406 c.m/sec"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.423    c.m/sec"
*           Hydrograph volume          7046.434    c.m"
*                0.362     0.362     0.019     0.423"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.362     0.000     0.019     0.423"
* 33        CATCHMENT 205"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        205   Iron Bridge Manufacturing Property - Woodlot"
*      5.000   % Impervious"
*      1.190   Total Area"
*    255.000   Flow length"
*      1.800   Overland Slope"
*      1.131   Pervious Area"
*    255.000   Pervious length"
*      1.800   Pervious slope"
*      0.060   Impervious Area"
*    255.000   Impervious length"
*      1.800   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.000   Pervious SCS Curve No."
*      0.193   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.886   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.884   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.018     0.000     0.019     0.423 c.m/sec"
*           Catchment 205          Pervious   Impervious Total Area "
*           Surface Area           1.131      0.060      1.190      hectare"
*           Time of concentration  84.280     7.362      69.314     minutes"
*           Time to Centroid       199.685    96.665     179.636    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        534.05     28.11      562.15     c.m"
*           Rainfall losses        38.140     5.458      36.506     mm"
*           Runoff depth           9.100      41.782     10.734     mm"
```



```
*           Runoff volume          102.88     24.86      127.74     c.m"
*           Runoff coefficient     0.193      0.884      0.227      "
*           Maximum flow           0.012      0.017      0.018      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.018     0.018     0.019     0.423"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.018     0.018     0.018     0.423"
* 40        HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                  0.434    c.m/sec"
*           Hydrograph volume          7174.169    c.m"
*                0.018     0.018     0.018     0.434"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.018     0.000     0.018     0.434"
* 33        CATCHMENT 206"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        206   Industrial properties at end of Hamilton Road"
*     35.000   % Impervious"
*      2.850   Total Area"
*     50.000   Flow length"
*      1.000   Overland Slope"
*      1.852   Pervious Area"
*     50.000   Pervious length"
*      1.000   Pervious slope"
*      0.997   Impervious Area"
*     50.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.272   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.874   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.287     0.000     0.018     0.434 c.m/sec"
*           Catchment 206          Pervious   Impervious Total Area "
*           Surface Area           1.852      0.997      2.850      hectare"
*           Time of concentration  31.067     3.313      13.491     minutes"
*           Time to Centroid       136.445    90.849     107.570    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        875.12     471.22     1346.34    c.m"
*           Rainfall losses        34.371     5.968      24.430     mm"
*           Runoff depth           12.869     41.271     22.810     mm"
*           Runoff volume          238.39     411.68     650.07     c.m"
*           Runoff coefficient     0.272      0.874      0.483      "
*           Maximum flow           0.059      0.273      0.287      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.287     0.287     0.018     0.434"
* 33        CATCHMENT 207"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        207   Woodlot and Wetland east of Pestells"
*      5.000   % Impervious"
*      5.920   Total Area"
*     65.000   Flow length"
```

```
*        3.000   Overland Slope"
*        5.624   Pervious Area"
*       65.000   Pervious length"
*        3.000   Pervious slope"
*        0.296   Impervious Area"
*       65.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.200   Pervious SCS Curve No."
*        0.195   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.782   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.871   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.142     0.287     0.018     0.434 c.m/sec"
*             Catchment 207          Pervious   Impervious Total Area "
*             Surface Area           5.624      0.296      5.920      hectare"
*             Time of concentration  31.608     2.789      26.117     minutes"
*             Time to Centroid       137.527    90.032     128.478    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        2656.77    139.83     2796.60    c.m"
*             Rainfall losses        38.034     6.073      36.436     mm"
*             Runoff depth           9.205      41.167     10.804     mm"
*             Runoff volume          517.72     121.85     639.57     c.m"
*             Runoff coefficient     0.195      0.871      0.229      "
*             Maximum flow           0.127      0.084      0.142      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.142     0.390     0.018     0.434"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.142     0.390     0.390     0.434"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  0.652    c.m/sec"
*             Hydrograph volume          8463.813    c.m"
*                  0.142     0.390     0.390     0.652"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.142     0.000     0.390     0.652"
* 33          CATCHMENT 208"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          208   N.C. Pestell site"
*       75.000   % Impervious"
*        5.530   Total Area"
*      130.000   Flow length"
*        2.000   Overland Slope"
*        1.383   Pervious Area"
*       50.000   Pervious length"
*        3.000   Pervious slope"
*        4.148   Impervious Area"
*      192.000   Impervious length"
*        0.750   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       75.000   Pervious SCS Curve No."
*        0.257   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.467   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
```



```
*        0.888   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.209     0.000     0.390     0.652 c.m/sec"
*             Catchment 208          Pervious   Impervious Total Area "
*             Surface Area           1.383      4.148      5.530      hectare"
*             Time of concentration  23.025     8.096      9.412      minutes"
*             Time to Centroid       126.613    97.690     100.239    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        653.09     1959.27    2612.36    c.m"
*             Rainfall losses        35.076     5.299      12.744     mm"
*             Runoff depth           12.164     41.940     34.496     mm"
*             Runoff volume          168.17     1739.48    1907.65    c.m"
*             Runoff coefficient     0.257      0.888      0.730      "
*             Maximum flow           0.051      1.193      1.209      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  1.209     1.209     0.390     0.652"
* 54          POND DESIGN"
*        1.209   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       1907.6   Hydrograph volume    c.m"
*           9.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.200   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*             Peak outflow                  0.052    c.m/sec"
*             Maximum level                 0.647    metre"
*             Maximum storage            1543.705    c.m"
*             Centroidal lag               12.880    hours"
*                  1.209     1.209     0.052     0.652 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  0.699    c.m/sec"
*             Hydrograph volume         10057.212    c.m"
*                  1.209     1.209     0.052     0.699"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  1.209     0.000     0.052     0.699"
* 33          CATCHMENT 209"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          209   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
```

```
*     150.000   Pervious length"
*       1.500   Pervious slope"
*       0.576   Impervious Area"
*     113.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.339   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.883   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.175     0.000     0.052     0.699 c.m/sec"
*            Catchment 209          Pervious   Impervious Total Area "
*            Surface Area           1.344      0.576      1.920      hectare"
*            Time of concentration  47.489     4.785      24.965     minutes"
*            Time to Centroid       156.896    92.959     123.174    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        634.90     272.10     907.01     c.m"
*            Rainfall losses        31.231     5.549      23.527     mm"
*            Runoff depth           16.009     41.691     23.713     mm"
*            Runoff volume          215.16     240.14     455.30     c.m"
*            Runoff coefficient     0.339      0.883      0.502      "
*            Maximum flow           0.040      0.168      0.175      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.175     0.175     0.052     0.699"
* 54         POND DESIGN"
*       0.175   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       455.3   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*            Peak outflow                  0.088    c.m/sec"
*            Maximum level                 0.489    metre"
*            Maximum storage              68.189    c.m"
*            Centroidal lag                2.187   hours"
*                 0.175     0.175     0.088     0.699 c.m/sec"
* 40         HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*            Maximum flow                  0.088    c.m/sec"
*            Hydrograph volume           454.849    c.m"
*                 0.175     0.175     0.088     0.088"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.175     0.000     0.088     0.088"
* 33         CATCHMENT 210"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        210   Woodlot north of Hamburglr/Badenview lands"
```



```
*       5.000   % Impervious"
*      13.230   Total Area"
*     170.000   Flow length"
*       2.400   Overland Slope"
*      12.568   Pervious Area"
*     170.000   Pervious length"
*       2.400   Pervious slope"
*       0.661   Impervious Area"
*     170.000   Impervious length"
*       2.400   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.193   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.884   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.211     0.000     0.088     0.088 c.m/sec"
*            Catchment 210          Pervious   Impervious Total Area "
*            Surface Area           12.568     0.661      13.230     hectare"
*            Time of concentration  60.616     5.309      49.852     minutes"
*            Time to Centroid       171.753    93.685     156.558    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        5937.34    312.49     6249.83    c.m"
*            Rainfall losses        38.141     5.461      36.507     mm"
*            Runoff depth           9.099      41.779     10.733     mm"
*            Runoff volume          1143.60    276.37     1419.97    c.m"
*            Runoff coefficient     0.193      0.884      0.227      "
*            Maximum flow           0.174      0.194      0.211      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.211     0.211     0.088     0.088"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.211     0.211     0.211     0.088"
* 40         HYDROGRAPH   Combine    3"
*          6   Combine "
*          3   Node #"
*              INLET 2"
*            Maximum flow                  0.284    c.m/sec"
*            Hydrograph volume          1874.817    c.m"
*                 0.211     0.211     0.211     0.284"
* 81         ADD COMMENT==================================================="
*          3   Lines of comment"
*              **********************************************"
*              South of GEXR along Nafziger Rd, part of Inlet #3"
*              **********************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.211     0.000     0.211     0.284"
* 33         CATCHMENT 211"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        211   Culivated lands east of Nafziger Road"
*      1.000   % Impervious"
*      7.310   Total Area"
*    120.000   Flow length"
*      3.300   Overland Slope"
*      7.237   Pervious Area"
*    120.000   Pervious length"
*      3.300   Pervious slope"
*      0.073   Impervious Area"
*    120.000   Impervious length"
```

```
*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.273   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.877   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*             0.212     0.000     0.211     0.284 c.m/sec"
*           Catchment 211          Pervious   Impervious Total Area "
*           Surface Area           7.237      0.073      7.310      hectare"
*           Time of concentration  36.717     3.915      35.685     minutes"
*           Time to Centroid       143.480    91.724     141.850    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        3418.70    34.53      3453.23    c.m"
*           Rainfall losses        34.364     5.805      34.079     mm"
*           Runoff depth           12.875     41.435     13.161     mm"
*           Runoff volume          931.78     30.29      962.07     c.m"
*           Runoff coefficient     0.273      0.877      0.279      "
*           Maximum flow           0.209      0.021      0.212      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*             0.212     0.212     0.211     0.284"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*             0.212     0.212     0.212     0.284"
* 40        HYDROGRAPH   Combine    4"
*         6   Combine "
*         4   Node #"
*             INLET 3"
*          Maximum flow                0.212    c.m/sec"
*          Hydrograph volume           962.070    c.m"
*             0.212     0.212     0.212     0.212"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*             0.212     0.000     0.212     0.212"
* 33        CATCHMENT 212"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       212   Alpine Solutions - East SMWP"
*     40.000  % Impervious"
*      2.560  Total Area"
*    150.000  Flow length"
*      1.500  Overland Slope"
*      1.536  Pervious Area"
*    180.000  Pervious length"
*      1.500  Pervious slope"
*      1.024  Impervious Area"
*    131.000  Impervious length"
*      1.500  Impervious slope"
*      0.250  Pervious Manning 'n'"
*     80.000  Pervious SCS Curve No."
*      0.339  Pervious Runoff coefficient"
*      0.100  Pervious Ia/S coefficient"
*      6.350  Pervious Initial abstraction"
*      0.015  Impervious Manning 'n'"
*     98.000  Impervious SCS Curve No."
*      0.883  Impervious Runoff coefficient"
*      0.100  Impervious Ia/S coefficient"
*      0.518  Impervious Initial abstraction"
*             0.306     0.000     0.212     0.212 c.m/sec"
*           Catchment 212          Pervious   Impervious Total Area "
*           Surface Area           1.536      1.024      2.560      hectare"
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```
*           Time of concentration  52.979     5.228      22.671     minutes"
*           Time to Centroid       163.903    93.568     119.261    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        725.60     483.74     1209.34    c.m"
*           Rainfall losses        31.227     5.505      20.938     mm"
*           Runoff depth           16.013     41.735     26.302     mm"
*           Runoff volume          245.96     427.37     673.33     c.m"
*           Runoff coefficient     0.339      0.883      0.557      "
*           Maximum flow           0.041      0.300      0.306      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*             0.306     0.306     0.212     0.212"
* 54        POND DESIGN"
*       0.306   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       673.3   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*           Peak outflow                  0.071    c.m/sec"
*           Maximum level                 0.401    metre"
*           Maximum storage             232.104    c.m"
*           Centroidal lag                2.670    hours"
*             0.306     0.306     0.071     0.212 c.m/sec"
* 40        HYDROGRAPH   Combine    4"
*         6   Combine "
*         4   Node #"
*             INLET 3"
*          Maximum flow                  0.282    c.m/sec"
*          Hydrograph volume          1635.548    c.m"
*             0.306     0.306     0.071     0.282"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*             0.306     0.000     0.071     0.282"
* 33        CATCHMENT 213"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       213   Woodlot East and West of Nafziger Road"
*     3.000   % Impervious"
*    13.460   Total Area"
*   140.000   Flow length"
*     3.600   Overland Slope"
*    13.056   Pervious Area"
*   140.000   Pervious length"
*     3.600   Pervious slope"
*     0.404   Impervious Area"
*   140.000   Impervious length"
*     3.600   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    70.100   Pervious SCS Curve No."
*     0.194   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    10.834   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.880   Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.232     0.000     0.071     0.282 c.m/sec"
*            Catchment 213          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  47.595     4.184      42.247     minutes"
*            Time to Centroid       156.414    92.097     148.490    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        6167.73    190.75     6358.49    c.m"
*            Rainfall losses        38.086     5.652      37.113     mm"
*            Runoff depth           9.154      41.588     10.127     mm"
*            Runoff volume          1195.13    167.93     1363.06    c.m"
*            Runoff coefficient     0.194      0.880      0.214      "
*            Maximum flow           0.219      0.116      0.232      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.232     0.232     0.071     0.282"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.232     0.232     0.232     0.282"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.508    c.m/sec"
*            Hydrograph volume          2998.610    c.m"
*                 0.232     0.232     0.232     0.508"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.232     0.000     0.232     0.508"
* 33         CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.397   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.883   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.074     0.000     0.232     0.508 c.m/sec"
*            Catchment 214          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  19.839     6.369      8.289      minutes"
*            Time to Centroid       120.857    95.242     98.894     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        631.36     1707.01    2338.37    c.m"
*            Rainfall losses        28.477     5.507      11.709     mm"
*            Runoff depth           18.763     41.733     35.531     mm"
*            Runoff volume          250.76     1508.02    1758.79    c.m"
*            Runoff coefficient     0.397      0.883      0.752      "
*            Maximum flow           0.087      1.037      1.074      c.m/sec"
```



```
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.074     1.074     0.232     0.508"
* 54         POND DESIGN"
*        1.074   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      1758.8   Hydrograph volume    c.m"
*         15.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.450   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                  0.1500   0.00700   248.000"
*                  0.2500   0.00900   418.000"
*                  0.3500   0.01100   593.000"
*                  0.4500   0.01300   775.000"
*                  0.5500   0.01500   964.000"
*                  0.6500   0.01600  1161.000"
*                  0.7500   0.01700  1364.000"
*                  0.8500   0.01900  1575.000"
*                  0.9500   0.02000  1795.000"
*                   1.050   0.05600  2025.000"
*                   1.150    0.2080  2263.000"
*                   1.250    0.4600  2511.000"
*                   1.350     2.766  2768.000"
*                   1.450     6.856  3033.000"
*            Peak outflow                  0.019    c.m/sec"
*            Maximum level                 0.862    metre"
*            Maximum storage            1600.533    c.m"
*            Centroidal lag               18.149    hours"
*                 1.074     1.074     0.019     0.508 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.525    c.m/sec"
*            Hydrograph volume          4267.565    c.m"
*                 1.074     1.074     0.019     0.525"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.074     0.000     0.019     0.525"
* 33         CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.273   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.881   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                    0.378     0.000     0.019     0.525 c.m/sec"
*            Catchment 215          Pervious   Impervious Total Area *
*            Surface Area           1.573      1.287      2.860      hectare*
*            Time of concentration  39.384     4.200      13.857     minutes*
*            Time to Centroid       146.799    92.104     107.116    minutes*
*            Rainfall depth         47.240     47.240     47.240     mm*
*            Rainfall volume        743.08     607.98     1351.06    c.m*
*            Rainfall losses        34.364     5.642      21.439     mm*
*            Runoff depth           12.876     41.598     25.801     mm*
*            Runoff volume          202.54     535.37     737.91     c.m*
*            Runoff coefficient     0.273      0.881      0.546      *
*            Maximum flow           0.042      0.371      0.378      c.m/sec*
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                    0.378     0.378     0.019     0.525"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                    0.378     0.378     0.378     0.525"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.645    c.m/sec"
*           Hydrograph volume          5005.477    c.m"
*                    0.378     0.378     0.378     0.645"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                    0.378     0.000     0.378     0.645"
* 33         CATCHMENT 216"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        216   Industrial lands west of Nafziger Road"
*       45.000   % Impervious"
*        2.860   Total Area"
*      110.000   Flow length"
*        2.000   Overland Slope"
*        1.573   Pervious Area"
*      110.000   Pervious length"
*        2.000   Pervious slope"
*        1.287   Impervious Area"
*      110.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.272   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.882   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.379     0.000     0.378     0.645 c.m/sec"
*            Catchment 216          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  40.499     4.319      14.237     minutes"
*            Time to Centroid       148.183    92.263     107.593    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        743.08     607.98     1351.06    c.m"
*            Rainfall losses        34.367     5.583      21.414     mm"
*            Runoff depth           12.873     41.657     25.826     mm"
*            Runoff volume          202.49     536.13     738.62     c.m"
*            Runoff coefficient     0.272      0.882      0.547      "
*            Maximum flow           0.042      0.372      0.379      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
```



```
*          4   Add Runoff "
*                    0.379     0.379     0.378     0.645"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                    0.379     0.379     0.379     0.645"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  1.024    c.m/sec"
*           Hydrograph volume          5744.094    c.m"
*                    0.379     0.379     0.379     1.024"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                    0.379     0.000     0.379     1.024"
* 33         CATCHMENT 217"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        217   Existing ROW west of Nafziger Road"
*       75.000   % Impervious"
*        0.730   Total Area"
*       90.000   Flow length"
*        2.100   Overland Slope"
*        0.183   Pervious Area"
*       90.000   Pervious length"
*        2.100   Pervious slope"
*        0.548   Impervious Area"
*       90.000   Impervious length"
*        2.100   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.272   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.874   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.156     0.000     0.379     1.024 c.m/sec"
*            Catchment 217          Pervious   Impervious Total Area "
*            Surface Area           0.183      0.548      0.730      hectare"
*            Time of concentration  35.383     3.773      6.748      minutes"
*            Time to Centroid       141.817    91.537     96.268     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        86.21      258.64     344.85     c.m"
*            Rainfall losses        34.368     5.930      13.039     mm"
*            Runoff depth           12.872     41.310     34.200     mm"
*            Runoff volume          23.49      226.17     249.66     c.m"
*            Runoff coefficient     0.272      0.874      0.724      "
*            Maximum flow           0.005      0.155      0.156      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                    0.156     0.156     0.379     1.024"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                    0.156     0.156     0.156     1.024"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  1.180    c.m/sec"
*           Hydrograph volume          5993.755    c.m"
*                    0.156     0.156     0.156     1.180"
* 40         HYDROGRAPH   Confluence    2"
*          7   Confluence "
```

```
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.699    c.m/sec"
*            Hydrograph volume         10057.213    c.m"
*                   0.156     0.699     0.156     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.156     0.699     0.699     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.699    c.m/sec"
*            Hydrograph volume         10057.213    c.m"
*                   0.156     0.699     0.699     0.699"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.284    c.m/sec"
*            Hydrograph volume          1874.817    c.m"
*                   0.156     0.284     0.699     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.156     0.284     0.284     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.944    c.m/sec"
*            Hydrograph volume         11932.032    c.m"
*                   0.156     0.284     0.284     0.944"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.180    c.m/sec"
*            Hydrograph volume          5993.756    c.m"
*                   0.156     1.180     0.284     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.156     1.180     1.180     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  2.066    c.m/sec"
*            Hydrograph volume         17925.785    c.m"
*                   0.156     1.180     1.180     2.066"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.156     0.000     1.180     2.066"
* 33         CATCHMENT 223"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         223   New Hamburglr Inc. lands"
*      85.000   % Impervious"
*      12.570   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       1.885   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      10.684   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
```



```
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.273   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.883   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   3.124     0.000     1.180     2.066 c.m/sec"
*            Catchment 223          Pervious   Impervious Total Area "
*            Surface Area           1.885      10.684     12.570     hectare"
*            Time of concentration  44.204     4.714      6.754      minutes"
*            Time to Centroid       152.801    92.856     95.953     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        890.71     5047.34    5938.05    c.m"
*            Rainfall losses        34.366     5.539      9.863      mm"
*            Runoff depth           12.874     41.700     37.376     mm"
*            Runoff volume          242.74     4455.48    4698.21    c.m"
*            Runoff coefficient     0.273      0.883      0.791      "
*            Maximum flow           0.047      3.117      3.124      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   3.124     3.124     1.180     2.066"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   3.124     3.124     3.124     2.066"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  5.190    c.m/sec"
*            Hydrograph volume         22624.000    c.m"
*                   3.124     3.124     3.124     5.190"
* 81         ADD COMMENT==================================================="
*         3   Lines of comment"
*             **************************************************"
*             Catchments east of Hamilton Road, part of Inlet #4"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   3.124     0.000     3.124     5.190"
* 33         CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*      85.000   % Impervious"
*       2.060   Total Area"
*     230.000   Flow length"
*       1.700   Overland Slope"
*       0.309   Pervious Area"
*     230.000   Pervious length"
*       3.000   Pervious slope"
*       1.751   Impervious Area"
*     230.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.311   Pervious Runoff coefficient"
*       0.060   Pervious Ia/S coefficient"
*       4.813   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.886   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                   0.510     0.000     3.124     5.190 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  51.742     5.953      8.622      minutes"
*            Time to Centroid       162.538    94.597     98.557     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        145.97     827.17     973.14     c.m"
*            Rainfall losses        32.564     5.396      9.472      mm"
*            Runoff depth           14.676     41.843     37.768     mm"
*            Runoff volume          45.35      732.68     778.03     c.m"
*            Runoff coefficient     0.311      0.886      0.800      "
*            Maximum flow           0.008      0.508      0.510      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   0.510     0.510     3.124     5.190"
* 54         POND DESIGN"
*       0.510   Current peak flow    c.m/sec"
*       4.094   Target outflow    c.m/sec"
*       778.0   Hydrograph volume    c.m"
*         15.   Number of stages"
*     344.700   Minimum water level    metre"
*     345.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               344.700    0.1250     0.000"
*               344.750    0.1270     9.000"
*               344.800    0.1280    35.000"
*               344.850    0.1300    77.000"
*               344.900    0.1450   136.000"
*               344.950    0.1820   209.000"
*               345.000    0.2220   297.000"
*               345.050    0.2690   400.000"
*               345.100    0.2710   519.000"
*               345.150    0.2740   653.000"
*               345.200    0.2760   804.000"
*               345.250    0.2790   971.000"
*               345.300    0.2820  1154.000"
*               345.350    0.2840  1355.000"
*               345.400    0.2860  1571.000"
*            Peak outflow                  0.196    c.m/sec"
*            Maximum level               344.967    metre"
*            Maximum storage             239.803    c.m"
*            Centroidal lag                1.839    hours"
*                 0.510     0.510     0.196     5.190 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                  5.332    c.m/sec"
*            Hydrograph volume         23400.115    c.m"
*                 0.510     0.510     0.196     5.332"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.510     0.000     0.196     5.332"
* 33         CATCHMENT 219"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        219   N.C. Pestells Head Office & other Industrial"
*      85.000  % Impervious"
*       1.280  Total Area"
*      75.000  Flow length"
*       1.500  Overland Slope"
*       0.192  Pervious Area"
*      75.000  Pervious length"
```



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*       3.000   Pervious slope"
*       1.088   Impervious Area"
*      75.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.123   Pervious Runoff coefficient"
*       0.281   Pervious Ia/S coefficient"
*      22.539   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.874   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.303     0.000     0.196     5.332 c.m/sec"
*            Catchment 219          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  46.665     3.039      4.097      minutes"
*            Time to Centroid       160.338    90.407     92.102     minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        90.70      513.97     604.67     c.m"
*            Rainfall losses        41.426     5.949      11.270     mm"
*            Runoff depth           5.814      41.291     35.969     mm"
*            Runoff volume          11.16      449.25     460.41     c.m"
*            Runoff coefficient     0.123      0.874      0.761      "
*            Maximum flow           0.002      0.303      0.303      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   0.303     0.303     0.196     5.332"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   0.303     0.303     0.303     5.332"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                  5.625    c.m/sec"
*            Hydrograph volume         23860.521    c.m"
*                   0.303     0.303     0.303     5.625"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                   0.303     0.000     0.303     5.625"
* 33         CATCHMENT 220"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        220   Northwest corner of Nithview Heights"
*       8.000  % Impervious"
*       0.500  Total Area"
*      60.000  Flow length"
*       5.000  Overland Slope"
*       0.460  Pervious Area"
*      60.000  Pervious length"
*       5.000  Pervious slope"
*       0.040  Impervious Area"
*      60.000  Impervious length"
*       5.000  Impervious slope"
*       0.250  Pervious Manning 'n'"
*      74.000  Pervious SCS Curve No."
*       0.243  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*       8.924  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*      98.000  Impervious SCS Curve No."
*       0.876  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
```

```
*                0.019     0.000     0.303     5.625 c.m/sec"
*           Catchment 220          Pervious   Impervious Total Area "
*           Surface Area           0.460      0.040      0.500      hectare"
*           Time of concentration  22.730     2.280      17.854     minutes"
*           Time to Centroid       126.407    89.228     117.543    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        217.30     18.90      236.20     c.m"
*           Rainfall losses        35.746     5.862      33.355     mm"
*           Runoff depth           11.494     41.378     13.885     mm"
*           Runoff volume          52.87      16.55      69.42      c.m"
*           Runoff coefficient     0.243      0.876      0.294      "
*           Maximum flow           0.016      0.012      0.019      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.019     0.019     0.303     5.625"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.019     0.019     0.019     5.625"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                  5.640    c.m/sec"
*           Hydrograph volume         23929.943    c.m"
*                0.019     0.019     0.019     5.640"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.019     0.000     0.019     5.640"
* 33        CATCHMENT 221"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       221   Proposed ROW from Hamilton Road"
*    81.500   % Impervious"
*     0.810   Total Area"
*    40.000   Flow length"
*     2.000   Overland Slope"
*     0.150   Pervious Area"
*    40.000   Pervious length"
*     2.000   Pervious slope"
*     0.660   Impervious Area"
*    40.000   Impervious length"
*     2.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.272   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.876   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.195     0.000     0.019     5.640 c.m/sec"
*           Catchment 221          Pervious   Impervious Total Area "
*           Surface Area           0.150      0.660      0.810      hectare"
*           Time of concentration  22.072     2.354      3.654      minutes"
*           Time to Centroid       125.258    89.353     91.721     minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        70.79      311.85     382.64     c.m"
*           Rainfall losses        34.378     5.879      11.151     mm"
*           Runoff depth           12.862     41.361     36.088     mm"
*           Runoff volume          19.27      273.04     292.32     c.m"
*           Runoff coefficient     0.272      0.876      0.764      "
*           Maximum flow           0.006      0.194      0.195      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
```



```
*                0.195     0.195     0.019     5.640"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.195     0.195     0.195     5.640"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                  5.808    c.m/sec"
*           Hydrograph volume         24222.256    c.m"
*                0.195     0.195     0.195     5.808"
* 81        ADD COMMENT================================================="
*         3   Lines of comment"
*             ************************************************"
*             Catchment to Inlet #5"
*             ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.195     0.000     0.195     5.808"
* 33        CATCHMENT 222"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       222   Rear yards from Hamilton Heights Subdivision"
*     5.000   % Impervious"
*     1.080   Total Area"
*    20.000   Flow length"
*     3.000   Overland Slope"
*     1.026   Pervious Area"
*    20.000   Pervious length"
*     3.000   Pervious slope"
*     0.054   Impervious Area"
*    20.000   Impervious length"
*     3.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.272   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.875   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.060     0.000     0.195     5.808 c.m/sec"
*           Catchment 222          Pervious   Impervious Total Area "
*           Surface Area           1.026      0.054      1.080      hectare"
*           Time of concentration  12.894     1.375      11.224     minutes"
*           Time to Centroid       113.857    87.892     110.092    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        484.68     25.51      510.19     c.m"
*           Rainfall losses        34.405     5.888      32.979     mm"
*           Runoff depth           12.835     41.352     14.261     mm"
*           Runoff volume          131.69     22.33      154.02     c.m"
*           Runoff coefficient     0.272      0.875      0.302      "
*           Maximum flow           0.056      0.017      0.060      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.060     0.060     0.195     5.808"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.060     0.060     0.060     5.808"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                  5.853    c.m/sec"
```

```
*            Hydrograph volume         24376.273    c.m"
*                  0.060     0.060     0.060     5.853"
* 81         ADD COMMENT==================================================="
*          3  Lines of comment"
*             **************************************************"
*             Badenview Developments Inc. lands"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.060     0.000     0.060     5.853"
* 33         CATCHMENT 224"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          224   Badenview lands"
*       85.000   % Impervious"
*       43.200   Total Area"
*       90.000   Flow length"
*        1.000   Overland Slope"
*        6.480   Pervious Area"
*       90.000   Pervious length"
*        1.000   Pervious slope"
*       36.720   Impervious Area"
*       90.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.273   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.883   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  10.737     0.000     0.060     5.853 c.m/sec"
*             Catchment 224          Pervious   Impervious Total Area "
*             Surface Area           6.480      36.720     43.200     hectare"
*             Time of concentration  44.204     4.714      6.754      minutes"
*             Time to Centroid       152.801    92.856     95.953     minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        0.3061     1.7346     2.0408     ha-m"
*             Rainfall losses        34.366     5.539      9.863      mm"
*             Runoff depth           12.874     41.700     37.376     mm"
*             Runoff volume          0.0834     1.5312     1.6147     ha-m"
*             Runoff coefficient     0.273      0.883      0.791      "
*             Maximum flow           0.162      10.711     10.737     c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  10.737    10.737     0.060     5.853"
* 40         HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  10.737    10.737    10.737     5.853"
* 40         HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 16.590    c.m/sec"
*             Hydrograph volume         40522.883    c.m"
*                  10.737    10.737    10.737    16.590"
* 40         HYDROGRAPH   Confluence    5"
*            7   Confluence "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 16.590    c.m/sec"
*             Hydrograph volume         40522.879    c.m"
*                  10.737    16.590    10.737     0.000"
```



```
* 81         ADD COMMENT==================================================="
*          7  Lines of comment"
*             **************************************************"
*             **************************************************"
*             **                                              **"
*             **          PROPOSED SWM POND DESIGN            **"
*             **                                              **"
*             **************************************************"
*             **************************************************"
* 54         POND DESIGN"
*       16.590   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*     40522.9    Hydrograph volume    c.m"
*        36.     Number of stages"
*      334.550   Minimum water level    metre"
*      337.850   Maximum water level    metre"
*      334.550   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                334.550     0.000     0.000"
*                334.600   0.00400  1187.000"
*                334.700   0.02830  3607.000"
*                334.800   0.06350  6090.000"
*                334.900   0.08900  8636.000"
*                335.000    0.1880  11246.00"
*                335.100    0.3430  13920.00"
*                335.200    0.5360  16658.00"
*                335.300    0.7599  19459.00"
*                335.400     1.011  22323.00"
*                335.500     1.286  25249.00"
*                335.600     1.583  28239.00"
*                335.700     1.901  31294.00"
*                335.800     2.238  34414.00"
*                335.900     2.593  37599.00"
*                336.000     2.966  40851.00"
*                336.100     3.427  43465.00"
*                336.200     3.959  46848.00"
*                336.300     4.543  50286.00"
*                336.400     5.171  53779.00"
*                336.500     5.840  57328.00"
*                336.600     6.544  60933.00"
*                336.700     7.284  64595.00"
*                336.800     8.055  68313.00"
*                336.900     8.858  72088.00"
*                337.000     9.690  75920.00"
*                337.100    10.550  79809.00"
*                337.200    11.437  83755.00"
*                337.300    12.351  87759.00"
*                337.400    13.291  91821.00"
*                337.500    14.255  95940.00"
*                337.550    14.746  98022.00"
*                337.600    16.027  100118.0"
*                337.700    20.027  104352.0"
*                337.800    25.280  108643.0"
*                337.850    28.277  110810.0"
*             Peak outflow                  1.272    c.m/sec"
*             Maximum level               335.495    metre"
*             Maximum storage           25097.650    c.m"
*             Centroidal lag               14.221    hours"
*                  10.737    16.590     1.272     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*            6   Combine "
*           12   Node #"
*                d/s of Proposed SWMF"
*             Maximum flow                  1.272    c.m/sec"
*             Hydrograph volume         32891.445    c.m"
*                  10.737    16.590     1.272     1.272"
```

```
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                   10.737     0.000     1.272     1.272"
* 33          CATCHMENT 260"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           260  Hamilton Heights Subdivision"
*        46.000  % Impervious"
*         8.160  Total Area"
*        50.000  Flow length"
*         1.000  Overland Slope"
*         4.406  Pervious Area"
*        50.000  Pervious length"
*         3.000  Pervious slope"
*         3.754  Impervious Area"
*       232.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.272  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.884  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   1.161     0.000     1.272     1.272 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  22.344     7.367      11.342     minutes"
*              Time to Centroid       125.604    96.644     104.330    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        2081.58    1773.20    3854.77    c.m"
*              Rainfall losses        34.383     5.462      21.079     mm"
*              Runoff depth           12.857     41.778     26.160     mm"
*              Runoff volume          566.52     1568.18    2134.69    c.m"
*              Runoff coefficient     0.272      0.884      0.554      "
*              Maximum flow           0.181      1.102      1.161      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                   1.161     1.161     1.272     1.272"
* 33          CATCHMENT 261"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           261  Klassen Bronze Property"
*        32.000  % Impervious"
*         2.350  Total Area"
*       100.000  Flow length"
*         2.500  Overland Slope"
*         1.598  Pervious Area"
*        50.000  Pervious length"
*         2.500  Pervious slope"
*         0.752  Impervious Area"
*       164.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.272  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
```



```
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.886  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   0.238     1.161     1.272     1.272 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  23.600     5.983      12.947     minutes"
*              Time to Centroid       127.153    94.642     107.493    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        754.89     355.24     1110.14    c.m"
*              Rainfall losses        34.371     5.404      25.101     mm"
*              Runoff depth           12.869     41.836     22.138     mm"
*              Runoff volume          205.65     314.60     520.25     c.m"
*              Runoff coefficient     0.272      0.886      0.469      "
*              Maximum flow           0.062      0.218      0.238      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                   0.238     1.399     1.272     1.272"
* 40          HYDROGRAPH Copy to Outflow"
*             8  Copy to Outflow"
*                   0.238     1.399     1.399     1.272"
* 40          HYDROGRAPH   Combine    12"
*             6  Combine "
*            12  Node #"
*                d/s of Proposed SWMF"
*                Maximum flow                  1.514    c.m/sec"
*                Hydrograph volume         35546.395    c.m"
*                   0.238     1.399     1.399     1.514"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                   0.238     0.000     1.399     1.514"
* 33          CATCHMENT 225"
*             1  Triangular SCS"
*             1  Equal length"
*             1  SCS method"
*           225  HWY 7/8 and north ditching"
*        30.000  % Impervious"
*         1.670  Total Area"
*        75.000  Flow length"
*         2.000  Overland Slope"
*         1.169  Pervious Area"
*        75.000  Pervious length"
*         2.000  Pervious slope"
*         0.501  Impervious Area"
*        75.000  Impervious length"
*         2.000  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        74.000  Pervious SCS Curve No."
*         0.243  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.924  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.873  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   0.145     0.000     1.399     1.514 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  34.207     3.432      15.568     minutes"
*              Time to Centroid       140.442    91.014     110.505    minutes"
*              Rainfall depth         47.240     47.240     47.240     mm"
*              Rainfall volume        552.23     236.67     788.91     c.m"
*              Rainfall losses        35.738     6.017      26.821     mm"
```

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*           Runoff depth           11.502     41.223     20.418     mm"
*           Runoff volume          134.46     206.53     340.99     c.m"
*           Runoff coefficient     0.243      0.873      0.432      "
*           Maximum flow           0.031      0.138      0.145      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                 0.145     0.145     1.399     1.514"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                 0.145     0.145     0.145     1.514"
* 40        HYDROGRAPH   Combine    12"
*         6   Combine "
*        12   Node #"
*             d/s of Proposed SWMF"
*           Maximum flow                  1.658    c.m/sec"
*           Hydrograph volume         35887.375    c.m"
*                 0.145     0.145     0.145     1.658"
* 81        ADD COMMENT==========================================================="
*       3 Lines of comment"
*         ************************************************************"
*         Western catchment along Hamilton Road, diverted to Inlet #6"
*         ************************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                 0.145     0.000     0.145     1.658"
* 33        CATCHMENT 270"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       270   Industrial/Residential area along Hamilton Road"
*    55.000   % Impervious"
*     8.450   Total Area"
*    45.000   Flow length"
*     2.000   Overland Slope"
*     3.802   Pervious Area"
*    30.000   Pervious length"
*     3.000   Pervious slope"
*     4.648   Impervious Area"
*   235.000   Impervious length"
*     1.500   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.272   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.885   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                 1.439     0.000     0.145     1.658 c.m/sec"
*           Catchment 270          Pervious   Impervious Total Area "
*           Surface Area           3.802      4.648      8.450      hectare"
*           Time of concentration  16.446     7.424      9.238      minutes"
*           Time to Centroid       118.278    96.726     101.059    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        1796.30    2195.47    3991.77    c.m"
*           Rainfall losses        34.389     5.449      18.472     mm"
*           Runoff depth           12.851     41.791     28.768     mm"
*           Runoff volume          488.65     1942.25    2430.90    c.m"
*           Runoff coefficient     0.272      0.885      0.609      "
*           Maximum flow           0.182      1.363      1.439      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                 1.439     1.439     0.145     1.658"
* 56        DIVERSION"
*         6   Node number"
```



```
*       1.560   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow          0.000    c.m/sec"
*            Volume of diverted flow        0.000    c.m"
*            DIV00006.005hyd"
*            Major flow at 6"
*                   1.439     1.439     1.439     1.658 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*            Maximum flow                   1.439    c.m/sec"
*            Hydrograph volume           2430.903    c.m"
*                   1.439     1.439     1.439     1.439"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                   1.439     0.000     1.439     1.439"
* 47         FILE1_O Read/Open DIV00006.005hyd"
*          1   1=read/open; 2=write/save"
*          2   1=rainfall; 2=hydrograph"
*          1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00006.005hyd"
*            Major flow at 6"
*            Total volume                   0.000    c.m"
*            Maximum flow                   0.000    c.m/sec"
*                0.000     0.000     1.439     1.439 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   0.000     0.000     1.439     1.439"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   0.000     0.000     0.000     1.439"
* 40         HYDROGRAPH   Combine    12"
*          6   Combine "
*         12   Node #"
*              d/s of Proposed SWMF"
*            Maximum flow                   1.658    c.m/sec"
*            Hydrograph volume          35887.379    c.m"
*                   0.000     0.000     0.000     1.658"
* 40         HYDROGRAPH   Confluence    12"
*          7   Confluence "
*         12   Node #"
*              d/s of Proposed SWMF"
*            Maximum flow                   1.658    c.m/sec"
*            Hydrograph volume          35887.379    c.m"
*                   0.000     1.658     0.000     0.000"
* 54         POND DESIGN"
*       1.658   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*   35887.4   Hydrograph volume    c.m"
*         8.   Number of stages"
*     334.290   Minimum water level    metre"
*     337.000   Maximum water level    metre"
*     334.290   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               334.290     0.000     0.000"
*               334.500    0.2540     5.000"
*               335.000     1.303   110.000"
*               335.500     2.800   674.000"
*               336.000     4.639  1910.000"
*               336.500     6.480  3748.000"
*               336.550     6.665  3967.000"
*               337.000    23.484  6569.000"
*            Peak outflow                   1.491    c.m/sec"
*            Maximum level                335.064    metre"
```

```
*           Maximum storage            182.051    c.m"
*           Centroidal lag               7.102   hours"
*                0.000     1.658     1.491     0.000 c.m/sec"
* 40        HYDROGRAPH Next link "
*          5   Next link "
*                0.000     1.491     1.491     0.000"
* 56        DIVERSION"
*          7   Node number"
*       7.170  Overflow threshold"
*       1.000  Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow        0.000    c.m/sec"
*           Volume of diverted flow      0.000    c.m"
*           DIV00007.005hyd"
*           Major flow at 7"
*                0.000     1.491     1.491     0.000 c.m/sec"
* 40        HYDROGRAPH   Combine    8"
*          6   Combine "
*          8   Node #"
*              NODE A"
*           Maximum flow                 1.491    c.m/sec"
*           Hydrograph volume        35889.633    c.m"
*                0.000     1.491     1.491     1.491"
* 81        ADD COMMENT==================================================="
*        3  Lines of comment"
*           ************************************************"
*           Catchments South of Hwy 7/8"
*           ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.000     0.000     1.491     1.491"
* 33        CATCHMENT 280"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        280   Northeast portion of Maple Leaf Foods property"
*      26.000  % Impervious"
*       0.700  Total Area"
*      45.000  Flow length"
*       1.500  Overland Slope"
*       0.518  Pervious Area"
*      20.000  Pervious length"
*       2.000  Pervious slope"
*       0.182  Impervious Area"
*      68.000  Impervious length"
*       1.000  Impervious slope"
*       0.250  Pervious Manning 'n'"
*      79.000  Pervious SCS Curve No."
*       0.320  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*       6.752  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*      98.000  Impervious SCS Curve No."
*       0.878  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
*                0.072     0.000     1.491     1.491 c.m/sec"
*           Catchment 280          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  13.366     3.984      8.764      minutes"
*           Time to Centroid       113.606    91.817     102.919    minutes"
*           Rainfall depth         47.240     47.240     47.240     mm"
*           Rainfall volume        244.70     85.98      330.68     c.m"
*           Rainfall losses        32.102     5.764      25.254     mm"
*           Runoff depth           15.138     41.476     21.986     mm"
*           Runoff volume          78.41      75.49      153.90     c.m"
*           Runoff coefficient     0.320      0.878      0.465      "
```



```
*           Maximum flow           0.034      0.052      0.072      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.072     0.072     1.491     1.491"
* 54        POND DESIGN"
*       0.072  Current peak flow    c.m/sec"
*       0.070  Target outflow    c.m/sec"
*       153.9  Hydrograph volume    c.m"
*          8.  Number of stages"
*       0.000  Minimum water level    metre"
*       0.750  Maximum water level    metre"
*       0.000  Starting water level    metre"
*           0  Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*                0.000     0.000     0.000"
*               0.1500   0.00400     1.000"
*               0.2500   0.00600     8.000"
*               0.3500   0.00700    29.000"
*               0.4500   0.00800    69.000"
*               0.6500   0.01000   178.000"
*               0.7000    0.1060   208.000"
*               0.7500    0.2810   240.000"
*           Peak outflow                 0.008    c.m/sec"
*           Maximum level                0.498    metre"
*           Maximum storage             95.201    c.m"
*           Centroidal lag               3.728   hours"
*                0.072     0.072     0.008     1.491 c.m/sec"
* 40        HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                 1.446    c.m/sec"
*           Hydrograph volume         2584.699    c.m"
*                0.072     0.072     0.008     1.446"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.072     0.000     0.008     1.446"
* 33        CATCHMENT 281"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        281   Western portion of John Bear property"
*       93.000  % Impervious"
*       1.870  Total Area"
*      120.000  Flow length"
*       1.000  Overland Slope"
*       0.131  Pervious Area"
*      20.000  Pervious length"
*       2.000  Pervious slope"
*       1.739  Impervious Area"
*      112.000  Impervious length"
*       1.000  Impervious slope"
*       0.250  Pervious Manning 'n'"
*       65.000  Pervious SCS Curve No."
*       0.140  Pervious Runoff coefficient"
*       0.100  Pervious Ia/S coefficient"
*       13.677  Pervious Initial abstraction"
*       0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*       0.885  Impervious Runoff coefficient"
*       0.100  Impervious Ia/S coefficient"
*       0.518  Impervious Initial abstraction"
*                0.510     0.000     0.008     1.446 c.m/sec"
*           Catchment 281          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration  21.064     5.375      5.559      minutes"
*           Time to Centroid       126.420    93.781     94.165     minutes"
```

```
*            Rainfall depth          47.240      47.240      47.240      mm"
*            Rainfall volume         61.84       821.55      883.39      c.m"
*            Rainfall losses         40.632      5.432       7.896       mm"
*            Runoff depth            6.608       41.808      39.344      mm"
*            Runoff volume           8.65        727.09      735.74      c.m"
*            Runoff coefficient      0.140       0.885       0.833       "
*            Maximum flow            0.003       0.509       0.510       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.510     0.510     0.008     1.446"
* 54         POND DESIGN"
*       0.510   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       735.7   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                  0.3000    0.09000   8.000"
*                  0.6000    0.1200    97.000"
*                  0.9000    0.1300    167.000"
*                  1.200     0.1400    254.000"
*                  1.500     0.1500    358.000"
*                  1.800     1.000     400.000"
*            Peak outflow                  0.143    c.m/sec"
*            Maximum level                 1.280    metre"
*            Maximum storage               281.788  c.m"
*            Centroidal lag                1.883    hours"
*                 0.510     0.510     0.143     1.446 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.574    c.m/sec"
*            Hydrograph volume             3323.813 c.m"
*                 0.510     0.510     0.143     1.574"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.510     0.000     0.143     1.574"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.140   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.876   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.238     0.000     0.143     1.574 c.m/sec"
*            Catchment 282           Pervious    Impervious Total Area "
*            Surface Area            0.375       0.835       1.210       hectare"
*            Time of concentration   23.789      3.829       5.166       minutes"
*            Time to Centroid        129.513     91.603      94.142      minutes"
*            Rainfall depth          47.240      47.240      47.240      mm"
*            Rainfall volume         177.20      394.41      571.60      c.m"
*            Rainfall losses         40.631      5.873       16.648      mm"
*            Runoff depth            6.609       41.366      30.592      mm"
*            Runoff volume           24.79       345.37      370.16      c.m"
*            Runoff coefficient      0.140       0.876       0.648       "
*            Maximum flow            0.007       0.237       0.238       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.238     0.238     0.143     1.574"
* 54         POND DESIGN"
*       0.238   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       370.2   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                  0.3200    0.04300   276.000"
*                  0.7500    0.06600   333.000"
*                  1.300     0.08700   371.000"
*                  1.400     0.5000    400.000"
*            Peak outflow                  0.035    c.m/sec"
*            Maximum level                 0.263    metre"
*            Maximum storage               227.248  c.m"
*            Centroidal lag                3.352    hours"
*                 0.238     0.238     0.035     1.574 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.596    c.m/sec"
*            Hydrograph volume             3693.966 c.m"
*                 0.238     0.238     0.035     1.596"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.238     0.000     0.035     1.596"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.173   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

```
*       0.887   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.670     0.000     0.035     1.596 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  61.650     9.286      26.246     minutes"
*            Time to Centroid       172.132    99.328     122.908    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        0.7812     0.3191     1.1002     ha-m"
*            Rainfall losses        39.045     5.359      29.276     mm"
*            Runoff depth           8.195      41.881     17.964     mm"
*            Runoff volume          1355.09    2828.69    4183.78    c.m"
*            Runoff coefficient     0.173      0.887      0.380      "
*            Maximum flow           0.205      1.651      1.670      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.670     1.670     0.035     1.596"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.670     1.670     1.670     1.596"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  3.266    c.m/sec"
*            Hydrograph volume          7877.744    c.m"
*                 1.670     1.670     1.670     3.266"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                  1.491    c.m/sec"
*            Hydrograph volume         35889.629    c.m"
*                 1.670     1.491     1.670     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.670     1.491     1.491     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  4.610    c.m/sec"
*            Hydrograph volume         43767.371    c.m"
*                 1.670     1.491     1.491     4.610"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.670     0.000     1.491     4.610"
* 33         CATCHMENT 284"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         284   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.244   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
```



```
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.874   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.085     0.000     1.491     4.610 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  31.177     3.128      29.262     minutes"
*            Time to Centroid       136.740    90.552     133.587    minutes"
*            Rainfall depth         47.240     47.240     47.240     mm"
*            Rainfall volume        1365.70    27.87      1393.58    c.m"
*            Rainfall losses        35.737     5.939      35.141     mm"
*            Runoff depth           11.503     41.301     12.099     mm"
*            Runoff volume          332.56     24.37      356.92     c.m"
*            Runoff coefficient     0.244      0.874      0.256      "
*            Maximum flow           0.082      0.016      0.085      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.085     0.085     1.491     4.610"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.085     0.085     0.085     4.610"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  4.644    c.m/sec"
*            Hydrograph volume         44124.316    c.m"
*                 0.085     0.085     0.085     4.644"
* 40         HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                  4.644    c.m/sec"
*            Hydrograph volume         44124.313    c.m"
*                 0.085     4.644     0.085     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.085     4.644     4.644     0.000"
* 40         HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                  4.644    c.m/sec"
*            Hydrograph volume         44124.313    c.m"
*                 0.085     4.644     4.644     4.644"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.085     0.000     4.644     4.644"
* 33         CATCHMENT 285"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         285   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
```

```
*       64.400   Pervious SCS Curve No."
*        0.134   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.888   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  3.162     0.000     4.644     4.644 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  22.917     8.144      9.602      minutes"
*             Time to Centroid       128.820    97.761     100.827    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        3726.09    5145.56    8871.65    c.m"
*             Rainfall losses        40.896     5.290      20.244     mm"
*             Runoff depth           6.344      41.950     26.996     mm"
*             Runoff volume          500.38     4569.37    5069.74    c.m"
*             Runoff coefficient     0.134      0.888      0.571      "
*             Maximum flow           0.144      3.129      3.162      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  3.162     3.162     4.644     4.644"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  3.162     3.162     3.162     4.644"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                  7.806    c.m/sec"
*             Hydrograph volume         49194.063    c.m"
*                  3.162     3.162     3.162     7.806"
* 81          ADD COMMENT============================================================"
*           3  Lines of comment"
*              ************************************************************"
*              Catchments north of Hwy 7/8, towards Eastern Tributary"
*              ************************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  3.162     0.000     3.162     7.806"
* 33          CATCHMENT 250"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           250   Southern portion of Rec Centre fields"
*         0.000   % Impervious"
*         3.510   Total Area"
*        95.000   Flow length"
*         1.600   Overland Slope"
*         3.510   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         0.000   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.272   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
```



```
*                  0.097     0.000     3.162     7.806 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  38.248     7.822      38.248     minutes"
*             Time to Centroid       145.388    97.287     145.388    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        1658.12    0.00       1658.12    c.m"
*             Rainfall losses        34.367     5.363      34.367     mm"
*             Runoff depth           12.872     41.877     12.872     mm"
*             Runoff volume          451.82     0.00       451.82     c.m"
*             Runoff coefficient     0.272      0.000      0.272      "
*             Maximum flow           0.097      0.000      0.097      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.097     0.097     3.162     7.806"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.097     0.097     0.097     7.806"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.097    c.m/sec"
*             Hydrograph volume           451.822    c.m"
*                  0.097     0.097     0.097     0.097"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.097     0.000     0.097     0.097"
* 33          CATCHMENT 251"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.272   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.886   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  0.572     0.000     0.097     0.097 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  38.248     7.822      19.514     minutes"
*             Time to Centroid       145.388    97.287     115.771    minutes"
*             Rainfall depth         47.240     47.240     47.240     mm"
*             Rainfall volume        1826.25    899.49     2725.74    c.m"
*             Rainfall losses        34.368     5.363      24.796     mm"
*             Runoff depth           12.872     41.877     22.444     mm"
*             Runoff volume          497.63     797.37     1295.00    c.m"
*             Runoff coefficient     0.272      0.886      0.475      "
*             Maximum flow           0.107      0.552      0.572      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

```
*                 0.572     0.572     0.097     0.097"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.572     0.572     0.572     0.097"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                 0.591    c.m/sec"
*            Hydrograph volume         1746.827    c.m"
*                 0.572     0.572     0.572     0.591"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.572     0.000     0.572     0.591"
* 33         CATCHMENT 252"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         252   Southern portion of Hamburglr lands"
*       5.000   % Impervious"
*       2.870   Total Area"
*      65.000   Flow length"
*       1.500   Overland Slope"
*       2.726   Pervious Area"
*      65.000   Pervious length"
*       1.500   Pervious slope"
*       0.144   Impervious Area"
*      65.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.243   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.873   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.078     0.000     0.572     0.591 c.m/sec"
*            Catchment 252          Pervious   Impervious Total Area "
*            Surface Area           2.726     0.144     2.870     hectare"
*            Time of concentration  34.223    3.434     29.337    minutes"
*            Time to Centroid       140.461   91.016    132.614   minutes"
*            Rainfall depth         47.240    47.240    47.240    mm"
*            Rainfall volume        1287.99   67.79     1355.78   c.m"
*            Rainfall losses        35.738    6.017     34.252    mm"
*            Runoff depth           11.502    41.222    12.988    mm"
*            Runoff volume          313.61    59.15     372.76    c.m"
*            Runoff coefficient     0.243     0.873     0.275     "
*            Maximum flow           0.073     0.040     0.078     c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.078     0.078     0.572     0.591"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.078     0.078     0.078     0.591"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                 0.645    c.m/sec"
*            Hydrograph volume         2119.578    c.m"
*                 0.078     0.078     0.078     0.645"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.078     0.000     0.078     0.645"
```



```
* 47         FILEI_O Read/Open DIV00007.005hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*               DIV00007.005hyd"
*               Major flow at 7"
*               Total volume                 0.000    c.m"
*               Maximum flow                 0.000    c.m/sec"
*                    0.000     0.000     0.078     0.645 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.000     0.000     0.078     0.645"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.000     0.000     0.000     0.645"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                 0.645    c.m/sec"
*            Hydrograph volume         2119.578    c.m"
*                 0.000     0.000     0.000     0.645"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*            Maximum flow                 0.645    c.m/sec"
*            Hydrograph volume         2119.578    c.m"
*                 0.000     0.645     0.000     0.000"
* 54         POND DESIGN"
*       0.645   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2119.6   Hydrograph volume    c.m"
*          9.   Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               332.660     0.000     0.000"
*               333.000    0.3010   198.000"
*               333.500     1.168  1165.000"
*               334.000     2.325  2895.000"
*               334.500     3.132  5301.000"
*               335.000     3.780  8376.000"
*               335.500     4.332  12258.00"
*               335.750     4.583  14551.00"
*               336.000    21.985  17113.00"
*            Peak outflow                 0.393    c.m/sec"
*            Maximum level              333.053    metre"
*            Maximum storage            300.466    c.m"
*            Centroidal lag               2.279   hours"
*                 0.000     0.645     0.393     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 0.000     0.393     0.393     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                234.030    hectare"
*            Total Impervious area               110.433    hectare"
*            Total % impervious                   47.187"
* 19         EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*          10 Units used:                                          ie METRIC"
*             Job folder:                     Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                    34896-104_Post-010yr.out"
*             Licensee name:                                          admin"
*             Company                                             Microsoft"
*             Date & Time last used:              12/17/2018 at 2:56:41 PM"
* 81        ADD COMMENT============================================================"
*          7 Lines of comment"
*            ************************************************************"
*            Wilmot Employment Lands"
*            New Hamburg, Ontario"
*            10 Year Storm Event - Post development"
*            Job No.: 34896-104"
*            Calculated by: NED/MSB"
*            ************************************************************"
* 31         TIME PARAMETERS"
*        5.000   Time Step"
*      240.000   Max. Storm length"
*     1500.000   Max. Hydrograph"
* 32         STORM Chicago storm"
*           1   Chicago storm"
*     2221.000   Coefficient A"
*       12.000   Constant B"
*        0.908   Exponent C"
*        0.400   Fraction R"
*      180.000   Duration"
*        1.000   Time step multiplier"
*             Maximum intensity          169.551    mm/hr"
*             Total depth                 56.290    mm"
*           6   010hyd   Hydrograph extension used in this file"
* 81         ADD COMMENT============================================================"
*          3 Lines of comment"
*            ************************************************"
*            Catchments North of GEXR, part of Inlet #1"
*            ************************************************"
* 33         CATCHMENT 201"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         201   Area Northeast of GEXR"
*        0.000   % Impervious"
*        2.970   Total Area"
*       80.000   Flow length"
*        0.500   Overland Slope"
*        2.970   Pervious Area"
*       80.000   Pervious length"
*        0.500   Pervious slope"
*        0.000   Impervious Area"
*       80.000   Impervious length"
*        0.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       82.000   Pervious SCS Curve No."
*        0.429   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        5.576   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.167     0.000     0.000     0.000 c.m/sec"
*             Catchment 201          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  37.216     4.974      37.216     minutes"
```



```
*             Time to Centroid       141.929    92.233     141.929    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        1671.82    0.00       1671.82    c.m"
*             Rainfall losses        32.141     5.688      32.141     mm"
*             Runoff depth           24.149     50.602     24.149     mm"
*             Runoff volume          717.23     0.00       717.23     c.m"
*             Runoff coefficient     0.429      0.000      0.429      "
*             Maximum flow           0.167      0.000      0.167      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.167     0.167     0.000     0.000"
* 33          CATCHMENT 202"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         202   Woodlot - north of GEXR"
*       0.000   % Impervious"
*       2.080   Total Area"
*      80.000   Flow length"
*       2.500   Overland Slope"
*       2.080   Pervious Area"
*      80.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.237   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.071     0.167     0.000     0.000 c.m/sec"
*             Catchment 202          Pervious   Impervious Total Area "
*             Surface Area           2.080      0.000      2.080      hectare"
*             Time of concentration  31.163     3.069      31.163     minutes"
*             Time to Centroid       135.358    89.471     135.358    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        1170.83    0.00       1170.83    c.m"
*             Rainfall losses        42.931     6.208      42.931     mm"
*             Runoff depth           13.359     50.082     13.359     mm"
*             Runoff volume          277.86     0.00       277.86     c.m"
*             Runoff coefficient     0.237      0.000      0.237      "
*             Maximum flow           0.071      0.000      0.071      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.071     0.237     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.071     0.237     0.237     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                 0.237    c.m/sec"
*             Hydrograph volume          995.093    c.m"
*                 0.071     0.237     0.237     0.237"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.071     0.000     0.237     0.237"
* 33          CATCHMENT 203"
*           1   Triangular SCS"
*           1   Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.366   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.898   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 4.057     0.000     0.237     0.237 c.m/sec"
*           Catchment 203          Pervious   Impervious Total Area "
*           Surface Area           7.404      11.106     18.510     hectare"
*           Time of concentration  34.985     4.336      10.886     minutes"
*           Time to Centroid       139.289    91.294     101.551    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        0.4168     0.6252     1.0419     ha-m"
*           Rainfall losses        35.678     5.730      17.709     mm"
*           Runoff depth           20.613     50.560     38.581     mm"
*           Runoff volume          1526.16    5615.18    7141.34    c.m"
*           Runoff coefficient     0.366      0.898      0.685      "
*           Maximum flow           0.373      3.971      4.057      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                 4.057     4.057     0.237     0.237"
* 54        POND DESIGN"
*       4.057   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*      7141.3   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*             341.500     0.000     0.000"
*             342.000    0.1541  1746.000"
*             342.500    0.2669  3784.000"
*             343.000    0.3446  6114.000"
*             343.300    0.3837  7652.000"
*             343.600     2.941  9295.000"
*         1.  WEIRS"
*               Crest      Weir      Crest      Left      Right"
*          elevation coefficie   breadth sideslope sideslope"
*             343.300     0.900    10.000     0.000     0.000"
*         1.  ORIFICES"
*             Orifice   Orifice   Orifice Number of"
*              invert coefficie  diameter  orifices"
*             341.500     0.630    0.3750     1.000"
*           Peak outflow                  0.310    c.m/sec"
*           Maximum level               342.778    metre"
*           Maximum storage            5081.307    c.m"
*           Centroidal lag                5.490   hours"
*                 4.057     4.057     0.310     0.237 c.m/sec"
* 40        HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.527    c.m/sec"
*            Hydrograph volume          8129.803    c.m"
*                   4.057     4.057     0.310     0.527"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.527    c.m/sec"
*            Hydrograph volume          8129.803    c.m"
*                   4.057     0.527     0.310     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   4.057     0.527     0.527     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.527    c.m/sec"
*            Hydrograph volume          8129.803    c.m"
*                   4.057     0.527     0.527     0.527"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   4.057     0.000     0.527     0.527"
* 81         ADD COMMENT==========================================================="
*         3   Lines of comment"
*             **************************************************"
*             Catchments South of GEXR, part of Inlet #1"
*             **************************************************"
* 33         CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.441     0.000     0.527     0.527 c.m/sec"
*           Catchment 204          Pervious   Impervious Total Area "
*           Surface Area           0.828      1.192      2.020      hectare"
*           Time of concentration  23.839     6.216      9.723      minutes"
*           Time to Centroid       125.573    93.996     100.279    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        466.19     670.87     1137.06    c.m"
*           Rainfall losses        38.162     5.581      18.939     mm"
*           Runoff depth           18.128     50.709     37.351     mm"
*           Runoff volume          150.14     604.35     754.49     c.m"
*           Runoff coefficient     0.322      0.901      0.664      "
```

```
*            Maximum flow          0.047      0.426      0.441      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.441     0.441     0.527     0.527"
* 54         POND DESIGN"
*       0.441   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       754.5   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*            Peak outflow                 0.024    c.m/sec"
*            Maximum level                0.236    metre"
*            Maximum storage            595.098    c.m"
*            Centroidal lag               8.614    hours"
*                0.441     0.441     0.024     0.527 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 0.548    c.m/sec"
*            Hydrograph volume         8857.039    c.m"
*                0.441     0.441     0.024     0.548"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.441     0.000     0.024     0.548"
* 33         CATCHMENT 205"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         205   Iron Bridge Manufacturing Property - Woodlot"
*       5.000   % Impervious"
*       1.190   Total Area"
*     255.000   Flow length"
*       1.800   Overland Slope"
*       1.131   Pervious Area"
*     255.000   Pervious length"
*       1.800   Pervious slope"
*       0.060   Impervious Area"
*     255.000   Impervious length"
*       1.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.237   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.896   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.024     0.000     0.024     0.548 c.m/sec"
*            Catchment 205          Pervious   Impervious Total Area "
*            Surface Area           1.131      0.060      1.190      hectare"
*            Time of concentration  68.946     6.790      58.644     minutes"
*            Time to Centroid       181.294    94.818     166.961    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        636.36     33.49      669.85     c.m"
*            Rainfall losses        42.928     5.853      41.074     mm"
*            Runoff depth           13.362     50.437     15.216     mm"
```



```
*            Runoff volume         151.06     30.01      181.07     c.m"
*            Runoff coefficient    0.237      0.896      0.270      "
*            Maximum flow          0.021      0.022      0.024      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.024     0.024     0.024     0.548"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.024     0.024     0.024     0.548"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                 0.567    c.m/sec"
*            Hydrograph volume         9038.109    c.m"
*                0.024     0.024     0.024     0.567"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.024     0.000     0.024     0.567"
* 33         CATCHMENT 206"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         206   Industrial properties at end of Hamilton Road"
*      35.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.852   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       0.997   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.890   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.360     0.000     0.024     0.567 c.m/sec"
*            Catchment 206          Pervious   Impervious Total Area "
*            Surface Area           1.852      0.997      2.850      hectare"
*            Time of concentration  26.308     3.047      12.398     minutes"
*            Time to Centroid       128.687    89.435     105.214    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        1042.77    561.49     1604.27    c.m"
*            Rainfall losses        38.166     6.216      26.984     mm"
*            Runoff depth           18.124     50.074     29.306     mm"
*            Runoff volume          335.74     499.49     835.23     c.m"
*            Runoff coefficient     0.322      0.890      0.521      "
*            Maximum flow           0.098      0.344      0.360      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.360     0.360     0.024     0.567"
* 33         CATCHMENT 207"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         207   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
```

```
*       3.000   Overland Slope"
*       5.624   Pervious Area"
*      65.000   Pervious length"
*       3.000   Pervious slope"
*       0.296   Impervious Area"
*      65.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.200   Pervious SCS Curve No."
*       0.240   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.782   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.888   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.237     0.360     0.024     0.567 c.m/sec"
*            Catchment 207          Pervious   Impervious Total Area "
*            Surface Area           5.624      0.296      5.920      hectare"
*            Time of concentration  25.895     2.565      22.088     minutes"
*            Time to Centroid       128.931    88.717     122.367    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        3165.76    166.62     3332.38    c.m"
*            Rainfall losses        42.796     6.281      40.970     mm"
*            Runoff depth           13.494     50.009     15.320     mm"
*            Runoff volume          758.91     148.03     906.93     c.m"
*            Runoff coefficient     0.240      0.888      0.272      "
*            Maximum flow           0.216      0.106      0.237      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.237     0.512     0.024     0.567"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.237     0.512     0.512     0.567"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.938    c.m/sec"
*            Hydrograph volume         10780.273    c.m"
*                 0.237     0.512     0.512     0.938"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.237     0.000     0.512     0.938"
* 33         CATCHMENT 208"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         208   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.306   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```



```
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.540     0.000     0.512     0.938 c.m/sec"
*            Catchment 208          Pervious   Impervious Total Area "
*            Surface Area           1.383      4.148      5.530      hectare"
*            Time of concentration  19.407     7.447      8.664      minutes"
*            Time to Centroid       120.174    95.744     98.229     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        778.21     2334.63    3112.85    c.m"
*            Rainfall losses        39.063     5.579      13.950     mm"
*            Runoff depth           17.227     50.711     42.340     mm"
*            Runoff volume          238.16     2103.25    2341.41    c.m"
*            Runoff coefficient     0.306      0.901      0.752      "
*            Maximum flow           0.084      1.507      1.540      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.540     1.540     0.512     0.938"
* 54         POND DESIGN"
*       1.540   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2341.4   Hydrograph volume    c.m"
*          9.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.200   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400   297.000"
*                0.3000   0.01000   635.000"
*                0.4500   0.03600  1004.000"
*                0.6000   0.04900  1405.000"
*                0.7500   0.06000  1847.000"
*                0.9000   0.06900  2329.000"
*                 1.050    0.5220  2852.000"
*                 1.200     1.100  2900.000"
*            Peak outflow                  0.061    c.m/sec"
*            Maximum level                 0.773    metre"
*            Maximum storage            1919.869    c.m"
*            Centroidal lag               12.280    hours"
*                 1.540     1.540     0.061     0.938 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.991    c.m/sec"
*            Hydrograph volume         12777.717    c.m"
*                 1.540     1.540     0.061     0.991"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments South of GEXR, part of Inlet #2"
*            **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.540     0.000     0.061     0.991"
* 33         CATCHMENT 209"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         209   Alpine Solutions - west SMWP"
*      30.000   % Impervious"
*       1.920   Total Area"
*     150.000   Flow length"
*       1.000   Overland Slope"
*       1.344   Pervious Area"
```

```
*     150.000   Pervious length"
*       1.500   Pervious slope"
*       0.576   Impervious Area"
*     113.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.390   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.899   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.219     0.000     0.061     0.991 c.m/sec"
*            Catchment 209          Pervious   Impervious Total Area "
*            Surface Area           1.344      0.576      1.920      hectare"
*            Time of concentration  40.878     4.401      22.762     minutes"
*            Time to Centroid       146.877    91.383     119.317    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        756.54     324.23     1080.77    c.m"
*            Rainfall losses        34.319     5.708      25.735     mm"
*            Runoff depth           21.972     50.582     30.555     mm"
*            Runoff volume          295.30     291.35     586.65     c.m"
*            Runoff coefficient     0.390      0.899      0.543      "
*            Maximum flow           0.064      0.206      0.219      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.219     0.219     0.061     0.991"
* 54         POND DESIGN"
*         0.219   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         586.6   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.2500   0.04200     7.000"
*                  0.5000   0.09000    71.000"
*                  0.7500    0.1250   220.000"
*                  0.9000    0.1400   346.000"
*                   1.000    0.3110   445.000"
*                   1.100    0.6160   557.000"
*            Peak outflow                  0.097    c.m/sec"
*            Maximum level                 0.551    metre"
*            Maximum storage             101.655    c.m"
*            Centroidal lag                2.180   hours"
*                 0.219     0.219     0.097     0.991 c.m/sec"
* 40         HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.097    c.m/sec"
*            Hydrograph volume           587.274    c.m"
*                   0.219     0.219     0.097     0.097"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.219     0.000     0.097     0.097"
* 33         CATCHMENT 210"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         210   Woodlot north of Hamburglr/Badenview lands"
```



```
*       5.000   % Impervious"
*      13.230   Total Area"
*     170.000   Flow length"
*       2.400   Overland Slope"
*      12.568   Pervious Area"
*     170.000   Pervious length"
*       2.400   Pervious slope"
*       0.661   Impervious Area"
*     170.000   Impervious length"
*       2.400   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.237   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.899   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.328     0.000     0.097     0.097 c.m/sec"
*            Catchment 210          Pervious   Impervious Total Area "
*            Surface Area           12.568     0.661      13.230     hectare"
*            Time of concentration  49.587     4.884      42.158     minutes"
*            Time to Centroid       157.759    92.103     146.848    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        7074.83    372.36     7447.19    c.m"
*            Rainfall losses        42.930     5.698      41.068     mm"
*            Runoff depth           13.360     50.593     15.222     mm"
*            Runoff volume          1679.20    334.67     2013.87    c.m"
*            Runoff coefficient     0.237      0.899      0.270      "
*            Maximum flow           0.307      0.240      0.328      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.328     0.328     0.097     0.097"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.328     0.328     0.328     0.097"
* 40         HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.424    c.m/sec"
*            Hydrograph volume          2601.143    c.m"
*                   0.328     0.328     0.328     0.424"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            **********************************************"
*            South of GEXR along Nafziger Rd, part of Inlet #3"
*            **********************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.328     0.000     0.328     0.424"
* 33         CATCHMENT 211"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         211   Culivated lands east of Nafziger Road"
*       1.000   % Impervious"
*       7.310   Total Area"
*     120.000   Flow length"
*       3.300   Overland Slope"
*       7.237   Pervious Area"
*     120.000   Pervious length"
*       3.300   Pervious slope"
*       0.073   Impervious Area"
*     120.000   Impervious length"
```

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*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.887   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.346     0.000     0.328     0.424 c.m/sec"
*            Catchment 211          Pervious   Impervious Total Area "
*            Surface Area           7.237      0.073      7.310      hectare"
*            Time of concentration  31.093     3.602      30.348     minutes"
*            Time to Centroid       134.736    90.293     133.532    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        4073.66    41.15      4114.81    c.m"
*            Rainfall losses        38.169     6.344      37.851     mm"
*            Runoff depth           18.121     49.947     18.439     mm"
*            Runoff volume          1311.40    36.51      1347.91    c.m"
*            Runoff coefficient     0.322      0.887      0.328      "
*            Maximum flow           0.341      0.025      0.346      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.346     0.346     0.328     0.424"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.346     0.346     0.346     0.424"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.346    c.m/sec"
*            Hydrograph volume          1347.907    c.m"
*                0.346     0.346     0.346     0.346"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.346     0.000     0.346     0.346"
* 33         CATCHMENT 212"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         212   Alpine Solutions - East SMWP"
*      40.000   % Impervious"
*       2.560   Total Area"
*     150.000   Flow length"
*       1.500   Overland Slope"
*       1.536   Pervious Area"
*     180.000   Pervious length"
*       1.500   Pervious slope"
*       1.024   Impervious Area"
*     131.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.391   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.899   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.382     0.000     0.346     0.346 c.m/sec"
*            Catchment 212          Pervious   Impervious Total Area "
*            Surface Area           1.536      1.024      2.560      hectare"
```



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*            Time of concentration  45.604     4.809      20.909     minutes"
*            Time to Centroid       152.977    91.996     116.063    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        864.62     576.41     1441.03    c.m"
*            Rainfall losses        34.307     5.712      22.869     mm"
*            Runoff depth           21.983     50.578     39.421     mm"
*            Runoff volume          337.66     517.92     855.58     c.m"
*            Runoff coefficient     0.391      0.899      0.594      "
*            Maximum flow           0.066      0.370      0.382      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.382     0.382     0.346     0.346"
* 54         POND DESIGN"
*       0.382   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       855.6   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*            Peak outflow                  0.088    c.m/sec"
*            Maximum level                 0.489    metre"
*            Maximum storage             330.576    c.m"
*            Centroidal lag                2.743    hours"
*                 0.382     0.382     0.088     0.346 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.430    c.m/sec"
*            Hydrograph volume          2203.337    c.m"
*                0.382     0.382     0.088     0.430"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.382     0.000     0.088     0.430"
* 33         CATCHMENT 213"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         213   Woodlot East and West of Nafziger Road"
*       3.000   % Impervious"
*      13.460   Total Area"
*     140.000   Flow length"
*       3.600   Overland Slope"
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.239   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.892   Impervious Runoff coefficient"
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*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.402     0.000     0.088     0.430 c.m/sec"
*             Catchment 213          Pervious   Impervious Total Area "
*             Surface Area           13.056     0.404      13.460     hectare"
*             Time of concentration  38.965     3.849      35.326     minutes"
*             Time to Centroid       144.843    90.632     139.225    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        7349.35    227.30     7576.65    c.m"
*             Rainfall losses        42.859     6.082      41.755     mm"
*             Runoff depth           13.431     50.208     14.535     mm"
*             Runoff volume          1753.62    202.74     1956.36    c.m"
*             Runoff coefficient     0.239      0.892      0.258      "
*             Maximum flow           0.383      0.142      0.402      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.402     0.402     0.088     0.430"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.402     0.402     0.402     0.430"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*           Maximum flow                  0.827    c.m/sec"
*           Hydrograph volume          4159.701    c.m"
*                  0.402     0.402     0.402     0.827"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.402     0.000     0.402     0.827"
* 33          CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.449   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.902   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  1.369     0.000     0.402     0.827 c.m/sec"
*             Catchment 214          Pervious   Impervious Total Area "
*             Surface Area           1.336      3.613      4.950      hectare"
*             Time of concentration  17.262     5.858      7.632      minutes"
*             Time to Centroid       115.692    93.486     96.940     minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        752.32     2034.04    2786.36    c.m"
*             Rainfall losses        30.997     5.497      12.382     mm"
*             Runoff depth           25.294     50.793     43.908     mm"
*             Runoff volume          338.05     1835.40    2173.45    c.m"
*             Runoff coefficient     0.449      0.902      0.780      "
*             Maximum flow           0.134      1.303      1.369      c.m/sec"
```



```
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.369     1.369     0.402     0.827"
* 54          POND DESIGN"
*        1.369   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      2173.5    Hydrograph volume    c.m"
*         15.    Number of stages"
*        0.000   Minimum water level    metre"
*        1.450   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*           Peak outflow                    0.041    c.m/sec"
*           Maximum level                   1.009    metre"
*           Maximum storage              1930.151    c.m"
*           Centroidal lag                 18.348    hours"
*                1.369     1.369     0.041     0.827 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*           Maximum flow                    0.846    c.m/sec"
*           Hydrograph volume            5696.637    c.m"
*                  1.369     1.369     0.041     0.846"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  1.369     0.000     0.041     0.846"
* 33          CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.892   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                   0.467     0.000     0.041     0.846 c.m/sec"
*            Catchment 215          Pervious   Impervious Total Area *
*            Surface Area           1.573      1.287      2.860      hectare*
*            Time of concentration  33.351     3.863      12.891     minutes*
*            Time to Centroid       137.586    90.651     105.020    minutes*
*            Rainfall depth         56.290     56.290     56.290     mm*
*            Rainfall volume        885.44     724.45     1609.90    c.m"
*            Rainfall losses        38.160     6.068      23.719     mm*
*            Runoff depth           18.130     50.222     32.571     mm*
*            Runoff volume          285.18     646.36     931.54     c.m"
*            Runoff coefficient     0.322      0.892      0.579      *
*            Maximum flow           0.071      0.451      0.467      c.m/sec*
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   0.467     0.467     0.041     0.846"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   0.467     0.467     0.467     0.846"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.977    c.m/sec"
*           Hydrograph volume          6628.185    c.m"
*                   0.467     0.467     0.467     0.977"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                   0.467     0.000     0.467     0.977"
* 33         CATCHMENT 216"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        216   Industrial lands west of Nafziger Road"
*       45.000   % Impervious"
*        2.860   Total Area"
*      110.000   Flow length"
*        2.000   Overland Slope"
*        1.573   Pervious Area"
*      110.000   Pervious length"
*        2.000   Pervious slope"
*        1.287   Impervious Area"
*      110.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.322   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.894   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.469     0.000     0.467     0.977 c.m/sec"
*            Catchment 216          Pervious   Impervious Total Area *
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  34.295     3.973      13.243     minutes"
*            Time to Centroid       138.777    90.801     105.468    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        885.44     724.45     1609.90    c.m"
*            Rainfall losses        38.166     5.982      23.683     mm"
*            Runoff depth           18.124     50.308     32.607     mm"
*            Runoff volume          285.09     647.46     932.56     c.m"
*            Runoff coefficient     0.322      0.894      0.579      *
*            Maximum flow           0.069      0.453      0.469      c.m/sec*
* 40         HYDROGRAPH Add Runoff "
```



```
*          4   Add Runoff "
*                   0.469     0.469     0.467     0.977"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   0.469     0.469     0.469     0.977"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  1.323    c.m/sec"
*           Hydrograph volume          7560.740    c.m"
*                   0.469     0.469     0.469     1.323"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                   0.469     0.000     0.469     1.323"
* 33         CATCHMENT 217"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        217   Existing ROW west of Nafziger Road"
*       75.000   % Impervious"
*        0.730   Total Area"
*       90.000   Flow length"
*        2.100   Overland Slope"
*        0.183   Pervious Area"
*       90.000   Pervious length"
*        2.100   Pervious slope"
*        0.548   Impervious Area"
*       90.000   Impervious length"
*        2.100   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.322   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.888   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.189     0.000     0.469     1.323 c.m/sec"
*            Catchment 217          Pervious   Impervious Total Area "
*            Surface Area           0.183      0.548      0.730      hectare"
*            Time of concentration  29.963     3.471      6.328      minutes"
*            Time to Centroid       133.304    90.082     94.744     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        102.73     308.19     410.92     c.m"
*            Rainfall losses        38.161     6.310      14.273     mm"
*            Runoff depth           18.129     49.980     42.018     mm"
*            Runoff volume          33.09      273.64     306.73     c.m"
*            Runoff coefficient     0.322      0.888      0.746      "
*            Maximum flow           0.009      0.187      0.189      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                   0.189     0.189     0.469     1.323"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                   0.189     0.189     0.189     1.323"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  1.512    c.m/sec"
*           Hydrograph volume          7867.466    c.m"
*                   0.189     0.189     0.189     1.512"
* 40         HYDROGRAPH   Confluence    2"
*          7   Confluence "
```

```
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.991    c.m/sec"
*            Hydrograph volume          12777.717    c.m"
*                  0.189     0.991      0.189     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.189     0.991      0.991     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  0.991    c.m/sec"
*            Hydrograph volume          12777.717    c.m"
*                  0.189     0.991      0.991     0.991"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.424    c.m/sec"
*            Hydrograph volume           2601.142    c.m"
*                  0.189     0.424      0.991     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.189     0.424      0.424     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  1.391    c.m/sec"
*            Hydrograph volume          15378.855    c.m"
*                  0.189     0.424      0.424     1.391"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.512    c.m/sec"
*            Hydrograph volume           7867.466    c.m"
*                  0.189     1.512      0.424     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.189     1.512      1.512     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  2.668    c.m/sec"
*            Hydrograph volume          23246.309    c.m"
*                  0.189     1.512      1.512     2.668"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.189     0.000      1.512     2.668"
* 33         CATCHMENT 223"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         223   New Hamburglr Inc. lands"
*      85.000   % Impervious"
*      12.570   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       1.885   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      10.684   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
```



```
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.322   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.898   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  3.836     0.000      1.512     2.668 c.m/sec"
*            Catchment 223          Pervious   Impervious Total Area "
*            Surface Area           1.885      10.684     12.570     hectare"
*            Time of concentration  37.433     4.336      6.305      minutes"
*            Time to Centroid       142.743    91.294     94.355     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        1061.35    6014.32    7075.67    c.m"
*            Rainfall losses        38.164     5.730      10.595     mm"
*            Runoff depth           18.126     50.560     45.695     mm"
*            Runoff volume          341.77     5402.07    5743.84    c.m"
*            Runoff coefficient     0.322      0.898      0.812      "
*            Maximum flow           0.078      3.820      3.836      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  3.836     3.836      1.512     2.668"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  3.836     3.836      3.836     2.668"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  6.504    c.m/sec"
*            Hydrograph volume          28990.150    c.m"
*                  3.836     3.836      3.836     6.504"
* 81         ADD COMMENT==================================================="
*           3   Lines of comment"
*               **************************************************"
*               Catchments east of Hamilton Road, part of Inlet #4"
*               **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  3.836     0.000      3.836     6.504"
* 33         CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*      85.000   % Impervious"
*       2.060   Total Area"
*     230.000   Flow length"
*       1.700   Overland Slope"
*       0.309   Pervious Area"
*     230.000   Pervious length"
*       3.000   Pervious slope"
*       1.751   Impervious Area"
*     230.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.357   Pervious Runoff coefficient"
*       0.060   Pervious Ia/S coefficient"
*       4.813   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.902   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                 0.637     0.000     3.836     6.504 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  44.715     5.476      8.040      minutes"
*            Time to Centroid       151.964    92.934     96.792     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        173.94     985.64     1159.58    c.m"
*            Rainfall losses        36.175     5.529      10.126     mm"
*            Runoff depth           20.115     50.761     46.164     mm"
*            Runoff volume          62.16      888.82     950.98     c.m"
*            Runoff coefficient     0.357      0.902      0.820      "
*            Maximum flow           0.012      0.635      0.637      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.637     0.637     3.836     6.504"
* 54         PGND DESIGN"
*       0.637   Current peak flow    c.m/sec"
*       4.094   Target outflow    c.m/sec"
*       951.0   Hydrograph volume    c.m"
*         15.   Number of stages"
*     344.700   Minimum water level    metre"
*     345.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               344.700    0.1250     0.000"
*               344.750    0.1270     9.000"
*               344.800    0.1280    35.000"
*               344.850    0.1300    77.000"
*               344.900    0.1450   136.000"
*               344.950    0.1820   209.000"
*               345.000    0.2220   297.000"
*               345.050    0.2690   400.000"
*               345.100    0.2710   519.000"
*               345.150    0.2740   653.000"
*               345.200    0.2760   804.000"
*               345.250    0.2790   971.000"
*               345.300    0.2820  1154.000"
*               345.350    0.2840  1355.000"
*               345.400    0.2860  1571.000"
*            Peak outflow                  0.233    c.m/sec"
*            Maximum level               345.012    metre"
*            Maximum storage             321.163    c.m"
*            Centroidal lag                1.851    hours"
*                 0.637     0.637     0.233     6.504 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  6.674    c.m/sec"
*            Hydrograph volume         29940.189    c.m"
*                 0.637     0.637     0.233     6.674"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.637     0.000     0.233     6.674"
* 33         CATCHMENT 219"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         219   N.C. Pestells Head Office & other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      75.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      75.000   Pervious length"
```



```
*       3.000   Pervious slope"
*       1.088   Impervious Area"
*      75.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.177   Pervious Runoff coefficient"
*       0.281   Pervious Ia/S coefficient"
*      22.539   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.887   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.383     0.000     0.233     6.674 c.m/sec"
*            Catchment 219          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  34.229     2.795      3.868      minutes"
*            Time to Centroid       143.695    89.055     90.919     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        108.08     612.44     720.51     c.m"
*            Rainfall losses        46.299     6.364      12.354     mm"
*            Runoff depth           9.991      49.926     43.936     mm"
*            Runoff volume          19.18      543.20     562.38     c.m"
*            Runoff coefficient     0.177      0.887      0.781      "
*            Maximum flow           0.004      0.383      0.383      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.383     0.383     0.233     6.674"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.383     0.383     0.383     6.674"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  7.026    c.m/sec"
*            Hydrograph volume         30502.574    c.m"
*                 0.383     0.383     0.383     7.026"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.383     0.000     0.383     7.026"
* 33         CATCHMENT 220"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         220   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.291   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.894   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```

```
*                0.030     0.000     0.383     7.026 c.m/sec"
*           Catchment 220          Pervious   Impervious Total Area "
*           Surface Area           0.460      0.040      0.500      hectare"
*           Time of concentration  19.062     2.098      15.488     minutes"
*           Time to Centroid       119.935    87.960     113.198    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        258.93     22.52      281.45     c.m"
*           Rainfall losses        39.898     5.968      37.183     mm"
*           Runoff depth           16.392     50.322     19.107     mm"
*           Runoff volume          75.40      20.13      95.53      c.m"
*           Runoff coefficient     0.291      0.894      0.339      "
*           Maximum flow           0.027      0.015      0.030      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.030     0.030     0.383     7.026"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.030     0.030     0.030     7.026"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  7.049    c.m/sec"
*           Hydrograph volume          30598.107    c.m"
*                0.030     0.030     0.030     7.049"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.030     0.000     0.030     7.049"
* 33        CATCHMENT 221"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        221   Proposed ROW from Hamilton Road"
*       81.500 % Impervious"
*        0.810 Total Area"
*       40.000 Flow length"
*        2.000 Overland Slope"
*        0.150 Pervious Area"
*       40.000 Pervious length"
*        2.000 Pervious slope"
*        0.660 Impervious Area"
*       40.000 Impervious length"
*        2.000 Impervious slope"
*        0.250 Pervious Manning 'n'"
*       76.000 Pervious SCS Curve No."
*        0.322 Pervious Runoff coefficient"
*        0.100 Pervious Ia/S coefficient"
*        8.021 Pervious Initial abstraction"
*        0.015 Impervious Manning 'n'"
*       98.000 Impervious SCS Curve No."
*        0.893 Impervious Runoff coefficient"
*        0.100 Impervious Ia/S coefficient"
*        0.518 Impervious Initial abstraction"
*                0.245     0.000     0.030     7.049 c.m/sec"
*           Catchment 221          Pervious   Impervious Total Area "
*           Surface Area           0.150      0.660      0.810      hectare"
*           Time of concentration  18.691     2.165      3.414      minutes"
*           Time to Centroid       119.061    88.064     90.407     minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        84.35      371.60     455.95     c.m"
*           Rainfall losses        38.178     6.018      11.968     mm"
*           Runoff depth           18.112     50.272     44.323     mm"
*           Runoff volume          27.14      331.87     359.01     c.m"
*           Runoff coefficient     0.322      0.893      0.787      "
*           Maximum flow           0.010      0.244      0.245      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
```



```
*                0.245     0.245     0.030     7.049"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.245     0.245     0.245     7.049"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  7.256    c.m/sec"
*           Hydrograph volume          30957.117    c.m"
*                0.245     0.245     0.245     7.256"
* 81        ADD COMMENT================================================="
*          3  Lines of comment"
*             **************************************************"
*             Catchment to Inlet #5"
*             **************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.245     0.000     0.245     7.256"
* 33        CATCHMENT 222"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        222   Rear yards from Hamilton Heights Subdivision"
*        5.000 % Impervious"
*        1.080 Total Area"
*       20.000 Flow length"
*        3.000 Overland Slope"
*        1.026 Pervious Area"
*       20.000 Pervious length"
*        3.000 Pervious slope"
*        0.054 Impervious Area"
*       20.000 Impervious length"
*        3.000 Impervious slope"
*        0.250 Pervious Manning 'n'"
*       76.000 Pervious SCS Curve No."
*        0.322 Pervious Runoff coefficient"
*        0.100 Pervious Ia/S coefficient"
*        8.021 Pervious Initial abstraction"
*        0.015 Impervious Manning 'n'"
*       98.000 Impervious SCS Curve No."
*        0.889 Impervious Runoff coefficient"
*        0.100 Impervious Ia/S coefficient"
*        0.518 Impervious Initial abstraction"
*                0.097     0.000     0.245     7.256 c.m/sec"
*           Catchment 222          Pervious   Impervious Total Area "
*           Surface Area           1.026      0.054      1.080      hectare"
*           Time of concentration  10.919     1.265      9.693      minutes"
*           Time to Centroid       109.232    86.789     106.382    minutes"
*           Rainfall depth         56.290     56.290     56.290     mm"
*           Rainfall volume        577.54     30.40      607.93     c.m"
*           Rainfall losses        38.191     6.254      36.594     mm"
*           Runoff depth           18.099     50.036     19.696     mm"
*           Runoff volume          185.70     27.02      212.72     c.m"
*           Runoff coefficient     0.322      0.889      0.350      "
*           Maximum flow           0.089      0.021      0.097      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.097     0.097     0.245     7.256"
* 40        HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.097     0.097     0.097     7.256"
* 40        HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                  7.336    c.m/sec"
```

```
*            Hydrograph volume          31169.834    c.m"
*                  0.097     0.097     0.097     7.336"
* 81         ADD COMMENT==========================================================="
*          3  Lines of comment"
*             **************************************************"
*             Badenview Developments Inc. lands"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.097     0.000     0.097     7.336"
* 33         CATCHMENT 224"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          224   Badenview lands"
*       85.000   % Impervious"
*       43.200   Total Area"
*       90.000   Flow length"
*        1.000   Overland Slope"
*        6.480   Pervious Area"
*       90.000   Pervious length"
*        1.000   Pervious slope"
*       36.720   Impervious Area"
*       90.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.322   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.898   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  13.184     0.000     0.097     7.336 c.m/sec"
*             Catchment 224          Pervious   Impervious Total Area "
*             Surface Area           6.480      36.720     43.200     hectare"
*             Time of concentration  37.433     4.336      6.305      minutes"
*             Time to Centroid       142.743    91.294     94.355     minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        0.3648     2.0670     2.4317     ha-m"
*             Rainfall losses        38.164     5.730      10.595     mm"
*             Runoff depth           18.126     50.560     45.695     mm"
*             Runoff volume          0.1175     1.8566     1.9740     ha-m"
*             Runoff coefficient     0.322      0.898      0.812      "
*             Maximum flow           0.268      13.130     13.184     c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  13.184    13.184     0.097     7.336"
* 40         HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  13.184    13.184    13.184     7.336"
* 40         HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 20.519    c.m/sec"
*             Hydrograph volume          50910.012    c.m"
*                  13.184    13.184    13.184    20.519"
* 40         HYDROGRAPH   Confluence    5"
*            7   Confluence "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                 20.519    c.m/sec"
*             Hydrograph volume          50910.016    c.m"
*                  13.184    20.519    13.184     0.000"
```



```
* 81         ADD COMMENT==========================================================="
*          7  Lines of comment"
*             **************************************************"
*             **************************************************"
*             **                                              **"
*             **          PROPOSED SWM POND DESIGN            **"
*             **                                              **"
*             **************************************************"
*             **************************************************"
* 54         POND DESIGN"
*       20.519   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*      50910.0   Hydrograph volume    c.m"
*         36.    Number of stages"
*      334.550   Minimum water level    metre"
*      337.850   Maximum water level    metre"
*      334.550   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  334.550     0.000     0.000"
*                  334.600   0.00400  1187.000"
*                  334.700   0.02830  3607.000"
*                  334.800   0.06350  6090.000"
*                  334.900   0.08900  8636.000"
*                  335.000    0.1880  11246.00"
*                  335.100    0.3430  13920.00"
*                  335.200    0.5360  16658.00"
*                  335.300    0.7599  19459.00"
*                  335.400     1.011  22323.00"
*                  335.500     1.286  25249.00"
*                  335.600     1.583  28239.00"
*                  335.700     1.901  31294.00"
*                  335.800     2.238  34414.00"
*                  335.900     2.593  37599.00"
*                  336.000     2.966  40851.00"
*                  336.100     3.427  43465.00"
*                  336.200     3.959  46848.00"
*                  336.300     4.543  50286.00"
*                  336.400     5.171  53779.00"
*                  336.500     5.840  57328.00"
*                  336.600     6.544  60933.00"
*                  336.700     7.284  64595.00"
*                  336.800     8.055  68313.00"
*                  336.900     8.858  72088.00"
*                  337.000     9.690  75920.00"
*                  337.100    10.550  79809.00"
*                  337.200    11.437  83755.00"
*                  337.300    12.351  87759.00"
*                  337.400    13.291  91821.00"
*                  337.500    14.255  95940.00"
*                  337.550    14.746  98022.00"
*                  337.600    16.027  100118.0"
*                  337.700    20.027  104352.0"
*                  337.800    25.280  108643.0"
*                  337.850    28.277  110810.0"
*               Peak outflow                  1.816    c.m/sec"
*               Maximum level               335.673    metre"
*               Maximum storage           30478.438    c.m"
*               Centroidal lag               12.690    hours"
*                  13.184    20.519     1.816     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*            6   Combine "
*           12   Node #"
*                d/s of Proposed SWMF"
*               Maximum flow                  1.816    c.m/sec"
*               Hydrograph volume          42970.973    c.m"
*                     13.184    20.519     1.816     1.816"
```

```
* 81          ADD COMMENT==================================================="
*            3  Lines of comment"
*               **************************************************"
*               Catchments to Inlet #6"
*               **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                   13.184     0.000     1.816     1.816"
* 33          CATCHMENT 260"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           260  Hamilton Heights Subdivision"
*        46.000  % Impervious"
*         8.160  Total Area"
*        50.000  Flow length"
*         1.000  Overland Slope"
*         4.406  Pervious Area"
*        50.000  Pervious length"
*         3.000  Pervious slope"
*         3.754  Impervious Area"
*       232.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.322  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.896  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   1.504     0.000     1.816     1.816 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  18.921     6.776      10.377     minutes"
*              Time to Centroid       119.354    94.798     102.079    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        2480.37    2112.91    4593.28    c.m"
*              Rainfall losses        38.185     5.862      23.317     mm"
*              Runoff depth           18.105     50.428     32.974     mm"
*              Runoff volume          797.79     1892.86    2690.65    c.m"
*              Runoff coefficient     0.322      0.896      0.586      "
*              Maximum flow           0.285      1.384      1.504      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                   1.504     1.504     1.816     1.816"
* 33          CATCHMENT 261"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           261  Klassen Bronze Property"
*        32.000  % Impervious"
*         2.350  Total Area"
*       100.000  Flow length"
*         2.500  Overland Slope"
*         1.598  Pervious Area"
*        50.000  Pervious length"
*         2.500  Pervious slope"
*         0.752  Impervious Area"
*       164.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.322  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
```



```
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.902  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   0.312     1.504     1.816     1.816 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  19.985     5.503      11.746     minutes"
*              Time to Centroid       120.699    92.974     104.926    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        899.52     423.30     1322.82    c.m"
*              Rainfall losses        38.185     5.520      27.732     mm"
*              Runoff depth           18.105     50.770     28.558     mm"
*              Runoff volume          289.32     381.79     671.11     c.m"
*              Runoff coefficient     0.322      0.902      0.507      "
*              Maximum flow           0.102      0.273      0.312      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                   0.312     1.816     1.816     1.816"
* 40          HYDROGRAPH Copy to Outflow"
*             8  Copy to Outflow"
*                   0.312     1.816     1.816     1.816"
* 40          HYDROGRAPH   Combine    12"
*             6  Combine "
*            12  Node #"
*                d/s of Proposed SWMF"
*               Maximum flow                    2.086    c.m/sec"
*               Hydrograph volume           46332.719    c.m"
*                   0.312     1.816     1.816     2.086"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                   0.312     0.000     1.816     2.086"
* 33          CATCHMENT 225"
*             1  Triangular SCS"
*             1  Equal length"
*             1  SCS method"
*           225  HWY 7/8 and north ditching"
*        30.000  % Impervious"
*         1.670  Total Area"
*        75.000  Flow length"
*         2.000  Overland Slope"
*         1.169  Pervious Area"
*        75.000  Pervious length"
*         2.000  Pervious slope"
*         0.501  Impervious Area"
*        75.000  Impervious length"
*         2.000  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        74.000  Pervious SCS Curve No."
*         0.291  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.924  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.890  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   0.181     0.000     1.816     2.086 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  28.688     3.157      14.212     minutes"
*              Time to Centroid       131.958    89.600     107.941    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        658.03     282.01     940.05     c.m"
*              Rainfall losses        39.895     6.194      29.784     mm"
```

```
*            Runoff depth           16.395     50.096     26.506     mm"
*            Runoff volume          191.66     250.98     442.64     c.m"
*            Runoff coefficient     0.291      0.890      0.471      "
*            Maximum flow           0.053      0.171      0.181      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.181      0.181      1.816      2.086"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.181      0.181      0.181      2.086"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                  2.229    c.m/sec"
*            Hydrograph volume         46775.363    c.m"
*                  0.181      0.181      0.181      2.229"
* 81         ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************************"
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.181      0.000      0.181      2.229"
* 33         CATCHMENT 270"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         270   Industrial/Residential area along Hamilton Road"
*      55.000   % Impervious"
*       8.450   Total Area"
*      45.000   Flow length"
*       2.000   Overland Slope"
*       3.802   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       4.648   Impervious Area"
*     235.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.321   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.896   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  1.879      0.000      0.181      2.229 c.m/sec"
*            Catchment 270          Pervious   Impervious Total Area "
*            Surface Area           3.802      4.648      8.450      hectare"
*            Time of concentration  13.927     6.829      8.439      minutes"
*            Time to Centroid       113.054    94.875     98.998     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        2140.43    2616.08    4756.52    c.m"
*            Rainfall losses        38.197     5.830      20.395     mm"
*            Runoff depth           18.093     50.460     35.895     mm"
*            Runoff volume          687.99     2345.12    3033.11    c.m"
*            Runoff coefficient     0.321      0.896      0.638      "
*            Maximum flow           0.302      1.712      1.879      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.879      1.879      0.181      2.229"
* 56         DIVERSION"
*           6   Node number"
```



```
*        1.560   Overflow threshold"
*        1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*               Peak of diverted flow          0.319    c.m/sec"
*               Volume of diverted flow      100.877    c.m"
*               DIV00006.010hyd"
*               Major flow at 6"
*                     1.879      1.879      1.560      2.229 c.m/sec"
* 40            HYDROGRAPH   Combine    9"
*              6   Combine "
*              9   Node #"
*                  NODE B"
*               Maximum flow                   1.560    c.m/sec"
*               Hydrograph volume           2932.236    c.m"
*                     1.879      1.879      1.560      1.560"
* 40            HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                     1.879      0.000      1.560      1.560"
* 47            FILEI_O Read/Open DIV00006.010hyd"
*              1   1=read/open; 2=write/save"
*              2   1=rainfall; 2=hydrograph"
*              1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*               DIV00006.010hyd"
*               Major flow at 6"
*               Total volume                 100.877    c.m"
*               Maximum flow                   0.319    c.m/sec"
*                  0.319      0.000      1.560      1.560 c.m/sec"
* 40            HYDROGRAPH Add Runoff "
*              4   Add Runoff "
*                     0.319      0.319      1.560      1.560"
* 40            HYDROGRAPH Copy to Outflow"
*              8   Copy to Outflow"
*                     0.319      0.319      0.319      1.560"
* 40            HYDROGRAPH   Combine    12"
*              6   Combine "
*             12   Node #"
*                  d/s of Proposed SWMF"
*               Maximum flow                   2.548    c.m/sec"
*               Hydrograph volume          46876.246    c.m"
*                     0.319      0.319      0.319      2.548"
* 40            HYDROGRAPH   Confluence    12"
*              7   Confluence "
*             12   Node #"
*                  d/s of Proposed SWMF"
*               Maximum flow                   2.548    c.m/sec"
*               Hydrograph volume          46876.246    c.m"
*                     0.319      2.548      0.319      0.000"
* 54            POND DESIGN"
*         2.548   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*     46876.2   Hydrograph volume    c.m"
*           8.   Number of stages"
*       334.290   Minimum water level    metre"
*       337.000   Maximum water level    metre"
*       334.290   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 334.290     0.000     0.000"
*                 334.500    0.2540     5.000"
*                 335.000     1.303   110.000"
*                 335.500     2.800   674.000"
*                 336.000     4.639  1910.000"
*                 336.500     6.480  3748.000"
*                 336.550     6.665  3967.000"
*                 337.000    23.484  6569.000"
*               Peak outflow                   2.050    c.m/sec"
*               Maximum level                335.257    metre"
```

```
*            Maximum storage            399.873    c.m"
*            Centroidal lag               6.693   hours"
*                 0.319     2.548     2.050     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 0.319     2.050     2.050     0.000"
* 56         DIVERSION"
*           7   Node number"
*         7.170   Overflow threshold"
*         1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow        0.000    c.m/sec"
*            Volume of diverted flow      0.000    c.m"
*            DIV00007.010hyd"
*            Major flow at 7"
*                 0.319     2.050     2.050     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    8"
*           6   Combine "
*           8   Node #"
*               NODE A"
*            Maximum flow                 2.050    c.m/sec"
*            Hydrograph volume        46865.305    c.m"
*                 0.319     2.050     2.050     2.050"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchments South of Hwy 7/8"
*            ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.319     0.000     2.050     2.050"
* 33         CATCHMENT 280"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         280   Northeast portion of Maple Leaf Foods property"
*        26.000   % Impervious"
*         0.700   Total Area"
*        45.000   Flow length"
*         1.500   Overland Slope"
*         0.518   Pervious Area"
*        20.000   Pervious length"
*         2.000   Pervious slope"
*         0.182   Impervious Area"
*        68.000   Impervious length"
*         1.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        79.000   Pervious SCS Curve No."
*         0.371   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         6.752   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.887   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.101     0.000     2.050     2.050 c.m/sec"
*              Catchment 280          Pervious   Impervious Total Area "
*              Surface Area           0.518      0.182      0.700      hectare"
*              Time of concentration  11.461     3.665      7.902      minutes"
*              Time to Centroid       109.158    90.388     100.590    minutes"
*              Rainfall depth         56.290     56.290     56.290     mm"
*              Rainfall volume        291.58     102.45     394.03     c.m"
*              Rainfall losses        35.394     6.336      27.839     mm"
*              Runoff depth           20.897     49.954     28.452     mm"
*              Runoff volume          108.24     90.92      199.16     c.m"
*              Runoff coefficient     0.371      0.887      0.505      "
```



```
*            Maximum flow           0.052      0.063      0.101      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.101     0.101     2.050     2.050"
* 54         POND DESIGN"
*         0.101   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         199.2   Hydrograph volume    c.m"
*            8.   Number of stages"
*         0.000   Minimum water level    metre"
*         0.750   Maximum water level    metre"
*         0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400     1.000"
*                 0.2500   0.00600     8.000"
*                 0.3500   0.00700    29.000"
*                 0.4500   0.00800    69.000"
*                 0.6500   0.01000   178.000"
*                 0.7000    0.1060   208.000"
*                 0.7500    0.2810   240.000"
*            Peak outflow                 0.009    c.m/sec"
*            Maximum level                0.571    metre"
*            Maximum storage            134.704    c.m"
*            Centroidal lag               4.279   hours"
*                 0.101     0.101     0.009     2.050 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 1.568    c.m/sec"
*            Hydrograph volume         3131.367    c.m"
*                 0.101     0.101     0.009     1.568"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.101     0.000     0.009     1.568"
* 33         CATCHMENT 281"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         281   Western portion of John Bear property"
*        93.000   % Impervious"
*         1.870   Total Area"
*       120.000   Flow length"
*         1.000   Overland Slope"
*         0.131   Pervious Area"
*        20.000   Pervious length"
*         2.000   Pervious slope"
*         1.739   Impervious Area"
*       112.000   Impervious length"
*         1.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        65.000   Pervious SCS Curve No."
*         0.180   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*        13.677   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.899   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.632     0.000     0.009     1.568 c.m/sec"
*              Catchment 281          Pervious   Impervious Total Area "
*              Surface Area           0.131      1.739      1.870      hectare"
*              Time of concentration  17.090     4.944      5.124      minutes"
*              Time to Centroid       119.153    92.190     92.590     minutes"
```

```
*            Rainfall depth          56.290      56.290      56.290      mm"
*            Rainfall volume         73.68       978.94      1052.63     c.m"
*            Rainfall losses         46.176      5.689       8.523       mm"
*            Runoff depth            10.114      50.601      47.767      mm"
*            Runoff volume           13.24       880.01      893.24      c.m"
*            Runoff coefficient      0.180       0.899       0.849       "
*            Maximum flow            0.005       0.630       0.632       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.632     0.632     0.009     1.568"
* 54         POND DESIGN"
*       0.632   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       893.2   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.255    c.m/sec"
*            Maximum level                 1.537    metre"
*            Maximum storage             363.182    c.m"
*            Centroidal lag                1.920    hours"
*                 0.632     0.632     0.255     1.568 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE 8"
*            Maximum flow                  1.715    c.m/sec"
*            Hydrograph volume          4027.972    c.m"
*                 0.632     0.632     0.255     1.715"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.632     0.000     0.255     1.715"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.179   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.888   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.291     0.000     0.255     1.715 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  19.301     3.522      4.835      minutes"
*            Time to Centroid       121.735    90.164     92.792     minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        211.14     469.97     681.11     c.m"
*            Rainfall losses        46.193     6.320      18.681     mm"
*            Runoff depth           10.097     49.970     37.610     mm"
*            Runoff volume          37.87      417.20     455.08     c.m"
*            Runoff coefficient     0.179      0.888      0.668      "
*            Maximum flow           0.013      0.287      0.291      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.291     0.291     0.255     1.715"
* 54         POND DESIGN"
*       0.291   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       455.1   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.046    c.m/sec"
*            Maximum level                 0.382    metre"
*            Maximum storage             284.251    c.m"
*            Centroidal lag                3.322    hours"
*                 0.291     0.291     0.046     1.715 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.751    c.m/sec"
*            Hydrograph volume          4483.037    c.m"
*                 0.291     0.291     0.046     1.751"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.291     0.000     0.046     1.751"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.217   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

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*       0.905   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               2.204     0.000     0.046     1.751 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  49.728     8.541      23.756     minutes"
*            Time to Centroid       157.772    97.221     119.589    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        0.9308     0.3802     1.3110     ha-m"
*            Rainfall losses        44.097     5.333      32.855     mm"
*            Runoff depth           12.193     50.957     23.435     mm"
*            Runoff volume          2016.24    3441.69    5457.94    c.m"
*            Runoff coefficient     0.217      0.905      0.416      "
*            Maximum flow           0.368      2.157      2.204      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               2.204     2.204     0.046     1.751"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               2.204     2.204     2.204     1.751"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  3.934    c.m/sec"
*           Hydrograph volume          9940.976    c.m"
*               2.204     2.204     2.204     3.934"
* 40         HYDROGRAPH   Confluence    8"
*          7   Confluence "
*          8   Node #"
*              NODE A"
*           Maximum flow                  2.050    c.m/sec"
*           Hydrograph volume         46865.301    c.m"
*               2.204     2.050     2.204     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               2.204     2.050     2.050     0.000"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  5.874    c.m/sec"
*           Hydrograph volume         56806.270    c.m"
*               2.204     2.050     2.050     5.874"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               2.204     0.000     2.050     5.874"
* 33         CATCHMENT 284"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        284   Agricultural lands south of Bleams Road"
*      2.000   % Impervious"
*      2.950   Total Area"
*     80.000   Flow length"
*      3.100   Overland Slope"
*      2.891   Pervious Area"
*     80.000   Pervious length"
*      3.100   Pervious slope"
*      0.059   Impervious Area"
*     80.000   Impervious length"
*      3.100   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     74.000   Pervious SCS Curve No."
*      0.291   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
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*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.888   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.141     0.000     2.050     5.874 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  26.147     2.877      24.784     minutes"
*            Time to Centroid       128.777    89.177     126.459    minutes"
*            Rainfall depth         56.290     56.290     56.290     mm"
*            Rainfall volume        1627.35    33.21      1660.56    c.m"
*            Rainfall losses        39.887     6.301      39.215     mm"
*            Runoff depth           16.404     49.989     17.075     mm"
*            Runoff volume          474.23     29.49      503.72     c.m"
*            Runoff coefficient     0.291      0.888      0.303      "
*            Maximum flow           0.138      0.021      0.141      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.141     0.141     2.050     5.874"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               0.141     0.141     0.141     5.874"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                  5.960    c.m/sec"
*           Hydrograph volume         57309.988    c.m"
*               0.141     0.141     0.141     5.960"
* 40         HYDROGRAPH   Confluence    9"
*          7   Confluence "
*          9   Node #"
*              NODE B"
*           Maximum flow                  5.960    c.m/sec"
*           Hydrograph volume         57309.988    c.m"
*               0.141     5.960     0.141     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               0.141     5.960     5.960     0.000"
* 40         HYDROGRAPH   Combine    10"
*          6   Combine "
*         10   Node #"
*              NODE C"
*           Maximum flow                  5.960    c.m/sec"
*           Hydrograph volume         57309.988    c.m"
*               0.141     5.960     5.960     5.960"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               0.141     0.000     5.960     5.960"
* 33         CATCHMENT 285"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        285   Morningside Retirement Community lands"
*     58.000   % Impervious"
*     18.780   Total Area"
*    190.000   Flow length"
*      2.000   Overland Slope"
*      7.888   Pervious Area"
*     25.000   Pervious length"
*      2.500   Pervious slope"
*     10.892   Impervious Area"
*    354.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
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*       64.400   Pervious SCS Curve No."
*        0.173   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.901   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  4.045     0.000     5.960     5.960 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  18.691     7.491      8.860      minutes"
*             Time to Centroid       121.080    95.806     98.894     minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        0.4440     0.6131     1.0571     ha-m"
*             Rainfall losses        46.540     5.571      22.778     mm"
*             Runoff depth           9.750      50.719     33.512     mm"
*             Runoff volume          769.03     5524.52    6293.55    c.m"
*             Runoff coefficient     0.173      0.901      0.595      "
*             Maximum flow           0.264      3.952      4.045      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  4.045     4.045     5.960     5.960"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  4.045     4.045     4.045     5.960"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                   9.699    c.m/sec"
*             Hydrograph volume          63603.551    c.m"
*                  4.045     4.045     4.045     9.699"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ********************************************************"
*              Catchments north of Hwy 7/8, towards Eastern Tributary"
*              ********************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  4.045     0.000     4.045     9.699"
* 33          CATCHMENT 250"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           250   Southern portion of Rec Centre fields"
*         0.000   % Impervious"
*         3.510   Total Area"
*        95.000   Flow length"
*         1.600   Overland Slope"
*         3.510   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         0.000   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.322   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
```



```
*                  0.160     0.000     4.045     9.699 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  32.389     7.195      32.389     minutes"
*             Time to Centroid       136.372    95.385     136.371    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        1975.78    0.00       1975.78    c.m"
*             Rainfall losses        38.166     5.668      38.166     mm"
*             Runoff depth           18.124     50.622     18.125     mm"
*             Runoff volume          636.17     0.00       636.17     c.m"
*             Runoff coefficient     0.322      0.000      0.322      "
*             Maximum flow           0.160      0.000      0.160      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.160     0.160     4.045     9.699"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.160     0.160     0.160     9.699"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                   0.160    c.m/sec"
*             Hydrograph volume            636.171    c.m"
*                  0.160     0.160     0.160     0.160"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.160     0.000     0.160     0.160"
* 33          CATCHMENT 251"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.322   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.899   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  0.737     0.000     0.160     0.160 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  32.389     7.195      17.800     minutes"
*             Time to Centroid       136.372    95.385     112.638    minutes"
*             Rainfall depth         56.290     56.290     56.290     mm"
*             Rainfall volume        2176.12    1071.82    3247.94    c.m"
*             Rainfall losses        38.166     5.668      27.441     mm"
*             Runoff depth           18.124     50.622     28.849     mm"
*             Runoff volume          700.67     963.90     1664.57    c.m"
*             Runoff coefficient     0.322      0.899      0.512      "
*             Maximum flow           0.176      0.696      0.737      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

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*                  0.737     0.737     0.160     0.160"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.737     0.737     0.737     0.160"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                 0.775    c.m/sec"
*             Hydrograph volume          2300.740    c.m"
*                  0.737     0.737     0.737     0.775"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.737     0.000     0.737     0.775"
* 33          CATCHMENT 252"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          252   Southern portion of Hamburglr lands"
*        5.000   % Impervious"
*        2.870   Total Area"
*       65.000   Flow length"
*        1.500   Overland Slope"
*        2.726   Pervious Area"
*       65.000   Pervious length"
*        1.500   Pervious slope"
*        0.144   Impervious Area"
*       65.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.291   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.890   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.133     0.000     0.737     0.775 c.m/sec"
*             Catchment 252          Pervious   Impervious Total Area "
*             Surface Area           2.726     0.144     2.870     hectare"
*             Time of concentration  28.701    3.158     25.162    minutes"
*             Time to Centroid       131.974   89.603    126.105   minutes"
*             Rainfall depth         56.290    56.290    56.290    mm"
*             Rainfall volume        1534.75   80.78     1615.53   c.m"
*             Rainfall losses        39.894    6.194     38.209    mm"
*             Runoff depth           16.396    50.096    18.081    mm"
*             Runoff volume          447.03    71.89     518.92    c.m"
*             Runoff coefficient     0.291     0.890     0.321     "
*             Maximum flow           0.124     0.049     0.133     c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.133     0.133     0.737     0.775"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.133     0.133     0.133     0.775"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                 0.855    c.m/sec"
*             Hydrograph volume          2819.661    c.m"
*                  0.133     0.133     0.133     0.855"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.133     0.000     0.133     0.855"
```



```
* 47          FILEI_O Read/Open DIV00007.010hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00007.010hyd"
*             Major flow at 7"
*             Total volume                 0.000    c.m"
*             Maximum flow                 0.000    c.m/sec"
*                0.000     0.000     0.133     0.855 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.000     0.000     0.133     0.855"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.000     0.000     0.000     0.855"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                 0.855    c.m/sec"
*             Hydrograph volume          2819.661    c.m"
*                  0.000     0.000     0.000     0.855"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                 0.855    c.m/sec"
*             Hydrograph volume          2819.661    c.m"
*                  0.000     0.855     0.000     0.000"
* 54          POND DESIGN"
*          0.855   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*        2819.7    Hydrograph volume    c.m"
*            9.    Number of stages"
*        332.660   Minimum water level    metre"
*        336.000   Maximum water level    metre"
*        332.660   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                  332.660     0.000     0.000"
*                  333.000    0.3010   198.000"
*                  333.500     1.168  1165.000"
*                  334.000     2.325  2895.000"
*                  334.500     3.132  5301.000"
*                  335.000     3.780  8376.000"
*                  335.500     4.332  12258.00"
*                  335.750     4.583  14551.00"
*                  336.000    21.985  17113.00"
*             Peak outflow                 0.557    c.m/sec"
*             Maximum level              333.148    metre"
*             Maximum storage            483.704    c.m"
*             Centroidal lag               2.222    hours"
*                  0.000     0.855     0.557     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                  0.000     0.557     0.557     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                234.030    hectare"
*             Total Impervious area               110.433    hectare"
*             Total % impervious                   47.187"
* 19          EXIT"
```

```
*             MIDUSS Output ------------------------------------------->"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*       10    Units used:                                          ie METRIC"
*             Job folder:                       Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                     34896-104_Post-025yr.out"
*             Licensee name:                                          admin"
*             Company                                              Microsoft"
*             Date & Time last used:              12/17/2018 at 2:58:43 PM"
* 81        ADD COMMENT==========================================="
*       7   Lines of comment"
*           ************************************************"
*           Wilmot Employment Lands"
*           New Hamburg, Ontario"
*           25 Year Storm Event - Post development"
*           Job No.: 34896-104"
*           Calculated by: NED/MSB"
*           ************************************************"
* 31        TIME PARAMETERS"
*     5.000   Time Step"
*   240.000   Max. Storm length"
*  1500.000   Max. Hydrograph"
* 32        STORM Chicago storm"
*        1    Chicago storm"
*  3158.000   Coefficient A"
*    15.000   Constant B"
*     0.936   Exponent C"
*     0.400   Fraction R"
*   180.000   Duration"
*     1.000   Time step multiplier"
*           Maximum intensity          191.271    mm/hr"
*           Total depth                 68.087    mm"
*         6   025hyd   Hydrograph extension used in this file"
* 81        ADD COMMENT==========================================="
*       3   Lines of comment"
*           ************************************************"
*           Catchments North of GEXR, part of Inlet #1"
*           ************************************************"
* 33        CATCHMENT 201"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         201   Area Northeast of GEXR"
*       0.000   % Impervious"
*       2.970   Total Area"
*      80.000   Flow length"
*       0.500   Overland Slope"
*       2.970   Pervious Area"
*      80.000   Pervious length"
*       0.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      82.000   Pervious SCS Curve No."
*       0.485   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.576   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.252     0.000     0.000     0.000 c.m/sec"
*           Catchment 201          Pervious   Impervious Total Area "
*           Surface Area           2.970      0.000      2.970      hectare"
*           Time of concentration  33.434     4.721      33.434     minutes"
```



```
*           Time to Centroid       135.456    91.254     135.456    minutes"
*           Rainfall depth         68.087     68.087     68.087     mm"
*           Rainfall volume        2022.17    0.00       2022.17    c.m"
*           Rainfall losses        35.056     5.784      35.056     mm"
*           Runoff depth           33.030     62.303     33.030     mm"
*           Runoff volume          981.00     0.00       981.00     c.m"
*           Runoff coefficient     0.485      0.000      0.485      "
*           Maximum flow           0.252      0.000      0.252      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.252     0.252     0.000     0.000"
* 33        CATCHMENT 202"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         202   Woodlot - north of GEXR"
*       0.000   % Impervious"
*       2.080   Total Area"
*      80.000   Flow length"
*       2.500   Overland Slope"
*       2.080   Pervious Area"
*      80.000   Pervious length"
*       2.500   Pervious slope"
*       0.000   Impervious Area"
*      80.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.289   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.000   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.119     0.252     0.000     0.000 c.m/sec"
*           Catchment 202          Pervious   Impervious Total Area "
*           Surface Area           2.080      0.000      2.080      hectare"
*           Time of concentration  26.728     2.913      26.728     minutes"
*           Time to Centroid       128.563    88.712     128.563    minutes"
*           Rainfall depth         68.087     68.087     68.087     mm"
*           Rainfall volume        1416.20    0.00       1416.20    c.m"
*           Rainfall losses        48.398     6.764      48.398     mm"
*           Runoff depth           19.689     61.323     19.689     mm"
*           Runoff volume          409.53     0.00       409.53     c.m"
*           Runoff coefficient     0.289      0.000      0.289      "
*           Maximum flow           0.119      0.000      0.119      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*               0.119     0.367     0.000     0.000"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*               0.119     0.367     0.367     0.000"
* 40        HYDROGRAPH   Combine    1"
*         6   Combine "
*         1   Node #"
*             u/s of GEXR"
*           Maximum flow                 0.367    c.m/sec"
*           Hydrograph volume         1390.529    c.m"
*               0.119     0.367     0.367     0.367"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*               0.119     0.000     0.367     0.367"
* 33        CATCHMENT 203"
*         1   Triangular SCS"
*         1   Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.418   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.911   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 4.724     0.000     0.367     0.367 c.m/sec"
*            Catchment 203          Pervious   Impervious Total Area "
*            Surface Area           7.404      11.106     18.510     hectare"
*            Time of concentration  31.371     4.116      10.493     minutes"
*            Time to Centroid       133.117    90.424     100.414    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        0.5041     0.7562     1.2603     ha-m"
*            Rainfall losses        39.650     6.029      19.477     mm"
*            Runoff depth           28.436     62.058     48.609     mm"
*            Runoff volume          2105.40    6892.12    8997.53    c.m"
*            Runoff coefficient     0.418      0.911      0.714      "
*            Maximum flow           0.561      4.578      4.724      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 4.724     4.724     0.367     0.367"
* 54         POND DESIGN"
*       4.724   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*      8997.5   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               341.500     0.000     0.000"
*               342.000    0.1541  1746.000"
*               342.500    0.2669  3784.000"
*               343.000    0.3446  6114.000"
*               343.300    0.3837  7652.000"
*               343.600     2.941  9295.000"
*           1.  WEIRS"
*                 Crest      Weir     Crest      Left     Right"
*             elevation coefficie   breadth sideslope sideslope"
*               343.300     0.900    10.000     0.000     0.000"
*           1.  ORIFICES"
*               Orifice   Orifice   Orifice Number of"
*                invert coefficie  diameter  orifices"
*               341.500     0.630    0.3750     1.000"
*             Peak outflow                0.357    c.m/sec"
*             Maximum level             343.096    metre"
*             Maximum storage          6605.548    c.m"
*             Centroidal lag              5.795   hours"
*                 4.724     4.724     0.357     0.367 c.m/sec"
* 40         HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                0.698    c.m/sec"
*            Hydrograph volume       10379.439    c.m"
*                   4.724     4.724     0.357     0.698"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                0.698    c.m/sec"
*            Hydrograph volume       10379.441    c.m"
*                   4.724     0.698     0.357     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   4.724     0.698     0.698     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                0.698    c.m/sec"
*            Hydrograph volume       10379.441    c.m"
*                   4.724     0.698     0.698     0.698"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   4.724     0.000     0.698     0.698"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments South of GEXR, part of Inlet #1"
*            **************************************************"
* 33         CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.378   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.917   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.533     0.000     0.698     0.698 c.m/sec"
*            Catchment 204          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  20.985     5.900      9.256      minutes"
*            Time to Centroid       120.566    92.933     99.081     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        563.89     811.45     1375.35    c.m"
*            Rainfall losses        42.380     5.660      20.716     mm"
*            Runoff depth           25.706     62.426     47.371     mm"
*            Runoff volume          212.90     743.99     956.89     c.m"
*            Runoff coefficient     0.378      0.917      0.696      "
```

```
*           Maximum flow          0.075      0.505      0.533      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                 0.533     0.533     0.698     0.698"
* 54        POND DESIGN"
*       0.533   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       956.9   Hydrograph volume    c.m"
*          4.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.910   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3100   0.03090   782.000"
*                0.6100    0.1232  1619.000"
*                0.9100    0.2769  2511.000"
*           Peak outflow                  0.030    c.m/sec"
*           Maximum level                 0.302    metre"
*           Maximum storage             760.596    c.m"
*           Centroidal lag                8.594    hours"
*                0.533     0.533     0.030     0.698 c.m/sec"
* 40        HYDROGRAPH   Combine    2"
*         6   Combine "
*         2   Node #"
*             INLET 1"
*           Maximum flow                  0.724    c.m/sec"
*           Hydrograph volume         11301.876    c.m"
*                 0.533     0.533     0.030     0.724"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                 0.533     0.000     0.030     0.724"
* 33        CATCHMENT 205"
*         1   Triangular SCS"
*         3   Specify values"
*         1   SCS method"
*       205   Iron Bridge Manufacturing Property - Woodlot"
*     5.000   % Impervious"
*     1.190   Total Area"
*   255.000   Flow length"
*     1.800   Overland Slope"
*     1.131   Pervious Area"
*   255.000   Pervious length"
*     1.800   Pervious slope"
*     0.060   Impervious Area"
*   255.000   Impervious length"
*     1.800   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    70.000   Pervious SCS Curve No."
*     0.289   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*    10.886   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.915   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                 0.038     0.000     0.030     0.724 c.m/sec"
*           Catchment 205          Pervious   Impervious Total Area "
*           Surface Area           1.131      0.060      1.190      hectare"
*           Time of concentration  59.133     6.445      51.616     minutes"
*           Time to Centroid       167.959    93.681     157.362    minutes"
*           Rainfall depth         68.087     68.087     68.087     mm"
*           Rainfall volume        769.72     40.51      810.23     c.m"
*           Rainfall losses        48.387     5.802      46.257     mm"
*           Runoff depth           19.700     62.284     21.829     mm"
```



```
*           Runoff volume          222.71     37.06      259.77     c.m"
*           Runoff coefficient     0.289      0.915      0.321      "
*           Maximum flow           0.036      0.025      0.038      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                 0.038     0.038     0.030     0.724"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                 0.038     0.038     0.038     0.724"
* 40        HYDROGRAPH   Combine    2"
*         6   Combine "
*         2   Node #"
*             INLET 1"
*           Maximum flow                  0.755    c.m/sec"
*           Hydrograph volume         11561.646    c.m"
*                 0.038     0.038     0.038     0.755"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                 0.038     0.000     0.038     0.755"
* 33        CATCHMENT 206"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       206   Industrial properties at end of Hamilton Road"
*    35.000   % Impervious"
*     2.850   Total Area"
*    50.000   Flow length"
*     1.000   Overland Slope"
*     1.852   Pervious Area"
*    50.000   Pervious length"
*     1.000   Pervious slope"
*     0.997   Impervious Area"
*    50.000   Impervious length"
*     1.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.377   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.900   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                 0.431     0.000     0.038     0.755 c.m/sec"
*           Catchment 206          Pervious   Impervious Total Area "
*           Surface Area           1.852      0.997      2.850      hectare"
*           Time of concentration  23.158     2.892      11.762     minutes"
*           Time to Centroid       123.297    88.679     103.830    minutes"
*           Rainfall depth         68.087     68.087     68.087     mm"
*           Rainfall volume        1261.30    679.16     1940.47    c.m"
*           Rainfall losses        42.393     6.782      29.930     mm"
*           Runoff depth           25.693     61.304     38.157     mm"
*           Runoff volume          475.96     611.51     1087.47    c.m"
*           Runoff coefficient     0.377      0.900      0.560      "
*           Maximum flow           0.156      0.407      0.431      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                 0.431     0.431     0.038     0.755"
* 33        CATCHMENT 207"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       207   Woodlot and Wetland east of Pestells"
*     5.000   % Impervious"
*     5.920   Total Area"
*    65.000   Flow length"
```

```
*        3.000   Overland Slope"
*        5.624   Pervious Area"
*       65.000   Pervious length"
*        3.000   Pervious slope"
*        0.296   Impervious Area"
*       65.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.200   Pervious SCS Curve No."
*        0.292   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.782   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.905   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.399     0.431     0.038     0.755 c.m/sec"
*             Catchment 207          Pervious   Impervious Total Area "
*             Surface Area           5.624      0.296      5.920      hectare"
*             Time of concentration  22.233     2.435      19.452     minutes"
*             Time to Centroid       123.078    87.981     118.149    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        3829.18    201.54     4030.72    c.m"
*             Rainfall losses        48.230     6.445      46.141     mm"
*             Runoff depth           19.856     61.641     21.946     mm"
*             Runoff volume          1116.72    182.46     1299.18    c.m"
*             Runoff coefficient     0.292      0.905      0.322      "
*             Maximum flow           0.373      0.125      0.399      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.399     0.658     0.038     0.755"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.399     0.658     0.658     0.755"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  1.349    c.m/sec"
*             Hydrograph volume         13948.298    c.m"
*                  0.399     0.658     0.658     1.349"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.399     0.000     0.658     1.349"
* 33          CATCHMENT 208"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          208   N.C. Pestell site"
*       75.000   % Impervious"
*        5.530   Total Area"
*      130.000   Flow length"
*        2.000   Overland Slope"
*        1.383   Pervious Area"
*       50.000   Pervious length"
*        3.000   Pervious slope"
*        4.148   Impervious Area"
*      192.000   Impervious length"
*        0.750   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       75.000   Pervious SCS Curve No."
*        0.361   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.467   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
```



```
*        0.913   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.861     0.000     0.658     1.349 c.m/sec"
*             Catchment 208          Pervious   Impervious Total Area "
*             Surface Area           1.383      4.148      5.530      hectare"
*             Time of concentration  17.019     7.069      8.227      minutes"
*             Time to Centroid       115.786    94.541     97.014     minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        941.30     2823.89    3765.18    c.m"
*             Rainfall losses        43.502     5.893      15.295     mm"
*             Runoff depth           24.584     62.193     52.791     mm"
*             Runoff volume          339.88     2579.47    2919.35    c.m"
*             Runoff coefficient     0.361      0.913      0.775      "
*             Maximum flow           0.133      1.799      1.861      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  1.861     1.861     0.658     1.349"
* 54          POND DESIGN"
*        1.861   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       2919.4   Hydrograph volume    c.m"
*           9.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.200   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*             Peak outflow                  0.109    c.m/sec"
*             Maximum level                 0.913    metre"
*             Maximum storage            2376.069    c.m"
*             Centroidal lag               11.644    hours"
*                  1.861     1.861     0.109     1.349 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  1.410    c.m/sec"
*             Hydrograph volume         16491.287    c.m"
*                  1.861     1.861     0.109     1.410"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  1.861     0.000     0.109     1.410"
* 33          CATCHMENT 209"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          209   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
```

```
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.447   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.912   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.259     0.000     0.109     1.410 c.m/sec"
*             Catchment 209          Pervious   Impervious Total Area *
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  36.487     4.177      21.412     minutes"
*             Time to Centroid       139.623    90.510     116.708    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        915.08     392.18     1307.26    c.m"
*             Rainfall losses        37.663     5.996      28.163     mm"
*             Runoff depth           30.424     62.090     39.924     mm"
*             Runoff volume          408.89     357.64     766.53     c.m"
*             Runoff coefficient     0.447      0.912      0.586      "
*             Maximum flow           0.100      0.238      0.259      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.259     0.259     0.109     1.410"
* 54          POND DESIGN"
*         0.259   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         766.5   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                  0.2500   0.04200     7.000"
*                  0.5000   0.09000    71.000"
*                  0.7500    0.1250   220.000"
*                  0.9000    0.1400   346.000"
*                   1.000    0.3110   445.000"
*                   1.100    0.6160   557.000"
*             Peak outflow                  0.114    c.m/sec"
*             Maximum level                 0.673    metre"
*             Maximum storage             174.140    c.m"
*             Centroidal lag                2.233   hours"
*                  0.259     0.259     0.114     1.410 c.m/sec"
* 40          HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*             Maximum flow                  0.114    c.m/sec"
*             Hydrograph volume           766.134    c.m"
*                    0.259     0.259     0.114     0.114"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.259     0.000     0.114     0.114"
* 33          CATCHMENT 210"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         210   Woodlot north of Hamburglr/Badenview lands"
```



```
*           5.000   % Impervious"
*          13.230   Total Area"
*         170.000   Flow length"
*           2.400   Overland Slope"
*          12.568   Pervious Area"
*         170.000   Pervious length"
*           2.400   Pervious slope"
*           0.661   Impervious Area"
*         170.000   Impervious length"
*           2.400   Impervious slope"
*           0.250   Pervious Manning 'n'"
*          70.000   Pervious SCS Curve No."
*           0.289   Pervious Runoff coefficient"
*           0.100   Pervious Ia/S coefficient"
*          10.886   Pervious Initial abstraction"
*           0.015   Impervious Manning 'n'"
*          98.000   Impervious SCS Curve No."
*           0.915   Impervious Runoff coefficient"
*           0.100   Impervious Ia/S coefficient"
*           0.518   Impervious Initial abstraction"
*                     0.552     0.000     0.114     0.114 c.m/sec"
*                Catchment 210          Pervious   Impervious Total Area *
*                Surface Area           12.568     0.661      13.230     hectare"
*                Time of concentration  42.530     4.635      37.123     minutes"
*                Time to Centroid       147.776    91.129     139.693    minutes"
*                Rainfall depth         68.087     68.087     68.087     mm"
*                Rainfall volume        8557.45    450.39     9007.84    c.m"
*                Rainfall losses        48.386     5.789      46.256     mm"
*                Runoff depth           19.701     62.297     21.831     mm"
*                Runoff volume          2476.11    412.10     2888.21    c.m"
*                Runoff coefficient     0.289      0.915      0.321      "
*                Maximum flow           0.520      0.278      0.552      c.m/sec"
* 40             HYDROGRAPH Add Runoff "
*              4   Add Runoff "
*                    0.552     0.552     0.114     0.114"
* 40             HYDROGRAPH Copy to Outflow"
*              8   Copy to Outflow"
*                    0.552     0.552     0.552     0.114"
* 40             HYDROGRAPH   Combine    3"
*              6   Combine "
*              3   Node #"
*                  INLET 2"
*                Maximum flow                  0.666    c.m/sec"
*                Hydrograph volume          3654.344    c.m"
*                      0.552     0.552     0.552     0.666"
* 81             ADD COMMENT==================================================="
*            3   Lines of comment"
*                ************************************************
*                South of GEXR along Nafziger Rd, part of Inlet #3"
*                ************************************************
* 40             HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                      0.552     0.000     0.552     0.666"
* 33             CATCHMENT 211"
*              1   Triangular SCS"
*              1   Equal length"
*              1   SCS method"
*            211   Cultivated lands east of Nafziger Road"
*          1.000   % Impervious"
*          7.310   Total Area"
*        120.000   Flow length"
*          3.300   Overland Slope"
*          7.237   Pervious Area"
*        120.000   Pervious length"
*          3.300   Pervious slope"
*          0.073   Impervious Area"
*        120.000   Impervious length"
```

```
*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.378   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.904   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.552     0.000     0.552     0.666 c.m/sec"
*            Catchment 211          Pervious   Impervious Total Area "
*            Surface Area           7.237      0.073      7.310      hectare"
*            Time of concentration  27.370     3.418      26.805     minutes"
*            Time to Centroid       128.573    89.462     127.650    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        4927.35    49.77      4977.12    c.m"
*            Rainfall losses        42.374     6.553      42.015     mm"
*            Runoff depth           25.713     61.534     26.071     mm"
*            Runoff volume          1860.81    44.98      1905.79    c.m"
*            Runoff coefficient     0.378      0.904      0.383      "
*            Maximum flow           0.546      0.029      0.552      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.552     0.552     0.552     0.666"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               0.552     0.552     0.552     0.666"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.552    c.m/sec"
*           Hydrograph volume          1905.792    c.m"
*               0.552     0.552     0.552     0.552"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               0.552     0.000     0.552     0.552"
* 33         CATCHMENT 212"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        212   Alpine Solutions - East SMWP"
*     40.000   % Impervious"
*      2.560   Total Area"
*    150.000   Flow length"
*      1.500   Overland Slope"
*      1.536   Pervious Area"
*    180.000   Pervious length"
*      1.500   Pervious slope"
*      1.024   Impervious Area"
*    131.000   Impervious length"
*      1.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     80.000   Pervious SCS Curve No."
*      0.447   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.350   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.915   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*               0.449     0.000     0.552     0.552 c.m/sec"
*            Catchment 212          Pervious   Impervious Total Area "
*            Surface Area           1.536      1.024      2.560      hectare"
```



```
*            Time of concentration  40.705     4.565      19.846     minutes"
*            Time to Centroid       145.013    91.029     113.855    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1045.81    697.21     1743.01    c.m"
*            Rainfall losses        37.663     5.794      24.915     mm"
*            Runoff depth           30.423     62.293     43.171     mm"
*            Runoff volume          467.30     637.88     1105.18    c.m"
*            Runoff coefficient     0.447      0.915      0.634      "
*            Maximum flow           0.103      0.429      0.449      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.449     0.449     0.552     0.552"
* 54         POND DESIGN"
*       0.449   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1105.2   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*              Peak outflow                  0.099    c.m/sec"
*              Maximum level                 0.568    metre"
*              Maximum storage             487.205    c.m"
*              Centroidal lag                2.894    hours"
*                   0.449     0.449     0.099     0.552 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                  0.646    c.m/sec"
*           Hydrograph volume          3010.588    c.m"
*               0.449     0.449     0.099     0.646"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               0.449     0.000     0.099     0.646"
* 33         CATCHMENT 213"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        213   Woodlot East and West of Nafziger Road"
*      3.000   % Impervious"
*     13.460   Total Area"
*    140.000   Flow length"
*      3.600   Overland Slope"
*     13.056   Pervious Area"
*    140.000   Pervious length"
*      3.600   Pervious slope"
*      0.404   Impervious Area"
*    140.000   Impervious length"
*      3.600   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     70.100   Pervious SCS Curve No."
*      0.291   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     10.834   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.901   Impervious Runoff coefficient"
```

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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.667     0.000     0.099     0.646 c.m/sec"
*            Catchment 213          Pervious   Impervious Total Area *
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  33.436     3.653      30.830     minutes"
*            Time to Centroid       136.715    89.805     132.611    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        8889.51    274.93     9164.44    c.m"
*            Rainfall losses        48.294     6.717      47.046     mm"
*            Runoff depth           19.793     61.370     21.040     mm"
*            Runoff volume          2584.19    247.81     2832.00    c.m"
*            Runoff coefficient     0.291      0.901      0.309      "
*            Maximum flow           0.644      0.162      0.667      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.667     0.667     0.099     0.646"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.667     0.667     0.667     0.646"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.310    c.m/sec"
*            Hydrograph volume          5842.592    c.m"
*                 0.667     0.667     0.667     1.310"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.667     0.000     0.667     1.310"
* 33         CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.504   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.915   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.638     0.000     0.667     1.310 c.m/sec"
*            Catchment 214          Pervious   Impervious Total Area *
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  15.557     5.560      7.253      minutes"
*            Time to Centroid       112.209    92.435     95.783     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        909.98     2460.31    3370.28    c.m"
*            Rainfall losses        33.745     5.768      13.322     mm"
*            Runoff depth           34.341     62.318     54.764     mm"
*            Runoff volume          458.97     2251.87    2710.84    c.m"
*            Runoff coefficient     0.504      0.915      0.804      "
*            Maximum flow           0.196      1.535      1.638      c.m/sec"
```



```
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.638     1.638     0.667     1.310"
* 54         POND DESIGN"
*       1.638   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2710.8   Hydrograph volume    c.m"
*         15.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.450   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00700   248.000"
*                0.2500   0.00900   418.000"
*                0.3500   0.01100   593.000"
*                0.4500   0.01300   775.000"
*                0.5500   0.01500   964.000"
*                0.6500   0.01600  1161.000"
*                0.7500   0.01700  1364.000"
*                0.8500   0.01900  1575.000"
*                0.9500   0.02000  1795.000"
*                 1.050   0.05600  2025.000"
*                 1.150    0.2080  2263.000"
*                 1.250    0.4600  2511.000"
*                 1.350     2.766  2768.000"
*                 1.450     6.856  3033.000"
*            Peak outflow                  0.142    c.m/sec"
*            Maximum level                 1.107    metre"
*            Maximum storage            2159.934    c.m"
*            Centroidal lag               15.631    hours"
*                 1.638     1.638     0.142     1.310 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.350    c.m/sec"
*            Hydrograph volume          7892.712    c.m"
*                 1.638     1.638     0.142     1.350"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.638     0.000     0.142     1.350"
* 33         CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.378   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.902   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                 0.546     0.000     0.142     1.350 c.m/sec"
*            Catchment 215          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  29.358     3.667      12.364     minutes"
*            Time to Centroid       131.072    89.823     103.787    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1071.00    876.27     1947.27    c.m"
*            Rainfall losses        42.379     6.690      26.319     mm"
*            Runoff depth           25.708     61.397     41.768     mm"
*            Runoff volume          404.39     790.17     1194.56    c.m"
*            Runoff coefficient     0.378      0.902      0.613      "
*            Maximum flow           0.114      0.517      0.546      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.546     0.546     0.142     1.350"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.546     0.546     0.546     1.350"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                 1.567    c.m/sec"
*           Hydrograph volume         9087.274    c.m"
*                 0.546     0.546     0.546     1.567"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.546     0.000     0.546     1.567"
* 33         CATCHMENT 216"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        216   Industrial lands west of Nafziger Road"
*       45.000 % Impervious"
*        2.860 Total Area"
*      110.000 Flow length"
*        2.000 Overland Slope"
*        1.573 Pervious Area"
*      110.000 Pervious length"
*        2.000 Pervious slope"
*        1.287 Impervious Area"
*      110.000 Impervious length"
*        2.000 Impervious slope"
*        0.250 Pervious Manning 'n'"
*       76.000 Pervious SCS Curve No."
*        0.378 Pervious Runoff coefficient"
*        0.100 Pervious Ia/S coefficient"
*        8.021 Pervious Initial abstraction"
*        0.015 Impervious Manning 'n'"
*       98.000 Impervious SCS Curve No."
*        0.905 Impervious Runoff coefficient"
*        0.100 Impervious Ia/S coefficient"
*        0.518 Impervious Initial abstraction"
*                 0.549     0.000     0.546     1.567 c.m/sec"
*            Catchment 216          Pervious   Impervious Total Area "
*            Surface Area           1.573      1.287      2.860      hectare"
*            Time of concentration  30.189     3.771      12.694     minutes"
*            Time to Centroid       132.111    89.963     104.200    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1071.00    876.27     1947.27    c.m"
*            Rainfall losses        42.371     6.468      26.215     mm"
*            Runoff depth           25.716     61.618     41.872     mm"
*            Runoff volume          404.51     793.03     1197.54    c.m"
*            Runoff coefficient     0.378      0.905      0.615      "
*            Maximum flow           0.111      0.521      0.549      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
```



```
*          4   Add Runoff "
*                 0.549     0.549     0.546     1.567"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.549     0.549     0.549     1.567"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                 1.780    c.m/sec"
*           Hydrograph volume         10284.808    c.m"
*                 0.549     0.549     0.549     1.780"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.549     0.000     0.549     1.780"
* 33         CATCHMENT 217"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        217   Existing ROW west of Nafziger Road"
*       75.000 % Impervious"
*        0.730 Total Area"
*       90.000 Flow length"
*        2.100 Overland Slope"
*        0.183 Pervious Area"
*       90.000 Pervious length"
*        2.100 Pervious slope"
*        0.548 Impervious Area"
*       90.000 Impervious length"
*        2.100 Impervious slope"
*        0.250 Pervious Manning 'n'"
*       76.000 Pervious SCS Curve No."
*        0.377 Pervious Runoff coefficient"
*        0.100 Pervious Ia/S coefficient"
*        8.021 Pervious Initial abstraction"
*        0.015 Impervious Manning 'n'"
*       98.000 Impervious SCS Curve No."
*        0.904 Impervious Runoff coefficient"
*        0.100 Impervious Ia/S coefficient"
*        0.518 Impervious Initial abstraction"
*                 0.220     0.000     0.549     1.780 c.m/sec"
*            Catchment 217          Pervious   Impervious Total Area "
*            Surface Area           0.183      0.548      0.730      hectare"
*            Time of concentration  26.376     3.294      6.114      minutes"
*            Time to Centroid       127.323    89.262     93.912     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        124.26     372.77     497.03     c.m"
*            Rainfall losses        42.384     6.530      15.494     mm"
*            Runoff depth           25.702     61.556     52.593     mm"
*            Runoff volume          46.91      337.02     383.93     c.m"
*            Runoff coefficient     0.377      0.904      0.772      "
*            Maximum flow           0.014      0.217      0.220      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.220     0.220     0.549     1.780"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.220     0.220     0.220     1.780"
* 40         HYDROGRAPH   Combine    4"
*          6   Combine "
*          4   Node #"
*              INLET 3"
*           Maximum flow                 1.873    c.m/sec"
*           Hydrograph volume         10668.730    c.m"
*                 0.220     0.220     0.220     1.873"
* 40         HYDROGRAPH   Confluence    2"
*          7   Confluence "
```

```
*           2   Node #"
*               INLET 1"
*            Maximum flow                  1.410    c.m/sec"
*            Hydrograph volume         16491.287    c.m"
*                  0.220     1.410     0.220     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.220     1.410     1.410     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  1.410    c.m/sec"
*            Hydrograph volume         16491.287    c.m"
*                  0.220     1.410     1.410     1.410"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.666    c.m/sec"
*            Hydrograph volume          3654.344    c.m"
*                  0.220     0.666     1.410     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.220     0.666     0.666     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  2.016    c.m/sec"
*            Hydrograph volume         20145.652    c.m"
*                  0.220     0.666     0.666     2.016"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.873    c.m/sec"
*            Hydrograph volume         10668.730    c.m"
*                  0.220     1.873     0.666     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.220     1.873     1.873     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  3.850    c.m/sec"
*            Hydrograph volume         30814.379    c.m"
*                  0.220     1.873     1.873     3.850"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.220     0.000     1.873     3.850"
* 33         CATCHMENT 223"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         223   New Hamburglr Inc. lands"
*      85.000   % Impervious"
*      12.570   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       1.885   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      10.684   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
```



```
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.378   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.911   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 4.433     0.000     1.873     3.850 c.m/sec"
*            Catchment 223          Pervious   Impervious Total Area "
*            Surface Area           1.885      10.684     12.570     hectare"
*            Time of concentration  32.951     4.116      6.080      minutes"
*            Time to Centroid       135.571    90.424     93.499     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1283.77    7274.70    8558.47    c.m"
*            Rainfall losses        42.377     6.029      11.481     mm"
*            Runoff depth           25.710     62.058     56.606     mm"
*            Runoff volume          484.76     6630.55    7115.31    c.m"
*            Runoff coefficient     0.378      0.911      0.831      "
*            Maximum flow           0.124      4.404      4.433      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  4.433     4.433     1.873     3.850"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  4.433     4.433     4.433     3.850"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  7.791    c.m/sec"
*            Hydrograph volume         37929.688    c.m"
*                  4.433     4.433     4.433     7.791"
* 81         ADD COMMENT==========================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments east of Hamilton Road, part of Inlet #4"
*              **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  4.433     0.000     4.433     7.791"
* 33         CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*      85.000   % Impervious"
*       2.060   Total Area"
*     230.000   Flow length"
*       1.700   Overland Slope"
*       0.309   Pervious Area"
*     230.000   Pervious length"
*       3.000   Pervious slope"
*       1.751   Impervious Area"
*     230.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.410   Pervious Runoff coefficient"
*       0.060   Pervious Ia/S coefficient"
*       4.813   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.914   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

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*       0.518   Impervious Initial abstraction"
*                   0.746     0.000     4.433     7.791 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  39.972     5.197      7.747      minutes"
*            Time to Centroid       144.219    91.946     95.778     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        210.39     1192.19    1402.58    c.m"
*            Rainfall losses        40.188     5.854      11.004     mm"
*            Runoff depth           27.899     62.232     57.082     mm"
*            Runoff volume          86.21      1089.68    1175.89    c.m"
*            Runoff coefficient     0.410      0.914      0.838      "
*            Maximum flow           0.019      0.742      0.746      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.746     0.746     4.433     7.791"
* 54         POND DESIGN"
*      0.746   Current peak flow    c.m/sec"
*      4.094   Target outflow    c.m/sec"
*     1175.9   Hydrograph volume    c.m"
*        15.   Number of stages"
*    344.700   Minimum water level    metre"
*    345.400   Maximum water level    metre"
*      0.000   Starting water level    metre"
*          0   Keep Design Data: 1 = True; 0 = False"
*                Level Discharge    Volume"
*              344.700    0.1250     0.000"
*              344.750    0.1270     9.000"
*              344.800    0.1280    35.000"
*              344.850    0.1300    77.000"
*              344.900    0.1450   136.000"
*              344.950    0.1820   209.000"
*              345.000    0.2220   297.000"
*              345.050    0.2690   400.000"
*              345.100    0.2710   519.000"
*              345.150    0.2740   653.000"
*              345.200    0.2760   804.000"
*              345.250    0.2790   971.000"
*              345.300    0.2820  1154.000"
*              345.350    0.2840  1355.000"
*              345.400    0.2860  1571.000"
*           Peak outflow                  0.269    c.m/sec"
*           Maximum level               345.053    metre"
*           Maximum storage             406.654    c.m"
*           Centroidal lag                1.876    hours"
*                0.746     0.746     0.269     7.791 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*           Maximum flow                  7.992    c.m/sec"
*           Hydrograph volume         39105.105    c.m"
*                0.746     0.746     0.269     7.992"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.746     0.000     0.269     7.992"
* 33         CATCHMENT 219"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         219   N.C. Pestells Head Office & other Industrial"
*      85.000   % Impervious"
*       1.280   Total Area"
*      75.000   Flow length"
*       1.500   Overland Slope"
*       0.192   Pervious Area"
*      75.000   Pervious length"
```



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*       3.000   Pervious slope"
*       1.088   Impervious Area"
*      75.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.242   Pervious Runoff coefficient"
*       0.281   Pervious Ia/S coefficient"
*      22.539   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.902   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.453     0.000     0.269     7.992 c.m/sec"
*            Catchment 219          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  27.653     2.653      3.783      minutes"
*            Time to Centroid       132.525    88.320     90.319     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        130.73     740.78     871.51     c.m"
*            Rainfall losses        51.605     6.654      13.397     mm"
*            Runoff depth           16.481     61.432     54.690     mm"
*            Runoff volume          31.64      668.38     700.03     c.m"
*            Runoff coefficient     0.242      0.902      0.803      "
*            Maximum flow           0.009      0.453      0.453      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.453     0.453     0.269     7.992"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.453     0.453     0.453     7.992"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*           Maximum flow                  8.396    c.m/sec"
*           Hydrograph volume         39805.105    c.m"
*                0.453     0.453     0.453     8.396"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.453     0.000     0.453     8.396"
* 33         CATCHMENT 220"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         220   Northwest corner of Nithview Heights"
*       8.000   % Impervious"
*       0.500   Total Area"
*      60.000   Flow length"
*       5.000   Overland Slope"
*       0.460   Pervious Area"
*      60.000   Pervious length"
*       5.000   Pervious slope"
*       0.040   Impervious Area"
*      60.000   Impervious length"
*       5.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.346   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.908   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```

```
*                0.048     0.000     0.453     8.396 c.m/sec"
*             Catchment 220          Pervious   Impervious Total Area "
*             Surface Area           0.460      0.040      0.500      hectare"
*             Time of concentration  16.651     1.991      13.924     minutes"
*             Time to Centroid       115.546    87.300     110.293    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        313.20     27.23      340.43     c.m"
*             Rainfall losses        44.551     6.253      41.487     mm"
*             Runoff depth           23.535     61.833     26.599     mm"
*             Runoff volume          108.26     24.73      133.00     c.m"
*             Runoff coefficient     0.346      0.908      0.391      "
*             Maximum flow           0.043      0.017      0.048      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.048     0.048     0.453     8.396"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.048     0.048     0.048     8.396"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  8.428    c.m/sec"
*             Hydrograph volume         39938.109    c.m"
*                0.048     0.048     0.048     8.428"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.048     0.000     0.048     8.428"
* 33          CATCHMENT 221"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         221   Proposed ROW from Hamilton Road"
*      81.500   % Impervious"
*       0.810   Total Area"
*      40.000   Flow length"
*       2.000   Overland Slope"
*       0.150   Pervious Area"
*      40.000   Pervious length"
*       2.000   Pervious slope"
*       0.660   Impervious Area"
*      40.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.377   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.908   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.286     0.000     0.048     8.428 c.m/sec"
*             Catchment 221          Pervious   Impervious Total Area "
*             Surface Area           0.150      0.660      0.810      hectare"
*             Time of concentration  16.453     2.055      3.294      minutes"
*             Time to Centroid       114.904    87.397     89.763     minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        102.03     449.47     551.50     c.m"
*             Rainfall losses        42.440     6.232      12.930     mm"
*             Runoff depth           25.646     61.855     55.156     mm"
*             Runoff volume          38.43      408.33     446.76     c.m"
*             Runoff coefficient     0.377      0.908      0.810      "
*             Maximum flow           0.015      0.284      0.286      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
```



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*                0.286     0.286     0.048     8.428"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.286     0.286     0.286     8.428"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  8.674    c.m/sec"
*             Hydrograph volume         40384.867    c.m"
*                0.286     0.286     0.286     8.674"
* 81          ADD COMMENT================================================*
*           3   Lines of comment"
*               ************************************************"
*               Catchment to Inlet #5"
*               ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.286     0.000     0.286     8.674"
* 33          CATCHMENT 222"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         222   Rear yards from Hamilton Heights Subdivision"
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.376   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.902   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.147     0.000     0.286     8.674 c.m/sec"
*             Catchment 222          Pervious   Impervious Total Area "
*             Surface Area           1.026      0.054      1.080      hectare"
*             Time of concentration  9.612      1.200      8.668      minutes"
*             Time to Centroid       106.340    86.234     104.084    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        698.57     36.77      735.33     c.m"
*             Rainfall losses        42.515     6.669      40.722     mm"
*             Runoff depth           25.572     61.417     27.364     mm"
*             Runoff volume          262.37     33.17      295.53     c.m"
*             Runoff coefficient     0.376      0.902      0.402      "
*             Maximum flow           0.136      0.024      0.147      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.147     0.147     0.286     8.674"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.147     0.147     0.147     8.674"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  8.802    c.m/sec"
```

```
*            Hydrograph volume          40680.406    c.m"
*                  0.147     0.147     0.147     8.802"
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             **************************************************"
*             Badenview Developments Inc. lands"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.147     0.000     0.147     8.802"
* 33         CATCHMENT 224"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         224   Badenview lands"
*      85.000   % Impervious"
*      43.200   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       6.480   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      36.720   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.378   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.911   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 15.234     0.000     0.147     8.802 c.m/sec"
*            Catchment 224          Pervious   Impervious Total Area "
*            Surface Area           6.480     36.720     43.200     hectare"
*            Time of concentration  32.951     4.116      6.080      minutes"
*            Time to Centroid       135.571    90.424     93.499     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        0.4412     2.5001     2.9413     ha-m"
*            Rainfall losses        42.377     6.029      11.481     mm"
*            Runoff depth           25.710     62.058     56.606     mm"
*            Runoff volume          0.1666     2.2788     2.4454     ha-m"
*            Runoff coefficient     0.378      0.911      0.831      "
*            Maximum flow           0.426      15.136     15.234     c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 15.234    15.234     0.147     8.802"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 15.234    15.234    15.234     8.802"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                24.036    c.m/sec"
*            Hydrograph volume         65134.020    c.m"
*                  15.234    15.234    15.234    24.036"
* 40         HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                24.036    c.m/sec"
*            Hydrograph volume         65134.020    c.m"
*                  15.234    24.036    15.234     0.000"
```



```
* 81         ADD COMMENT==========================================="
*          7  Lines of comment"
*             **************************************************"
*             **************************************************"
*             **                                              **"
*             **          PROPOSED SWM POND DESIGN            **"
*             **                                              **"
*             **************************************************"
*             **************************************************"
* 54         POND DESIGN"
*       24.036   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*      65134.0   Hydrograph volume    c.m"
*         36.    Number of stages"
*      334.550   Minimum water level    metre"
*      337.850   Maximum water level    metre"
*      334.550   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                334.550     0.000     0.000"
*                334.600   0.00400  1187.000"
*                334.700   0.02830  3607.000"
*                334.800   0.06350  6090.000"
*                334.900   0.08900  8636.000"
*                335.000    0.1880  11246.00"
*                335.100    0.3430  13920.00"
*                335.200    0.5360  16658.00"
*                335.300    0.7599  19459.00"
*                335.400     1.011  22323.00"
*                335.500     1.286  25249.00"
*                335.600     1.583  28239.00"
*                335.700     1.901  31294.00"
*                335.800     2.238  34414.00"
*                335.900     2.593  37599.00"
*                336.000     2.966  40851.00"
*                336.100     3.427  43465.00"
*                336.200     3.959  46848.00"
*                336.300     4.543  50286.00"
*                336.400     5.171  53779.00"
*                336.500     5.840  57328.00"
*                336.600     6.544  60933.00"
*                336.700     7.284  64595.00"
*                336.800     8.055  68313.00"
*                336.900     8.858  72088.00"
*                337.000     9.690  75920.00"
*                337.100    10.550  79809.00"
*                337.200    11.437  83755.00"
*                337.300    12.351  87759.00"
*                337.400    13.291  91821.00"
*                337.500    14.255  95940.00"
*                337.550    14.746  98022.00"
*                337.600    16.027  100118.0"
*                337.700    20.027  104352.0"
*                337.800    25.280  108643.0"
*                337.850    28.277  110810.0"
*             Peak outflow                  2.641    c.m/sec"
*             Maximum level               335.913    metre"
*             Maximum storage           38018.945    c.m"
*             Centroidal lag               11.281    hours"
*                 15.234    24.036     2.641     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*             Maximum flow                  2.641    c.m/sec"
*             Hydrograph volume         56903.836    c.m"
*                   15.234    24.036     2.641     2.641"
```

```
* 81          ADD COMMENT==================================================*
*           3  Lines of comment"
*              **************************************************"
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                   15.234     0.000     2.641     2.641"
* 33          CATCHMENT 260"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           260  Hamilton Heights Subdivision"
*        46.000  % Impervious"
*         8.160  Total Area"
*        50.000  Flow length"
*         1.000  Overland Slope"
*         4.406  Pervious Area"
*        50.000  Pervious length"
*         3.000  Pervious slope"
*         3.754  Impervious Area"
*       232.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.377  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.915  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   1.768     0.000     2.641     2.641 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  16.656     6.432      9.764      minutes"
*              Time to Centroid       115.158    93.663     100.668    minutes"
*              Rainfall depth         68.087     68.087     68.087     mm"
*              Rainfall volume        3000.16    2555.69    5555.86    c.m"
*              Rainfall losses        42.435     5.798      25.582     mm"
*              Runoff depth           25.651     62.288     42.504     mm"
*              Runoff volume          1130.29    2338.05    3468.34    c.m"
*              Runoff coefficient     0.377      0.915      0.624      "
*              Maximum flow           0.450      1.574      1.768      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                   1.768     1.768     2.641     2.641"
* 33          CATCHMENT 261"
*             1  Triangular SCS"
*             3  Specify values"
*             1  SCS method"
*           261  Klassen Bronze Property"
*        32.000  % Impervious"
*         2.350  Total Area"
*       100.000  Flow length"
*         2.500  Overland Slope'
*         1.598  Pervious Area"
*        50.000  Pervious length"
*         2.500  Pervious slope'
*         0.752  Impervious Area"
*       164.000  Impervious length"
*         1.500  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        76.000  Pervious SCS Curve No."
*         0.377  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
```



```
*         8.021  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.914  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   0.390     1.768     2.641     2.641 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  17.592     5.223      11.005     minutes"
*              Time to Centroid       116.320    91.982     103.358    minutes"
*              Rainfall depth         68.087     68.087     68.087     mm"
*              Rainfall volume        1088.02    512.01     1600.03    c.m"
*              Rainfall losses        42.388     5.859      30.699     mm"
*              Runoff depth           25.698     62.228     37.388     mm"
*              Runoff volume          410.66     467.95     878.61     c.m"
*              Runoff coefficient     0.377      0.914      0.549      "
*              Maximum flow           0.157      0.319      0.390      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4  Add Runoff "
*                   0.390     2.158     2.641     2.641"
* 40          HYDROGRAPH Copy to Outflow"
*             8  Copy to Outflow"
*                   0.390     2.158     2.158     2.641"
* 40          HYDROGRAPH   Combine    12"
*             6  Combine "
*            12  Node #"
*                d/s of Proposed SWMF"
*                Maximum flow                 2.905    c.m/sec"
*                Hydrograph volume        61250.793    c.m"
*                   0.390     2.158     2.158     2.905"
* 40          HYDROGRAPH Start - New Tributary"
*             2  Start - New Tributary"
*                   0.390     0.000     2.158     2.905"
* 33          CATCHMENT 225"
*             1  Triangular SCS"
*             1  Equal length"
*             1  SCS method"
*           225  HWY 7/8 and north ditching"
*        30.000  % Impervious"
*         1.670  Total Area"
*        75.000  Flow length"
*         2.000  Overland Slope"
*         1.169  Pervious Area"
*        75.000  Pervious length"
*         2.000  Pervious slope"
*         0.501  Impervious Area"
*        75.000  Impervious length"
*         2.000  Impervious slope"
*         0.250  Pervious Manning 'n'"
*        74.000  Pervious SCS Curve No."
*         0.346  Pervious Runoff coefficient"
*         0.100  Pervious Ia/S coefficient"
*         8.924  Pervious Initial abstraction"
*         0.015  Impervious Manning 'n'"
*        98.000  Impervious SCS Curve No."
*         0.902  Impervious Runoff coefficient"
*         0.100  Impervious Ia/S coefficient"
*         0.518  Impervious Initial abstraction"
*                   0.218     0.000     2.158     2.905 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  25.059     2.996      13.417     minutes"
*              Time to Centroid       125.959    88.829     106.366    minutes"
*              Rainfall depth         68.087     68.087     68.087     mm"
*              Rainfall volume        795.93     341.11     1137.04    c.m"
*              Rainfall losses        44.524     6.659      33.164     mm"
```

```
*            Runoff depth          23.563     61.427     34.922     mm"
*            Runoff volume         275.45     307.75     583.20     c.m"
*            Runoff coefficient    0.346      0.902      0.513      "
*            Maximum flow          0.084      0.203      0.218      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.218     0.218     2.158     2.905"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.218     0.218     0.218     2.905"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                3.057    c.m/sec"
*            Hydrograph volume          61833.992   c.m"
*                 0.218     0.218     0.218     3.057"
* 81         ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ************************************************************"
*              Western catchment along Hamilton Road, diverted to Inlet #6"
*              ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.218     0.000     0.218     3.057"
* 33         CATCHMENT 270"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         270   Industrial/Residential area along Hamilton Road"
*       55.000  % Impervious"
*        8.450  Total Area"
*       45.000  Flow length"
*        2.000  Overland Slope"
*        3.802  Pervious Area"
*       30.000  Pervious length"
*        3.000  Pervious slope"
*        4.648  Impervious Area"
*      235.000  Impervious length"
*        1.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.377  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.915  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                 2.247     0.000     0.218     3.057 c.m/sec"
*              Catchment 270          Pervious   Impervious Total Area *
*              Surface Area           3.802      4.648      8.450      hectare"
*              Time of concentration  12.259     6.482      7.938      minutes"
*              Time to Centroid       109.638    93.737     97.744     minutes"
*              Rainfall depth         68.087     68.087     68.087     mm"
*              Rainfall volume        2588.99    3164.32    5753.31    c.m"
*              Rainfall losses        42.444     5.817      22.299     mm"
*              Runoff depth           25.643     62.270     45.788     mm"
*              Runoff volume          975.07     2893.99    3869.06    c.m"
*              Runoff coefficient     0.377      0.915      0.672      "
*              Maximum flow           0.439      1.946      2.247      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 2.247     2.247     0.218     3.057"
* 56         DIVERSION"
*           6   Node number"
```



```
*         1.560   Overflow threshold"
*         1.000   Required diverted fraction"
*             0   Conduit type; 1=Pipe;2=Channel"
*              Peak of diverted flow          0.687    c.m/sec"
*              Volume of diverted flow      347.180    c.m"
*              DIV00006.025hyd"
*              Major flow at 6"
*                   2.247     2.247     1.560     3.057 c.m/sec"
* 40           HYDROGRAPH   Combine    9"
*             6   Combine "
*             9   Node #"
*                 NODE B"
*              Maximum flow                  1.560    c.m/sec"
*              Hydrograph volume          3521.877    c.m"
*                   2.247     2.247     1.560     1.560"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   2.247     0.000     1.560     1.560"
* 47           FILEI_O Read/Open DIV00006.025hyd"
*             1   1=read/open; 2=write/save"
*             2   1=rainfall; 2=hydrograph"
*             1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*              DIV00006.025hyd"
*              Major flow at 6"
*              Total volume                347.180    c.m"
*              Maximum flow                  0.687    c.m/sec"
*                   0.687     0.000     1.560     1.560 c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.687     0.687     1.560     1.560"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   0.687     0.687     0.687     1.560"
* 40           HYDROGRAPH   Combine    12"
*             6   Combine "
*            12   Node #"
*                 d/s of Proposed SWMF"
*              Maximum flow                  3.527    c.m/sec"
*              Hydrograph volume          62181.180   c.m"
*                   0.687     0.687     0.687     3.527"
* 40           HYDROGRAPH   Confluence    12"
*             7   Confluence "
*            12   Node #"
*                 d/s of Proposed SWMF"
*              Maximum flow                  3.527    c.m/sec"
*              Hydrograph volume          62181.180   c.m"
*                   0.687     3.527     0.687     0.000"
* 54           POND DESIGN"
*         3.527   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*     62181.2     Hydrograph volume    c.m"
*           8.    Number of stages"
*       334.290   Minimum water level    metre"
*       337.000   Maximum water level    metre"
*       334.290   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 334.290     0.000     0.000"
*                 334.500     0.2540    5.000"
*                 335.000     1.303   110.000"
*                 335.500     2.800   674.000"
*                 336.000     4.639  1910.000"
*                 336.500     6.480  3748.000"
*                 336.550     6.665  3967.000"
*                 337.000    23.484  6569.000"
*              Peak outflow                  2.930    c.m/sec"
*              Maximum level               335.537    metre"
```

```
*           Maximum storage            766.216    c.m"
*           Centroidal lag               6.312   hours"
*                0.687     3.527     2.930     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*          5   Next link "
*                0.687     2.930     2.930     0.000"
* 56         DIVERSION"
*          7   Node number"
*       7.170  Overflow threshold"
*       1.000  Required diverted fraction"
*          0   Conduit type; 1=Pipe;2=Channel"
*           Peak of diverted flow        0.000    c.m/sec"
*           Volume of diverted flow      0.000    c.m"
*           DIV00007.025hyd"
*           Major flow at 7"
*                0.687     2.930     2.930     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    8"
*          6   Combine "
*          8   Node #"
*              NODE A"
*           Maximum flow                 2.930    c.m/sec"
*           Hydrograph volume        62194.930    c.m"
*                0.687     2.930     2.930     2.930"
* 81         ADD COMMENT==================================================="
*        3   Lines of comment"
*           ************************************************"
*           Catchments South of Hwy 7/8"
*           ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.687     0.000     2.930     2.930"
* 33         CATCHMENT 280"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        280   Northeast portion of Maple Leaf Foods property"
*     26.000   % Impervious"
*      0.700   Total Area"
*     45.000   Flow length"
*      1.500   Overland Slope"
*      0.518   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      0.182   Impervious Area"
*     68.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     79.000   Pervious SCS Curve No."
*      0.427   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      6.752   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.903   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.134     0.000     2.930     2.930 c.m/sec"
*           Catchment 280          Pervious   Impervious Total Area "
*           Surface Area           0.518      0.182      0.700      hectare"
*           Time of concentration  10.196     3.478      7.332      minutes"
*           Time to Centroid       106.319    89.555     99.171     minutes"
*           Rainfall depth         68.087     68.087     68.087     mm"
*           Rainfall volume        352.69     123.92     476.61     c.m"
*           Rainfall losses        39.020     6.588      30.587     mm"
*           Runoff depth           29.067     61.498     37.499     mm"
*           Runoff volume          150.57     111.93     262.49     c.m"
*           Runoff coefficient     0.427      0.903      0.551      "
```



```
*           Maximum flow           0.077      0.073      0.134      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.134     0.134     2.930     2.930"
* 54         POND DESIGN"
*       0.134   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       262.5   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
*                0.4500   0.00800    69.000"
*                0.6500   0.01000   178.000"
*                0.7000    0.1060   208.000"
*                0.7500    0.2810   240.000"
*           Peak outflow                 0.019    c.m/sec"
*           Maximum level                0.655    metre"
*           Maximum storage            180.740    c.m"
*           Centroidal lag               4.706   hours"
*                0.134     0.134     0.019     2.930 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                 1.568    c.m/sec"
*           Hydrograph volume         3784.229    c.m"
*                0.134     0.134     0.019     1.568"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.134     0.000     0.019     1.568"
* 33         CATCHMENT 281"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        281   Western portion of John Bear property"
*     93.000   % Impervious"
*      1.870   Total Area"
*    120.000   Flow length"
*      1.000   Overland Slope"
*      0.131   Pervious Area"
*     20.000   Pervious length"
*      2.000   Pervious slope"
*      1.739   Impervious Area"
*    112.000   Impervious length"
*      1.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     65.000   Pervious SCS Curve No."
*      0.227   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*     13.677   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.915   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.735     0.000     0.019     1.568 c.m/sec"
*           Catchment 281          Pervious   Impervious Total Area "
*           Surface Area           0.131      1.739      1.870      hectare"
*           Time of concentration  14.185     4.693      4.867      minutes"
*           Time to Centroid       114.335    91.211     91.635     minutes"
```

```
*            Rainfall depth          68.087     68.087     68.087     mm"
*            Rainfall volume         89.13      1184.09    1273.22    c.m"
*            Rainfall losses         52.618     5.788      9.066      mm"
*            Runoff depth            15.468     62.298     59.020     mm"
*            Runoff volume           20.25      1083.43    1103.68    c.m"
*            Runoff coefficient      0.227      0.915      0.867      "
*            Maximum flow            0.008      0.731      0.735      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.735     0.735     0.019     1.568"
* 54         POND DESIGN"
*       0.735   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1103.7   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.481    c.m/sec"
*            Maximum level                 1.626    metre"
*            Maximum storage             375.668    c.m"
*            Centroidal lag                1.876   hours"
*                 0.735     0.735     0.481     1.568 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.049    c.m/sec"
*            Hydrograph volume          4893.313    c.m"
*                 0.735     0.735     0.481     2.049"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.735     0.000     0.481     2.049"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.227   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.904   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.339     0.000     0.481     2.049 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  16.020     3.343      4.626      minutes"
*            Time to Centroid       116.535    89.341     92.093     minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        255.39     568.45     823.85     c.m"
*            Rainfall losses        52.658     6.531      20.830     mm"
*            Runoff depth           15.428     61.556     47.256     mm"
*            Runoff volume          57.87      513.93     571.80     c.m"
*            Runoff coefficient     0.227      0.904      0.694      "
*            Maximum flow           0.023      0.330      0.339      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.339     0.339     0.481     2.049"
* 54         POND DESIGN"
*       0.339   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       571.8   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.072    c.m/sec"
*            Maximum level                 0.915    metre"
*            Maximum storage             344.420    c.m"
*            Centroidal lag                3.189   hours"
*                 0.339     0.339     0.072     2.049 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.097    c.m/sec"
*            Hydrograph volume          5465.156    c.m"
*                 0.339     0.339     0.072     2.097"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.339     0.000     0.072     2.097"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.267   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

```
*       0.919   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               2.962     0.000     0.072     2.097 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  42.247     8.107      22.307     minutes"
*            Time to Centroid       147.414    95.971     117.368    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1.1259     0.4599     1.5857     ha-m"
*            Rainfall losses        49.895     5.548      37.035     mm"
*            Runoff depth           18.191     62.539     31.052     mm"
*            Runoff volume          3008.07    4223.92    7231.98    c.m"
*            Runoff coefficient     0.267      0.919      0.456      "
*            Maximum flow           0.632      2.863      2.962      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               2.962     2.962     0.072     2.097"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               2.962     2.962     2.962     2.097"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                 4.707    c.m/sec"
*           Hydrograph volume        12697.146    c.m"
*               2.962     2.962     2.962     4.707"
* 40         HYDROGRAPH   Confluence    8"
*          7   Confluence "
*          8   Node #"
*              NODE A"
*           Maximum flow                 2.930    c.m/sec"
*           Hydrograph volume        62194.938    c.m"
*               2.962     2.930     2.962     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               2.962     2.930     2.930     0.000"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                 7.503    c.m/sec"
*           Hydrograph volume        74892.070    c.m"
*               2.962     2.930     2.930     7.503"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               2.962     0.000     2.930     7.503"
* 33         CATCHMENT 284"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        284   Agricultural lands south of Bleams Road"
*      2.000   % Impervious"
*      2.950   Total Area"
*     80.000   Flow length"
*      3.100   Overland Slope"
*      2.891   Pervious Area"
*     80.000   Pervious length"
*      3.100   Pervious slope"
*      0.059   Impervious Area"
*     80.000   Impervious length"
*      3.100   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     74.000   Pervious SCS Curve No."
*      0.346   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
```



```
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.901   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.230     0.000     2.930     7.503 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  22.839     2.731      21.824     minutes"
*            Time to Centroid       123.209    88.446     121.454    minutes"
*            Rainfall depth         68.087     68.087     68.087     mm"
*            Rainfall volume        1968.38    40.17      2008.55    c.m"
*            Rainfall losses        44.536     6.713      43.780     mm"
*            Runoff depth           23.550     61.373     24.307     mm"
*            Runoff volume          680.84     36.21      717.05     c.m"
*            Runoff coefficient     0.346      0.901      0.357      "
*            Maximum flow           0.224      0.024      0.230      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*               0.230     0.230     2.930     7.503"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               0.230     0.230     0.230     7.503"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*           Maximum flow                 7.656    c.m/sec"
*           Hydrograph volume        75609.117    c.m"
*               0.230     0.230     0.230     7.656"
* 40         HYDROGRAPH   Confluence    9"
*          7   Confluence "
*          9   Node #"
*              NODE B"
*           Maximum flow                 7.656    c.m/sec"
*           Hydrograph volume        75609.117    c.m"
*               0.230     7.656     0.230     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*               0.230     7.656     7.656     0.000"
* 40         HYDROGRAPH   Combine    10"
*          6   Combine "
*         10   Node #"
*              NODE C"
*           Maximum flow                 7.656    c.m/sec"
*           Hydrograph volume        75609.117    c.m"
*               0.230     7.656     7.656     7.656"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*               0.230     0.000     7.656     7.656"
* 33         CATCHMENT 285"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        285   Morningside Retirement Community lands"
*     58.000   % Impervious"
*     18.780   Total Area"
*    190.000   Flow length"
*      2.000   Overland Slope"
*      7.888   Pervious Area"
*     25.000   Pervious length"
*      2.500   Pervious slope"
*     10.892   Impervious Area"
*    354.000   Impervious length"
*      2.500   Impervious slope"
*      0.250   Pervious Manning 'n'"
```

```
*       64.400   Pervious SCS Curve No."
*        0.220   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.914   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  4.916     0.000     7.656     7.656 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  15.433     7.110      8.346      minutes"
*             Time to Centroid       115.949    94.598     97.768     minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        0.5370     0.7416     1.2787     ha-m"
*             Rainfall losses        53.104     5.869      25.707     mm"
*             Runoff depth           14.983     62.218     42.379     mm"
*             Runoff volume          1181.79    6777.00    7958.79    c.m"
*             Runoff coefficient     0.220      0.914      0.622      "
*             Maximum flow           0.476      4.722      4.916      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  4.916     4.916     7.656     7.656"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  4.916     4.916     4.916     7.656"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                 11.785    c.m/sec"
*             Hydrograph volume         83567.875    c.m"
*                  4.916     4.916     4.916    11.785"
* 81          ADD COMMENT============================================================"
*           3  Lines of comment"
*              ************************************************************
*              Catchments north of Hwy 7/8, towards Eastern Tributary*
*              ************************************************************
* 40          HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                  4.916     0.000     4.916    11.785"
* 33          CATCHMENT 250"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           250   Southern portion of Rec Centre fields"
*         0.000   % Impervious"
*         3.510   Total Area"
*        95.000   Flow length"
*         1.600   Overland Slope"
*         3.510   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         0.000   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.377   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
```



```
*                  0.260     0.000     4.916    11.785 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  28.511     6.829      28.511     minutes"
*             Time to Centroid       130.003    94.200     130.003    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        2389.83    0.00       2389.84    c.m"
*             Rainfall losses        42.407     5.986      42.407     mm"
*             Runoff depth           25.680     62.100     25.680     mm"
*             Runoff volume          901.36     0.00       901.36     c.m"
*             Runoff coefficient     0.377      0.000      0.377      "
*             Maximum flow           0.260      0.000      0.260      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.260     0.260     4.916    11.785"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.260     0.260     0.260    11.785"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                 0.260    c.m/sec"
*             Hydrograph volume          901.360    c.m"
*                  0.260     0.260     0.260     0.260"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.260     0.000     0.260     0.260"
* 33          CATCHMENT 251"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.377   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.912   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  0.905     0.000     0.260     0.260 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  28.511     6.829      16.725     minutes"
*             Time to Centroid       130.003    94.200     110.540    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        2632.16    1296.44    3928.59    c.m"
*             Rainfall losses        42.407     5.986      30.388     mm"
*             Runoff depth           25.680     62.100     37.699     mm"
*             Runoff volume          992.75     1182.45    2175.20    c.m"
*             Runoff coefficient     0.377      0.912      0.554      "
*             Maximum flow           0.286      0.829      0.905      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

```
*                  0.905     0.905     0.260     0.260"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.905     0.905     0.905     0.260"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*            Maximum flow                  0.973    c.m/sec"
*            Hydrograph volume          3076.563    c.m"
*                  0.905     0.905     0.905     0.973"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.905     0.000     0.905     0.973"
* 33          CATCHMENT 252"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          252   Southern portion of Hamburglr lands"
*        5.000   % Impervious"
*        2.870   Total Area"
*       65.000   Flow length"
*        1.500   Overland Slope"
*        2.726   Pervious Area"
*       65.000   Pervious length"
*        1.500   Pervious slope"
*        0.144   Impervious Area"
*       65.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.346   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.902   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.210     0.000     0.905     0.973 c.m/sec"
*             Catchment 252          Pervious   Impervious Total Area "
*             Surface Area           2.726      0.144      2.870      hectare"
*             Time of concentration  25.070     2.998      22.407     minutes"
*             Time to Centroid       125.973    88.831     121.492    minutes"
*             Rainfall depth         68.087     68.087     68.087     mm"
*             Rainfall volume        1856.38    97.70      1954.08    c.m"
*             Rainfall losses        44.524     6.658      42.631     mm"
*             Runoff depth           23.563     61.428     25.456     mm"
*             Runoff volume          642.43     88.15      730.58     c.m"
*             Runoff coefficient     0.346      0.902      0.374      "
*             Maximum flow           0.195      0.058      0.210      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.210     0.210     0.905     0.973"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.210     0.210     0.210     0.973"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.088    c.m/sec"
*            Hydrograph volume          3807.146    c.m"
*                  0.210     0.210     0.210     1.088"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.210     0.000     0.210     1.088"
```



```
* 47          FILEI_O Read/Open DIV00007.025hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00007.025hyd"
*             Major flow at 7"
*             Total volume                  0.000    c.m"
*             Maximum flow                  0.000    c.m/sec"
*                0.000     0.000     0.210     1.088 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.000     0.000     0.210     1.088"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.000     0.000     0.000     1.088"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.088    c.m/sec"
*            Hydrograph volume          3807.146    c.m"
*                  0.000     0.000     0.000     1.088"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.088    c.m/sec"
*            Hydrograph volume          3807.146    c.m"
*                  0.000     1.088     0.000     0.000"
* 54          POND DESIGN"
*         1.088   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        3807.1   Hydrograph volume    c.m"
*            9.   Number of stages"
*       332.660   Minimum water level    metre"
*       336.000   Maximum water level    metre"
*       332.660   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 332.660     0.000     0.000"
*                 333.000    0.3010   198.000"
*                 333.500     1.168  1165.000"
*                 334.000     2.325  2895.000"
*                 334.500     3.132  5301.000"
*                 335.000     3.780  8376.000"
*                 335.500     4.332  12258.00"
*                 335.750     4.583  14551.00"
*                 336.000    21.985  17113.00"
*             Peak outflow                  0.795    c.m/sec"
*             Maximum level               333.287    metre"
*             Maximum storage             752.387    c.m"
*             Centroidal lag                2.186    hours"
*                0.000     1.088     0.795     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                  0.000     0.795     0.795     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                234.030    hectare"
*             Total Impervious area               110.433    hectare"
*             Total % impervious                   47.187"
* 19          EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>*
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*          10 Units used:                                          ie METRIC"
*             Job folder:                      Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                     34896-104_Post-050yr.out"
*             Licensee name:                                          admin"
*             Company                                             Microsoft"
*             Date & Time last used:             12/17/2018 at 3:00:57 PM"
* 81        ADD COMMENT============================================="
*          7 Lines of comment"
*            ************************************************************"
*            Wilmot Employment Lands"
*            New Hamburg, Ontario"
*            50 Year Storm Evert - Post development"
*            Job No.: 34896-104"
*            Calculated by: NED/MSB"
*            ************************************************************"
* 31         TIME PARAMETERS"
*       5.000  Time Step"
*     240.000  Max. Storm length"
*    1500.000  Max. Hydrograph"
* 32         STORM Chicago storm"
*           1  Chicago storm"
*    3886.000  Coefficient A"
*      16.000  Constant B"
*       0.950  Exponent C"
*       0.400  Fraction R"
*     180.000  Duration"
*       1.000  Time step multiplier"
*            Maximum intensity          215.474    mm/hr"
*            Total depth                 77.443    mm"
*           6  050hyd   Hydrograph extension used in this file"
* 81         ADD COMMENT============================================="
*          3 Lines of comment"
*            ************************************************"
*            Catchments North of GEXR, part of Inlet #1"
*            ************************************************"
* 33         CATCHMENT 201"
*            1  Triangular SCS"
*            1  Equal length"
*            1  SCS method"
*          201  Area Northeast of GEXR"
*        0.000  % Impervious"
*        2.970  Total Area"
*       80.000  Flow length"
*        0.500  Overland Slope"
*        2.970  Pervious Area"
*       80.000  Pervious length"
*        0.500  Pervious slope"
*        0.000  Impervious Area"
*       80.000  Impervious length"
*        0.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       82.000  Pervious SCS Curve No."
*        0.522  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        5.576  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.000  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                 0.334     0.000     0.000     0.000 c.m/sec"
*            Catchment 201          Pervious   Impervious Total Area "
*            Surface Area           2.970      0.000      2.970      hectare"
*            Time of concentration  30.768     4.492      30.768     minutes"
```



```
*            Time to Centroid       131.220    90.546     131.220    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        2300.05    0.00       2300.05    c.m"
*            Rainfall losses        36.991     5.932      36.991     mm"
*            Runoff depth           40.452     71.510     40.452     mm"
*            Runoff volume          1201.42    0.00       1201.43    c.m"
*            Runoff coefficient     0.522      0.000      0.522      "
*            Maximum flow           0.334      0.000      0.334      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4  Add Runoff "
*                0.334     0.334     0.000     0.000"
* 33         CATCHMENT 202"
*            1  Triangular SCS"
*            1  Equal length"
*            1  SCS method"
*          202  Woodlot - north of GEXR"
*        0.000  % Impervious"
*        2.080  Total Area"
*       80.000  Flow length"
*        2.500  Overland Slope"
*        2.080  Pervious Area"
*       80.000  Pervious length"
*        2.500  Pervious slope"
*        0.000  Impervious Area"
*       80.000  Impervious length"
*        2.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       70.000  Pervious SCS Curve No."
*        0.326  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*       10.886  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.000  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                 0.167     0.334     0.000     0.000 c.m/sec"
*            Catchment 202          Pervious   Impervious Total Area "
*            Surface Area           2.080      0.000      2.080      hectare"
*            Time of concentration  23.957     2.772      23.957     minutes"
*            Time to Centroid       124.301    88.103     124.301    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1610.81    0.00       1610.81    c.m"
*            Rainfall losses        52.205     6.990      52.205     mm"
*            Runoff depth           25.238     70.453     25.238     mm"
*            Runoff volume          524.95     0.00       524.95     c.m"
*            Runoff coefficient     0.326      0.000      0.326      "
*            Maximum flow           0.167      0.000      0.167      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4  Add Runoff "
*                0.167     0.497     0.000     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8  Copy to Outflow"
*                0.167     0.497     0.497     0.000"
* 40         HYDROGRAPH   Combine    1"
*           6  Combine "
*           1  Node #"
*              u/s of GEXR"
*            Maximum flow                 0.497    c.m/sec"
*            Hydrograph volume         1726.374    c.m"
*                0.167     0.497     0.497     0.497"
* 40         HYDROGRAPH Start - New Tributary"
*           2  Start - New Tributary"
*                0.167     0.000     0.497     0.497"
* 33         CATCHMENT 203"
*           1  Triangular SCS"
*           1  Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.453   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.917   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 5.369     0.000     0.497     0.497 c.m/sec"
*           Catchment 203          Pervious   Impervious Total Area *
*           Surface Area           7.404      11.106     18.510     hectare"
*           Time of concentration  28.797     3.916      10.077     minutes"
*           Time to Centroid       129.051    89.753     99.484     minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        0.5734     0.8601     1.4335     ha-m"
*           Rainfall losses        42.374     6.410      20.796     mm"
*           Runoff depth           35.069     71.032     56.647     mm"
*           Runoff volume          0.2596     0.7889     1.0485     ha-m"
*           Runoff coefficient     0.453      0.917      0.731      *
*           Maximum flow           0.759      5.154      5.369      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 5.369     5.369     0.497     0.497"
* 54        POND DESIGN"
*        5.369   Current peak flow    c.m/sec"
*        2.303   Target outflow    c.m/sec"
*      10485.4   Hydrograph volume    c.m"
*           6.   Number of stages"
*      341.500   Minimum water level    metre"
*      343.600   Maximum water level    metre"
*      341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*             Level Discharge    Volume"
*           341.500     0.000     0.000"
*           342.000    0.1541  1746.000"
*           342.500    0.2669  3784.000"
*           343.000    0.3446  6114.000"
*           343.300    0.3837  7652.000"
*           343.600     2.941  9295.000"
*         1.   WEIRS"
*            Crest      Weir     Crest      Left     Right"
*       elevation coefficie   breadth sideslope sideslope"
*           343.300     0.900    10.000     0.000     0.000"
*         1.   ORIFICES"
*           Orifice   Orifice   Orifice Number of"
*            invert coefficie  diameter  orifices"
*           341.500     0.630    0.3750     1.000"
*         Peak outflow                  0.532    c.m/sec"
*         Maximum level               343.318    metre"
*         Maximum storage            7747.867    c.m"
*         Centroidal lag                5.939   hours"
*              5.369     5.369     0.532     0.497 c.m/sec"
* 40        HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.849    c.m/sec"
*            Hydrograph volume         12197.528    c.m"
*                  5.369     5.369     0.532     0.849"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  0.849    c.m/sec"
*            Hydrograph volume         12197.528    c.m"
*                  5.369     0.849     0.532     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  5.369     0.849     0.849     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.849    c.m/sec"
*            Hydrograph volume         12197.528    c.m"
*                  5.369     0.849     0.849     0.849"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  5.369     0.000     0.849     0.849"
* 81         ADD COMMENT==========================================================="
*         3  Lines of comment"
*            **************************************************"
*            Catchments South of GEXR, part of Inlet #1"
*            **************************************************"
* 33         CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.415   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.924   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.619     0.000     0.849     0.849 c.m/sec"
*           Catchment 204          Pervious   Impervious Total Area *
*           Surface Area           0.828      1.192      2.020      hectare"
*           Time of concentration  19.079     5.614      8.817      minutes"
*           Time to Centroid       117.291    92.090     98.084     minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        641.38     922.96     1564.34    c.m"
*           Rainfall losses        45.307     5.882      22.046     mm"
*           Runoff depth           32.136     71.561     55.397     mm"
*           Runoff volume          266.15     852.87     1119.02    c.m"
*           Runoff coefficient     0.415      0.924      0.715      "
```

```
*            Maximum flow          0.098      0.577      0.619      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.619     0.619     0.849     0.849"
* 54         POND DESIGN"
*        0.619   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       1119.0   Hydrograph volume    c.m"
*          4.    Number of stages"
*        0.000   Minimum water level    metre"
*        0.910   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3100   0.03090   782.000"
*                 0.6100    0.1232  1619.000"
*                 0.9100    0.2769  2511.000"
*            Peak outflow                  0.042    c.m/sec"
*            Maximum level                 0.345    metre"
*            Maximum storage             880.598    c.m"
*            Centroidal lag                8.363   hours"
*                 0.619     0.619     0.042     0.849 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.878    c.m/sec"
*            Hydrograph volume         13277.759    c.m"
*                 0.619     0.619     0.042     0.878"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.619     0.000     0.042     0.878"
* 33         CATCHMENT 205"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         205   Iron Bridge Manufacturing Property - Woodlot"
*       5.000   % Impervious"
*       1.190   Total Area"
*     255.000   Flow length"
*       1.800   Overland Slope"
*       1.131   Pervious Area"
*     255.000   Pervious length"
*       1.800   Pervious slope"
*       0.060   Impervious Area"
*     255.000   Impervious length"
*       1.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.326   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.925   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.054     0.000     0.042     0.878 c.m/sec"
*            Catchment 205          Pervious   Impervious Total Area "
*            Surface Area           1.131      0.060      1.190      hectare"
*            Time of concentration  53.003     6.132      46.913     minutes"
*            Time to Centroid       159.848    92.834     151.140    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        875.49     46.08      921.57     c.m"
*            Rainfall losses        52.195     5.798      49.875     mm"
*            Runoff depth           25.248     71.645     27.568     mm"
```



```
*            Runoff volume         285.43     42.63      328.06     c.m"
*            Runoff coefficient    0.326      0.925      0.356      "
*            Maximum flow          0.051      0.029      0.054      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.054     0.054     0.042     0.878"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.054     0.054     0.054     0.878"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  0.920    c.m/sec"
*            Hydrograph volume         13605.821    c.m"
*                 0.054     0.054     0.054     0.920"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.054     0.000     0.054     0.920"
* 33         CATCHMENT 206"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         206   Industrial properties at end of Hamilton Road"
*      35.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.852   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       0.997   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.416   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.910   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.502     0.000     0.054     0.920 c.m/sec"
*            Catchment 206          Pervious   Impervious Total Area "
*            Surface Area           1.852      0.997      2.850      hectare"
*            Time of concentration  21.055     2.752      11.154     minutes"
*            Time to Centroid       119.782    88.078     102.632    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1434.63    772.49     2207.12    c.m"
*            Rainfall losses        45.253     6.990      31.861     mm"
*            Runoff depth           32.190     70.452     45.582     mm"
*            Runoff volume          596.31     702.76     1299.08    c.m"
*            Runoff coefficient     0.416      0.910      0.589      "
*            Maximum flow           0.212      0.470      0.502      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.502     0.502     0.054     0.920"
* 33         CATCHMENT 207"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         207   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
```

```
*        3.000   Overland Slope"
*        5.624   Pervious Area"
*       65.000   Pervious length"
*        3.000   Pervious slope"
*        0.296   Impervious Area"
*       65.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.200   Pervious SCS Curve No."
*        0.328   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.782   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.915   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.539     0.502     0.054     0.920 c.m/sec"
*             Catchment 207          Pervious   Impervious Total Area *
*             Surface Area           5.624      0.296      5.920      hectare"
*             Time of concentration  19.939     2.317      17.685     minutes"
*             Time to Centroid       119.350    87.394     115.263    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        4355.38    229.23     4584.61    c.m"
*             Rainfall losses        52.010     6.583      49.738     mm"
*             Runoff depth           25.433     70.860     27.704     mm"
*             Runoff volume          1430.35    209.74     1640.10    c.m"
*             Runoff coefficient     0.328      0.915      0.358      "
*             Maximum flow           0.510      0.143      0.539      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.539     0.869     0.054     0.920"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.539     0.869     0.869     0.920"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  1.741    c.m/sec"
*             Hydrograph volume         16544.998    c.m"
*                  0.539     0.869     0.869     1.741"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.539     0.000     0.869     1.741"
* 33          CATCHMENT 208"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          208   N.C. Pestell site"
*       75.000   % Impervious"
*        5.530   Total Area"
*      130.000   Flow length"
*        2.000   Overland Slope"
*        1.383   Pervious Area"
*       50.000   Pervious length"
*        3.000   Pervious slope"
*        4.148   Impervious Area"
*      192.000   Impervious length"
*        0.750   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       75.000   Pervious SCS Curve No."
*        0.399   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.467   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
```



```
*        0.922   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  2.155     0.000     0.869     1.741 c.m/sec"
*             Catchment 208          Pervious   Impervious Total Area *
*             Surface Area           1.383      4.148      5.530      hectare"
*             Time of concentration  15.440     6.726      7.826      minutes"
*             Time to Centroid       112.945    93.621     96.061     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        1070.65    3211.94    4282.58    c.m"
*             Rainfall losses        46.511     6.075      16.184     mm"
*             Runoff depth           30.931     71.368     61.259     mm"
*             Runoff volume          427.63     2959.99    3387.62    c.m"
*             Runoff coefficient     0.399      0.922      0.791      "
*             Maximum flow           0.180      2.066      2.155      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  2.155     2.155     0.869     1.741"
* 54          POND DESIGN"
*        2.155   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       3387.6   Hydrograph volume    c.m"
*           9.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.200   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*             Peak outflow                  0.248    c.m/sec"
*             Maximum level                 0.960    metre"
*             Maximum storage            2536.727    c.m"
*             Centroidal lag               10.367    hours"
*                  2.155     2.155     0.248     1.741 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                  1.807    c.m/sec"
*             Hydrograph volume         19555.422    c.m"
*                  2.155     2.155     0.248     1.807"
* 81          ADD COMMENT==================================================="
*           3   Lines of comment"
*               **************************************************"
*               Catchments South of GEXR, part of Inlet #2"
*               **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  2.155     0.000     0.248     1.807"
* 33          CATCHMENT 209"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          209   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
```

```
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.485   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.918   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.300     0.000     0.248     1.807 c.m/sec"
*             Catchment 209          Pervious   Impervious Total Area "
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  33.446     3.975      20.238     minutes"
*             Time to Centroid       134.917    89.837     114.714    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        1040.83    446.07     1486.90    c.m"
*             Rainfall losses        39.907     6.317      29.830     mm"
*             Runoff depth           37.535     71.125     47.612     mm"
*             Runoff volume          504.47     409.68     914.16     c.m"
*             Runoff coefficient     0.485      0.918      0.615      "
*             Maximum flow           0.131      0.268      0.300      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.300     0.300     0.248     1.807"
* 54          POND DESIGN"
*         0.300   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*         914.2   Hydrograph volume    c.m"
*            7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09000    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*             Peak outflow                  0.129    c.m/sec"
*             Maximum level                 0.787    metre"
*             Maximum storage             251.403    c.m"
*             Centroidal lag                2.276    hours"
*                  0.300     0.300     0.129     1.807 c.m/sec"
* 40          HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*             Maximum flow                  0.129    c.m/sec"
*             Hydrograph volume           913.591    c.m"
*                    0.300     0.300     0.129     0.129"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.300     0.000     0.129     0.129"
* 33          CATCHMENT 210"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         210   Woodlot north of Hamburglr/Badenview lands"
```



```
*           5.000   % Impervious"
*          13.230   Total Area"
*         170.000   Flow length"
*           2.400   Overland Slope"
*          12.568   Pervious Area"
*         170.000   Pervious length"
*           2.400   Pervious slope"
*           0.661   Impervious Area"
*         170.000   Impervious length"
*           2.400   Impervious slope"
*           0.250   Pervious Manning 'n'"
*          70.000   Pervious SCS Curve No."
*           0.326   Pervious Runoff coefficient"
*           0.100   Pervious Ia/S coefficient"
*          10.886   Pervious Initial abstraction"
*           0.015   Impervious Manning 'n'"
*          98.000   Impervious SCS Curve No."
*           0.923   Impervious Runoff coefficient"
*           0.100   Impervious Ia/S coefficient"
*           0.518   Impervious Initial abstraction"
*                     0.787     0.000     0.129     0.129 c.m/sec"
*                Catchment 210          Pervious   Impervious Total Area "
*                Surface Area           12.568     0.661      13.230     hectare"
*                Time of concentration  38.121     4.411      33.749     minutes"
*                Time to Centroid       141.640    90.426     134.998    minutes"
*                Rainfall depth         77.443     77.443     77.443     mm"
*                Rainfall volume        0.9733     0.0512     1.0246     ha-m"
*                Rainfall losses        52.208     5.993      49.897     mm"
*                Runoff depth           25.235     71.450     27.546     mm"
*                Runoff volume          3171.67    472.64     3644.31    c.m"
*                Runoff coefficient     0.326      0.923      0.356      "
*                Maximum flow           0.740      0.313      0.787      c.m/sec"
* 40             HYDROGRAPH Add Runoff "
*              4   Add Runoff "
*                    0.787     0.787     0.129     0.129"
* 40             HYDROGRAPH Copy to Outflow"
*              8   Copy to Outflow"
*                    0.787     0.787     0.787     0.129"
* 40             HYDROGRAPH   Combine    3"
*              6   Combine "
*              3   Node #"
*                  INLET 2"
*                Maximum flow                  0.913    c.m/sec"
*                Hydrograph volume          4557.905    c.m"
*                    0.787     0.787     0.787     0.913"
* 81             ADD COMMENT================================================="
*            3  Lines of comment"
*               **************************************************"
*               South of GEXR along Nafziger Rd, part of Inlet #3"
*               **************************************************"
* 40             HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                    0.787     0.000     0.787     0.913"
* 33             CATCHMENT 211"
*              1   Triangular SCS"
*              1   Equal length"
*              1   SCS method"
*            211   Culivated lands east of Nafziger Road"
*          1.000   % Impervious"
*          7.310   Total Area"
*        120.000   Flow length"
*          3.300   Overland Slope"
*          7.237   Pervious Area"
*        120.000   Pervious length"
*          3.300   Pervious slope"
*          0.073   Impervious Area"
*        120.000   Impervious length"
```

```
*       3.300   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.416   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.742     0.000     0.787     0.913 c.m/sec"
*            Catchment 211          Pervious   Impervious Total Area "
*            Surface Area           7.237      0.073      7.310      hectare"
*            Time of concentration  24.885     3.253      24.416     minutes"
*            Time to Centroid       124.607    88.790     123.830    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        5604.45    56.61      5661.07    c.m"
*            Rainfall losses        45.260     6.780      44.876     mm"
*            Runoff depth           32.182     70.663     32.567     mm"
*            Runoff volume          2329.00    51.65      2380.66    c.m"
*            Runoff coefficient     0.416      0.912      0.421      "
*            Maximum flow           0.734      0.033      0.742      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.742     0.742     0.787     0.913"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*               0.742     0.742     0.742     0.913"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.742    c.m/sec"
*            Hydrograph volume          2380.657    c.m"
*               0.742     0.742     0.742     0.742"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.742     0.000     0.742     0.742"
* 33         CATCHMENT 212"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         212   Alpine Solutions - East SMWP"
*      40.000   % Impervious"
*       2.560   Total Area"
*     150.000   Flow length"
*       1.500   Overland Slope"
*       1.536   Pervious Area"
*     180.000   Pervious length"
*       1.500   Pervious slope"
*       1.024   Impervious Area"
*     131.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.485   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.922   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*               0.514     0.000     0.742     0.742 c.m/sec"
*            Catchment 212          Pervious   Impervious Total Area *
*            Surface Area           1.536      1.024      2.560      hectare"
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*            Time of concentration  37.313     4.343      18.881     minutes"
*            Time to Centroid       139.862    90.328     112.170    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1189.52    793.01     1982.53    c.m"
*            Rainfall losses        39.904     6.056      26.364     mm"
*            Runoff depth           37.539     71.387     51.078     mm"
*            Runoff volume          576.60     731.00     1307.61    c.m"
*            Runoff coefficient     0.485      0.922      0.660      "
*            Maximum flow           0.138      0.484      0.514      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*               0.514     0.514     0.742     0.742"
* 54         POND DESIGN"
*       0.514   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1307.6   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.000   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1000   0.02000     7.000"
*                0.2500   0.04200    64.000"
*                0.5000   0.09000   343.000"
*                0.7500    0.1250   877.000"
*                0.8000    0.1360  1014.000"
*                 1.000    0.7880  1667.000"
*            Peak outflow                  0.109    c.m/sec"
*            Maximum level                 0.635    metre"
*            Maximum storage             631.360    c.m"
*            Centroidal lag                3.031    hours"
*               0.514     0.514     0.109     0.742 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  0.840    c.m/sec"
*            Hydrograph volume          3688.489    c.m"
*               0.514     0.514     0.109     0.840"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*               0.514     0.000     0.109     0.840"
* 33         CATCHMENT 213"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         213   Woodlot East and West of Nafziger Road"
*       3.000   % Impervious"
*      13.460   Total Area"
*     140.000   Flow length"
*       3.600   Overland Slope"
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.327   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
```

```
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.956     0.000     0.109     0.840 c.m/sec"
*             Catchment 213          Pervious   Impervious Total Area "
*             Surface Area           13.056     0.404      13.460     hectare"
*             Time of concentration  29.978     3.476      27.876     minutes"
*             Time to Centroid       131.659    89.142     128.286    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        1.0111     0.0313     1.0424     ha-m"
*             Rainfall losses        52.093     6.805      50.734     mm"
*             Runoff depth           25.350     70.637     26.709     mm"
*             Runoff volume          3309.74    285.23     3594.97    c.m"
*             Runoff coefficient     0.327      0.912      0.345      "
*             Maximum flow           0.921      0.183      0.956      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.956     0.956     0.109     0.840"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.956     0.956     0.956     0.840"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                  1.784    c.m/sec"
*               Hydrograph volume          7283.461    c.m"
*                      0.956     0.956     0.956     1.784"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.956     0.000     0.956     1.784"
* 33          CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*        73.000   % Impervious"
*         4.950   Total Area"
*        50.000   Flow length"
*         2.800   Overland Slope"
*         1.336   Pervious Area"
*        40.000   Pervious length"
*         1.500   Pervious slope"
*         3.613   Impervious Area"
*       182.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        83.000   Pervious SCS Curve No."
*         0.541   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.202   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.923   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  1.900     0.000     0.956     1.784 c.m/sec"
*             Catchment 214          Pervious   Impervious Total Area "
*             Surface Area           1.336      3.613      4.950      hectare"
*             Time of concentration  14.345     5.291      6.906      minutes"
*             Time to Centroid       109.846    91.657     94.901     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        1035.02    2798.39    3833.42    c.m"
*             Rainfall losses        35.508     5.995      13.963     mm"
*             Runoff depth           41.935     71.448     63.480     mm"
*             Runoff volume          560.46     2581.78    3142.24    c.m"
*             Runoff coefficient     0.541      0.923      0.820      "
*             Maximum flow           0.259      1.746      1.900      c.m/sec"
```



```
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.900     1.900     0.956     1.784"
* 54          POND DESIGN"
*         1.900   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        3142.2   Hydrograph volume    c.m"
*           15.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.450   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1500   0.00700   248.000"
*                  0.2500   0.00900   418.000"
*                  0.3500   0.01100   593.000"
*                  0.4500   0.01300   775.000"
*                  0.5500   0.01500   964.000"
*                  0.6500   0.01600  1161.000"
*                  0.7500   0.01700  1364.000"
*                  0.8500   0.01900  1575.000"
*                  0.9500   0.02000  1795.000"
*                   1.050   0.05600  2025.000"
*                   1.150    0.2080  2263.000"
*                   1.250    0.4600  2511.000"
*                   1.350     2.766  2768.000"
*                   1.450     6.856  3033.000"
*               Peak outflow                  0.263    c.m/sec"
*               Maximum level                 1.172    metre"
*               Maximum storage            2318.544    c.m"
*               Centroidal lag               13.769   hours"
*                    1.900     1.900     0.263     1.784 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                  1.964    c.m/sec"
*               Hydrograph volume          9765.568    c.m"
*                      1.900     1.900     0.263     1.964"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  1.900     0.000     0.263     1.964"
* 33          CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*        45.000   % Impervious"
*         2.860   Total Area"
*       105.000   Flow length"
*         2.000   Overland Slope"
*         1.573   Pervious Area"
*       105.000   Pervious length"
*         2.000   Pervious slope"
*         1.287   Impervious Area"
*       105.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.416   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.912   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
```

```
*        0.518   Impervious Initial abstraction"
*                    0.629      0.000      0.263      1.964 c.m/sec"
*             Catchment 215          Pervious   Impervious Total Area "
*             Surface Area           1.573      1.287      2.860      hectare"
*             Time of concentration  26.692     3.489      11.791     minutes"
*             Time to Centroid       126.862    89.162     102.651    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        1218.17    996.69     2214.86    c.m"
*             Rainfall losses        45.247     6.815      27.952     mm"
*             Runoff depth           32.196     70.628     49.490     mm"
*             Runoff volume          506.44     908.98     1415.43    c.m"
*             Runoff coefficient     0.416      0.912      0.639      "
*             Maximum flow           0.152      0.584      0.629      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                    0.629      0.629      0.263      1.964"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.629      0.629      0.629      1.964"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                   2.228    c.m/sec"
*            Hydrograph volume          11180.990    c.m"
*                    0.629      0.629      0.629      2.228"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.629      0.000      0.629      2.228"
* 33          CATCHMENT 216"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         216   Industrial lands west of Nafziger Road"
*       45.000  % Impervious"
*        2.860  Total Area"
*      110.000  Flow length"
*        2.000  Overland Slope"
*        1.573  Pervious Area"
*      110.000  Pervious length"
*        2.000  Pervious slope"
*        1.287  Impervious Area"
*      110.000  Impervious length"
*        2.000  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.416  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.911  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                    0.629      0.000      0.629      2.228 c.m/sec"
*             Catchment 216          Pervious   Impervious Total Area "
*             Surface Area           1.573      1.287      2.860      hectare"
*             Time of concentration  27.448     3.588      12.132     minutes"
*             Time to Centroid       127.815    89.305     103.095    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        1218.17    996.69     2214.86    c.m"
*             Rainfall losses        45.243     6.899      27.988     mm"
*             Runoff depth           32.200     70.544     49.455     mm"
*             Runoff volume          506.50     907.90     1414.40    c.m"
*             Runoff coefficient     0.416      0.911      0.639      "
*             Maximum flow           0.151      0.586      0.629      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
```



```
*           4   Add Runoff "
*                    0.629      0.629      0.629      2.228"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.629      0.629      0.629      2.228"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                   2.497    c.m/sec"
*            Hydrograph volume          12595.395    c.m"
*                    0.629      0.629      0.629      2.497"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.629      0.000      0.629      2.497"
* 33          CATCHMENT 217"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         217   Existing ROW west of Nafziger Road"
*       75.000  % Impervious"
*        0.730  Total Area"
*       90.000  Flow length"
*        2.100  Overland Slope"
*        0.183  Pervious Area"
*       90.000  Pervious length"
*        2.100  Pervious slope"
*        0.548  Impervious Area"
*       90.000  Impervious length"
*        2.100  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.416  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.912  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                    0.253      0.000      0.629      2.497 c.m/sec"
*             Catchment 217          Pervious   Impervious Total Area "
*             Surface Area           0.183      0.548      0.730      hectare"
*             Time of concentration  23.981     3.134      5.885      minutes"
*             Time to Centroid       123.466    88.626     93.222     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        141.33     424.00     565.33     c.m"
*             Rainfall losses        45.245     6.821      16.427     mm"
*             Runoff depth           32.198     70.622     61.016     mm"
*             Runoff volume          58.76      386.65     445.41     c.m"
*             Runoff coefficient     0.416      0.912      0.788      "
*             Maximum flow           0.019      0.251      0.253      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                    0.253      0.253      0.629      2.497"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.253      0.253      0.253      2.497"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                   2.563    c.m/sec"
*            Hydrograph volume          13040.813    c.m"
*                    0.253      0.253      0.253      2.563"
* 40          HYDROGRAPH   Confluence    2"
*           7   Confluence "
```

```
*           2   Node #"
*               INLET 1"
*            Maximum flow                  1.807    c.m/sec"
*            Hydrograph volume          19555.424    c.m"
*                  0.253     1.807     0.253     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.253     1.807     1.807     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  1.807    c.m/sec"
*            Hydrograph volume          19555.424    c.m"
*                  0.253     1.807     1.807     1.807"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.913    c.m/sec"
*            Hydrograph volume           4557.905    c.m"
*                  0.253     0.913     1.807     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.253     0.913     0.913     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  2.667    c.m/sec"
*            Hydrograph volume          24113.342    c.m"
*                  0.253     0.913     0.913     2.667"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.563    c.m/sec"
*            Hydrograph volume          13040.811    c.m"
*                  0.253     2.563     0.913     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.253     2.563     2.563     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  5.209    c.m/sec"
*            Hydrograph volume          37154.141    c.m"
*                  0.253     2.563     2.563     5.209"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.253     0.000     2.563     5.209"
* 33         CATCHMENT 223"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         223   New Hamburglr Inc. lands"
*      85.000   % Impervious"
*      12.570   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       1.885   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      10.684   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
```



```
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.416   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.917   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 5.002     0.000     2.563     5.209 c.m/sec"
*            Catchment 223          Pervious   Impervious Total Area "
*            Surface Area           1.885      10.684     12.570     hectare"
*            Time of concentration  29.959     3.916      5.845      minutes"
*            Time to Centroid       130.975    89.753     92.806     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1460.18    8274.37    9734.55    c.m"
*            Rainfall losses        45.241     6.410      12.235     mm"
*            Runoff depth           32.202     71.032     65.208     mm"
*            Runoff volume          607.16     7589.46    8196.62    c.m"
*            Runoff coefficient     0.416      0.917      0.842      "
*            Maximum flow           0.170      4.959      5.002      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 5.002     5.002     2.563     5.209"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 5.002     5.002     5.002     5.209"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  9.101    c.m/sec"
*            Hydrograph volume          45350.754    c.m"
*                  5.002     5.002     5.002     9.101"
* 81         ADD COMMENT==========================================================="
*           3   Lines of comment"
*               **************************************************"
*               Catchments east of Hamilton Road, part of Inlet #4"
*               **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 5.002     0.000     5.002     9.101"
* 33         CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*      85.000   % Impervious"
*       2.060   Total Area"
*     230.000   Flow length"
*       1.700   Overland Slope"
*       0.309   Pervious Area"
*     230.000   Pervious length"
*       3.000   Pervious slope"
*       1.751   Impervious Area"
*     230.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.446   Pervious Runoff coefficient"
*       0.060   Pervious Ia/S coefficient"
*       4.813   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.924   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*        0.518   Impervious Initial abstraction"
*                    0.847     0.000     5.002     9.101 c.m/sec"
*             Catchment 218          Pervious   Impervious Total Area "
*             Surface Area           0.309      1.751      2.060      hectare"
*             Time of concentration  36.632     4.945      7.431      minutes"
*             Time to Centroid       139.160    91.169     94.934     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        239.30     1356.02    1595.32    c.m"
*             Rainfall losses        42.937     5.915      11.468     mm"
*             Runoff depth           34.506     71.528     65.975     mm"
*             Runoff volume          106.62     1252.46    1359.08    c.m"
*             Runoff coefficient     0.446      0.924      0.852      "
*             Maximum flow           0.026      0.842      0.847      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                    0.847     0.847     5.002     9.101"
* 54          POND DESIGN"
*        0.847   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*       1359.1   Hydrograph volume    c.m"
*          15.   Number of stages"
*      344.700   Minimum water level    metre"
*      345.400   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                344.700    0.1250     0.000"
*                344.750    0.1270     9.000"
*                344.800    0.1280    35.000"
*                344.850    0.1300    77.000"
*                344.900    0.1450   136.000"
*                344.950    0.1820   209.000"
*                345.000    0.2220   297.000"
*                345.050    0.2690   400.000"
*                345.100    0.2710   519.000"
*                345.150    0.2740   653.000"
*                345.200    0.2760   804.000"
*                345.250    0.2790   971.000"
*                345.300    0.2820  1154.000"
*                345.350    0.2840  1355.000"
*                345.400    0.2860  1571.000"
*             Peak outflow                  0.271    c.m/sec"
*             Maximum level               345.092    metre"
*             Maximum storage             499.900    c.m"
*             Centroidal lag                1.901    hours"
*                    0.847     0.847     0.271     9.101 c.m/sec"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  9.329    c.m/sec"
*             Hydrograph volume         46701.293    c.m"
*                    0.847     0.847     0.271     9.329"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.847     0.000     0.271     9.329"
* 33          CATCHMENT 219"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         219   N.C. Pestells Head Office & other Industrial"
*       85.000   % Impervious"
*        1.280   Total Area"
*       75.000   Flow length"
*        1.500   Overland Slope"
*        0.192   Pervious Area"
*       75.000   Pervious length"
```



```
*        3.000   Pervious slope"
*        1.088   Impervious Area"
*       75.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.288   Pervious Runoff coefficient"
*        0.281   Pervious Ia/S coefficient"
*       22.539   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.913   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.521     0.000     0.271     9.329 c.m/sec"
*             Catchment 219          Pervious   Impervious Total Area "
*             Surface Area           0.192      1.088      1.280      hectare"
*             Time of concentration  24.329     2.525      3.673      minutes"
*             Time to Centroid       126.540    87.719     89.764     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        148.69     842.58     991.27     c.m"
*             Rainfall losses        55.161     6.722      13.988     mm"
*             Runoff depth           22.282     70.721     63.455     mm"
*             Runoff volume          42.78      769.45     812.23     c.m"
*             Runoff coefficient     0.288      0.913      0.819      "
*             Maximum flow           0.013      0.521      0.521      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                    0.521     0.521     0.271     9.329"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.521     0.521     0.521     9.329"
* 40          HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*             Maximum flow                  9.790    c.m/sec"
*             Hydrograph volume         47513.516    c.m"
*                    0.521     0.521     0.521     9.790"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.521     0.000     0.521     9.790"
* 33          CATCHMENT 220"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         220   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.384   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.918   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
```

```
*                0.064     0.000     0.521     9.790 c.m/sec"
*           Catchment 220          Pervious   Impervious Total Area "
*           Surface Area           0.460      0.040      0.500      hectare"
*           Time of concentration  15.072     1.894      12.802     minutes"
*           Time to Centroid       112.666    86.772     108.204    minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        356.24     30.98      387.21     c.m"
*           Rainfall losses        47.736     6.331      44.424     mm"
*           Runoff depth           29.707     71.112     33.019     mm"
*           Runoff volume          136.65     28.44      165.10     c.m"
*           Runoff coefficient     0.384      0.918      0.426      "
*           Maximum flow           0.058      0.020      0.064      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.064     0.064     0.521     9.790"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.064     0.064     0.064     9.790"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                 9.835    c.m/sec"
*           Hydrograph volume        47678.613    c.m"
*                0.064     0.064     0.064     9.835"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.064     0.000     0.064     9.835"
* 33        CATCHMENT 221"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       221   Proposed ROW from Hamilton Road"
*    81.500   % Impervious"
*     0.810   Total Area"
*    40.000   Flow length"
*     2.000   Overland Slope"
*     0.150   Pervious Area"
*    40.000   Pervious length"
*     2.000   Pervious slope"
*     0.660   Impervious Area"
*    40.000   Impervious length"
*     2.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.415   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.917   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.328     0.000     0.064     9.835 c.m/sec"
*           Catchment 221          Pervious   Impervious Total Area "
*           Surface Area           0.150      0.660      0.810      hectare"
*           Time of concentration  14.959     1.955      3.167      minutes"
*           Time to Centroid       112.122    86.858     89.212     minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        116.05     511.24     627.29     c.m"
*           Rainfall losses        45.278     6.397      13.590     mm"
*           Runoff depth           32.165     71.045     63.852     mm"
*           Runoff volume          48.20      469.01     517.20     c.m"
*           Runoff coefficient     0.415      0.917      0.825      "
*           Maximum flow           0.021      0.324      0.328      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
```



```
*                0.328     0.328     0.064     9.835"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.328     0.328     0.328     9.835"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                10.117    c.m/sec"
*           Hydrograph volume        48195.820    c.m"
*                0.328     0.328     0.328    10.117"
* 81        ADD COMMENT==================================================="
*         3   Lines of comment"
*             ************************************************"
*             Catchment to Inlet #5"
*             ************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.328     0.000     0.328    10.117"
* 33        CATCHMENT 222"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       222   Rear yards from Hamilton Heights Subdivision"
*     5.000   % Impervious"
*     1.080   Total Area"
*    20.000   Flow length"
*     3.000   Overland Slope"
*     1.026   Pervious Area"
*    20.000   Pervious length"
*     3.000   Pervious slope"
*     0.054   Impervious Area"
*    20.000   Impervious length"
*     3.000   Impervious slope"
*     0.250   Pervious Manning 'n'"
*    76.000   Pervious SCS Curve No."
*     0.414   Pervious Runoff coefficient"
*     0.100   Pervious Ia/S coefficient"
*     8.021   Pervious Initial abstraction"
*     0.015   Impervious Manning 'n'"
*    98.000   Impervious SCS Curve No."
*     0.908   Impervious Runoff coefficient"
*     0.100   Impervious Ia/S coefficient"
*     0.518   Impervious Initial abstraction"
*                0.192     0.000     0.328    10.117 c.m/sec"
*           Catchment 222          Pervious   Impervious Total Area "
*           Surface Area           1.026      0.054      1.080      hectare"
*           Time of concentration  8.739      1.142      7.953      minutes"
*           Time to Centroid       104.291    85.784     102.375    minutes"
*           Rainfall depth         77.443     77.443     77.443     mm"
*           Rainfall volume        794.56     41.82      836.38     c.m"
*           Rainfall losses        45.378     7.102      43.464     mm"
*           Runoff depth           32.065     70.341     33.978     mm"
*           Runoff volume          328.98     37.98      366.97     c.m"
*           Runoff coefficient     0.414      0.908      0.439      "
*           Maximum flow           0.180      0.028      0.192      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.192     0.192     0.328    10.117"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.192     0.192     0.192    10.117"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                10.292    c.m/sec"
```

```
*            Hydrograph volume          48562.785    c.m"
*                  0.192     0.192     0.192    10.292"
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             **************************************************"
*             Badenview Developments Inc. lands"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.192     0.000     0.192    10.292"
* 33         CATCHMENT 224"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         224   Badenview lands"
*      85.000   % Impervious"
*      43.200   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       6.480   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      36.720   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.416   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.917   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  17.192     0.000     0.192    10.292 c.m/sec"
*            Catchment 224          Pervious   Impervious Total Area "
*            Surface Area           6.480      36.720     43.200     hectare"
*            Time of concentration  29.959     3.916      5.845      minutes"
*            Time to Centroid       130.975    89.753     92.806     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        0.5018     2.8437     3.3455     ha-m"
*            Rainfall losses        45.241     6.410      12.235     mm"
*            Runoff depth           32.202     71.032     65.208     mm"
*            Runoff volume          0.2087     2.6083     2.8170     ha-m"
*            Runoff coefficient     0.416      0.917      0.842      "
*            Maximum flow           0.585      17.042     17.192     c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  17.192    17.192     0.192    10.292"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  17.192    17.192    17.192    10.292"
* 40         HYDROGRAPH   Combine     5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 27.485    c.m/sec"
*            Hydrograph volume          76732.563    c.m"
*                  17.192    17.192     17.192    27.485"
* 40         HYDROGRAPH   Confluence     5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 27.485    c.m/sec"
*            Hydrograph volume          76732.563    c.m"
*                  17.192    27.485     17.192     0.000"
```



```
* 81         ADD COMMENT==========================================="
*          7  Lines of comment"
*             **************************************************"
*             **************************************************"
*             **                                              **"
*             **          PROPOSED SWM POND DESIGN            **"
*             **                                              **"
*             **************************************************"
*             **************************************************"
* 54         POND DESIGN"
*       27.485   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*      76732.6   Hydrograph volume    c.m"
*          36.   Number of stages"
*      334.550   Minimum water level    metre"
*      337.850   Maximum water level    metre"
*      334.550   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  334.550     0.000     0.000"
*                  334.600   0.00400  1187.000"
*                  334.700   0.02830  3607.000"
*                  334.800   0.06350  6090.000"
*                  334.900   0.08900  8636.000"
*                  335.000    0.1880  11246.00"
*                  335.100    0.3430  13920.00"
*                  335.200    0.5360  16658.00"
*                  335.300    0.7599  19459.00"
*                  335.400     1.011  22323.00"
*                  335.500     1.286  25249.00"
*                  335.600     1.583  28239.00"
*                  335.700     1.901  31294.00"
*                  335.800     2.238  34414.00"
*                  335.900     2.593  37599.00"
*                  336.000     2.966  40851.00"
*                  336.100     3.427  43465.00"
*                  336.200     3.959  46848.00"
*                  336.300     4.543  50286.00"
*                  336.400     5.171  53779.00"
*                  336.500     5.840  57328.00"
*                  336.600     6.544  60933.00"
*                  336.700     7.284  64595.00"
*                  336.800     8.055  68313.00"
*                  336.900     8.858  72088.00"
*                  337.000     9.690  75920.00"
*                  337.100    10.550  79809.00"
*                  337.200    11.437  83755.00"
*                  337.300    12.351  87759.00"
*                  337.400    13.291  91821.00"
*                  337.500    14.255  95940.00"
*                  337.550    14.746  98022.00"
*                  337.600    16.027  100118.0"
*                  337.700    20.027  104352.0"
*                  337.800    25.280  108643.0"
*                  337.850    28.277  110810.0"
*               Peak outflow                  3.555    c.m/sec"
*               Maximum level               336.124    metre"
*               Maximum storage           44286.559    c.m"
*               Centroidal lag               10.386   hours"
*                   17.192    27.485     3.555     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                  3.555    c.m/sec"
*            Hydrograph volume          68359.266    c.m"
*                  17.192    27.485     3.555     3.555"
```

```
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    17.192     0.000     3.555     3.555"
* 33          CATCHMENT 260"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           260   Hamilton Heights Subdivision"
*        46.000   % Impervious"
*         8.160   Total Area"
*        50.000   Flow length"
*         1.000   Overland Slope"
*         4.406   Pervious Area"
*        50.000   Pervious length"
*         3.000   Pervious slope"
*         3.754   Impervious Area"
*       232.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.415   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.925   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    2.122     0.000     3.555     3.555 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  15.144     6.120      9.235      minutes"
*              Time to Centroid       112.357    92.817     99.561     minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        3412.44    2906.89    6319.33    c.m"
*              Rainfall losses        45.272     5.794      27.112     mm"
*              Runoff depth           32.171     71.649     50.331     mm"
*              Runoff volume          1417.58    2689.42    4107.00    c.m"
*              Runoff coefficient     0.415      0.925      0.650      "
*              Maximum flow           0.605      1.809      2.122      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    2.122     2.122     3.555     3.555"
* 33          CATCHMENT 261"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           261   Klassen Bronze Property"
*        32.000   % Impervious"
*         2.350   Total Area"
*       100.000   Flow length"
*         2.500   Overland Slope"
*         1.598   Pervious Area"
*        50.000   Pervious length"
*         2.500   Pervious slope"
*         0.752   Impervious Area"
*       164.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.415   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
```



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*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.923   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.463     2.122     3.555     3.555 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  15.995     4.970      10.355     minutes"
*              Time to Centroid       113.448    91.205     102.069    minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        1237.54    582.37     1819.90    c.m"
*              Rainfall losses        45.309     5.928      32.707     mm"
*              Runoff depth           32.133     71.515     44.735     mm"
*              Runoff volume          513.49     537.79     1051.28    c.m"
*              Runoff coefficient     0.415      0.923      0.578      "
*              Maximum flow           0.213      0.362      0.463      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    0.463     2.585     3.555     3.555"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                    0.463     2.585     2.585     3.555"
* 40          HYDROGRAPH   Combine    12"
*             6   Combine "
*            12   Node #"
*                 d/s of Proposed SWMF"
*                 Maximum flow                 3.764    c.m/sec"
*                 Hydrograph volume        73517.547    c.m"
*                    0.463     2.585     2.585     3.764"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    0.463     0.000     2.585     3.764"
* 33          CATCHMENT 225"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           225   HWY 7/8 and north ditching"
*        30.000   % Impervious"
*         1.670   Total Area"
*        75.000   Flow length"
*         2.000   Overland Slope"
*         1.169   Pervious Area"
*        75.000   Pervious length"
*         2.000   Pervious slope"
*         0.501   Impervious Area"
*        75.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        74.000   Pervious SCS Curve No."
*         0.384   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.924   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.909   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.255     0.000     2.585     3.764 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  22.683     2.851      12.689     minutes"
*              Time to Centroid       122.160    88.218     105.055    minutes"
*              Rainfall depth         77.443     77.443     77.443     mm"
*              Rainfall volume        905.31     387.99     1293.29    c.m"
*              Rainfall losses        47.733     7.020      35.519     mm"
```

```
*            Runoff depth           29.710     70.423     41.924     mm"
*            Runoff volume          347.31     352.82     700.13     c.m"
*            Runoff coefficient     0.384      0.909      0.541      "
*            Maximum flow           0.117      0.234      0.255      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.255      0.255      2.585      3.764"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.255      0.255      0.255      3.764"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                    3.801    c.m/sec"
*            Hydrograph volume           74217.680    c.m"
*                  0.255      0.255      0.255      3.801"
* 81         ADD COMMENT============================================================"
*          3  Lines of comment"
*             ************************************************************
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.255      0.000      0.255      3.801"
* 33         CATCHMENT 270"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         270   Industrial/Residential area along Hamilton Road"
*      55.000   % Impervious"
*       8.450   Total Area"
*      45.000   Flow length"
*       2.000   Overland Slope"
*       3.802   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       4.648   Impervious Area"
*     235.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.415   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.925   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  2.684      0.000      0.255      3.801 c.m/sec"
*               Catchment 270          Pervious   Impervious Total Area "
*               Surface Area           3.802      4.648      8.450      hectare"
*               Time of concentration  11.146     6.167      7.504      minutes"
*               Time to Centroid       107.313    92.882     96.757     minutes"
*               Rainfall depth         77.443     77.443     77.443     mm"
*               Rainfall volume        2944.76    3599.15    6543.91    c.m"
*               Rainfall losses        45.302     5.811      23.582     mm"
*               Runoff depth           32.141     71.631     53.861     mm"
*               Runoff volume          1222.17    3329.07    4551.24    c.m"
*               Runoff coefficient     0.415      0.925      0.695      "
*               Maximum flow           0.597      2.238      2.684      c.m/sec"
* 40            HYDROGRAPH Add Runoff "
*              4   Add Runoff "
*                     2.684      2.684      0.255      3.801"
* 56            DIVERSION"
*              6   Node number"
```



```
*          1.560   Overflow threshold"
*          1.000   Required diverted fraction"
*              0   Conduit type; 1=Pipe;2=Channel"
*               Peak of diverted flow          1.124    c.m/sec"
*               Volume of diverted flow      630.529    c.m"
*               DIV00006.050hyd"
*               Major flow at 6"
*                     2.684      2.684      1.560      3.801 c.m/sec"
* 40            HYDROGRAPH   Combine    9"
*              6   Combine "
*              9   Node #"
*                  NODE B"
*               Maximum flow                   1.560    c.m/sec"
*               Hydrograph volume           3920.710    c.m"
*                     2.684      2.684      1.560      1.560"
* 40            HYDROGRAPH Start - New Tributary"
*              2   Start - New Tributary"
*                     2.684      0.000      1.560      1.560"
* 47            FILEI_O Read/Open DIV00006.050hyd"
*             1   1=read/open; 2=write/save"
*             2   1=rainfall; 2=hydrograph"
*             1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*              DIV00006.050hyd"
*              Major flow at 6"
*              Total volume                 630.529    c.m"
*              Maximum flow                   1.124    c.m/sec"
*                   1.124      0.000      1.560      1.560 c.m/sec"
* 40            HYDROGRAPH Add Runoff "
*              4   Add Runoff "
*                     1.124      1.124      1.560      1.560"
* 40            HYDROGRAPH Copy to Outflow"
*              8   Copy to Outflow"
*                     1.124      1.124      1.124      1.560"
* 40            HYDROGRAPH   Combine    12"
*              6   Combine "
*             12   Node #"
*                  d/s of Proposed SWMF"
*               Maximum flow                   4.607    c.m/sec"
*               Hydrograph volume          74848.211    c.m"
*                     1.124      1.124      1.124      4.607"
* 40            HYDROGRAPH   Confluence    12"
*              7   Confluence "
*             12   Node #"
*                  d/s of Proposed SWMF"
*               Maximum flow                   4.607    c.m/sec"
*               Hydrograph volume          74848.211    c.m"
*                     1.124      4.607      1.124      0.000"
* 54            POND DESIGN"
*          4.607   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*        74848.2   Hydrograph volume    c.m"
*             8.   Number of stages"
*         334.290   Minimum water level    metre"
*         337.000   Maximum water level    metre"
*         334.290   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                  334.290     0.000     0.000"
*                  334.500     0.2540    5.000"
*                  335.000     1.303   110.000"
*                  335.500     2.800   674.000"
*                  336.000     4.639  1910.000"
*                  336.500     6.480  3748.000"
*                  336.550     6.665  3967.000"
*                  337.000    23.484  6569.000"
*               Peak outflow                   3.764    c.m/sec"
*               Maximum level                335.762    metre"
```

```
*            Maximum storage            1321.965    c.m"
*            Centroidal lag                6.043   hours"
*                 1.124     4.607     3.764     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 1.124     3.764     3.764     0.000"
* 56         DIVERSION"
*           7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow         0.000    c.m/sec"
*            Volume of divertec flow       0.000    c.m"
*            DIV00007.050hyd"
*            Major flow at 7"
*                 1.124     3.764     3.764     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    8"
*           6   Combine "
*           8   Node #"
*               NODE A"
*            Maximum flow                  3.764    c.m/sec"
*            Hydrograph volume         74845.594    c.m"
*                 1.124     3.764     3.764     3.764"
* 81         ADD COMMENT==================================================="
*         3   Lines of comment"
*             ************************************************"
*             Catchments South of Hwy 7/8"
*             ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.124     0.000     3.764     3.764"
* 33         CATCHMENT 280"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         280   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.465   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.913   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.169     0.000     3.764     3.764 c.m/sec"
*            Catchment 280          Pervious   Impervious Total Area "
*            Surface Area           0.518      0.182      0.700      hectare"
*            Time of concentration  9.328      3.310      6.871      minutes"
*            Time to Centroid       104.332    88.880     98.024     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        401.15     140.95     542.10     c.m"
*            Rainfall losses        41.454     6.765      32.435     mm"
*            Runoff depth           35.989     70.678     45.008     mm"
*            Runoff volume          186.42     128.63     315.06     c.m"
*            Runoff coefficient     0.465      0.913      0.581      "
```



```
*            Maximum flow           0.101      0.082      0.169      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.169     0.169     3.764     3.764"
* 54         POND DESIGN"
*       0.169   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       315.1   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400     1.000"
*                 0.2500   0.00600     8.000"
*                 0.3500   0.00700    29.000"
*                 0.4500   0.00800    69.000"
*                 0.6500   0.01000   178.000"
*                 0.7000    0.1060   208.000"
*                 0.7500    0.2810   240.000"
*            Peak outflow                  0.048    c.m/sec"
*            Maximum level                 0.670    metre"
*            Maximum storage             189.902    c.m"
*            Centroidal lag                4.278   hours"
*                 0.169     0.169     0.048     3.764 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.569    c.m/sec"
*            Hydrograph volume          4234.678    c.m"
*                 0.169     0.169     0.048     1.569"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.169     0.000     0.048     1.569"
* 33         CATCHMENT 281"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         281   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.261   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.923   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.832     0.000     0.048     1.569 c.m/sec"
*            Catchment 281          Pervious   Impervious Total Area "
*            Surface Area           0.131      1.739      1.870      hectare"
*            Time of concentration  12.513     4.465      4.632      minutes"
*            Time to Centroid       111.346    90.506     90.940     minutes"
```

```
*            Rainfall depth          77.443     77.443     77.443     mm"
*            Rainfall volume         101.37     1346.81    1448.18    c.m"
*            Rainfall losses         57.250     5.949      9.540      mm"
*            Runoff depth            20.193     71.493     67.902     mm"
*            Runoff volume           26.43      1243.34    1269.78    c.m"
*            Runoff coefficient      0.261      0.923      0.877      "
*            Maximum flow            0.012      0.826      0.832      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.832     0.832     0.048     1.569"
* 54         POND DESIGN"
*       0.832   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1269.8   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3000   0.09000     8.000"
*                0.6000    0.1200    97.000"
*                0.9000    0.1300   167.000"
*                 1.200    0.1400   254.000"
*                 1.500    0.1500   358.000"
*                 1.800     1.000   400.000"
*            Peak outflow                  0.548    c.m/sec"
*            Maximum level                 1.694    metre"
*            Maximum storage             385.161    c.m"
*            Centroidal lag                1.872   hours"
*                 0.832     0.832     0.548     1.569 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*            Maximum flow                  2.116    c.m/sec"
*            Hydrograph volume          5436.227    c.m"
*                 0.832     0.832     0.548     2.116"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.832     0.000     0.548     2.116"
* 33         CATCHMENT 282"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.262   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                0.387     0.000     0.548     2.116 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  14.132     3.181      4.430      minutes"
*            Time to Centroid       113.260    88.692     91.496     minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        290.49     646.57     937.06     c.m"
*            Rainfall losses        57.190     6.798      22.419     mm"
*            Runoff depth           20.253     70.645     55.023     mm"
*            Runoff volume          75.97      589.81     665.78     c.m"
*            Runoff coefficient     0.262      0.912      0.711      "
*            Maximum flow           0.032      0.382      0.387      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.387     0.387     0.548     2.116"
* 54         POND DESIGN"
*       0.387   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       665.8   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.3200   0.04300   276.000"
*                0.7500   0.06600   333.000"
*                 1.300   0.08700   371.000"
*                 1.400    0.5000   400.000"
*            Peak outflow                  0.133    c.m/sec"
*            Maximum level                 1.313    metre"
*            Maximum storage             374.697    c.m"
*            Centroidal lag                3.055   hours"
*                 0.387     0.387     0.133     2.116 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*          6   Combine "
*          9   Node #"
*              NODE B"
*            Maximum flow                  2.183    c.m/sec"
*            Hydrograph volume          6098.461    c.m"
*                 0.387     0.387     0.133     2.183"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.387     0.000     0.133     2.183"
* 33         CATCHMENT 283"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.303   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

```
*       0.926   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                3.473     0.000     0.133     2.183 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area *
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  37.685     7.714      21.048     minutes"
*            Time to Centroid       141.218    94.989     115.557    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        1.2806     0.5231     1.8036     ha-m"
*            Rainfall losses        53.971     5.749      39.987     mm"
*            Runoff depth           23.471     71.694     37.456     mm"
*            Runoff volume          3881.20    4842.30    8723.50    c.m"
*            Runoff coefficient     0.303      0.926      0.484      "
*            Maximum flow           0.908      3.308      3.473      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                3.473     3.473     0.133     2.183"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                3.473     3.473     3.473     2.183"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 5.231    c.m/sec"
*            Hydrograph volume         14821.966   c.m"
*                3.473     3.473     3.473     5.231"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                 3.764    c.m/sec"
*            Hydrograph volume         74845.594   c.m"
*                3.473     3.764     3.473     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                3.473     3.764     3.764     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 8.591    c.m/sec"
*            Hydrograph volume         89667.555   c.m"
*                3.473     3.764     3.764     8.591"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                3.473     0.000     3.764     8.591"
* 33         CATCHMENT 284"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         284   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.384   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
```



```
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.912   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.312     0.000     3.764     8.591 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area *
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  20.674     2.599      19.838     minutes"
*            Time to Centroid       119.645    87.828     118.173    minutes"
*            Rainfall depth         77.443     77.443     77.443     mm"
*            Rainfall volume        2238.87    45.69      2284.56    c.m"
*            Rainfall losses        47.708     6.806      46.890     mm"
*            Runoff depth           29.735     70.637     30.553     mm"
*            Runoff volume          859.64     41.68      901.31     c.m"
*            Runoff coefficient     0.384      0.912      0.395      "
*            Maximum flow           0.306      0.028      0.312      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.312     0.312     3.764     8.591"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.312     0.312     0.312     8.591"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 8.824    c.m/sec"
*            Hydrograph volume         90568.883   c.m"
*                0.312     0.312     0.312     8.824"
* 40         HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                 8.824    c.m/sec"
*            Hydrograph volume         90568.883   c.m"
*                0.312     8.824     0.312     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.312     8.824     8.824     0.000"
* 40         HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                 8.824    c.m/sec"
*            Hydrograph volume         90568.883   c.m"
*                0.312     8.824     8.824     8.824"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.312     0.000     8.824     8.824"
* 33         CATCHMENT 285"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         285   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
```

```
*       64.400   Pervious SCS Curve No."
*        0.254   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.921   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  5.768     0.000     8.824     8.824 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  13.582     6.766      7.900      minutes"
*             Time to Centroid       112.718    93.679     96.848     minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        0.6108     0.8435     1.4544     ha-m"
*             Rainfall losses        57.769     6.109      27.806     mm"
*             Runoff depth           19.674     71.334     49.637     mm"
*             Runoff volume          1551.82    7769.97    9321.79    c.m"
*             Runoff coefficient     0.254      0.921      0.641      "
*             Maximum flow           0.670      5.424      5.768      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  5.768     5.768     8.824     8.824"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  5.768     5.768     5.768     8.824"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                  13.797    c.m/sec"
*             Hydrograph volume          99890.656    c.m"
*                  5.768     5.768     5.768    13.797"
* 81          ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************************"
*             Catchments north of Hwy 7/8, towards Eastern Tributary"
*             ************************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                  5.768     0.000     5.768    13.797"
* 33          CATCHMENT 250"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           250   Southern portion of Rec Centre fields"
*         0.000   % Impervious"
*         3.510   Total Area"
*        95.000   Flow length"
*         1.600   Overland Slope"
*         3.510   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         0.000   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.415   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
```



```
*                  0.344     0.000     5.768    13.797 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  25.922     6.498      25.922     minutes"
*             Time to Centroid       125.891    93.327     125.891    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        2718.24    0.00       2718.24    c.m"
*             Rainfall losses        45.275     5.933      45.275     mm"
*             Runoff depth           32.168     71.509     32.168     mm"
*             Runoff volume          1129.08    0.00       1129.08    c.m"
*             Runoff coefficient     0.415      0.000      0.415      "
*             Maximum flow           0.344      0.000      0.344      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.344     0.344     5.768    13.797"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.344     0.344     0.344    13.797"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.344    c.m/sec"
*             Hydrograph volume          1129.083    c.m"
*                  0.344     0.344     0.344     0.344"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.344     0.000     0.344     0.344"
* 33          CATCHMENT 251"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*        33.000   % Impervious"
*         5.770   Total Area"
*       100.000   Flow length"
*         2.000   Overland Slope"
*         3.866   Pervious Area"
*       100.000   Pervious length"
*         2.000   Pervious slope"
*         1.904   Impervious Area"
*       296.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.415   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.923   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  1.027     0.000     0.344     0.344 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  25.922     6.498      15.770     minutes"
*             Time to Centroid       125.891    93.327     108.872    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        2993.86    1474.59    4468.45    c.m"
*             Rainfall losses        45.275     5.933      32.292     mm"
*             Runoff depth           32.168     71.509     45.150     mm"
*             Runoff volume          1243.56    1361.61    2605.17    c.m"
*             Runoff coefficient     0.415      0.923      0.583      "
*             Maximum flow           0.379      0.911      1.027      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

```
*                 1.027     1.027     0.344     0.344"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                 1.027     1.027     1.027     0.344"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.162    c.m/sec"
*            Hydrograph volume          3734.259    c.m"
*                 1.027     1.027     1.027     1.162"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                 1.027     0.000     1.027     1.162"
* 33          CATCHMENT 252"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          252   Southern portion of Hamburglr lands"
*        5.000   % Impervious"
*        2.870   Total Area"
*       65.000   Flow length"
*        1.500   Overland Slope"
*        2.726   Pervious Area"
*       65.000   Pervious length"
*        1.500   Pervious slope"
*        0.144   Impervious Area"
*       65.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.384   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.909   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                 0.288     0.000     1.027     1.162 c.m/sec"
*             Catchment 252          Pervious   Impervious Total Area "
*             Surface Area           2.726      0.144      2.870      hectare"
*             Time of concentration  22.694     2.852      20.493     minutes"
*             Time to Centroid       122.172    88.220     118.406    minutes"
*             Rainfall depth         77.443     77.443     77.443     mm"
*             Rainfall volume        2111.48    111.13     2222.61    c.m"
*             Rainfall losses        47.733     7.020      45.697     mm"
*             Runoff depth           29.710     70.422     31.746     mm"
*             Runoff volume          810.05     101.06     911.10     c.m"
*             Runoff coefficient     0.384      0.909      0.410      "
*             Maximum flow           0.272      0.067      0.288      c.m/sec"
* 40          HYDROGRAPH Add Ruroff "
*            4   Add Runoff "
*                 0.288     0.288     1.027     1.162"
* 40          HYDROGRAPH Copy tc Outflow"
*            8   Copy to Outflow"
*                 0.288     0.288     0.288     1.162"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*            Maximum flow                  1.370    c.m/sec"
*            Hydrograph volume          4645.363    c.m"
*                 0.288     0.288     0.288     1.370"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                 0.288     0.000     0.288     1.370"
```



```
* 47          FILEI_O Read/Open DIV00007.050hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00007.050hyd"
*             Major flow at 7"
*             Total volume                  0.000    c.m"
*             Maximum flow                  0.000    c.m/sec"
*                0.000     0.000     0.288     1.370 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                0.000     0.000     0.288     1.370"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                0.000     0.000     0.000     1.370"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  1.370    c.m/sec"
*             Hydrograph volume          4645.363    c.m"
*                0.000     0.000     0.000     1.370"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  1.370    c.m/sec"
*             Hydrograph volume          4645.363    c.m"
*                0.000     1.370     0.000     0.000"
* 54          POND DESIGN"
*         1.370   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        4645.4   Hydrograph volume    c.m"
*            9.   Number of stages"
*       332.660   Minimum water level    metre"
*       336.000   Maximum water level    metre"
*       332.660   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 332.660     0.000     0.000"
*                 333.000    0.3010   198.000"
*                 333.500     1.168  1165.000"
*                 334.000     2.325  2895.000"
*                 334.500     3.132  5301.000"
*                 335.000     3.780  8376.000"
*                 335.500     4.332  12258.00"
*                 335.750     4.583  14551.00"
*                 336.000    21.985  17113.00"
*             Peak outflow                  1.023    c.m/sec"
*             Maximum level               333.417    metre"
*             Maximum storage            1003.699    c.m"
*             Centroidal lag                2.156   hours"
*                0.000     1.370     1.023     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                0.000     1.023     1.023     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                234.030    hectare"
*             Total Impervious area               110.433    hectare"
*             Total % impervious                   47.187"
* 19          EXIT"
```

```
*             MIDUSS Output ------------------------------------------------>"
*             MIDUSS version                          Version 2.25  rev. 473"
*             MIDUSS created                        Sunday, February 07, 2010"
*          10 Units used:                                          ie METRIC"
*             Job folder:                     Q:\34896\104\SWM\MIDUSS\Post"
*             Output filename:                    34896-104_Post-100yr.out"
*             Licensee name:                                          admin"
*             Company                                             Microsoft"
*             Date & Time last used:             12/17/2018 at 1:30:25 PM"
* 81          ADD COMMENT==========================================================="
*           7 Lines of comment"
*             ************************************************************"
*             Wilmot Employment Lands"
*             New Hamburg, Ontario"
*             100 Year Storm Event - Post development"
*             Job No.: 34896-104"
*             Calculated by: NED/MSB"
*             ************************************************************"
* 31          TIME PARAMETERS"
*        5.000  Time Step"
*      240.000  Max. Storm length"
*     1500.000  Max. Hydrograph"
* 32          STORM Chicago storm"
*           1   Chicago storm"
*     4688.000  Coefficient A"
*       17.000  Constant B"
*        0.962  Exponent C"
*        0.400  Fraction R"
*      180.000  Duration"
*        1.000  Time step multiplier"
*             Maximum intensity          239.650    mm/hr"
*             Total depth                 87.263    mm"
*           6   100hyd   Hydrograph extension used in this file"
* 81          ADD COMMENT==========================================================="
*           3 Lines of comment"
*             ************************************************"
*             Catchments North of GEXR, part of Inlet #1"
*             ************************************************"
* 33          CATCHMENT 201"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         201   Area Northeast of GEXR"
*        0.000  % Impervious"
*        2.970  Total Area"
*       80.000  Flow length"
*        0.500  Overland Slope"
*        2.970  Pervious Area"
*       80.000  Pervious length"
*        0.500  Pervious slope"
*        0.000  Impervious Area"
*       80.000  Impervious length"
*        0.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       82.000  Pervious SCS Curve No."
*        0.556  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        5.576  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.000  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                 0.431     0.000     0.000     0.000 c.m/sec"
*             Catchment 201          Pervious   Impervious Total Area "
*             Surface Area           2.970      0.000      2.970      hectare"
*             Time of concentration  28.626     4.298      28.626     minutes"
```



```
*             Time to Centroid       127.786    89.937     127.786    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        2591.72    0.00       2591.72    c.m"
*             Rainfall losses        38.763     6.170      38.763     mm"
*             Runoff depth           48.500     81.093     48.500     mm"
*             Runoff volume          1440.46    0.00       1440.46    c.m"
*             Runoff coefficient     0.556      0.000      0.556      "
*             Maximum flow           0.431      0.000      0.431      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.431     0.431     0.000     0.000"
* 33          CATCHMENT 202"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         202   Woodlot - north of GEXR"
*        0.000  % Impervious"
*        2.080  Total Area"
*       80.000  Flow length"
*        2.500  Overland Slope"
*        2.080  Pervious Area"
*       80.000  Pervious length"
*        2.500  Pervious slope"
*        0.000  Impervious Area"
*       80.000  Impervious length"
*        2.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       70.000  Pervious SCS Curve No."
*        0.361  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*       10.886  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.000  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                 0.228     0.431     0.000     0.000 c.m/sec"
*             Catchment 202          Pervious   Impervious Total Area "
*             Surface Area           2.080      0.000      2.080      hectare"
*             Time of concentration  21.812     2.652      21.812     minutes"
*             Time to Centroid       120.953    87.600     120.953    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1815.08    0.00       1815.08    c.m"
*             Rainfall losses        55.802     7.109      55.802     mm"
*             Runoff depth           31.462     80.154     31.462     mm"
*             Runoff volume          654.40     0.00       654.40     c.m"
*             Runoff coefficient     0.361      0.000      0.361      "
*             Maximum flow           0.228      0.000      0.228      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.228     0.644     0.000     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.228     0.644     0.644     0.000"
* 40          HYDROGRAPH   Combine    1"
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*             Maximum flow                 0.644    c.m/sec"
*             Hydrograph volume         2094.868    c.m"
*                 0.228     0.644     0.644     0.644"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.228     0.000     0.644     0.644"
* 33          CATCHMENT 203"
*           1   Triangular SCS"
*           1   Equal length"
```

```
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.486   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.920   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 6.017     0.000     0.644     0.644 c.m/sec"
*            Catchment 203          Pervious   Impervious Total Area "
*            Surface Area           7.404      11.106     18.510     hectare"
*            Time of concentration  26.713     3.747      9.726      minutes"
*            Time to Centroid       125.718    89.195     98.705     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        0.6461     0.9691     1.6152     ha-m"
*            Rainfall losses        44.876     6.989      22.144     mm"
*            Runoff depth           42.387     80.275     65.120     mm"
*            Runoff volume          0.3138     0.8915     1.2054     ha-m"
*            Runoff coefficient     0.486      0.920      0.746      "
*            Maximum flow           0.957      5.715      6.017      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 6.017     6.017     0.644     0.644"
* 54         POND DESIGN"
*        6.017   Current peak flow    c.m/sec"
*        2.303   Target outflow    c.m/sec"
*      12053.6   Hydrograph volume    c.m"
*           6.   Number of stages"
*      341.500   Minimum water level    metre"
*      343.600   Maximum water level    metre"
*      341.500   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                341.500     0.000     0.000"
*                342.000    0.1541  1746.000"
*                342.500    0.2669  3784.000"
*                343.000    0.3446  6114.000"
*                343.300    0.3837  7652.000"
*                343.600     2.941  9295.000"
*           1.   WEIRS"
*                  Crest      Weir      Crest      Left      Right"
*              elevation coefficie   breadth sideslope sideslope"
*                343.300     0.900    10.000     0.000     0.000"
*           1.   ORIFICES"
*                Orifice   Orifice   Orifice Number of"
*                 invert coefficie  diameter  orifices"
*                341.500     0.630    0.3750     1.000"
*            Peak outflow                  1.172    c.m/sec"
*            Maximum level               343.393    metre"
*            Maximum storage            8161.791    c.m"
*            Centroidal lag                5.475   hours"
*                 6.017     6.017     1.172     0.644 c.m/sec"
* 40         HYDROGRAPH   Combine    1"
```



```
*           6   Combine "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  1.614    c.m/sec"
*            Hydrograph volume         14145.346    c.m"
*                 6.017     6.017     1.172     1.614"
* 40         HYDROGRAPH   Confluence    1"
*           7   Confluence "
*           1   Node #"
*               u/s of GEXR"
*            Maximum flow                  1.614    c.m/sec"
*            Hydrograph volume         14145.346    c.m"
*                 6.017     1.614     1.172     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 6.017     1.614     1.614     0.000"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  1.614    c.m/sec"
*            Hydrograph volume         14145.346    c.m"
*                 6.017     1.614     1.614     1.614"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 6.017     0.000     1.614     1.614"
* 81         ADD COMMENT==========================================================="
*         3   Lines of comment"
*             **************************************************"
*             Catchments South of GEXR, part of Inlet #1"
*             **************************************************"
* 33         CATCHMENT 204"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         204   Riverside Brass"
*      59.000   % Impervious"
*       2.020   Total Area"
*      35.000   Flow length"
*       1.200   Overland Slope"
*       0.828   Pervious Area"
*      60.000   Pervious length"
*       2.000   Pervious slope"
*       1.192   Impervious Area"
*     116.000   Impervious length"
*       0.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.451   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.930   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.707     0.000     1.614     1.614 c.m/sec"
*            Catchment 204          Pervious   Impervious Total Area "
*            Surface Area           0.828      1.192      2.020      hectare"
*            Time of concentration  17.571     5.372      8.447      minutes"
*            Time to Centroid       114.679    91.434     97.293     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        722.72     1040.01    1762.72    c.m"
*            Rainfall losses        47.922     6.142      23.272     mm"
*            Runoff depth           39.341     81.122     63.992     mm"
*            Runoff volume          325.82     966.81     1292.64    c.m"
*            Runoff coefficient     0.451      0.930      0.733      "
```

```
*            Maximum flow          0.129      0.647      0.707      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.707     0.707     1.614     1.614"
* 54         POND DESIGN"
*        0.707   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       1292.6   Hydrograph volume    c.m"
*          4.    Number of stages"
*        0.000   Minimum water level    metre"
*        0.910   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3100   0.03090   782.000"
*                 0.6100    0.1232  1619.000"
*                 0.9100    0.2769  2511.000"
*             Peak outflow                  0.055    c.m/sec"
*             Maximum level                 0.389    metre"
*             Maximum storage            1002.650    c.m"
*             Centroidal lag                8.024    hours"
*                  0.707     0.707     0.055     1.614 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*             Maximum flow                  1.666    c.m/sec"
*             Hydrograph volume         15395.846    c.m"
*                    0.707     0.707     0.055     1.666"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.707     0.000     0.055     1.666"
* 33         CATCHMENT 205"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         205   Iron Bridge Manufacturing Property - Woodlot"
*       5.000   % Impervious"
*       1.190   Total Area"
*     255.000   Flow length"
*       1.800   Overland Slope"
*       1.131   Pervious Area"
*     255.000   Pervious length"
*       1.800   Pervious slope"
*       0.060   Impervious Area"
*     255.000   Impervious length"
*       1.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.361   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.932   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.073     0.000     0.055     1.666 c.m/sec"
*            Catchment 205          Pervious   Impervious Total Area "
*            Surface Area           1.131      0.060      1.190      hectare"
*            Time of concentration  48.258     5.868      43.182     minutes"
*            Time to Centroid       153.462    92.125     146.119    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        986.51     51.92      1038.43    c.m"
*            Rainfall losses        55.779     5.901      53.285     mm"
*            Runoff depth           31.485     81.362     33.979     mm"
```



```
*            Runoff volume         355.94     48.41      404.35     c.m"
*            Runoff coefficient    0.361      0.932      0.389      "
*            Maximum flow          0.069      0.032      0.073      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.073     0.073     0.055     1.666"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.073     0.073     0.073     1.666"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*             Maximum flow                  1.738    c.m/sec"
*             Hydrograph volume         15800.200    c.m"
*                    0.073     0.073     0.073     1.738"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.073     0.000     0.073     1.738"
* 33         CATCHMENT 206"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         206   Industrial properties at end of Hamilton Road"
*      35.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.852   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       0.997   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.450   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.919   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.588     0.000     0.073     1.738 c.m/sec"
*            Catchment 206          Pervious   Impervious Total Area "
*            Surface Area           1.852      0.997      2.850      hectare"
*            Time of concentration  19.391     2.633      10.617     minutes"
*            Time to Centroid       116.983    87.574     101.585    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1616.56    870.45     2487.01    c.m"
*            Rainfall losses        47.973     7.079      33.660     mm"
*            Runoff depth           39.290     80.185     53.603     mm"
*            Runoff volume          727.85     799.84     1527.69    c.m"
*            Runoff coefficient     0.450      0.919      0.614      "
*            Maximum flow           0.270      0.533      0.588      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.588     0.588     0.073     1.738"
* 33         CATCHMENT 207"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         207   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
*      65.000   Flow length"
```

```
*        3.000   Overland Slope"
*        5.624   Pervious Area"
*       65.000   Pervious length"
*        3.000   Pervious slope"
*        0.296   Impervious Area"
*       65.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.200   Pervious SCS Curve No."
*        0.363   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.782   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.924   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.721     0.588     0.073     1.738 c.m/sec"
*             Catchment 207          Pervious   Impervious Total Area "
*             Surface Area           5.624      0.296      5.920      hectare"
*             Time of concentration  18.161     2.217      16.280     minutes"
*             Time to Centroid       116.426    86.942     112.948    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        4907.70    258.30     5166.00    c.m"
*             Rainfall losses        55.550     6.662      53.106     mm"
*             Runoff depth           31.713     80.602     34.158     mm"
*             Runoff volume          1783.55    238.58     2022.13    c.m"
*             Runoff coefficient     0.363      0.924      0.391      "
*             Maximum flow           0.671      0.161      0.721      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.721     1.151     0.073     1.738"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.721     1.151     1.151     1.738"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                 2.292    c.m/sec"
*             Hydrograph volume        19350.027    c.m"
*                  0.721     1.151     1.151     2.292"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.721     0.000     1.151     2.292"
* 33          CATCHMENT 208"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          208   N.C. Pestell site"
*       75.000   % Impervious"
*        5.530   Total Area"
*      130.000   Flow length"
*        2.000   Overland Slope"
*        1.383   Pervious Area"
*       50.000   Pervious length"
*        3.000   Pervious slope"
*        4.148   Impervious Area"
*      192.000   Impervious length"
*        0.750   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       75.000   Pervious SCS Curve No."
*        0.434   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.467   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
```



```
*        0.931   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  2.370     0.000     1.151     2.292 c.m/sec"
*             Catchment 208          Pervious   Impervious Total Area "
*             Surface Area           1.383      4.148      5.530      hectare"
*             Time of concentration  14.194     6.436      7.480      minutes"
*             Time to Centroid       110.640    92.886     95.275     minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1206.42    3619.25    4825.67    c.m"
*             Rainfall losses        49.377     6.039      16.874     mm"
*             Runoff depth           37.867     81.224     70.390     mm"
*             Runoff volume          523.78     3368.77    3892.55    c.m"
*             Runoff coefficient     0.434      0.931      0.807      "
*             Maximum flow           0.238      2.237      2.370      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  2.370     2.370     1.151     2.292"
* 54          POND DESIGN"
*        2.370   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       3892.5   Hydrograph volume    c.m"
*           9.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.200   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*             Peak outflow                 0.403    c.m/sec"
*             Maximum level                1.011    metre"
*             Maximum storage           2715.837    c.m"
*             Centroidal lag               9.340    hours"
*                  2.370     2.370     0.403     2.292 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*            6   Combine "
*            2   Node #"
*                INLET 1"
*             Maximum flow                 2.695    c.m/sec"
*             Hydrograph volume        22861.723    c.m"
*                  2.370     2.370     0.403     2.695"
* 81          ADD COMMENT==========================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments South of GEXR, part of Inlet #2"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  2.370     0.000     0.403     2.695"
* 33          CATCHMENT 209"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          209   Alpine Solutions - west SMWP"
*       30.000   % Impervious"
*        1.920   Total Area"
*      150.000   Flow length"
*        1.000   Overland Slope"
*        1.344   Pervious Area"
```

```
*      150.000   Pervious length"
*        1.500   Pervious slope"
*        0.576   Impervious Area"
*      113.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       80.000   Pervious SCS Curve No."
*        0.519   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.350   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.921   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.342     0.000     0.403     2.695 c.m/sec"
*             Catchment 209          Pervious   Impervious Total Area "
*             Surface Area           1.344      0.576      1.920      hectare"
*             Time of concentration  31.013     3.803      19.260     minutes"
*             Time to Centroid       131.131    89.275     113.050    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1172.82    502.64     1675.46    c.m"
*             Rainfall losses        41.950     6.859      31.423     mm"
*             Runoff depth           45.313     80.404     55.841     mm"
*             Runoff volume          609.01     463.13     1072.14    c.m"
*             Runoff coefficient     0.519      0.921      0.640      "
*             Maximum flow           0.169      0.297      0.342      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.342     0.342     0.403     2.695"
* 54          POND DESIGN"
*         0.342   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        1072.1   Hydrograph volume    c.m"
*           7.    Number of stages"
*         0.000   Minimum water level    metre"
*         1.100   Maximum water level    metre"
*         0.000   Starting water level    metre"
*            0    Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.2500   0.04200     7.000"
*                  0.5000   0.09000    71.000"
*                  0.7500    0.1250   220.000"
*                  0.9000    0.1400   346.000"
*                   1.000    0.3110   445.000"
*                   1.100    0.6160   557.000"
*             Peak outflow                  0.141    c.m/sec"
*             Maximum level                 0.901    metre"
*             Maximum storage             346.549    c.m"
*             Centroidal lag                2.338   hours"
*                  0.342     0.342     0.141     2.695 c.m/sec"
* 40          HYDROGRAPH   Combine    3"
*            6   Combine "
*            3   Node #"
*                INLET 2"
*             Maximum flow                  0.141    c.m/sec"
*             Hydrograph volume          1072.464    c.m"
*                  0.342     0.342     0.141     0.141"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.342     0.000     0.141     0.141"
* 33          CATCHMENT 210"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          210   Woodlot north of Hamburglr/Badenview lands"
```



```
*        5.000   % Impervious"
*       13.230   Total Area"
*      170.000   Flow length"
*        2.400   Overland Slope"
*       12.568   Pervious Area"
*      170.000   Pervious length"
*        2.400   Pervious slope"
*        0.661   Impervious Area"
*      170.000   Impervious length"
*        2.400   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.000   Pervious SCS Curve No."
*        0.361   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.886   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.929   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.047     0.000     0.141     0.141 c.m/sec"
*             Catchment 210          Pervious   Impervious Total Area "
*             Surface Area           12.568     0.661      13.230     hectare"
*             Time of concentration  34.708     4.220      31.068     minutes"
*             Time to Centroid       136.800    89.831     131.192    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1.0968     0.0577     1.1545     ha-m"
*             Rainfall losses        55.800     6.208      53.320     mm"
*             Runoff depth           31.463     81.055     33.943     mm"
*             Runoff volume          3954.48    536.18     4490.67    c.m"
*             Runoff coefficient     0.361      0.929      0.389      "
*             Maximum flow           0.995      0.349      1.047      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  1.047     1.047     0.141     0.141"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  1.047     1.047     1.047     0.141"
* 40          HYDROGRAPH   Combine    3"
*            6   Combine "
*            3   Node #"
*                INLET 2"
*             Maximum flow                  1.183    c.m/sec"
*             Hydrograph volume          5563.123    c.m"
*                  1.047     1.047     1.047     1.183"
* 81          ADD COMMENT==============================================="
*          3  Lines of comment"
*             **********************************************"
*             South of GEXR along Nafziger Rd, part of Inlet #3"
*             **********************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  1.047     0.000     1.047     1.183"
* 33          CATCHMENT 211"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          211   Culivated lands east of Nafziger Road"
*        1.000   % Impervious"
*        7.310   Total Area"
*      120.000   Flow length"
*        3.300   Overland Slope"
*        7.237   Pervious Area"
*      120.000   Pervious length"
*        3.300   Pervious slope"
*        0.073   Impervious Area"
*      120.000   Impervious length"
```

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*        3.300   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.451   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.918   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.974     0.000     1.047     1.183 c.m/sec"
*             Catchment 211          Pervious   Impervious Total Area "
*             Surface Area           7.237      0.073      7.310      hectare"
*             Time of concentration  22.917     3.112      22.518     minutes"
*             Time to Centroid       121.427    88.279     120.759    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        6315.17    63.79      6378.96    c.m"
*             Rainfall losses        47.932     7.115      47.524     mm"
*             Runoff depth           39.331     80.148     39.739     mm"
*             Runoff volume          2846.35    58.59      2904.94    c.m"
*             Runoff coefficient     0.451      0.918      0.455      "
*             Maximum flow           0.965      0.038      0.974      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.974     0.974     1.047     1.183"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.974     0.974     0.974     1.183"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                 0.974    c.m/sec"
*            Hydrograph volume         2904.939    c.m"
*                 0.974     0.974     0.974     0.974"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.974     0.000     0.974     0.974"
* 33          CATCHMENT 212"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         212   Alpine Solutions - East SMWP"
*      40.000   % Impervious"
*       2.560   Total Area"
*     150.000   Flow length"
*       1.500   Overland Slope"
*       1.536   Pervious Area"
*     180.000   Pervious length"
*       1.500   Pervious slope"
*       1.024   Impervious Area"
*     131.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.519   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.928   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.581     0.000     0.974     0.974 c.m/sec"
*            Catchment 212          Pervious   Impervious Total Area "
*            Surface Area           1.536      1.024      2.560      hectare"
```



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*            Time of concentration  34.599     4.156      18.044     minutes"
*            Time to Centroid       135.716    89.748     110.719    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1340.37    893.58     2233.94    c.m"
*            Rainfall losses        41.957     6.255      27.676     mm"
*            Runoff depth           45.306     81.008     59.587     mm"
*            Runoff volume          695.90     829.53     1525.43    c.m"
*            Runoff coefficient     0.519      0.928      0.683      "
*            Maximum flow           0.179      0.539      0.581      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.581     0.581     0.974     0.974"
* 54          POND DESIGN"
*        0.581   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      1525.4    Hydrograph volume    c.m"
*          7.    Number of stages"
*        0.000   Minimum water level    metre"
*        1.000   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1000   0.02000     7.000"
*                 0.2500   0.04200    64.000"
*                 0.5000   0.09000   343.000"
*                 0.7500    0.1250   877.000"
*                 0.8000    0.1360  1014.000"
*                  1.000    0.7880  1667.000"
*               Peak outflow                  0.119    c.m/sec"
*               Maximum level                 0.709    metre"
*               Maximum storage             788.718    c.m"
*               Centroidal lag                3.165    hours"
*                    0.581     0.581     0.119     0.974 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  1.078    c.m/sec"
*            Hydrograph volume          4430.444    c.m"
*                 0.581     0.581     0.119     1.078"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.581     0.000     0.119     1.078"
* 33          CATCHMENT 213"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         213   Woodlot East and West of Nafziger Road"
*       3.000   % Impervious"
*      13.460   Total Area"
*     140.000   Flow length"
*       3.600   Overland Slope"
*      13.056   Pervious Area"
*     140.000   Pervious length"
*       3.600   Pervious slope"
*       0.404   Impervious Area"
*     140.000   Impervious length"
*       3.600   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.100   Pervious SCS Curve No."
*       0.362   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.834   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.920   Impervious Runoff coefficient"
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*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  1.266     0.000     0.119     1.078 c.m/sec"
*            Catchment 213          Pervious   Impervious Total Area "
*            Surface Area           13.056     0.404      13.460     hectare"
*            Time of concentration  27.300     3.326      25.554     minutes"
*            Time to Centroid       127.677    88.586     124.830    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1.1393     0.0352     1.1746     ha-m"
*            Rainfall losses        55.661     7.005      54.201     mm"
*            Runoff depth           31.603     80.258     33.062     mm"
*            Runoff volume          4126.11    324.08     4450.19    c.m"
*            Runoff coefficient     0.362      0.920      0.379      "
*            Maximum flow           1.226      0.206      1.266      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.266     1.266     0.119     1.078"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  1.266     1.266     1.266     1.078"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.305    c.m/sec"
*            Hydrograph volume          8880.620    c.m"
*                  1.266     1.266     1.266     2.305"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  1.266     0.000     1.266     2.305"
* 33         CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      73.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.336   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.613   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.574   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.930   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  2.166     0.000     1.266     2.305 c.m/sec"
*            Catchment 214          Pervious   Impervious Total Area "
*            Surface Area           1.336      3.613      4.950      hectare"
*            Time of concentration  13.369     5.062      6.605      minutes"
*            Time to Centroid       107.903    91.005     94.142     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1166.28    3153.26    4319.54    c.m"
*            Rainfall losses        37.213     6.070      14.478     mm"
*            Runoff depth           50.051     81.193     72.785     mm"
*            Runoff volume          668.93     2933.93    3602.85    c.m"
*            Runoff coefficient     0.574      0.930      0.834      "
*            Maximum flow           0.315      1.953      2.166      c.m/sec"
```



```
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  2.166     2.166     1.266     2.305"
* 54         POND DESIGN"
*        2.166   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*       3602.9   Hydrograph volume    c.m"
*          15.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.450   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00700   248.000"
*                 0.2500   0.00900   418.000"
*                 0.3500   0.01100   593.000"
*                 0.4500   0.01300   775.000"
*                 0.5500   0.01500   964.000"
*                 0.6500   0.01600  1161.000"
*                 0.7500   0.01700  1364.000"
*                 0.8500   0.01900  1575.000"
*                 0.9500   0.02000  1795.000"
*                  1.050   0.05600  2025.000"
*                  1.150    0.2080  2263.000"
*                  1.250    0.4600  2511.000"
*                  1.350     2.766  2768.000"
*                  1.450     6.856  3033.000"
*               Peak outflow                  0.427    c.m/sec"
*               Maximum level                 1.237    metre"
*               Maximum storage            2478.470    c.m"
*               Centroidal lag               12.276    hours"
*                  2.166     2.166     0.427     2.305 c.m/sec"
* 40         HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  2.699    c.m/sec"
*            Hydrograph volume          11821.912   c.m"
*                  2.166     2.166     0.427     2.699"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  2.166     0.000     0.427     2.699"
* 33         CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.451   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.920   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
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*        0.518   Impervious Initial abstraction"
*                    0.714      0.000      0.427      2.699 c.m/sec"
*             Catchment 215          Pervious   Impervious Total Area "
*             Surface Area           1.573      1.287      2.860      hectare"
*             Time of concentration  24.582     3.338      11.300     minutes"
*             Time to Centroid       123.534    88.605     101.695    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1372.65    1123.08    2495.73    c.m"
*             Rainfall losses        47.902     7.002      29.497     mm"
*             Runoff depth           39.362     80.261     57.767     mm"
*             Runoff volume          619.16     1032.97    1652.13    c.m"
*             Runoff coefficient     0.451      0.920      0.662      "
*             Maximum flow           0.199      0.655      0.714      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                    0.714      0.714      0.427      2.699"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.714      0.714      0.714      2.699"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  3.020    c.m/sec"
*            Hydrograph volume         13474.040    c.m"
*                    0.714      0.714      0.714      3.020"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.714      0.000      0.714      3.020"
* 33          CATCHMENT 216"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         216   Industrial lands west of Nafziger Road"
*       45.000  % Impervious"
*        2.860  Total Area"
*      110.000  Flow length"
*        2.000  Overland Slope"
*        1.573  Pervious Area"
*      110.000  Pervious length"
*        2.000  Pervious slope"
*        1.287  Impervious Area"
*      110.000  Impervious length"
*        2.000  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.451  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.920  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                    0.715      0.000      0.714      3.020 c.m/sec"
*             Catchment 216          Pervious   Impervious Total Area "
*             Surface Area           1.573      1.287      2.860      hectare"
*             Time of concentration  25.278     3.433      11.615     minutes"
*             Time to Centroid       124.396    88.754     102.103    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        1372.65    1123.08    2495.73    c.m"
*             Rainfall losses        47.943     7.007      29.522     mm"
*             Runoff depth           39.321     80.256     57.742     mm"
*             Runoff volume          618.52     1032.89    1651.41    c.m"
*             Runoff coefficient     0.451      0.920      0.662      "
*             Maximum flow           0.195      0.653      0.715      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
```



```
*           4   Add Runoff "
*                    0.715      0.715      0.714      3.020"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.715      0.715      0.715      3.020"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  3.360    c.m/sec"
*            Hydrograph volume         15125.443    c.m"
*                    0.715      0.715      0.715      3.360"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                    0.715      0.000      0.715      3.360"
* 33          CATCHMENT 217"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         217   Existing ROW west of Nafziger Road"
*       75.000  % Impervious"
*        0.730  Total Area"
*       90.000  Flow length"
*        2.100  Overland Slope"
*        0.183  Pervious Area"
*       90.000  Pervious length"
*        2.100  Pervious slope"
*        0.548  Impervious Area"
*       90.000  Impervious length"
*        2.100  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.451  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.917  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                    0.288      0.000      0.715      3.360 c.m/sec"
*             Catchment 217          Pervious   Impervious Total Area "
*             Surface Area           0.183      0.548      0.730      hectare"
*             Time of concentration  22.085     2.999      5.686      minutes"
*             Time to Centroid       120.383    88.118     92.660     minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        159.26     477.77     637.02     c.m"
*             Rainfall losses        47.939     7.245      17.418     mm"
*             Runoff depth           39.324     80.019     69.845     mm"
*             Runoff volume          71.77      438.10     509.87     c.m"
*             Runoff coefficient     0.451      0.917      0.800      "
*             Maximum flow           0.025      0.285      0.288      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                    0.288      0.288      0.715      3.360"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                    0.288      0.288      0.288      3.360"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  3.457    c.m/sec"
*            Hydrograph volume         15635.310    c.m"
*                    0.288      0.288      0.288      3.457"
* 40          HYDROGRAPH   Confluence    2"
*           7   Confluence "
```

```
*           2   Node #"
*               INLET 1"
*            Maximum flow                  2.695    c.m/sec"
*            Hydrograph volume          22861.723    c.m"
*                  0.288     2.695     0.288     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.288     2.695     2.695     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  2.695    c.m/sec"
*            Hydrograph volume          22861.723    c.m"
*                  0.288     2.695     2.695     2.695"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  1.183    c.m/sec"
*            Hydrograph volume           5563.123    c.m"
*                  0.288     1.183     2.695     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.288     1.183     1.183     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  3.842    c.m/sec"
*            Hydrograph volume          28424.844    c.m"
*                  0.288     1.183     1.183     3.842"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  3.457    c.m/sec"
*            Hydrograph volume          15635.311    c.m"
*                  0.288     3.457     1.183     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.288     3.457     3.457     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  7.011    c.m/sec"
*            Hydrograph volume          44060.141    c.m"
*                  0.288     3.457     3.457     7.011"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.288     0.000     3.457     7.011"
* 33         CATCHMENT 223"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         223   New Hamburglr Inc. lands"
*      85.000   % Impervious"
*      12.570   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       1.885   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      10.684   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
```



```
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.451   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.920   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 5.562     0.000     3.457     7.011 c.m/sec"
*            Catchment 223          Pervious   Impervious Total Area "
*            Surface Area           1.885      10.684     12.570     hectare"
*            Time of concentration  27.590     3.747      5.646      minutes"
*            Time to Centroid       127.310    89.195     92.231     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        0.1645     0.9324     1.0969     ha-m"
*            Rainfall losses        47.902     6.989      13.126     mm"
*            Runoff depth           39.362     80.275     74.138     mm"
*            Runoff volume          742.16     8576.95    9319.11    c.m"
*            Runoff coefficient     0.451      0.920      0.850      "
*            Maximum flow           0.222      5.498      5.562      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 5.562     5.562     3.457     7.011"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 5.562     5.562     5.562     7.011"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 10.529    c.m/sec"
*            Hydrograph volume         53379.254    c.m"
*                  5.562     5.562     5.562    10.529"
* 81         ADD COMMENT==========================================================="
*           3   Lines of comment"
*               ****************************************************"
*               Catchments east of Hamilton Road, part of Inlet #4"
*               ****************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 5.562     0.000     5.562    10.529"
* 33         CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*      85.000   % Impervious"
*       2.060   Total Area"
*     230.000   Flow length"
*       1.700   Overland Slope"
*       0.309   Pervious Area"
*     230.000   Pervious length"
*       3.000   Pervious slope"
*       1.751   Impervious Area"
*     230.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.479   Pervious Runoff coefficient"
*       0.060   Pervious Ia/S coefficient"
*       4.813   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.932   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                 0.948     0.000     5.562    10.529 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  33.937     4.732      7.160      minutes"
*            Time to Centroid       135.070    90.522     94.226     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        269.64     1527.98    1797.63    c.m"
*            Rainfall losses        45.484     5.972      11.899     mm"
*            Runoff depth           41.780     81.291     75.364     mm"
*            Runoff volume          129.10     1423.41    1552.51    c.m"
*            Runoff coefficient     0.479      0.932      0.864      "
*            Maximum flow           0.033      0.940      0.948      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.948     0.948     5.562    10.529"
* 54         POND DESIGN"
*       0.948   Current peak flow    c.m/sec"
*       4.094   Target outflow    c.m/sec"
*      1552.5   Hydrograph volume    c.m"
*         15.   Number of stages"
*     344.700   Minimum water level    metre"
*     345.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               344.700    0.1250     0.000"
*               344.750    0.1270     9.000"
*               344.800    0.1280    35.000"
*               344.850    0.1300    77.000"
*               344.900    0.1450   136.000"
*               344.950    0.1820   209.000"
*               345.000    0.2220   297.000"
*               345.050    0.2690   400.000"
*               345.100    0.2710   519.000"
*               345.150    0.2740   653.000"
*               345.200    0.2760   804.000"
*               345.250    0.2790   971.000"
*               345.300    0.2820  1154.000"
*               345.350    0.2840  1355.000"
*               345.400    0.2860  1571.000"
*            Peak outflow                  0.273    c.m/sec"
*            Maximum level               345.134    metre"
*            Maximum storage             609.738    c.m"
*            Centroidal lag                1.949    hours"
*                 0.948     0.948     0.273    10.529 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                 10.785    c.m/sec"
*            Hydrograph volume         54926.520    c.m"
*                 0.948     0.948     0.273    10.785"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.948     0.000     0.273    10.785"
* 33         CATCHMENT 219"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        219   N.C. Pestells Head Office & other Industrial"
*     85.000   % Impervious"
*      1.280   Total Area"
*     75.000   Flow length"
*      1.500   Overland Slope"
*      0.192   Pervious Area"
*     75.000   Pervious length"
```



```
*      3.000   Pervious slope"
*      1.088   Impervious Area"
*     75.000   Impervious length"
*      3.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.331   Pervious Runoff coefficient"
*      0.281   Pervious Ia/S coefficient"
*     22.539   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.921   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.589     0.000     0.273    10.785 c.m/sec"
*           Catchment 219          Pervious   Impervious Total Area "
*           Surface Area           0.192      1.088      1.280      hectare"
*           Time of concentration  21.830     2.416      3.572      minutes"
*           Time to Centroid       122.174    87.233     89.314     minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        167.55     949.43     1116.97    c.m"
*           Rainfall losses        58.408     6.873      14.603     mm"
*           Runoff depth           28.855     80.390     72.660     mm"
*           Runoff volume          55.40      874.65     930.05     c.m"
*           Runoff coefficient     0.331      0.921      0.833      "
*           Maximum flow           0.019      0.588      0.589      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.589     0.589     0.273    10.785"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.589     0.589     0.589    10.785"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*            Maximum flow                 11.304    c.m/sec"
*            Hydrograph volume         55856.563    c.m"
*                 0.589     0.589     0.589    11.304"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.589     0.000     0.589    11.304"
* 33         CATCHMENT 220"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        220   Northwest corner of Nithview Heights"
*      8.000   % Impervious"
*      0.500   Total Area"
*     60.000   Flow length"
*      5.000   Overland Slope"
*      0.460   Pervious Area"
*     60.000   Pervious length"
*      5.000   Pervious slope"
*      0.040   Impervious Area"
*     60.000   Impervious length"
*      5.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     74.000   Pervious SCS Curve No."
*      0.419   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.924   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.926   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
```

```
*                0.083     0.000     0.589    11.304 c.m/sec"
*           Catchment 220          Pervious   Impervious Total Area "
*           Surface Area           0.460      0.040      0.500      hectare"
*           Time of concentration  13.831     1.813      11.893     minutes"
*           Time to Centroid       110.380    86.352     106.506    minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        401.41     34.91      436.32     c.m"
*           Rainfall losses        50.709     6.442      47.168     mm"
*           Runoff depth           36.554     80.821     40.095     mm"
*           Runoff volume          168.15     32.33      200.48     c.m"
*           Runoff coefficient     0.419      0.926      0.459      "
*           Maximum flow           0.076      0.022      0.083      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.083     0.083     0.589    11.304"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.083     0.083     0.083    11.304"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                 11.366    c.m/sec"
*           Hydrograph volume         56057.035    c.m"
*                0.083     0.083     0.083    11.366"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.083     0.000     0.083    11.366"
* 33        CATCHMENT 221"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       221   Proposed ROW from Hamilton Road"
*      81.500 % Impervious"
*       0.810 Total Area"
*      40.000 Flow length"
*       2.000 Overland Slope"
*       0.150 Pervious Area"
*      40.000 Pervious length"
*       2.000 Pervious slope"
*       0.660 Impervious Area"
*      40.000 Impervious length"
*       2.000 Impervious slope"
*       0.250 Pervious Manning 'n'"
*      76.000 Pervious SCS Curve No."
*       0.450 Pervious Runoff coefficient"
*       0.100 Pervious Ia/S coefficient"
*       8.021 Pervious Initial abstraction"
*       0.015 Impervious Manning 'n'"
*      98.000 Impervious SCS Curve No."
*       0.926 Impervious Runoff coefficient"
*       0.100 Impervious Ia/S coefficient"
*       0.518 Impervious Initial abstraction"
*                0.372     0.000     0.083    11.366 c.m/sec"
*           Catchment 221          Pervious   Impervious Total Area "
*           Surface Area           0.150      0.660      0.810      hectare"
*           Time of concentration  13.776     1.871      3.055      minutes"
*           Time to Centroid       109.926    86.432     88.768     minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        130.76     576.07     706.83     c.m"
*           Rainfall losses        47.971     6.470      14.148     mm"
*           Runoff depth           39.293     80.794     73.116     mm"
*           Runoff volume          58.88      533.36     592.24     c.m"
*           Runoff coefficient     0.450      0.926      0.838      "
*           Maximum flow           0.027      0.366      0.372      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
```



```
*                0.372     0.372     0.083    11.366"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.372     0.372     0.372    11.366"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                 11.685    c.m/sec"
*           Hydrograph volume         56649.285    c.m"
*                0.372     0.372     0.372    11.685"
* 81        ADD COMMENT================================================="
*         3 Lines of comment"
*           **************************************************"
*           Catchment to Inlet #5"
*           **************************************************"
* 40        HYDROGRAPH Start - New Tributary"
*         2   Start - New Tributary"
*                0.372     0.000     0.372    11.685"
* 33        CATCHMENT 222"
*         1   Triangular SCS"
*         1   Equal length"
*         1   SCS method"
*       222   Rear yards from Hamilton Heights Subdivision"
*       5.000 % Impervious"
*       1.080 Total Area"
*      20.000 Flow length"
*       3.000 Overland Slope"
*       1.026 Pervious Area"
*      20.000 Pervious length"
*       3.000 Pervious slope"
*       0.054 Impervious Area"
*      20.000 Impervious length"
*       3.000 Impervious slope"
*       0.250 Pervious Manning 'n'"
*      76.000 Pervious SCS Curve No."
*       0.450 Pervious Runoff coefficient"
*       0.100 Pervious Ia/S coefficient"
*       8.021 Pervious Initial abstraction"
*       0.015 Impervious Manning 'n'"
*      98.000 Impervious SCS Curve No."
*       0.913 Impervious Runoff coefficient"
*       0.100 Impervious Ia/S coefficient"
*       0.518 Impervious Initial abstraction"
*                0.248     0.000     0.372    11.685 c.m/sec"
*           Catchment 222          Pervious   Impervious Total Area "
*           Surface Area           1.026      0.054      1.080      hectare"
*           Time of concentration  8.048      1.093      7.376      minutes"
*           Time to Centroid       102.747    85.426     101.074    minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        895.32     47.12      942.45     c.m"
*           Rainfall losses        48.019     7.569      45.997     mm"
*           Runoff depth           39.244     79.694     41.267     mm"
*           Runoff volume          402.64     43.03      445.68     c.m"
*           Runoff coefficient     0.450      0.913      0.473      "
*           Maximum flow           0.227      0.031      0.248      c.m/sec"
* 40        HYDROGRAPH Add Runoff "
*         4   Add Runoff "
*                0.248     0.248     0.372    11.685"
* 40        HYDROGRAPH Copy to Outflow"
*         8   Copy to Outflow"
*                0.248     0.248     0.248    11.685"
* 40        HYDROGRAPH   Combine    5"
*         6   Combine "
*         5   Node #"
*             u/s of HWY 7&8"
*           Maximum flow                 11.933    c.m/sec"
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*            Hydrograph volume          57094.953    c.m"
*                  0.248     0.248     0.248    11.933"
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             **************************************************"
*             Badenview Developments Inc. lands"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.248     0.000     0.248    11.933"
* 33         CATCHMENT 224"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         224   Badenview lands"
*      85.000   % Impervious"
*      43.200   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       6.480   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      36.720   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.451   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.920   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*              19.116     0.000     0.248    11.933 c.m/sec"
*           Catchment 224          Pervious   Impervious Total Area "
*           Surface Area           6.480      36.720     43.200     hectare"
*           Time of concentration  27.590     3.747      5.646      minutes"
*           Time to Centroid       127.310    89.195     92.231     minutes"
*           Rainfall depth         87.263     87.263     87.263     mm"
*           Rainfall volume        0.5655     3.2043     3.7698     ha-m"
*           Rainfall losses        47.902     6.989      13.126     mm"
*           Runoff depth           39.362     80.275     74.138     mm"
*           Runoff volume          0.2551     2.9477     3.2027     ha-m"
*           Runoff coefficient     0.451      0.920      0.850      "
*           Maximum flow           0.764      18.897     19.116     c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                19.116    19.116     0.248    11.933"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                19.116    19.116    19.116    11.933"
* 40         HYDROGRAPH   Combine     5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 31.049    c.m/sec"
*            Hydrograph volume         89122.477    c.m"
*                19.116    19.116    19.116    31.049"
* 40         HYDROGRAPH   Confluence    5"
*           7   Confluence "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 31.049    c.m/sec"
*            Hydrograph volume         89122.477    c.m"
*                  19.116    31.049    19.116     0.000"
```



```
* 81         ADD COMMENT==========================================="
*          7  Lines of comment"
*             **************************************************"
*             **************************************************"
*             **                                              ***"
*             **          PROPOSED SWM POND DESIGN            ***"
*             **                                              ***"
*             **************************************************"
*             **************************************************"
* 54         POND DESIGN"
*       31.049   Current peak flow    c.m/sec"
*        4.094   Target outflow    c.m/sec"
*     89122.5    Hydrograph volume    c.m"
*          36.   Number of stages"
*      334.550   Minimum water level    metre"
*      337.850   Maximum water level    metre"
*      334.550   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                 334.550     0.000     0.000"
*                 334.600   0.00400  1187.000"
*                 334.700   0.02830  3607.000"
*                 334.800   0.06350  6090.000"
*                 334.900   0.08900  8636.000"
*                 335.000    0.1880  11246.00"
*                 335.100    0.3430  13920.00"
*                 335.200    0.5360  16658.00"
*                 335.300    0.7599  19459.00"
*                 335.400     1.011  22323.00"
*                 335.500     1.286  25249.00"
*                 335.600     1.583  28239.00"
*                 335.700     1.901  31294.00"
*                 335.800     2.238  34414.00"
*                 335.900     2.593  37599.00"
*                 336.000     2.966  40851.00"
*                 336.100     3.427  43465.00"
*                 336.200     3.959  46848.00"
*                 336.300     4.543  50286.00"
*                 336.400     5.171  53779.00"
*                 336.500     5.840  57328.00"
*                 336.600     6.544  60933.00"
*                 336.700     7.284  64595.00"
*                 336.800     8.055  68313.00"
*                 336.900     8.858  72088.00"
*                 337.000     9.690  75920.00"
*                 337.100    10.550  79809.00"
*                 337.200    11.437  83755.00"
*                 337.300    12.351  87759.00"
*                 337.400    13.291  91821.00"
*                 337.500    14.255  95940.00"
*                 337.550    14.746  98022.00"
*                 337.600    16.027  100118.0"
*                 337.700    20.027  104352.0"
*                 337.800    25.280  108643.0"
*                 337.850    28.277  110810.0"
*              Peak outflow                  4.763    c.m/sec"
*              Maximum level               336.335    metre"
*              Maximum storage           51517.750    c.m"
*              Centroidal lag                9.516    hours"
*                  19.116    31.049     4.763     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                  4.763    c.m/sec"
*            Hydrograph volume         80698.648    c.m"
*                  19.116    31.049     4.763     4.763"
```

```
" 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    19.116     0.000     4.763     4.763"
* 33          CATCHMENT 260"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           260   Hamilton Heights Subdivision"
*        46.000   % Impervious"
*         8.160   Total Area"
*        50.000   Flow length"
*         1.000   Overland Slope"
*         4.406   Pervious Area"
*        50.000   Pervious length"
*         3.000   Pervious slope"
*         3.754   Impervious Area"
*       232.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.450   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.932   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    2.502     0.000     4.763     4.763 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  13.946     5.856      8.783      minutes"
*              Time to Centroid       110.138    92.108     98.631     minutes"
*              Rainfall depth         87.263     87.263     87.263     mm"
*              Rainfall volume        3845.18    3275.52    7120.70    c.m"
*              Rainfall losses        47.979     5.905      28.625     mm"
*              Runoff depth           39.285     81.358     58.639     mm"
*              Runoff volume          1731.05    3053.86    4784.90    c.m"
*              Runoff coefficient     0.450      0.932      0.672      "
*              Maximum flow           0.791      2.041      2.502      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    2.502     2.502     4.763     4.763"
* 33          CATCHMENT 261"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           261   Klassen Bronze Property"
*        32.000   % Impervious"
*         2.350   Total Area"
*       100.000   Flow length"
*         2.500   Overland Slope"
*         1.598   Pervious Area"
*        50.000   Pervious length"
*         2.500   Pervious slope"
*         0.752   Impervious Area"
*       164.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.451   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
```



```
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.932   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.554     2.502     4.763     4.763 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  14.730     4.756      9.811      minutes"
*              Time to Centroid       111.127    90.555     100.982    minutes"
*              Rainfall depth         87.263     87.263     87.263     mm"
*              Rainfall volume        1394.47    656.22     2050.69    c.m"
*              Rainfall losses        47.948     5.974      34.517     mm"
*              Runoff depth           39.315     81.289     52.747     mm"
*              Runoff volume          628.25     611.30     1239.55    c.m"
*              Runoff coefficient     0.451      0.932      0.604      "
*              Maximum flow           0.284      0.404      0.554      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                    0.554     3.056     4.763     4.763"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                    0.554     3.056     3.056     4.763"
* 40          HYDROGRAPH   Combine    12"
*             6   Combine "
*            12   Node #"
*                 d/s of Proposed SWMF"
*              Maximum flow                  5.032    c.m/sec"
*              Hydrograph volume         86723.109    c.m"
*                    0.554     3.056     3.056     5.032"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                    0.554     0.000     3.056     5.032"
* 33          CATCHMENT 225"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           225   HWY 7/8 and north ditching"
*        30.000   % Impervious"
*         1.670   Total Area"
*        75.000   Flow length"
*         2.000   Overland Slope"
*         1.169   Pervious Area"
*        75.000   Pervious length"
*         2.000   Pervious slope"
*         0.501   Impervious Area"
*        75.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        74.000   Pervious SCS Curve No."
*         0.419   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.924   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.917   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                    0.296     0.000     3.056     5.032 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  20.815     2.728      12.065     minutes"
*              Time to Centroid       119.089    87.729     103.918    minutes"
*              Rainfall depth         87.263     87.263     87.263     mm"
*              Rainfall volume        1020.11    437.19     1457.30    c.m"
*              Rainfall losses        50.664     7.232      37.634     mm"
```

```
*            Runoff depth           36.600     80.032     49.629     mm"
*            Runoff volume          427.85     400.96     828.81     c.m"
*            Runoff coefficient     0.419      0.917      0.569      "
*            Maximum flow           0.154      0.266      0.296      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.296      0.296      3.056      5.032"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.296      0.296      0.296      5.032"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                    5.082    c.m/sec"
*            Hydrograph volume           87551.914    c.m"
*                  0.296      0.296      0.296      5.082"
* 81         ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************************
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************
* 40         HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.296      0.000      0.296      5.082"
* 33         CATCHMENT 270"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          270   Industrial/Residential area along Hamilton Road"
*       55.000   % Impervious"
*        8.450   Total Area"
*       45.000   Flow length"
*        2.000   Overland Slope"
*        3.802   Pervious Area"
*       30.000   Pervious length"
*        3.000   Pervious slope"
*        4.648   Impervious Area"
*      235.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.449   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.932   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                3.151      0.000      0.296      5.082 c.m/sec"
*             Catchment 270          Pervious   Impervious Total Area *
*             Surface Area           3.802      4.648      8.450      hectare"
*             Time of concentration  10.265     5.901      7.135      minutes"
*             Time to Centroid       105.500    92.173     95.941     minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        3318.19    4055.57    7373.76    c.m"
*             Rainfall losses        48.050     5.893      24.863     mm"
*             Runoff depth           39.214     81.371     62.400     mm"
*             Runoff volume          1491.10    3781.70    5272.79    c.m"
*             Runoff coefficient     0.449      0.932      0.715      *
*             Maximum flow           0.773      2.526      3.151      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  3.151      3.151      0.296      5.082"
* 56          DIVERSION"
*             6   Node number"
```



```
*          1.560   Overflow threshold"
*          1.000   Required diverted fraction"
*             0   Conduit type; 1=Pipe;2=Channel"
*              Peak of diverted flow          1.591    c.m/sec"
*              Volume of diverted flow     1002.011    c.m"
*              DIV00006.100hyd"
*              Major flow at 6"
*                     3.151      3.151      1.560      5.082 c.m/sec"
* 40           HYDROGRAPH   Combine    9"
*             6   Combine "
*             9   Node #"
*                 NODE B"
*              Maximum flow                    1.560    c.m/sec"
*              Hydrograph volume            4270.784    c.m"
*                     3.151      3.151      1.560      1.560"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                     3.151      0.000      1.560      1.560"
* 47           FILEI_O Read/Open DIV00006.100hyd"
*             1   1=read/open; 2=write/save"
*             2   1=rainfall; 2=hydrograph"
*             1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*              DIV00006.100hyd"
*              Major flow at 6"
*              Total volume                 1002.011    c.m"
*              Maximum flow                    1.591    c.m/sec"
*                    1.591      0.000      1.560      1.560 c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                     1.591      1.591      1.560      1.560"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                     1.591      1.591      1.591      1.560"
* 40           HYDROGRAPH   Combine    12"
*             6   Combine "
*            12   Node #"
*                 d/s of Proposed SWMF"
*              Maximum flow                    5.831    c.m/sec"
*              Hydrograph volume           88553.938    c.m"
*                     1.591      1.591      1.591      5.831"
* 40           HYDROGRAPH   Confluence    12"
*             7   Confluence "
*            12   Node #"
*                 d/s of Proposed SWMF"
*              Maximum flow                    5.831    c.m/sec"
*              Hydrograph volume           88553.938    c.m"
*                     1.591      5.831      1.591      0.000"
* 54           POND DESIGN"
*          5.831   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*       88553.9   Hydrograph volume    c.m"
*             8.   Number of stages"
*        334.290   Minimum water level    metre"
*        337.000   Maximum water level    metre"
*        334.290   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                 334.290     0.000     0.000"
*                 334.500    0.2540     5.000"
*                 335.000     1.303   110.000"
*                 335.500     2.800   674.000"
*                 336.000     4.639  1910.000"
*                 336.500     6.480  3748.000"
*                 336.550     6.665  3967.000"
*                 337.000    23.484  6569.000"
*              Peak outflow                    4.970    c.m/sec"
*              Maximum level                 336.090    metre"
```

```
*            Maximum storage            2240.868    c.m"
*            Centroidal lag                5.715   hours"
*                1.591     5.831     4.970     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                1.591     4.970     4.970     0.000"
* 56         DIVERSION"
*           7   Node number"
*       7.170   Overflow threshold"
*       1.000   Required diverted fraction"
*           0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow         0.000    c.m/sec"
*            Volume of diverted flow       0.000    c.m"
*            DIV00007.100hyd"
*            Major flow at 7"
*                1.591     4.970     4.970     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    8"
*           6   Combine "
*           8   Node #"
*               NODE A"
*            Maximum flow                  4.970    c.m/sec"
*            Hydrograph volume         88526.750    c.m"
*                1.591     4.970     4.970     4.970"
* 81         ADD COMMENT==================================================="
*         3   Lines of comment"
*             ***************************************************
*             Catchments South of Hwy 7/8"
*             ***************************************************
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                1.591     0.000     4.970     4.970"
* 33         CATCHMENT 280"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         280   Northeast portion of Maple Leaf Foods property"
*      26.000   % Impervious"
*       0.700   Total Area"
*      45.000   Flow length"
*       1.500   Overland Slope"
*       0.518   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       0.182   Impervious Area"
*      68.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      79.000   Pervious SCS Curve No."
*       0.499   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.752   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.919   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.205     0.000     4.970     4.970 c.m/sec"
*            Catchment 280          Pervious   Impervious Total Area "
*            Surface Area           0.518      0.182      0.700      hectare"
*            Time of concentration  8.635      3.167      6.487      minutes"
*            Time to Centroid       102.727    88.360     97.085     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        452.02     158.82     610.84     c.m"
*            Rainfall losses        43.691     7.069      34.169     mm"
*            Runoff depth           43.572     80.194     53.094     mm"
*            Runoff volume          225.71     145.95     371.66     c.m"
*            Runoff coefficient     0.499      0.919      0.608      "
```



```
*            Maximum flow           0.127      0.094      0.205      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.205     0.205     4.970     4.970"
* 54         POND DESIGN"
*       0.205   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       371.7   Hydrograph volume    c.m"
*          8.   Number of stages"
*       0.000   Minimum water level    metre"
*       0.750   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.1500   0.00400     1.000"
*                0.2500   0.00600     8.000"
*                0.3500   0.00700    29.000"
*                0.4500   0.00800    69.000"
*                0.6500   0.01000   178.000"
*                0.7000    0.1060   208.000"
*                0.7500    0.2810   240.000"
*            Peak outflow                  0.080    c.m/sec"
*            Maximum level                 0.687    metre"
*            Maximum storage             200.227    c.m"
*            Centroidal lag                3.907   hours"
*                0.205     0.205     0.080     4.970 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.595    c.m/sec"
*            Hydrograph volume          4642.585    c.m"
*                0.205     0.205     0.080     1.595"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.205     0.000     0.080     1.595"
* 33         CATCHMENT 281"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         281   Western portion of John Bear property"
*      93.000   % Impervious"
*       1.870   Total Area"
*     120.000   Flow length"
*       1.000   Overland Slope"
*       0.131   Pervious Area"
*      20.000   Pervious length"
*       2.000   Pervious slope"
*       1.739   Impervious Area"
*     112.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.294   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.929   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.930     0.000     0.080     1.595 c.m/sec"
*            Catchment 281          Pervious   Impervious Total Area "
*            Surface Area           0.131      1.739      1.870      hectare"
*            Time of concentration  11.258     4.272      4.435      minutes"
*            Time to Centroid       108.968    89.899     90.343     minutes"
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```
*            Rainfall depth          87.263     87.263     87.263     mm"
*            Rainfall volume         114.23     1517.60    1631.83    c.m"
*            Rainfall losses         61.569     6.185      10.062     mm"
*            Runoff depth            25.695     81.079     77.202     mm"
*            Runoff volume           33.63      1410.04    1443.68    c.m"
*            Runoff coefficient      0.294      0.929      0.885      "
*            Maximum flow            0.015      0.920      0.930      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.930     0.930     0.080     1.595"
* 54         POND DESIGN"
*       0.930   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      1443.7   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                  0.3000    0.09000   8.000"
*                  0.6000    0.1200    97.000"
*                  0.9000    0.1300    167.000"
*                   1.200    0.1400    254.000"
*                   1.500    0.1500    358.000"
*                   1.800     1.000    400.000"
*            Peak outflow                  0.827    c.m/sec"
*            Maximum level                 1.756    metre"
*            Maximum storage             393.788    c.m"
*            Centroidal lag                1.798    hours"
*                 0.930     0.930     0.827     1.595 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.396    c.m/sec"
*            Hydrograph volume          6143.625    c.m"
*                 0.930     0.930     0.827     2.396"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.930     0.000     0.827     2.396"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.294   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.918   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
```



```
*                 0.440     0.000     0.827     2.396 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  12.714     3.043      4.260      minutes"
*            Time to Centroid       110.760    88.184     91.023     minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        327.33     728.56     1055.89    c.m"
*            Rainfall losses        61.626     7.190      24.065     mm"
*            Runoff depth           25.638     80.073     63.198     mm"
*            Runoff volume          96.17      668.53     764.70     c.m"
*            Runoff coefficient     0.294      0.918      0.724      "
*            Maximum flow           0.042      0.433      0.440      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.440     0.440     0.827     2.396"
* 54         POND DESIGN"
*       0.440   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*       764.7   Hydrograph volume    c.m"
*          5.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3200    0.04300   276.000"
*                 0.7500    0.06600   333.000"
*                  1.300    0.08700   371.000"
*                  1.400     0.5000   400.000"
*            Peak outflow                  0.200    c.m/sec"
*            Maximum level                 1.337    metre"
*            Maximum storage             381.694    c.m"
*            Centroidal lag                2.883    hours"
*                 0.440     0.440     0.200     2.396 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  2.448    c.m/sec"
*            Hydrograph volume          6910.332    c.m"
*                 0.440     0.440     0.200     2.448"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.440     0.000     0.200     2.448"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.337   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
```

```
*       0.931   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                4.012     0.000     0.200     2.448 c.m/sec"
*            Catchment 283          Pervious   Impervious Total Area "
*            Surface Area           16.536     6.754      23.290     hectare"
*            Time of concentration  34.184     7.381      19.979     minutes"
*            Time to Centroid       136.252    94.189     113.960    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        1.4430     0.5894     2.0324     ha-m"
*            Rainfall losses        57.821     5.992      42.791     mm"
*            Runoff depth           29.442     81.271     44.473     mm"
*            Runoff volume          0.4869     0.5489     1.0358     ha-m"
*            Runoff coefficient     0.337      0.931      0.510      "
*            Maximum flow           1.231      3.757      4.012      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                4.012     4.012     0.200     2.448"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                4.012     4.012     4.012     2.448"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 6.460    c.m/sec"
*            Hydrograph volume         17267.979   c.m"
*                4.012     4.012     4.012     6.460"
* 40         HYDROGRAPH   Confluence    8"
*           7   Confluence "
*           8   Node #"
*               NODE A"
*            Maximum flow                 4.970    c.m/sec"
*            Hydrograph volume         88526.750   c.m"
*                4.012     4.970     4.012     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                4.012     4.970     4.970     0.000"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                 9.912    c.m/sec"
*            Hydrograph volume        105794.695   c.m"
*                4.012     4.970     4.970     9.912"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                4.012     0.000     4.970     9.912"
* 33         CATCHMENT 284"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         284   Agricultural lands south of Bleams Road"
*       2.000   % Impervious"
*       2.950   Total Area"
*      80.000   Flow length"
*       3.100   Overland Slope"
*       2.891   Pervious Area"
*      80.000   Pervious length"
*       3.100   Pervious slope"
*       0.059   Impervious Area"
*      80.000   Impervious length"
*       3.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.419   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
```



```
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.921   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                0.400     0.000     4.970     9.912 c.m/sec"
*            Catchment 284          Pervious   Impervious Total Area "
*            Surface Area           2.891      0.059      2.950      hectare"
*            Time of concentration  18.971     2.486      18.263     minutes"
*            Time to Centroid       116.786    87.343     115.522    minutes"
*            Rainfall depth         87.263     87.263     87.263     mm"
*            Rainfall volume        2522.79    51.49      2574.27    c.m"
*            Rainfall losses        50.707     6.917      49.832     mm"
*            Runoff depth           36.556     80.346     37.432     mm"
*            Runoff volume          1056.84    47.40      1104.24    c.m"
*            Runoff coefficient     0.419      0.921      0.429      "
*            Maximum flow           0.392      0.032      0.400      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                0.400     0.400     4.970     9.912"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.400     0.400     0.400     9.912"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                10.241    c.m/sec"
*            Hydrograph volume        106898.930   c.m"
*                0.400     0.400     0.400    10.241"
* 40         HYDROGRAPH   Confluence    9"
*           7   Confluence "
*           9   Node #"
*               NODE B"
*            Maximum flow                10.241    c.m/sec"
*            Hydrograph volume        106898.938   c.m"
*                0.400    10.241     0.400     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                0.400    10.241    10.241     0.000"
* 40         HYDROGRAPH   Combine    10"
*           6   Combine "
*          10   Node #"
*               NODE C"
*            Maximum flow                10.241    c.m/sec"
*            Hydrograph volume        106898.938   c.m"
*                0.400    10.241    10.241    10.241"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                0.400     0.000    10.241    10.241"
* 33         CATCHMENT 285"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         285   Morningside Retirement Community lands"
*      58.000   % Impervious"
*      18.780   Total Area"
*     190.000   Flow length"
*       2.000   Overland Slope"
*       7.888   Pervious Area"
*      25.000   Pervious length"
*       2.500   Pervious slope"
*      10.892   Impervious Area"
*     354.000   Impervious length"
*       2.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
```

```
*       64.400   Pervious SCS Curve No."
*        0.287   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       14.041   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.931   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  6.412     0.000    10.241    10.241 c.m/sec"
*             Catchment 285          Pervious   Impervious Total Area "
*             Surface Area           7.888      10.892     18.780     hectare"
*             Time of concentration  12.199     6.474      7.517      minutes"
*             Time to Centroid       110.243    92.945     96.098     minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        0.6883     0.9505     1.6388     ha-m"
*             Rainfall losses        62.261     6.045      29.656     mm"
*             Runoff depth           25.003     81.219     57.608     mm"
*             Runoff volume          0.1972     0.8847     1.0819     ha-m"
*             Runoff coefficient     0.287      0.931      0.660      "
*             Maximum flow           0.876      5.869      6.412      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  6.412     6.412    10.241    10.241"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  6.412     6.412     6.412    10.241"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                  16.195    c.m/sec"
*             Hydrograph volume         117717.727    c.m"
*                  6.412     6.412     6.412    16.195"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              ******************************************************"
*              Catchments north of Hwy 7/8, towards Eastern Tributary"
*              ******************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  6.412     0.000     6.412    16.195"
* 33          CATCHMENT 250"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          250   Southern portion of Rec Centre fields"
*        0.000   % Impervious"
*        3.510   Total Area"
*       95.000   Flow length"
*        1.600   Overland Slope"
*        3.510   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        0.000   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.451   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.000   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
```



```
*                  0.454     0.000     6.412    16.195 c.m/sec"
*             Catchment 250          Pervious   Impervious Total Area "
*             Surface Area           3.510      0.000      3.510      hectare"
*             Time of concentration  23.873     6.217      23.873     minutes"
*             Time to Centroid       122.633    92.616     122.633    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        3062.94    0.00       3062.95    c.m"
*             Rainfall losses        47.899     5.932      47.899     mm"
*             Runoff depth           39.365     81.331     39.365     mm"
*             Runoff volume          1381.70    0.00       1381.70    c.m"
*             Runoff coefficient     0.451      0.000      0.451      "
*             Maximum flow           0.454      0.000      0.454      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  0.454     0.454     6.412    16.195"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  0.454     0.454     0.454    16.195"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  0.454    c.m/sec"
*             Hydrograph volume          1381.705    c.m"
*                  0.454     0.454     0.454     0.454"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.454     0.000     0.454     0.454"
* 33          CATCHMENT 251"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*       33.000   % Impervious"
*        5.770   Total Area"
*      100.000   Flow length"
*        2.000   Overland Slope"
*        3.866   Pervious Area"
*      100.000   Pervious length"
*        2.000   Pervious slope"
*        1.904   Impervious Area"
*      296.000   Impervious length"
*        2.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.451   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.932   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.199     0.000     0.454     0.454 c.m/sec"
*             Catchment 251          Pervious   Impervious Total Area "
*             Surface Area           3.866      1.904      5.770      hectare"
*             Time of concentration  23.873     6.217      14.968     minutes"
*             Time to Centroid       122.633    92.616     107.493    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        3373.52    1661.58    5035.10    c.m"
*             Rainfall losses        47.899     5.932      34.050     mm"
*             Runoff depth           39.365     81.331     53.214     mm"
*             Runoff volume          1521.80    1548.62    3070.42    c.m"
*             Runoff coefficient     0.451      0.932      0.610      "
*             Maximum flow           0.501      1.031      1.199      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
```

```
*                    1.199     1.199     0.454     0.454"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    1.199     1.199     1.199     0.454"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  1.390    c.m/sec"
*             Hydrograph volume          4452.130    c.m"
*                    1.199     1.199     1.199     1.390"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    1.199     0.000     1.199     1.390"
* 33          CATCHMENT 252"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          252   Southern portion of Hamburglr lands"
*        5.000   % Impervious"
*        2.870   Total Area"
*       65.000   Flow length"
*        1.500   Overland Slope"
*        2.726   Pervious Area"
*       65.000   Pervious length"
*        1.500   Pervious slope"
*        0.144   Impervious Area"
*       65.000   Impervious length"
*        1.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.419   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.917   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                    0.376     0.000     1.199     1.390 c.m/sec"
*             Catchment 252          Pervious   Impervious Total Area "
*             Surface Area           2.726      0.144      2.870      hectare"
*             Time of concentration  20.824     2.729      18.957     minutes"
*             Time to Centroid       119.101    87.731     115.863    minutes"
*             Rainfall depth         87.263     87.263     87.263     mm"
*             Rainfall volume        2379.24    125.22     2504.46    c.m"
*             Rainfall losses        50.663     7.234      48.492     mm"
*             Runoff depth           36.600     80.029     38.771     mm"
*             Runoff volume          997.90     114.84     1112.74    c.m"
*             Runoff coefficient     0.419      0.917      0.444      "
*             Maximum flow           0.358      0.076      0.376      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.376     0.376     1.199     1.390"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.376     0.376     0.376     1.390"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  1.685    c.m/sec"
*             Hydrograph volume          5564.872    c.m"
*                    0.376     0.376     0.376     1.685"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    0.376     0.000     0.376     1.685"
```



```
* 47          FILE1_O Read/Open DIV00007.100hyd"
*            1   1=read/open; 2=write/save"
*            2   1=rainfall; 2=hydrograph"
*            1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*             DIV00007.100hyd"
*             Major flow at 7"
*             Total volume                  0.000    c.m"
*             Maximum flow                  0.000    c.m/sec"
*                 0.000     0.000     0.376     1.685 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.000     0.000     0.376     1.685"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.000     0.000     0.000     1.685"
* 40          HYDROGRAPH   Combine    11"
*            6   Combine "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  1.685    c.m/sec"
*             Hydrograph volume          5564.872    c.m"
*                    0.000     0.000     0.000     1.685"
* 40          HYDROGRAPH   Confluence    11"
*            7   Confluence "
*           11   Node #"
*                u/s of east culvert of HWY 7&8"
*             Maximum flow                  1.685    c.m/sec"
*             Hydrograph volume          5564.872    c.m"
*                    0.000     1.685     0.000     0.000"
* 54          POND DESIGN"
*          1.685   Current peak flow    c.m/sec"
*          0.070   Target outflow    c.m/sec"
*         5564.9   Hydrograph volume    c.m"
*             9.   Number of stages"
*        332.660   Minimum water level    metre"
*        336.000   Maximum water level    metre"
*        332.660   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                  332.660     0.000     0.000"
*                  333.000    0.3010   198.000"
*                  333.500     1.168  1165.000"
*                  334.000     2.325  2895.000"
*                  334.500     3.132  5301.000"
*                  335.000     3.780  8376.000"
*                  335.500     4.332  12258.00"
*                  335.750     4.583  14551.00"
*                  336.000    21.985  17113.00"
*             Peak outflow                  1.257    c.m/sec"
*             Maximum level               333.538    metre"
*             Maximum storage            1297.745    c.m"
*             Centroidal lag                2.134   hours"
*                    0.000     1.685     1.257     0.000 c.m/sec"
* 40          HYDROGRAPH Next link "
*            5   Next link "
*                    0.000     1.257     1.257     0.000"
* 38          START/RE-START TOTALS 11"
*            3   Runoff Totals on EXIT"
*             Total Catchment area                234.030    hectare"
*             Total Impervious area               110.433    hectare"
*             Total % impervious                   47.187"
* 19          EXIT"
```

```
*              MIDUSS Output ------------------------------------------------>"
*              MIDUSS version                          Version 2.25  rev. 473"
*              MIDUSS created                        Sunday, February 07, 2010"
*           10 Units used:                                        ie METRIC"
*              Job folder:                      Q:\34896\104\SWM\MIDUSS\Post"
*              Output filename:                  34896-104_Post-Regional.out"
*              Licensee name:                                          admin"
*              Company                                             Microsoft"
*              Date & Time last used:             12/17/2018 at 2:00:39 PM"
* 31           TIME PARAMETERS"
*        5.000   Time Step"
*      180.000   Max. Storm length"
*     1500.000   Max. Hydrograph"
* 81           ADD COMMENT==================================================="
*           7  Lines of comment"
*              ************************************************************"
*              Wilmot Employment Lands"
*              New Hamburg, Ontario"
*              Regional Storm Event - Post development"
*              Job No.: 34896-104"
*              Calculated by: NED/MSB"
*              ************************************************************"
* 31           TIME PARAMETERS"
*        5.000   Time Step"
*     2880.000   Max. Storm length"
*     5760.000   Max. Hydrograph"
* 32           STORM Mass Curve"
*           3   Mass Curve"
*      285.000   Rainfall depth"
*     2880.000   Duration"
*           38  Q:\TOOLS\SWM\Hazel entire 48 hours.mrd   Hurricane Hazel (entire 48 h)"
*             Maximum intensity            53.012    mm/hr"
*             Total depth                 285.000    mm"
*            6   250hyd   Hydrograph extension used in this file"
* 81           ADD COMMENT==================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchments North of GEXR, part of Inlet #1"
*              ************************************************"
* 33           CATCHMENT 201"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           201   Area Northeast of GEXR"
*         0.000   % Impervious"
*         2.970   Total Area"
*        80.000   Flow length"
*         0.500   Overland Slope"
*         2.970   Pervious Area"
*        80.000   Pervious length"
*         0.500   Pervious slope"
*         0.000   Impervious Area"
*        80.000   Impervious length"
*         0.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        82.000   Pervious SCS Curve No."
*         0.817   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         5.576   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.442     0.000     0.000     0.000 c.m/sec"
*              Catchment 201          Pervious   Impervious Total Area "
*              Surface Area           2.970      0.000      2.970      hectare"
```



```
*              Time of concentration  42.907     7.809      42.907     minutes"
*              Time to Centroid       2494.869   2277.147   2494.868   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        8464.49    0.01       8464.50    c.m"
*              Rainfall losses        52.081     6.444      52.081     mm"
*              Runoff depth           232.919    278.556    232.919    mm"
*              Runoff volume          6917.67    0.01       6917.68    c.m"
*              Runoff coefficient     0.817      0.000      0.817      *
*              Maximum flow           0.442      0.000      0.442      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.442     0.442     0.000     0.000"
* 33           CATCHMENT 202"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           202   Woodlot - north of GEXR"
*         0.000   % Impervious"
*         2.080   Total Area"
*        80.000   Flow length"
*         2.500   Overland Slope"
*         2.080   Pervious Area"
*        80.000   Pervious length"
*         2.500   Pervious slope"
*         0.000   Impervious Area"
*        80.000   Impervious length"
*         2.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        70.000   Pervious SCS Curve No."
*         0.688   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*        10.886   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.000   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                   0.285     0.442     0.000     0.000 c.m/sec"
*              Catchment 202          Pervious   Impervious Total Area "
*              Surface Area           2.080      0.000      2.080      hectare"
*              Time of concentration  27.287     4.818      27.287     minutes"
*              Time to Centroid       2546.806   2272.282   2546.806   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        5927.99    0.01       5928.00    c.m"
*              Rainfall losses        88.888     6.718      88.888     mm"
*              Runoff depth           196.112    278.282    196.112    mm"
*              Runoff volume          4079.13    0.01       4079.14    c.m"
*              Runoff coefficient     0.688      0.000      0.688      *
*              Maximum flow           0.285      0.000      0.285      c.m/sec"
* 40           HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                   0.285     0.716     0.000     0.000"
* 40           HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                   0.285     0.716     0.716     0.000"
* 40           HYDROGRAPH   Combine    1"
*             6   Combine "
*             1   Node #"
*                 u/s of GEXR"
*              Maximum flow                  0.716    c.m/sec"
*              Hydrograph volume         10996.820    c.m"
*                   0.285     0.716     0.716     0.716"
* 40           HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                   0.285     0.000     0.716     0.716"
* 33           CATCHMENT 203"
*             1   Triangular SCS"
```

```
*           1   Equal length"
*           1   SCS method"
*         203   Pfenning Farm Residential Development"
*      60.000   % Impervious"
*      18.510   Total Area"
*      90.000   Flow length"
*       1.000   Overland Slope"
*       7.404   Pervious Area"
*      90.000   Pervious length"
*       1.000   Pervious slope"
*      11.106   Impervious Area"
*      90.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.767   Pervious Runoff coefficient"
*       0.050   Pervious Ia/S coefficient"
*       4.011   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.972   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 2.658     0.000     0.716     0.716 c.m/sec"
*            Catchment 203          Pervious   Impervious Total Area *
*            Surface Area           7.404      11.106     18.510     hectare"
*            Time of concentration  37.860     6.807      17.511     minutes"
*            Time to Centroid       2507.423   2273.436   2354.091   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2.1101     3.1652     5.2754     ha-m"
*            Rainfall losses        66.535     8.121      31.487     mm"
*            Runoff depth           218.465    276.879    253.513    mm"
*            Runoff volume          1.6175     3.0750     4.6925     ha-m"
*            Runoff coefficient     0.767      0.972      0.890      *
*            Maximum flow           1.074      1.690      2.658      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 2.658     2.658     0.716     0.716"
* 54         POND DESIGN"
*       2.658   Current peak flow    c.m/sec"
*       2.303   Target outflow    c.m/sec"
*     46925.3   Hydrograph volume    c.m"
*          6.   Number of stages"
*     341.500   Minimum water level    metre"
*     343.600   Maximum water level    metre"
*     341.500   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               341.500     0.000     0.000"
*               342.000    0.1541  1746.000"
*               342.500    0.2669  3784.000"
*               343.000    0.3446  6114.000"
*               343.300    0.3837  7652.000"
*               343.600     2.941  9295.000"
*           1.  WEIRS"
*                 Crest      Weir     Crest      Left     Right"
*             elevation coefficie   breadth sideslope sideslope"
*               343.300     0.900    10.000     0.000     0.000"
*           1.  ORIFICES"
*               Orifice   Orifice   Orifice Number of"
*                invert coefficie  diameter  orifices"
*               341.500     0.630    0.3750     1.000"
*            Peak outflow                 2.562    c.m/sec"
*            Maximum level              343.556    metre"
*            Maximum storage           9054.124    c.m"
*            Centroidal lag              41.963   hours"
*                 2.658     2.658     2.562     0.716 c.m/sec"
```



```
* 40         HYDROGRAPH   Combine    1"
*          6   Combine "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 3.278    c.m/sec"
*           Hydrograph volume         57923.898    c.m"
*                 2.658     2.658     2.562     3.278"
* 40         HYDROGRAPH   Confluence    1"
*          7   Confluence "
*          1   Node #"
*              u/s of GEXR"
*           Maximum flow                 3.278    c.m/sec"
*           Hydrograph volume         57923.895    c.m"
*                 2.658     3.278     2.562     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 2.658     3.278     3.278     0.000"
* 40         HYDROGRAPH   Combine    2"
*          6   Combine "
*          2   Node #"
*              INLET 1"
*           Maximum flow                 3.278    c.m/sec"
*           Hydrograph volume         57923.895    c.m"
*                 2.658     3.278     3.278     3.278"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 2.658     0.000     3.278     3.278"
* 81         ADD COMMENT==================================================*
*          3  Lines of comment"
*             ************************************************
*             Catchments South of GEXR, part of Inlet #1"
*             ************************************************
* 33         CATCHMENT 204"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          204   Riverside Brass"
*       85.000   % Impervious"
*        2.020   Total Area"
*       35.000   Flow length"
*        1.200   Overland Slope"
*        0.303   Pervious Area"
*       60.000   Pervious length"
*        2.000   Pervious slope"
*        1.717   Impervious Area"
*      116.000   Impervious length"
*        0.500   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.753   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.976   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.293     0.000     3.278     3.278 c.m/sec"
*             Catchment 204          Pervious   Impervious Total Area "
*             Surface Area           0.303      1.717      2.020      hectare"
*             Time of concentration  24.130     9.759      11.481     minutes"
*             Time to Centroid       2507.917   2278.793   2306.254   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        863.55     4893.45    5757.00    c.m"
*             Rainfall losses        70.315     6.777      16.308     mm"
*             Runoff depth           214.685    278.223    268.692    mm"
*             Runoff volume          650.49     4777.09    5427.59    c.m"
```

```
*            Runoff coefficient      0.753       0.976       0.943       *
*            Maximum flow            0.044       0.265       0.293       c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.293     0.293     3.278     3.278"
* 54         POND DESIGN"
*        0.293   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*      5427.6    Hydrograph volume    c.m"
*          4.    Number of stages"
*        0.000   Minimum water level    metre"
*        0.910   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3100   0.03090   782.000"
*                 0.6100    0.1232  1619.000"
*                 0.9100    0.2769  2511.000"
*            Peak outflow                  0.178    c.m/sec"
*            Maximum level                 0.716    metre"
*            Maximum storage            1934.986    c.m"
*            Centroidal lag               43.596    hours"
*                 0.293     0.293     0.178     3.278 c.m/sec"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  3.425    c.m/sec"
*            Hydrograph volume          63350.113    c.m"
*                 0.293     0.293     0.178     3.425"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.293     0.000     0.178     3.425"
* 33         CATCHMENT 205"
*           1   Triangular SCS'
*           3   Specify values'
*           1   SCS method"
*         205   Iron Bridge Manufacturing Property - Woodlot"
*       5.000   % Impervious"
*       1.190   Total Area"
*     255.000   Flow length"
*       1.800   Overland Slope"
*       1.131   Pervious Area"
*     255.000   Pervious length"
*       1.800   Pervious slope"
*       0.060   Impervious Area"
*     255.000   Impervious length"
*       1.800   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.688   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.978   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.151     0.000     0.178     3.425 c.m/sec"
*            Catchment 205          Pervious   Impervious Total Area "
*            Surface Area           1.131      0.060      1.190      hectare"
*            Time of concentration  60.370     10.660     56.912     minutes"
*            Time to Centroid       2592.960   2280.979   2571.254   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        3221.93    169.57     3391.50    c.m"
*            Rainfall losses        88.828     6.293      84.701     mm"
```



```
*            Runoff depth           196.172    278.707    200.299    mm"
*            Runoff volume          2217.72    165.83     2383.55    c.m"
*            Runoff coefficient     0.688      0.978      0.703      *
*            Maximum flow           0.145      0.009      0.151      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.151     0.151     0.178     3.425"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.151     0.151     0.151     3.425"
* 40         HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  3.568    c.m/sec"
*            Hydrograph volume          65733.641    c.m"
*                  0.151     0.151     0.151     3.568"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.151     0.000     0.151     3.568"
* 33         CATCHMENT 206"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         206   Industrial properties at end of Hamilton Road"
*      35.000   % Impervious"
*       2.850   Total Area"
*      50.000   Flow length"
*       1.000   Overland Slope"
*       1.852   Pervious Area"
*      50.000   Pervious length"
*       1.000   Pervious slope"
*       0.997   Impervious Area"
*      50.000   Impervious length"
*       1.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.753   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.976   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.413     0.000     0.151     3.568 c.m/sec"
*            Catchment 206          Pervious   Impervious Total Area "
*            Surface Area           1.852      0.997      2.850      hectare"
*            Time of concentration  26.629     4.784      17.649     minutes"
*            Time to Centroid       2511.441   2272.189   2413.091   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        5279.63    2842.87    8122.50    c.m"
*            Rainfall losses        70.314     6.701      48.049     mm"
*            Runoff depth           214.686    278.299    236.951    mm"
*            Runoff volume          3977.06    2776.04    6753.09    c.m"
*            Runoff coefficient     0.753      0.976      0.831      *
*            Maximum flow           0.266      0.150      0.413      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.413     0.413     0.151     3.568"
* 33         CATCHMENT 207"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         207   Woodlot and Wetland east of Pestells"
*       5.000   % Impervious"
*       5.920   Total Area"
```

```
*       65.000   Flow length"
*        3.000   Overland Slope"
*        5.624   Pervious Area"
*       65.000   Pervious length"
*        3.000   Pervious slope"
*        0.296   Impervious Area"
*       65.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       70.200   Pervious SCS Curve No."
*        0.690   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       10.782   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.966   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.810     0.413     0.151     3.568 c.m/sec"
*             Catchment 207          Pervious   Impervious Total Area "
*             Surface Area           5.624      0.296      5.920      hectare"
*             Time of concentration  22.793     4.027      21.505     minutes"
*             Time to Centroid       2539.290   2267.086   2520.600   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1.6028     0.0844     1.6872     ha-m"
*             Rainfall losses        88.411     9.617      84.471     mm"
*             Runoff depth           196.589    275.383    200.529    mm"
*             Runoff volume          1.1056     0.0815     1.1871     ha-m"
*             Runoff coefficient     0.690      0.966      0.704      "
*             Maximum flow           0.768      0.043      0.810      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.810     1.218     0.151     3.568"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.810     1.218     1.218     3.568"
* 40          HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*               Maximum flow                 4.729    c.m/sec"
*               Hydrograph volume        84357.898    c.m"
*                  0.810     1.218     1.218     4.729"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.810     0.000     1.218     4.729"
* 33          CATCHMENT 208"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         208   N.C. Pestell site"
*      75.000   % Impervious"
*       5.530   Total Area"
*     130.000   Flow length"
*       2.000   Overland Slope"
*       1.383   Pervious Area"
*      50.000   Pervious length"
*       3.000   Pervious slope"
*       4.148   Impervious Area"
*     192.000   Impervious length"
*       0.750   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      75.000   Pervious SCS Curve No."
*       0.741   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.467   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
```



```
*       98.000   Impervious SCS Curve No."
*        0.978   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.817     0.000     1.218     4.729 c.m/sec"
*             Catchment 208          Pervious   Impervious Total Area "
*             Surface Area           1.383      4.148      5.530      hectare"
*             Time of concentration  19.201     11.692     13.206     minutes"
*             Time to Centroid       2506.556   2282.697   2327.829   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        0.3940     1.1820     1.5761     ha-m"
*             Rainfall losses        73.774     6.180      23.078     mm"
*             Runoff depth           211.226    278.820    261.922    mm"
*             Runoff volume          0.2920     1.1564     1.4484     ha-m"
*             Runoff coefficient     0.741      0.978      0.919      "
*             Maximum flow           0.196      0.642      0.817      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.817     0.817     1.218     4.729"
* 54          POND DESIGN"
*        0.817   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*     14484.3    Hydrograph volume    c.m"
*           9.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.200   Maximum water level    metre"
*        0.000   Starting water level    metre"
*           0    Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.1500   0.00400   297.000"
*                 0.3000   0.01000   635.000"
*                 0.4500   0.03600  1004.000"
*                 0.6000   0.04900  1405.000"
*                 0.7500   0.06000  1847.000"
*                 0.9000   0.06900  2329.000"
*                  1.050    0.5220  2852.000"
*                  1.200     1.100  2900.000"
*               Peak outflow                  0.811    c.m/sec"
*               Maximum level                 1.125    metre"
*               Maximum storage            2876.116    c.m"
*               Centroidal lag               44.039    hours"
*                  0.817     0.817     0.811     4.729 c.m/sec"
* 40          HYDROGRAPH   Combine    2"
*           6   Combine "
*           2   Node #"
*               INLET 1"
*               Maximum flow                  5.525    c.m/sec"
*               Hydrograph volume         98742.914    c.m"
*                  0.817     0.817     0.811     5.525"
* 81          ADD COMMENT==========================================================="
*           3  Lines of comment"
*              ************************************************"
*              Catchments South of GEXR, part of Inlet #2"
*              ************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.817     0.000     0.811     5.525"
* 33          CATCHMENT 209"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         209   Alpine Solutions - west SMWP"
*      85.000   % Impervious"
*       1.920   Total Area"
*     150.000   Flow length"
*       1.000   Overland Slope"
```

```
*       0.288   Pervious Area"
*     150.000   Pervious length"
*       1.500   Pervious slope"
*       1.632   Impervious Area"
*     113.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      80.000   Pervious SCS Curve No."
*       0.796   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       6.350   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.972   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.275     0.000     0.811     5.525 c.m/sec"
*            Catchment 209          Pervious   Impervious Total Area "
*            Surface Area           0.288      1.632      1.920      hectare"
*            Time of concentration  45.172     6.909      11.741     minutes"
*            Time to Centroid       2512.022   2273.902   2303.970   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        820.80     4651.20    5472.00    c.m"
*            Rainfall losses        58.094     7.934      15.458     mm"
*            Runoff depth           226.906    277.066    269.542    mm"
*            Runoff volume          653.49     4521.72    5175.21    c.m"
*            Runoff coefficient     0.796      0.972      0.946      "
*            Maximum flow           0.042      0.248      0.275      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.275     0.275     0.811     5.525"
* 54         POND DESIGN"
*       0.275   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      5175.2   Hydrograph volume    c.m"
*          7.   Number of stages"
*       0.000   Minimum water level    metre"
*       1.100   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                 0.000     0.000     0.000"
*                0.2500   0.04200     7.000"
*                0.5000   0.09C00    71.000"
*                0.7500    0.1250   220.000"
*                0.9000    0.1400   346.000"
*                 1.000    0.3110   445.000"
*                 1.100    0.6160   557.000"
*            Peak outflow                  0.255    c.m/sec"
*            Maximum level                 0.967    metre"
*            Maximum storage             412.386    c.m"
*            Centroidal lag               38.672    hours"
*                 0.275     0.275     0.255     5.525 c.m/sec"
* 40         HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  0.255    c.m/sec"
*            Hydrograph volume          5174.667    c.m"
*                 0.275     0.275     0.255     0.255"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.275     0.000     0.255     0.255"
* 33         CATCHMENT 210"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
```



```
*         210   Woodlot north of Hamburglr/Badenview lands"
*       5.000   % Impervious"
*      13.230   Total Area"
*     170.000   Flow length"
*       2.400   Overland Slope"
*      12.568   Pervious Area"
*     170.000   Pervious length"
*       2.400   Pervious slope"
*       0.661   Impervious Area"
*     170.000   Impervious length"
*       2.400   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      70.000   Pervious SCS Curve No."
*       0.688   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      10.886   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.977   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 1.809     0.000     0.255     0.255 c.m/sec"
*            Catchment 210          Pervious   Impervious Total Area "
*            Surface Area           12.568     0.661      13.230     hectare"
*            Time of concentration  43.420     7.667      40.935     minutes"
*            Time to Centroid       2569.299   2276.815   2548.973   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        3.5820     0.1885     3.7705     ha-m"
*            Rainfall losses        88.871     6.688      84.762     mm"
*            Runoff depth           196.129    278.312    200.238    mm"
*            Runoff volume          2.4650     0.1841     2.6491     ha-m"
*            Runoff coefficient     0.688      0.977      0.703      "
*            Maximum flow           1.715      0.100      1.809      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 1.809     1.809     0.255     0.255"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 1.809     1.809     1.809     0.255"
* 40         HYDROGRAPH   Combine    3"
*           6   Combine "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  2.063    c.m/sec"
*            Hydrograph volume         31666.143    c.m"
*                 1.809     1.809     1.809     2.063"
* 81         ADD COMMENT==================================================="
*         3   Lines of comment"
*             **************************************************"
*             South of GEXR along Nafziger Rd, part of Inlet #3"
*             **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 1.809     0.000     1.809     2.063"
* 33         CATCHMENT 211"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         211   Culivated lands east of Nafziger Road"
*      85.000   % Impervious"
*       7.310   Total Area"
*     120.000   Flow length"
*       3.300   Overland Slope"
*       1.096   Pervious Area"
*     120.000   Pervious length"
*       3.300   Pervious slope"
*       6.214   Impervious Area"
```

```
*      120.000   Impervious length"
*        3.300   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.753   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.972   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.070     0.000     1.809     2.063 c.m/sec"
*             Catchment 211          Pervious   Impervious Total Area "
*             Surface Area           1.096      6.214      7.310      hectare"
*             Time of concentration  31.472     5.654      8.760      minutes"
*             Time to Centroid       2518.149   2271.151   2300.868   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        0.3125     1.7708     2.0833     ha-m"
*             Rainfall losses        70.386     8.091      17.436     mm"
*             Runoff depth           214.614    276.909    267.564    mm"
*             Runoff volume          0.2353     1.7206     1.9559     ha-m"
*             Runoff coefficient     0.753      0.972      0.939      "
*             Maximum flow           0.159      0.947      1.070      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.070     1.070     1.809     2.063"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  1.070     1.070     1.070     2.063"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                 1.070    c.m/sec"
*               Hydrograph volume        19558.957    c.m"
*                  1.070     1.070     1.070     1.070"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  1.070     0.000     1.070     1.070"
* 33          CATCHMENT 212"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         212   Alpine Solutions - East SMWP"
*        85.000   % Impervious"
*         2.560   Total Area"
*       150.000   Flow length"
*         1.500   Overland Slope"
*         0.384   Pervious Area"
*       180.000   Pervious length"
*         1.500   Pervious slope"
*         2.176   Impervious Area"
*       131.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        80.000   Pervious SCS Curve No."
*         0.796   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         6.350   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.976   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                  0.370     0.000     1.070     1.070 c.m/sec"
*             Catchment 212          Pervious   Impervious Total Area "
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*             Surface Area           0.384      2.176      2.560      hectare"
*             Time of concentration  50.393     7.550      12.941     minutes"
*             Time to Centroid       2519.385   2276.079   2306.695   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1094.40    6201.60    7296.00    c.m"
*             Rainfall losses        58.154     6.895      14.584     mm"
*             Runoff depth           226.846    278.105    270.416    mm"
*             Runoff volume          871.09     6051.56    6922.65    c.m"
*             Runoff coefficient     0.796      0.976      0.949      "
*             Maximum flow           0.055      0.327      0.370      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.370     0.370     1.070     1.070"
* 54          POND DESIGN"
*         0.370   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        6922.7   Hydrograph volume    c.m"
*           7.   Number of stages"
*         0.000   Minimum water level    metre"
*         1.000   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1000   0.02000     7.000"
*                  0.2500   0.04200    64.000"
*                  0.5000   0.09000   343.000"
*                  0.7500    0.1250   877.000"
*                  0.8000    0.1360  1014.000"
*                   1.000    0.7880  1667.000"
*               Peak outflow                    0.301    c.m/sec"
*               Maximum level                   0.851    metre"
*               Maximum storage              1179.514    c.m"
*               Centroidal lag                 39.431   hours"
*                  0.370     0.370     0.301     1.070 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*               Maximum flow                   1.333    c.m/sec"
*               Hydrograph volume          26482.074    c.m"
*                  0.370     0.370     0.301     1.333"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.370     0.000     0.301     1.333"
* 33          CATCHMENT 213"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         213   Woodlot East and West of Nafziger Road"
*         3.000   % Impervious"
*        13.460   Total Area"
*       140.000   Flow length"
*         3.600   Overland Slope"
*        13.056   Pervious Area"
*       140.000   Pervious length"
*         3.600   Pervious slope"
*         0.404   Impervious Area"
*       140.000   Impervious length"
*         3.600   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        70.100   Pervious SCS Curve No."
*         0.689   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*        10.834   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
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*        0.972   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  1.868     0.000     0.301     1.333 c.m/sec"
*             Catchment 213          Pervious   Impervious Total Area "
*             Surface Area           13.056     0.404      13.460     hectare"
*             Time of concentration  34.208     6.042      33.031     minutes"
*             Time to Centroid       2555.880   2272.527   2544.038   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        3.7210     0.1151     3.8361     ha-m"
*             Rainfall losses        88.597     8.043      86.181     mm"
*             Runoff depth           196.403    276.957    198.819    mm"
*             Runoff volume          2.5643     0.1118     2.6761     ha-m"
*             Runoff coefficient     0.689      0.972      0.698      "
*             Maximum flow           1.809      0.062      1.868      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.868     1.868     0.301     1.333"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  1.868     1.868     1.868     1.333"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*             Maximum flow                  3.201    c.m/sec"
*             Hydrograph volume         53243.152    c.m"
*                    1.868     1.868     1.868     3.201"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  1.868     0.000     1.868     3.201"
* 33          CATCHMENT 214"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         214   Rec Centre - SWMP"
*      75.000   % Impervious"
*       4.950   Total Area"
*      50.000   Flow length"
*       2.800   Overland Slope"
*       1.237   Pervious Area"
*      40.000   Pervious length"
*       1.500   Pervious slope"
*       3.712   Impervious Area"
*     182.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      83.000   Pervious SCS Curve No."
*       0.827   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       5.202   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.975   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.727     0.000     1.868     3.201 c.m/sec"
*             Catchment 214          Pervious   Impervious Total Area "
*             Surface Area           1.237      3.712      4.950      hectare"
*             Time of concentration  20.324     9.197      11.650     minutes"
*             Time to Centroid       2455.064   2277.818   2316.901   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        0.3527     1.0581     1.4108     ha-m"
*             Rainfall losses        49.235     7.174      17.690     mm"
*             Runoff depth           235.765    277.826    267.310    mm"
*             Runoff volume          0.2918     1.0314     1.3232     ha-m"
*             Runoff coefficient     0.827      0.975      0.938      "
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*             Maximum flow           0.185      0.573      0.727      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.727     0.727     1.868     3.201"
* 54          POND DESIGN"
*        0.727   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*     13231.9    Hydrograph volume    c.m"
*          15.   Number of stages"
*        0.000   Minimum water level    metre"
*        1.450   Maximum water level    metre"
*        0.000   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                  0.1500    0.00700   248.000"
*                  0.2500    0.00900   418.000"
*                  0.3500    0.01100   593.000"
*                  0.4500    0.01300   775.000"
*                  0.5500    0.01500   964.000"
*                  0.6500    0.01600   1161.000"
*                  0.7500    0.01700   1364.000"
*                  0.8500    0.01900   1575.000"
*                  0.9500    0.02000   1795.000"
*                  1.050     0.05600   2025.000"
*                  1.150     0.2080    2263.000"
*                  1.250     0.4600    2511.000"
*                  1.350     2.766     2768.000"
*                  1.450     6.856     3033.000"
*             Peak outflow                  0.727    c.m/sec"
*             Maximum level                 1.262    metre"
*             Maximum storage            2540.733    c.m"
*             Centroidal lag               45.256    hours"
*                  0.727     0.727     0.727     3.201 c.m/sec"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*             Maximum flow                  3.920    c.m/sec"
*             Hydrograph volume         66420.594    c.m"
*                    0.727     0.727     0.727     3.920"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.727     0.000     0.727     3.920"
* 33          CATCHMENT 215"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         215   Vacant Industrial lands west of Nafziger Road"
*      45.000   % Impervious"
*       2.860   Total Area"
*     105.000   Flow length"
*       2.000   Overland Slope"
*       1.573   Pervious Area"
*     105.000   Pervious length"
*       2.000   Pervious slope"
*       1.287   Impervious Area"
*     105.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.753   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.972   Impervious Runoff coefficient"
```

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*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  0.415     0.000     0.727     3.920 c.m/sec"
*             Catchment 215          Pervious   Impervious Total Area "
*             Surface Area           1.573      1.287      2.860      hectare"
*             Time of concentration  33.758     6.065      19.536     minutes"
*             Time to Centroid       2521.454   2272.541   2393.626   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        4483.05    3667.95    8151.00    c.m"
*             Rainfall losses        70.311     7.991      42.267     mm"
*             Runoff depth           214.689    277.009    242.733    mm"
*             Runoff volume          3377.06    3565.11    6942.16    c.m"
*             Runoff coefficient     0.753      0.972      0.852      "
*             Maximum flow           0.228      0.197      0.415      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.415     0.415     0.727     3.920"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.415     0.415     0.415     3.920"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  4.335    c.m/sec"
*            Hydrograph volume         73362.750    c.m"
*                  0.415     0.415     0.415     4.335"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.415     0.000     0.415     4.335"
* 33          CATCHMENT 216"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         216   Industrial lands west of Nafziger Road"
*      85.000   % Impervious"
*       2.860   Total Area"
*     110.000   Flow length"
*       2.000   Overland Slope"
*       0.429   Pervious Area"
*     110.000   Pervious length"
*       2.000   Pervious slope"
*       2.431   Impervious Area"
*     110.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.753   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.973   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.414     0.000     0.415     4.335 c.m/sec"
*             Catchment 216          Pervious   Impervious Total Area "
*             Surface Area           0.429      2.431      2.860      hectare"
*             Time of concentration  34.714     6.236      9.659      minutes"
*             Time to Centroid       2522.758   2272.513   2302.586   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1222.65    6928.35    8151.00    c.m"
*             Rainfall losses        70.358     7.691      17.091     mm"
*             Runoff depth           214.642    277.309    267.909    mm"
*             Runoff volume          920.81     6741.37    7662.19    c.m"
*             Runoff coefficient     0.753      0.973      0.940      "
*             Maximum flow           0.062      0.372      0.414      c.m/sec"
```



```
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.414     0.414     0.415     4.335"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.414     0.414     0.414     4.335"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  4.749    c.m/sec"
*            Hydrograph volume         81024.961    c.m"
*                  0.414     0.414     0.414     4.749"
* 40          HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.414     0.000     0.414     4.749"
* 33          CATCHMENT 217"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         217   Existing ROW west of Nafziger Road"
*      75.000   % Impervious"
*       0.730   Total Area"
*      90.000   Flow length"
*       2.100   Overland Slope"
*       0.183   Pervious Area"
*      90.000   Pervious length"
*       2.100   Pervious slope"
*       0.548   Impervious Area"
*      90.000   Impervious length"
*       2.100   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.753   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.974   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                  0.107     0.000     0.414     4.749 c.m/sec"
*             Catchment 217          Pervious   Impervious Total Area "
*             Surface Area           0.183      0.548      0.730      hectare"
*             Time of concentration  30.329     5.449      10.549     minutes"
*             Time to Centroid       2516.602   2272.013   2322.148   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        520.13     1560.38    2080.50    c.m"
*             Rainfall losses        70.330     7.460      23.177     mm"
*             Runoff depth           214.670    277.540    261.823    mm"
*             Runoff volume          391.77     1519.53    1911.31    c.m"
*             Runoff coefficient     0.753      0.974      0.919      "
*             Maximum flow           0.026      0.083      0.107      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.107     0.107     0.414     4.749"
* 40          HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.107     0.107     0.107     4.749"
* 40          HYDROGRAPH   Combine    4"
*           6   Combine "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  4.856    c.m/sec"
*            Hydrograph volume         82936.266    c.m"
*                  0.107     0.107     0.107     4.856"
* 40          HYDROGRAPH   Confluence    2"
```

```
*           7   Confluence "
*           2   Node #"
*               INLET 1"
*            Maximum flow                  5.525    c.m/sec"
*            Hydrograph volume          98742.898    c.m"
*                   0.107     5.525     0.107     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.107     5.525     5.525     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  5.525    c.m/sec"
*            Hydrograph volume          98742.898    c.m"
*                   0.107     5.525     5.525     5.525"
* 40         HYDROGRAPH   Confluence    3"
*           7   Confluence "
*           3   Node #"
*               INLET 2"
*            Maximum flow                  2.063    c.m/sec"
*            Hydrograph volume          31666.143    c.m"
*                   0.107     2.063     5.525     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.107     2.063     2.063     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  7.549    c.m/sec"
*            Hydrograph volume         130409.000    c.m"
*                   0.107     2.063     2.063     7.549"
* 40         HYDROGRAPH   Confluence    4"
*           7   Confluence "
*           4   Node #"
*               INLET 3"
*            Maximum flow                  4.856    c.m/sec"
*            Hydrograph volume          82936.266    c.m"
*                   0.107     4.856     2.063     0.000"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.107     4.856     4.856     0.000"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 12.403    c.m/sec"
*            Hydrograph volume         213345.281    c.m"
*                   0.107     4.856     4.856    12.403"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.107     0.000     4.856    12.403"
* 33         CATCHMENT 223"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         223   New Hamburglr Inc. lands"
*       85.000  % Impervious"
*       12.570  Total Area"
*       90.000  Flow length"
*        1.000  Overland Slope"
*        1.885  Pervious Area"
*       90.000  Pervious length"
*        1.000  Pervious slope"
*       10.684  Impervious Area"
*       90.000  Impervious length"
```



```
*        1.000  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.753  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.972  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                   1.797     0.000     4.856    12.403 c.m/sec"
*             Catchment 223          Pervious   Impervious Total Area "
*             Surface Area           1.885     10.684     12.570     hectare"
*             Time of concentration  37.890     6.807      10.548     minutes"
*             Time to Centroid       2527.254   2273.436   2303.983   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        0.5374     3.0451     3.5824     ha-m"
*             Rainfall losses        70.343     8.121      17.454     mm"
*             Runoff depth           214.657    276.879    267.546    mm"
*             Runoff volume          0.4047     2.9583     3.3631     ha-m"
*             Runoff coefficient     0.753      0.972      0.939      "
*             Maximum flow           0.273      1.626      1.797      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   1.797     1.797     4.856    12.403"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   1.797     1.797     1.797    12.403"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                 14.200    c.m/sec"
*            Hydrograph volume         246975.828    c.m"
*                   1.797     1.797     1.797    14.200"
* 81         ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments east of Hamilton Road, part of Inlet #4"
*              **************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   1.797     0.000     1.797    14.200"
* 33         CATCHMENT 218"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         218   Ironbridge Manufacturing Property"
*       85.000  % Impervious"
*        2.060  Total Area"
*      230.000  Flow length"
*        1.700  Overland Slope"
*        0.309  Pervious Area"
*      230.000  Pervious length"
*        3.000  Pervious slope"
*        1.751  Impervious Area"
*      230.000  Impervious length"
*        3.000  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.764  Pervious Runoff coefficient"
*        0.060  Pervious Ia/S coefficient"
*        4.813  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.977  Impervious Runoff coefficient"
```

```
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.299     0.000     1.797    14.200 c.m/sec"
*            Catchment 218          Pervious   Impervious Total Area "
*            Surface Area           0.309      1.751      2.060      hectare"
*            Time of concentration  47.820     8.596      13.355     minutes"
*            Time to Centroid       2525.765   2277.665   2307.767   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        880.65     4990.35    5871.00    c.m"
*            Rainfall losses        67.222     6.681      15.763     mm"
*            Runoff depth           217.778    278.319    269.237    mm"
*            Runoff volume          672.93     4873.36    5546.29    c.m"
*            Runoff coefficient     0.764      0.977      0.945      "
*            Maximum flow           0.044      0.270      0.299      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.299     0.299     1.797    14.200"
* 54         POND DESIGN"
*       0.299   Current peak flow    c.m/sec"
*       4.094   Target outflow    c.m/sec"
*      5546.3   Hydrograph volume    c.m"
*         15.   Number of stages"
*     344.700   Minimum water level    metre"
*     345.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*               344.700    0.1250     0.000"
*               344.750    0.1270     9.000"
*               344.800    0.1280    35.000"
*               344.850    0.1300    77.000"
*               344.900    0.1450   136.000"
*               344.950    0.1820   209.000"
*               345.000    0.2220   297.000"
*               345.050    0.2690   400.000"
*               345.100    0.2710   519.000"
*               345.150    0.2740   653.000"
*               345.200    0.2760   804.000"
*               345.250    0.2790   971.000"
*               345.300    0.2820  1154.000"
*               345.350    0.2840  1355.000"
*               345.400    0.2860  1571.000"
*            Peak outflow                  0.247    c.m/sec"
*            Maximum level               345.026    metre"
*            Maximum storage             351.306    c.m"
*            Centroidal lag               38.585    hours"
*                 0.299     0.299     0.247    14.200 c.m/sec"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                 14.437    c.m/sec"
*           Hydrograph volume         252514.875    c.m"
*                 0.299     0.299     0.247    14.437"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.299     0.000     0.247    14.437"
* 33         CATCHMENT 219"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        219   N.C. Pestells Head Office & other Industrial"
*       85.000   % Impervious"
*        1.280   Total Area"
*       75.000   Flow length"
*        1.500   Overland Slope"
*        0.192   Pervious Area"
```



```
*       75.000   Pervious length"
*        3.000   Pervious slope"
*        1.088   Impervious Area"
*       75.000   Impervious length"
*        3.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.705   Pervious Runoff coefficient"
*        0.281   Pervious Ia/S coefficient"
*       22.539   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.972   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                 0.185     0.000     0.247    14.437 c.m/sec"
*            Catchment 219          Pervious   Impervious Total Area "
*            Surface Area           0.192      1.088      1.280      hectare"
*            Time of concentration  24.503     4.388      6.670      minutes"
*            Time to Centroid       2573.045   2271.859   2306.028   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        547.20     3100.80    3648.00    c.m"
*            Rainfall losses        84.132     7.998      19.418     mm"
*            Runoff depth           200.868    277.002    265.582    mm"
*            Runoff volume          385.67     3013.79    3399.45    c.m"
*            Runoff coefficient     0.705      0.972      0.932      "
*            Maximum flow           0.027      0.160      0.185      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                 0.185     0.185     0.247    14.437"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                 0.185     0.185     0.185    14.437"
* 40         HYDROGRAPH   Combine    5"
*          6   Combine "
*          5   Node #"
*              u/s of HWY 7&8"
*           Maximum flow                 14.621    c.m/sec"
*           Hydrograph volume         255914.297    c.m"
*                 0.185     0.185     0.185    14.621"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                 0.185     0.000     0.185    14.621"
* 33         CATCHMENT 220"
*          1   Triangular SCS"
*          1   Equal length"
*          1   SCS method"
*        220   Northwest corner of Nithview Heights"
*        8.000   % Impervious"
*        0.500   Total Area"
*       60.000   Flow length"
*        5.000   Overland Slope"
*        0.460   Pervious Area"
*       60.000   Pervious length"
*        5.000   Pervious slope"
*        0.040   Impervious Area"
*       60.000   Impervious length"
*        5.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.731   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.962   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
```

```
*       0.518   Impervious Initial abstraction"
*                   0.070     0.000     0.185    14.621 c.m/sec"
*            Catchment 220          Pervious   Impervious Total Area "
*            Surface Area           0.460      0.040      0.500      hectare"
*            Time of concentration  18.427     3.293      16.673     minutes"
*            Time to Centroid       2511.791   2263.920   2486.343   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1311.00    114.00     1425.00    c.m"
*            Rainfall losses        76.545     10.723     71.280     mm"
*            Runoff depth           208.455    274.277    213.720    mm"
*            Runoff volume          958.89     109.71     1068.60    c.m"
*            Runoff coefficient     0.731      0.962      0.750      "
*            Maximum flow           0.065      0.006      0.070      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.070     0.070     0.185    14.621"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.070     0.070     0.070    14.621"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8'
*            Maximum flow                  14.688    c.m/sec"
*            Hydrograph volume         256982.875    c.m"
*                   0.070     0.070     0.070    14.688"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.070     0.000     0.070    14.688"
* 33         CATCHMENT 221"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         221   Proposed ROW from Hamilton Road"
*      81.500   % Impervious"
*       0.810   Total Area"
*      40.000   Flow length"
*       2.000   Overland Slope'
*       0.150   Pervious Area"
*      40.000   Pervious length"
*       2.000   Pervious slope"
*       0.660   Impervious Area"
*      40.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.752   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.961   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.114     0.000     0.070    14.688 c.m/sec"
*            Catchment 221          Pervious   Impervious Total Area "
*            Surface Area           0.150      0.660      0.810      hectare"
*            Time of concentration  18.919     3.399      5.741      minutes"
*            Time to Centroid       2500.228   2264.844   2300.357   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        427.07     1881.43    2308.50    c.m"
*            Rainfall losses        70.590     11.084     22.093     mm"
*            Runoff depth           214.410    273.916    262.907    mm"
*            Runoff volume          321.29     1808.26    2129.55    c.m"
*            Runoff coefficient     0.752      0.961      0.922      "
*            Maximum flow           0.021      0.098      0.114      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
```



```
*           4   Add Runoff "
*                   0.114     0.114     0.070    14.688"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.114     0.114     0.114    14.688"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
*            Maximum flow                  14.801    c.m/sec"
*            Hydrograph volume         259112.422    c.m"
*                   0.114     0.114     0.114    14.801"
* 81         ADD COMMENT==================================================="
*         3  Lines of comment"
*            ************************************************"
*            Catchment to Inlet #5"
*            ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                   0.114     0.000     0.114    14.801"
* 33         CATCHMENT 222"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         222   Rear yards from Hamilton Heights Subdivision"
*       5.000   % Impervious"
*       1.080   Total Area"
*      20.000   Flow length"
*       3.000   Overland Slope"
*       1.026   Pervious Area"
*      20.000   Pervious length"
*       3.000   Pervious slope"
*       0.054   Impervious Area"
*      20.000   Impervious length"
*       3.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      76.000   Pervious SCS Curve No."
*       0.751   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.021   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.962   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                   0.152     0.000     0.114    14.801 c.m/sec"
*            Catchment 222          Pervious   Impervious Total Area "
*            Surface Area           1.026      0.054      1.080      hectare"
*            Time of concentration  11.052     1.986      10.480     minutes"
*            Time to Centroid       2488.823   2266.183   2474.766   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2924.10    153.90     3078.00    c.m"
*            Rainfall losses        70.882     10.824     67.879     mm"
*            Runoff depth           214.118    274.176    217.121    mm"
*            Runoff volume          2196.85    148.05     2344.91    c.m"
*            Runoff coefficient     0.751      0.962      0.762      "
*            Maximum flow           0.144      0.008      0.152      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                   0.152     0.152     0.114    14.801"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                   0.152     0.152     0.152    14.801"
* 40         HYDROGRAPH   Combine    5"
*           6   Combine "
*           5   Node #"
*               u/s of HWY 7&8"
```

```
*            Maximum flow                14.949    c.m/sec"
*            Hydrograph volume        261457.281    c.m"
*                  0.152     0.152     0.152    14.949"
* 81         ADD COMMENT==========================================="
*          3  Lines of comment"
*             **************************************************
*             Badenview Developments Inc. lands"
*             **************************************************
* 40         HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                  0.152     0.000     0.152    14.949"
* 33         CATCHMENT 224"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          224   Badenview lands"
*       85.000   % Impervious"
*       43.200   Total Area"
*       90.000   Flow length"
*        1.000   Overland Slope"
*        6.480   Pervious Area"
*       90.000   Pervious length"
*        1.000   Pervious slope"
*       36.720   Impervious Area"
*       90.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       76.000   Pervious SCS Curve No."
*        0.753   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        8.021   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.972   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                  6.175     0.000     0.152    14.949 c.m/sec"
*             Catchment 224          Pervious   Impervious Total Area "
*             Surface Area           6.480      36.720     43.200     hectare"
*             Time of concentration  37.890     6.807      10.548     minutes"
*             Time to Centroid       2527.255   2273.436   2303.983   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1.8468     10.4652    12.3120    ha-m"
*             Rainfall losses        70.343     8.121      17.454     mm"
*             Runoff depth           214.657    276.879    267.546    mm"
*             Runoff volume          1.3910     10.1670    11.5580    ha-m"
*             Runoff coefficient     0.753      0.972      0.939      "
*             Maximum flow           0.937      5.588      6.175      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                  6.175     6.175     0.152    14.949"
* 40         HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                  6.175     6.175     6.175    14.949"
* 40         HYDROGRAPH   Combine    5"
*            6   Combine "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                21.124    c.m/sec"
*             Hydrograph volume        377037.063    c.m"
*                  6.175     6.175     6.175    21.124"
* 40         HYDROGRAPH   Confluence    5"
*            7   Confluence "
*            5   Node #"
*                u/s of HWY 7&8"
*             Maximum flow                21.124    c.m/sec"
*             Hydrograph volume        377037.094    c.m"
```



```
*                  6.175    21.124     6.175     0.000"
* 81         ADD COMMENT==========================================="
*          7  Lines of comment"
*             **************************************************
*             **************************************************
*             **                                              ***
*             **          PROPOSED SWM POND DESIGN            ***
*             **                                              ***
*             **************************************************
*             **************************************************
* 54         POND DESIGN"
*         21.124   Current peak flow    c.m/sec"
*          4.094   Target outflow    c.m/sec"
*       377037.1   Hydrograph volume    c.m"
*            36.   Number of stages"
*        334.550   Minimum water level    metre"
*        337.850   Maximum water level    metre"
*        334.550   Starting water level    metre"
*              0   Keep Design Data: 1 = True; 0 = False"
*                    Level Discharge    Volume"
*                  334.550     0.000     0.000"
*                  334.600   0.00400  1187.000"
*                  334.700   0.02830  3607.000"
*                  334.800   0.06350  6090.000"
*                  334.900   0.08900  8636.000"
*                  335.000    0.1880  11246.00"
*                  335.100    0.3430  13920.00"
*                  335.200    0.5360  16658.00"
*                  335.300    0.7599  19459.00"
*                  335.400     1.011  22323.00"
*                  335.500     1.286  25249.00"
*                  335.600     1.583  28239.00"
*                  335.700     1.901  31294.00"
*                  335.800     2.238  34414.00"
*                  335.900     2.593  37599.00"
*                  336.000     2.966  40851.00"
*                  336.100     3.427  43465.00"
*                  336.200     3.959  46848.00"
*                  336.300     4.543  50286.00"
*                  336.400     5.171  53779.00"
*                  336.500     5.840  57328.00"
*                  336.600     6.544  60933.00"
*                  336.700     7.284  64595.00"
*                  336.800     8.055  68313.00"
*                  336.900     8.858  72088.00"
*                  337.000     9.690  75920.00"
*                  337.100    10.550  79809.00"
*                  337.200    11.437  83755.00"
*                  337.300    12.351  87759.00"
*                  337.400    13.291  91821.00"
*                  337.500    14.255  95940.00"
*                  337.550    14.746  98022.00"
*                  337.600    16.027  100118.0"
*                  337.700    20.027  104352.0"
*                  337.800    25.280  108643.0"
*                  337.850    28.277  110810.0"
*             Peak outflow                14.496    c.m/sec"
*             Maximum level              337.525    metre"
*             Maximum storage          96960.078    c.m"
*             Centroidal lag              44.943   hours"
*                  6.175    21.124    14.496     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    12"
*            6   Combine "
*           12   Node #"
*                d/s of Proposed SWMF"
*             Maximum flow                14.496    c.m/sec"
*             Hydrograph volume        373059.344    c.m"
```

```
*                6.175    21.124    14.496    14.496"
* 81          ADD COMMENT==================================================="
*           3  Lines of comment"
*              **************************************************"
*              Catchments to Inlet #6"
*              **************************************************"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                 6.175     0.000    14.496    14.496"
* 33          CATCHMENT 260"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           260   Hamilton Heights Subdivision"
*        46.000   % Impervious"
*         8.160   Total Area"
*        50.000   Flow length"
*         1.000   Overland Slope"
*         4.406   Pervious Area"
*        50.000   Pervious length"
*         3.000   Pervious slope"
*         3.754   Impervious Area"
*       232.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.752   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.978   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 1.180     0.000    14.496    14.496 c.m/sec"
*              Catchment 260          Pervious   Impervious Total Area "
*              Surface Area           4.406      3.754      8.160      hectare"
*              Time of concentration  19.152     10.638     14.677     minutes"
*              Time to Centroid       2500.402   2280.953   2385.057   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        1.2558     1.0698     2.3256     ha-m"
*              Rainfall losses        70.711     6.284      41.075     mm"
*              Runoff depth           214.289    278.716    243.925    mm"
*              Runoff volume          0.9442     1.0462     1.9904     ha-m"
*              Runoff coefficient     0.752      0.978      0.856      "
*              Maximum flow           0.630      0.575      1.180      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                 1.180     1.180    14.496    14.496"
* 33          CATCHMENT 261"
*             1   Triangular SCS"
*             3   Specify values"
*             1   SCS method"
*           261   Klassen Bronze Property"
*        32.000   % Impervious"
*         2.350   Total Area"
*       100.000   Flow length"
*         2.500   Overland Slope"
*         1.598   Pervious Area"
*        50.000   Pervious length"
*         2.500   Pervious slope"
*         0.752   Impervious Area"
*       164.000   Impervious length"
*         1.500   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        76.000   Pervious SCS Curve No."
*         0.753   Pervious Runoff coefficient"
```



```
*         0.100   Pervious Ia/S coefficient"
*         8.021   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.976   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.338     1.180    14.496    14.496 c.m/sec"
*              Catchment 261          Pervious   Impervious Total Area "
*              Surface Area           1.598      0.752      2.350      hectare"
*              Time of concentration  20.229     8.640      15.837     minutes"
*              Time to Centroid       2502.276   2277.514   2417.098   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        4554.30    2143.20    6697.50    c.m"
*              Rainfall losses        70.406     6.727      50.029     mm"
*              Runoff depth           214.594    278.273    234.971    mm"
*              Runoff volume          3429.21    2092.61    5521.83    c.m"
*              Runoff coefficient     0.753      0.976      0.824      "
*              Maximum flow           0.228      0.116      0.338      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*             4   Add Runoff "
*                 0.338     1.518    14.496    14.496"
* 40          HYDROGRAPH Copy to Outflow"
*             8   Copy to Outflow"
*                 0.338     1.518     1.518    14.496"
* 40          HYDROGRAPH   Combine    12"
*             6   Combine "
*            12   Node #"
*                 d/s of Proposed SWMF"
*              Maximum flow                15.533    c.m/sec"
*              Hydrograph volume       398485.438    c.m"
*                 0.338     1.518     1.518    15.533"
* 40          HYDROGRAPH Start - New Tributary"
*             2   Start - New Tributary"
*                 0.338     0.000     1.518    15.533"
* 33          CATCHMENT 225"
*             1   Triangular SCS"
*             1   Equal length"
*             1   SCS method"
*           225   HWY 7/8 and north ditching"
*        30.000   % Impervious"
*         1.670   Total Area"
*        75.000   Flow length"
*         2.000   Overland Slope"
*         1.169   Pervious Area"
*        75.000   Pervious length"
*         2.000   Pervious slope"
*         0.501   Impervious Area"
*        75.000   Impervious length"
*         2.000   Impervious slope"
*         0.250   Pervious Manning 'n'"
*        74.000   Pervious SCS Curve No."
*         0.731   Pervious Runoff coefficient"
*         0.100   Pervious Ia/S coefficient"
*         8.924   Pervious Initial abstraction"
*         0.015   Impervious Manning 'n'"
*        98.000   Impervious SCS Curve No."
*         0.977   Impervious Runoff coefficient"
*         0.100   Impervious Ia/S coefficient"
*         0.518   Impervious Initial abstraction"
*                 0.240     0.000     1.518    15.533 c.m/sec"
*              Catchment 225          Pervious   Impervious Total Area "
*              Surface Area           1.169      0.501      1.670      hectare"
*              Time of concentration  27.732     4.956      19.443     minutes"
*              Time to Centroid       2524.840   2272.954   2433.168   minutes"
*              Rainfall depth         285.000    285.000    285.000    mm"
*              Rainfall volume        3331.65    1427.85    4759.50    c.m"
```

```
*            Rainfall losses        76.535     6.681      55.579     mm"
*            Runoff depth           208.465    278.319    229.421    mm"
*            Runoff volume          2436.96    1394.38    3831.34    c.m"
*            Runoff coefficient     0.731      0.977      0.805      "
*            Maximum flow           0.166      0.076      0.240      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.240      0.240      1.518     15.533"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                  0.240      0.240      0.240     15.533"
* 40         HYDROGRAPH   Combine    12"
*           6   Combine "
*          12   Node #"
*               d/s of Proposed SWMF"
*            Maximum flow                15.701    c.m/sec"
*            Hydrograph volume        402316.844   c.m"
*                  0.240      0.240      0.240     15.701"
* 81         ADD COMMENT==========================================================="
*          3  Lines of comment"
*             ************************************************************
*             Western catchment along Hamilton Road, diverted to Inlet #6"
*             ************************************************************
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.240      0.000      0.240     15.701"
* 33         CATCHMENT 270"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         270   Industrial/Residential area along Hamilton Road"
*       55.000  % Impervious"
*        8.450  Total Area"
*       45.000  Flow length"
*        2.000  Overland Slope"
*        3.802  Pervious Area"
*       30.000  Pervious length"
*        3.000  Pervious slope"
*        4.648  Impervious Area"
*      235.000  Impervious length"
*        1.500  Impervious slope"
*        0.250  Pervious Manning 'n'"
*       76.000  Pervious SCS Curve No."
*        0.752  Pervious Runoff coefficient"
*        0.100  Pervious Ia/S coefficient"
*        8.021  Pervious Initial abstraction"
*        0.015  Impervious Manning 'n'"
*       98.000  Impervious SCS Curve No."
*        0.978  Impervious Runoff coefficient"
*        0.100  Impervious Ia/S coefficient"
*        0.518  Impervious Initial abstraction"
*                  1.241      0.000      0.240     15.701 c.m/sec"
*               Catchment 270          Pervious   Impervious Total Area "
*               Surface Area           3.802      4.648      8.450      hectare"
*               Time of concentration  14.097     10.721     12.024     minutes"
*               Time to Centroid       2493.258   2281.054   2363.002   minutes"
*               Rainfall depth         285.000    285.000    285.000    mm"
*               Rainfall volume        1.0837     1.3245     2.4082     ha-m"
*               Rainfall losses        70.705     6.312      35.289     mm"
*               Runoff depth           214.295    278.688    249.711    mm"
*               Runoff volume          0.8149     1.2952     2.1101     ha-m"
*               Runoff coefficient     0.752      0.978      0.876      "
*               Maximum flow           0.536      0.711      1.241      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  1.241      1.241      0.240     15.701"
* 56         DIVERSION"
```



```
*            6   Node number"
*        1.560   Overflow threshold"
*        1.000   Required diverted fraction"
*            0   Conduit type; 1=Pipe;2=Channel"
*             Peak of diverted flow          0.000    c.m/sec"
*             Volume of diverted flow        0.000    c.m"
*             DIV00006.250hyd"
*             Major flow at 6"
*                    1.241      1.241      1.241     15.701 c.m/sec"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*             Maximum flow                   1.241    c.m/sec"
*             Hydrograph volume          21100.598    c.m"
*                    1.241      1.241      1.241      1.241"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                    1.241      0.000      1.241      1.241"
* 47          FILEI_O Read/Open DIV00006.250hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*            DIV00006.250hyd"
*            Major flow at 6"
*            Total volume                   0.000    c.m"
*            Maximum flow                   0.000    c.m/sec"
*                0.000      0.000      1.241      1.241 c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                    0.000      0.000      1.241      1.241"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                    0.000      0.000      0.000      1.241"
* 40          HYDROGRAPH   Combine    12"
*            6   Combine "
*           12   Node #"
*                d/s of Proposed SWMF"
*             Maximum flow                  15.701    c.m/sec"
*             Hydrograph volume         402316.875    c.m"
*                    0.000      0.000      0.000     15.701"
* 40          HYDROGRAPH   Confluence    12"
*            7   Confluence "
*           12   Node #"
*                d/s of Proposed SWMF"
*             Maximum flow                  15.701    c.m/sec"
*             Hydrograph volume         402316.875    c.m"
*                    0.000     15.701      0.000      0.000"
* 54          POND DESIGN"
*       15.701   Current peak flow    c.m/sec"
*        0.070   Target outflow    c.m/sec"
*    402316.9    Hydrograph volume    c.m"
*           8.   Number of stages"
*      334.290   Minimum water level    metre"
*      337.000   Maximum water level    metre"
*      334.290   Starting water level    metre"
*            0   Keep Design Data: 1 = True; 0 = False"
*                  Level Discharge    Volume"
*                334.290     0.000     0.000"
*                334.500     0.2540    5.000"
*                335.000     1.303   110.000"
*                335.500     2.800   674.000"
*                336.000     4.639  1910.000"
*                336.500     6.480  3748.000"
*                336.550     6.665  3967.000"
*                337.000    23.484  6569.000"
*             Peak outflow                  15.674    c.m/sec"
```

```
*            Maximum level              336.791    metre"
*            Maximum storage           5361.965    c.m"
*            Centroidal lag              43.954   hours"
*                 0.000    15.701    15.674     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 0.000    15.674    15.674     0.000"
* 56         DIVERSION"
*           7   Node number"
*         7.170   Overflow threshold"
*         1.000   Required diverted fraction"
*             0   Conduit type; 1=Pipe;2=Channel"
*            Peak of diverted flow        8.504    c.m/sec"
*            Volume of diverted flow   65386.973    c.m"
*            DIV00007.250hyd"
*            Major flow at 7"
*                 0.000    15.674     7.170     0.000 c.m/sec"
* 40         HYDROGRAPH   Combine    8"
*           6   Combine "
*           8   Node #"
*               NODE A"
*            Maximum flow                 7.170    c.m/sec"
*            Hydrograph volume       336897.813    c.m"
*                 0.000    15.674     7.170     7.170"
* 81         ADD COMMENT==========================================================*
*          3  Lines of comment"
*             ************************************************"
*             Catchments South of Hwy 7/8"
*             ************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.000     0.000     7.170     7.170"
* 33         CATCHMENT 280"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          280   Northeast portion of Maple Leaf Foods property"
*       26.000   % Impervious"
*        0.700   Total Area"
*       45.000   Flow length"
*        1.500   Overland Slope"
*        0.518   Pervious Area"
*       20.000   Pervious length"
*        2.000   Pervious slope"
*        0.182   Impervious Area"
*       68.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       79.000   Pervious SCS Curve No."
*        0.784   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*        6.752   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.972   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                 0.102     0.000     7.170     7.170 c.m/sec"
*             Catchment 280          Pervious   Impervious Total Area "
*             Surface Area           0.518      0.182      0.700      hectare"
*             Time of concentration  12.395     5.753      10.380     minutes"
*             Time to Centroid       2471.649   2271.438   2410.898   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        1476.30    518.70     1995.00    c.m"
*             Rainfall losses        61.623     8.047      47.694     mm"
*             Runoff depth           223.377    276.953    237.306    mm"
*             Runoff volume          1157.09    504.05     1661.14    c.m"
```



```
*            Runoff coefficient     0.784      0.972      0.833      *
*            Maximum flow           0.075      0.028      0.102      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.102     0.102     7.170     7.170"
* 54         POND DESIGN"
*         0.102   Current peak flow    c.m/sec"
*         0.070   Target outflow    c.m/sec"
*        1661.1   Hydrograph volume    c.m"
*            8.   Number of stages"
*         0.000   Minimum water level    metre"
*         0.750   Maximum water level    metre"
*         0.000   Starting water level    metre"
*             0   Keep Design Data: 1 = True; 0 = False"
*                   Level Discharge    Volume"
*                   0.000     0.000     0.000"
*                  0.1500   0.00400     1.000"
*                  0.2500   0.00600     8.000"
*                  0.3500   0.00700    29.000"
*                  0.4500   0.00800    69.000"
*                  0.6500   0.01000   178.000"
*                  0.7000    0.1060   208.000"
*                  0.7500    0.2810   240.000"
*            Peak outflow                  0.098    c.m/sec"
*            Maximum level                 0.696    metre"
*            Maximum storage             205.634    c.m"
*            Centroidal lag               41.432   hours"
*                 0.102     0.102     0.098     7.170 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.335    c.m/sec"
*            Hydrograph volume         22761.688    c.m"
*                 0.102     0.102     0.098     1.335"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.102     0.000     0.098     1.335"
* 33         CATCHMENT 281"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          281   Western portion of John Bear property"
*       93.000   % Impervious"
*        1.870   Total Area"
*      120.000   Flow length"
*        1.000   Overland Slope"
*        0.131   Pervious Area"
*       20.000   Pervious length"
*        2.000   Pervious slope"
*        1.739   Impervious Area"
*      112.000   Impervious length"
*        1.000   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       65.000   Pervious SCS Curve No."
*        0.630   Pervious Runoff coefficient"
*        0.100   Pervious Ia/S coefficient"
*       13.677   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.977   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                 0.279     0.000     0.098     1.335 c.m/sec"
*             Catchment 281          Pervious   Impervious Total Area "
*             Surface Area           0.131      1.739      1.870      hectare"
*             Time of concentration  12.932     7.761      8.001      minutes"
```

```
*            Time to Centroid       2552.368   2277.105   2289.851   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        373.07     4956.44    5329.50    c.m"
*            Rainfall losses        105.367    6.536      13.454     mm"
*            Runoff depth           179.633    278.464    271.546    mm"
*            Runoff volume          235.14     4842.77    5077.91    c.m"
*            Runoff coefficient     0.630      0.977      0.953      "
*            Maximum flow           0.017      0.264      0.279      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.279     0.279     0.098     1.335"
* 54         POND DESIGN"
*       0.279   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      5077.9   Hydrograph volume    c.m"
*         7.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.800   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3000   0.09000     8.000"
*                 0.6000    0.1200    97.000"
*                 0.9000    0.1300   167.000"
*                  1.200    0.1400   254.000"
*                  1.500    0.1500   358.000"
*                  1.800     1.000   400.000"
*            Peak outflow                  0.271    c.m/sec"
*            Maximum level                 1.543    metre"
*            Maximum storage             363.985    c.m"
*            Centroidal lag               38.335    hours"
*                 0.279     0.279     0.271     1.335 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.570    c.m/sec"
*            Hydrograph volume         27826.746    c.m"
*                  0.279     0.279     0.271     1.570"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.279     0.000     0.271     1.570"
* 33         CATCHMENT 282"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         282   Eastern portion of John Bear property"
*      69.000   % Impervious"
*       1.210   Total Area"
*      60.000   Flow length"
*       2.500   Overland Slope"
*       0.375   Pervious Area"
*      30.000   Pervious length"
*       3.000   Pervious slope"
*       0.835   Impervious Area"
*      90.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      65.000   Pervious SCS Curve No."
*       0.632   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      13.677   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.973   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
```



```
*       0.518   Impervious Initial abstraction"
*                  0.170     0.000     0.271     1.570 c.m/sec"
*            Catchment 282          Pervious   Impervious Total Area "
*            Surface Area           0.375      0.835      1.210      hectare"
*            Time of concentration  14.605     5.529      7.579      minutes"
*            Time to Centroid       2555.069   2271.599   2335.622   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1069.04    2379.47    3448.50    c.m"
*            Rainfall losses        104.915    7.681      37.823     mm"
*            Runoff depth           180.085    277.319    247.177    mm"
*            Runoff volume          675.50     2315.34    2990.84    c.m"
*            Runoff coefficient     0.632      0.973      0.867      "
*            Maximum flow           0.048      0.127      0.170      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                  0.170     0.170     0.271     1.570"
* 54         POND DESIGN"
*       0.170   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*      2990.8   Hydrograph volume    c.m"
*         5.    Number of stages"
*       0.000   Minimum water level    metre"
*       1.400   Maximum water level    metre"
*       0.000   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*                 Level Discharge    Volume"
*                  0.000     0.000     0.000"
*                 0.3200   0.04300   276.000"
*                 0.7500   0.06600   333.000"
*                  1.300   0.08700   371.000"
*                  1.400    0.5000   400.000"
*            Peak outflow                  0.170    c.m/sec"
*            Maximum level                 1.320    metre"
*            Maximum storage             376.845    c.m"
*            Centroidal lag               40.352    hours"
*                 0.170     0.170     0.170     1.570 c.m/sec"
* 40         HYDROGRAPH   Combine    9"
*           6   Combine "
*           9   Node #"
*               NODE B"
*            Maximum flow                  1.739    c.m/sec"
*            Hydrograph volume         30817.129    c.m"
*                  0.170     0.170     0.170     1.739"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                  0.170     0.000     0.170     1.739"
* 33         CATCHMENT 283"
*           1   Triangular SCS"
*           3   Specify values"
*           1   SCS method"
*         283   Area along western tributary, south of Hwy 7/8"
*      29.000   % Impervious"
*      23.290   Total Area"
*     160.000   Flow length"
*       2.000   Overland Slope"
*      16.536   Pervious Area"
*     150.000   Pervious length"
*       2.200   Pervious slope"
*       6.754   Impervious Area"
*     394.000   Impervious length"
*       2.000   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      68.300   Pervious SCS Curve No."
*       0.669   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      11.789   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
```

```
*       98.000   Impervious SCS Curve No."
*        0.978   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   3.188     0.000     0.170     1.739 c.m/sec"
*             Catchment 283          Pervious   Impervious Total Area "
*             Surface Area           16.536     6.754      23.290     hectare"
*             Time of concentration  41.583     13.409     31.052     minutes"
*             Time to Centroid       2575.672   2285.137   2467.080   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        4.7127     1.9249     6.6377     ha-m"
*             Rainfall losses        94.226     6.233      68.708     mm"
*             Runoff depth           190.774    278.767    216.292    mm"
*             Runoff volume          3.1546     1.8828     5.0374     ha-m"
*             Runoff coefficient     0.669      0.978      0.759      "
*             Maximum flow           2.236      1.048      3.188      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   3.188     3.188     0.170     1.739"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   3.188     3.188     3.188     1.739"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*             Maximum flow                  4.924    c.m/sec"
*             Hydrograph volume         81191.539    c.m"
*                   3.188     3.188     3.188     4.924"
* 40          HYDROGRAPH   Confluence    8"
*            7   Confluence "
*            8   Node #"
*                NODE A"
*             Maximum flow                  7.170    c.m/sec"
*             Hydrograph volume        336897.875    c.m"
*                   3.188     7.170     3.188     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   3.188     7.170     7.170     0.000"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*             Maximum flow                 12.094    c.m/sec"
*             Hydrograph volume        418090.063    c.m"
*                   3.188     7.170     7.170    12.094"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   3.188     0.000     7.170    12.094"
* 33          CATCHMENT 284"
*            1   Triangular SCS"
*            1   Equal length"
*            1   SCS method"
*          284   Agricultural lands south of Bleams Road"
*        2.000   % Impervious"
*        2.950   Total Area"
*       80.000   Flow length"
*        3.100   Overland Slope"
*        2.891   Pervious Area"
*       80.000   Pervious length"
*        3.100   Pervious slope"
*        0.059   Impervious Area"
*       80.000   Impervious length"
*        3.100   Impervious slope"
*        0.250   Pervious Manning 'n'"
*       74.000   Pervious SCS Curve No."
*        0.731   Pervious Runoff coefficient"
```



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*        0.100   Pervious Ia/S coefficient"
*        8.924   Pervious Initial abstraction"
*        0.015   Impervious Manning 'n'"
*       98.000   Impervious SCS Curve No."
*        0.975   Impervious Runoff coefficient"
*        0.100   Impervious Ia/S coefficient"
*        0.518   Impervious Initial abstraction"
*                   0.419     0.000     7.170    12.094 c.m/sec"
*             Catchment 284          Pervious   Impervious Total Area "
*             Surface Area           2.891      0.059      2.950      hectare"
*             Time of concentration  25.276     4.517      24.726     minutes"
*             Time to Centroid       2521.159   2271.813   2514.554   minutes"
*             Rainfall depth         285.000    285.000    285.000    mm"
*             Rainfall volume        8239.35    168.15     8407.50    c.m"
*             Rainfall losses        76.690     7.247      75.301     mm"
*             Runoff depth           208.310    277.753    209.699    mm"
*             Runoff volume          6022.25    163.87     6186.13    c.m"
*             Runoff coefficient     0.731      0.975      0.736      "
*             Maximum flow           0.410      0.009      0.419      c.m/sec"
* 40          HYDROGRAPH Add Runoff "
*            4   Add Runoff "
*                   0.419     0.419     7.170    12.094"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.419     0.419     0.419    12.094"
* 40          HYDROGRAPH   Combine    9"
*            6   Combine "
*            9   Node #"
*                NODE B"
*             Maximum flow                 12.498    c.m/sec"
*             Hydrograph volume        424276.125    c.m"
*                   0.419     0.419     0.419    12.498"
* 40          HYDROGRAPH   Confluence    9"
*            7   Confluence "
*            9   Node #"
*                NODE B"
*             Maximum flow                 12.498    c.m/sec"
*             Hydrograph volume        424276.094    c.m"
*                   0.419    12.498     0.419     0.000"
* 40          HYDROGRAPH Copy to Outflow"
*            8   Copy to Outflow"
*                   0.419    12.498    12.498     0.000"
* 40          HYDROGRAPH   Combine    10"
*            6   Combine "
*           10   Node #"
*                NODE C"
*             Maximum flow                 12.498    c.m/sec"
*             Hydrograph volume        424276.094    c.m"
*                   0.419    12.498    12.498    12.498"
* 40          HYDROGRAPH Start - New Tributary"
*            2   Start - New Tributary"
*                   0.419     0.000    12.498    12.498"
* 33          CATCHMENT 285"
*            1   Triangular SCS"
*            3   Specify values"
*            1   SCS method"
*          285   Morningside Retirement Community lands"
*       58.000   % Impervious"
*       18.780   Total Area"
*      190.000   Flow length"
*        2.000   Overland Slope"
*        7.888   Pervious Area"
*       25.000   Pervious length"
*        2.500   Pervious slope"
*       10.892   Impervious Area"
*      354.000   Impervious length"
*        2.500   Impervious slope"
```

```
*       0.250   Pervious Manning 'n'"
*      64.400   Pervious SCS Curve No."
*       0.625   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*      14.041   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.978   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                2.671     0.000    12.498    12.498 c.m/sec"
*            Catchment 285          Pervious   Impervious Total Area "
*            Surface Area           7.888      10.892     18.780     hectare"
*            Time of concentration  13.861     11.761     12.425     minutes"
*            Time to Centroid       2556.982   2282.928   2369.608   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        2.2480     3.1043     5.3523     ha-m"
*            Rainfall losses        106.859    6.146      48.445     mm"
*            Runoff depth           178.141    278.854    236.555    mm"
*            Runoff volume          1.4051     3.0374     4.4425     ha-m"
*            Runoff coefficient     0.625      0.978      0.830      "
*            Maximum flow           0.991      1.688      2.671      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                2.671     2.671    12.498    12.498"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                2.671     2.671     2.671    12.498"
* 40         HYDROGRAPH   Combine    10"
*          6   Combine "
*         10   Node #"
*              NODE C"
*            Maximum flow                 15.075    c.m/sec"
*            Hydrograph volume        468701.063    c.m"
*                2.671     2.671     2.671    15.075"
* 81         ADD COMMENT==========================================================="
*        3  Lines of comment"
*           ************************************************************"
*           Catchments north of Hwy 7/8, towards Eastern Tributary"
*           ************************************************************"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                2.671     0.000     2.671    15.075"
* 33         CATCHMENT 250"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        250   Southern portion of Rec Centre fields"
*      0.000   % Impervious"
*      3.510   Total Area"
*     95.000   Flow length"
*      1.600   Overland Slope"
*      3.510   Pervious Area"
*    100.000   Pervious length"
*      2.000   Pervious slope"
*      0.000   Impervious Area"
*    296.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.753   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.000   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
```



```
*       0.518   Impervious Initial abstraction"
*                0.508     0.000     2.671    15.075 c.m/sec"
*            Catchment 250          Pervious   Impervious Total Area "
*            Surface Area           3.510      0.000      3.510      hectare"
*            Time of concentration  32.784     11.295     32.784     minutes"
*            Time to Centroid       2520.114   2281.667   2520.113   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1.0003     0.0000     1.0003     ha-m"
*            Rainfall losses        70.298     6.416      70.298     mm"
*            Runoff depth           214.702    278.584    214.702    mm"
*            Runoff volume          7536.03    0.01       7536.04    c.m"
*            Runoff coefficient     0.753      0.000      0.753      "
*            Maximum flow           0.508      0.000      0.508      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*          4   Add Runoff "
*                0.508     0.508     2.671    15.075"
* 40         HYDROGRAPH Copy to Outflow"
*          8   Copy to Outflow"
*                0.508     0.508     0.508    15.075"
* 40         HYDROGRAPH   Combine    11"
*          6   Combine "
*         11   Node #"
*              u/s of east culvert of HWY 7&8"
*            Maximum flow                 0.508    c.m/sec"
*            Hydrograph volume         7536.041    c.m"
*                0.508     0.508     0.508     0.508"
* 40         HYDROGRAPH Start - New Tributary"
*          2   Start - New Tributary"
*                0.508     0.000     0.508     0.508"
* 33         CATCHMENT 251"
*          1   Triangular SCS"
*          3   Specify values"
*          1   SCS method"
*        251   Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
*     33.000   % Impervious"
*      5.770   Total Area"
*    100.000   Flow length"
*      2.000   Overland Slope"
*      3.866   Pervious Area"
*    100.000   Pervious length"
*      2.000   Pervious slope"
*      1.904   Impervious Area"
*    296.000   Impervious length"
*      2.000   Impervious slope"
*      0.250   Pervious Manning 'n'"
*     76.000   Pervious SCS Curve No."
*      0.753   Pervious Runoff coefficient"
*      0.100   Pervious Ia/S coefficient"
*      8.021   Pervious Initial abstraction"
*      0.015   Impervious Manning 'n'"
*     98.000   Impervious SCS Curve No."
*      0.977   Impervious Runoff coefficient"
*      0.100   Impervious Ia/S coefficient"
*      0.518   Impervious Initial abstraction"
*                0.840     0.000     0.508     0.508 c.m/sec"
*            Catchment 251          Pervious   Impervious Total Area "
*            Surface Area           3.866      1.904      5.770      hectare"
*            Time of concentration  32.784     11.295     24.405     minutes"
*            Time to Centroid       2520.114   2281.666   2427.143   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        1.1018     0.5427     1.6445     ha-m"
*            Rainfall losses        70.298     6.416      49.217     mm"
*            Runoff depth           214.702    278.584    235.783    mm"
*            Runoff volume          0.8300     0.5305     1.3605     ha-m"
*            Runoff coefficient     0.753      0.977      0.827      "
*            Maximum flow           0.560      0.293      0.840      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
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```
*           4   Add Runoff "
*                 0.840     0.840     0.508     0.508"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.840     0.840     0.840     0.508"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                  1.349    c.m/sec"
*           Hydrograph volume         21140.723    c.m"
*                 0.840     0.840     0.840     1.349"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
*                 0.840     0.000     0.840     1.349"
* 33         CATCHMENT 252"
*           1   Triangular SCS"
*           1   Equal length"
*           1   SCS method"
*         252   Southern portion of Hamburglr lands"
*       5.000   % Impervious"
*       2.870   Total Area"
*      65.000   Flow length"
*       1.500   Overland Slope"
*       2.726   Pervious Area"
*      65.000   Pervious length"
*       1.500   Pervious slope"
*       0.144   Impervious Area"
*      65.000   Impervious length"
*       1.500   Impervious slope"
*       0.250   Pervious Manning 'n'"
*      74.000   Pervious SCS Curve No."
*       0.731   Pervious Runoff coefficient"
*       0.100   Pervious Ia/S coefficient"
*       8.924   Pervious Initial abstraction"
*       0.015   Impervious Manning 'n'"
*      98.000   Impervious SCS Curve No."
*       0.977   Impervious Runoff coefficient"
*       0.100   Impervious Ia/S coefficient"
*       0.518   Impervious Initial abstraction"
*                 0.409     0.000     0.840     1.349 c.m/sec"
*            Catchment 252          Pervious   Impervious Total Area "
*            Surface Area           2.726      0.144      2.870      hectare"
*            Time of concentration  27.744     4.958      26.248     minutes"
*            Time to Centroid       2524.852   2272.966   2508.315   minutes"
*            Rainfall depth         285.000    285.000    285.000    mm"
*            Rainfall volume        7770.52    408.98     8179.50    c.m"
*            Rainfall losses        76.539     6.681      73.046     mm"
*            Runoff depth           208.461    278.319    211.954    mm"
*            Runoff volume          5683.69    399.39     6083.08    c.m"
*            Runoff coefficient     0.731      0.977      0.744      "
*            Maximum flow           0.388      0.022      0.409      c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 0.409     0.409     0.840     1.349"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 0.409     0.409     0.409     1.349"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                  1.752    c.m/sec"
*           Hydrograph volume         27223.801    c.m"
*                 0.409     0.409     0.409     1.752"
* 40         HYDROGRAPH Start - New Tributary"
*           2   Start - New Tributary"
```



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*                 0.409     0.000     0.409     1.752"
* 47         FILEI_O Read/Open DIV00007.250hyd"
*           1   1=read/open; 2=write/save"
*           2   1=rainfall; 2=hydrograph"
*           1   1=runoff; 2=inflow; 3=outflow; 4=junction"
*           DIV00007.250hyd"
*           Major flow at 7"
*           Total volume              65386.973    c.m"
*           Maximum flow                  8.504    c.m/sec"
*                 8.504     0.000     0.409     1.752 c.m/sec"
* 40         HYDROGRAPH Add Runoff "
*           4   Add Runoff "
*                 8.504     8.504     0.409     1.752"
* 40         HYDROGRAPH Copy to Outflow"
*           8   Copy to Outflow"
*                 8.504     8.504     8.504     1.752"
* 40         HYDROGRAPH   Combine    11"
*           6   Combine "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                  9.698    c.m/sec"
*           Hydrograph volume         92610.773    c.m"
*                 8.504     8.504     8.504     9.698"
* 40         HYDROGRAPH   Confluence    11"
*           7   Confluence "
*          11   Node #"
*               u/s of east culvert of HWY 7&8"
*           Maximum flow                  9.698    c.m/sec"
*           Hydrograph volume         92610.773    c.m"
*                 8.504     9.698     8.504     0.000"
* 54         POND DESIGN"
*       9.698   Current peak flow    c.m/sec"
*       0.070   Target outflow    c.m/sec"
*     92610.8   Hydrograph volume    c.m"
*          9.   Number of stages"
*     332.660   Minimum water level    metre"
*     336.000   Maximum water level    metre"
*     332.660   Starting water level    metre"
*           0   Keep Design Data: 1 = True; 0 = False"
*               Level Discharge    Volume"
*             332.660     0.000     0.000"
*             333.000    0.3010   198.000"
*             333.500     1.168  1165.000"
*             334.000     2.325  2895.000"
*             334.500     3.132  5301.000"
*             335.000     3.780  8376.000"
*             335.500     4.332  12258.00"
*             335.750     4.583  14551.00"
*             336.000    21.985  17113.00"
*           Peak outflow                  9.687    c.m/sec"
*           Maximum level               335.823    metre"
*           Maximum storage           15302.474    c.m"
*           Centroidal lag               45.753    hours"
*                8.504     9.698     9.687     0.000 c.m/sec"
* 40         HYDROGRAPH Next link "
*           5   Next link "
*                 8.504     9.687     9.687     0.000"
* 38         START/RE-START TOTALS 11"
*           3   Runoff Totals on EXIT"
*            Total Catchment area                   234.030    hectare"
*            Total Impervious area                  120.549    hectare"
*            Total % impervious                      51.510"
* 19         EXIT"
```

APPENDIX D

PROPOSED SWM FACILITY DESIGN CALCULATIONS

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number:	34896-104
Date:	December 15, 2018
Design By:	NED/MSB
File:	Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

Step 1: Choose Level of Water Quality Control

Enhanced 80% long-term S.S. removal

Step 2: Choose Type of Facility

Wet Pond

Step 3: Define Catchment area and Imperviousness

Catchment Area (ha): 153.71

Imperviousness (%): 57.9

Interpolated Storage Volume Requirement (m^3/ha): 196.85

Permanent Pool Required (m^3): 24109

Extended Detention Volume Required (m^3): 6148

Table 3.2 Water Quality Storage Requirements based on Receiving Waters (from MOE Stormwater Management Planning and Design Manual, March 2003)

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level			
		35	55	70	85
Enhanced 80% long-term S.S. removal	*Wetlands*	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250
Normal 70% long-term S.S. Removal	*Wetlands*	60	70	80	90
	Hybrid Wet Pond/Wetland	75	90	105	120
	Wet Pond	90	110	130	150
Basic 60% long-term S.S. Removal	*Wetlands*	60	60	60	60
	Hybrid Wet Pond/Wetland	60	70	75	80
	Wet Pond	60	75	85	95
	Dry Pond (Continuous Flow)	90	150	200	240

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number: 34896-104
Date: December 17, 2018
Design By: NED/MSB
File: Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

STAGE-STORAGE RELATIONSHIP

Stage	Active Depth	Forebay			Main Pond			Total Pond Volume	Active Storage Volume	Volume Summary	Ponding Elevation	Comments	Stage
		Area	Volume	Cumulative Volume	Area	Volume	Cumulative Volume						
m	m	m^2	m^3	m^3	m^2	m^3	m^3	m^3	m^3	m^3	m		m
332.55		6918	0	0				0					332.55
332.60		6990	348	348				348					332.60
332.70		7133	707	1055				1055					332.70
332.80		7278	721	1776				1776					332.80
332.90		7423	736	2512				2512					332.90
333.00		7569	750	3262				3262					333.00
333.05		7642	411	3673	8677	235	235	3908					333.05
333.10		7715	384	4057	8796	437	672	4729					333.10
333.20		7863	779	4836	9035	892	1564	6400					333.20
333.30		8011	794	5630	9274	916	2480	8110					333.30
333.40		8160	809	6439	9515	940	3420	9859					333.40
333.50		8310	824	7263	9756	964	4384	11647					333.50
333.60		8462	839	8102	9998	988	5372	13474					333.60
333.70		8613	854	8956	10242	1013	6385	15341					333.70
333.80		8766	869	9825	10486	1037	7422	17247					333.80
333.90		8920	885	10710	10731	1061	8483	19193					333.90
333.95		8997	448	11158	10854	540	9023	20181					333.95
334.00		9120	453	11611	11035	548	9571	21182					334.00
334.10		9368	925	12536	11400	1122	10693	23229					334.10
334.20		9616	950	13486	11767	1159	11852	25338					334.20
334.30		9867	975	14461	12138	1196	13048	27509					334.30
334.40		10118	1000	15461	12511	1233	14281	29742					334.40
334.50		10372	1025	16486	12888	1270	15551	32037					334.50
334.55		10499	522	**17008**	13077	650	**16201**	33209		**33209**		Permanent Pool	334.55
334.55	0.00	10499	0	0	13077	0	0	33209	0				334.55
334.60	0.05	10617	528	528	13266	659	659	34396	1187				334.60
334.70	0.15	10856	1074	1602	13648	1346	2005	36816	3607				334.70
334.80	0.25	11097	1098	2700	14035	1385	3390	39299	6090	6148	334.81	MOE Extended Detention	334.80
334.90	0.35	11339	1122	3822	14427	1424	4814	41845	8636	6500	334.83	12.5mm Event	334.90
335.00	0.45	11583	1147	4969	14823	1463	6277	44455	11246		335.05	25mm Event	335.00
335.10	0.55	11829	1171	6140	15224	1503	7780	47129	13920				335.10
335.20	0.65	12077	1196	7336	15610	1542	9322	49867	16658		335.24	2 year event	335.20
335.30	0.75	12326	1221	8557	15982	1580	10902	52668	19459				335.30
335.40	0.85	12577	1246	9803	16358	1618	12520	55532	22323				335.40
335.50	0.95	12830	1271	11074	16739	1655	14175	58458	25249		335.50	5 year Event	335.50
335.60	1.05	13085	1296	12370	17125	1694	15869	61448	28239				335.60
335.70	1.15	13341	1322	13692	17516	1733	17602	64503	31294		335.67	10 year Event	335.70
335.80	1.25	13599	1348	15040	17911	1772	19374	67623	34414				335.80
335.90	1.35	13860	1373	16413	18311	1812	21186	70808	37599		335.91	25 year Event	335.90
336.00	1.45	14121	1400	17813	18716	1852	23038	74060	40851				336.00
336.10	1.55				33551	2614	25652	76674	43465		336.12	50 year Event	336.10
336.20	1.65				34101	3383	29035	80057	46848				336.20
336.30	1.75				34652	3438	32473	83495	50286		336.34	100 year Event	336.30
336.40	1.85				35206	3493	35966	86988	53779				336.40
336.50	1.95				35766	3549	39515	90537	57328				336.50
336.60	2.05				36329	3605	43120	94142	60933				336.60
336.70	2.15				36893	3662	46782	97804	64595				336.70
336.80	2.25				37460	3718	50500	101522	68313				336.80
336.90	2.35				38029	3775	54275	105297	72088				336.90
337.00	2.45				38599	3832	58107	109129	75920				337.00
337.10	2.55				39172	3889	61996	113018	79809				337.10
337.20	2.65				39745	3946	65942	116964	83755				337.20
337.30	2.75				40321	4004	69946	120968	87759				337.30
337.40	2.85				40900	4062	74008	125030	91821				337.40
337.50	2.95				41477	4119	78127	129149	95940				337.50
337.55	3.00				41767	2082	80209	131231	98022		337.53	Regional Event	337.55
337.60	3.05				42052	2096	82305	133327	100118				337.60
337.70	3.15				42621	4234	86539	137561	104352				337.70
337.80	3.25				43193	4291	90830	141852	108643				337.80
337.85	3.30				43480	2167	92997	144019	110810	**110810**			337.85

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

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Orifice Calculations

$Q_o = C_d * A_o * (2 * g * H_o)^{0.5}$

	Orifice 1	Orifice 2
C_d	0.63	0.63
Invert (m)	334.55	500.00
Width (m)	0.000	0.000
Diameter/Height (m)	0.300	0.000
Type (H/V)	V	V

C_d	Description
0.63	Orifice Plate
0.80	Orifice Tube

Weir Calculations

$Q_w = 2/3 * C_d * (2g)^{1/2} * L * H_w^{3/2} + 8/15 * C_d * (2g)^{1/2} * \tan\theta * H_w^{5/2}$

	Weir 1	Weir 2	Weir 3	Weir 4
C_d	0.50	0.50	0.50	0.50
Invert (m)	334.90	336.00	337.55	337.55
Length (m)	1.600	1.468	12.272	30.000
Side Slope (H:V)	0	0	0	0
Side Slope (rad)	0.000	0.000	0.000	0.000

Notch 1	Notch 2	Top of Box	Emergency

STAGE-DISCHARGE RELATIONSHIP

Stage	Active Volume	Orifice 1			Orifice 2			Weir 1	Weir 2	Weir 3	Sub Total Flow	Weir 4	Total Flow	Comments
		Area	H_o	Flow	Area	H_o	Flow	Flow	Flow	Flow		Flow		
m	m^3	m^2	*m*	m^3/s	m^2	*m*	m^3/s	m^3/s	m^3/s	m^3/s		m^3/s	m^3/s	
334.55	0	0.00	0.00	0.0000							0.0000		0.0000	Permanent Pool, Orifice 1 Starts
334.60	1187	0.01	0.03	0.0040							0.0040		0.0040	
334.70	3607	0.04	0.08	0.0283							0.0283		0.0283	
334.80	6090	0.06	0.13	0.0635							0.0635		0.0635	
334.90	8636	0.07	0.20	0.0891				0.0000			0.0891		0.0891	Weir 1 Starts
335.00	11246	0.07	0.30	0.1088				0.0792			0.1880		0.1880	
335.10	13920	0.07	0.40	0.1254				0.2177			0.3430		0.3430	
335.20	16658	0.07	0.50	0.1400				0.3960			0.5360		0.5360	
335.30	19459	0.07	0.60	0.1533				0.6066			0.7599		0.7599	
335.40	22323	0.07	0.70	0.1655				0.8453			1.0108		1.0108	
335.50	25249	0.07	0.80	0.1769				1.1089			1.2858		1.2858	
335.60	28239	0.07	0.90	0.1875				1.3954			1.5830		1.5830	
335.70	31294	0.07	1.00	0.1976				1.7031			1.9007		1.9007	
335.80	34414	0.07	1.10	0.2073				2.0305			2.2377		2.2377	
335.90	37599	0.07	1.20	0.2164				2.3766			2.5930		2.5930	
336.00	40851	0.07	1.30	0.2252				2.7403	0.0000		2.9656		2.9656	Weir 2 Starts
336.10	43465	0.07	1.40	0.2337				3.1210	0.0727		3.4274		3.4274	
336.20	46848	0.07	1.50	0.2419				3.5177	0.1997		3.9594		3.9594	
336.30	50286	0.07	1.60	0.2498				3.9301	0.3633		4.5432		4.5432	
336.40	53779	0.07	1.70	0.2575				4.3573	0.5566		5.1714		5.1714	
336.50	57328	0.07	1.80	0.2649				4.7990	0.7755		5.8395		5.8395	
336.60	60933	0.07	1.90	0.2722				5.2548	1.0174		6.5444		6.5444	
336.70	64595	0.07	2.00	0.2792				5.7240	1.2803		7.2836		7.2836	
336.80	68313	0.07	2.10	0.2861				6.2065	1.5626		8.0552		8.0552	
336.90	72088	0.07	2.20	0.2928				6.7019	1.8630		8.8577		8.8577	
337.00	75920	0.07	2.30	0.2994				7.2097	2.1805		9.6896		9.6896	
337.10	79809	0.07	2.40	0.3058				7.7298	2.5142		10.5498		10.5498	
337.20	83755	0.07	2.50	0.3121				8.2617	2.8635		11.4374		11.4374	
337.30	87759	0.07	2.60	0.3183				8.8054	3.2275		12.3513		12.3513	
337.40	91821	0.07	2.70	0.3244				9.3605	3.6058		13.2907		13.2907	
337.50	95940	0.07	2.80	0.3303				9.9268	3.9978		14.2550		14.2550	
337.55	98022	0.07	2.85	0.3332				10.2141	4.1989	0.0000	14.7462	0.0000	14.7462	Weirs 3 & 4 start (Emergency Overflow only)
337.60	100118	0.07	2.90	0.3361				10.5041	4.4031	0.2274	15.4707	0.5558	16.0265	
337.70	104352	0.07	3.00	0.3419				11.0921	4.8212	1.0950	17.3503	2.6769	20.0272	
337.80	108643	0.07	3.10	0.3475				11.6908	5.2518	2.3195	19.6096	5.6702	25.2798	
337.85	110810	0.07	3.15	0.3503				11.9940	5.4717	3.0371	20.8530	7.4244	28.2774	

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

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WEST FOREBAY DESIGN CALCULATIONS

MOE SWM Planning and Design Manual, 2003

Forebay Design Flows

Flow into forebay during the 1:5-year return period event	12.002 m^3/s
Flow into forebay during the 25 mm - 4 hour design storm event	5.734 m^3/s
Peak flow from main pond outlet for the 25mm design storm (from MIDUSS)	0.226 m^3/s

Forebay Characteristics

b =	35.0 *m*	bottom width
y =	2 *m*	depth
z =	4 :1	side slope
w =	43.0 *m*	average width
R =	1.67 *m*	hydraulic radius
A =	86.0 m^2	cross-sectional area

1. Length Calculation Based on Settling Velocity

L = forebay flow length *(m)*
r = length-to-width ratio
Q_p = peak flow rate through forebay *(m^3/s)*
v_s = settling velocity *(m/s)*

Equation 4.5: Forebay Settling Length

a) Required Settling Length (assuming Q_p = forebay through-flow & v_s = 0.0055 m/s)

Q_p =	5.73 m^3/s	peak flow rate through forebay
v_s =	0.0055 *m/s*	settling velocity
r =	0.56	length-to-width ratio
L =	24.2 *m*	required settling length
L =	*24.2 m*	*trial length*

b) Required Settling Length (assuming Q_p = pond discharge & v_s = 0.0003 m/s)

Q_p =	0.226 m^3/s	peak flow rate through forebay
v_s =	0.0003 *m/s*	settling velocity
r =	0.41	length-to-width ratio
L =	17.6 *m*	required settling length
L =	*17.6 m*	*trial length*

Table 1: Average settling velocities

	Mass Removed	Particle Size Range	Average Settling Velocity
	%	*μm*	*m/s*
	80 - 100	x ≤ 20	0.00000254
Enhanced:	70 - 80	20 < x ≤ 40	0.00001300
Normal:	60 - 70	40 < x ≤ 60	0.00002540
Basic:	40 - 60	60 < x ≤ 130	0.00012700
Medium Sand:	20 - 40	130 < x ≤ 400	0.00059267
Gross Grit:	0 - 20	400 < x ≤ 4000	0.00550333

2. Length Calculation Based on Flow Dispersion Length

Q =	12.00 m^3/s	inlet flow rate
d =	2 *m*	depth of permanent pool in forebay
V_f =	0.50 *m/s*	desired velocity in forebay (typical value ≤ 0.50 *m/s*)
L =	96.0 m	required length of dispersion

Equation 4.6: Dispersion Length

3. Required Forebay Length

L =	**96.0 *m***	**design length**
r =	2.23	design length-to-width ratio (typical minimum of 2.0)

4. Scour Velocity

v_s =	0.15 *m/s*	scour velocity (typical value = 0.15 *m/s*)
v =	**0.140 *m/s***	**actual velocity**

OK The actual velocity through the forebay is less than the scour velocity.

5. Weir Flow From Forebay

L =	30 *m*	length of crest of weir
α =	1.65	coefficient
H =	0.5 *m*	head
Q =	17.50 m^3/s	**discharge**

Equation 4.4: Weir Flow

OK The weir flow from the forebay exceeds the flow entering the forebay

6. Estimated Cleanout Frequencies

a) Forebay

Forebay volume	17008 m^3
Estimated TSS removal efficiency	80%
Impervious level	57.9%
Estimated annual sediment loading	2.0 m^3/ha
Contributing area	153.71 *ha*
Annual sediment volume	246 m^3/yr
Cleanout frequency for 33% volume reduction	**22.8 *years***

Table 2: Annual sediment loading

Impervious Level	Annual Loading
%	m^3/ha
35%	0.6
55%	1.9
70%	2.8
85%	3.8

b) Stormwater Management Pond

Wetpond volume (excluding forebay)	16201 m^3
Estimated TSS removal efficiency	30%
Impervious level	57.9%
Estimated annual sediment loading	2.0 m^3/ha
Contributing area	153.71 *ha*
Annual sediment volume	92 m^3/yr
Cleanout frequency for 33% volume reduction	**58.0 *years***

Wilmot Employment Lands
STORMWATER MANAGEMENT
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EAST FOREBAY DESIGN CALCULATIONS

MOE SWM Planning and Design Manual, 2003

Forebay Design Flows

Flow into forebay during the 1:5-year return period event	4.588 m^3/s
Flow into forebay during the 25 mm - 4 hour design storm event	2.163 m^3/s
Peak flow from main pond outlet for the 25mm design storm (from MIDUSS)	0.226 m^3/s

Forebay Characteristics

b =	28.0 *m*	bottom width
y =	2 *m*	depth
z =	4 :1	side slope
w =	36.0 *m*	average width
R =	1.62 *m*	hydraulic radius
A =	72.0 m^2	cross-sectional area

1. Length Calculation Based on Settling Velocity

L = forebay flow length *(m)*
r = length-to-width ratio
Q_p = peak flow rate through forebay *(m^3/s)*
v_s = settling velocity *(m/s)*

Equation 4.5: Forebay Settling Length

a) Required Settling Length (assuming Q_p = forebay through-flow & v_s = 0.0055 m/s)

Q_p =	2.16 m^3/s	peak flow rate through forebay
v_s =	0.0055 *m/s*	settling velocity
r =	0.31	length-to-width ratio
L =	11.0 *m*	required settling length
L =	*11.0 m*	*trial length*

b) Required Settling Length (assuming Q_p = pond discharge & v_s = 0.0003 m/s)

Q_p =	0.226 m^3/s	peak flow rate through forebay
v_s =	0.0003 *m/s*	settling velocity
r =	0.58	length-to-width ratio
L =	20.9 *m*	required settling length
L =	*20.9 m*	*trial length*

Table 1: Average settling velocities

	Mass Removed	Particle Size Range	Average Settling Velocity
	%	μm	m/s
	80 - 100	x ≤ 20	0.00000254
Enhanced:	70 - 80	20 < x ≤ 40	0.00001300
Normal:	60 - 70	40 < x ≤ 60	0.00002540
Basic:	40 - 60	60 < x ≤ 130	0.00012700
Medium Sand:	20 - 40	130 < x ≤ 400	0.00059267
Gross Grit:	0 - 20	400 < x ≤ 4000	0.00550333

2. Length Calculation Based on Flow Dispersion Length

Q =	4.59 m^3/s	inlet flow rate
d =	2 *m*	depth of permanent pool in forebay
V_f =	0.50 *m/s*	desired velocity in forebay (typical value ≤ 0.50 *m/s*)
L =	36.7 m	required length of dispersion

Equation 4.6: Dispersion Length

3. Required Forebay Length

L =	**220.0 *m***	**provided length**
r =	6.11	design length-to-width ratio (typical minimum of 2.0)

4. Scour Velocity

v_s =	0.15 *m/s*	scour velocity (typical value = 0.15 *m/s*)
v =	0.064 ***m/s***	**actual velocity**

OK The actual velocity through the forebay is less than the scour velocity.

5. Weir Flow From Forebay

L =	30 *m*	length of crest of weir
α =	1.65	coefficient
H =	0.5 *m*	head
Q =	17.50 m^3/s	**discharge**

Equation 4.4: Weir Flow

OK The weir flow from the forebay exceeds the flow entering the forebay

6. Estimated Cleanout Frequencies

a) Forebay

Forebay volume	17008 m^3
Estimated TSS removal efficiency	80%
Impervious level	57.9%
Estimated annual sediment loading	2.0 m^3/ha
Contributing area	153.71 *ha*
Annual sediment volume	246 m^3/yr
Cleanout frequency for 33% volume reduction	**22.8 *years***

Table 2: Annual sediment loading

Impervious Level	Annual Loading
%	m^3/ha
35%	0.6
55%	1.9
70%	2.8
85%	3.8

b) Stormwater Management Pond

Wetpond volume (excluding forebay)	16201 m^3
Estimated TSS removal efficiency	30%
Impervious level	57.9%
Estimated annual sediment loading	2.0 m^3/ha
Contributing area	153.71 *ha*
Annual sediment volume	92 m^3/yr
Cleanout frequency for 33% volume reduction	**58.0 *years***

Wilmot Employment Lands
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FALLING HEAD DRAWDOWN CALCULATION
MOE SWM Planning and Design Manual, 2003

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_O}$$ Equation 4.11

where

t =	126476.188	*s*	
	35.1	*hr*	drawdown time
A_p =	25192.7738	m^2	surface area of the pond
C =	0.63		discharge coefficient
d =	300	*mm*	diameter of the orifice
A_O =	0.07068583	m^2	cross-sectional area of the orifice
g =	9.81	m/s^2	gravitational acceleration constant
h_1 =	334.810	*m*	starting water elevation above the orifice
h_2 =	334.550	*m*	ending water elevation above the orifice
h =	0.26	*m*	maximum water elevation above the orifice
C_2 =	6228.449		slope coefficient from the area-depth linear regression
C_3 =	23573.3771		intercept from the area-depth linear regression

	ELEVATION *m*	STAGE *m*	AREA m^2	COMMENTS
1	334.55	0	23576	Permanent pool
2	334.60	0.05	23884	
3	334.70	0.15	24504	
4	334.81	0.256	25170	Extended detention

DRAWDOWN TIME: 126476 *s* / 35.1 *hr*

Regression Output:

m_1 =	6228.45	slope coefficient from the area-depth linear regression
b =	23573.38	intercept from the area-depth linear regression
se_1 =	16.84	standard error for coefficient m_1
se_b =	2.53	standard error for constant b
R^2 =	1.0000	coefficient of determination
se_y =	3.31	standard error of the *y* estimate
F =	136873.49	F statistic
df =	2	degrees of freedom
ss_{reg} =	1495570	regression sum of squares
ss_{resid} =	22	residual sum of squares

Wilmot Employment Lands
STORMWATER MANAGEMENT
New Hamburg, Ontario

Project Number:	34896-104
Date:	December 17, 2018
Design By:	NED/MSB
File:	Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

FALLING HEAD DRAWDOWN CALCULATION
MOE SWM Planning and Design Manual, 2003

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_O}$$ Equation 4.11

where

t =	131473.534	*s*	
	36.5	*hr*	drawdown time
A_p =	25316.5032	m^2	surface area of the pond
C =	0.63		discharge coefficient
d =	300	*mm*	diameter of the orifice
A_O =	0.07068583	m^2	cross-sectional area of the orifice
g =	9.81	m/s^2	gravitational acceleration constant
h_1 =	334.830	*m*	starting water elevation above the orifice
h_2 =	334.550	*m*	ending water elevation above the orifice
h =	0.28	*m*	maximum water elevation above the orifice
C_2 =	6224.76983		slope coefficient from the area-depth linear regression
C_3 =	23573.5676		intercept from the area-depth linear regression

	ELEVATION *m*	STAGE *m*	AREA m^2	COMMENTS
1	334.55	0	23576	Permanent pool
2	334.60	0.05	23884	
3	334.70	0.15	24504	
4	334.80	0.25	25132	
5	334.90	0.35	25766	
6	335.00	0.45	26406	
7	334.83	0.276	25297	12.5mm Storm Event

DRAWDOWN TIME: 131474 *s* / 36.5 *hr*

Regression Output:

m_1 =	6224.77	slope coefficient from the area-depth linear regression
b =	23573.57	intercept from the area-depth linear regression
se_1 =	15.68	standard error for coefficient m_1
se_b =	2.32	standard error for constant b
R^2 =	1.0000	coefficient of determination
se_y =	3.01	standard error of the *y* estimate
F =	157625.65	F statistic
df =	2	degrees of freedom
ss_{reg} =	1428824	regression sum of squares
ss_{resid} =	18	residual sum of squares

APPENDIX E

GEOTECHNICAL REPORTS
(BY PETO MacCALLUM LIMITED)

GEOTECHNICAL INVESTIGATION
PROPOSED DEVELOPMENT
WILMOT EMPLOYMENT LANDS
NEW HAMBURG, ONTARIO

for

MR. PAT GEORGE
c/o MTE CONSULTANTS INC.

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PML Ref.: 18KF009
Report: 1
December 18, 2018

Peto MacCallum Ltd.
CONSULTING ENGINEERS

December 18, 2018

PML Ref.: 18KF009
Report: 1

Mr. Pat George
c/o Mr. Dave Hicks, C.E.T.
MTE Consultants Inc.
520 Bingemans Centre Drive
Kitchener, Ontario
N2B 3X9

Dear Mr. Hicks

Geotechnical Investigation
Proposed Industrial Development
Wilmot Employment Lands
New Hamburg, Ontario

Peto MacCallum Ltd. (PML) is pleased to report the results of the geotechnical investigation recently completed at the above noted project site. Authorization to proceed with this assignment was provided by Mr. D. Hicks, C.E.T. verbally on February 12, 2018.

In general, the project involves the proposed construction of an industrial subdivision on an existing 47.5 Ha agricultural property located northwest of the Highway 7/8 and Nafziger Road intersection in New Hamburg, Ontario. It is understood that the proposed development will have full municipal servicing including watermain, storm and sanitary sewers, with typical invert depths expected to be to a maximum 3 m depth below existing grade. Based on the preliminary draft plans it is understood that development will include about 3.1 km of new roadways and buried services. In addition, a trunk sanitary sewer will run through the site, connecting a proposed future development situated north of the site to an existing sanitary sewer crossing of Highway 7/8 at the south end of the site. Based on preliminary design information it is understood that the invert levels of the proposed trunk sewer are about 4 to 6 m below existing grade. A storm water management facility will also be constructed at the south side of the development site.

A municipal drainage system servicing neighbouring properties extends across the site. The site also has an extensive agricultural tile drainage system which connects into the municipal drains.

It is understood that a previous geotechnical investigation was carried out at the site in 2010, and reference is given to Appendix A for the borehole logs provided by MTE Consultants Inc. (MTE), and Drawing 1 for the corresponding locations.

The purpose of the current geotechnical investigation was to explore the subsurface soil and ground water conditions at the site and based on this information, to provide geotechnical recommendations for the proposed development. Specific considerations to be addressed in this report include:

- A description of the site and the field investigation procedure;
- A summary of the subsurface soil and ground water conditions encountered;
- Log of borehole sheets, a borehole location plan drawing, and geotechnical laboratory test results;
- Excavation and construction dewatering requirements;
- Foundation design, including bearing resistances, settlement projections and site class for seismic design;
- Slab on grade floors and below grade walls, including compaction requirements and geotechnical suitability of onsite soils for re-use;
- Site servicing (storm, sanitary, water and utilities) including pipe bedding requirements;
- Pavement structure design for new roadways; and,
- Suitability of native soils for infiltration of stormwater.

The comments and recommendations provided in this report are based on the site conditions at the time of the investigation, and are for the current project only. Any changes in plans will require review by PML to assess the applicability of the report, and may require modified recommendations, additional analysis and / or investigation. When the project design is complete, the general recommendations given in this report should be reviewed by PML to ensure their applicability.

Investigation Procedure

Geotechnical Investigation

The field work for this geotechnical investigation was conducted between March 12 and 26, 2018. The investigation program comprised a total of 18 boreholes (101 to 109 and 111 to 119) advanced to between 3.6 and 11.1 m depth, with monitoring wells installed in seven of the boreholes. The borehole locations are shown on the appended Borehole Location Plan, Drawing 1.

The borehole locations were established in the field by PML. The ground surface elevations were interpolated from a topographic survey drawing provided by MTE.

The boreholes were advanced using a Diedrich D-50 track mounted drillrig fitted with continuous flight solid and hollow stem augers and automatic hammer, supplied and operated by a specialist drilling contractor. The work was carried out under the full-time supervision of a PML engineering staff member who directed the drilling and sampling operations, documented the soil stratigraphy, monitored ground water conditions and processed the recovered samples.

Representative samples of the overburden were recovered at regular intervals throughout the depths explored. Standard penetration tests (SPT) were carried out during sampling operations of the boreholes using conventional split spoon equipment. Ground water observations were made in the boreholes during and upon completion of drilling. The boreholes were backfilled and compacted in accordance with O.Reg.903 upon completion of drilling.

Pocket penetrometer testing was carried out on the recovered samples to determine the undrained shear strength of the cohesive soils.

Monitoring wells were installed in seven boreholes to more accurately measure ground water levels. The monitoring wells comprised 50 mm diameter PVC pipe, filter sand, bentonite seals, and protective casings. Subsequent water level measurements from the wells were conducted by MTE.

All of the recovered samples were returned to PML's laboratory for detailed visual examination, classification, and routine moisture content determinations. The laboratory testing also included particle size distribution analyses on eight samples of the major soil types encountered.

Summarized Subsurface Conditions

Reference is made to the appended Log of Borehole sheets for details of the field work including soil descriptions, inferred stratigraphy, standard penetration test (SPT) N values, dynamic cone penetration test values, ground water observations and laboratory moisture content determinations.

Due to the soil sampling procedures and the limited size of samples, the depth / elevation demarcations on the borehole logs must be viewed as "transitional" zones, and cannot be construed as exact geologic boundaries between layers.

In general, the soil stratigraphy encountered comprised surficial topsoil and localized fill, underlain by an extensive clayey silt deposit containing silt, sandy silt, and silty sand layers.

Surficial topsoil was contacted in all of the boreholes, with the exception of Boreholes 111 and 119. The topsoil was between 50 and 360 mm thick, with an average of 222 mm.

Surficial fill was encountered locally in Boreholes 111 and 119, and extended to 0.45 and 0.75 m depth, respectively.

An extensive clayey silt deposit was encountered below the surficial topsoil and fills deposits, in all of the boreholes, and extended to the 3.6 to 11.1 m borehole termination depths. The cohesive clayey silt deposit was generally firm to very stiff based on standard penetration N values between 4 and 31 blows per 0.3 m penetration of the split spoon sampler. Pocket penetrometer shear strengths of the clayey silt ranged between 25 and 225 kPa. Moisture content ranged between 9 and 32% indicating drier than plastic limit (DTPL) to about plastic limit (APL) conditions in the cohesive clayey silt soils. Localized layers of wet to saturated silt, sandy silt, and silty sand were also encountered within the clayey silt deposit. Reference is given to Figures 1 to 8 for the results of particle size distribution analyses conducted on samples of the clayey silt and silt.

Ground Water Conditions

Ground water observations carried out during and upon completion of drilling are presented on the appended Log of Borehole Sheets.

During drilling, wet and saturated conditions and were generally encountered in the silt, sandy silt and silty sand layers below 1.5 to 6.1 m depth (Elevation 332.3 to 343.8). Free water was observed during and upon completion of drilling, in Boreholes 104, 107, 108, 109, 113, 117 and 118, below 2.3 to 7.6 m depth (Elevation 332.6 to 339.1).

On April 8, 2018 water level measurements from the monitoring wells installed in Boreholes 101 to 107 ranged between 0.5 to 6.7 m depth below existing grade (about Elevation 327.0 to 338.3).

The ground water levels at the site are subject to seasonal fluctuations and precipitation patterns.

The relatively impermeable nature of the clayey silt could contribute to the development of perched water conditions following short term and seasonal precipitation events.

Discussion and Recommendations

The project involves the proposed construction of a industrial and commercial development at Wilmot Employment Lands, in New Hamburg, Ontario. The work will include earthworks grading, construction of 3.1 km of municipal roads and installation of a trunk sanitary sewer (about 4 to 6 m below existing grades).

It is noted that the proposed subdivision road and sewer configuration have changed since completion of PML's field investigation. Consequently, the following recommendations are provided for preliminary design purposes, and a supplemental geotechnical field investigation will be required once design details have been finalized.

The following recommendations are based on design information provided by the client. It is recommended that PML be retained to review the final design for both additions to check that the recommendations presented hereafter have been interpreted correctly and are sufficient and appropriate for the proposed works.

Foundations and Earthworks Grading

Details of the buildings in the proposed industrial subdivision have yet to be established. We have provided the following preliminary foundation design recommendations and earthworks grading recommendations for the development. However, we recommend that a site specific geotechnical investigation be carried out for foundation designs once details of the proposed structures are known

The site is generally underlain by firm to very stiff clayey silt. It is feasible to support buildings on conventional spread or strip footings, or mat foundations founded in the native firm to very stiff clayey silt. Based on the investigation findings, footings founded a minimum 0.3 m into the firm to very stiff native clayey silt deposits, below any surficial fill and topsoil and local surficial soft or loose zones, may be designed for a net bearing resistance of 150 kPa at the serviceability limit state (SLS) and a factored bearing resistance of 225 kPa at the ultimate limit state (ULS).

Alternatively, in areas where grades are to be raised footings maybe placed at higher elevations on engineered structural fill. The existing topsoil and fill must be excavated to the levels of competent native clayey silt deposits in advance of engineered structural fill placement. Engineered structural fill used to establish footing founding subgrade levels should comprise an approved compactable inorganic soil, placed in lifts with a maximum thickness of 300 mm and be compacted to at least 98% standard Proctor maximum dry density (SPMDD). Additional generic recommendations for engineered fill construction are provided in Appendix B. Footings supported on approved engineered structural fill may also be designed using the values for a net factored resistance of 150 at SLS and 225 kPa at ULS. Full time inspection of any structural fill placement by PML personnel is recommended to approve subgrade conditions, fill materials and to verify that the specified compaction levels are being achieved.

The maximum total settlement of foundations designed for the net SLS bearing pressures noted above are not expected to exceed 25 mm. Differential settlements of around 50 to 75% of the total settlement should be anticipated.

All founding surfaces should be examined by PML personnel prior to concrete placement, to check that all loose, frozen, organic or otherwise deleterious materials have been satisfactorily removed and the required bearing capacity is available throughout.

All exterior footings and all footings exposed to seasonal freezing conditions must be provided with frost protection. The minimum frost protection should be 1.2 m of earth cover or the thermal insulation equivalent.

Design provisions for earthquake loading should also be applied. For the soil conditions at the site, a Class D site category may be assumed, in accordance with the 2012 Ontario Building Code.

As noted previously, municipal drains servicing neighbouring properties cross the site. In addition, an extensive agricultural drainage system extends across the site, and connects to the municipal drains. The location and details of these drains should be confirmed prior to construction. Existing drainage pipes which extend into the proposed development lots should be rerouted into easements away from the building areas, or be decommissioned where appropriate.

Slab on Grade Floors

Preparation of the floor slab subgrade should include stripping of the surficial, topsoil, and other deleterious material, placement and compaction of engineered fill, if necessary, followed by proof rolling of the exposed subgrade with a heavy roller to ensure uniform adequate support. Excessively loose, soft or compressible materials revealed during the proofrolling operations should be subexcavated and replaced with well compacted approved material.

Engineered fill placed under the floor slab to achieve finished subgrade levels or as foundation wall backfill should comprise approved inorganic material having a moisture content within 3% of the optimum value, placed in maximum 200 mm thick lifts, and compacted to at least 95% SPMDD. Reference is given to Appendix B for additional engineered fill construction recommendations.

A minimum 150 mm thick layer of Granular A compacted to 98% SPMDD is recommended directly beneath the slab-on-grade. A polyethylene vapour barrier should be placed on the surface of the granular base if a moisture sensitive finish is to be placed on the floor. Joints should be saw cut into concrete floor immediately after initial set of the concrete to control potential cracking of the slab.

Below Grade Walls

Below grade walls and basement walls should be designed as retaining walls to resist the unbalanced horizontal earth pressure imposed by the backfill adjacent to the wall. The unfactored lateral earth pressure, p, may be computed using the following equation, assuming a triangular pressure distribution:

$$p = K(\gamma h + q)$$

where K = lateral earth pressure coefficient
= 0.5 for wall restrained at both top and bottom

γ = unit weight of free-draining granular material
= *21* kN/m^3

h = depth below final grade (m)

q = surcharge load (kPa), if present

The excavation adjacent to the basement walls should be backfilled with free-draining granular material satisfying the OPS Granular "B" gradation specification and a weeping tile system installed to minimize the build-up of hydrostatic pressure behind the wall.

The weeping tiles should be surrounded by a properly designed graded granular filter or wrapped with approved geotextile to prevent migration of fines into the system. The drainage pipe should be placed on a positive grade and lead to a frost-free sump or outlet.

Excavation and Ground Water Control

It is generally envisaged that excavations for the earthworks and site servicing will extend to a maximum 9 m depth within the proposed development.

Excavations for service installations are expected to extend up to about 9 m depth through topsoil and into the native clayey silt deposits containing silt, sandy silt and silty sand, which are classified as Type 3 materials as defined in the OHSA. Subject to inspection and providing adequate ground water control is achieved, excavations within Type 3 soils that are to be entered by workers should be inclined from the base of the excavation at one horizontal to one vertical (1H:1V) or flatter.

It is anticipated that ground water seepage or surface water entering the excavations will be handled readily by conventional sump pumping. The actual dewatering methods should be established at the contractor's discretion within the context of a performance specification for the project. Regardless of the dewatering method chosen, the hydraulic head and ground water inflow must be properly controlled to ensure a stable and safe excavation and to facilitate construction. The design of the dewatering system should be specified to maintain and control ground water at least 0.3 m below the excavation base level, in order to provide a stable excavation base throughout construction.

It should be noted that, under the Ontario Water Resources Act, the Water Taking and Transfer Regulation 387/04, a Permit to Take Water (PTTW) from the Ministry of Environment, Conservation and Parks (MECP) is required if the dewatering discharge is greater than 50,000 L/day. In accordance with the above noted regulatory requirements and in compliance with the MECP's PTTW Manual (April 2005), and application should be filed to the MECP for the subject property construction dewatering PTTW, if the dewatering discharge is greater than 400,000 L/day, or about 4.6 L/S. If the dewatering discharge is between 50,000 L/day (or about 0.6 L/S) and 400,000 L/day (or about 4.6 L/S) dewatering activities need to be registered on the Environmental Activity and

Sector Registry (EASR). PML would be happy to assist with this process, if required. The depth of excavations for site grading and site servicing are expected to extend to a maximum 9 m depth into clayey silt deposits with wet to saturated layers of silt, sand, sandy silt, and silty sand. Due to the relatively low permeability of the native deposits, typical trenching excavations for utility installation, storm water pond construction and earthworks grading are generally expected to have dewatering rates less than 50,000 L/day, and a PTTW or EASR should not be required.

It is recommended that test pits be carried out during the tendering stage of the project in order that prospective contractors may familiarize themselves with soil and ground water conditions to be contacted. Also, as noted above, the dewatering requirements should be established by the contractor in the context of a performance specification.

Pipe Bedding and Cover

It is expected that the proposed water and sewer pipes will be founded on competent native clayey silt deposits, or engineered fill. Providing adequate ground water control is achieved, bearing problems are not anticipated for conduits founded on the native mineral soils or engineered fill. It may be necessary to increase the bedding thickness if excessively loose, soft or wet conditions are present at the pipe subgrade. The need for this is best determined during construction.

Conventional bedding and cover constructed in accordance with applicable Ontario Provincial Standard Drawings (OPSD) will be suitable. Material containing stones larger than 50 mm size should not be used in the bedding layer. The bedding and cover material should be placed in 150 mm lifts compacted to at least 95% SPMDD. Compaction should be provided beneath the pipe haunches to provide uniform support. Over-compaction should be avoided as damage to the pipe could result.

Trench backfill material should comprise approved material placed in uniform 200 mm thick lifts within 3% of the optimum moisture content and compacted to at least 95% SPMDD.

It is anticipated that the excavated material will primarily comprise clayey silt. The insitu moisture content of the clayey silt typically ranges from 9 to 32%. Based on our experience with similar types of material, the upper limit of placement moisture content compatible with efficient compaction is expected to be about 15%. Therefore, the excavated clayey silt containing wet and saturated soils are considered suitable for reuse only if the work is carried out during the dry summer months and the construction schedule is flexible to permit air drying to reduce the moisture content closer to the optimum value.

Excavated materials intended for backfilling purposes should not be exposed to the elements for prolonged time periods, as they might be rendered unsuitable for reuse. Organic soil, topsoil, deleterious or excessively wet material should not be used as backfill. Should construction start during the winter season, particular attention must be given to ensure that frozen material is not used as backfill for service trenches. Topsoil may be reused for landscape purposes only.

It should also be noted that the insitu clayey silt materials will tend to retain a voided structure when placed as backfill. Sufficient compaction must be applied to breakdown all lumps / clods within the fill matrix to achieve a non-voided condition. Significant post construction settlement could otherwise result.

The trenching and backfilling operations should be carried out in a manner which minimizes the length of trench left open yet accommodates efficient pipe laying and compaction activities.

Storm Water Management and Soil Infiltration

A storm water pond is proposed at the south side of the site, near Boreholes 101, 102 and 103. Design details of the pond have yet to be finalized. However, it is understood that the pond will have a permanent pool at elevation 334.55 and active storage to about elevation 337.85. Typical soils at the pond site comprise clayey silt with occasional silt layers. Although the clayey silt is considered to be relatively impermeable, the silt, sandy silt and silty sand layers which are interlayered with the clayey silt are more permeable. Therefore, it will be necessary to line the base of the pond to maintain the permanent pool water level.

The earthen liner should comprise clayey silt soils having a hydraulic conductivity of no more than $1x10^{-6}$ cm/s. The native clayey silt has a permeability $<1x10^{-6}$ cm/sec, however, inspection and testing during construction will be required to confirm if excavated materials are suitable for reuse as the earth liner.

Fill used for earth liner construction at the pond, should be placed in lifts with a maximum 300 mm thickness, and compacted to at least 95% standard Proctor maximum dry density (SPMDD). General recommendations for fill subgrade preparation and engineered fill construction are provided in Appendix B.

Berms should be constructed using select soil placed in maximum 300 mm thick lifts compacted to 95% SPMDD. Finished slopes of the ponds should not be steeper than five horizontal to one vertical (5H:1V) for the interior. Slopes should be provided with vegetation cover or other means for erosion protection.

Full-time inspection should be carried out by PML personnel to examine and approve backfill, fill placement operations, and to check the compaction by in situ density testing using nuclear gauges.

It is understood that onsite storm water infiltration parameters are required. The following table provides hydraulic conductivity and infiltration design parameters for the major onsite soils encountered. An appropriate factor of safety should also be used for design.

SOIL	HYDRAULIC CONDUCTIVITY (cm/s)	INFILTRATION RATE (mm/hr)
Clayey silt	Less than $1x10^{-6}$	Less than 0.04
Silt/Sandy Silt/Silty Sand	$1x10^{-4}$	5

Cognizant of the low permeability and infiltration rates and considering the limited nature of silt/sandy silt/silty sand seams, the amount of onsite infiltration is expected to be negligible.

Pavement Design

As noted previously, approximately 3.1 km of new roadway will be constructed at the site. Based on the proposed pavement usage, frost susceptibility, and strength of the expected subgrade soils, the following pavement component thicknesses are considered suitable for the proposed industrial subdivision roadways.

PAVEMENT COMPONENT	THICKNESS (mm)
Asphalt	100
Granular A Base	150
Granular B Subbase	600

The pavement design considers that construction will be carried out during the drier time of the year and that the subgrade is stable, as determined by proofrolling and inspection by PML personnel. If the subgrade is wet and unstable, subexcavation and placement of additional granular subbase material will be required.

In areas where the subgrade is sensitive to disturbance or construction is to occur outside of the drier time of year, then consideration can be given to thickening the granular subbase or using a geotextile separator between the pavement structure and subbase, in lieu of additional granular subbase. The geotextile separator envisaged should provide reinforcement, filtration and separation of the granular subbase from the anticipated clayey silt / clayey silt fill subgrade soils, and a woven geotextile such Terrafix's 200 W (or equivalent) is envisaged.

The pavement materials should conform to current OPS and municipal specifications. The Granular A base and Granular B subbase courses should be placed in thin lifts and be compacted to a minimum of 100% SPMDD, and asphalt should be placed to a minimum of 92% of the material's maximum relative density (MRD) and reference is made to OPS Specification 310.

During construction, testing should be conducted to confirm the gradation and compactibility characteristics of the granular base materials and the mix design properties of the asphalt.

Proofrolling procedures and the placement and compaction of all the granular materials and asphalt for the pavement construction should be inspected on a continuous basis by PML personnel.

The pavement subgrade materials will lose strength to support traffic loads if allowed to become wet. Moreover, the silty clay subgrade soils are considered frost susceptible and the roadway may heave during freezing and thawing periods. Drainage of the pavement structure is essential to maintain structural integrity and limit frost heave. In this regard, installation of longitudinal subdrains is recommended. The longitudinal subdrains should comprise a minimum 100 mm diameter perforated plastic pipe, set below the subbase level, and outlet to ditching, or catch basins. Subdrain pipes should be surrounded by appropriate filter media such as clear stone wrapped in geotextile, or alternatively the pipes should be wrapped in filter cloth and surrounded by concrete sand.

Geotechnical Review and Construction Inspection and Testing

When development design is complete, it is recommended that the design drawings be submitted to PML for general geotechnical review for compatibility with site conditions and recommendations of this report.

Earthworks operations should be carried out under the supervision of PML to approve subgrade preparation, backfill materials, placement and compaction procedures, and verify the specified degree of compaction is achieved uniformly throughout fill materials.

The comments and recommendations provided in the report are based on the information revealed in the boreholes. Conditions away from and between boreholes may vary, particularly where service trenches exist. Geotechnical review during construction should be on going to confirm the subsurface conditions are substantially similar to those encountered in the boreholes, which may otherwise require modification to the original recommendations.

This report is subject to the Statement of Limitations that is included in Appendix C, which must be read in conjunction with the report.

Closure

We trust the information presented in this report is sufficient for your immediate requirements. If you have any questions or require further information, please do not hesitate to contact our office.

Sincerely

Peto MacCallum Ltd.

William Loghrin, P.Eng.
Project Engineer, Geotechnical Services

Gerry Mitchell, MEng, P.Eng.
Senior Consultant

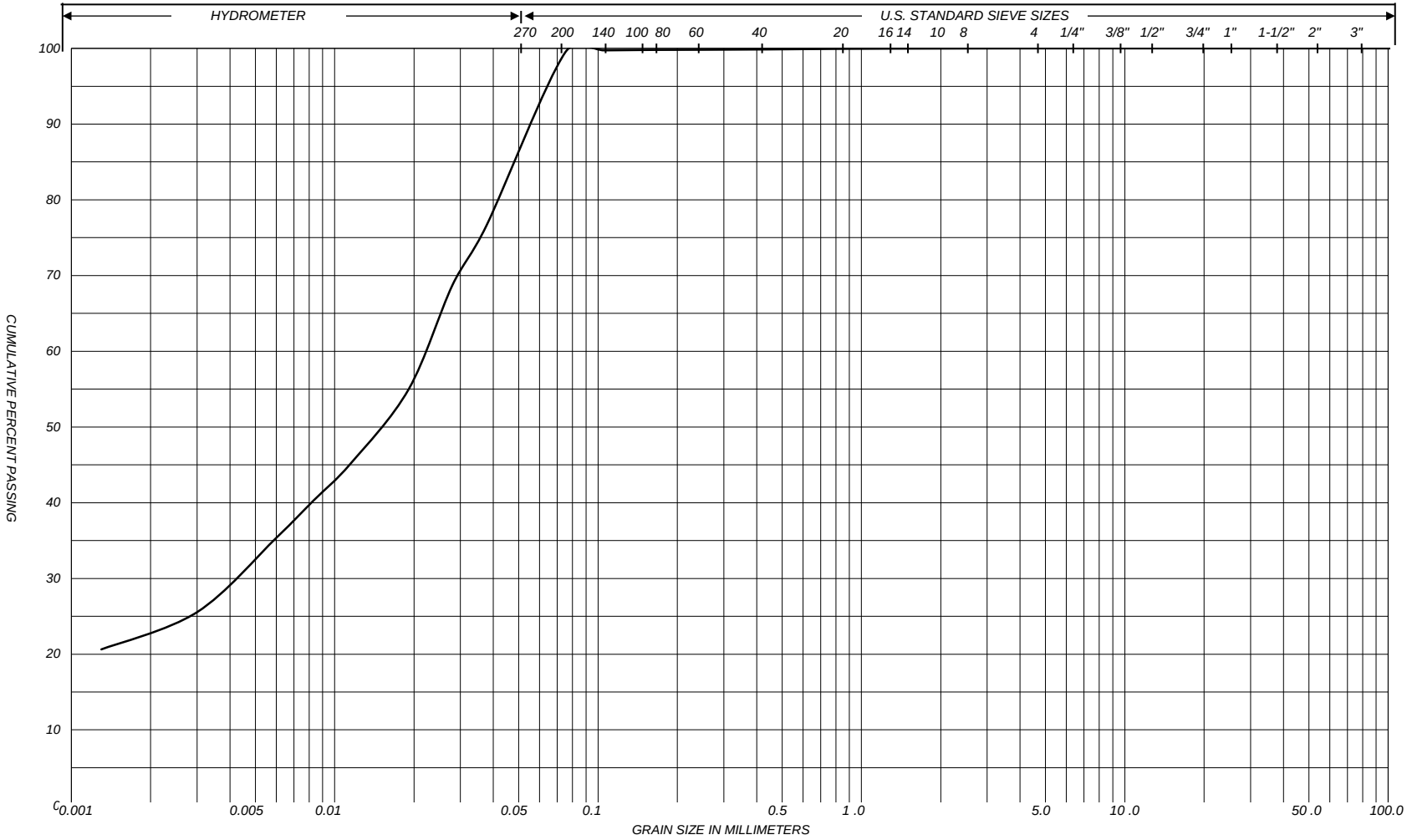
WL/GM:wl

Enclosures:
Figures 1 to 3 - Particle Size Distribution Charts
List of Abbreviations
Log of Boreholes 1 to 6
Drawing 1 - Borehole Location Plan
Appendix A - MTE Boreholes and Site Plan
Appendix A – Engineered Fill
Appendix B – Statement of Limitations

Peto MacCallum Ltd.
CONSULTING ENGINEERS

PML REF. 18KF009
FIGURE NO. 1

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES		UNIFIED
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES		M.I.T.
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL					U.S. BUREAU
				SAND									

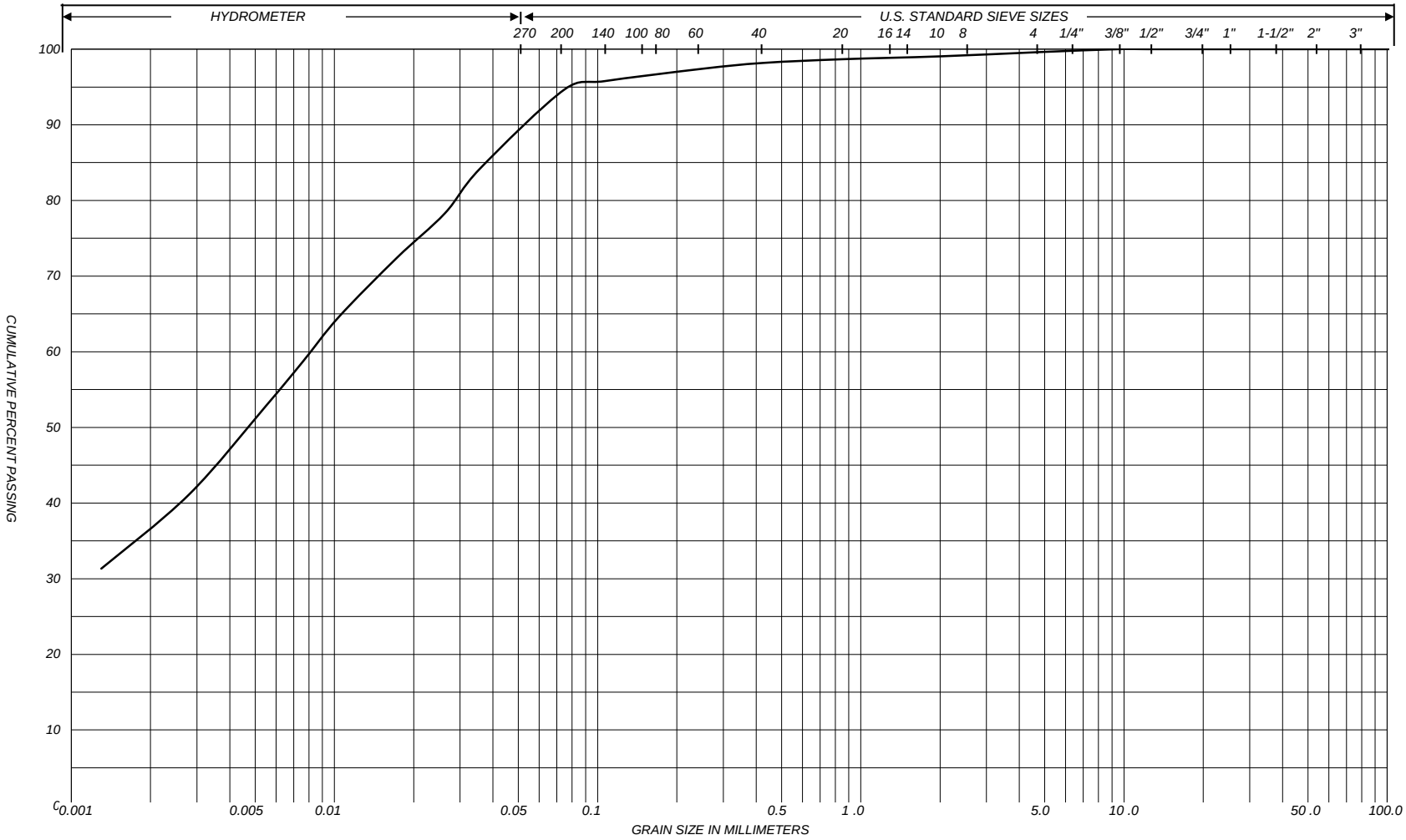
REMARKS Borehole 101, Sample SS9, Depth 9.1 to 9.6 m

CLAYEY SILT

Peto MacCallum Ltd.
CONSULTING ENGINEERS

PML REF. 18KF009
FIGURE NO. 2

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES		UNIFIED
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES		M.I.T.
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL					U.S. BUREAU
				SAND									

REMARKS Borehole 102, Sample SS8, Depth 6.0 to 6.5 m

CLAYEY SILT

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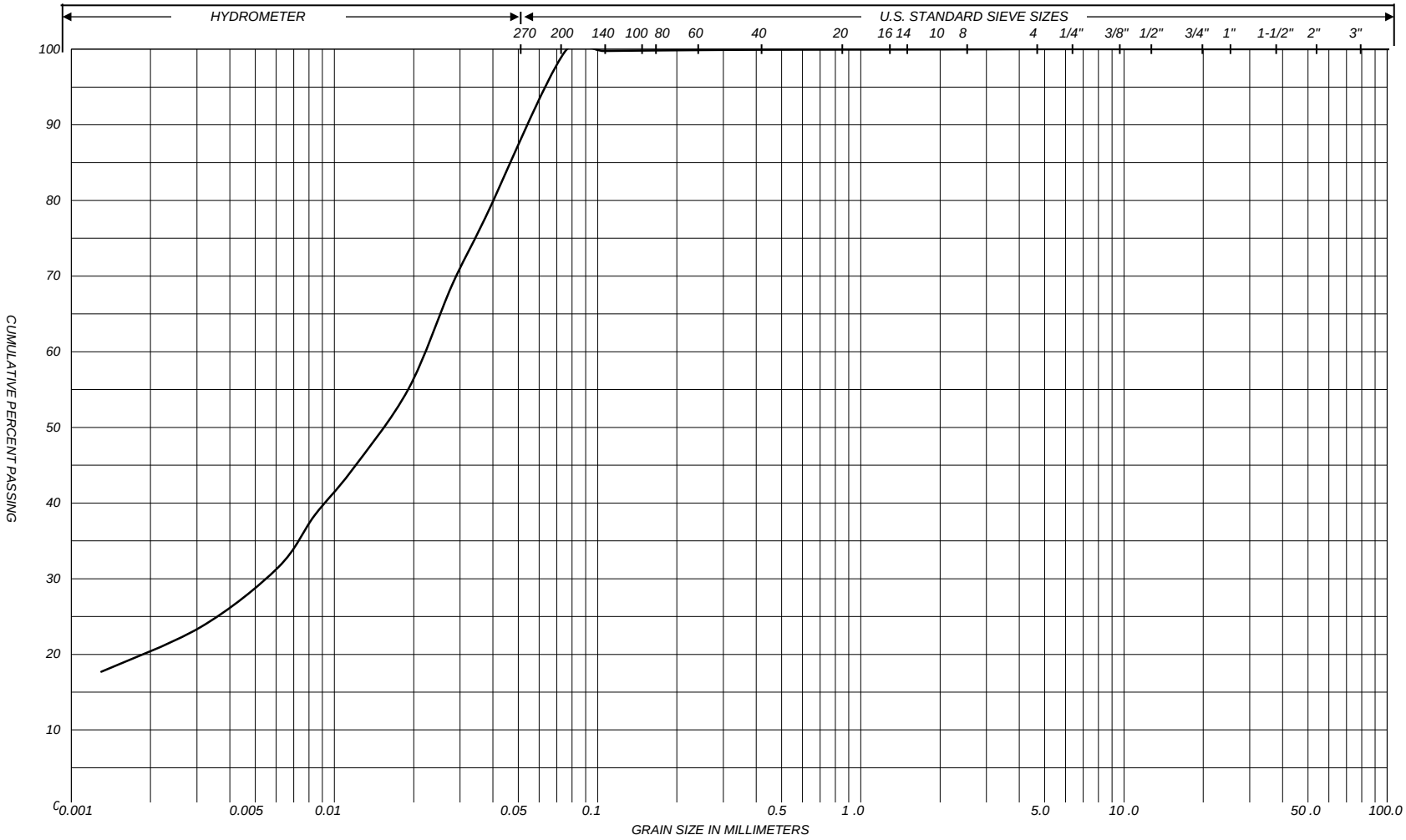
PML REF. 18KF009
FIGURE NO. 3

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES		UNIFIED
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES		M.I.T.
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL					U.S. BUREAU
				SAND									

REMARKS Borehole 103, Sample 3, Depth 1.5 to 2.0 m

CLAYEY SILT

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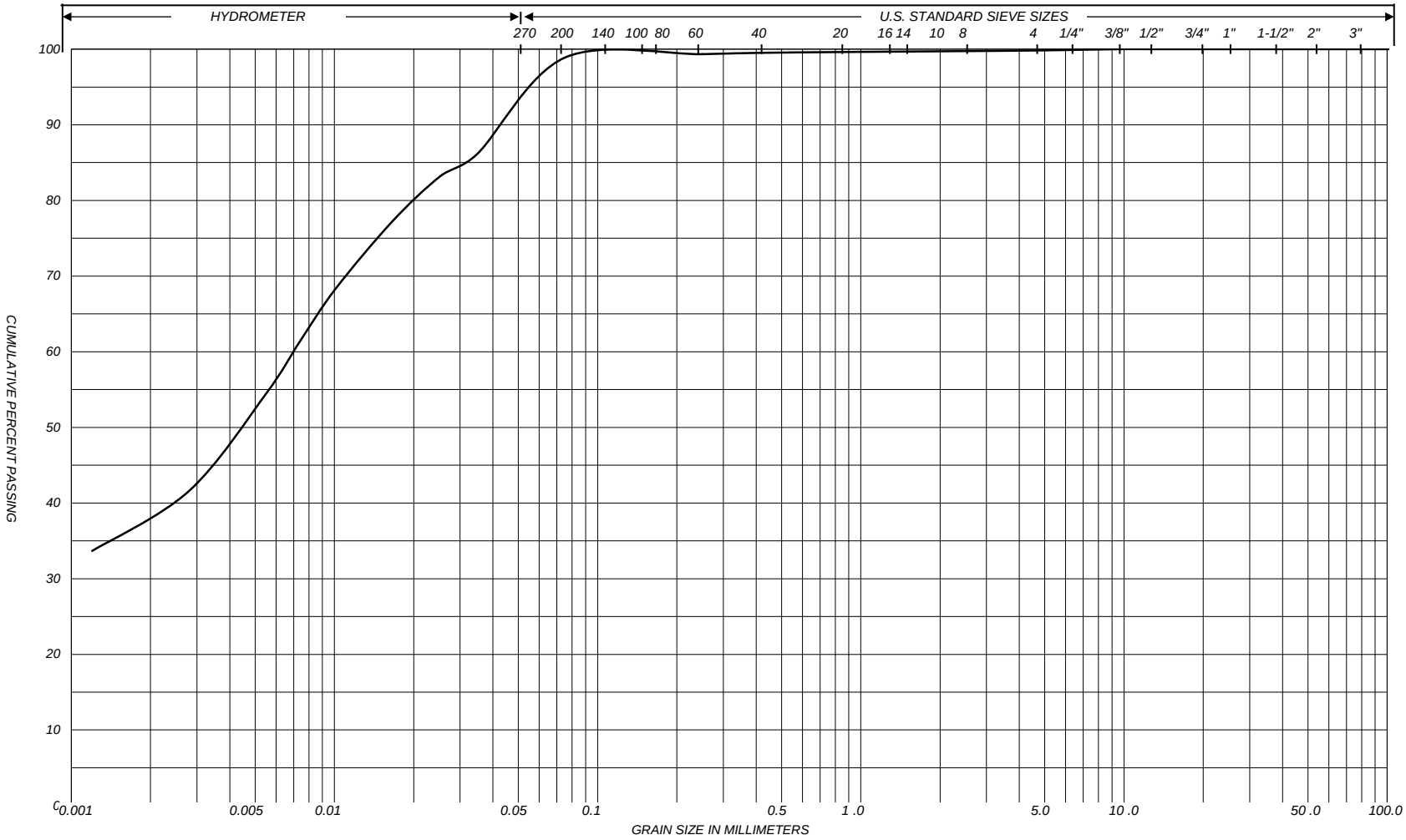
PML REF. 18KF009
FIGURE NO. 4

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES		UNIFIED
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES		M.I.T.
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL					U.S. BUREAU
				SAND									

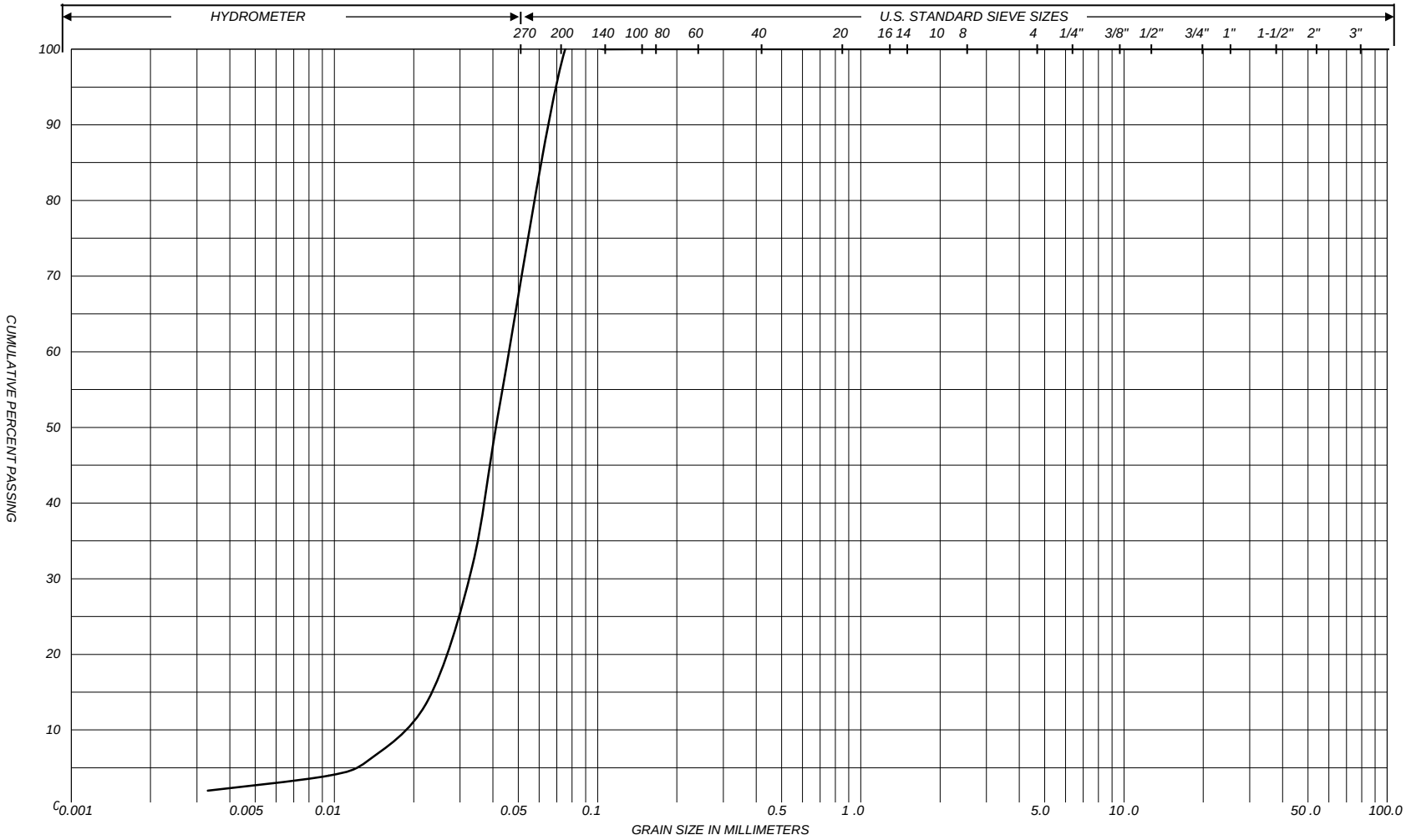
REMARKS Borehole 103, Sample SS8, Depth 6.1 to 6.6 m

CLAYEY SILT

Peto MacCallum Ltd.
CONSULTING ENGINEERS

PML REF. 18KF009
FIGURE NO. 5

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL			COBBLES	UNIFIED		
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL			COBBLES	M.I.T.		
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL			U.S. BUREAU		
				SAND									

REMARKS Borehole 104, Sample SS3, Depth 1.5 to 2.0 m

SILT

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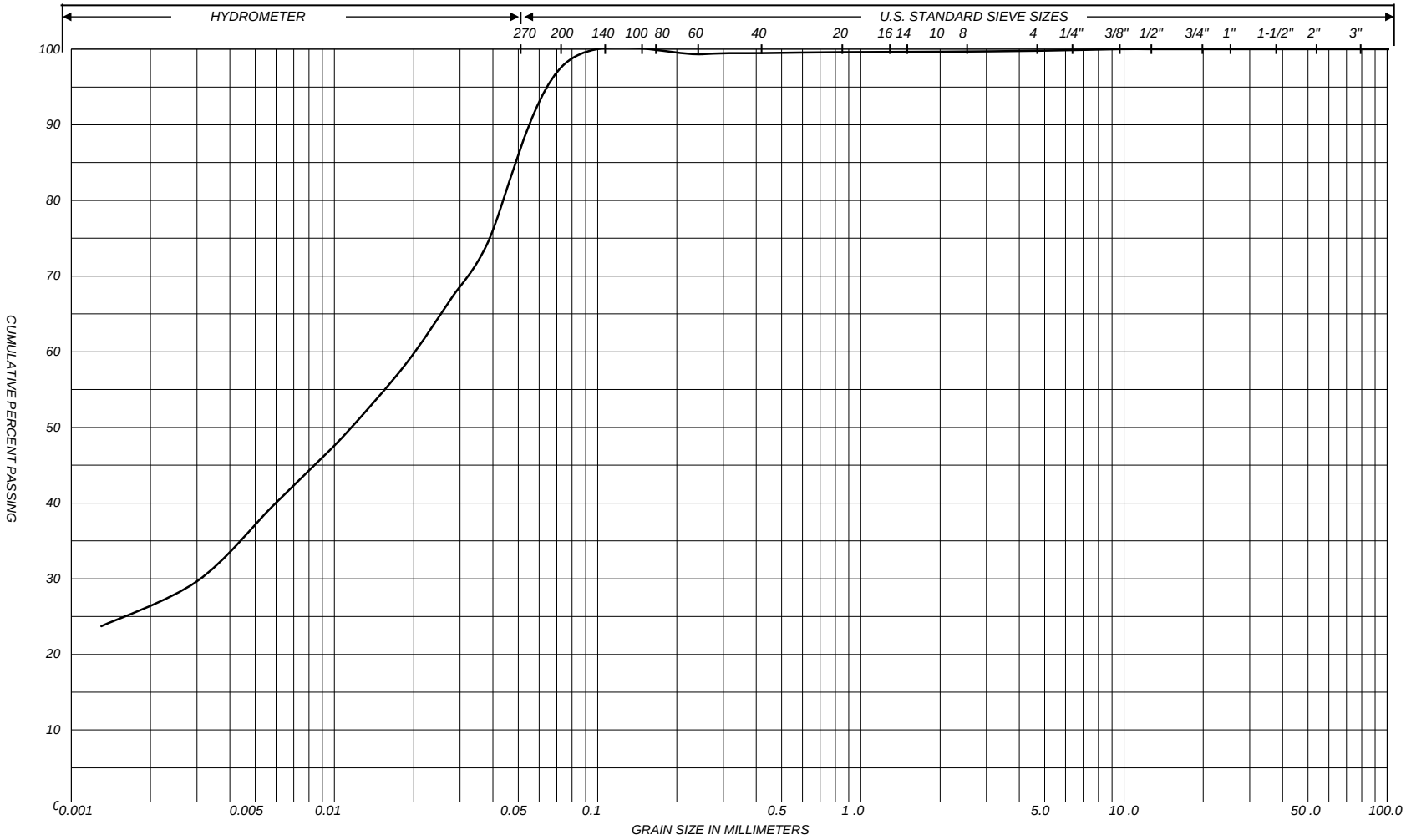
PML REF. 18KF009
FIGURE NO. 6

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES		UNIFIED
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES		M.I.T.
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL					U.S. BUREAU
				SAND									

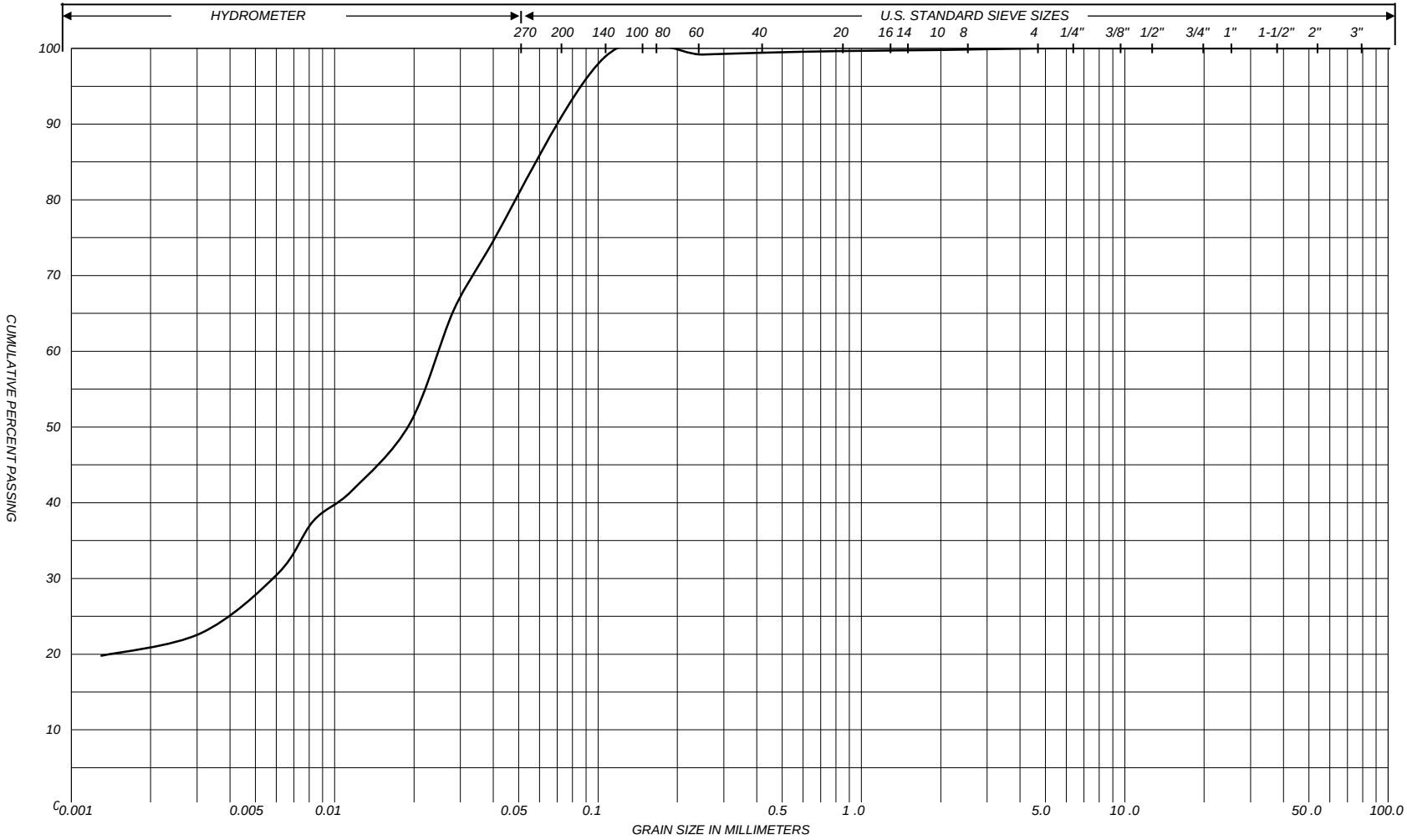
REMARKS Borehole 104, Sampler SS9, Depth 9.1 to 9.6 m

CLAYEY SILT

Peto MacCallum Ltd.
CONSULTING ENGINEERS

PML REF. 18KF009
FIGURE NO. 7

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES	UNIFIED
				SAND								
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES	M.I.T.
	SILT			SAND								
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL				U.S. BUREAU
				SAND								

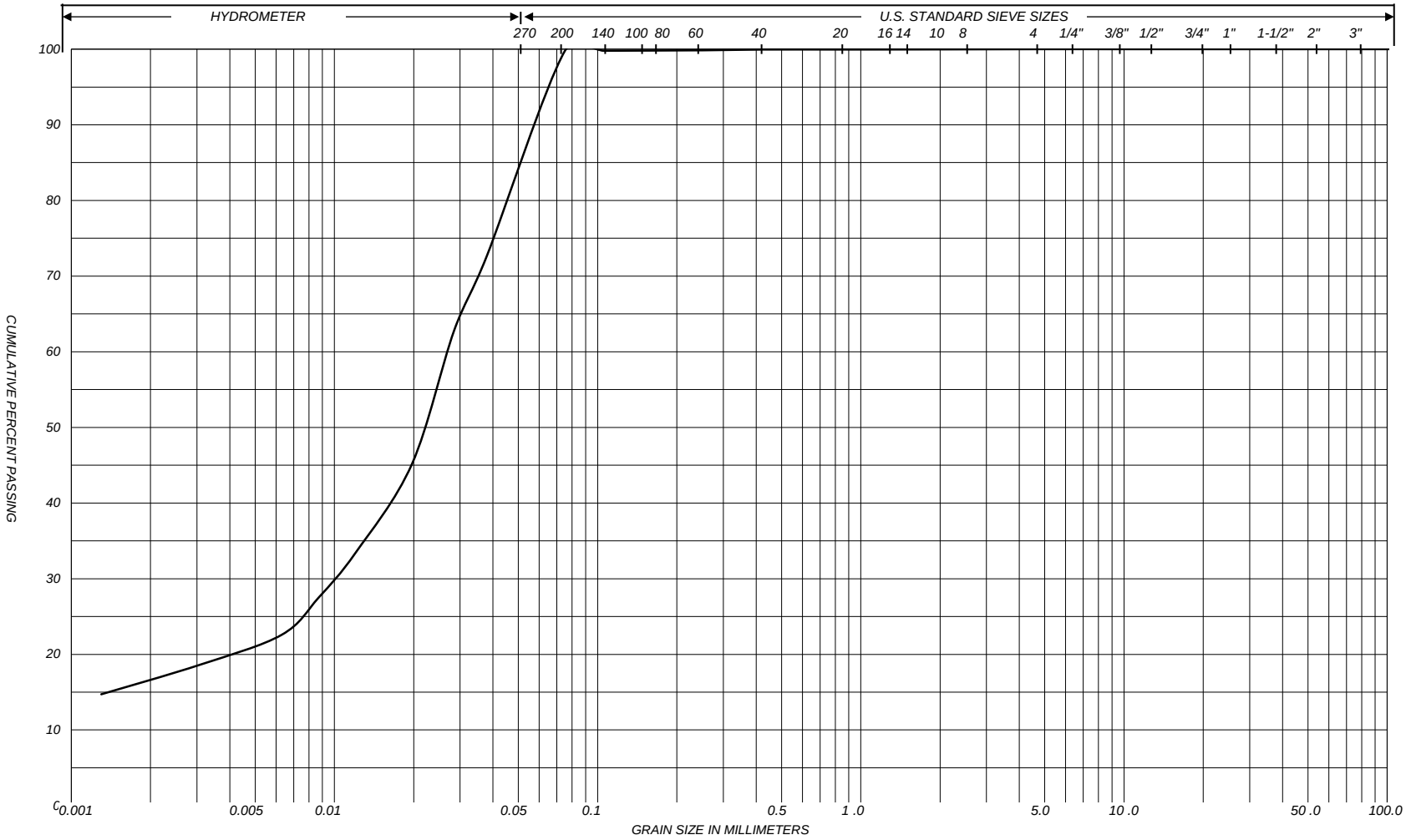
REMARKS Borehole 107, Sample SS3, Depth 1.5 to 2.0 m

CLAYEY SILT

Peto MacCallum Ltd.
CONSULTING ENGINEERS

PML REF. 18KF009
FIGURE NO. 8

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY				FINE	MEDIUM	COARSE	GRAVEL				COBBLES	UNIFIED	
				SAND									
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL				COBBLES	M.I.T.	
	SILT			SAND									
CLAY	SILT			VERY FINE	FINE	MEDIUM	COARSE	GRAVEL				U.S. BUREAU	
				SAND									

REMARKS Borehole 107, Sample SS7, Depth 6.1 to 6.6 m

CLAYEY SILT

LIST OF ABBREVIATIONS

PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. - Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

CONSISTENCY	N (blows/0.3 m)	c (kPa)	DENSENESS	N (blows/0.3 m)
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		

WTPL	Wetter Than Plastic Limit
APL	About Plastic Limit
DTPL	Drier Than Plastic Limit

TYPE OF SAMPLE

SS	Split Spoon	TW	Thinwall Open
WS	Washed Sample	TP	Thinwall Piston
SB	Scraper Bucket Sample	OS	Oesterberg Sample
AS	Auger Sample	FS	Foil Sample
CS	Chunk Sample	RC	Rock Core
ST	Slotted Tube Sample	USS	Undisturbed Shear Strength
PH	Sample Advanced Hydraulically	RSS	Remoulded Shear Strength
PM	Sample Advanced Manually		

SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	C	Consolidation
Qd	Drained Triaxial		

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 101

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 13, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
	338.59	SURFACE ELEVATION 338.59			
0.0	338.54	TOPSOIL: Dark brown clayey silt, frozen	1	SS	8
		CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL			
1.0			2	SS	19
2.0			3	SS	25
			4	SS	28
3.0	335.6	becoming stiff, grey, APL	5	SS	9
4.0					
			6	SS	10
5.0					
6.0	332.5	becoming very stiff, occasional silt layers, wet	7	SS	21
7.0					
			8	SS	18
8.0					
9.0			9	SS	18
10.0					
11.0	327.5	BOREHOLE TERMINATED AT 11.1 m	10	SS	23
12.0					
13.0					
14.0					
15.0					

ELEVATION SCALE: 338, 337, 336, 335, 334, 333, 332, 331, 330, 329, 328

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling, no free water in cased borehole

Water Level Readings:
Initial Depth: 10.6 m
Elevation: 327.99

2018-04-08:
Depth: 1.03 m
Elevation: 337.56

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 102

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLE NUMBER	SAMPLE TYPE	"N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 336.06					336
0.0		TOPSOIL: Dark brown clayey silt topsoil, frozen		1	SS	6	
0.33	335.73	CLAYEY SILT: Firm brown clayey silt, some sand, APL					
1.0				2	SS	4	335
1.5	334.6	becoming stiff, layered with brown silt, some fine sand, wet		3	SS	14	
2.0				4	SS	25	334
3.0	333.1	becoming grey clayey silt, trace sand, DTPL, occasional sand partings		5	SS	13	333
4.0				6	AS		332
5.0				7	SS	13	331
6.0				8	SS	11	330
7.0							329
8.0	328.0	BOREHOLE TERMINATED AT 8.1 m		9	SS	22	328
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling, no free water in cased borehole

Water Level Readings:
Initial: Dry

2018-04-08:
Depth: 0.93 m
Elevation: 335.13

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 103

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
	333.72	SURFACE ELEVATION 333.72				
0.0	333.47	TOPSOIL: Dark brown clayey silt, frozen		1	SS	6
0.25		CLAYEY SILT: Firm brown clayey silt, trace sand, moist				
0.76	332.96	SILT: Loose brown sandy silt, trace clay, moist		2	SS	8
1.0						
1.5	332.2	becoming compact, occasional clayey lenses		3	SS	11
2.0				4	SS	16
3.0	330.7	CLAYEY SILT: Stiff grey clayey silt, trace sand, APL		5	SS	14
				6	GS	
4.0				7	SS	12
5.0						
6.0				8	SS	13
7.0						
8.1	325.6	BOREHOLE TERMINATED AT 8.1 m		9	SS	12
8.0						
9.0						
10.0						
11.0						
12.0						
13.0						
14.0						
15.0						

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

ELEVATION SCALE: 333, 332, 331, 330, 329, 328, 327, 326

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling, no free water in cased borehole

Water Level Readings:
Initial: Dry

2018/04/08:
Depth: 6.73 m
Elevation: 326.99

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 104

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 13, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" VALUES
		SURFACE ELEVATION 339.03				
0.0		TOPSOIL: Dark brown clayey silt, frozen				
0.25	338.78	CLAYEY SILT: Firm to very stiff brown clayey silt, trace sand, moist		1	SS	8
1.0				2	SS	13
1.5	337.5	numerous wet silt layers		3	SS	12
2.0				4	SS	15
3.0	336.0	SILT: Compact grey silt, some sand, occasional clayey lenses, saturated		5	SS	18
4.0						
5.0				6	SS	25
6.0						
7.0				7	SS	24
7.6	331.4	becoming dense		8	SS	31
8.0						
9.0	9.1					
	329.9	CLAYEY SILT: Very stiff grey clayey silt, APL, numerous saturated silt layers		9	SS	21
10.0						
11.0	11.1			10	SS	26
	327.9	BOREHOLE TERMINATED AT 11.1 m				
12.0						
13.0						
14.0						
15.0						

ELEVATION SCALE: 338, 337, 336, 335, 334, 333, 332, 331, 330, 329, 328

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

During drilling sampler wet from SS4 to completion
Water Level Readings:
Initial Depth: 10.4 m
Elevation: 328.63 m

2018-04-08:
Depth: 0.76 m
Elevation: 338.27

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 105

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 340.48					
0.0	340.48	TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	5	340
0.36	340.12	CLAYEY SILT: Firm brown clayey silt, some sand, APL		2	SS	7	
1.0				3	SS	6	339
2.0							
2.3	338.2	becoming stiff, grey, no zones		4	SS	12	338
3.0				5	SS	12	
4.0							337
4.5	336.0	SANDY SILT: Compact grey sandy silt, saturated, occasional clayey lenses		6	SS	16	336
5.0							
6.0							335
6.1	334.4	CLAYEY SILT: Very stiff grey clayey silt, trace sand, DTPL, occasional silt lenses, wet		7	SS	17	334
7.0							
8.0							333
8.1	332.4	BOREHOLE TERMINATED AT 8.1 m		8	SS	19	
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling no free water in cased borehole

Water Level Readings:
Initial Depth: 5.7 m
Elevation: 334.78

2018-04-08:
Depth: 0.85 m
Elevation: 339.63

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 106

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 339.91					
0.25	339.66	TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	9	
		CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL		2	SS	17	339
				3	SS	18	338
				4	SS	18	
				5	SS	12	337
4.5	335.4	becoming firm, grey, occasional silt layers, wet		6	SS	7	336
6.1	333.8	SILT: Compact grey silt, some sand, trace clay, wet, occasional clayey layers		7	SS	13	335
6.5	333.4	BOREHOLE TERMINATED AT 6.5 m					334

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling no free water in cased borehole

Water Level Readings:
Initial Depth: 4.5 m
Elevation: 335.41

2018-04-08:
Depth: 2.76 m
Elevation: 337.15

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 107

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 13, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
	338.38	SURFACE ELEVATION 338.38			
0.27	338.11	TOPSOIL: Dark brown clayey silt, trace sand, frozen	1	SS	8
		CLAYEY SILT: Firm brown clayey silt, some sand, APL	2	SS	7
1.5	336.9	becoming stiff, layered with brown silt, some sand, trace clay, moist	3	SS	9
2.3					
2.5	335.9	becoming very stiff/compact becoming grey, no layers	4	SS	28
			5	SS	25
			6	SS	14
6.0	332.4	becoming very stiff, occasional silt layers	7	SS	16
7.6	330.8	becoming stiff	8	SS	9
8.1	330.3	BOREHOLE TERMINATED AT 8.1 m			

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

During drilling sampler wet at SS4 and SS5

Water Level Readings:
Initial Depth: 7.4 m
Elevation: 330.98

2018-04-08:
Depth: 0.46 m
Elevation: 337.84

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 108

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 12, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 340.05					
0.20	339.85	TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	10	
		CLAYEY SILT: Stiff brown clayey silt, trace sand, DTPL		2	SS	11	339
1.5	338.6	becoming very stiff, occasional silty sand layers		3	SS	16	
2.3	337.8	SILT: Compact grey silt, some sand, trace clay, wet		4	SS	14	338
3.5	336.6	CLAYEY SILT: Stiff grey clayey silt, trace sand, APL		5	SS	10	337
				6	SS	10	336
				7	SS	15	335
7.6	332.5	becoming APL, numerous silt layers, wet		8	SS	13	334
				9	SS	17	333
11.1	329.0	BOREHOLE TERMINATED AT 11.1 m		10	SS	14	332
							331
							330
							329

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Sampler wet from 7.6 m to completion

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 109

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 12, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	GROUND WATER OBSERVATIONS AND REMARKS
		SURFACE ELEVATION 337.86					
0.21	337.65	TOPSOIL: Dark brown clayey silt, some sand, frozen		1	SS	9	
		CLAYEY SILT: Firm brown clayey silt, trace sand, APL		2	SS	5	
				3	SS	4	
2.3	335.6	becoming stiff, DTPL, occasional sand seams, wet		4	SS	14	Sampler wet at 2.3 m
				5	SS	14	
4.5	333.4	SILTY SAND: Compact grey silty sand, trace clay, saturated		6	SS	26	Sampler wet at 4.5 m
6.0	331.9	CLAYEY SILT: Very stiff grey clayey silt, trace sand, APL		7	SS	20	
				8	SS	22	
8.1	329.8	occasional sand seams, wet					Sampler wet at 8.1 m
				9	SS	17	
				10	SS	14	
11.1	326.8	BOREHOLE TERMINATED AT 11.1 m					Upon completion of augering Open Free water at 6.0 m

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 111

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN W. Loghrin

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 347.31					
0.0	FILL: 150 mm dark brown silt, over dark brown clayey silt, DTPL-APL		1	SS	10	347
0.45 / 346.86	CLAYEY SILT: Very stiff brown clayey silt, trace sand, trace gravel, DTPL		2	SS	15	346
			3	SS	21	345
2.9 / 344.4	becoming grey/brown, APL		4	SS	14	344
3.6 / 343.7	BOREHOLE TERMINATED AT 3.6 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 112

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 344.26					
0.0	344.16	TOPSOIL: Dark brown clayey silt, some sand, moist		1	SS	12	344
		CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL		2	SS	18	
1.0							343
2.0				3	SS	17	342
3.0	3.0 341.3	becoming stiff, APL, occasional silt seams, wet		4	SS	13	341
	3.7 340.6	BOREHOLE TERMINATED AT 3.7 m					
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 113

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 342.07					
0.0	342.07						342
0.33	341.74	TOPSOIL: Dark brown clayey silt, trace sand, moist		1	SS	7	
1.0		CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, DTPL to APL, occasional silt zones		2	SS	9	341
2.0							340
				3	SS	10	
3.0	339.1	SILT: Dense grey silt, some sand, saturated		4	SS	32	339
3.7	338.4	BOREHOLE TERMINATED AT 3.7 m					
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering Wet Cave at 3.0 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 114

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 340.11					
0.20	TOPSOIL: Dark brown clayey silt, moist					
339.91	CLAYEY SILT: Stiff brown clayey silt, trace sand, DTPL to APL		1	SS	7	
			2	SS	9	
2.0						
338.1	SILT: Compact brown silt, some sand, wet, occasional clayey zones		3	SS	14	
			4	SS	17	
3.7						
336.4	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 115

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 336.82					
0.15	336.67	TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	9	
		SILT: Loose brown silt, some sand, trace clay, moist		2	SS	6	336
				3	SS	11	335
2.3	334.5	CLAYEY SILT: Stiff brown clayey silt, trace sand, APL, occasional sand layers		4	SS	10	
3.0	333.8	becoming grey		5	SS	11	334
4.5	332.3	becoming layered with grey silt, some sand, wet		6	SS	12	333
							332
6.5				7	SS	10	331
	330.3	BOREHOLE TERMINATED AT 6.5 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 116

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 338.96					
0.0	338.96						
0.20	338.76	TOPSOIL: Dark brown clayey silt, APL		1	SS	5	
0.60	338.36	CLAYEY SILT: Firm brown clayey silt, trace sand, trace gravel, APL becoming very stiff, DTPL		2	SS	15	338
1.0							
2.0				3	SS	23	337
3.0	336.0	becoming hard, grey		4	SS	47	336
3.7	335.3	BOREHOLE TERMINATED AT 3.7 m					
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

Upon completion of augering
Open
No free water

GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

NOTES

Peto MacCallum Ltd.
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LOG OF BOREHOLE NO. 117

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 339.58					
0.20	339.38	TOPSOIL: Dark brown clayey silt, APL					
		CLAYEY SILT: Firm brown clayey silt, some sand, APL		1	SS	5	339
				2	SS	6	
1.5	338.1	occasional sand seams, wet					338
				3	SS	4	337
3.0	336.6	becoming hard, DTPL, occasional sand partings		4	SS	54	336
3.7	335.9	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Sampler wet at 3.0 m

Upon completion of augering
Open
Free water at 2.4 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 118

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 341.51					
0.0	341.51	TOPSOIL: Dark brown clayey silt, trace sand, moist		1	SS	10	341
0.20	341.31	CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, APL		2	SS	10	
1.0							
1.5	340.0	becoming very stiff, DTPL					340
2.0				3	SS	22	339
3.0	338.5	becoming hard, grey, occasional sand layers, wet		4	SS	38	338
3.7	337.8	BOREHOLE TERMINATED AT 3.7 m					
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Wet cave at 3.0 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 119

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 345.30					
0.0 / 345.22	FILL: Dark brown clayey silt topsoil, trace sand, damp		1	SS	19	345
0.75 / 344.55	becoming brown silt, some sand, some gravel, trace clay, damp					
1.0	CLAYEY SILT: Stiff brown clayey silt, trace sand, trace gravel, DTPL		2	SS	15	344
1.5 / 343.8	becoming APL, occasional silt layers, moist to wet		3	SS	10	343
3.0			4	SS	10	342
3.7 / 341.6	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

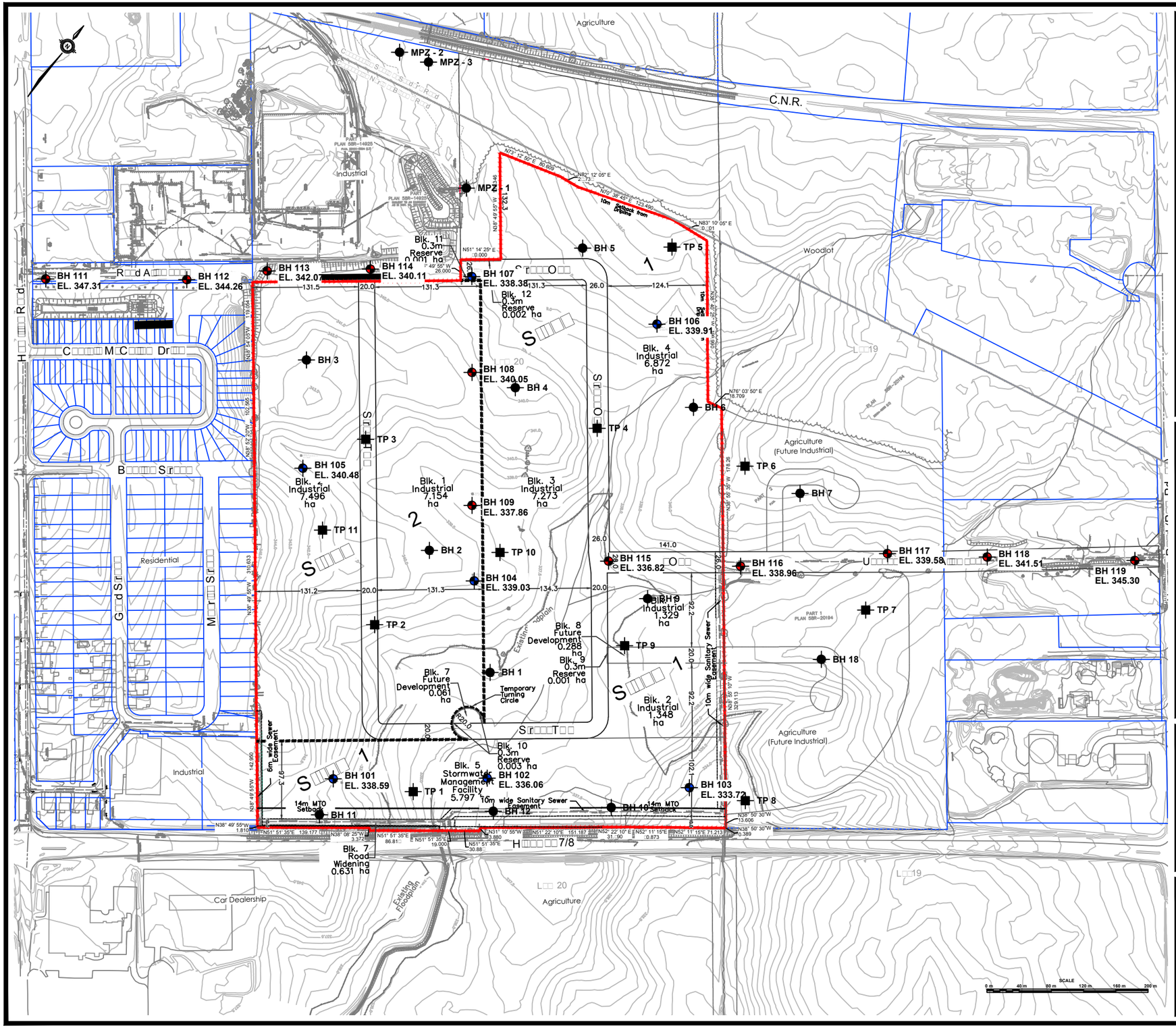
UNIT WEIGHT kN/m³

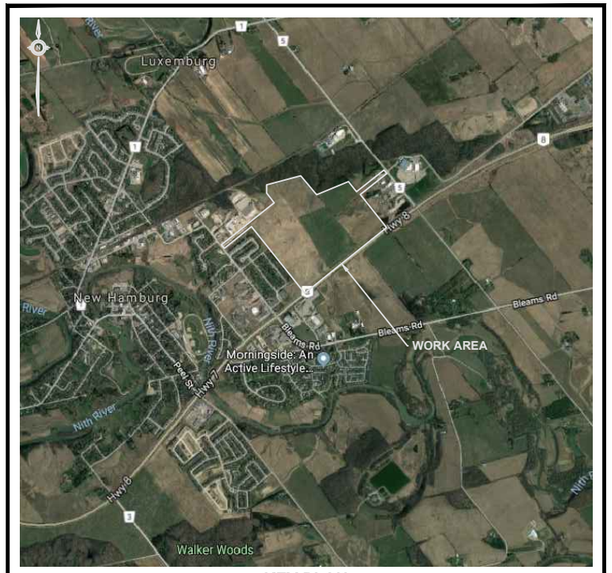
GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES





KEY PLAN

LEGEND:

- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- PREVIOUS BOREHOLE BY OTHERS
- PREVIOUS TEST PIT BY OTHERS

REFERENCE:

BOREHOLE LOCATION PLAN REPRODUCED FROM DRAWING SUPPLIED BY CLIENT.

NOTE:

THE INFERRED STRATIGRAPHY REFERRED TO IN THE REPORT IS BASED ON THE DATA FROM THESE BOREHOLES SUPPLEMENTED BY GEOLOGICAL EVIDENCE. THE ACTUAL STRATIGRAPHY BETWEEN THE BOREHOLES MAY VARY.

BADENVIEW DEVELOPMENTS INC

PROPOSED DEVELOPMENT

WILMOT EMPLOYMENT LANDS

NEW HAMBURG, ONTARIO

BOREHOLE LOCATION PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	D. BRICE	DATE	SCALE	PML REF.	DWG. NO.
CHECKED	W. LOGHRIN	DECEMBER 2018	AS SHOWN	18KF009	1
APPROVED	G. MITCHELL				

APPENDIX A

MTE BOREHOLES AND SITE PLAN

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH1

Job Number: 34896-100

Drill Date: November 29, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
ft / m	0.00	Ground Elevation							
0.0 / 0.0	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT CLAY** Light brown sandy silt and clay, fine grained, loose, moist, no staining or odour		1	SS	21			
4.0	-1.52								
6.0 / 2.0	1.52	**Silty SAND** Light brown silty sand, some clay @ 6', fine grained, stiff, moist to wet @ 7', saturated below 7', no staining or odour		2	SS	40			
8.0				3	SS	55			
10.0				4	SS	75			
12.0 / 4.0									
14.0									
16.0	-4.88			5	SS	63			
	4.88	**Sandy SILT** Grey sandy silt, trace clay, fine grained, stiff, saturated							
18.0		**SILT TILL** Grey sandy silt till, small stones, no staining or odour							
20.0 / 6.0	-6.10								
	6.10	**Sandy SILT** Light grey sandy silt, some silty clay @ 22', fine grained, stiff, no staining or odur, wet, dry @ 22'		6	SS	51			
22.0									
24.0									
26.0 / 8.0	-8.08			7	SS	31			
	8.08	**CLAY** Grey clay, trace silt, dry, no staining or odour							
28.0				8	SS	39			
	-8.99	**SILT**							
	8.99	Grey silt, fine grained, dry							
30.0									
32.0 / 10.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

MTE Consultants Inc.
520 Bingemans Centre Drive
Kitchener, Ontario
N2B 3X9
(519) 743-6500

Logged By: YXM

Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH2

Job Number: 34896-100

Drill Date: November 30, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT** Light brown clayey silt, fine grained, stiff, dry, no staining or odour. Light brown sandy silt @ 7'		1	SS	30			
4.0									
6.0				2	SS	51			
2.0	-2.29								
8.0	2.29	**Silty CLAY** Grey-brown silty clay, fine grained, stiff, dry, no staining or odour		3	SS	42			
10.0	-3.05 3.05								
12.0		**CLAY** Grey clay, fine, stiff, dry, trace sand @ 17', no staining or odour		4	SS	23			
4.0									
14.0									
16.0				5	SS	33			
18.0									
20.0	6.0			6	SS	27			
22.0									
24.0									
26.0	8.0			7	SS	31			
	-8.23 8.23								
28.0									
30.0									
32.0	10.0								
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

MTE Consultants Inc.
520 Bingemans Centre Drive
Kitchener, Ontario
N2B 3X9
(519) 743-6500

Logged By: YXM

Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH3

Job Number: 34896-100

Drill Date: November 30, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT** Light brown clayey silt, trace sand, dry, no staining or odour		1	SS	31			
4.0	-1.52								
	1.52	**Sandy SILT** Light brown sandy silt with clay, fine grained, stiff, dry, slightly moist @ 8'		2	SS	49			
6.0	2.0								
8.0				3	SS	38			
	-3.05								
10.0	3.05	**Silty CLAY** Grey silty clay with sand, fine grained, stiff, dy, no staining or odour		4	SS	32			
12.0	-3.66								
	3.66	**Silty SAND** Grey silty sand, trace clay seams, fine grained, stiff, no staining or odour, dry to wet							
14.0	4.0								
16.0				5	SS	45			
18.0									
20.0	6.0			6	SS	20			
22.0									
24.0									
26.0	8.0			7	SS	54			
	-8.23								
	8.23								
28.0									
30.0									
32.0	10.0								
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

MTE Consultants Inc.
520 Bingemans Centre Drive
Kitchener, Ontario
N2B 3X9
(519) 743-6500

Logged By: YXM

Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH4

Job Number: 34896-100

Drill Date: November 30, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT** Dark brown sandy silt with clay, light brown silty clay @ 4'dry, no staining or odour		1	SS	28			
4.0	-1.52								
6.0	1.52	**SILT TILL** Light brown clayey silt till, some small stones, dry, no staining or odour		2	SS	36			
	-2.13								
8.0	2.13	**Silty SAND** Light brown silty sand, loose, fine, moist to wet @8', light brown dry clay @ 9,		3	SS	23			
10.0	-3.05								
	3.05	**CLAY** Grey clay, trace silt, fine grained, stiff, no staining or odour, slightly moist		4	SS	21			
12.0									
14.0									
16.0				5	SS	23			
18.0									
20.0	-6.10								
	6.10	**Sandy SILT** Grey sandy silt, fine grained, saturated, no staining or odour		6	SS	49			
22.0									
24.0	-7.62								
	7.62	**CLAY** Grey clay, fine grained, stiff, no staining or odour, dry		7	SS	47			
26.0	-8.23								
	8.23								
28.0									
30.0									
32.0									
34.0									

ft / m: 0.0, 2.0, 4.0, 6.0, 8.0, 10.0

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH5

Job Number: 34896-100

Drill Date: December 01, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0 ft / 0.0 m	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**Clayey SILT** Grey to light brown silt and clay, fine grained, soft, moist, no staining or odour		1	SS	27			
4.0	-1.52								
	1.52	**Silty CLAY** Light grey to grey silty clay, trace sand, fine grained, stiff, silty wet sand seam @ 21', damp to moist, no staining or odour		2	SS	35			
6.0 – 2.0				3	SS	74			
8.0									
10.0				4	SS	32			
12.0									
14.0 – 4.0									
16.0				5	SS	24			
18.0									
20.0 – 6.0				6	SS	24			
22.0									
24.0	-7.62								
	7.62	**CLAY TILL** Grey silty clay till, trace sand, trace stone, stiff, moist to slight moist		7	SS	93			
26.0 – 8.0	-8.23								
	8.23								
28.0									
30.0									
32.0									
34.0 – 10.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH6

Job Number: 34896-100

Drill Date: December 01, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-1.22			1	SS	16			
2.0	1.22	**Silty CLAY** Light brown silty clay, little sand, moist to very moist, no staining or odour		2	SS	14			
4.0	-2.44								
6.0	2.44	**Silty SAND** Light brown silty sand, some clay, wet		3	SS	29			
8.0	-3.05								
10.0	3.05	**Silty CLAY** Light grey silty clay, dry		4	SS	70			
12.0		**Silty SAND** Light brown silty sand, little clay, trace stone, slight wet							
14.0	-4.57								
16.0	4.57	**Silty CLAY** Greyish brown silty clay, some sand,fine grained, stiff slightly moist		5	SS	50			
18.0	-5.49								
20.0	5.49	**Silty SAND** Lihgt grey clayey silty sand, fine grained, slightly wet to saturated		6	SS	65			
22.0		**Silty CLAY** Grey silty clay, some sand, fine grained, stiff, moist							
24.0		**CLAY TILL** Grey sandy silty clay till, some stones, fien grained, stiff, damp to moist		7	SS	65			
26.0									
28.0									
30.0				8	SS	75			
32.0	-9.75								
34.0	9.75								

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH7

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
ft / m	0.00	Ground Elevation							
0.0 / 0.0	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**Silty CLAY** Light brown silty clay, little sand, stiff, damp to moist, no staining or odour		1	SS	52			
4.0									
6.0 / 2.0				2	SS	57			
8.0				3	SS	52			
10.0				4	SS	46			
12.0	-3.66								
	3.66	**SILT TILL** Light brown to grey clayey silt till, some sand, some small stones, fine grained, some pebbles @ 16', dry							
4.0				5	SS	71			
14.0									
16.0									
18.0									
20.0 / 6.0				6	SS	92			
22.0									
24.0									
26.0 / 8.0				7	SS	50			
	-8.23								
	8.23								
28.0									
30.0									
32.0									
10.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH8

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**Silty CLAY** Light brown silty clay, trace sand, stiff, dry,gravelly sand with stones @ 16' no staining or odour		1	SS	30			
4.0									
6.0				2	SS	55			
8.0				3	SS	35			
10.0									
12.0									
14.0									
16.0	-4.88			4	SS	125			
	4.88	**SILT TILL** Grey silt till, very stiff, dry, no staining or odour, light brown moist to wet silty sand @ 22'.							
18.0									
20.0				5	SS	50			
22.0									
24.0	-7.62								
	7.62	**SAND** Light brown sand, fine grained, stiff, saturated, moist silty clay @ 27', no staining or odour		6	SS	99			
26.0	-8.23								
	8.23								
28.0									
30.0									
32.0									
34.0									

ft / m: 0.0 / 0.0; 2.0; 4.0; 6.0; 8.0; 10.0

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Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH9

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-1.07			1	SS	25			
2.0	1.07	**Sandy SILT** Light brown sandy silt with clay, some stones, moist, no staining or odour		2	SS	18			
4.0	-2.29								
6.0	2.29	**Silty CLAY** Grey silty clay, trace sand, soft, slightly moist, no staining or odour, water coming out @ 13'		3	SS	27			
8.0				4	SS	25			
10.0									
12.0									
14.0	-4.57								
16.0	4.57	**CLAY** Grey clay, soft, fine grained, slightly moist, no staining or odour		5	SS	30			
18.0									
20.0				6	SS	39			
22.0									
24.0									
26.0				7	SS	42			
28.0	-8.23								
30.0	8.23								
32.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH10

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**Clayey SILT** Light brown clayey silt, trace sand, fine grained, stiff, dry, no staining or odour		1	SS	34			
4.0				2	SS	64			
6.0	2.0								
8.0	-2.74			3	SS	54			
	2.74	**Silty SAND** Grey silty sand, fine grained, moist to wet, no staining or odour		4	SS	67			
10.0									
12.0	4.0								
14.0	-4.57								
	4.57	**CLAY** Grey clay, trace sand, soft, dry, no staining or odour		5	SS	33			
16.0									
18.0									
20.0	6.0			6	SS	53			
22.0									
24.0									
26.0	8.0			7	SS	41			
	-8.23								
	8.23								
28.0									
30.0									
32.0	10.0								
34.0									

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Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH11

Job Number: 34896-100

Drill Date: December 03, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0 ft / 0.0 m	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**CLAY TILL** Light brown silty clay till with sand, stiff, dense, fine grained, dry, no staining or odour		1	SS	64			
4.0				2	SS	50			
6.0 – 2.0				3	SS	41			
8.0				4	SS	41			
10.0									
12.0 – 4.0									
14.0	-4.57								
	4.57	**Silty CLAY** Grey silt with some silt and sand, dense, fine grained, slightly moist to moist, no staining or odour		5	SS	20			
16.0									
18.0									
20.0 – 6.0				6	SS	38			
22.0									
24.0	-7.62								
	7.62	**Clayey SILT** Grey clayey silt with sand, stiff, fine grained, dry, no staining or odour		7	SS	85			
26.0 – 8.0	-8.23								
	8.23								
28.0									
30.0									
32.0 – 10.0									
34.0									

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Method: Hollow Stem Auguring/Split Spoon

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH12

Job Number: 34896-100

Drill Date: December 03, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0 (0.0 m)	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**CLAY TILL** Light brown silty clay till with sand, stiff, fine grained, dry, no staining or odour		1	SS	38			
4.0									
6.0	-1.98			2	SS	37			
(2.0 m)	1.98	**Sandy SILT** Light brown sandy silt, trace clay, dry,moist to wet @ 8', no staining or odour							
8.0	-2.74			3	SS	53			
	2.74	**Silty CLAY** Light brown silty clay, moist to wet, no staining or odour							
10.0				4	SS	35			
12.0		**Silty SAND** Grey silty sand with clay, fine grained, loose, moist, wet to saturated @ 16', no staining or odour							
(4.0 m) 14.0									
16.0				5	SS	52			
18.0									
20.0 (6.0 m)	-6.40			6	SS	45			
	6.40	**Silty CLAY** Grey silty clay, stiff, dense, fine grained, slightly moist, no staining or odour							
22.0									
24.0									
26.0 (8.0 m)	-8.23			7	SS	56			
	8.23								
28.0									
30.0									
32.0									
34.0 (10.0 m)									

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Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT1

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, wood pieces, soft, damp					
2.0	-0.76						No seepage observed during excavation Caving @ 3 feet
	0.76	**Silty CLAY** Brown silty clay, sand seam @ 3-3.5 feet, soft, sticky, moist to very moist					
4.0							
6.0							
2.0							
8.0							
10.0	-3.20						
	3.20						
12.0							

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Method: Backhoe

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT2

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets of corn, soft, damp					
	-0.46						
	0.46	**Clayey SILT** Brown silt and clay, some sand, damp to very moist,soft, no staining or odour					No seepage observed during excavation
2.0							
4.0	-1.37						
	1.37	**Silty CLAY** Brown silty clay, little sand, sticky, moist, no staining or odour					
6.0							
2.0							
8.0	-2.44						
	2.44	**Sandy SILT** Grey sandy silt, clayey, fine grained, moist to slight wet					
10.0							
	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT3

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets of corn, soft, damp					
	-0.46						
	0.46	**SILT** Brown ssandy clayey silt, loose, damp, no staining or odour					No seepage observed during excavation
2.0							
	-1.07						
	1.07	**Silty CLAY** Brown to dark brown silty clay, little sand, hard, moist to damp, no staining or odour					
4.0							
6.0							
2.0							
8.0							
10.0							
	-3.35						
	3.35						
12.0							

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Method: Backhoe

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT4

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 (ft) / 0.0 (m)	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46 0.46	**Silty CLAY** Brown silty clay, little sand, damp to moist, changing to grey below 8' and damp to dry with trace sand, no staining or odour					No seepage observed during excavation
2.0							
4.0							
6.0							
2.0 (m)							
8.0							
10.0	-3.35 3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT5

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Sandy SILT** Brown to dark brown sandy clayey silt, few big stones @ 2-2.5', trace gry sand @ 2.5' , no staining or odour					No seepage observed during excavation
2.0	-0.91						
	0.91	**Silty CLAY** Brown to dark brown silty clay, trace sand, hard, sticky, damp, no staining or odour					
4.0							
6.0							
2.0							
8.0							
10.0	-3.20						
	3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT6

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft / m	0.00	Ground Elevation					
0.0 / 0.0	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Silty CLAY** Brown silty clay, trace sand, sticky, trace stones @ 4'and getting hard and dry below 4', more stones and clayey @ 7', no staining or odour					No seepage observed during excavation
2.0 / 2.0							
4.0							
6.0							
8.0							
10.0	-3.05						
	3.05						
12.0							

Reviewed By: RBM

Method: Backhoe

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT7

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft / 0.0 m	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
2.0	-0.61 0.61	**Sandy SILT** Brown sandy clayey silt, gravelly, loose, dry to moist, no staining or odour					
4.0	-1.22 1.22	**Silty CLAY** Brown to dark brown silty clay, hard, sticky, damp to moist, no staining or odour					
6.0 — 2.0	-1.68 1.68	**SAND AND GRAVEL** Brown sand and gravel, some clay, saturated, no staining or odour					Seepage observed during excavation @6'
8.0	-2.13 2.13	**Silty CLAY** Brown silty clay, gravelly, moist, no staining or odour					
10.0	-3.20 3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT8

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46 / 0.46	**Silty CLAY** Brown silty clay, little sand, stones @ and below 6' (few big boulders), damp to little moist, no staining or odour moist, getting dry and hard below 4', more stones @ 7', more clayey and sticky below 7', no staining or odour					No seepage observed during excavation
2.0							
4.0							
6.0							
2.0							
8.0							
	-2.59 / 2.59	Grey to dark grey silty clay, hard, damp					
10.0							
	-3.20 / 3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT9

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Sandy SILT** Brown sandy silt, clayey, fine grained, loose, damp, no staining or odour					No seepage observed during excavation
2.0	-0.91						
	0.91	**Silty CLAY** Brown silty clay, little sand, soft, damp to slight moist					
4.0							
6.0							
2.0							
8.0							
10.0							
	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT10

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Clayey SILT** Brown clayey silt, some sand, loose, fine grained,moist to wet, no staining or odour					Seepage observed during excavation @ 3.5'
2.0							
	-1.22						
4.0	1.22	**Silty CLAY** Brown silty clay, little sand, soft, moist, no staining or odour					
6.0							
2.0							
8.0							
10.0							
	-3.20						
	3.20						
12.0							

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Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT11

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Sandy SILT** Brown sandy silt, clayey, fine grained, loose, moist, no staining or odour					No seepage observed during excavation
2.0							
	-1.22						
4.0	1.22	**SILT AND CLAY** Brown silt and clay, some sand, very moist, no staining or odour					
6.0							
	-2.13						
	2.13	**Clayey SILT** Grey clayey sandy silt, fine grained, loose, slight wet, no staining or odour					
8.0							
10.0	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

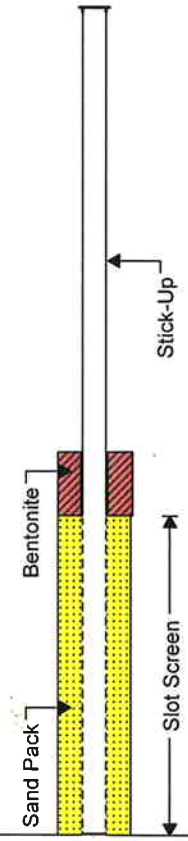
Location: Wilmot Lands

Mini-Piezometer: MP1-11

Job Number: 34896-100

Drill Date: January 11, 2011

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Recovery (%)	Headspace (ppm)	Groundwater Observations and Well Details
ft / m								
-4.0 / 1.0								
-2.0 /								
0.0 /	0.00	Ground Elevation						
	0.00	**TOPSOIL**						
	-0.15 / 0.15	**Silty SAND** Brownish grey silty sand, some organics, some clay, wet						
	-0.30 / 0.30	**Silty CLAY** Grey silty clay, some sand, wet to moist						
2.0 /	-0.91 / 0.91							
4.0 /								
6.0 /								



Reviewed By: RBM

Method: Hand Augering

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Mini-Piezometer: MP2-11

Job Number: 34896-100

Drill Date: January 11, 2011

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Recovery (%)	Headspace (ppm)	Groundwater Observations and Well Details
ft / m -4.0 -2.0 0.0 2.0 1.0 4.0	0.00 0.00 -0.15 0.15 -0.61 0.61 -0.84 0.84	Ground Elevation **TOPSOIL** **Silty CLAY** Greyish brown silty clay, little to trace sand, very moist **Clayey SILT** Greyish brown clayey silt, some sand, moist to wet **Silty CLAY** Grey silty clay, hard, moist						Stick-Up Bentonite Sand Pack Slot Screen

Reviewed By: RBM

Method: Hand Augering

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

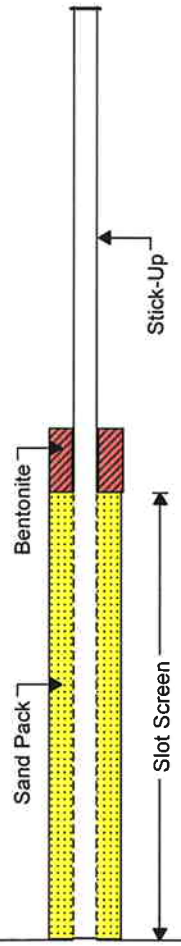
Location: Wilmot Lands

Mini-Piezometer: MP3-11

Job Number: 34896-100

Drill Date: January 11, 2011

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Recovery (%)	Headspace (ppm)	Groundwater Observations and Well Details
ft / m								
-4.0								
-2.0								
0.0	0.00	Ground Elevation						
	0.00	**TOPSOIL**						
	-0.15 / 0.15	**Clayey SILT** Dark grey clayey silt, some sand, wet						
		Sandy SILT Brown sandy silt, some clay, moist to wet						
2.0		**Silty CLAY** Brown silty cly, some sand, trace stone, moist						
1.0	-1.07 / 1.07	**Silty SAND** Brown silty sand, clayey, wet						
4.0	-1.22 / 1.22							



Reviewed By: RBM

Method: Hand Augering

Notes:

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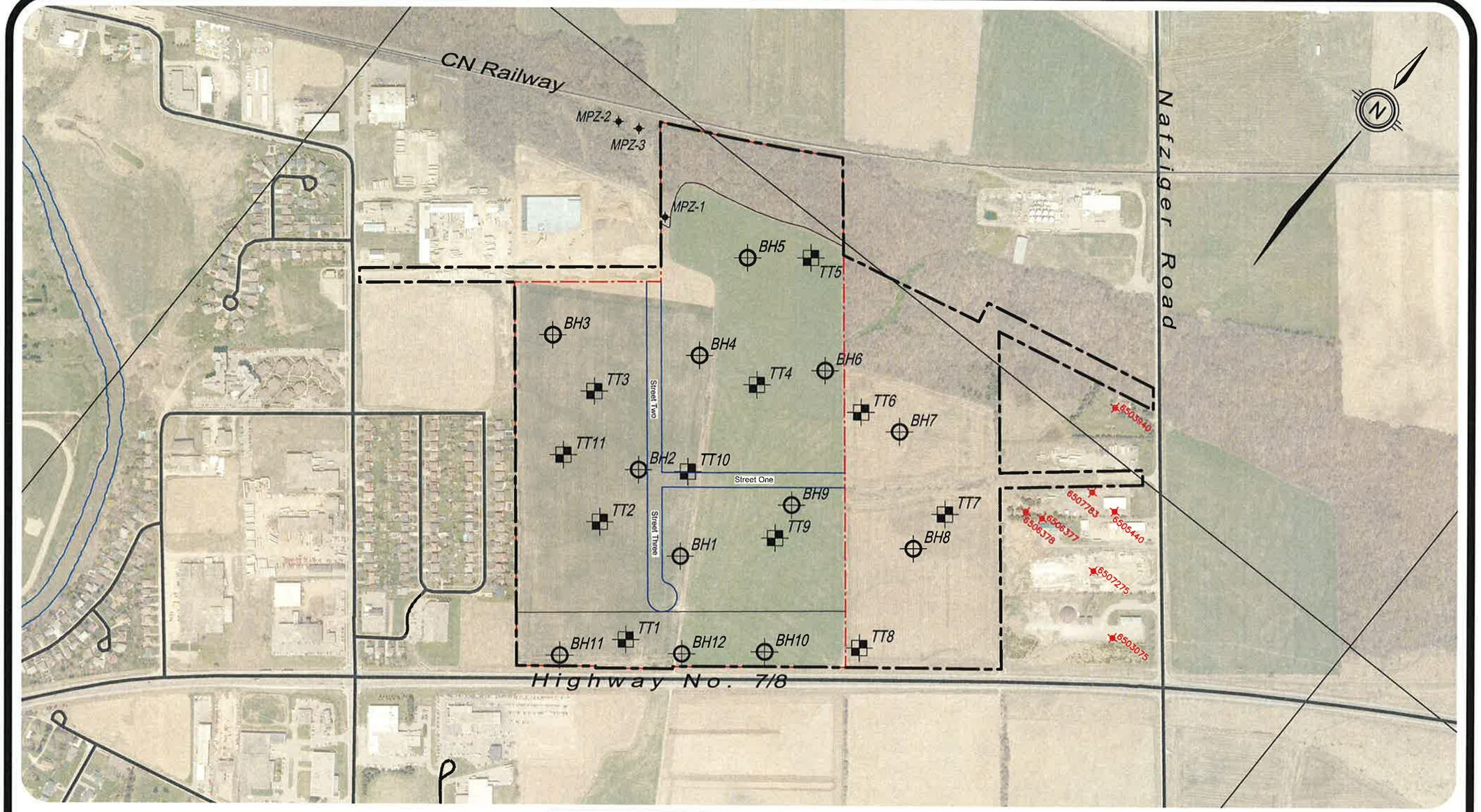
Logged By: YXM

Sheet: 1 of 1

MOE WELL RECORDS

MOE_ID	EASTING	NORTHING	ELEVATION (m)	FROM (m)	TO (m)	MATERIAL	WATER LEVEL (m)
6507783	525474	4803928	342.3	0.00	19.81	CLAY	4.57
				19.81	23.16	GRAVEL	
				23.16	64.00	HARDPAN	
				64.00	70.10	LIMESTONE	
6503075	525662.46	4803750.31	347.48	0.00	16.76	CLAY	
				16.76	19.20	GRAVEL	
6503940	525412.46	4804070.29	347.48	0.00	9.14	CLAY	
				9.14	15.24	GRAVEL	
6505440	525526.47	4803926.31	345.04	0.00	9.75	CLAY	
				9.75	13.72	SAND	
				13.72	24.38	CLAY	
6506377	525433.47	4803837.31	345.04	0.00	10.36	CLAY	6.10
				10.36	11.28	SAND	
				11.28	11.58	MEDIUM SAND	
				11.58	13.72	SAND	
6506378	525404.47	4803828.31	345.04	0.00	10.67	CLAY	
				10.67	15.85	SAND	
				15.85	16.76	CLAY	
6507275	525562.47	4803821.3	345.95	0.00	3.66	STONES	8.23
				3.66	7.32	CLAY	
				7.32	21.34	STONES	
				21.34	35.05	SILT	
				35.05	38.41	BOULDERS	
				38.41	57.91	ROCK	



LEGEND

- BH9 — Borehole
- TT4 — Test Trench / Test Pit
- 6503075 — MOE Wells & I.D. Number
- MPZ-1 — Mini Piezometer

25 YEARS 1985-2010

MTE

ENVIRONMENTAL DIVISION

Figure 4 BOREHOLE , TEST TRENCH & MOE WELL LOCATIONS

Project Name	
Wilmot Employment Lands Enhanced Master Drainage Plan	
Site: Wilmot Employment Lands, Township of Wilmot, Ontario	Client: Township of Wilmot
Scale: 1:10,000	MTE Project No.: 34896-100
Date: February 2011	Layout No.: EV1.5

APPENDIX B

ENGINEERED FILL

ENGINEERED FILL

The information presented in this appendix is intended for general guidance only. Site specific conditions and prevailing weather may require modification of compaction standards, backfill type or procedures. Each site must be discussed, and procedures agreed with Peto MacCallum Ltd. prior to the start of the earthworks and must be subject to ongoing review during construction. This appendix is not intended to apply to embankments. Steeply sloping ravine residential lots require special consideration.

For fill to be classified as engineered fill suitable for supporting structural loads, a number of conditions must be satisfied, including but not necessarily limited to the following:

1. Purpose

The site specific purpose of the engineered fill must be recognized. In advance of construction, all parties should discuss the project and its requirements and agree on an appropriate set of standards and procedures.

2. Minimum Extent

The engineered fill envelope must extend beyond the footprint of the structure to be supported. The minimum extent of the envelope should be defined from a geotechnical perspective by:

- at founding level, extend a minimum 1.0 m beyond the outer edge of the foundations, greater if adequate layout has not yet been completed as noted below; and
- extend downward and outward at a slope no greater than 45° to meet the subgrade

All fill within the envelope established above must meet the requirements of engineered fill in order to support the structure safely. Other considerations such as survey control, or construction methods may require an envelope that is larger, as noted in the following sections.

Once the minimum envelope has been established, structures must not be moved or extended without consultation with Peto MacCallum Ltd. Similarly, Peto MacCallum Ltd. should be consulted prior to any excavation within the minimum envelope.

3. Survey Control

Accurate survey control is essential to the success of an engineered fill project. The boundaries of the engineered fill must be laid out by a surveyor in consultation with engineering staff from Peto MacCallum Ltd. Careful consideration of the maximum building envelope is required.

During construction it is necessary to have a qualified surveyor provide total station control on the three dimensional extent of filling.

4. Subsurface Preparation

Prior to placement of fill, the subgrade must be prepared to the satisfaction of Peto MacCallum Ltd. All deleterious material must be removed and in some cases, excavation of native mineral soils may be required.

Particular attention must be paid to wet subgrades and possible additional measures required to achieve sufficient compaction. Where fill is placed against a slope, benching may be necessary and natural drainage paths must not be blocked.

5. Suitable Fill Materials

All material to be used as fill must be approved by Peto MacCallum Ltd. Such approval will be influenced by many factors and must be site and project specific. External fill sources must be sampled, tested and approved prior to material being hauled to site.

6. Test Section

In advance of the start of construction of the engineered fill pad, the Contractor should conduct a test section. The compaction criterion will be assessed in consultation with Peto MacCallum Ltd. for the various fill material types using different lift thicknesses and number of passes for the compaction equipment proposed by the Contractor.

Additional test sections may be required throughout the course of the project to reflect changes in fill sources, natural moisture content of the material and weather conditions.

The Contractor should be particularly aware of changes in the moisture content of fill material. Site review by Peto MacCallum Ltd. is required to ensure the desired lift thickness is maintained and that each lift is systematically compacted, tested and approved before a subsequent lift is commenced.

7. Inspection and Testing

Uniform, thorough compaction is crucial to the performance of the engineered fill and the supported structure. Hence, all subgrade preparation, filling and compacting must be carried out under the full time inspection by Peto MacCallum Ltd.

All founding surfaces for all buildings and residential dwellings or any part thereof (including but not limited to footings and floor slabs) on structural fill or native soils must be inspected and approved by PML engineering personnel prior to placement of the base/subbase granular material and/or concrete. The purpose of the inspection is to ensure the subgrade soils are capable of supporting the building/house foundation and floor slab loads and to confirm the building/house envelope does not extend beyond the limits of any structural fill pads.

8. Protection of Fill

Fill is generally more susceptible to the effects of weather than natural soil. Fill placed and approved to the level at which structural support is required must be protected from excessive wetting, drying, erosion or freezing. Where adequate protection has not been provided, it may be necessary to provide deeper footings or to strip and recompact some of the fill.

9. Construction Delay Time Considerations

The integrity of the fill pad can deteriorate due to the harsh effects of our Canadian weather. Hence, particular care must be taken if the fill pad is constructed over a long time period.

It is necessary therefore, that all fill sources are tested to ensure the material compactability prior to the soil arriving at site. When there has been a lengthy delay between construction periods of the fill pad, it is necessary to conduct subgrade proof rolling, test pits or boreholes to verify the adequacy of the exposed subgrade to accept new fill material.

When the fill pad will be constructed over a lengthy period of time, a field survey should be completed at the end of each construction season to verify the areal extent and the level at which the compacted fill has been brought up to, tested and approved.

In the following spring, subexcavation may be necessary if the fill pad has been softened attributable to ponded surface water or freeze/thaw cycles.

A new survey is required at the beginning of the next construction season to verify that random dumping and/or spreading of fill has not been carried out at the site.

10. Approved Fill Pad Surveillance

It should be appreciated that once the fill pad has been brought to final grade and documented by field survey, there must be ongoing surveillance to ensure that the integrity of the fill pad is not threatened.

Grading operations adjacent to fill pads can often take place several months or years after completion of the fill pad.

It is imperative that all site management and supervision staff, the staff of Contractors and earthwork operators be fully aware of the boundaries of all approved engineered fill pads.

Excavation into an approved engineered fill pad should never be contemplated without the full knowledge, approval and documentation by the geotechnical consultant.

If the fill pad is knowingly built several years in advance of ultimate construction, the areal limits of the fill pad should be substantially overbuilt laterally to allow for changes in possible structure location and elevation and other earthwork operations and competing interests on the site. The overbuilt distance required is project and/or site specified.

Iron bars should be placed at the corner/intermediate points of the fill pad as a permanent record of the approved limits of the work for record keeping purposes.

11. Unusual Working Conditions

Construction of fill pads may at times take place at night and/or during periods of freezing weather conditions because of the requirements of the project schedule. It should be appreciated therefore, that both situations present more difficult working conditions. The Owner, Contractor, Design Consultant and Geotechnical Engineer must be willing to work together to revise site construction procedures, enhance field testing and surveillance, and incorporate design modifications as necessary to suit site conditions.

When working at night there must be sufficient artificial light to properly illuminate the fill pad and borrow areas.

Placement of material to form an engineered fill pad during winter and freezing temperatures has its own special conditions that must be addressed. It is imperative that each day prior to placement of new fill, the exposed subgrade must be inspected and any overnight snow or frozen material removed. Particular attention should be given to the borrow source inspection to ensure only nonfrozen fill is brought to the site.

The Contractor must continually assess the work program and have the necessary spreading and compacting equipment to ensure that densification of the fill material takes place in a minimum amount of time. Changes may be required to the spreading methods, lift thickness, and compaction techniques to ensure the desired compaction is achieved uniformly throughout each fill lift.

The Contractor should adequately protect the subgrade at the end of each shift to minimize frost penetration overnight. Since water cannot be added to the fill material to facilitate compaction, it is imperative that densification of the fill be achieved by additional compaction effort and an appropriate reduced lift thickness. Once the fill pad has been completed, it must be properly protected from freezing temperatures and ponding of water during the spring thaw period.

If the pad is unusually thick or if the fill thickness varies dramatically across the width or length of the fill pad, Peto MacCallum Ltd. should be consulted for additional recommendations. In this case, alternative special provisions may be recommended, such as providing a surcharge preload for a limited time or increase the degree of compaction of the fill.

APPENDIX C

STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS

This report is prepared for and made available for the sole use of the client named. Peto MacCallum Ltd. (PML) hereby disclaims any liability or responsibility to any person or entity, other than those for whom this report is specifically issued, for any loss, damage, expenses, or penalties that may arise or result from the use of any information or recommendations contained in this report. The contents of this report may not be used or relied upon by any other person without the express written consent and authorization of PML.

This report shall not be relied upon for any purpose other than as agreed with the client named without the written consent of PML. It shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. A portion of this report may not be used as a separate entity: that is to say the report is to be read in its entirety at all times.

The report is based solely on the scope of services which are specifically referred to in this report. No physical or intrusive testing has been performed, except as specifically referenced in this report. This report is not a certification of compliance with past or present regulations, codes, guidelines and policies.

The scope of services carried out by PML is based on details of the proposed development and land use to address certain issues, purposes and objectives with respect to the specific site as identified by the client. Services not expressly set forth in writing are expressly excluded from the services provided by PML. In other words, PML has not performed any observations, investigations, study analysis, engineering evaluation or testing that is not specifically listed in the scope of services in this report. PML assumes no responsibility or duty to the client for any such services and shall not be liable for failing to discover any condition, whose discovery would require the performance of services not specifically referred to in this report.

The findings an comments made by PML in this report are based on the conditions observed at the time of PML's site reconnaissance. No assurances can be made and no assurances are given with respect to any potential changes in site conditions following the time of completion of PML's field work. Furthermore, regulations, codes and guidelines may change at any time subsequent to the date of this report and these changes may effect the validity of the findings and recommendations given in this report.

STATEMENT OF LIMITATIONS

The results and conclusions with respect to site conditions are therefore in no way intended to be taken as a guarantee or representation, expressed or implied, that the site is free from any contaminants from past or current land use activities or that the conditions in all areas of the site and beneath or within structures are the same as those areas specifically sampled.

Any investigation, examination, measurements or sampling explorations at a particular location may not be representative of conditions between sampled locations. Soil, ground water, surface water, or building material conditions between and beyond the sampled locations may differ from those encountered at the sampling locations and conditions may become apparent during construction which could not be detected or anticipated at the time of the intrusive sampling investigation.

Budget estimates contained in this report are to be viewed as an engineering estimate of probable costs and provided solely for the purposes of assisting the client in its budgeting process. It is understood and agreed that PML will not in any way be held liable as a result of any budget figures provided by it.

The Client expressly waives its right to withhold PML's fees, either in whole or in part, or to make any claim or commence any action or bring any other proceedings, whether in contract, tort, or otherwise against PML in anyway connected with advice or information given by PML relating to the cost estimate or Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate.

Peto MacCallum Ltd.
CONSULTING ENGINEERS

GEOTECHNICAL INVESTIGATION
PROPOSED DEVELOPMENT
HIGHWAY 7/8 NEW HAMBURG PROPERTY
NEW HAMBURG, ONTARIO

for

NEW HAMBURGLRS INC.
MR. PAUL GRESPAN/LEE AND ROGER KIESWETTER
c/o MTE CONSULTANTS INC.

PETO MacCALLUM LTD.
16 FRANKLIN STREET SOUTH
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PML Ref.: 18KF025
Report: 1
December 18, 2018

Peto MacCallum Ltd.
CONSULTING ENGINEERS

December 18, 2018

PML Ref.: 18KF025
Report: 1

New Hamburglrs Inc.
Mr. Paul Grespan/Lee and Roger Kieswetter
c/o Mr. Dave Hicks, C.E.T.
MTE Consultants Inc.
520 Bingemans Centre Drive
Kitchener, Ontario
N2B 3X9

Dear Mr. Hicks

Geotechnical Investigation
Proposed Industrial Development
Highway 7/8 New Hamburg Property
New Hamburg, Ontario

Peto MacCallum Ltd. (PML) is pleased to report the results of the geotechnical investigation recently completed at the above noted project site. Authorization to proceed with this assignment was provided by Mr. D. Hicks, C.E.T. in an email dated May 24, 2018.

In general, the project involves the proposed construction of an industrial subdivision on a 18.7 Ha site located northwest of the Highway 7/8 and Nafziger Road intersection in New Hamburg, Ontario. The proposed development is located on an existing agricultural property, and is bordered by agricultural lands to the west and commercial properties to the east. It is understood that buried agricultural field drains are located across the site.

PML recently completed a geotechnical investigation for a development on the neighbouring property to the west. The investigation included a series of boreholes which extended across the current site, for a road connection to Nafziger Road. It is also understood that a previous geotechnical investigation was carried out at the site in 2010. Reference is given to Appendix A for the borehole logs from PML's previous investigation along with borehole logs provided by MTE Consultants Inc. (MTE) for the 2010 investigation.

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BARRIE, COLLINGWOOD, HAMILTON, KITCHEER, LONDON, TORONTO

The purpose of the current geotechnical investigation was to explore the subsurface soil and ground water conditions at the site and based on this information, to provide geotechnical recommendations for the proposed development. Specific considerations to be addressed in this report include:

- A description of the site and the field investigation procedure;
- A summary of the subsurface soil and ground water conditions encountered;
- Log of borehole sheets, a borehole location plan drawing, and geotechnical laboratory test results;
- Excavation and construction dewatering requirements;
- Foundation design, including bearing resistances, settlement projections and site class for seismic design;
- Slab on grade floors and below grade walls, including compaction requirements and geotechnical suitability of onsite soils for re-use;
- Site servicing (storm, sanitary, water and utilities) including pipe bedding requirements;
- Pavement structure design for new roadways; and,
- Suitability of native soils for infiltration of stormwater.

The comments and recommendations provided in this report are based on the site conditions at the time of the investigation, and are for the current project only. Any changes in plans will require review by PML to assess the applicability of the report, and may require modified recommendations, additional analysis and / or investigation. When the project design is complete, the general recommendations given in this report should be reviewed by PML to ensure their applicability.

Investigation Procedure

Geotechnical Investigation

The field work for this geotechnical investigation was conducted on June 6, 2018. The investigation program comprised a total of 6 boreholes (201 to 206) advanced to 6.7 m depth, with monitoring wells installed in four of the boreholes. The borehole locations are shown on the appended Borehole Location Plan, Drawing 1.

The borehole locations were established in the field by PML. The ground surface elevations were surveyed by MTE.

The boreholes were advanced using a Diedrich D-50 track mounted drillrig fitted with continuous flight solid and hollow stem augers and automatic hammer, supplied and operated by a specialist drilling contractor. The work was carried out under the full-time supervision of a PML engineering staff member who directed the drilling and sampling operations, documented the soil stratigraphy, monitored ground water conditions and processed the recovered samples.

Representative samples of the overburden were recovered at regular intervals throughout the depths explored. Standard penetration tests (SPT) were carried out during sampling operations of the boreholes using conventional split spoon equipment. Ground water observations were made in the boreholes during and upon completion of drilling. The boreholes were backfilled and compacted in accordance with O.Reg.903 upon completion of drilling.

Monitoring wells were installed in four boreholes to more accurately measure ground water levels. The monitoring wells comprised 50 mm diameter PVC pipe, filter sand, bentonite seals, and protective casings. PML conducted water level readings in the wells upon installation and on June 15, 2018. Subsequent water level measurements from the wells were conducted by MTE.

All of the recovered samples were returned to PML's laboratory for detailed visual examination, classification, and routine moisture content determinations. The laboratory testing also included particle size distribution analyses on four samples of the major soil types encountered.

Summarized Subsurface Conditions

Reference is made to the appended Log of Borehole sheets for details of the field work including soil descriptions, inferred stratigraphy, standard penetration test (SPT) N values, dynamic cone penetration test values, ground water observations and laboratory moisture content determinations.

Due to the soil sampling procedures and the limited size of samples, the depth / elevation demarcations on the borehole logs must be viewed as "transitional" zones, and cannot be construed as exact geologic boundaries between layers.

In general, the soil stratigraphy encountered comprised surficial topsoil and localized fill, underlain by an extensive clayey silt deposit containing occasional silt, sandy silt, and silty sand layers.

Surficial topsoil was contacted in all of the boreholes, and was between 100 and 400 mm thick, with an average of 275 mm.

An extensive clayey silt deposit was encountered below the surficial topsoil, in all of the boreholes, and extended to between 4.0 and the 6.7 m borehole termination depths. The cohesive clayey silt deposit was generally firm to very stiff with standard penetration N values between 6 and 40 blows per 0.3 m penetration of the split spoon sampler. The clayey silt was typically brown to about 2.5 to 4.0 m depth, and grey below. Moisture content ranged between 8 and 32% indicating drier than plastic limit (DTPL) to about plastic limit (APL) conditions in the cohesive clayey silt soils. Localized layers of wet to saturated silt were also encountered within the clayey silt deposit. Reference is given to Figures 1 to 3 for the results of particle size distribution analyses conducted on samples of the clayey silt and silt.

Silty sand was encountered below the clayey silt in Borehole 202 and extended to the 6.7 m borehole termination depth. The silty sand was dense to very dense with SPT N values ranging from 40 to greater than 50 blows per 0.3 m penetration. The sandy silt was saturated with moisture contents between 15 and 18%. Reference is given to Figure 4 for the results of the particle size distribution analysis conducted on a sample of the silty sand.

Silt till was encountered below the clayey silt in Borehole 204 and extended to the 6.7 borehole termination depth. The till was very dense with SPT N value greater than 50 blows per 0.3 m penetration. The silt till was moist with a laboratory moisture content of 9%.

Ground Water Conditions

Ground water observations carried out during and upon completion of drilling are presented on the appended Log of Borehole Sheets.

During drilling, wet and saturated conditions and were generally encountered in the silt layers within the clayey silt deposits, and in the silty sand. Wet and saturated conditions were typically encountered below 4.0 m depth in the silt layers of the grey clayey silt and underlying silty sand. Localized near surface wet conditions were observed in Borehole 202 from the ground surface. Free water was observed during drilling of Borehole 202 from about 3.5 m depth to the borehole termination depth.

On June 15, 2018 water level measurements from the monitoring wells installed in Boreholes 201 to 204 ranged between 1.56 to 6.12 m depth below existing grade (about Elevation 336.75 to 339.23).

The ground water levels at the site are subject to seasonal fluctuations and precipitation patterns. The relatively impermeable nature of the clayey silt could contribute to the development of perched water conditions following short term and seasonal precipitation events.

Discussion and Recommendations

The project involves the proposed construction of a commercial development on a property north of Highway 7/8 in New Hamburg, Ontario. The work will include earthworks grading for the commercial lots, and construction of municipal roads.

The following recommendations are based on design information provided by the client. It is recommended that PML be retained to review the final design for both additions to check that the recommendations presented hereafter have been interpreted correctly and are sufficient and appropriate for the proposed works.

Foundations and Earthworks Grading

Details of the buildings in the proposed industrial subdivision have yet to be established. We have provided the following preliminary foundation design recommendations and earthworks grading recommendations for the development. However, we recommend that a site specific geotechnical investigation be carried out for foundation designs once details of the proposed structures are known

The site is generally underlain by firm to very stiff clayey silt. It is feasible to support buildings on conventional spread or strip footings, or mat foundations founded in the native firm to very stiff clayey silt. Based on the investigation findings, footings founded a minimum 0.3 m into the firm to very stiff native clayey silt deposits, below any surficial fill and topsoil and local surficial soft or loose zones, may be designed for a net bearing resistance of 150 kPa at the serviceability limit state (SLS) and a factored bearing resistance of 225 kPa at the ultimate limit state (ULS).

Alternatively, in areas where grades are to be raised, footings maybe placed at higher elevations on engineered structural fill. The existing topsoil and fill must be excavated to the levels of competent native clayey silt deposits in advance of engineered structural fill placement. Engineered structural fill used to establish footing founding subgrade levels should comprise an approved compactable inorganic soil, placed in lifts with a maximum thickness of 300 mm and be compacted to at least 98% standard Proctor maximum dry density (SPMDD). Additional generic recommendations for engineered fill construction are provided in Appendix B. Footings supported on approved engineered structural fill may also be designed using the values for a net factored resistance of 150 at SLS and 225 kPa at ULS. Full time inspection of any structural fill placement by PML personnel is recommended to approve subgrade conditions, fill materials and to verify that the specified compaction levels are being achieved.

The maximum total settlement of foundations designed for the net SLS bearing pressures noted above are not expected to exceed 25 mm. Differential settlements of around 50 to 75% of the total settlement should be anticipated.

All founding surfaces should be examined by PML personnel prior to concrete placement, to check that all loose, frozen, organic or otherwise deleterious materials have been satisfactorily removed and the required bearing capacity is available throughout.

All exterior footings and all footings exposed to seasonal freezing conditions must be provided with frost protection. The minimum frost protection should be 1.2 m of earth cover or the thermal insulation equivalent.

Design provisions for earthquake loading should also be applied. For the soil conditions at the site, a Class D site category may be assumed, in accordance with the 2012 Ontario Building Code.

As noted previously, it is understood that agricultural field drainage pipes extend across the site. The location and extent of the drainage pipes should be verified, and rerouted away from the building areas, or decommissioned as required. It is expected that excavation of the site for grading and servicing might encounter some of the agricultural tiles during construction.

Slab on Grade Floors

Preparation of the floor slab subgrade should include stripping of the surficial, topsoil, and other deleterious material, placement and compaction of engineered fill, if necessary, followed by proof rolling of the exposed subgrade with a heavy roller to ensure uniform adequate support. Excessively loose, soft or compressible materials revealed during the proofrolling operations should be subexcavated and replaced with well compacted approved material.

Engineered fill placed under the floor slab to achieve finished subgrade levels or as foundation wall backfill should comprise approved inorganic material having a moisture content within 3% of the optimum value, placed in maximum 200 mm thick lifts, and compacted to at least 95% SPMDD. Reference is given to Appendix B for additional engineered fill construction recommendations.

A minimum 150 mm thick layer of Granular A compacted to 98% SPMDD is recommended directly beneath the slab-on-grade. A polyethylene vapour barrier should be placed on the surface of the granular base if a moisture sensitive finish is to be placed on the floor. Joints should be saw cut into concrete floor immediately after initial set of the concrete to control potential cracking of the slab.

Below Grade Walls

Below grade walls and basement walls should be designed as retaining walls to resist the unbalanced horizontal earth pressure imposed by the backfill adjacent to the wall. The unfactored lateral earth pressure, p, may be computed using the following equation, assuming a triangular pressure distribution:

$$p = K(\gamma h + q)$$

where K = lateral earth pressure coefficient
= 0.5 for wall restrained at both top and bottom

γ = unit weight of free-draining granular material
= *21* kN/m^3

h = depth below final grade (m)

q = surcharge load (kPa), if present

The excavation adjacent to the basement walls should be backfilled with free-draining granular material satisfying the OPS Granular "B" gradation specification and a weeping tile system installed to minimize the build-up of hydrostatic pressure behind the wall.

The weeping tiles should be surrounded by a properly designed graded granular filter or wrapped with approved geotextile to prevent migration of fines into the system. The drainage pipe should be placed on a positive grade and lead to a frost-free sump or outlet.

Excavation and Ground Water Control

It is generally envisaged that excavations for the earthworks and site servicing will extend to a maximum 4 m depth within the proposed development.

Excavations for service installations are expected to extend up to about 4 m depth through topsoil and into the native clayey silt deposits containing silt layers which are classified as Type 3 materials as defined in the OHSA. Subject to inspection and providing adequate ground water control is achieved, excavations within Type 3 soils that are to be entered by workers should be inclined from the base of the excavation at one horizontal to one vertical (1H:1V) or flatter.

It is anticipated that ground water seepage or surface water entering the excavations will be handled readily by conventional sump pumping. The actual dewatering methods should be established at the contractor's discretion within the context of a performance specification for the project. Regardless of the dewatering method chosen, the hydraulic head and ground water inflow must be properly controlled to ensure a stable and safe excavation and to facilitate construction. The design of the dewatering system should be specified to maintain and control ground water at least 0.3 m below the excavation base level, in order to provide a stable excavation base throughout construction.

It should be noted that, under the Ontario Water Resources Act, the Water Taking and Transfer Regulation 387/04, a Permit to Take Water (PTTW) from the Ministry of Environment, Conservation and Parks (MECP) is required if the dewatering discharge is greater than 50,000 L/day. In accordance with the above noted regulatory requirements and in compliance with the MECP's PTTW Manual (April 2005), and application should be filed to the MECP for the subject property construction dewatering PTTW, if the dewatering discharge is greater than 400,000 L/day, or about 4.6 L/S. If the dewatering discharge is between 50,000 L/day (or about 0.6 L/S) and 400,000 L/day (or about 4.6 L/S) dewatering activities need to be registered on the Environmental Activity and

Sector Registry (EASR). PML would be happy to assist with this process, if required. The depth of excavations for site grading and site servicing are expected to extend to a maximum 4 m depth into clayey silt deposits with wet to saturated layers of silt, sand, sandy silt, and silty sand. Due to the relatively low permeability of the native deposits, typical trenching excavations for utility installation and earthworks grading are generally expected to have dewatering rates less than 50,000 L/day, and a PTTW or EASR should not be required.

It is recommended that test pits be carried out during the tendering stage of the project in order that prospective contractors may familiarize themselves with soil and ground water conditions to be contacted. Also, as noted above, the dewatering requirements should be established by the contractor in the context of a performance specification.

Pipe Bedding and Cover

It is expected that the proposed water and sewer pipes will be founded on competent native clayey silt deposits, or engineered fill. Providing adequate ground water control is achieved, bearing problems are not anticipated for conduits founded on the native mineral soils or engineered fill. It may be necessary to increase the bedding thickness if excessively loose, soft or wet conditions are present at the pipe subgrade. The need for this is best determined during construction.

Conventional bedding and cover constructed in accordance with applicable Ontario Provincial Standard Drawings (OPSD) will be suitable. Material containing stones larger than 50 mm in size should not be used in the bedding layer. The bedding and cover material should be placed in 150 mm lifts compacted to at least 95% SPMDD. Compaction should be provided beneath the pipe haunches to provide uniform support. Over-compaction should be avoided as damage to the pipe could result.

Trench backfill material should comprise approved material placed in uniform 200 mm thick lifts within 3% of the optimum moisture content and compacted to at least 95% SPMDD.

It is anticipated that the excavated material will primarily comprise clayey silt. The insitu moisture content of the clayey silt typically ranges from 8 to 32%. Based on our experience with similar types of material, the upper limit of placement moisture content compatible with efficient compaction is expected to be about 15%. Therefore, the excavated clayey silt containing wet and saturated soils are considered suitable for reuse only if the work is carried out during the dry summer months and the construction schedule is flexible to permit air drying to reduce the moisture content closer to the optimum value.

Excavated materials intended for backfilling purposes should not be exposed to the elements for prolonged time periods, as they might be rendered unsuitable for reuse. Organic soil, topsoil, deleterious or excessively wet material should not be used as backfill. Should construction start during the winter season, particular attention must be given to ensure that frozen material is not used as backfill for service trenches. Topsoil may be reused for landscape purposes only.

It should also be noted that the insitu clayey silt materials will tend to retain a voided structure when placed as backfill. Sufficient compaction must be applied to breakdown all lumps / clods within the fill matrix to achieve a non-voided condition. Significant post construction settlement could otherwise result.

The trenching and backfilling operations should be carried out in a manner which minimizes the length of trench left open yet accommodates efficient pipe laying and compaction activities.

Soil Infiltration

It is understood that onsite storm water infiltration parameters are required. The following table provides hydraulic conductivity and infiltration design parameters for the major onsite soils encountered. An appropriate factor of safety should also be used for design.

SOIL	HYDRAULIC CONDUCTIVITY (cm/s)	INFILTRATION RATE (mm/hr)
Clayey Silt	Less than $1x10^{-6}$	Less than 0.04
Silty Sand	$1x10^{-4}$	5

Cognizant of the low permeability and infiltration rates and considering the limited nature of silt/sandy silt/silty sand seams, the amount of onsite infiltration is expected to be negligible.

Pavement Design

As noted previously, a new roadway will be constructed across the middle section of the site to connect to Nafziger Road. Based on the proposed pavement usage, frost susceptibility, and strength of the expected subgrade soils, the following pavement component thicknesses are considered suitable for the proposed industrial subdivision roadways.

PAVEMENT COMPONENT	THICKNESS (mm)
Asphalt	100
Granular A Base	150
Granular B Subbase	600

The pavement design considers that construction will be carried out during the drier time of the year and that the subgrade is stable, as determined by proofrolling and inspection by PML personnel. If the subgrade is wet and unstable, subexcavation and placement of additional granular subbase material will be required.

In areas where the subgrade is sensitive to disturbance or construction is to occur outside of the drier time of year, then consideration can be given to thickening the granular subbase or using a geotextile separator between the pavement structure and subbase, in lieu of additional granular subbase. The geotextile separator envisaged should provide reinforcement, filtration and separation of the granular subbase from the anticipated clayey silt / clayey silt fill subgrade soils, and a woven geotextile such Terrafix's 200 W (or equivalent) is envisaged.

The pavement materials should conform to current OPS and municipal specifications. The Granular A base and Granular B subbase courses should be placed in thin lifts and be compacted to a minimum of 100% SPMDD, and asphalt should be placed to a minimum of 92% of the material's maximum relative density (MRD) and reference is made to OPS Specification 310.

During construction, testing should be conducted to confirm the gradation and compactibility characteristics of the granular base materials and the mix design properties of the asphalt.

Proofrolling procedures and the placement and compaction of all the granular materials and asphalt for the pavement construction should be inspected on a continuous basis by PML personnel.

The pavement subgrade materials will lose strength to support traffic loads if allowed to become wet. Moreover, the silty clay subgrade soils are considered frost susceptible and the roadway may heave during freezing and thawing periods. Drainage of the pavement structure is essential to maintain structural integrity and limit frost heave. In this regard, installation of longitudinal subdrains is recommended. The longitudinal subdrains should comprise a minimum 100 mm diameter perforated plastic pipe, set below the subbase level, and outlet to ditching, or catch basins. Subdrain pipes should be surrounded by appropriate filter media such as clear stone wrapped in geotextile, or alternatively the pipes should be wrapped in filter cloth and surrounded by concrete sand.

Geotechnical Review and Construction Inspection and Testing

When development design is complete, it is recommended that the design drawings be submitted to PML for general geotechnical review for compatibility with site conditions and recommendations of this report.

Earthworks operations should be carried out under the supervision of PML to approve subgrade preparation, backfill materials, placement and compaction procedures, and verify the specified degree of compaction is achieved uniformly throughout fill materials.

The comments and recommendations provided in the report are based on the information revealed in the boreholes. Conditions away from and between boreholes may vary, particularly where service trenches exist. Geotechnical review during construction should be on going to confirm the subsurface conditions are substantially similar to those encountered in the boreholes, which may otherwise require modification to the original recommendations.

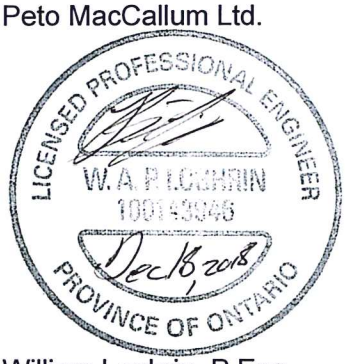
This report is subject to the Statement of Limitations that is included in Appendix C, which must be read in conjunction with the report.

Closure

We trust the information presented in this report is sufficient for your immediate requirements. If you have any questions or require further information, please do not hesitate to contact our office.

Sincerely

Peto MacCallum Ltd.



William Loghrin, P.Eng.
Project Engineer, Geotechnical Services

Gerry Mitchell, MEng, P.Eng.
Senior Consultant

WL/GM:wl

Enclosures:
Figures 1 to 3 - Particle Size Distribution Charts
List of Abbreviations
Log of Boreholes 201 to 206
Drawing 1 - Borehole Location Plan
Appendix A – Previous PML and MTE Boreholes
Appendix B – Engineered Fill
Appendix C – Statement of Limitations

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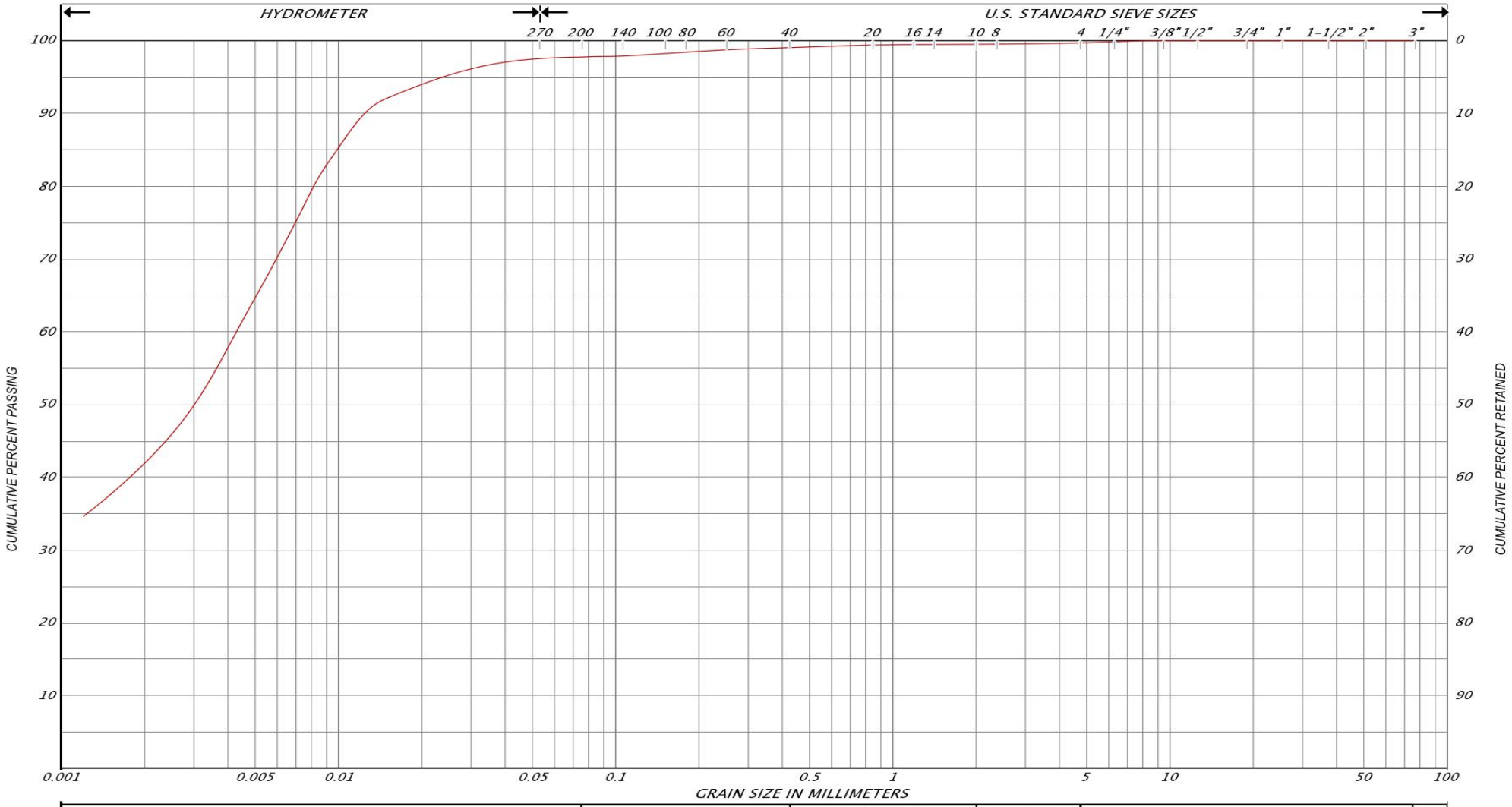
PROJECT NO. 18KF025
FIGURE NO. 1

PARTICLE SIZE DISTRIBUTION CHART



SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	201	5	15			

REMARKS: Borehole 201, Sample SS5, Depth 4.6 to 5.2 m

CLAYEY SILT

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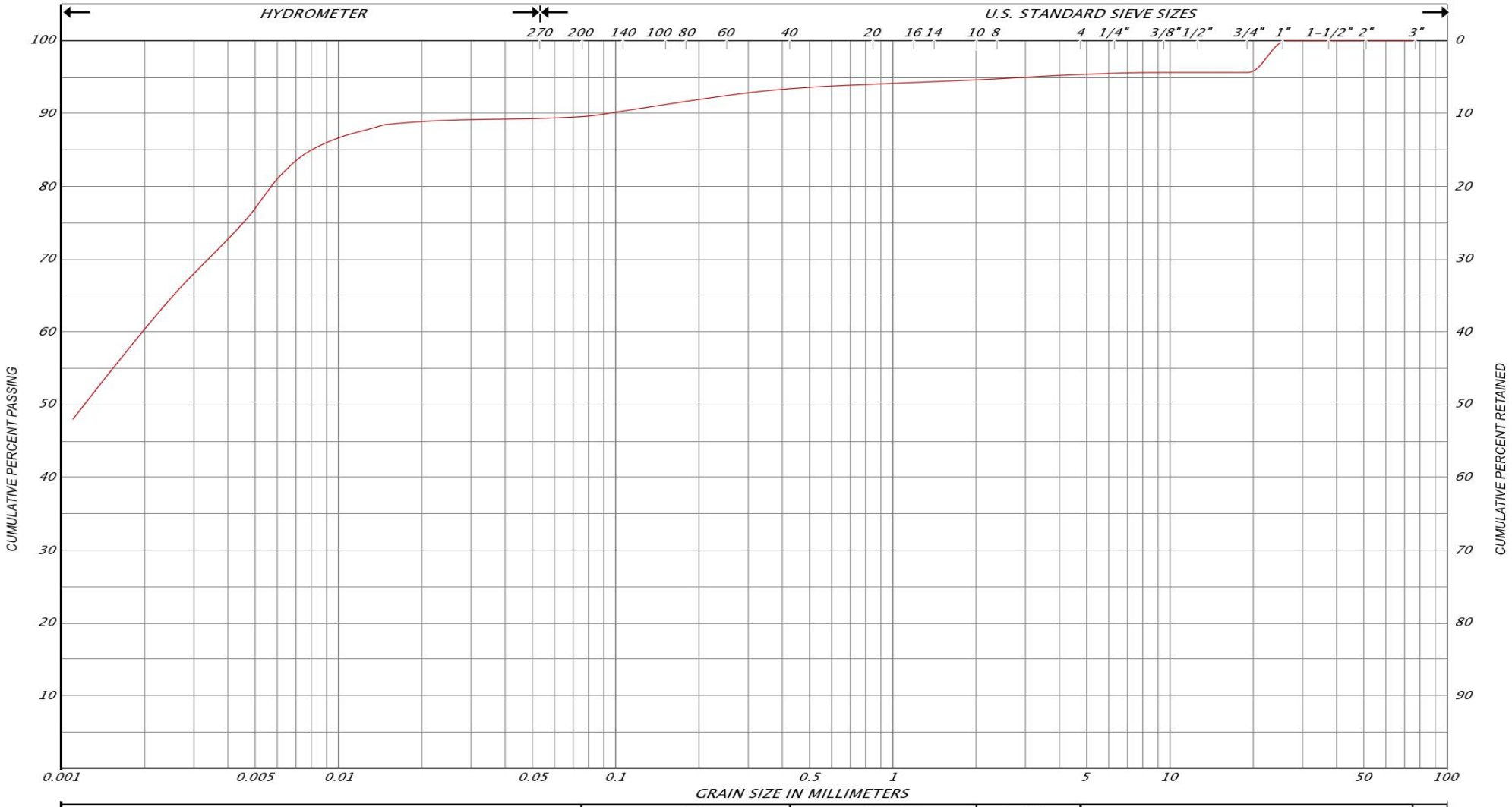
PROJECT NO. 18KF025
FIGURE NO. 3

PARTICLE SIZE DISTRIBUTION CHART



SILT & CLAY			FINE	MEDIUM	COARSE	GRAVEL		COB BLES	UNIFIED
			SAND						
CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	GRAVEL	COBBLES	M.I.T
	SILT			SAND					
CLAY	SILT		V.FINE	FINE	MED.	COARSE	GRAVEL		US BUREAU
			SAND						

SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	203	5	15			

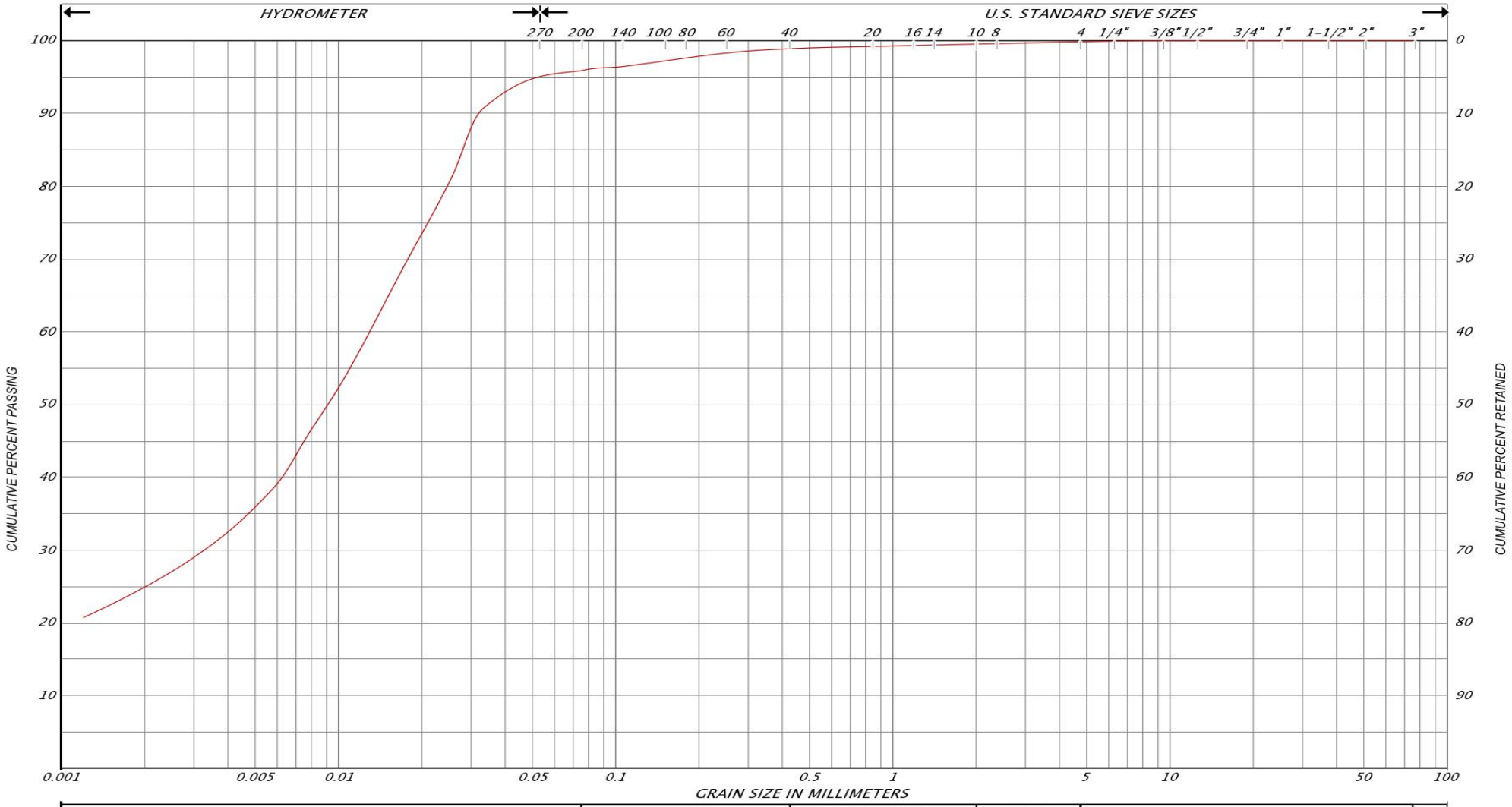
REMARKS: Borehole 203, Sample SS5, Depth 4.6 to 5.2 m

CLAYEY SILT

Peto MacCallum Ltd.
CONSULTING ENGINEERS

PROJECT NO. 18KF025
FIGURE NO. 4

PARTICLE SIZE DISTRIBUTION CHART



SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	204	5	15			

REMARKS: Borehole 204, Sample SS5, Depth 4.6 to 5.2 m

CLAYEY SILT

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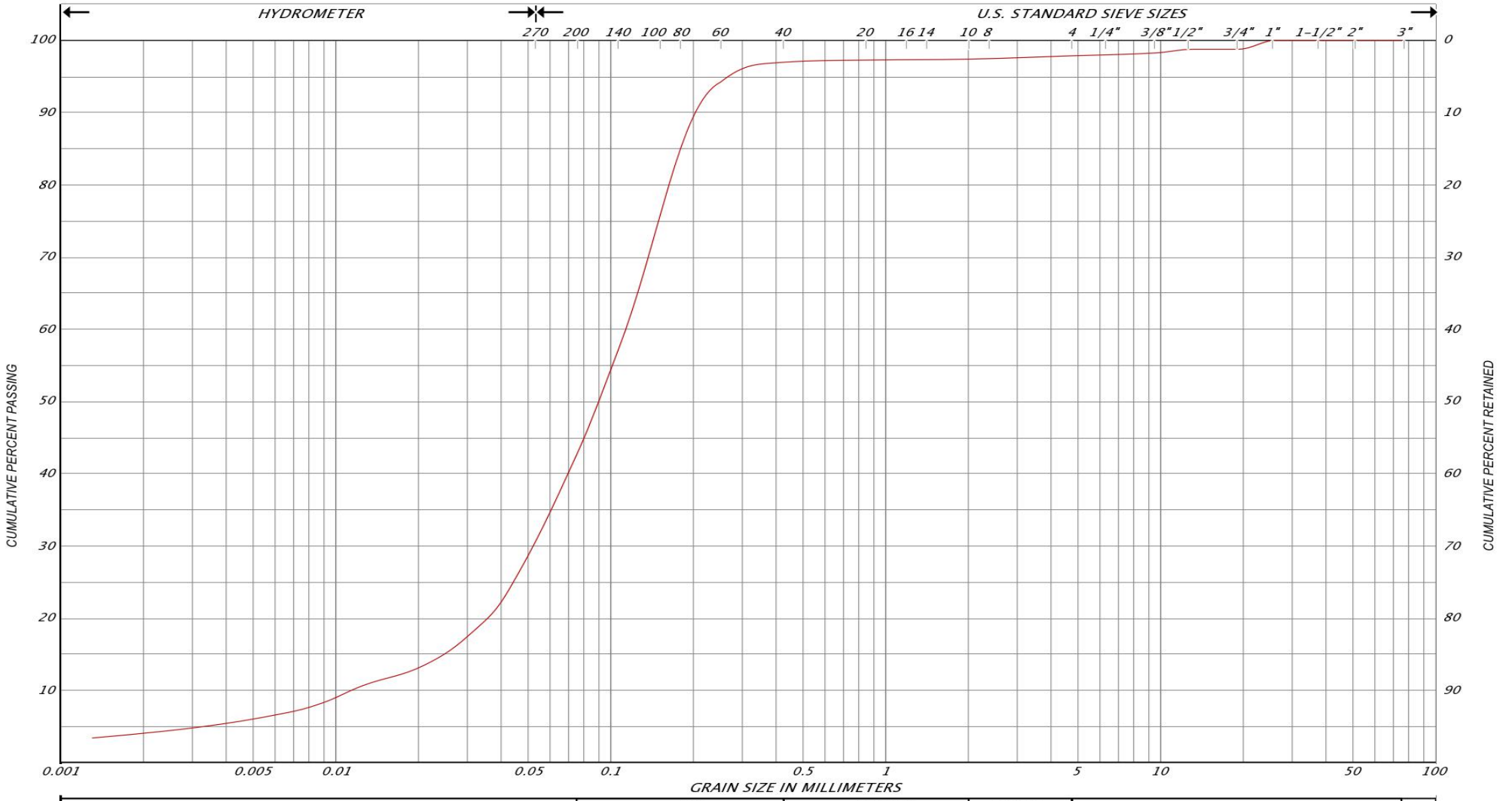
PROJECT NO. 18KF025
FIGURE NO. 2

PARTICLE SIZE DISTRIBUTION CHART



SYMBOL	BH No.	SAMPLE No.	DEPTH (ft)	WL	WP	PI
●	202	7	15			

REMARKS: Borehole 202, Sample SS7, Depth 4.6 to 5.2 m

SILTY SAND

LIST OF ABBREVIATIONS

PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. - Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

CONSISTENCY	N (blows/0.3 m)	c (kPa)	DENSENESS	N (blows/0.3 m)
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		

WTPL	Wetter Than Plastic Limit
APL	About Plastic Limit
DTPL	Drier Than Plastic Limit

TYPE OF SAMPLE

SS	Split Spoon	TW	Thinwall Open
WS	Washed Sample	TP	Thinwall Piston
SB	Scraper Bucket Sample	OS	Oesterberg Sample
AS	Auger Sample	FS	Foil Sample
CS	Chunk Sample	RC	Rock Core
ST	Slotted Tube Sample	USS	Undisturbed Shear Strength
PH	Sample Advanced Hydraulically	RSS	Remoulded Shear Strength
PM	Sample Advanced Manually		

SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	C	Consolidation
Qd	Drained Triaxial		

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LOG OF BOREHOLE NO. 201

PROJECT Proposed Development - Wilmot Employment Lands Eastside
PML REF. 18KF025
LOCATION New Hamburg, Ontario
BORING DATE June 6, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN W. Loghrin

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / DYNAMIC CONE PENETRATION / STANDARD PENETRATION TEST	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	GAS READINGS ppm	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SURFACE ELEVATION									
0.40	TOPSOIL: Dark brown silt, moist		1	SS	7					Stickup Well Protector Set in Concrete
	CLAYEY SILT: Firm to stiff brown clayey silt, some sand, trace gravel, APL		2	SS	12					Bentonite Seal
			3	SS	9					
4.0	becoming firm grey occasional silt layers		4	SS	8					Filter Sand
										Slotted Screen
6.7			5	SS	8					
	BOREHOLE TERMINATED AT 6.7 m									Water Level Readings: Initial: Dry 2018-06-15: 2.91 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 202

PROJECT Proposed Development - Wilmot Employment Lands Eastside
PML REF. 18KF025
LOCATION New Hamburg, Ontario
BORING DATE June 6, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN W. Loghrin

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES
	SURFACE ELEVATION				
0.0	TOPSOIL: Dark brown silt, moist to wet		1	SS	5
0.30	CLAYEY SILT: Brown mottled clayey silt, some sand trace gravel, occasional wet sand layers, APL		2	SS	7
1.0					
2.1	becoming hard, DTPL		3	SS	6
2.0			4	SS	40
3.0			5	SS	30
4.0	SILTY SAND: Dense brown silty fine sand, saturated				
5.0			6	SS	54
6.0			7	SS	44
6.7	BOREHOLE TERMINATED AT 6.7 m				
7.0					
8.0					
9.0					
10.0					
11.0					
12.0					
13.0					
14.0					
15.0					

ELEVATION SCALE

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen

Free water at 3.5 m after SS6

Water Level Readings:
Initial: 3.5 m
2018-06-15: 2.28 m

NOTES

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LOG OF BOREHOLE NO. 203

PROJECT Proposed Development - Wilmot Employment Lands Eastside
PML REF. 18KF025
LOCATION New Hamburg, Ontario
BORING DATE June 6, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN W. Loghrin

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION					
0.0	TOPSOIL: Dark brown silt, moist		1	SS	9	
0.35	CLAYEY SILT: Firm brown clayey silt, some sand, trace gravel, APL, occasional wet silt layers					
1.0						
			2	SS	8	
2.0						
2.5	becoming grey					
3.0			3	SS	6	
4.0						
			4	SS	9	
5.0						
			5	SS	10	
6.0						
6.7	BOREHOLE TERMINATED AT 6.7 m					
7.0						
8.0						
9.0						
10.0						
11.0						
12.0						
13.0						
14.0						
15.0						

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen

Water Level Readings:
Initial: Dry
2018-06-15: 6.12 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 204

PROJECT Proposed Development - Wilmot Employment Lands Eastside
PML REF. 18KF025
LOCATION New Hamburg, Ontario
BORING DATE June 9, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN W. Loghrin

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES
	SURFACE ELEVATION				
0.0	TOPSOIL: Dark brown silt, moist		1	SS	9
0.40	CLAYEY SILT: Firm to very stiff brown clayey silt, some sand, trace gravel, APL to DTPL, occasional silt layers		2	SS	7
1.0					
2.0			3	SS	11
3.0			4	SS	13
4.0	becoming grey, occasional saturated silt layers				
4.0			5	SS	6
5.0					
5.9	SILT TILL: Very dense grey silt, some sand, some gravel, occasional cobble, occasional boulders, moist		6	SS	75
6.0					
6.7	BOREHOLE TERMINATED AT 6.7 m				
7.0					
8.0					
9.0					
10.0					
11.0					
12.0					
13.0					
14.0					
15.0					

ELEVATION SCALE

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

GAS READINGS ppm

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
Bentonite Seal
Filter Sand
Slotted Screen

Water Level Readings:
Initial: Dry
2018-06-15: 1.56 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 205

PROJECT Proposed Development - Wilmot Employment Lands Eastside
PML REF. 18KF025
LOCATION New Hamburg, Ontario
BORING DATE June 9, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN W. Loghrin

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L; WATER CONTENT (%)	GAS READINGS ppm	GROUND WATER OBSERVATIONS AND REMARKS; GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SURFACE ELEVATION						20 40 60 80	10 20 30 40		
0.0	TOPSOIL: Dark brown clayey silt, APL		1	SS	5					
	CLAYEY SILT: Very stiff brown clayey silt, some sand, trace gravel, DTPL		2	SS	27					
1.0										
			3	SS	18					
2.0										
			4	SS	14					
3.0										
			5	SS	12					
4.0	4.0									
	becoming grey, APL, occasional wet silt layers									
5.0			6	SS	12					
6.0			7	SS	16					
	6.7									
7.0	BOREHOLE TERMINATED AT 6.7 m									Upon completion of augering Open No free water
8.0										
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 206

PROJECT Proposed Development - Wilmot Employment Lands Eastside
PML REF. 18KF025
LOCATION New Hamburg, Ontario
BORING DATE June 9, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN W. Loghrin

DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%)	GAS READINGS ppm	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	SURFACE ELEVATION									
	TOPSOIL: Dark brown silt, moist									
	CLAYEY SILT: Firm brown clayey silt, some sand, trace gravel, APL to DTPL		1	SS	4					
1.0			2	SS	9					
1.4	becoming hard, DTPL		3	SS	34					
2.0			4	SS	40					
2.9	becoming grey		5	SS	31					
4.0										
5.0			6	SS	34					
6.0			7	SS	30					
6.7	BOREHOLE TERMINATED AT 6.7 m									Upon completion of augering Open No free water
7.0										
8.0										
9.0										
10.0										
11.0										
12.0										
13.0										
14.0										
15.0										

NOTES

KEY PLAN

LEGEND:

- BOREHOLE
- BOREHOLE WITH MONITORING WELL
- PREVIOUS BOREHOLE BY OTHERS
- PREVIOUS TEST PIT BY OTHERS

REFERENCE:

BOREHOLE LOCATION PLAN REPRODUCED FROM DRAWING SUPPLIED BY CLIENT.

NOTE:

THE INFERRED STRATIGRAPHY REFERRED TO IN THE REPORT IS BASED ON THE DATA FROM THESE BOREHOLES SUPPLEMENTED BY GEOLOGICAL EVIDENCE. THE ACTUAL STRATIGRAPHY BETWEEN THE BOREHOLES MAY VARY.

NEW HAMBURGLRS INC.

PROPOSED DEVELOPMENT

HIGHWAY 7/8 NEW HAMBURG PROPERTY

NEW HAMBURG, ONTARIO

BOREHOLE LOCATION PLAN

Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN	D. BRICE	DATE	SCALE	PML REF.	DWG. NO.
CHECKED	W. LOGHRIN	DECEMBER 2018	AS SHOWN	18KF02□	1
APPROVED	G. MITCHELL				

APPENDIX A

PREVIOUS PML AND MTE BOREHOLES

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH1

Job Number: 34896-100

Drill Date: November 29, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
ft / m	0.00	Ground Elevation							
0.0 / 0.0	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT CLAY** Light brown sandy silt and clay, fine grained, loose, moist, no staining or odour		1	SS	21			
4.0	-1.52								
6.0 / 2.0	1.52	**Silty SAND** Light brown silty sand, some clay @ 6', fine grained, stiff, moist to wet @ 7', saturated below 7', no staining or odour		2	SS	40			
8.0				3	SS	55			
10.0				4	SS	75			
12.0 / 4.0									
14.0									
16.0	-4.88			5	SS	63			
	4.88	**Sandy SILT** Grey sandy silt, trace clay, fine grained, stiff, saturated							
18.0		**SILT TILL** Grey sandy silt till, small stones, no staining or odour							
20.0 / 6.0	-6.10								
	6.10	**Sandy SILT** Light grey sandy silt, some silty clay @ 22', fine grained, stiff, no staining or odur, wet, dry @ 22'		6	SS	51			
22.0									
24.0									
26.0 / 8.0	-8.08			7	SS	31			
	8.08	**CLAY** Grey clay, trace silt, dry, no staining or odour							
28.0				8	SS	39			
	-8.99	**SILT**							
	8.99	Grey silt, fine grained, dry							
30.0									
32.0 / 10.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH2

Job Number: 34896-100

Drill Date: November 30, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT** Light brown clayey silt, fine grained, stiff, dry, no staining or odour. Light brown sandy silt @ 7'		1	SS	30			
4.0									
6.0				2	SS	51			
2.0	-2.29								
8.0	2.29	**Silty CLAY** Grey-brown silty clay, fine grained, stiff, dry, no staining or odour		3	SS	42			
10.0	-3.05 3.05								
12.0		**CLAY** Grey clay, fine, stiff, dry, trace sand @ 17', no staining or odour		4	SS	23			
4.0									
14.0									
16.0				5	SS	33			
18.0									
20.0	6.0			6	SS	27			
22.0									
24.0									
26.0	8.0			7	SS	31			
	-8.23 8.23								
28.0									
30.0									
32.0	10.0								
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH3

Job Number: 34896-100

Drill Date: November 30, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT** Light brown clayey silt, trace sand, dry, no staining or odour		1	SS	31			
4.0	-1.52								
	1.52	**Sandy SILT** Light brown sandy silt with clay, fine grained, stiff, dry, slightly moist @ 8'		2	SS	49			
6.0	2.0								
8.0				3	SS	38			
	-3.05								
10.0	3.05	**Silty CLAY** Grey silty clay with sand, fine grained, stiff, dy, no staining or odour		4	SS	32			
12.0	-3.66								
	3.66	**Silty SAND** Grey silty sand, trace clay seams, fine grained, stiff, no staining or odour, dry to wet							
14.0	4.0								
16.0				5	SS	45			
18.0									
20.0	6.0			6	SS	20			
22.0									
24.0									
26.0	8.0			7	SS	54			
	-8.23								
	8.23								
28.0									
30.0									
32.0	10.0								
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH4

Job Number: 34896-100

Drill Date: November 30, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**SILT** Dark brown sandy silt with clay, light brown silty clay @ 4'dry, no staining or odour		1	SS	28			
4.0	-1.52								
6.0	1.52	**SILT TILL** Light brown clayey silt till, some small stones, dry, no staining or odour		2	SS	36			
	-2.13								
8.0	2.13	**Silty SAND** Light brown silty sand, loose, fine, moist to wet @8', light brown dry clay @ 9,		3	SS	23			
10.0	-3.05								
	3.05	**CLAY** Grey clay, trace silt, fine grained, stiff, no staining or odour, slightly moist		4	SS	21			
12.0									
14.0									
16.0				5	SS	23			
18.0									
20.0	-6.10								
	6.10	**Sandy SILT** Grey sandy silt, fine grained, saturated, no staining or odour		6	SS	49			
22.0									
24.0	-7.62								
	7.62	**CLAY** Grey clay, fine grained, stiff, no staining or odour, dry		7	SS	47			
26.0	-8.23								
	8.23								
28.0									
30.0									
32.0									
34.0									

ft / m: 0.0, 2.0, 4.0, 6.0, 8.0, 10.0

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH5

Job Number: 34896-100

Drill Date: December 01, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0 ft / 0.0 m	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
	-0.61								
2.0	0.61	**Clayey SILT** Grey to light brown silt and clay, fine grained, soft, moist, no staining or odour		1	SS	27			
4.0	-1.52								
	1.52	**Silty CLAY** Light grey to grey silty clay, trace sand, fine grained, stiff, silty wet sand seam @ 21', damp to moist, no staining or odour		2	SS	35			
6.0 – 2.0				3	SS	74			
8.0									
10.0				4	SS	32			
12.0									
14.0 – 4.0									
16.0				5	SS	24			
18.0									
20.0 – 6.0				6	SS	24			
22.0									
24.0	-7.62								
	7.62	**CLAY TILL** Grey silty clay till, trace sand, trace stone, stiff, moist to slight moist		7	SS	93			
26.0 – 8.0	-8.23								
	8.23								
28.0									
30.0									
32.0									
34.0 – 10.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH6

Job Number: 34896-100

Drill Date: December 01, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-1.22			1	SS	16			
2.0	1.22	**Silty CLAY** Light brown silty clay, little sand, moist to very moist, no staining or odour		2	SS	14			
4.0	-2.44								
6.0	2.44	**Silty SAND** Light brown silty sand, some clay, wet		3	SS	29			
8.0	-3.05								
10.0	3.05	**Silty CLAY** Light grey silty clay, dry		4	SS	70			
12.0		**Silty SAND** Light brown silty sand, little clay, trace stone, slight wet							
14.0	-4.57								
16.0	4.57	**Silty CLAY** Greyish brown silty clay, some sand,fine grained, stiff slightly moist		5	SS	50			
18.0	-5.49								
20.0	5.49	**Silty SAND** Lihgt grey clayey silty sand, fine grained, slightly wet to saturated		6	SS	65			
22.0		**Silty CLAY** Grey silty clay, some sand, fine grained, stiff, moist							
24.0		**CLAY TILL** Grey sandy silty clay till, some stones, fien grained, stiff, damp to moist		7	SS	65			
26.0									
28.0									
30.0				8	SS	75			
32.0	-9.75								
34.0	9.75								

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH7

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
ft / m	0.00	Ground Elevation							
0.0 / 0.0	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**Silty CLAY** Light brown silty clay, little sand, stiff, damp to moist, no staining or odour		1	SS	52			
4.0									
6.0 / 2.0				2	SS	57			
8.0				3	SS	52			
10.0				4	SS	46			
12.0	-3.66								
	3.66	**SILT TILL** Light brown to grey clayey silt till, some sand, some small stones, fine grained, some pebbles @ 16', dry							
4.0				5	SS	71			
14.0									
16.0									
18.0									
20.0 / 6.0				6	SS	92			
22.0									
24.0									
26.0 / 8.0				7	SS	50			
	-8.23								
	8.23								
28.0									
30.0									
32.0									
10.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH8

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**Silty CLAY** Light brown silty clay, trace sand, stiff, dry,gravelly sand with stones @ 16' no staining or odour		1	SS	30			
4.0									
6.0				2	SS	55			
8.0				3	SS	35			
10.0									
12.0									
14.0									
16.0	-4.88			4	SS	125			
	4.88	**SILT TILL** Grey silt till, very stiff, dry, no staining or odour, light brown moist to wet silty sand @ 22'.							
18.0									
20.0				5	SS	50			
22.0									
24.0	-7.62								
	7.62	**SAND** Light brown sand, fine grained, stiff, saturated, moist silty clay @ 27', no staining or odour		6	SS	99			
26.0	-8.23								
	8.23								
28.0									
30.0									
32.0									
34.0									

ft / m: 0.0 / 0.0; 2.0; 4.0; 6.0; 8.0; 10.0

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH9

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
	-1.07			1	SS	25			
2.0	1.07	**Sandy SILT** Light brown sandy silt with clay, some stones, moist, no staining or odour		2	SS	18			
4.0	-2.29								
6.0	2.29	**Silty CLAY** Grey silty clay, trace sand, soft, slightly moist, no staining or odour, water coming out @ 13'		3	SS	27			
8.0				4	SS	25			
10.0									
12.0									
14.0	-4.57								
16.0	4.57	**CLAY** Grey clay, soft, fine grained, slightly moist, no staining or odour		5	SS	30			
18.0									
20.0				6	SS	39			
22.0									
24.0									
26.0				7	SS	42			
28.0	-8.23								
30.0	8.23								
32.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH10

Job Number: 34896-100

Drill Date: December 01/02, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0	0.00	Ground Elevation							
0.0	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**Clayey SILT** Light brown clayey silt, trace sand, fine grained, stiff, dry, no staining or odour		1	SS	34			
4.0				2	SS	64			
6.0	2.0								
8.0	-2.74			3	SS	54			
	2.74	**Silty SAND** Grey silty sand, fine grained, moist to wet, no staining or odour		4	SS	67			
10.0									
12.0	4.0								
14.0	-4.57								
	4.57	**CLAY** Grey clay, trace sand, soft, dry, no staining or odour		5	SS	33			
16.0									
18.0									
20.0	6.0			6	SS	53			
22.0									
24.0									
26.0	8.0			7	SS	41			
	-8.23								
	8.23								
28.0									
30.0									
32.0	10.0								
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH11

Job Number: 34896-100

Drill Date: December 03, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0 ft / 0.0 m	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**CLAY TILL** Light brown silty clay till with sand, stiff, dense, fine grained, dry, no staining or odour		1	SS	64			
4.0				2	SS	50			
6.0 – 2.0				3	SS	41			
8.0				4	SS	41			
10.0									
12.0 – 4.0									
14.0	-4.57								
	4.57	**Silty CLAY** Grey silt with some silt and sand, dense, fine grained, slightly moist to moist, no staining or odour		5	SS	20			
16.0									
18.0									
20.0 – 6.0				6	SS	38			
22.0									
24.0	-7.62								
	7.62	**Clayey SILT** Grey clayey silt with sand, stiff, fine grained, dry, no staining or odour		7	SS	85			
26.0 – 8.0	-8.23								
	8.23								
28.0									
30.0									
32.0 – 10.0									
34.0									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH12

Job Number: 34896-100

Drill Date: December 03, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph (25 50 75)	Headspace (ppm)	Borehole
0.0 (0.0 m)	0.00	Ground Elevation							
	0.00	**TOPSOIL**							
2.0	-0.76								
	0.76	**CLAY TILL** Light brown silty clay till with sand, stiff, fine grained, dry, no staining or odour		1	SS	38			
4.0									
6.0	-1.98			2	SS	37			
(2.0 m)	1.98	**Sandy SILT** Light brown sandy silt, trace clay, dry,moist to wet @ 8', no staining or odour							
8.0	-2.74			3	SS	53			
	2.74	**Silty CLAY** Light brown silty clay, moist to wet, no staining or odour							
10.0				4	SS	35			
12.0		**Silty SAND** Grey silty sand with clay, fine grained, loose, moist, wet to saturated @ 16', no staining or odour							
(4.0 m) 14.0									
16.0				5	SS	52			
18.0									
20.0 (6.0 m)	-6.40			6	SS	45			
	6.40	**Silty CLAY** Grey silty clay, stiff, dense, fine grained, slightly moist, no staining or odour							
22.0									
24.0									
26.0 (8.0 m)	-8.23			7	SS	56			
	8.23								
28.0									
30.0									
32.0									
34.0 (10.0 m)									

Reviewed By: RBM

Method: Hollow Stem Auguring/Split Spoon

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT1

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, wood pieces, soft, damp					
2.0	-0.76						No seepage observed during excavation Caving @ 3 feet
	0.76	**Silty CLAY** Brown silty clay, sand seam @ 3-3.5 feet, soft, sticky, moist to very moist					
4.0							
6.0							
2.0							
8.0							
10.0	-3.20						
	3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT2

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets of corn, soft, damp					
	-0.46						
	0.46	**Clayey SILT** Brown silt and clay, some sand, damp to very moist,soft, no staining or odour					No seepage observed during excavation
2.0							
4.0	-1.37						
	1.37	**Silty CLAY** Brown silty clay, little sand, sticky, moist, no staining or odour					
6.0							
2.0							
8.0	-2.44						
	2.44	**Sandy SILT** Grey sandy silt, clayey, fine grained, moist to slight wet					
10.0							
	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT3

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets of corn, soft, damp					
	-0.46						
	0.46	**SILT** Brown ssandy clayey silt, loose, damp, no staining or odour					No seepage observed during excavation
2.0							
	-1.07						
	1.07	**Silty CLAY** Brown to dark brown silty clay, little sand, hard, moist to damp, no staining or odour					
4.0							
6.0							
2.0							
8.0							
10.0							
	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT4

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 (ft) / 0.0 (m)	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46 0.46	**Silty CLAY** Brown silty clay, little sand, damp to moist, changing to grey below 8' and damp to dry with trace sand, no staining or odour					No seepage observed during excavation
2.0							
4.0							
6.0							
2.0 (m)							
8.0							
10.0	-3.35 3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Logged By: YXM

Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT5

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Sandy SILT** Brown to dark brown sandy clayey silt, few big stones @ 2-2.5', trace gry sand @ 2.5' , no staining or odour					No seepage observed during excavation
2.0	-0.91						
	0.91	**Silty CLAY** Brown to dark brown silty clay, trace sand, hard, sticky, damp, no staining or odour					
4.0							
6.0							
2.0							
8.0							
10.0	-3.20						
	3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT6

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft / m	0.00	Ground Elevation					
0.0 / 0.0	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Silty CLAY** Brown silty clay, trace sand, sticky, trace stones @ 4'and getting hard and dry below 4', more stones and clayey @ 7', no staining or odour					No seepage observed during excavation
2.0 / 2.0							
4.0							
6.0							
8.0							
10.0	-3.05						
	3.05						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT7

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft / 0.0 m	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
2.0	-0.61 0.61	**Sandy SILT** Brown sandy clayey silt, gravelly, loose, dry to moist, no staining or odour					
4.0	-1.22 1.22	**Silty CLAY** Brown to dark brown silty clay, hard, sticky, damp to moist, no staining or odour					
6.0 — 2.0	-1.68 1.68	**SAND AND GRAVEL** Brown sand and gravel, some clay, saturated, no staining or odour					Seepage observed during excavation @6'
8.0	-2.13 2.13	**Silty CLAY** Brown silty clay, gravelly, moist, no staining or odour					
10.0	-3.20 3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT8

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46 / 0.46	**Silty CLAY** Brown silty clay, little sand, stones @ and below 6' (few big boulders), damp to little moist, no staining or odour moist, getting dry and hard below 4', more stones @ 7', more clayey and sticky below 7', no staining or odour					No seepage observed during excavation
2.0							
4.0							
6.0							
2.0							
8.0							
	-2.59 / 2.59	Grey to dark grey silty clay, hard, damp					
10.0							
	-3.20 / 3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT9

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Sandy SILT** Brown sandy silt, clayey, fine grained, loose, damp, no staining or odour					No seepage observed during excavation
2.0	-0.91						
	0.91	**Silty CLAY** Brown silty clay, little sand, soft, damp to slight moist					
4.0							
6.0							
2.0							
8.0							
10.0							
	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT10

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
ft m 0.0 0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Clayey SILT** Brown clayey silt, some sand, loose, fine grained,moist to wet, no staining or odour					Seepage observed during excavation @ 3.5'
2.0							
	-1.22						
4.0	1.22	**Silty CLAY** Brown silty clay, little sand, soft, moist, no staining or odour					
6.0							
2.0							
8.0							
10.0							
	-3.20						
	3.20						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT11

Job Number: 34896-100

Date: December 21, 2010

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0	0.00	Ground Elevation					
	0.00	**TOPSOIL** Dark brown topsoil, rootlets, soft, damp					
	-0.46						
	0.46	**Sandy SILT** Brown sandy silt, clayey, fine grained, loose, moist, no staining or odour					No seepage observed during excavation
2.0							
	-1.22						
4.0	1.22	**SILT AND CLAY** Brown silt and clay, some sand, very moist, no staining or odour					
6.0							
	-2.13						
	2.13	**Clayey SILT** Grey clayey sandy silt, fine grained, loose, slight wet, no staining or odour					
8.0							
10.0	-3.35						
	3.35						
12.0							

Reviewed By: RBM

Method: Backhoe

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

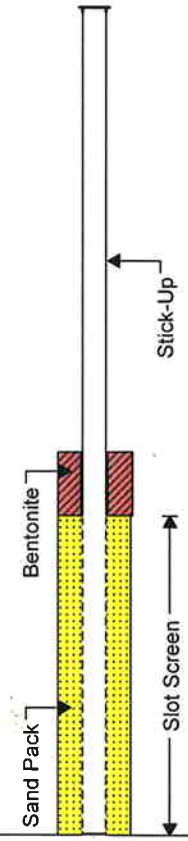
Location: Wilmot Lands

Mini-Piezometer: MP1-11

Job Number: 34896-100

Drill Date: January 11, 2011

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Recovery (%)	Headspace (ppm)	Groundwater Observations and Well Details
ft / m								
-4.0 / 1.0								
-2.0 /								
0.0 /	0.00	Ground Elevation						
	0.00	**TOPSOIL**						
	-0.15 / 0.15	**Silty SAND** Brownish grey silty sand, some organics, some clay, wet						
	-0.30 / 0.30	**Silty CLAY** Grey silty clay, some sand, wet to moist						
2.0 /	-0.91 / 0.91							
4.0 /								
6.0 /								



Reviewed By: RBM

Method: Hand Augering

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

Location: Wilmot Lands

Mini-Piezometer: MP2-11

Job Number: 34896-100

Drill Date: January 11, 2011

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Recovery (%)	Headspace (ppm)	Groundwater Observations and Well Details
ft / m -4.0 -2.0 0.0 2.0 1.0 4.0	0.00 0.00 -0.15 0.15 -0.61 0.61 -0.84 0.84	Ground Elevation **TOPSOIL** **Silty CLAY** Greyish brown silty clay, little to trace sand, very moist **Clayey SILT** Greyish brown clayey silt, some sand, moist to wet **Silty CLAY** Grey silty clay, hard, moist						Stick-Up Bentonite Sand Pack Slot Screen

Reviewed By: RBM

Method: Hand Augering

Notes:

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Sheet: 1 of 1

Client: Wilmot Employment Lands

Project: Hydrogeological Investigations

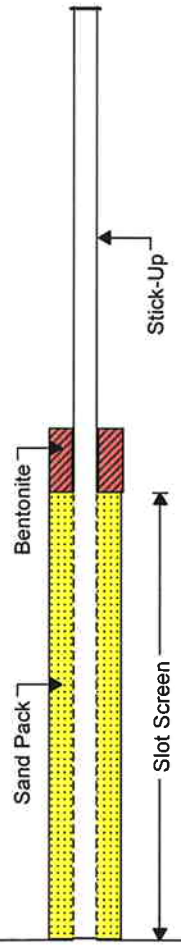
Location: Wilmot Lands

Mini-Piezometer: MP3-11

Job Number: 34896-100

Drill Date: January 11, 2011

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Recovery (%)	Headspace (ppm)	Groundwater Observations and Well Details
ft / m								
-4.0								
-2.0								
0.0	0.00	Ground Elevation						
	0.00	**TOPSOIL**						
	-0.15 / 0.15	**Clayey SILT** Dark grey clayey silt, some sand, wet						
		Sandy SILT Brown sandy silt, some clay, moist to wet						
2.0		**Silty CLAY** Brown silty cly, some sand, trace stone, moist						
1.0	-1.07 / 1.07	**Silty SAND** Brown silty sand, clayey, wet						
4.0	-1.22 / 1.22							



Reviewed By: RBM

Method: Hand Augering

Notes:

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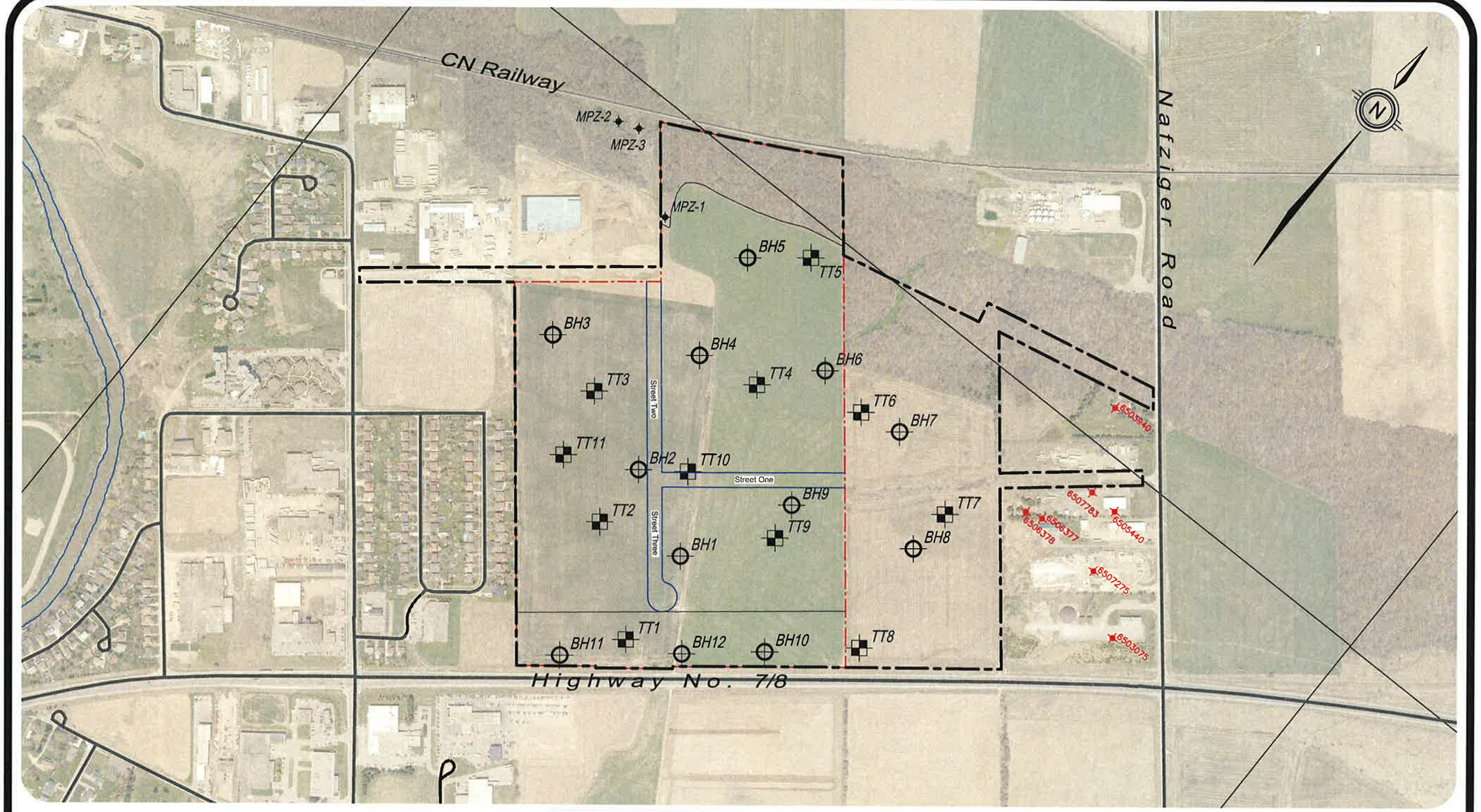
Sheet: 1 of 1

MOE WELL RECORDS

MOE_ID	EASTING	NORTHING	ELEVATION (m)	FROM (m)	TO (m)	MATERIAL	WATER LEVEL (m)
6507783	525474	4803928	342.3	0.00	19.81	CLAY	4.57
				19.81	23.16	GRAVEL	
				23.16	64.00	HARDPAN	
				64.00	70.10	LIMESTONE	
6503075	525662.46	4803750.31	347.48	0.00	16.76	CLAY	
				16.76	19.20	GRAVEL	
6503940	525412.46	4804070.29	347.48	0.00	9.14	CLAY	
				9.14	15.24	GRAVEL	
6505440	525526.47	4803926.31	345.04	0.00	9.75	CLAY	
				9.75	13.72	SAND	
				13.72	24.38	CLAY	
6506377	525433.47	4803837.31	345.04	0.00	10.36	CLAY	6.10
				10.36	11.28	SAND	
				11.28	11.58	MEDIUM SAND	
				11.58	13.72	SAND	
6506378	525404.47	4803828.31	345.04	0.00	10.67	CLAY	
				10.67	15.85	SAND	
				15.85	16.76	CLAY	
6507275	525562.47	4803821.3	345.95	0.00	3.66	STONES	8.23
				3.66	7.32	CLAY	
				7.32	21.34	STONES	
				21.34	35.05	SILT	
				35.05	38.41	BOULDERS	
				38.41	57.91	ROCK	



LEGEND

- BH9 — Borehole
- TT4 — Test Trench / Test Pit
- 6503075 — MOE Wells & I.D. Number
- MPZ-1 — Mini Piezometer

25 YEARS 1985-2010

MTE

ENVIRONMENTAL DIVISION

Figure 4 BOREHOLE , TEST TRENCH & MOE WELL LOCATIONS

Project Name	
Wilmot Employment Lands Enhanced Master Drainage Plan	
Site: Wilmot Employment Lands, Township of Wilmot, Ontario	Client: Township of Wilmot
Scale: 1:10,000	MTE Project No.: 34896-100
Date: February 2011	Layout No.: EV1.5

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 101

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 13, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 338.59					
0.0	338.54	TOPSOIL: Dark brown clayey silt, frozen					
		CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL		1	SS	8	338
1.0				2	SS	19	
2.0				3	SS	25	337
				4	SS	28	336
3.0	3.0 335.6	becoming stiff, grey, APL		5	SS	9	
4.0							335
5.0				6	SS	10	334
6.0	6.1 332.5	becoming very stiff, occasional silt layers, wet		7	SS	21	333
7.0							332
8.0				8	SS	18	331
9.0				9	SS	18	330
10.0							329
11.0	11.1 327.5	BOREHOLE TERMINATED AT 11.1 m		10	SS	23	328
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling, no free water in cased borehole

Water Level Readings:
Initial Depth: 10.6 m
Elevation: 327.99

2018-04-08:
Depth: 1.03 m
Elevation: 337.56

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 102

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
		SURFACE ELEVATION 336.06			
0.0	336.06	TOPSOIL: Dark brown clayey silt topsoil, frozen	1	SS	6
0.33	335.73	CLAYEY SILT: Firm brown clayey silt, some sand, APL	2	SS	4
1.5	334.6	becoming stiff, layered with brown silt, some fine sand, wet	3	SS	14
			4	SS	25
3.0	333.1	becoming grey clayey silt, trace sand, DTPL, occasional sand partings	5	SS	13
			6	AS	
			7	SS	13
			8	SS	11
			9	SS	22
8.1	328.0	BOREHOLE TERMINATED AT 8.1 m			

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%)

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete

50 mm Plastic Riser

Bentonite Seal

Filter Sand

Slotted Screen

Upon completion of drilling, no free water in cased borehole

Water Level Readings:
Initial: Dry

2018-04-08:
Depth: 0.93 m
Elevation: 335.13

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 103

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
		SURFACE ELEVATION 333.72							
0.0		TOPSOIL: Dark brown clayey silt, frozen							
0.25	333.47	CLAYEY SILT: Firm brown clayey silt, trace sand, moist		1	SS	6			
0.76	332.96	SILT: Loose brown sandy silt, trace clay, moist		2	SS	8	333		
1.0									
1.5	332.2	becoming compact, occasional clayey lenses		3	SS	11	332		
2.0				4	SS	16			
3.0	330.7	CLAYEY SILT: Stiff grey clayey silt, trace sand, APL		5	SS	14	331		
3.0				6	GS				
4.0							330		
5.0				7	SS	12	329		
6.0				8	SS	13	328		
7.0							327		
8.0	8.1			9	SS	12	326		
8.1	325.6	BOREHOLE TERMINATED AT 8.1 m							
9.0									
10.0									
11.0									
12.0									
13.0									
14.0									
15.0									

SHEAR STRENGTH (kPa)
+FIELD VANE △TORVANE ○ Qu
▲POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling, no free water in cased borehole

Water Level Readings:
Initial: Dry

2018/04/08:
Depth: 6.73 m
Elevation: 326.99

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 104

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 13, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 339.03					
0.25	338.78	TOPSOIL: Dark brown clayey silt, frozen CLAYEY SILT: Firm to very stiff brown clayey silt, trace sand, moist		1	SS	8	
				2	SS	13	338
1.5	337.5	numerous wet silt layers		3	SS	12	
				4	SS	15	337
3.0	336.0	SILT: Compact grey silt, some sand, occasional clayey lenses, saturated		5	SS	18	336
				6	SS	25	335
				7	SS	24	334
7.6	331.4	becoming dense		8	SS	31	333
							332
9.1	329.9	CLAYEY SILT: Very stiff grey clayey silt, APL, numerous saturated silt layers		9	SS	21	331
							330
							329
11.1	327.9	BOREHOLE TERMINATED AT 11.1 m		10	SS	26	328

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

During drilling sampler wet from SS4 to completion
Water Level Readings:
Initial Depth: 10.4 m
Elevation: 328.63 m

2018-04-08:
Depth: 0.76 m
Elevation: 338.27

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 105

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES
	340.48	SURFACE ELEVATION 340.48				
0.0		TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	5
0.36	340.12	CLAYEY SILT: Firm brown clayey silt, some sand, APL		2	SS	7
1.0				3	SS	6
2.0						
2.3	338.2	becoming stiff, grey, no zones		4	SS	12
3.0				5	SS	12
4.0						
4.5	336.0	SANDY SILT: Compact grey sandy silt, saturated, occasional clayey lenses		6	SS	16
5.0						
6.0						
6.1	334.4	CLAYEY SILT: Very stiff grey clayey silt, trace sand, DTPL, occasional silt lenses, wet		7	SS	17
7.0						
8.0				8	SS	19
8.1	332.4	BOREHOLE TERMINATED AT 8.1 m				
9.0						
10.0						
11.0						
12.0						
13.0						
14.0						
15.0						

ELEVATION SCALE: 340, 339, 338, 337, 336, 335, 334, 333

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling no free water in cased borehole

Water Level Readings:
Initial Depth: 5.7 m
Elevation: 334.78

2018-04-08:
Depth: 0.85 m
Elevation: 339.63

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 106

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 339.91					
0.25	339.66	TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	9	
		CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL		2	SS	17	339
				3	SS	18	338
				4	SS	18	
				5	SS	12	337
4.5	335.4	becoming firm, grey, occasional silt layers, wet		6	SS	7	336
6.1	333.8	SILT: Compact grey silt, some sand, trace clay, wet, occasional clayey layers		7	SS	13	335
6.5	333.4	BOREHOLE TERMINATED AT 6.5 m					334

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

Upon completion of drilling no free water in cased borehole

Water Level Readings:
Initial Depth: 4.5 m
Elevation: 335.41

2018-04-08:
Depth: 2.76 m
Elevation: 337.15

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 107

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 13, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	NUMBER	TYPE	"N" VALUES
	338.38	SURFACE ELEVATION 338.38			
0.27	338.11	TOPSOIL: Dark brown clayey silt, trace sand, frozen	1	SS	8
		CLAYEY SILT: Firm brown clayey silt, some sand, APL	2	SS	7
1.5	336.9	becoming stiff, layered with brown silt, some sand, trace clay, moist	3	SS	9
2.3					
2.5	335.9	becoming very stiff/compact becoming grey, no layers	4	SS	28
			5	SS	25
			6	SS	14
6.0	332.4	becoming very stiff, occasional silt layers	7	SS	16
7.6	330.8	becoming stiff	8	SS	9
8.1	330.3	BOREHOLE TERMINATED AT 8.1 m			

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Stickup Well Protector Set in Concrete
50 mm Plastic Riser
Bentonite Seal
Filter Sand
Slotted Screen

During drilling sampler wet at SS4 and SS5

Water Level Readings:
Initial Depth: 7.4 m
Elevation: 330.98

2018-04-08:
Depth: 0.46 m
Elevation: 337.84

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 108

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 12, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q / DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
		SURFACE ELEVATION 340.05						50 100 150 200 / 20 40 60 80	10 20 30 40		
0.0	0.20	TOPSOIL: Dark brown clayey silt, trace									
	339.85	sand, frozen		1	SS	10					
		CLAYEY SILT: Stiff brown clayey silt, trace sand, DTPL									
1.0				2	SS	11	339				
	1.5										
	338.6	becoming very stiff, occasional silty sand layers		3	SS	16					
2.0	2.3						338				
	337.8	SILT: Compact grey silt, some sand, trace clay, wet		4	SS	14					
3.0				5	SS	10	337				
	3.5										
	336.6	CLAYEY SILT: Stiff grey clayey silt, trace sand, APL									
4.0							336				
				6	SS	10					
5.0							335				
6.0							334				
				7	SS	15					
7.0							333				
	7.6										
	332.5	becoming APL, numerous silt layers, wet		8	SS	13					Sampler wet from 7.6 m to completion
8.0							332				
9.0							331				
				9	SS	17					
10.0							330				
				10	SS	14					
11.0	11.1						329				
	329.0	BOREHOLE TERMINATED AT 11.1 m									Upon completion of augering Open No free water
12.0											
13.0											
14.0											
15.0											

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 109

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 12, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Hollow Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	GROUND WATER OBSERVATIONS AND REMARKS
		SURFACE ELEVATION 337.86					
0.21	337.65	TOPSOIL: Dark brown clayey silt, some sand, frozen		1	SS	9	
		CLAYEY SILT: Firm brown clayey silt, trace sand, APL		2	SS	5	
				3	SS	4	
2.3	335.6	becoming stiff, DTPL, occasional sand seams, wet		4	SS	14	Sampler wet at 2.3 m
				5	SS	14	
4.5	333.4	SILTY SAND: Compact grey silty sand, trace clay, saturated		6	SS	26	Sampler wet at 4.5 m
6.0	331.9	CLAYEY SILT: Very stiff grey clayey silt, trace sand, APL		7	SS	20	
				8	SS	22	
8.1	329.8	occasional sand seams, wet					Sampler wet at 8.1 m
				9	SS	17	
				10	SS	14	
11.1	326.8	BOREHOLE TERMINATED AT 11.1 m					Upon completion of augering Open Free water at 6.0 m

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 111

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN W. Loghrin

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE	SHEAR STRENGTH (kPa) / WATER CONTENT (%)	UNIT WEIGHT kN/m³	GROUND WATER OBSERVATIONS AND REMARKS / GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SURFACE ELEVATION 347.31								
0.45 / 346.86	FILL: 150 mm dark brown silt, over dark brown clayey silt, DTPL-APL		1	SS	10	347			
	CLAYEY SILT: Very stiff brown clayey silt, trace sand, trace gravel, DTPL		2	SS	15				
			3	SS	21	346			
2.9 / 344.4	becoming grey/brown, APL		4	SS	14	345			
3.6 / 343.7	BOREHOLE TERMINATED AT 3.6 m					344			Upon completion of augering Open No free water

SHEAR STRENGTH (kPa): + FIELD VANE △ TORVANE ○ Qu ▲ POCKET PENETROMETER ○ Q; 50 100 150 200; DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●; 20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30 40

0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 112

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	"N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 344.26					
0.0	344.16	TOPSOIL: Dark brown clayey silt, some sand, moist		1	SS	12	344
		CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL		2	SS	18	
1.0							343
2.0				3	SS	17	342
3.0	3.0 341.3	becoming stiff, APL, occasional silt seams, wet		4	SS	13	341
	3.7 340.6	BOREHOLE TERMINATED AT 3.7 m					
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

Upon completion of augering
Open
No free water

GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 113

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 342.07					
0.0	342.07	TOPSOIL: Dark brown clayey silt, trace sand, moist		1	SS	7	342
0.33	341.74	CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, DTPL to APL, occasional silt zones		2	SS	9	341
2.0				3	SS	10	340
3.0	339.1	SILT: Dense grey silt, some sand, saturated		4	SS	32	339
3.7	338.4	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering Wet Cave at 3.0 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 114

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 340.11					
0.20 / 339.91	TOPSOIL: Dark brown clayey silt, moist					
	CLAYEY SILT: Stiff brown clayey silt, trace sand, DTPL to APL		1	SS	7	
			2	SS	9	
2.0 / 338.1	SILT: Compact brown silt, some sand, wet, occasional clayey zones		3	SS	14	
			4	SS	17	
3.7 / 336.4	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 115

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 14, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 336.82					
0.15	336.67	TOPSOIL: Dark brown clayey silt, trace sand, frozen		1	SS	9	
		SILT: Loose brown silt, some sand, trace clay, moist		2	SS	6	336
				3	SS	11	335
2.3	334.5	CLAYEY SILT: Stiff brown clayey silt, trace sand, APL, occasional sand layers		4	SS	10	
3.0	333.8	becoming grey		5	SS	11	334
4.5	332.3	becoming layered with grey silt, some sand, wet		6	SS	12	333
				7	SS	10	332
6.5	330.3	BOREHOLE TERMINATED AT 6.5 m					331

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 116

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 338.96					
0.0	338.96						
0.20	338.76	TOPSOIL: Dark brown clayey silt, APL		1	SS	5	
0.60	338.36	CLAYEY SILT: Firm brown clayey silt, trace sand, trace gravel, APL becoming very stiff, DTPL		2	SS	15	338
1.0							
2.0				3	SS	23	337
3.0	336.0	becoming hard, grey		4	SS	47	336
3.7	335.3	BOREHOLE TERMINATED AT 3.7 m					
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							
13.0							
14.0							
15.0							

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

Upon completion of augering
Open
No free water

GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 117

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 339.58					
0.20	339.38	TOPSOIL: Dark brown clayey silt, APL					
		CLAYEY SILT: Firm brown clayey silt, some sand, APL		1	SS	5	339
				2	SS	6	
1.5	338.1	occasional sand seams, wet					338
				3	SS	4	337
3.0	336.6	becoming hard, DTPL, occasional sand partings		4	SS	54	336
3.7	335.9	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Sampler wet at 3.0 m

Upon completion of augering
Open
Free water at 2.4 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 118

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres)	ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
		SURFACE ELEVATION 341.51					
0.0	341.51	TOPSOIL: Dark brown clayey silt, trace sand, moist		1	SS	10	341
		CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, APL		2	SS	10	
1.5	340.0	becoming very stiff, DTPL		3	SS	22	340
3.0	338.5	becoming hard, grey, occasional sand layers, wet		4	SS	38	339
3.7	337.8	BOREHOLE TERMINATED AT 3.7 m					338

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS
GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Wet cave at 3.0 m

NOTES

Peto MacCallum Ltd.
CONSULTING ENGINEERS

LOG OF BOREHOLE NO. 119

PROJECT Proposed Development - Wilmot Employment Lands
PML REF. 18KF009
LOCATION New Hamburg, Ontario
BORING DATE March 26, 2018
ENGINEER W. Loghrin
BORING METHOD Continuous Flight Solid Stem Augers
TECHNICIAN D. Brice

DEPTH (metres) / ELEV	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" VALUES	ELEVATION SCALE
	SURFACE ELEVATION 345.30					
345.22	FILL: Dark brown clayey silt topsoil, trace sand, damp		1	SS	19	345
0.75	becoming brown silt, some sand, some gravel, trace clay, damp					
344.55	CLAYEY SILT: Stiff brown clayey silt, trace sand, trace gravel, DTPL		2	SS	15	344
1.5						
343.8	becoming APL, occasional silt layers, moist to wet		3	SS	10	343
			4	SS	10	342
3.7						
341.6	BOREHOLE TERMINATED AT 3.7 m					

SHEAR STRENGTH (kPa)
+ FIELD VANE △ TORVANE ○ Qu
▲ POCKET PENETROMETER ○ Q
50 100 150 200
DYNAMIC CONE PENETRATION ×
STANDARD PENETRATION TEST ●
20 40 60 80

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30 40

UNIT WEIGHT kN/m³

GROUND WATER OBSERVATIONS AND REMARKS

GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Upon completion of augering
Open
No free water

0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0

NOTES

APPENDIX B

ENGINEERED FILL

ENGINEERED FILL

The information presented in this appendix is intended for general guidance only. Site specific conditions and prevailing weather may require modification of compaction standards, backfill type or procedures. Each site must be discussed, and procedures agreed with Peto MacCallum Ltd. prior to the start of the earthworks and must be subject to ongoing review during construction. This appendix is not intended to apply to embankments. Steeply sloping ravine residential lots require special consideration.

For fill to be classified as engineered fill suitable for supporting structural loads, a number of conditions must be satisfied, including but not necessarily limited to the following:

1. Purpose

The site specific purpose of the engineered fill must be recognized. In advance of construction, all parties should discuss the project and its requirements and agree on an appropriate set of standards and procedures.

2. Minimum Extent

The engineered fill envelope must extend beyond the footprint of the structure to be supported. The minimum extent of the envelope should be defined from a geotechnical perspective by:

- at founding level, extend a minimum 1.0 m beyond the outer edge of the foundations, greater if adequate layout has not yet been completed as noted below; and
- extend downward and outward at a slope no greater than 45° to meet the subgrade

All fill within the envelope established above must meet the requirements of engineered fill in order to support the structure safely. Other considerations such as survey control, or construction methods may require an envelope that is larger, as noted in the following sections.

Once the minimum envelope has been established, structures must not be moved or extended without consultation with Peto MacCallum Ltd. Similarly, Peto MacCallum Ltd. should be consulted prior to any excavation within the minimum envelope.

3. Survey Control

Accurate survey control is essential to the success of an engineered fill project. The boundaries of the engineered fill must be laid out by a surveyor in consultation with engineering staff from Peto MacCallum Ltd. Careful consideration of the maximum building envelope is required.

During construction it is necessary to have a qualified surveyor provide total station control on the three dimensional extent of filling.

4. Subsurface Preparation

Prior to placement of fill, the subgrade must be prepared to the satisfaction of Peto MacCallum Ltd. All deleterious material must be removed and in some cases, excavation of native mineral soils may be required.

Particular attention must be paid to wet subgrades and possible additional measures required to achieve sufficient compaction. Where fill is placed against a slope, benching may be necessary and natural drainage paths must not be blocked.

5. Suitable Fill Materials

All material to be used as fill must be approved by Peto MacCallum Ltd. Such approval will be influenced by many factors and must be site and project specific. External fill sources must be sampled, tested and approved prior to material being hauled to site.

6. Test Section

In advance of the start of construction of the engineered fill pad, the Contractor should conduct a test section. The compaction criterion will be assessed in consultation with Peto MacCallum Ltd. for the various fill material types using different lift thicknesses and number of passes for the compaction equipment proposed by the Contractor.

Additional test sections may be required throughout the course of the project to reflect changes in fill sources, natural moisture content of the material and weather conditions.

The Contractor should be particularly aware of changes in the moisture content of fill material. Site review by Peto MacCallum Ltd. is required to ensure the desired lift thickness is maintained and that each lift is systematically compacted, tested and approved before a subsequent lift is commenced.

7. Inspection and Testing

Uniform, thorough compaction is crucial to the performance of the engineered fill and the supported structure. Hence, all subgrade preparation, filling and compacting must be carried out under the full time inspection by Peto MacCallum Ltd.

All founding surfaces for all buildings and residential dwellings or any part thereof (including but not limited to footings and floor slabs) on structural fill or native soils must be inspected and approved by PML engineering personnel prior to placement of the base/subbase granular material and/or concrete. The purpose of the inspection is to ensure the subgrade soils are capable of supporting the building/house foundation and floor slab loads and to confirm the building/house envelope does not extend beyond the limits of any structural fill pads.

8. Protection of Fill

Fill is generally more susceptible to the effects of weather than natural soil. Fill placed and approved to the level at which structural support is required must be protected from excessive wetting, drying, erosion or freezing. Where adequate protection has not been provided, it may be necessary to provide deeper footings or to strip and recompact some of the fill.

9. Construction Delay Time Considerations

The integrity of the fill pad can deteriorate due to the harsh effects of our Canadian weather. Hence, particular care must be taken if the fill pad is constructed over a long time period.

It is necessary therefore, that all fill sources are tested to ensure the material compactability prior to the soil arriving at site. When there has been a lengthy delay between construction periods of the fill pad, it is necessary to conduct subgrade proof rolling, test pits or boreholes to verify the adequacy of the exposed subgrade to accept new fill material.

When the fill pad will be constructed over a lengthy period of time, a field survey should be completed at the end of each construction season to verify the areal extent and the level at which the compacted fill has been brought up to, tested and approved.

In the following spring, subexcavation may be necessary if the fill pad has been softened attributable to ponded surface water or freeze/thaw cycles.

A new survey is required at the beginning of the next construction season to verify that random dumping and/or spreading of fill has not been carried out at the site.

10. Approved Fill Pad Surveillance

It should be appreciated that once the fill pad has been brought to final grade and documented by field survey, there must be ongoing surveillance to ensure that the integrity of the fill pad is not threatened.

Grading operations adjacent to fill pads can often take place several months or years after completion of the fill pad.

It is imperative that all site management and supervision staff, the staff of Contractors and earthwork operators be fully aware of the boundaries of all approved engineered fill pads.

Excavation into an approved engineered fill pad should never be contemplated without the full knowledge, approval and documentation by the geotechnical consultant.

If the fill pad is knowingly built several years in advance of ultimate construction, the areal limits of the fill pad should be substantially overbuilt laterally to allow for changes in possible structure location and elevation and other earthwork operations and competing interests on the site. The overbuilt distance required is project and/or site specified.

Iron bars should be placed at the corner/intermediate points of the fill pad as a permanent record of the approved limits of the work for record keeping purposes.

11. Unusual Working Conditions

Construction of fill pads may at times take place at night and/or during periods of freezing weather conditions because of the requirements of the project schedule. It should be appreciated therefore, that both situations present more difficult working conditions. The Owner, Contractor, Design Consultant and Geotechnical Engineer must be willing to work together to revise site construction procedures, enhance field testing and surveillance, and incorporate design modifications as necessary to suit site conditions.

When working at night there must be sufficient artificial light to properly illuminate the fill pad and borrow areas.

Placement of material to form an engineered fill pad during winter and freezing temperatures has its own special conditions that must be addressed. It is imperative that each day prior to placement of new fill, the exposed subgrade must be inspected and any overnight snow or frozen material removed. Particular attention should be given to the borrow source inspection to ensure only nonfrozen fill is brought to the site.

The Contractor must continually assess the work program and have the necessary spreading and compacting equipment to ensure that densification of the fill material takes place in a minimum amount of time. Changes may be required to the spreading methods, lift thickness, and compaction techniques to ensure the desired compaction is achieved uniformly throughout each fill lift.

The Contractor should adequately protect the subgrade at the end of each shift to minimize frost penetration overnight. Since water cannot be added to the fill material to facilitate compaction, it is imperative that densification of the fill be achieved by additional compaction effort and an appropriate reduced lift thickness. Once the fill pad has been completed, it must be properly protected from freezing temperatures and ponding of water during the spring thaw period.

If the pad is unusually thick or if the fill thickness varies dramatically across the width or length of the fill pad, Peto MacCallum Ltd. should be consulted for additional recommendations. In this case, alternative special provisions may be recommended, such as providing a surcharge preload for a limited time or increase the degree of compaction of the fill.

APPENDIX C

STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS

This report is prepared for and made available for the sole use of the client named. Peto MacCallum Ltd. (PML) hereby disclaims any liability or responsibility to any person or entity, other than those for whom this report is specifically issued, for any loss, damage, expenses, or penalties that may arise or result from the use of any information or recommendations contained in this report. The contents of this report may not be used or relied upon by any other person without the express written consent and authorization of PML.

This report shall not be relied upon for any purpose other than as agreed with the client named without the written consent of PML. It shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. A portion of this report may not be used as a separate entity: that is to say the report is to be read in its entirety at all times.

The report is based solely on the scope of services which are specifically referred to in this report. No physical or intrusive testing has been performed, except as specifically referenced in this report. This report is not a certification of compliance with past or present regulations, codes, guidelines and policies.

The scope of services carried out by PML is based on details of the proposed development and land use to address certain issues, purposes and objectives with respect to the specific site as identified by the client. Services not expressly set forth in writing are expressly excluded from the services provided by PML. In other words, PML has not performed any observations, investigations, study analysis, engineering evaluation or testing that is not specifically listed in the scope of services in this report. PML assumes no responsibility or duty to the client for any such services and shall not be liable for failing to discover any condition, whose discovery would require the performance of services not specifically referred to in this report.

The findings an comments made by PML in this report are based on the conditions observed at the time of PML's site reconnaissance. No assurances can be made and no assurances are given with respect to any potential changes in site conditions following the time of completion of PML's field work. Furthermore, regulations, codes and guidelines may change at any time subsequent to the date of this report and these changes may effect the validity of the findings and recommendations given in this report.

STATEMENT OF LIMITATIONS

The results and conclusions with respect to site conditions are therefore in no way intended to be taken as a guarantee or representation, expressed or implied, that the site is free from any contaminants from past or current land use activities or that the conditions in all areas of the site and beneath or within structures are the same as those areas specifically sampled.

Any investigation, examination, measurements or sampling explorations at a particular location may not be representative of conditions between sampled locations. Soil, ground water, surface water, or building material conditions between and beyond the sampled locations may differ from those encountered at the sampling locations and conditions may become apparent during construction which could not be detected or anticipated at the time of the intrusive sampling investigation.

Budget estimates contained in this report are to be viewed as an engineering estimate of probable costs and provided solely for the purposes of assisting the client in its budgeting process. It is understood and agreed that PML will not in any way be held liable as a result of any budget figures provided by it.

The Client expressly waives its right to withhold PML's fees, either in whole or in part, or to make any claim or commence any action or bring any other proceedings, whether in contract, tort, or otherwise against PML in anyway connected with advice or information given by PML relating to the cost estimate or Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate.

MTE FILE No: 34896-104-EC1.1

EXISTING CONDITIONS PLAN

P:\P\34896\104\34896-104-P-EC1

LEGEND

- SITE BOUNDARY
- EXISTING CONTOURS
- EXISTING EMBANKMENT (SLOPE AS NOTED)
- EXISTING WATERMAIN
- EXISTING SANITARY
- EXISTING STORM
- EXISTING FENCE
- EXISTING DRIPLINE
- HAND HOLE (HH#0A8)
- MONITORING WELL (MW101-10)
- BOREHOLE (BH 4)
- TEST PIT (TP 202)
- EXISTING REGULATORY FLOODPLAIN (GRCA)
- EXISTING REGULATION LIMIT (GRCA)
- EXISTING WATERCOURSE (GRCA)
- EXISTING WETLAND (GRCA)

PFENNING FARM

GODERICH-EXETER RAILWAY

EX. WETLAND

IRON BRIDGE MANUFACTURING

PESTELL'S

ALPINE SOLUTIONS

CAPTAIN McCALLUM DRIVE

NITHVIEW HEIGHTS SUBDIVISION

BOULLEE STREET

HAMILTON ROAD

HAMILTON HEIGHTS SUBDIVISION

GOOD STREET

MAURICE STREET

BADENVIEW DEVELOPMENTS INC.
(FORMER GOOD LANDS)

NEW HAMBURGLRS INC.
(FORMER SCHNEIDER LANDS)

NAFZIGER ROAD

WILMOT RECREATION COMPLEX

WILMOT HIGHWAY 7/8 MAINTENANCE LANDS

KLASSEN BRONZE

MARVIN STREET

HIGHWAY 7 & 8

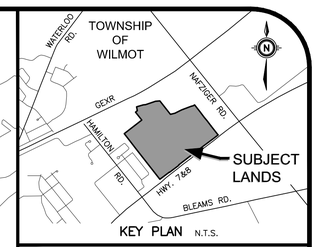
HAMILTON CULVERT
900mmØ Conc.

WESTERN CULVERT
1530x1530mm Conc. Box

EASTERN CULVERT
1200x1200mm Conc. Box

WEST TRIBUTARY

EAST TRIBUTARY



KEY PLAN N.T.S.

GEODETIC BM ELEV. = 342.487m

ONE STOREY RED BRICK BUILDING (HAHN BRASS CO.) ON THE NORTH SIDE OF HWY.7&8, BEING 0.6km SOUTH ALONG PEEL ST. EVANGELICAL UNITED CHURCH IN NEW HAMBURG. TABLET IS SET HORIZONTALLY IN SOUTH FACE OF CONC. FOUNDATION, BEING 62m NORTH OF CENTRELINE OF HIGHWAY, 2.26m EAST OF SOUTHWEST CORNER AND 24cm BELOW THE FIRST COURSE OF BRICKWORK.

SITE BENCHMARK ELEV. = 336.032m

CUT CROSS ON CONCRETE BOX CULVERT LOCATED WEST OF FIELD ENTRANCE.

NOTE TO CONTRACTOR :

DO NOT SCALE DRAWINGS.

CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT M.T.E. CONSULTANTS INC. CANNOT CERTIFY ANY COMPONENT OF THE SITE WORKS NOT INSPECTED DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY M.T.E. CONSULTANTS INC. PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.

No.	REVISION	BY	DATE
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1.	ISSUED FOR DRAFT PLAN APPROVAL	DFH	DEC.17/18

MTE
Engineers | Scientists | Surveyors
(519) 743-6500 www.mte85.com

OWNERS
BADENVIEW DEVELOPMENTS INC.
NEW HAMBURGLRS INC.

PROJECT
WILMOT EMPLOYMENT LANDS
New Hamburg

DRAWING
EXISTING CONDITIONS PLAN

Project Manager	D.HICKS	Project No.	34896-104 39219-104
Design By	NED	Checked By	GMK
Drawn By	RXB	Checked By	NED
Surveyed By	MTE	Drawing No.	EC1.1
Date	Oct.23/18		
Scale	1:2000	Sheet	of

December 19, 2018 – 1:33 p.m. – Plotted By: ndamaren

34896-104-AG1.1

MTE FILE No:

PRELIMINARY FINISHED GRADE CONTOUR PLAN

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LEGEND

- SITE BOUNDARY
- EXISTING CONTOURS
- EXISTING EMBANKMENT (SLOPE AS NOTED) (TOP) (BOTTOM)
- EXISTING DRIPLINE
- EXISTING REGULATION LIMIT (GRCA)
- EXISTING WATERCOURSE (GRCA)
- EXISTING WETLAND (GRCA)
- PROPOSED SPOT ELEVATIONS EX =MAINTAIN EXISTING HP =HIGH POINT LP =LOW POINT
- PROPOSED CONTOURS
- DIRECTION OF DRAINAGE
- MAJOR OVERLAND FLOW ROUTE

PFENNING FARM

GODERICH-EXETER RAILWAY

EX. WETLAND

IRON BRIDGE MANUFACTURING

PESTELL'S

ALPINE SOLUTIONS

STREET ONE

CAPTAIN McCALLUM DRIVE

NITHVIEW HEIGHTS SUBDIVISION

BOULLEE STREET

HAMILTON ROAD

HAMILTON HEIGHTS SUBDIVISION

GOOD STREET

MAURICE STREET

STREET TWO

BADENVIEW DEVELOPMENTS INC.
(FORMER GOOD LANDS)

MUNICIPAL CHANNEL #1

STREET ONE

MUNICIPAL CHANNEL #2

STREET A

STREET THREE

MUNICIPAL CHANNEL #3

NEW HAMBURGLRS INC.
(FORMER SCHNEIDER LANDS)

STREET B

MUNICIPAL CHANNEL #2/3

CONCEPTUAL HWY. 7 & 8 RAMP

NAFZIGER ROAD

WILMOT RECREATION COMPLEX

WILMOT HIGHWAY 7/8 MAINTENANCE LANDS

MARVIN STREET

KLASSEN BRONZE

SWM FACILITY

HIGHWAY 7 & 8

HAMILTON CULVERT
900mmØ Conc.

WESTERN CULVERT
1530x1530mm Conc. Box

WEST TRIBUTARY

EASTERN CULVERT
1200x1200mm Conc. Box

EAST TRIBUTARY

December 19, 2018 – 9:45 a.m. – Plotted By: ndamaren

KEY PLAN N.T.S.

TOWNSHIP OF WILMOT
WATERLOO RD.
GCR#
HAMILTON RD.
NAFZIGER RD.
HWY. 7&8
BLEAMS RD.
SUBJECT LANDS

GEODETIC BM ELEV. = 342.487m

ONE STOREY RED BRICK BUILDING (HAHN BRASS CO.) ON THE NORTH SIDE OF HWY.7&8, BEING 0.6km SOUTH ALONG PEEL ST. EVANGELICAL UNITED CHURCH IN NEW HAMBURG. TABLET IS SET HORIZONTALLY IN SOUTH FACE OF CONC. FOUNDATION, BEING 62m NORTH OF CENTRELINE OF HIGHWAY, 2.26m EAST OF SOUTHWEST CORNER AND 24cm BELOW THE FIRST COURSE OF BRICKWORK.

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1.	ISSUED FOR DRAFT PLAN APPROVAL	DPH	DEC.17/18

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OWNERS
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PROJECT
WILMOT EMPLOYMENT LANDS
New Hamburg

DRAWING
PRELIMINARY FINISHED GRADE CONTOUR PLAN

Project Manager	D.HICKS	Project No.	34896-104 39219-104
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