

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

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1.0 INTRODUCTION

1.1 Overview

MTE Consultants Inc. (MTE) was retained by Badenview Developments Inc. and New HamburgIrs Inc. to prepare the following Preliminary Stormwater Management Report in support of two Draft Plan of Subdivision applications. The Badenview and New HamburgIrs 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 HamburgIrs 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 Report* (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.



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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.



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**.

		Western	n Tributary		Eastern	Tributary
Storm Event	EN	IDP	MTE 2	018	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

TABLE 2.1 – ATTENUATED PRE-DEVELOPMENT PEAK RUNOFF RATES (M³/s)

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**.



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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 rightof-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 196.85m³/ha of storage, 40m³/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 24,109m³ and 6,148m³, 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 17,008m³, which combined with a 16,201m³ of permanent pool within the wetpond makes for a total permanent pool volume of 33,209m³. In order to provide a minimum 24 hour extended detention (maximum 48 hour) for the 6,148m³ of storage, a 300mm diameter orifice has been used. Similarly, the 12.5mm Storm Event (6,500m³) 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.

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 m³/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 Controle	
Rottom Draw, Reverse slope pine (MH 29)	
Orifice 1 Diameter (Extended Detention)	300mm
Orifice 1 Elevation (Extended Detention)	334.55m

TABLE 5.1 - DESIGN CHARACTERISTICS





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5.3 Water Quantity

Flows for all storm events will be conveyed to the proposed SWM facility 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 98,022m³ 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.

Elevation (m)	Discharge (m ³ /s)	Volume (m³)	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

TABLE 5.2 – STAGE-STORAGE-DISCHARGE SUMMARY

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 (m³)	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**.

	Western Peak Ru	Tributary noff Rates	Eastern ⁻ Peak Run	Tributary off Rates
Storm Event	Pre- development (m ³ /s)	Post Development (m ³ /s)	Pre- development (m ³ /s)	Post Development (m³/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

TABLE 5.4 – PRE & POST-DEVELOPMENT PEAK RUNOFF RATES

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 m³/ha of live and dead storage respectively (total 250 m³/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.





Garett Korber, P.Eng. Design Engineer



APPENDIX A

DRAFT PLAN OF SUBDIVISIONS (REDUCED)

Drawing on experience...Building on

gth.





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Roads Notes Additional and the set of the	14 some series of the series o	Code 9,899 45 SHOWN 00 Region: 10 TAUTO HI 10 Region: 10 Reg	ATE, AUGUST 26, 5 MAPLAN SOR 2015 Hent: ANN DE ANDS CHITEC CHITEC CHITEC Date Novem File No. Plan Scale Drawn By Checked By Other	UITAND I N SIG CAP CTUR 18157A 1:1,250 (24.38) D.G.S. P.C.
Roads Notes I. ALL OMERGIONS ARE IN METRES UNICES 2. STIE GUINARY AND TOPOGRAPHIC BAUURDATE AND TOPOGRAPHIC AU 2. Nov, 52, 2018 Project Approval Stamp Project Highway 7 and Nat Applicant New Hamburgle 675 Riverbend Dr. Ki N2K 3S3 P: 519.571.86	14 sonard	B SHOWN B SHOWN DORED BY M DORED BY M DORED BY Weyer and co on P L URB & L A RC O Strive Road	ATTE, AUGUST 26, 5 AN PLAN SERCENT HINN SERCENT A N N B A N DE A N DE A N DE C HITEC DE ANNE Date Novem File No. Plan Scale Drawn By Checked By Other	UIT AND ESIG CAP CTUR Her 22, 2 18157A D.G.S. P.C.
Roads Notes A Control of the second	14 sontennas seria pre- autoriasion la serio y su autoriasion la review by su autoria participation fiziger F rs Inc. tchener 800 PLLA	E SHOWN PARED BY J PARED BY J TAUGAI FAI URB & L A R C A R C A R C A R C A R C A R C A R C	ATTE, AUGUST 26, 1 MM PLAN SOR 2015 Hont; A N N S A N DE A N DS C HITEC DI STATUS Data Novem File No. Plan Scale Drawn By Checked By Other	UITAND IN SIG CAP CTUR 1:1,250 (2439) D.G.S. P.C.



Existing Conditions Catchment Parameters and MIDUSS Modeling

Drawing on experience...Building on

gth.
Wilmot Employment Lands STORMWATER MANAGEMENT

New Hamburg, Ontario



 Project Number:
 34896-104

 Date:
 December 12, 2018

 Design By:
 NED/MSB

 File:
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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

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 December 15, 2018

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 NED/MSB

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 Q:\34896\104\SWM\34896-104 Master SWM Facility Design Sheet.xlsx

COMPOSITE CN CALCULATIONS

Soil Group Curve Number (CN)

	Hydrologic Soil Group										
Land Use	А	AB	В	BC	С	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	92.0	
102	c				100		100	02.U 82.0	
103	C	100			100		100	70.0	
104	С							76.0	From M.N. Engineering SWM Report (1994)
105	С	70	30				100	81.0	From Stantec Consulting SWM Approach (2018)
106	С		100				100	76.0	
107	С	50			50		100	76.0	
108	С	95				5	100	70.2	
109	В							75.0	From MTE Consultants SWM Report (2005)
110	С							80.0	From R.J. Burnside SWM Report (1998)
111	С	100					100	70.0	
112	С				100		100	82.0	
113	С							80.0	From R.J. Burnside SWM Report (1998)
114	С	97				3	100	70.1	
115								83.0	From Stantec Consulting SWM Approach (2010)
116	С		100				100	76.0	
117	С	5			95		100	81.4	NHI Lands
118	С							74.0	From Stantec Consulting SWM Approach (2006)
119	C		100				100	76.0	
120	C		100				100	76.0	
121	С				100		100	82.0	GDI Lands
150	С		100					74.0	From Stantec Consulting SWM Approach (2010)
151	C		100				100	76.0	
152	С				100		100	82.0	
160	С		100				100	76.0	
161	C		100				100	76.0	
170	С		100				100	76.0	
180	В							79.0	From Paragon Engineering SWM Report (1994)
181	В		100				100	65.0	
182	В		100				100	65.0	
183	В		20	30	50		100	68.3	
184	В				100		100	74.0	
185	В		85			15	100	64.4	

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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 Cur Pervious (AMC II)	ve Number Impervious	Land Use	Comment
	(ha)	(%)	(<i>m</i>)	(%)	(<i>m</i>)	(%)	(mm)	(<i>m</i>)	(%)				
Catchments Draining to We	st Culvert - In	nlet #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 (Stantac 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 Wes	<u>st Culvert - In</u>	<u>ilet #2</u>											
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 Wes	st Culvert - In	ılet #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	Overland	Overland	Pervious	Pervious	Pervious IA	Impervious	Impervious	SCS Curv	ve Number	Land Line		
	, aca	Impervious	Length	Slope	Length	Slope	I EI VIOUS IA	Length	Slope	(AMC II)	Impervious	Land Use	Comment	
	(ha)	(%)	(<i>m</i>)	(%)	(<i>m</i>)	(%)	(<i>mm</i>)	(<i>m</i>)	(%)	our Hand Harris	\$165 Hotel			
Catchments Draining to Wes	st Culvert - Ini	et #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	09	Posidential	Fostern part of Llowilton Lloiphte Cubdivision	
120	1.00	5	20	5.0			0.0			70.0	90	Residential	Eastern part of Hamilton Heights Subdivision	
Wilmot Employment Lands	- Subject Prop	erties												
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	
	1.42,42													
Catchments Draining to Wes	st Culvert - Inle	<u>et #6</u>	50	4.0	50	0.00	0.0	000	4 50	70.0				
160	0.10	40	50	1.0	50	3.00	8.0	232	1.50	76.0	98	Residential	Hamilton Heights Subdivision	
101	2.55	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 Fas	t Culvert													
150	3 51	0	05	1 6	100	2.00	0.0	206	2.00	74.0	00	Descriptions	Southern part of Recreational Facility	
150	5.51	0	95	1.0	100	2.00	0.9	290	2.00	74.0	98	Recreational	(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 Highw	av 7/8													
180	0.70	26	45	4.5	00	0.00	0.0		4.00				Portion of Maple Leaf Foods Property	
160	0.70	26	45	1.5	20	2.00	6.8	68	1.00	79.0	98	Industrial	(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-Lotal (South)	48.80	41.9												
Grand Total	228.02	22.2												







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	MIDUSS Output		т	ime to Centroid	237 478	128,682	237 478	minutes*	
•	MIDUSS version Version 2.25 rev. 473*		8	ainfall depth	25.028	25.028	25.028	mm"	
÷	MIDUSS created Sunday, February 07, 2010"		R	ainfall volume	743.32	0.00	743.32	с.""т"	
	10 Units used: ie METRIC"		R	ainfall losses	19.997	4.960	19.997	"mm	
	Job folder: Q:\34896\104\SWM\MIDUSS\Pre"		R	unoff depth	5.031	20.068	5.031	" mm	
2	Output filename: 34896-104_Pre-0025mm.out"		R	unoff volume	149.42	0.00	149,42	с.п"	
2	Litensee name; aomin" Company Nicesset #	- C	H	unoff coefficient	0.201	0.000	0.201	1. 	
¥.	Date & Time last used: 12/7/2018 at 11-24-31 AM"	. 40	Mi Mi	VDROGRAPH Add Bupoff	0.015	0.000	0.015	c.m/sec"	
81			4	Add Bunoff "					
	7 Lines of comment [®]			0.015 0.01	15 0.00	0.000			
	***************************************	* 33	C	ATCHMENT 102"					
÷ .	Wilmot Employement Lands"		1	Triangular SCS"					
<u> </u>	New Hamburg, Ontario"		1	Equal length"					
2	25mm Storm Event - Pre-development"		1	SCS method*					
*	Calculated by: NED/MSR/GMK/%		102	Prenning Farm Devel	Lopment - no	orth of GEXI	A •		
	olioulitos by, http://www.endition.com		12 070						
* 31	TIME PARAMETERS"		180.000	Flow length*					
	5.000 Time Step"		2.500	Overland Slope"					
•	240.000 Max. Storm length"		12.070	Pervious Area"					
1	1500.000 Max. Hydrograph"		180,000	Pervious length*					
• 32	STORM Chicago storm"	2	2.500	Pervious slope"					
5	1 Chicago storm"		0.000	Impervious Area"					
	509.000 Coefficient A	- 6	180.000	Impervious length*					
			2.500	Impervious slope					
	0.400 Fraction R"		82 000	Pervious Manning 7	No "				
	240.000 Duration"		0.201	Pervious Bunoff con	officient"				
*2	1.000 Time step multiplier"		0.100	Pervious Ia/S coeff	ficient				3 - B
÷.	Maximum intensity 71.966 mm/hr"		5,576	Pervious Initial at	ostraction"				
	Total depth 25.028 mm"		0,015	Impervious Manning	'n'"				
•	7 0025hyd Hydrograph extension used in this file"		98.000	Impervious SCS Curv	ve No."				
81			0.000	Impervious Runoff (coefficient	u			
	J LINES OT COMMENT		0.100	Impervious Ia/S coe	efficient"				
	Catchmonts North of GEVE part of Inlat #4#	- C	0.518	Impervious Initial	abstraction	n" 	/ #		
•		<u>_</u>	0	0.062 0.01	15 0,000	U 0.000	C.M/Sec"	2	
33	CATCHMENT 101"		S	urface Area	12 070	1 000	12 070	hectare	
	1 Triangular SCS"		T	ime of concentration	74.427	7.255	74 427	minutes	
	1 Equallength"		Ť	ime to Centroid	237.863	128,722	237.862	minutes"	
•	1 SCS method"	3	R	ainfall depth	25.028	25.028	25,028	mm "	
	101 Area Northeast of GEXR"		R	ainfall volume	3020.84	0.00	3020.84	c.m*	
5	0.000 % Impervious"		R	ainfall losses	19.997	4.952	19.997	តា៣ "	
2	2.9/0 IDTALAREA"	<u>.</u>	R	unoff depth	5.031	20.076	5.031	mm"	
•	0.500 Overland Slope"		R	unoff volume	607.22	0.00	607.22	C.m"	
21	2.970 Pervious Area"	- C	H	unott coetticient	0.201	0.000	0.201		
	80.000 Pervious length"	* 40	NR NR	YDROGRAPH Add Bunoff	0.062	0.000	0.062	c.m/sec-	
•	0.500 Pervious slope"		4	Add Runoff "					
•	0.000 Impervious Area"			0.062 0.07	77 0.000	0.000	a		
	80.000 Impervious length"	* 40	H	YDROGRAPH Copy to Out	tflow"				
1	0.500 Impervious slope"		8	Copy to Outflow"					
2	0.250 Pervious Manning 'n'"	S		0.062 0.07	77 0.077	7 0.000			
	2.000 Pervious SUS CUIVE NO	40	H	YDROGRAPH Combine	1"				
	0.201 Pervious Numort Coerticient"		6	Combine "					
	5.576 Pervisus Initial abstraction"		1	NODE #"					
	0.015 Impervious Manning 'n'"		1.1	u/s OT GEAM	~ ~	77 0 74			
*	98.000 Impervious SCS Curve No."		Mi Lin	vdrograph volume	756 4	577 G.II/S 841 o.m."	SeC -		
7	0.000 Impervious Runoff coefficient"		п:	0.062 0.07	77 0.07	7 0.077			
	0.100 Impervious Ia/S coefficient"	* 40	н	YDROGRAPH Start - New	v Tributarv	. 0.077			
	0.518 Impervious Initial abstraction"		2	Start - New Tributa	ary"				
	0.015 0.000 0.000 c.m/sec"			0.062 0.00	0.07	7 0.077	и		
2	Catchment 101 Pervious Impervious Total Area "	* 33	C	ATCHMENT 103*					
÷.	surrace Area 2.970 0.000 2.970 hectare"		1	Triangular SCS"					
8	ilme of concentration 74.150 7.228 74.150 minutes"		1	Equal length [*]					

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1 SCS method" 103 Woodlot - north of GEXR" 0.000 % Impervious" 2.080 Total Area" 80.000 Flow length"	61 ADD COMMENT======"""""""""""""""""""""""""""""""	
2.500 Overland Slope" 2.080 Pervious Area" 80.000 Pervious length" 2.500 Pervious slope" 0.000 Impervious Area"	33 CATCHMENT 104" 1 Triangular SCS" 3 Specify values" 1 SCS method" 104 Riverside Brass"	
80.000 Impervious length" 2.500 Impervious slope" 0.250 Pervious Manning 'n'" 70.000 Pervious SCS Curve No." 0.065 Pervious Runoff coefficient"	59.000 % Impervious" 2.020 Total Area" 35.000 Flow length" 1.200 Overland Slope" 0.828 Pervious Area"	
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"	60.000 Pervious length" 2.000 Pervious slope" 1.192 Impervious Area" 116.000 Impervious length" 0.500 Impervious slope"	
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 economication 0.3 248 4 460 03.347 minutes"	0.250 Pervious Maning '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 Imporvious Mapping 'n'"	
Time of concentration 53:346 4:400 53:347 minutes Time of concentration 53:346 4:400 55:347 minutes Time to Centroid 251.972 124:266 251.971 minutes Rainfall depth 25:028 25:028 mm" Rainfall volume 520:58 0:00 520:58 c.m" Rainfall losses 23:402 4:987 23:402 mm"	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 c.m/sec"	
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 * 4	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 deoth 25.028 25.028 mm"	
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"	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 "	
6 Combine " 1 Node #" u/s of GEXR" Maximum flow 0.080 c.m/sec" Hydrograph volume 790.459 c.m"	Maximum flow 0.003 0.139 0.140 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.140 0.080 0.080" 54 POND DESIGN"	
0.003 0.003 0.003 0.080" 40 HYDROGRAPH Confluence 1" 7 Confluence " 1 Node #" u/s of GEXR"	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"	
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"	0.910 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"	
0.003 0.080 0.080 0.000" 40 HYDROGRAPH Combine 2" 6 Combine " 2 Node #" INLET 1"	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 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"	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 "	
0.003 0.000 0.080 0.080"	* 2 Node #"	

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÷.	INLET 1"			0.015 Impervious Manning 'n'"
	Maximum flow 0.087 c.m/sec"			98.000 Impervious SCS Curve No "
2	Hydrograph volume 1044.640 c.m"	5		0.800 Impervious Runoff coefficient"
•	0.140 0.140 0.008 0.087"	2		0.100 Impervious Ia/S coefficient"
* 40	HYDROGRAPH Start - New Tributary"			0.518 Impervious Initial abstraction*
-	2 Start - New Tributary*			0.142 0.314 0.008 0.087 c.m/sec"
	0.140 0.000 0.008 0.087*			Catchment 106 Pervious Impervious Total Area "
33	CATCHMENT 105"			Surface Area 0.192 1.088 1.280 hectare
S	1 Irlangular SCS"			Time of concentration 59.043 4.152 5.555 minutes
-	3 Specify Values"	- S		Time to Centroid 214.093 123.773 126.082 minutes"
	1 SUS method [*]			Rainfall depth 25.028 25.028 25.028 mm"
	55.000 * The provide and acturing Property			Haintall volume 48.05 272.30 320.35 C.m"
				Maintall losses 22.053 5.018 7.573 mm"
÷1	90.000 Flow length*			Runoff deptin 2.3/5 20.010 17.455 mm ⁻
	2.000 Overland Slope"			$ = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} $
÷	1,250 Pervious Area"			Maximum flow 0.001 0.142 0.142 c.m/sec=
•	90.000 Pervious length"		40	HYDROGRAPH Add Bunoff "
•	2.000 Pervious slope"			4 Add Runoff "
	2.320 Impervious Area"			0,142 0,456 0.008 0.087"
*	90.000 Impervious length"	1	40	HYDROGRAPH Copy to Outflow"
	2.000 Impervious slope"	•		8 Copy to Outflow"
	0.250 Pervious Manning 'n'"			0.142 0.456 0.456 0.087"
2	81.000 Pervious SCS Curve No."	*	40	HYDROGRAPH Combine 2"
÷	0.185 Pervious Hunott coetticient"	- 2		6 Combine "
	5.00 Pervious la/s coefficient			2 Node # ·
	0.015 Jeropovicy Magnice Late	- 5		INLET 1"
	OR OLO Impervious Mainting II			Maximum Tlow 0.466 c.m/sec"
	0.804 Impervious Bunoff coefficient"			
	0.100 Impervious Ta/S coefficient*		40	ULASS ULASS ULASS ULASS
•	0.518 Impervious Initial abstraction"		40	2 Start - New Tributary
2	0.314 0.000 0.008 0.087 c.m/sec"	- 28		0.142 0.000 0.456 0.466"
	Catchment 105 Pervious Impervious Total Area "		33	CATCHMENT 107"
•	Surface Area 1.250 2.320 3.570 hectare"			1 Triangular SCS"
•	Time of concentration 54.996 5.118 10.608 minutes"			1 Equal length*
<u>.</u>	Time to Centroid 210.933 125.283 134.712 minutes"			1 SCS method"
	Rainfall depth 25.028 25.028 25.028 mm"	1.1		107 Industrial properties at end of Hamilton Road"
	Rainfall volume 312.72 580.77 893.49 c.m			40.000 % Impervious
	Rainfall losses 20.404 4.901 10.327 mm"	÷.		2.850 Total Area
	Runoff depth 4,623 20.126 14.700 mm"			50.000 Flow length"
2	RUNDITT VOLUME 57.77 467.03 524.80 c.m*			1.000 Overland Slope"
	Nundri Coefficient 0.185 0.804 0.587			1.710 Pervious Area
* 40	Waximum Liow 0.007 0.313 0.314 C.m/sec ⁻			50.000 Pervious length"
	4 Add Bunoff "			1.000 Pervious slope"
÷	0.314 0.314 0.008 0.087"			1.140 Impervious Area
• 33	CATCHMENT 106"			1 DOO Impervious slope"
	1 Triangular SCS"			0.250 Pervious Manning 'n'"
13	3 Specify values"			76.000 Pervious SCS Curve No."
	1 SCS method"	22		0.119 Pervious Runoff coefficient"
	106 N.C. Pestell Head Office and other Industrial*			0.100 Pervious Ia/S coefficient*
•	85.000 % Impervious"			8.021 Pervious Initial abstraction"
5	1.280 Total Area"			0.015 Impervious Manning 'n'"
2	55.000 Flow length"			98.000 Impervious SCS Curve No."
÷	1.500 Overland Slope"	2		0.801 Impervious Runoff coefficient*
*	U.192 PERVIOUS AFER			0.100 Impervious Ia/S coefficient"
	55.000 Pervious length"			0.518 Impervious Initial abstraction"
	1.000 Fervious Stope			0.152 0.000 0.456 0.466 c.m/sec*
2	I.VOO INPERVIOUS AFGA"			Catchment 107 Pervious Impervious Total Area "
	1.500 Impervious length	<u>_</u>		Surface Area 1.710 1.140 2.850 hectare"
•	1.000 Impervious Aspaina (***			lime or concentration 62.974 4.428 15.088 minutes"
	76.000 Pervious SCS Curve No *			lime to Centroid 219.049 124.213 141.481 minutes"
	0.119 Pervious Runoff coefficient"			Maintail depth 25.028 25.028 25.028 mm*
	0.100 Pervious Ia/S coefficient"	<u></u>		natilall losses 22 053 4 086 15 007*
e	8.021 Pervious Initial abstraction"			Runoff denth 2 074 20 044 0 004
				101011 depth 2.3/4 20.041 9.001 mm"

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Runoff volume 50.86 228.47 279.33 c.m" Runoff coefficient 0.119 0.801 0.392 "		2.000 Overland Slope" 1.383 Pervious Area"
Maximum Tiow 0.006 0.151 0.152 c.m/sec" 40 HYDROGRAPH Add Runoff" 4 Add Runoff"		3.000 Pervious slope" 4.148 Impervious Area"
0.152 0.152 0.456 0.466"		192.000 Impervious length" 0.750 Impervious slope"
1 Triangular SCS" 1 Equal length		0.250 Pervious Manning 'n'" 75.000 Pervious SCS Curve No."
1 SCS method" 108 Woodlot and Wetland east of Pestells"		0,108 Pervious Runoff coefficient* 0.100 Pervious Ia/S coefficient*
5.000 % Impervious" 5.920 Total Area"		 8.467 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"
65.000 Flow length" 3.000 Overland Slope"		98.000 Impervious SCS Curve No." 0.806 Impervious Runoff coefficient"
5.624 Pervious Area" 65.000 Pervious length"		0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"
3.000 Pervious slope" 0.296 Impervious Area"		0.426 0.000 0.189 0.656 c.m/sec" Catchment 109 Pervious Impervious Total Area "
3.000 Impervious length 0.250 Repervious slope"		Time of concentration 48.732 10.822 12.446 minutes"
70,200 Pervious SCS Curve No." 0.066 Pervious SCS Curve No."		"Rainfall depth 25.028 25.028 25.028 mm" Rainfall volume 346.01 1038.02 1384.03 c.m"
0.100 Pervious Ia/S coefficient 10.782 Pervious Initial abstraction		Rainfall losses 22.319 4.844 9.213 mm" Runoff depth 2.709 20.183 15.815 mm"
0.015 Impervious Manning 'n' 98.000 Impervious SCS Curve No.		Runoff volume 37.45 837.11 874.56 c.m" Runoff coefficient 0.108 0.806 0.632 "
0.793 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"		 Maximum flow 0.005 0.425 0.426 c.m/sec" 40 HYDROGRAPH Add Runoff "
0.518 Impervious Initial abstraction" 0.038 0.152 0.456 0.466 c.m/sec"		* 4 Add Runoff * 0.426 0.426 0.189 0.656*
Surface Area 5.624 0.296 5.920 hectare		 0.426 Current peak flow c.m/sec" 0.070 Target outflow c.m/sec"
Time to Centroid 233,588 123.194 190.992 minutes Rainfall depth 25.028 25.028 25.028 mm"		<pre>874.6 Hydrograph volume c.m" 9. Number of stages"</pre>
" Rainfall volume 1407.56 74.08 1481.64 c.m" "Rainfall losses 23.365 5.185 22.456 mm"		* 0,000 Minimum water level metre* * 1.200 Maximum water level metre*
Runoff depth 1.662 19.842 2.571 mm" Runoff volume 93.49 58.73 152.22 c.m"		0.000 Starting water level metre" 0 Keep Design Data: 1 = True; 0 = False"
Runoff coefficient 0.066 0.793 0.103 Maximum flow 0.009 0.038 0.038 c.m/sec		C. 1500 0.000 0.000
40 HIUNUGHAPH Add HUIDIT 4 Add Runoff " 0.039 0.189 0.456 0.466"		0.3000 0.01000 635.000" 0.4500 0.03600 1004.000"
40 HYDROGRAPH Copy to Outflow* 8 Copy to Outflow*		• 0.6000 0.04900 1405.000" 0.7500 0.06000 1847.000"
0.038 0.189 0.466* 40 HYDROGRAPH Combine 2*		* 0.9000 0.06900 2329.000* * 1.050 0.5220 2852.000*
6 Combine * 2 Node #*		1.200 1.100 2900.000" Peak outflow 0.017 c.m/sec"
INLET 1" Maximum flow 0.656 c.m/sec"		Maximum level 0.338 metre" Maximum storage 729.270 c.m"
		40 HYDROGRAPH Combine 2"
2 Start - New Tributary" 0.038 0.000 0.189 0.656"		6 Combine " 2 Node #"
33 CATCHMENT 109" 1 Triangular SCS"		INLET 1" Maximum flow 0.658 c.m/sec"
3 Specify values" 1 SCS method"		Hydrograph volume 2853.068 c.m" 0.426 0.426 0.017 0.658"
109 N.C. Pestell site 75.000 % Impervious"		B1 ADD COMMENT===================================
5.530 Total Area" 130.000 Flow length"		Catchments South of GEXR, part of Inlet #2"

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•	******		6 Combine "	
• 40	HYDROGRAPH Start - New Tributary"	28	3 Node #"	
*	2 Start - New Tributary"		INLET 2"	
	0.426 0.000 0.017 0.658"		Maximum flow 0.050 c.m/sec*	
* 33	CATCHMENT 110"		Hydrograph volume 172.946 c.m"	
	1 Triangular SCS	2	0.081 0.081 0.050 0.050"	
- C	3 Specify values"	40	HYDROGRAPH Start - New Tributary	
	1 Sto Method		2 Start - New Iributary"	
	30.000 % Tenpervious"	. 33	CATCHMENT 111	
•	1.920 Total Area"		1 Trianular SCS*	
*	150.000 Flow length"		1 Equal length"	
	1.000 Overland Slope"		1 SCS method"	
1	1.344 Pervious Area		111 Woodlot north of Schneider/Good lands"	
5	150.000 Pervious length"		0.000 % Impervious"	
2	1.500 Pervious slope"	- C	13.230 Total Area	
	U.S.O Impervious Area"		170.000 Flow length	
÷	1 500 Impervious Jone"		2.400 Overland Slope	
	0.250 Pervious Manning 'n'"		170.000 Pervious Jeanth"	
	80.000 Pervious SCS Curve No."		2.400 Pervious Slone"	
¥.	0.170 Pervious Runoff coefficient"	1 H	0.000 Impervious Area"	
	0.100 Pervious Ia/S coefficient"		170.000 Impervious length [®]	
	6.350 Pervious Initial abstraction"		2.400 Impervious slope"	
÷.	0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"	
<u> </u>	98.000 Impervious SCS Curve No."		70.000 Pervious SCS Curve No."	
	0.100 Impervious Fullor Coefficient"	- C	0.005 Pervious Hunort coefficient	
	0.518 Impervious Initial abstraction"		0.100 Pervious la/s coefficient	
H	0.081 0.000 0.017 0.658 c.m/sec"		0.015 Impervious Manning 'n'"	
•	Catchment 110 Pervious Impervious Total Area "		98.000 Impervious SCS Curve No."	
	Surface Area 1.344 0.576 1.920 hectare"		0.000 Impervious Runoff coefficient	
	Time of concentration 85.517 6.395 32.540 minutes"		0.100 Impervious Ia/S coefficient"	
-	Time to Centroid 252.590 127.322 168.715 minutes"		0.518 Impervious Initial abstraction [®]	
1	Hainfail depth 25.028 25.028 25.028 mm ⁻		0.014 0.000 0.050 0.050 c.m/sec*	
2	Rainfall losse 20.793 4.050 16.026 mm ⁴		Catchment 111 Pervious Impervious Total Area	
•	Bunoff denth d. 245 20.060 8.900 mm*	2	Surface Area 13.230 0.000 13.230 nectare	
:	Bunoff volume 57.05 115.60 172.65 c.m		Time to Controld 314 035 138 488 314 032 minutes	
	Runoff coefficient 0.170 0.802 0.359		Rainfall depth 25.028 25.028 25.028 mm"	
*	Maximum flow 0.005 0.080 0.081 c.m/sec°		Rainfall volume 3311.16 0.00 3311.16 c.m"	
* 40	HYDROGRAPH Add Runoff "		Rainfall losses 23.402 4.997 23.402 mm"	
	4 Add Runoff "		Runoff depth 1.626 20.031 1.626 mm"	
S	0.081 0.081 0.017 0.658"		Runoff volume 215.11 0.00 215.12 c.m"	
. 54	POND DESIGN [*]		Aunott coetticient 0.065 0.000 0.065 "	
•	0.070 Tarpet outfow c.m/sec"	* 40	MAXIMUM TLOW 0.014 0.000 0.014 C.M/SeC"	
	172.6 Hydrograph volume c.m"		4 Add Runoff *	
- 8	7. Number of stages"	2	0.014 0.014 0.050 0.050*	
	0.000 Minimum water level metre"	* 40	HYDROGRAPH Copy to Outflow"	
*	1.100 Maximum water level metre"		8 Copy to Outflow"	
1	0.000 Starting water level metre"		0.014 0.014 0.014 0.050"	
	0 Keep Design Data: 1 = True; 0 = False"	* 40	HYDROGRAPH Combine 3"	
2	Level Discharge Volume"		6 Combine "	
•			3 NOGE #"	
	0.5000 0.09000 71.000*		INLEI Z' Navieus flow 0.051 o -/	
÷.	0.7500 0.1250 220.000*		MacAundin Litow U.USI C.III/S8C ⁻	
	0.9000 0.1400 346.000"		0.014 0.014 0.014 0.014	
	1.000 0.3110 445.000"	* 81	ADD COMMENT===================================	
2	1.100 0.6160 557.000"		3 Lines of comment"	
5	Peak outflow 0.050 c.m/sec"	- E		
- E	Maximum level 0.224 metre*		South of GEXR along Nafziger Rd, part of Inlet #3"	
	Maximum storage 18.231 c.m [*]		*******	
	0.081 0.091 0.050 0.650 m/coc"	40	HYDHOGHAPH Start - New Tributary"	
- 40	HYDROGRAPH Combine 3"		2 Start - New IFIDUTARY 0.014 0.000 0.014 0.000 0.014 0.000	
			0.004 0.000 0.014 0.001	

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 33 CATCHMENT 112" 1 Triangular SCS" 1 Equal length" 1 SCS method" 112 Culivated lands east of Nafziger Road" 1.000 % Impervious" 	 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" 	e.
7.310 Total Area" 120.000 Flow length" 3.300 Overland Slope" 7.237 Pervious Area" 120.000 Pervious Length"	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"	
3.300 Pervious slope" 0.073 Impervious Area" 120.000 Impervious length" 3.300 Impervious slope" 0.250 Pervious Maning 'n'"	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"	
82.000 Pervious SC Curve No." 0.201 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 5.576 Pervious Initial abstraction" 0.015 Importions Manaica 1."	Rainfall depth 25.028 25.028 mainfall 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" Bunoff wolume 55.20 20.015 10.553 mm"	
98.000 Impervious SCS Curve No." 0.805 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	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 "	
0.049 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"	54 POND DESIGN" 0.142 Current peak flow c.m/sec" 0.070 Target outflow c.m/sec" 270.2 Hydrograph volume c.m"	
Rainfall depth 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"	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"	
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 * * 4 Add Runoff * * •	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"	
40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.049 0.049 0.049 0.051" 40 HYDROGRAPH Combine 4"	• 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" • Peak outflow 0.044 c.m/sec"	
6 Combine " 4 Node #" 1 INLET 3" 4 Maximum flow 0.049 c.m/sec" 4 Maximum flow 378.707 c.m"	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"	
0.049 0.049 0.049 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.049 0.000 0.049 0.049"	6 Combine " 4 Node #" INLET 3" 0.086 c.m/sec" Maximum flow 0.086 c.m/sec" Buddoorabu volume 648.842 c.m"	
1 Triangular SCS* 3 Specify values* 1 SCS method" 113 Alpine Solutions - East SMWP*	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"	
40,000 % Impervious" 2,560 Total Area" 150,000 Flow length" 1,500 Overland Slope" 1,536 Pervious Area"	33 CAICHMENI 114" 1 Triangular SCS" 1 Equal length" 1 SCS method" 114 Woodlot East and West of Nafziger Road"	
180,000 Pervious length" 1,500 Pervious slope" 1,024 Impervious Area" 131,000 Impervious length"	3.000 % Impervious" 13.460 Total Area" 140.000 Flow length" 3.600 Overland Slope"	

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	13.056	Pervious Area"		0,100	Impervious Ia/S coefficient"
*	140.000	Pervious length"	1.5	0.518	Impervious Initial abstraction*
	3,600	Pervious slope*			0.441 0.000 0.055 0.105 c.m/sec"
*	0,404	Impervious Area"			Catchment 115 Pervious Impervious Total Area "
<u>.</u>	140.000	Impervious length"			Surface Area 1.336 3.613 4.950 hectare"
<u> </u>	3,600	Impervious slope"			Time of concentration 33,652 8.513 10.801 minutes"
	70,100	Pervious Manning Inf			lime to Centroid 180,684 130.578 135.139 minutes"
	0.066	Pervisus Runoff coefficient"	940 C		Haintail depth 25.028 25.028 25.028 mm ⁻
	0.100	Pervious Ia/S coefficient"			naintail Volume
÷	10.834	Pervious Initial abstraction"			$\pi_{111111111111111111111111111111111111$
•	0.015	Impervious Manning 'n'	3a C	i	Runoff volume 73.09 729.98 803.07 c.m*
•	98,000	Impervious SCS Curve No."		1	Runoff coefficient 0.219 0.807 0.648
*	0.806	Impervious Runoff coefficient"		1	Maximum flow 0.014 0.437 0.441 c.m/sec*
÷ .	0.100	Impervious Ia/S coefficient"	* 40	1	HYDROGRAPH Add Runoff
	0.518	Impervious initial abstraction		4	Add Runoff "
	0	0.055 0.000 0.044 0.000 C.M/Sec"	(*) E 4		0.441 0.441 0.055 0.105"
	S	π^{+}	. 04	0 441	Curpert peak flow o m/soch
	T.	ine of concentration 116.375 5.593 85.904 minutes"		0.070	Target outflow c m/sec"
	т	ime to Centroid 277.843 126.027 236.085 minutes"		803.1	Hvdporaph volume c.m"
5	R	ainfall depth 25.028 25.028 25.028 mm*	190)	15.	Number of stages"
<u>*</u>	R	ainfall volume 3267.66 101.06 3368.72 c.m°	•	0.000	Minimum water level metre
•	Ri	ainfall losses 23.384 4.859 22.828 mm"		1.450	Maximum water level metre"
	R	unoff depth 1.644 20.169 2.200 mm"	0405	0.000	Starting water level metre"
<u>.</u>	RI	unoff volume 214.65 81.44 296.09 c.m°	100	0	Keep Design Data: 1 = True; 0 = False"
10	HI N		- C		Level Discharge Volume"
* 40	H, We	Allidar I DW 0.010 0.055 0.055 C.m/sec			
*	4	Add Runoff *	000		
	-	0.055 0.055 0.044 0.086"	(#) (0.3500 0.01100 593 000"
* 40	H	YDROGRAPH Copy to Outflow"			0.4500 0.01300 775.000"
•	8	Copy to Outflow"			0.5500 0.01500 964.000*
*		0.055 0.055 0.055 0.086"			0.6500 0.01600 1161.000"
* 40	H.	YDROGRAPH Combine 4"	(*)		0.7500 0.01700 1364.000"
÷ .	6	Combine "	19 C		0.8500 0.01900 1575.000"
	4				0,9500 0,02000 1795.000"
	N.				1.050 0.05600 2025.000"
•	HIN CONTRACT				
1		0.055 0.055 0.105"			1 350 2 766 2768 000"
* 40	H	YDROGRAPH Start - New Tributary"			1.450 6.856 3033.000"
	2	Start - New Tributary"	(#C	1	Peak outflow 0.012 c.m/sec"
•		0.055 0.000 0.055 0.105"		1	Maximum level 0.397 metre*
- 33	C	ATCHMENT 115"		1	Maximum storage 678.481 c.m*
	1	Triangular SCS"			Centroidal lag 14.260 hours"
	3	Specify values	and the		0.441 0.441 0.012 0.105 c.m/sec"
	115		40		HYDROGRAPH Combine 4"
	73.000	net ventre - Shimr & Tanpeviouse		0	
	4,950	Total Area"	1.1	4	
	50.000	Flow length"	000		
•	2.800	Overland Slope"	(*)		Hydrograph volume 1630.375 c.m"
	1.336	Pervious Area"			0.441 0.441 0.012 0.110"
•	40.000	Pervious length"	* 40		HYDROGRAPH Start - New Tributary"
1	1.500	Pervious slope"		2	Start - New Tributary"
2	3.613	Impervious Area"			0.441 0.000 0.012 0.110"
	182,000	Impervious length"	33		CATCHMENT 116"
	0 250	Tillber Arturs Manufan (n.).	10 C	1	Intangutar SCS
•	83,000	Pervices SCS Curve No."	(*)	1	Equal Teudu
	0.219	Pervious Runoff coefficient"		116	Industrial lands west of Nafziger Road"
	0,100	Pervious Ia/S coefficient"		35,000	% Impervious*
	5,202	Pervious Initial abstraction"		7.710	Total Area*
5	0.015	Impervious Manning 'n'"	(4)	140.000	Flow length"
5	98.000	Impervious SCS Curve No."		1.600	Overland Slope"
	0.807	Impervious Runoff coefficient"		5.012	Pervious Area

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140.000Pervious length"1.600Pervious slope"2.698Impervious Area"140.000Impervious length"1.600Impervious slope"0.250Pervious slope"	40 HYDROGRAPH Combine 5" 6 Combine " 5 Node #" U/s of HWY 7&6" Maximum flow 0.704 c.m/sec" Hydrograph volume 3241 129 c.m"	
76.000 Pervious SC Gurve No." 0.119 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8.021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"	0.374 0.051 0.051 0.704" 40 HYDROGRAPH Confluence 4" 7 Confluence " 4 Node #" INLET 3"	
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" Cathemant 116 Requires Impervious Intal Area "	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" 9 Copy to Outflow"	
Surface Area 5.012 2.698 7.710 hectare" Time of concentration 101.442 7.133 27.517 minutes" Time to Centroid 267.522 128.542 158.561 minutes" Rainfall depth 25.028 25.028 25.028 cmm" Rainfall volume 1254.26 675.37 1929.63 c.m"	40 HYDROGRAPH Combine 5" 6 Combine " 5 Node #" u/s of HWY 7&8" Maximum flow 1.188 c.m/sec"	
Rainfall losses 22.053 4.990 16.081 mm" Runoff depth 2.975 20.037 6.947 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"	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"	
40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.374 0.012 0.110" 40 HYDROGRAPH Copy to Outflow" 0.374 0.374 0.110" 40 HYDROGRAPH Copy to Outflow" 0.374 0.374 0.110" 6 Copy to Outflow" 0.374 0.374 0.110"	 33 CAICHMENT 117" 1 Triangular SCS" 1 Equal length" 1 SCS method" 117 Cultivated Schneider central lands" 0.000 % Impervious" 	
40 HYDROGRAPH Combine 4" 6 Combine " 4 Node #" INLET 3" Maximum flow 0.483 c.m/sec"	7.450 Total Area" 140.000 Flow length" 2.000 Overland Slope" 7.450 Pervious Area" 140.000 Pervious length"	
Hydrograph volume 2320.169 c.m" 0.374 0.374 0.483" 40 HYDROGRAPH Confluence 2" 7 Confluence " 2 Node #"	<pre>2.000 Pervious slope" 0.000 Impervious Area" 140.000 Impervious length" 2.000 Impervious slope" 0.250 Pervious Manning 'n'" 2.00 Pervious SCS Curve Ne "</pre>	
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"	 0.190 Pervicus SCS curve NC. 0.191 Pervicus Runoff coefficient" 0.100 Pervicus Ia/S coefficient" 5.804 Pervicus Initial abstraction" 0.015 Impervicus Manning 'n'" 98.000 Impervicus SCS Curve No." 	
0.374 0.658 0.658 0.000" 40 HYDROGRAPH Combine 5" 6 Combine " 5 Node #" u/s of HWY 7&8"	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 "	
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"	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 minutes" 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"	
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" 8 Copy to Outflow" 0.374 0.051 0.000"	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*	

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			Accession of the second
8 Copy to Outflow"	4	40 HYDROGRAPH Start - New Tributary"	
0.038 0.038 0.038 1.188"	0	2 Start - New Tributary"	
40 HYDROGRAPH Combine 5"	ji da kata kata kata kata kata kata kata k	0.005 0.000 0.005 1.197"	
6 Combine "	3	33 CATCHMENT 119"	
S NOUE #"		1 Friangular SCS"	
Maximum flow 1.192 c.m/sec"	0	1 SCS method"	
Hydrograph volume 5917.612 c.m ["]	9	119 Existing ROW from Hamilton Road"	
0.038 0.038 0.038 1.192"	8	0.000 % Impervious"	
81 ADD COMMENT===================================		0.720 Total Area"	
		2 000 Overland Slope"	
Catchments east of Hamilton Road, part of Inlet #4"	8	0.720 Pervious Area"	
***************************************	3	40.000 Pervious length"	
40 HYDROGRAPH Start - New Tributary"	9	2.000 Pervious slope"	
2 Start - New IFIDUTARY"	2	0.000 Impervious Area"	
33 CATCHMENT 118"		2.000 Impervious signe"	
1 Triangular SCS"	29	0.250 Pervious Manning 'n'"	
1 Equal length"		76.000 Pervious SCS Curve No."	
1 SCS method"	S.	0.119 Pervious Runoff coefficient"	
8 DOG N IMPERIONALS		0.100 Pervious Ia/S coefficient	
0.500 Total Area"		0.015 Impervious Maning 'n'"	
60.000 Flow length"	9	98.000 Impervious SCS Curve No."	
5.000 Overland Slope"	2	0.000 Impervious Runoff coefficient"	
0.460 Pervious Area"	, i 1	0.100 Impervious Ia/S coefficient"	
5.000 Pervious slope"		0.518 Impervious Initial abstraction"	
0.040 Impervious Area"		Catchment 119 Pervious Intervious Tatal Area "	
60.000 Impervious length"	3	Surface Area 0.720 0.000 0.720 hectare"	
5.000 Impervious slope"	6	Time of concentration 44.741 3.146 44.741 minutes"	
0,250 Pervious Manning 'n'" 74 000 Decrieves Mar "	2	Time to Centroid 196.074 122.195 196.074 minutes"	
0.088 Pervious Bunoff coefficient"	8	Rainfall depth 25,028 25,028 mm"	
0.100 Pervious Ia/S coefficient"	5	Bainfall losses 22.053 5.124 22.053 mm*	
8.924 Pervious Initial abstraction"	19	Runoff depth 2.974 19.904 2.974 mm [*]	
0.015 Impervious Manning 'n'"	2	Runoff volume 21.41 0.00 21.42 c.m	
98,000 Impervious SCS Curve No."		Runoff coefficient 0.119 0.000 0.119 "	
0./90 Impervious Ta/S coefficient"		Maximum flow 0.003 0.000 0.003 c.m/sec"	
0,518 Impervious Initial abstraction"		4 Add Runoff "	
0.005 0.000 0.038 1.192 c.m/sec"	2	0.003 0.003 0.005 1.197"	
Catchment 118 Pervious Impervious Total Area "	59	* 40 HYDROGRAPH Copy to Outflow"	
Surface Area 0.460 0.040 0.500 hectare"		8 Copy to Outflow"	
Time to Controid 201.260 122.026 50.946 millites"	3	0.003 0.003 0.003 1,197*	
Rainfall depth 25.028 25.028 25.028 mm"		6 Combine "	
Rainfall volume 115.13 10.01 125.14 c.m*	A.	5 Node #"	
Rainfall losses 22.567 5.111 21.170 mm"	2	u/s of HWY 7&8"	
HUNOTT depth 2.461 19.917 3.857 mm"		Maximum flow 1.197 c.m/sec*	
Runoff coefficient 0.098 0.796 0.154 "		Hydrograph Volume 5958.31 c.m [*]	
Maximum flow 0.002 0.005 0.005 c.m/sec"	3	81 ADD COMMENT===================================	
40 HYDROGRAPH Add Runoff "	3	3 Lines of comment"	
4 Add Runoff "	2	***************************************	
0.005 0.005 0.038 1.192"	8	Catchment to Inlet #5"	
A Conv to Outflow"			
0.005 0.005 1.192"		2 Start - New Tributary	
40 HYDROGRAPH Combine 5*		0.003 0.000 0.003 1.197"	
6 Combine "	54	33 CATCHMENT 120"	
5 NODE #"		1 Triangular SCS"	
		i Ednar Teudiu.	
Maximum flow 1.197 c m/sec	- 4	1 SCS method"	

5.000% Impervious"2.800Impervious slope"1.080Total Area"0.250Pervious Manning 'n'"20.000Flow length"82.000Pervious SCS Curve No."3.000Overland Slope"0.201Pervious SCS Curve No."1.025Pervious Area"0.100Pervious Coefficient"20.000Pervious slope"0.100Pervious Initial abstraction"3.000Pervious slope"0.015Impervious Manning 'n'"0.054Inpervious Area"98.000Impervious Scoefficient"3.000Impervious slope"0.000Impervious Slope"0.055Impervious Slope"0.000Impervious Scoefficient"3.000Pervious Naning 'n'"0.000Impervious Slope"0.001Impervious Slope"0.000Impervious Slope"3.000Pervious Slope"0.000Impervious Slope"3.000Pervious Slope"0.000Impervious Slope"3.000Pervious Slope"0.000Impervious Slope"3.000Pervious Slope"0.000Impervious Slape3.000Pervious Slope"0.000Impervious Slape3.000Pervious Slape"0.000Impervious Slape3.000Pervious Slape"0.100Impervious Slape3.000Pervious Slape0.0000.0001.204 c.m/sec"3.000Pervious Slape0.0000.0001.204 c.m/sec"3.000Pervious SlapeScoreficient*0.2030.0003.000Pervious Slape	
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3.000 Pervious slope" 0.015 Impervious Manning 'n'" 0.054 Impervious Area" 98.000 Impervious SCS Curve No." 20.000 Impervious length" 0.001 Impervious SCS Curve No." 3.000 Impervious slope" 0.000 Impervious SCS Curve No." 3.000 Impervious slope" 0.100 Impervious Ia/S coefficient" 0.250 Pervious Manning 'n'" 0.100 Impervious Ia/S coefficient" 0.250 Pervious Manning 'n'" 0.100 Impervious Ia/S coefficient" 0.190 Pervious Runoff coefficient" 0.203 0.000 0.009 1.204 c.m/sec" 0.190 Pervious Runoff coefficient" 0.203 0.000 0.000 43.240 hectare" 0.191 Pervious Ia/S coefficient* Surface Area 43.240 0.000 43.240 hectare" 0.015 Impervious Manning 'n'* Time to Concentration 83.337 8.123 83.337 minutes" 0.015 Impervious Manning 'n'* Time to Centroid 250.276 130.044 250.275 mm" 0.015 Impervious SC Curve No * Bainfail death 250.27	
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3.000 Impervious Information Impervious Information 0.200 Pervious Manning 'n'* 0.200 Pervious SCS Curve No.* 0.100 Pervious Runoff coefficient* 0.101 Pervious Initial abstraction* 0.102 Pervious Initial abstraction* 0.103 Impervious Initial abstraction* 0.015 Impervious Manning 'n'* 0.015 Impervious Manning 'n'* 0.015 Impervious SCS Curve No.* 0.015 Impervious SCS Curve No.* 0.016 Impervious SCS Curve No.* 0.017 Pervious Manning 'n'* 0.018 Impervious SCS Curve No.* 0.019 Pervious Nanning 'n'* 0.011 Impervious SCS Curve No.* 0.012 Impervious SCS Curve No.* 0.013 Impervious SCS Curve No.* 0.014 Pervious SCS Curve No.* 0.015 Impervious SCS Curve No.*	
0.250 Pervious SC S Curve No.* 0.0119 Pervious Runoff coefficient* 0.203 0.000 0.009 1.204 c.m/sec* 0.100 Pervious Runoff coefficient* 0.203 0.000 0.009 1.204 c.m/sec* 0.100 Pervious Runoff coefficient* Catchment 121 Pervious Impervious Total Area * 0.101 Pervious Initial abstraction* Surface Area 43.240 0.000 43.240 0.015 Impervious Ranning 'n'* Time to Concentration 83.337 8.123 83.337 minutes* 0.015 Impervious SS Surve No * Time to Centroid 250.276 130.044 250.275 minutes* 0.015 Impervious SS Curve No * Rainfail death 250.28 250.28 250.28	
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0.100 Pervious Ia/S coefficient* Surface Area 43.240 0.000 43.240 hectare* 8.021 Pervious Initial abstraction* Time of concentration 83.337 8.123 83.337 minutes* 0.015 Impervious Manning 'n'* Time to Centroid 250.276 130.044 250.275 minutes* 98 000 Impervious SS Curve No.* Bainfail denth 25 028 25 028 25 028 mm*	
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0.015 Impervious Manning 'n'" Ime to Centrold 250.276 130.044 250.275 minutes" 98.000 Impervious SC Surve No. * Bainfall danth 25.028 25.028 25.028 mm"	
NO DEL TROPERVISIES AND A DEL TROPERVISIONA A DEL TROPERVISI	
0.798 Tempervise Bunoff coefficient* "Bainfall volume 1.0822 0.0000 1.082 ba.m"	
0.100 Impervious Ia/S coefficient" Rainfall losses 19.997 4.816 19.997 mm"	
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0.009 0.000 0.003 1.197 c.m/sec* * Runoff volume 2175.34 0.01 2175.35 c.m*	
Catchment 120 Pervious Impervious Total Area	
Surface Area 1.026 0.054 1.080 nectare" Maximum 1.0w 0.203 0.000 0.203 c.m/sec"	
Time to Control 172 620 119 953 158 868 minutes" 40 antonomera Audi Autori	
Rainfall depth 25.028 25.028 mm" * 0.203 0.203 0.009 1.204"	
Rainfall volume 256.78 13.51 270.30 c.m" 40 HYDROGRAPH Copy to Outflow"	
Rainfall losses 22.055 5.055 21.205 mm" 8 Copy to Outflow"	
Runoff depth 2.972 19.973 3.822 mm" 0.203 0.203 0.203 1.204"	
HUNOTT VOLUME 30.50 10.79 41.28 C.M" 40 HYDUGHAPH COMDINE 5"	
Maximum flow 0.006 0.009 0.009 c.m/sec" 5 Node #"	
40 HYDROGRAPH Add Runoff " u/s of HWY 7&8"	
4 Add Runoff "Maximum flow 1.223 c.m/sec"	
0.009 0.003 1.197" "Hydrograph volume 8174.944 c.m"	
40 HYDROGRAPH Copy to Outflow" 0.203 0.203 1.223"	
6 Copy to Out 100* 61 ADD Comment	
40 HYDROGRAPH Combine 5"	
6 Combine " Catchments to Inlet #6"	
5 Node #"	
u/s of HWY 7&6" 40 HYDROGRAPH Start - New Tributary"	
Maximum flow 1.204 c.m/sec* 2 Start - New (Flottary*	
nyurograph volume 5999.594 c.m 0.205 0.000 0.205 1.225	
at ADD COMMENT===================================	
3 Lines of comment" 3 Specify values"	
1 SCS method	
Good Lands" 160 Hamilton Heights Subdivision"	
40. UV To hutany" 8 160 Total Area"	
2 Start - New Fibulary 50.000 Fibulary 50.000 Fibulary 50.000 Fibulary	
0.009 0.000 0.009 1.204" 1.000 Overland Slope"	
33 CATCHMENT 121" 4.406 Pervious Area"	
1 Triangular SCS" 50.000 Pervious length	
1 Equal Length" 3.000 Mervious Aspa"	
1 Sos metilou S.7.54 miner vious Tenath	
0.000 % Impervious" 1.500 Impervious slope"	
43.240 Total Area" 0.250 Pervious Manning 'n'"	
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200.000 retryous tengen 0.021 retryous Manatan n.11ª 0.021 retryous Manatan n.11ª	
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w.	0.100 Impervious Ia/	S coefficient'					
*	0.518 Impervious Ini	tial abstract:	ion"				
÷.	0.417	0.000 0.2	203 1.223	c.m/sec"			
÷.	Catchment 160	Pervious	s Impervious	Total Area	1		
×	Time of concentrat	4.406	3.754	8,160	nectare		
	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	៣៣		
÷.	Runoff volume	2.974	20.113	10.858	៣៣		
	Runoff coefficien	t 0.119	0.804	0.434	с.ш "		
	Maximum flow	0.019	0.414	0.417	c.m/sec=		
* 4) HYDROGRAPH Add Rur	noff "					
÷.	4 Add Runoff "						
* 9	U.417 3 CATCHMENT 161*	0.417 0.2	203 1.223*				
*	1 Triangular SCS	ia.					
	3 Specify values	μ					
	1 SCS method*						
÷.	161 Klassen Bronze	Property"					
	32.000 % Impervious*						
	100.000 Flow length"						
	2.500 Overland Slope'	4					
*	1.598 Pervious Area*						
÷.	50.000 Pervious length	h"					
÷.	2.500 Pervious slope						
*	164.000 Impervious len	ath"					
7 .	1.500 Impervious slop	pe"					
•	0.250 Pervious Mannir	ng 'n'"					
	76.000 Pervious SCS Cu	urve No."					
2	0.119 Pervious Runoff	f coefficient'	•				
	8.021 Pervious Initi:	al abstraction					
	0.015 Impervious Man	ning 'n'"					
	98.000 Impervious SCS	Curve No."					
<u>.</u>	0.807 Impervious Rund	off coefficier	nt"				
÷.	0.100 Impervious Ia/S	S coefficient'					
	0.518 Impervious Init	0 417 0 2	LON" 203 1 223	0			
•	Catchment 161	Pervious	3 Impervious	Total Area			
5	Surface Area	1.598	0.752	2.350	hectare"		
÷.	Time of concentrat	tion 47.839	7.997	17.490	minutes"		
	Time to Centroid	199.975	129.846	146.555	minutes"		
5	Rainfall volume	25.028	25,028	25.028	mm -		
	Rainfall losses	22.053	4.821	16.539	mm [®]		
	Runoff depth	2.974	20,207	8.489	៣៣ "		
*	Runoff volume	47.53	151.95	199.48	c.m"		
	Runoff coefficient	t 0.119	0.807	0.339			
. 11) HYDROGRAPH Add Bur	0,007 off "	0.102	0.103	c.m/sec"		
	4 Add Runoff *						
1	0,103	0.520 0.2	203 1.223				
<u>*</u> 40	HYDROGRAPH Copy to	Outflow"					
1	8 Copy to Outflow	V"					
- 		0,520 0,5	520 1.223*				
*	6 Combine "	nia 2.					
	5 Node #"						
*	u/s of HWY 7&8"						
	Maximum flow	1	.743 c.m/s	ec"			
÷.	Hydrograph volume	9260	0.451 c.m"				
<i></i>	U.103	0,520 0,5	20 1.743*				

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....

*	81	у З (ADD COMMENT======= _ines of comment"					
		,	Vestern catchment a	long Ham	ilton	Road diver	ted to Inl	ot #6"
ŝ.				*****	*****			*****
	40	2	IYDROGRAPH Start - Start - New Trib	New Trib	outary"			
•		-	0.103 0	.000	0.520	1.743"		
•	33		CATCHMENT 170"					
2		1	Triangular SCS"					
		1	SCS method"					
•		170	Industrial/Resid	lential a	rea al	ong Hamilto	n Road*	
•		55,000	% Impervious"			Ũ		
:		8,450	Total Area"					
		45.000	Flow length" Overland Slope"					
		3.802	Pervious Area"					
•		30.000	Pervious length"					
٠		3,000	Pervious slope"					
:		4.648	Impervious Area"					
		235.000	Impervious lengt	"n" "				
		0.250	Pervious Manning	'n'"				
•		76.000	Pervious SCS Cur	ve No."				
•		0.119	Pervious Runoff	coeffici	ent"			
1		0.100	Pervious Ia/S co	efficien	t.			
		0.021	Tervious Initial	. abstrac	tion"			
		98.000	Impervious SCS C	urve No.				
		0.804	Impervious Runof	f coeffi	cient"			
		0.100	Impervious Ia/S	coeffici	ent"			
2		0.518	Impervious Initi	al abstr	action'	4 740	/ *	
			Catchment 170	Perv	100520	1.743 Impervious	C.M/Sec-	a *
		ŝ	Surface Area	3,80	2	4.648	8.450	hectare"
*		1	ime of concentrati	on 33.3	36	9.923	12.450	minutes"
2		1	ime to Centroid	181.	695	132.892	138,160	minutes"
			ainfall volume	25.0	68	25.028	25.028	
		Ē	ainfall losses	22.0	53	4.914	12.626	mm .
•		F	lunoff depth	2.97	5	20,114	12.401	
1		F	lunoff volume	113.	11	934.80	1047.91	c.m"
2		F	unoff coefficient	0.11	9	0.804	0.496	
	40	N F	YDROGRAPH Add Buno	0.02 ff "	0	0.510	0,514	c.m/sec"
•		4	Add Runoff "					
•			0.514 0	.514	0.520	1.743"		
1	56	C	VIVERSION"					
		1 560	Node number" Overflow throche	14.				
		1.000	Required diverte	d fracti	on*			
•		0	Conduit type; 1=	Pipe;2=C	hannel'	a		
		F	eak of diverted fl	ow	0.00	00 c.m/s	ec*	
2		N I	olume of diverted	flow	0.00	00 c.m"		
		L.	laior flow at 6"					
		1	0.514 0	.514	0.514	1,743	c.m/sec"	
*	40	F	YDROGRAPH Combin	e 9"				
		6	Combine "					
		9	NODE B*					
		N	laximum flow		0.51	4 c.m/s	ec "	
		Ĥ	lydrograph volume		1047.90	09 c.m."		
	40		0.514 0	.514	0.514	0.514"		
	40	, H	Start - New Taih	New Trib	utary"			
		6	Start - New HILD	ucary				

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			9 Node #"
ŝ	0.514 0.000 0.514 0.514"		
47	FILEI_O Read/Open DIVODOG.0025hyd"		NOVE A
2	1 1=read/open; 2=Write/save		
2	2 l=raintal; 2=nydrograph		Hyurographi volume 3250.652 C.m
S	Diverge constants	 81 	
Ş		*	a lines of comment*
*	Tably allow 0.000 c.m"		
	Maximum flow 0.000 c.m/sec*	•	Catchments South of Hwy 7/8"
÷	0,000 0,000 0,514 0,514 c,m/sec*		
- 40	HYDROGBAPH Add Bunoff "	• 40	HYDROGRAPH Start - New Tributary"
*	4 Add Bunoff "		2 Start - New Tributary"
	0.000 0.000 0.514 0.514"	•	0.000 0.000 1.305 1.305"
• 40	HYDROGRAPH Copy to Outflow"	• 33	CATCHMENT 180"
	8 Copy to Outflow"	•	1 Triangular SCS"
	0.000 0.000 0.000 0.514*		3 Specify values"
. 40	HYDROGRAPH Combine 5"		1 SCS method"
*	6 Combine "	-	180 Northeast portion of Maple Leaf Foods property"
	5 Node #"	-	26.000 % Impervious"
	u/s of HWY 7&8"	72	0.700 Total Area"
	Maximum flow 1.743 c.m/sec"		45.000 Flow length"
*	Hydrograph volume 9260.450 c.m"	-	1,500 Overland Slope"
	0.000 0.000 0.000 1.743"	•	0.518 Pervious Area"
* 40	HYDROGRAPH Confluence 5"		20.000 Pervious length"
H	7 Confluence "		2.000 Pervious slope"
	5 Node #*		0.182 Impervious Area"
	u/s of HWY 7&8"	•	68.000 Impervious length"
*	Maximum flow 1.743 c.m/sec"	1	1.000 Impervious slope"
*	Hydrograph volume 9260.450 c.m		0.250 Pervious Manning 'n'"
	0.000 1.743 0.000 0.000"		79.000 Pervious SCS Curve No."
• 54	POND DESIGN"		0.155 Pervious Runoff coefficient"
*	1.743 Current peak flow c.m/sec*		0.100 Pervious Ia/S coefficient"
	0.070 Target outflow c.m/sec"	5	6.752 Pervious Initial abstraction"
	9260,5 Hydrograph volume c.m"	-	0.015 Impervious Manning 'n'"
	7. Number of stages"	*	98.000 Impervious SCS Curve No."
	334.290 Minimum water level metre*	<u>.</u>	0.805 Impervious Runoff coefficient*
*	336.800 Maximum water level metre"		0.100 Impervious Ia/S coefficient"
	334.290 Starting water level metre"	*	0.518 Impervious Initial abstraction"
	0 Keep Design Data: 1 = True; 0 = False*	*	0.026 0.000 1.305 1.305 c.m/sec"
	Level Discharge Volume"		Catchment 180 Pervious Impervious Total Area 🗈
•	334.290 0.000 0.000"		Surface Area 0.518 0.182 0.700 hectare
	334.500 0.2540 5.000"	÷ .	Time of concentration 24.655 5.325 12.178 minutes"
	335.000 1.303 390.000"		Time to Centroid 169.975 125.607 141.338 minutes"
•	335.500 2.800 3269.000°	5	Rainfall depth 25.028 25.028 25.028 mm"
	336.000 4.639 13030.00"		Rainfall volume 129.64 45.55 175.19 c.m"
÷	336,400 6.109 30065.00°	•	Rainfall losses 21.137 4.869 16.908 mm"
	336.800 18.376 57257.00"	•	Runoff depth 3.890 20.158 8.120 mm"
•	Peak outflow 1.305 c.m/sec°		Runoff volume 20.15 36.69 56.84 C.m ⁻
	Maximum level 335.001 metre"	<u></u>	Runoff coefficient 0.155 0.805 0.324
÷	Maximum storage 393.871 c.m°	÷	Maximum 110W 0.004 0.025 0.026 C.m/sec*
*	Centroidal lag 4.628 hours"	= 40	HYDHOGHAPH Add Runott
*	0.000 1.743 1.305 0.000 c.m/sec"		4 Add Runott "
* 40	HYDROGRAPH Next link •	÷	0.026 0.026 1.305 1.305"
÷	5 Next link "	54	POND DESIGN"
<u>.</u>	0.000 1.305 1.305 0.000"		0.026 Current peak flow c.m/sec"
* 56	DIVERSION*	÷	0.070 larget outflow c.m/sec
18.	7 Node number"	- C	so.s nyurograph volume c.m.
ð	7.170 Overflow threshold"	<u> </u>	8. Number of stages"
<u>.</u>	1.000 Required diverted fraction"		0.000 Minimum water level metre"
	0 Conduit type; 1=Pipe;2=Channel	.*	0.750 Maximum water level metre"
	Peak of diverted flow 0.000 c.m/sec"	÷	U.UUU Starting water level metre"
	Volume of diverted flow 0.000 c.m"	- C	U Keep Design Data: 1 = Irue; U = Faise"
	DIV00007.0025hyd"	÷	Level Discharge Volume"
ð	Major flow at 7"		0.000 0.000 0.000"
	0.000 1.305 1.305 0.000 c.m/sec"	÷	0.1500 0.00400 1.000"
* 40	HYDROGRAPH Combine 8"	÷ .	0.2500 0.00600 8.000"
	6 Combine •	÷	0.3500 0.00700 29.000"

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*	0.4500 0.00800 69.000" 0.6500 0.01000 178.000" 0.7000 0.1060 208.000"		0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume" 0.000 0.000 0.000"
÷ .	0.7500 0.2810 240.000" Peak outflow 0.006 c.m/sec"		0.3000 0.09000 8.000" 0.6000 0.1200 97.000"
÷ –	Maximum level 0,299 metre" Maximum storage 18,314 c.m"		0.9000 0.1300 167.000"
÷ .	Centroidal lag 2.830 hours"		1.500 0.1500 358.000*
* 40	HYDROGRAPH Combine 9"		1.800 1.000 400.000" Peak outflow 0.111 c.m/sec"
÷ .	6 Combine * 9 Node #"		Maximum level 0.517 metre"
:	NODE B"		Centroidal lag 2.232 hours"
3	Hydrograph volume 1104.749 c.m"		0.240 0.240 0.111 0.520 c.m/sec" 40 HYDROGRAPH Combine 9"
40	0.026 0.026 0.006 0.520" HYDROGRAPH Start - New Tributary"		6 Combine " 9 Node #"
*	2 Start - New Tributary"		NODE B"
• 33	CATCHMENT 101"		Maximum flow 0.620 c.m/sec" Hydrograph volume 1454.777 c.m"
÷	1 riangular SCS" 3 Specify values"		0.240 0.240 0.111 0.620" 40 HYDBOGBAPH Start - New Tributary"
÷	1 SCS method"		2 Start - New Tributary
8	93.000 % Impervious"		0.240 0.000 0.111 0.620" 33 CATCHMENT 182"
â -	1.870 Total Area" 120.000 Flow length"		1 Triangular SCS" 3 Specify values"
÷ .	1.000 Overland Slope" 0.131 - Repuises Appa"		1 SCS method"
*	20.000 Pervious length"		182 Eastern portion of John Bear property" 69.000 % Impervious"
	2.000 Pervious slope" 1.739 Impervious Area"		1.210 Total Area"
÷ .	112.000 Impervious length"		2.500 Overland Slope"
	0.250 Pervious Manning 'n'"		0.375 Pervious Area" 30.000 Pervious length"
	0.035 Pervious Runoff coefficient"		3.000 Pervious slope" 0.835 Impervious Area"
*	0.100 Pervious Ia/S coefficient" 13.677 Pervious Initial abstraction"		90.000 Impervious length"
<u>\$</u>	0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"
÷	0.801 Impervious Runoff coefficient"		65.000 Pervious SCS Curve No." 0.035 Pervious Runoff coefficient"
	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"		0.100 Pervious Ia/S coefficient"
:	0.240 0.000 0.006 0.520 c.m/sec*		0.015 Impervious Manning 'n'"
÷	Surface Area 0,131 1.739 1.870 hectare"		98.000 Impervious SCS Curve No." 0.804 Impervious Runoff coefficient"
÷	Time of concentration 65.090 7.184 7,373 minutes" Time to Centroid 219,733 128,615 128,912 minutes"		0.100 Impervious Ia/S coefficient
5	Rainfall depth 25.028 25.028 25.028 mm"		0.112 0.000 0.111 0.620 c.m/sec"
	Rainfall losses 24.158 4.975 6.318 mm"		Catchment 182 Pervious Impervious Total Area " Surface Area 0.375 0.835 1.210 hectare"
•	Runoff depth 0.870 20.053 18.710 mm" Runoff volume 1.14 348.74 349.87 c.m"		Time of concentration 73.509 5.118 6.420 minutes"
÷	Runoff coefficient 0.035 0.801 0.748		Rainfall depth 25.028 25.028 mm
40	HYDROGRAPH Add Runoff		Haintall volume 93.88 208.96 302.83 c.m" Rainfall losses 24.158 4.901 10.871 mm"
8	4 AGG HUNOTT - 0.240 0.240 0.006 0.520		Runoff depth 0.870 20.126 14.157 mm" Runoff volume 3.26 168 04 171 30 c m"
54	POND DESIGN" 0.240 Current peak flow c.m/sec"		Runoff coefficient 0.035 0.804 0.566 "
2	0.070 Target outflow c.m/sec"		MAXIMUM 110W 0.000 0.112 0.112 c.m/sec" 40 HYDROGRAPH Add Runoff "
8	7. Number of stages"		4 Add Runoff " 0.112 0.111 0.620"
ŝ.	0,000 Minimum water level metre" 1,800 Maximum water level metre"		54 POND DESIGN" 0.112 Curpent peak flow o m/cee"
0	0.000 Starting water level metre"		0.070 Target outflow c.m/sec*

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171.3 Hydrograph volume c.m"	40 HYDROGRAPH Copy to Outflow"
5. Number of stages"	
• 0.000 Millmum water level metre	* 40 HYDROGRAPH Combine 9"
0.000 Starting water level metre"	6 Combine "
0 Keep Design Data: 1 = True: 0 = False"	• 9 Node #"
Level Discharge Volume"	NODE B"
0.000 0.000 0.000"	Maximum flow 1.272 c.m/sec"
0.3200 0.04300 276.000	Hydrograph volume 3210,438 C.m"
0.7500 0.06600 333.000"	• 0.003 0.003 0.003 1.272
1.400 0.08700 371.000	
Peak out-flow 0.015 c.m/sec*	• 8 Node #"
Maximum level 0.113 metre"	NODE A"
Maximum storage 97.471 c.m"	Maximum flow 1.305 c.m/sec*
Centroidal lag 3.904 hours"	Hydrograph volume 9256.890 c.m"
0.112 0.112 0.015 0.620 c.m/sec*	• 0.663 1.305 0.663 0.000°
40 HYDROGRAPH Combine 9"	40 HYDROGHAPH Copy to Outflow"
6 Combine "	
9 NODE #*	* 40 HYDROGRAPH Combine 9*
NOUE D Maximum flow 0.629 cm/sec*	6 Combine "
Hydrograph valume 1626.073 c.m"	• 9 Node #"
0.112 0.112 0.015 0.629"	NODE B"
40 HYDROGRAPH Start - New Tributary"	 Maximum flow 2.577 c.m/sec*
2 Start - New Tributary"	Hydrograph volume 12467.332 c.m [*]
0.112 0.000 0.015 0.629"	0.663 1.305 1.305 2.5//*
33 CATCHMENT 183"	40 HIDROGRAPH Start - New Inibitary
1 Irlangular SCS"	2 Start - New Hibblary 0.663 0.000 1.305 2.577"
1 SCS method	* 33 CATCHMENT 184"
Area along western tributary, south of Hwy 7/8"	1 Triangular SCS"
29.000 % Impervious"	• 1 Equal length"
* 23.290 Total Area*	1 SCS method"
160.000 Flow length"	164 Agricultural lands south of Bleams Road"
2.000 Overland Slope	2.000 % Impervious"
16.536 Pervious Area	2.950 IOLAL Area
150.000 Fervious length"	3.100 Overland Slope"
6 754 Impervious Apag [*]	2.891 Pervious Area"
394.000 Impervious length"	80.000 Pervious length"
2.000 Impervious slope"	* 3.100 Pervious slope"
• 0.250 Pervious Manning 'n'	0.059 Impervious Area"
68.300 Pervious SCS Curve No."	80.000 Impervious length
0.053 Pervious Runoff coefficient"	3.100 Impervious slope"
0.100 Pervious la/s coefficient	74 000 Pervious SCS Curve No "
0.015 Impervision Initial abstraction	0.098 Pervious Runoff coefficient"
94.000 Impervious SCS Curve No."	 0.100 Pervious Ia/S coefficient"
0.807 Impervious Runoff coefficient*	8.924 Pervious Initial abstraction*
0.100 Impervious Ia/S coefficient*	" 0.015 Impervious Manning 'n'"
* 0.518 Impervious Initial abstraction"	98.000 Impervious SCS Curve No."
0.663 0.000 0.015 0.629 c.m/sec"	0.800 Impervious Runott coetticient"
Catchment 183 Pervious Inpervious Total Area	" 0.100 Impervious lais coefficient
SUFTACE AFEA 16.535 5.754 23.250 NECLARE	0.008 0.000 1.305 2.577 c.m/sec"
	Catchment 184 Pervious Impervious Total Area "
Bainfall donth 25.028 25.028 25.028 mm ⁴	* Surface Area 2.891 0.059 2.950 hectare"
Rainfall volume 4138.55 1690.39 5828.95 c.m°	Time of concentration 69.384 4.181 60.103 minutes"
Rainfall losses 23.691 4.842 18.225 mm"	Time to Centroid 223.349 123.816 209.181 minutes"
* Runoff depth 1.337 20.186 6.803 mm*	Rainfall depth 25.028 25.028 mm"
"Runoff volume 221.02 1363.35 1584.37 c.m"	Rainfall volume 723.55 14.77 738.32 c.m"
Runoff coefficient 0.053 0.807 0.272	 Raintall losses 22.567 5.012 22.215 mm[*] Durade database 22.667 5.012 22.215 mm[*]
Maximum flow 0.014 0.663 0.663 c.m/sec*	- нилотт deptn 2.401 20.015 2.512 mm ⁻
40 HYDROGRAPH Add Runoff "	Aurori volume /1.15 /1.61 02.50 0.11 Bunoff coefficient 0.098 0.800 0.112 "
- 4 AUG TUTUTT - 0.663 0.653 0.015 0.629*	Maximum flow 0.008 0.008 c.m/sec"
0.000 0.000 0.010 0.020	

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• 40	HYDROGRAPH Add Runoff "				Runoff volume 62.88 2108.71 2261.50 c.m.	
-	4 Add Runoff "				Runoff coefficient 0.032 0.807 0.481	
	0,008 0.008 1.305	2.577"			Maximum flow 0.007 1.111 1.111 c.m/sec*	
40	HYDROGRAPH Copy to Outflow"			* 40	HYDROGRAPH Add Runoff	
	B COPY TO OUTTION"	0 5771		1.5	4 Add Runoff "	
40	HYDROGRAPH Combine 9"	2.5//*			1.111 1.111 2.582 2.582*	
10	6 Combine "			40	HYDROGRAPH Copy to Outflow"	
	9 Node #"				6 Copy to ULTTIOW"	
	NODE B"			• 40	HYDROGRAPH Combine 10"	
	Maximum flow 2.582	c.m/sec"		*	6 Combine "	
	Hydrograph volume 12550.296	C.M"			10 Node #"	
- 40	0.008 0.008 0.008	2.582"			NODE C"	
40	HIDRUGHAPH CONTILIENCE 9"				Maximum flow 3.668 c.m/sec*	
	9 Node #"				Hydrograph volume 14811.887 c.m"	
	NODE B"				1.111 1.111 1.111 3.668	
	Maximum flow 2.582	c.m/sec"		-	ADD COMMENT	
	Hydrograph volume 12550.297	С.П"				
	0.008 2.582 0.008	0.000"			Catchments north of Hwy 7/8, towards Eastern Tributary"	
40	HYDROGRAPH Copy to Outflow"			0.00		
	8 Copy to Outflow"			* 40	HYDROGRAPH Start - New Tributary"	
40	U.008 2.582 2.582 HVDBOGBARH Combine 10*	0.000"			2 Start - New Tributary"	
40	6 Combine "				1.111 0.000 1.111 3.668"	
	10 Node #"			33	CATCHMENT 150"	
<u>.</u>	NODE C"					
	Maximum flow 2.582	c.m/sec"			1 SCS method"	
	Hydrograph volume 12550.297	с.""т			150 Southern portion of Rec Centre fields"	
40	0.008 2.582 2.582	2.582*			0.000 % Impervious"	
40	ATTOHOGHAPH STAFT - New Tributary"				3.510 Total Area"	
	2 Start - New Intoutary	0 5001			95.000 Flow length	
33	CATCHMENT 185"	2.302			1.600 Overland Slope"	
e	1 Triangular SCS*				S.STO PERVIOUS APER	
·	3 Specify values*				2.000 Pervious slopa"	
	1 SCS method"				0.000 Impervious Area"	
	185 Morningside Retirement Community	lands"		(1)	296.000 Impervious length"	
i.	18 780 Tatal Annak				2.000 Impervious slope"	
	190 000 Flow length"			1	0.250 Pervious Manning 'n'"	
e la compañía de la c	2.000 Overland Slope"				74.000 Pervious SCS Curve No."	
4()	7.888 Pervious Area"				0.098 Pervious Hunort coefficient"	
e	25.000 Pervious length"				8.924 Pervious Taitial abstraction	
	2.500 Pervious slope"				0.015 Impervious Manning 'n'	
	10.892 Impervious Area"				98.000 Impervious SCS Curve No."	
6	2 500 Impervious length"				0.000 Impervious Runoff coefficient"	
	0 250 Pervious Manning 'n'"				0.100 Impervious Ia/S coefficient*	
ē	64,400 Pervious SCS Curve No."			2	0.518 Impervious Initial abstraction"	
9	0.032 Pervious Runoff coefficient"				0.008 0.000 1.111 3.668 c.m/sec*	
	0.100 Pervious Ia/S coefficient"				Surface Arga 2 510 0000 2 514 Area "	
	14.041 Pervious Initial abstraction [®]				Time of concentration 90 470 10 455 90 470 mettare	
	0.015 Impervious Manning 'n'"				Time to Centroid 248.117 133.696 248.116 minutes"	
	98.000 Impervious SCS Curve No."				Rainfall depth 25.028 25.028 25.028 mm"	
0	0.607 Impervious Runott coetticient"				Rainfall volume 878.47 0.00 878.47 c.m*	
	0.518 Impervious Initial abstraction				Rainfall losses 22.566 4.857 22.566 mm"	
	1,111 0.000 2 582	2.582 c m/sec"		1	Hunorr depth 2.461 20.171 2.461 mm*	
	Catchment 185 Pervious Im	pervious Total Area	40 - 40 - 40 - 40 - 40 - 40 - 40 - 40 -		NUNUTI VOLUME 86.39 0.00 86.40 c.m"	
	Surface Area 7.888 10	.892 18.780	hectare"		Maximum flow 0.008 0.000 0.008	
	Time of concentration 73,186 10	.886 12.618	minutes"	* 40	HYDROGRAPH Add Runoff "	
	Time to Centroid 227.867 13	4.366 136.966	minutes"		4 Add Runoff "	
	Rainfall depth 25.028 25	.028 25.028	mm "		0.008 0.008 1.111 3.668"	
	Rainfall Lossos 24 001 47	26.11 4700.20	C.m"	* 40	HYDROGRAPH Copy to Outflow [®]	
	Runoff denth 0 797 20	186 12.985	mm *	1	8 Copy to Outflow"	
		12,043	000		0.008 0.008 0.008 3.668"	

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 40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #" u/s of east culvert of HWY 7&8" 		:	152 5.000 8.560 170.000	Southern portion of Schneider lands" % Impervious" Total Area" Flow length"			
Maximum flow 0.008 c.m/sec" Hydrograph volume 86.395 c.m"		÷	3.500 8.132 170.000	Overland Slope" Pervious Area" Pervious length"			
40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 2 Open -		:	3.500 0.428 170.000	Pervious slope" Impervious Area" Impervious length"			
33 CATCHMENT 151" 1 Triangular SCS"		÷	3.500 0.250 82.000	Impervious slope" Pervious Manning 'n'" Pervious SCS Curve No. "			
1 SCS method" 151 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"		÷	0.201	Pervious Runoff coefficient" Pervious Ia/S coefficient" Pervious Ioitial abstraction			
53.000 % Impervious 5.770 Total Area" 100.000 Flow length" 2.000 Overland Slope"			0.015 98.000 0.802	Impervious Manning 'n'" Impervious SCS Curve No." Impervious Runoff coefficient"			
3.866 Pervious Area" 100.000 Pervious length" 2.000 Pervious slope"		÷	0.100 0.518	Impervious Ia/S coefficient" Impervious Initial abstraction" 0.065 0.000 0.202 0.202 c.m/sec"			
1.904 Impervious Area" 296.000 Impervious length" 2.000 Impervious slope"			C S T	atchment 152 Pervious Impervious Total Area " urface Area 8.132 0.428 8.560 hectare" ime of concentration 65.013 6.337 54.827 minutes"			
0.250 Pervious Manning 'n'" 76.000 Pervious SCS Curve No." 0.119 Pervious Runoff coefficient"		÷	T R P	ime to Centroid 224.749 127.221 207.817 minutes" ainfall depth 25.028 25.028 25.028 mm" ainfall volume 2035.25 107.12 2142.37 c.m"			
0.100 Pervious Ia/S coefficient" 8.021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"		:	H F P	alntall losses 19.997 4.947 19.244 mm" unoff depth 5.031 20.081 5.783 mm" unoff volume 409.11 85.94 495.06 c.m"			
98.000 Impervious SCS Curve No.* 0.806 Impervious Runoff coefficient" 0.100 Impervious In/S coefficient" 0.518 Impervious Initial Abstraction"		:	40 H	aximum flow 0.047 0.060 0.065 c.m/sec" YDROGRAPH Add Runoff " Add Runoff "			
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"		•	40 H	0.065 0.065 0.202 0.202" YDROGRAPH Copy to Outflow" Copy to Outflow"			
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"			40 H	0.065 0.065 0.065 0.202" YDROGRAPH Combine 11" Combine "			
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"			11 	Node #" u/s of east culvert of HWY 7&8" laximum flow 0.267 c.m/sec" u/decarabh volume 1080 530 c.m"			
Hunoff 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 H	VDROGRAPH VOLUME 10001000 0.1m 0.065 0.065 0.267 YDROGRAPH Start - New Tributary" Start - New Tributary"			
40 HIDROGRAPH Add KUNCH 4 Add Runoff " 0.202 0.202 0.008 0.008" 40 HYDROGRAPH Copy to Outflow"		:	47 F 1	0.065 0.000 0.065 0.267" ILEI_O Read/Open DIV00007.0025hyd" 1=read/open; 2=write/save"			
8 Copy to Outflow" 0.202 0.202 0.202 0.008" 40 HYDROGRAPH Combine 11"			2 1 [1=rainfall; 2=hydrograph" 1=runoff; 2=inflow; 3=outflow; 4=junction" IV00007.0025hyd"			
6 Combine " 11 Node #" u/s of east culvert of HWY 7&6"			۸ ۲ ۸	lajor flow at 7" otal volume 0.000 c.m" laximum flow 0.000 c.m/sec"			
Maximum flow 0.202 c.m/sec" Hydrograph volume 585.471 c.m" 0.202 0.202 0.202 0.202"		1.0	40 H	0.000 0.000 0.005 0.267 C.m//sec IVDROGRAPH Add Runoff " Add Runoff " 0.000 0.000 0.065 0.267"			
40 HYDHUGHAPH START - NEW FRIDUTARY" 2 Start - New Tributary" 0.202 0.000 0.202 0.202° 23 CATCHNENT 150"			40 H B	YDROGRAPH Copy to Outflow" Copy to Outflow" 0.000 0.000 0.000 0.267"			
Triangular SCS" Equal length" SCS method"			40 6 11	YZROGRAPH Combine 11" Combine " Node #"			

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		w/a of apot oulwast of W	V ZROI			
1		Maximum flow	0.267	0		
- 3		Hydrograph volume 1	0.207	C.m"		
		0.000 0.000	0.000	0.267*		
	40	HYDROGRAPH Confluence 1	1"	0.207		
- 3		7 Confluence "				
- 6		11 Node #"				
	•	u/s of east culvert of HW	Y 7&6"			
- 3		Maximum flow	0.267	c.m/sec"		
- 8		Hydrograph volume 1	080.530	с. "		
		0.000 0.267	0.000	0.000"		
	54	POND DESIGN*				
- 5		0.267 Current peak flow c.m/	sec"			
1		0.070 Target outflow c.m/sec				
- 3		1080.5 Hydrograph volume c.m"				
1		Number of stages"				
- 1		332.660 Minimum water level me	tre"			
- 8		336,000 Maximum water level me	tre"			
- 3		332,660 Starting water level m	etre"			
1		U Keep Design Data: 1 = Iru	e; 0 = F	alse"		
	,	rever processing of the	e -			
- 3		333 000 0.000 0.0	00"			
- 34		333 500 1 168 1914 0	00			
		334.000 2.325 4798 0	00"			
- 2		334.500 3.132 9073.0	00"			
- 8		335,000 3,780 14775.	00"			
		335.500 4,332 22251.	00"			
- 24	•	335,750 4,583 26742.	00°			
- 3		336.000 21.985 31757.	00"			
		Peak outflow	0.157	c.m/sec"		
- 2		Maximum level	332.839	metre"		
- 1		Maximum storage	140.204	с.п"		
- 1		Centroidal lag	3.376	hours"		
- 5		0.000 0.267 0.1	57 0	.000 c.m/sec"		
- 3	40	HYDROGRAPH Next link "				
- 2		5 Next link "				
- 2		0.000 0.157	0.157	0.000"		
- 9	38	START/RE-START TOTALS 11				
- 3		3 RUNDTT IOTALS ON EXIT"		000 000		
- 9		Total Calcoment area		228.020	nectare"	
		Total & impervious area		50.613	nectare"	
	10	EVIT:		22.197*		
	19	CATI				

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MIDUSS Output	Time to Centroid 171,264 97.071 171.264 minutes"						
MIDUSS version Version 2.25 rev. 473"	Rainfall depth 34.259 34.259 34.259 mm"						
MIDUSS created Sunday, February 07, 2010	Rainfall volume 1017.48 0.00 1017.48 c.m"						
10 Units used: 1e METRIC [*]	Aainfall losses 24,517 5,180 24,517 mm"						
Output filename: 34896-104 Pre-002vr out*	HUNOTT GEPTIN 9.742 29.079 9.742 mm*						
Licensee name: admin"	Runoff coefficient 0.284 0.000 0.284 "						
Company Microsoft"	Maximum flow 0.044 0.000 0.044 c.m/sec"						
Date & Time last used: 12/7/2018 at 11:50:00 AM"	40 HYDROGRAPH Add Runoff "						
81 ADD COMMENT	4 Add Runoff "						
/ Lifes of comment	• 33 CATCHINE 102						
Wilmot Employement Lands"	1 Trianular SCS"						
New Hamburg, Ontario"	1 Equal length"						
2 year Storm Event - Pre-development"	1 SCS method"						
	102 Pfenning Farm Development - north of GEXR"						
	0.000 % Impervious"						
* 31 TIME PARAMETERS"	180.000 Flow length"						
5,000 Time Step"	2.500 Overland Slope"						
240.000 Max. Storm length"	12.070 Pervious Area"						
1500,000 Max. Hydrograph"	180.000 Pervious length"						
SZ STORM Chicago Storm"	2.500 Pervious slope"						
743.000 Coefficient A"	180.000 Impervious Area						
6.000 Constant B"	2.500 Impervious slope"						
0.799 Exponent C"	0.250 Pervious Manning 'n'"						
0,400 Fraction R"	82.000 Pervious SCS Curve No."						
180.000 Duration"	0.284 Pervious Runoff coefficient"						
• Novimum step multiplier	5.575 Parvious 1a/s coerticipet						
Total depth 34.259 mm"	0.015 Impervious Maning 'n'"						
6 002hyd Hydrograph extension used in this file"	98.000 Impervious SCS Curve No."						
81 ADD COMMENT===================================	0.000 Impervious Runoff coefficient"						
3 Lines of comment"	0.100 Impervious Ia/S coefficient						
Catchments North of GEVE part of Tolet #1	0.518 Impervious initial abstraction						
	Catchment 102 Pervious Impervious Tablarea "						
33 CATCHMENT 101"	Surface Area 12.070 0.000 12.070 hectare"						
1 Triangular SCS"	Time of concentration 54.725 6.055 54.725 minutes"						
1 Equal length"	Time to Centroid 171.532 97.107 171.532 minutes"						
101 Area Northeast of GEVE	Hainfall depth 34,259 34,259 mm"						
0.000 % Impervious"	Rainfall losses 24 516 5 185 24 516 mm*						
* 2.970 Total Area"	Runoff depth 9,742 29,074 9,742 mm*						
80.000 Flow length"	Runoff volume 1175.87 0.00 1175.87 c.m"						
0.500 Overland Slope"	Runoff coefficient 0.284 0.000 0.284 "						
2.970 Pervious length"	Maximum flow 0.177 0.000 0.177 c.m/sec"						
0.500 Pervious slope"	40 ntonvokarn Add Runoff "						
0.000 Impervious Area"	• 0.177 0.220 0.000 0.000"						
80.000 Impervious length"	* 40 HYDROGRAPH Copy to Outflow"						
0.500 Impervious slope"	8 Copy to Outflow"						
0.250 Pervious Manning 'n'"	0.177 0.220 0.220 0.000"						
0.284 Pervious Runoff coefficient"	40 HYDROGRAPH COMDINE 1"						
0.100 Pervious Ia/S coefficient"	1 Node #"						
5.576 Pervious Initial abstraction"	u/s of GEXR"						
0.015 Impervious Manning 'n'	Maximum flow 0.220 c.m/sec"						
98.000 Impervious SCS Curve No."	Hydrograph volume 1465.209 c.m"						
0.100 Impervious Taks confficient"	0.177 0.220 0.220 0.220°						
0.518 Impervious Initial abstraction"	20 niunugarh Start - New Iributary" 2 Start - New Tributary"						
0.044 0.000 0.000 0.000 c.m/sec"	• 0.177 0.000 0.220 0.220*						
Catchment 101 Pervious Impervious Total Area *	33 CATCHMENT 103"						
Surface Area 2.970 0.000 2.970 hectare"	1 Triangular SCS"						
Inne or concentration 54.522 6.033 54.522 minutes"	Equal length						

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	1 SCS method"	- 81	ADD COMMENT	
	103 Woodlot - north of GEXR"	÷.	3 Lines of comment"	
	U.UUU % IMPERVIOUS"	÷.	Catchments South of GEXR part of Tolet #1"	
	80.000 Flow length"		Secondents South of deat, part of inset #1	
	2.500 Overland Slope*	* 33	CATCHMENT 104"	
	2.080 Pervious Area"	<u>*</u>	1 Triangular SCS"	
ā	80.000 Pervious length"	<u>.</u>	3 Specify values"	
÷ .	2.500 Pervious Slope"	- ÷	1 SCS method"	
×	0.000 Impervious Area	*	59 000 & Impervious"	
	2.500 Impervious slope"		2.020 Total Area"	
	0.250 Pervious Manning 'n'"		35.000 Flow length"	
	70.000 Pervious SCS Curve No."		1.200 Overland Slope"	
	0.121 Pervious Runott coefficient"	÷	0.828 Pervious Area"	
<u> </u>	U.100 PERVIOUS LA/S COETTICIENT" 10 886 - Pervious Initial abstraction"		2.000 Pervious length	
¥	0.015 Impervious Manning 'n'"		1.192 Impervious Area"	
	98.000 Impervious SCS Curve No."	* -	116.000 Impervious length"	
ð	0.000 Impervious Runoff coefficient"	5	0.500 Impervious slope"	
÷	0.100 Impervious Ia/S coefficient"	÷.	0.250 Pervious Manning 'n'"	
	0.518 Impervious initial abstraction \sim 0.220 c m/sec"		0.189 Pervious Bunoff coefficient"	
	Catchent 103 Pervious Impervious Total Area "	*	0.100 Pervious IA/S coefficient"	
	Surface Area 2.080 0.000 2.080 hectare"		8.021 Pervious Initial abstraction"	
	Time of concentration 56.918 3.722 56.918 minutes"		0.015 Impervious Manning 'n'"	
	Time to Centroid 169.776 93.696 169.775 minutes"		98.000 Impervious SCS Curve No."	
:	Rainfall depth 34.259 34.259 ar.259 mm"	- C	0.850 Impervious Runoff coefficient"	
<u> </u>	Hainfall volume /12.58 0.00 /12.58 C.m" Poinfall Losson 30.128 5.618 30.128 mm"	<u> </u>	0.100 Impervious la/s coefficient" 0.518 Impervious Initial abstraction"	
	Rainfail 105565 50.120 5.616 50.120 min Bunoff denth 4 130 28 641 4 130 mm ⁿ		0.248 0.000 0.233 0.233 c.m/sec"	
	Runoff volume 85.91 0.00 85.91 c.m"		Catchment 104 Pervious Impervious Total Area "	
•	Runaff coefficient 0.121 0.000 0.121 "		Surface Area 0.828 1.192 2.020 hectare"	
*	Maximum flow 0.013 0.000 0.013 c.m/sec"		Time of concentration 38.115 7.539 11.625 minutes"	
40	HYDROGRAPH Add Runoff "		Time to Centroid 149.857 99.373 106.120 minutes"	
<u> </u>	4 Add HUNOTT "	÷.	Rainall volume 283 73 408 29 54.259 101 "	
- 40	HYDROGRAPH Copy to Outflow"		Rainfall losses 27.795 5.138 14.427 mm"	
*	8 Copy to Outflow"		Runoff depth 6.464 29.121 19.831 mm"	
	0.013 0.013 0.013 0.220"		Runoff volume 53,53 347.06 400.59 c.m"	
40	HYDROGRAPH Combine 1"		Runoff coefficient 0.189 0.850 0.579 "	
Q	6 Compine "	* 40	MAXIMUM TIOW 0.010 0.246 0.248 C.M/SeC"	
	I NODE #	. 40	4 Add Runoff "	
	Maximum flow 0.233 c.m/sec"		0.248 0.248 0.233 0.233"	
•	Hydrograph volume 1551.121 c.m°	* 54	POND DESIGN"	
*	0.013 0.013 0.013 0.233"	- C	0.248 Current peak flow c.m/sec"	
40	HYDROGRAPH Confluence 1"	<u> </u>	0.070 larget outlow c.m/sec"	
			4. Number of states"	
÷ .	u/s of GEXR"	*	0.000 Minimum water level metre"	
×	Maximum flow 0.233 c.m/sec"		0.910 Maximum water level metre"	
	Hydrograph volume 1551.121 c.m"		0.000 Starting water level metre"	
š	0.013 0.233 0.013 0.000"		0 Keep Design Data: 1 = True; 0 = False"	
40	HYDROGRAPH Copy to Outflow"	÷.	Level Discharge Volume-	
			0.3100 0.03090 782.000"	
• 40	HYDROGRAPH Combine 2"		0.6100 0.1232 1619.000"	
	6 Combine "	×	0.9100 0.2769 2511.000"	
*	2 Node #"	<u>.</u>	Peak outflow 0.012 c.m/sec"	
<u>.</u>	INLET 1"	÷	Maximum level 0.122 metre"	
ē.	Maximum flow 0.233 c.m/sec	÷ –	Maximum storage 308.035 c.m"	
	Hyarograph volume 1551.121 C.m ⁻		Gentroidal lag 5.710 NOURS" 0.248 0.248 0.012 0.239 c.m/sac"	
* 40	HYDROGRAPH Start - New Tributary	• 40	HYDROGRAPH Combine 2"	
	2 Start - New Tributary"		6 Combine "	
	0.013 0.000 0.233 0.233"		2 Node #"	

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Design and the		And the second second						
	INLET 1"	2	0.015 Impervious Manning 'n'"					
	Maximum flow 0.244 c.m/sec*	*	98.000 Impervious SCS Curve No."					
	Hydrograph volume 1937.027 c.m	- S	0.837 Impervious Runoff coefficient					
	0.248 0.248 0.012 0.244*		0.100 Impervious Ia/S coefficient					
40	HIDHUGHAPH START - New Fributary-		0.518 Impervious Initial abstraction					
	2 Start - New Hildburg		U.219 U.487 U.U12 U.244 C.M/SEC ⁻					
. 33	CATCHMENT 105"		Surface Area 0 192 1 088 1 280 bectare"					
•	1 Triangular SCS*		Time of concentration 39,437 3,465 4,841 minutes"					
	3 Specify values"		Time to Centroid 151,482 93,287 95,512 minutes"					
	1 SCS method®	*	Rainfall depth 34.259 34.259 mm*					
	105 Iron Bridge Manufacturing Property"	•	Rainfall volume 65.78 372.73 438.51 c.m"					
*	65.000 % Impervious"	*	Rainfall losses 27.794 5.569 8.902 mm"					
	3.570 Total Area"	<u>,</u>	Runoff depth 6.465 28.690 25.356 መመ"					
.	90.000 Flow length"		Runoff volume 12.41 312.15 324.56 c.m"					
	2.000 Overland Slope		Runoff coefficient 0,189 0,837 0,740 "					
	1.250 Pervious Area		Maximum Tlow 0.002 0.219 0.219 c.m/sec*					
	2.000 Pervious fengine	40	A Add Runoff "					
•	90.000 Impervious length"	- 40	HYDROGRAPH Copy to Outflow"					
	2.000 Impervious slope"		8 Copy to Outflow"					
	0.250 Pervious Manning 'n'"		0.219 0.706 0.706 0.244"					
	81.000 Pervious SCS Curve No."	* 40	HYDROGRAPH Combine 2"					
	0.266 Pervious Runoff coefficient"		6 Combine "					
	0.100 Pervious Ia/S coefficient	61	2 Node #"					
÷	5.958 Pervious Initial abstraction"	<u>.</u>	INLET 1"					
	0.015 Impervious Manning 'n'	- E	Maximum flow 0.742 c.m/sec*					
	0.843 Impervious SCS Curve No.		Hydrograph Volume 3045.955 C.m."					
	0.000 Impervious Ta/S coefficient*	* 40	U.1219 U.100 U.100 U.142					
	0.518 Impervious Initial abstraction"	. 40	2 Start - New Tributary					
÷	0.487 0.000 0.012 0.244 c.m/sec*	÷.	0.219 0.000 0.706 0.742					
• :	Catchment 105 Pervious Impervious Total Area "	* 33	CATCHMENT 107"					
	Surface Area 1.250 2.320 3.570 hectare"	5	1 Triangular SCS"					
•	Time of concentration 39.995 4.271 9.456 minutes"		1 Equal length"					
•	Time to Centroid 152.243 94.478 102.862 minutes"		1 SCS method"					
*	Rainfall depth 34.259 34.259 mm*	•	107 Industrial properties at end of Hamilton Road"					
	Rainfall volume 428.06 794.97 1223.03 c.m	•	40.000 % Impervious"					
2	Rainfall losses 25.148 5.363 12.287 mm	÷	2.850 Total Area					
	Runoff depth 9.111 28.896 21.971 mm ⁻	- S	50.000 Flow length					
	Runoff Volume 113.04 070.53 /84.37 C.m ⁻		1.200 Overland Slope					
	Maximum flow 0.022 0.482 0.487 c.m/sec*		50.000 Pervious Area					
* 40	HYDROGRAPH Add Runoff "		1.000 Pervious Ingen					
× .	4 Add Runoff "		1.140 Impervious Area					
•	0.487 0.487 0.012 0.244"		50.000 Impervious length"					
* 33	CATCHMENT 106"	5	1.000 Impervious slope"					
	1 Triangular SCS"	•	0.250 Pervious Manning 'n'"					
	3 Specify values"	÷	76.000 Pervious SCS Curve No."					
	1 SCS method"	÷	0.189 Pervious Runoff coefficient"					
	106 N.C. Pesteri nead office and other industrial"		0.100 Pervious la/s coefficient"					
		- C	8.021 Pervious Initial abstraction"					
•	55.000 Flow length"		0.015 Impervious Manning In"					
5 - E	1.500 Overland Slope"		0.836 Impervious Bunoff coefficient"					
×	0.192 Pervious Area"		0.100 Impervious Ta/S coefficient"					
	55.000 Pervious length [°]		0.518 Impervious Initial abstraction"					
	1.500 Pervious slope"		0.235 0.000 0.706 0.742 c.m/sec"					
	1.088 Impervious Area"		Catchment 107 Pervious Impervious Total Area *					
	55.000 Impervious length"	<u>.</u>	Surface Area 1.710 1.140 2.850 hectare"					
	1.500 Impervious slope"		Time of concentration 42.063 3.696 13.405 minutes"					
	0.250 Pervious Manning 'n'"	÷.	Time to Centroid 154.727 93.661 109.115 minutes"					
	ro.uuu rervious SUS CURVE NO." 0.190 - Ropping Rungef, coofficient"		Haintail depth 34.259 34.259 34.259 mm"					
	0.100 Pervious Talks configuration		Maintail Volume 585.82 390.55 976.37 C.m"					
	8.021 Pervious Initial abstraction"		naimaii iusses 21.194 5.030 10.930 mm" Runnff depth 6.465 28.623 15.328 mm"					

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	Runoff volume 110.55 326.30 436.85 c.m"			2.000	Overland Slope'	
	Runoff coefficient 0,189 0.836 0.447 "			1.383	Pervious Area"	
	Maximum flow 0.020 0.232 0.235 c.m/	/sec*		50.000	Pervious length"	
* 40	HYDROGRAPH Add Runoff *			3.000	Pervious slope*	
	4 Add Runoff "			4.148	Impervious Area"	
	0.235 0.235 0.706 0.742"			192.000	Impervious length"	
33	CATCHMEN: 108"			0.750	Impervious stope"	
2	1 Foust length"			76.000	Pervious SCS Curron No. *	
*	1 SCS method"		(•)	0.176	Pervious Runoff coefficient"	
	108 Woodlot and Wetland east of Pestells"			0.100	Pervious Ta/S coefficient"	
•	5.000 % Impervious"			8.467	Pervious Initial abstraction"	
	5.920 Total Area"			0.015	Impervious Manning 'n'"	
• 6	5.000 Flow length"			98,000	Impervious SCS Curve No."	
7	3.000 Overland Slope"			0.851	Impervious Runoff coefficient"	
	5.624 Pervious Area"			0.100	Impervious Ia/S coefficient"	
6	5.000 Pervious length"		1.0	0.518	Impervious Initial abstraction"	
	3.000 Pervious stope"			0		
. 6	5.000 Impervious length"			6	acconnent ros reivious impervious local Area	
	3.000 Impervious slope"		1.2	т	ine of concentration 31.632 9.032 10.487 minutes"	
	0.250 Pervious Manning 'n'"		1000	Ť	ime to Centroid 141.833 101.527 104.121 minutes"	
. 7	0.200 Pervious SCS Curve No."		2.00	R	ainfall depth 34.259 34.259 34.259 mm"	
•	0.122 Pervious Runoff coefficient"			R	ainfall volume 473.62 1420.87 1894.50 c.m"	
	0.100 Pervious Ia/S coefficient"		*	R	ainfall losses 28.243 5.116 10.897 mm"	
* 1	0.782 Pervious Initial abstraction"			R	unoff depth 6.016 29.143 23.361 mm"	
	D.015 Impervious Manning 'n'"			R	unoff volume 83.17 1208.70 1291.87 c.m"	
9	B.000 Impervious SCS Curve No."			R	unoff coefficient 0.176 0.851 0.682 "	
	0.840 Impervious Runoff coefficient"			M	aximum flow 0.018 0.719 0.723 c.m/sec"	
	0.100 Impervious Ia/S coefficient"		40	H	YDROGRAPH Add Runott "	
	0.518 Impervious Initial abstraction"			4		
	Catchment 108 Parvious Impervious Total Area "		= 54	P	0.723 0.725 0.256 1.040	
	Surface Area 5 624 0.296 5 920 hect	are"		0.723	Current peak flow c m/sec"	
•	Time of concentration 47.251 3.111 35.545 minu	ites"	(m)	0.070	Target outflow c.m/sec°	
•	Time to Centroid 158.856 92.675 141.304 minu	ites"		1291.9	Hydrograph volume c.m"	
•	Rainfall depth 34.259 34.259 34.259 mm"			9.	Number of stages"	
•	Rainfall volume 1926.70 101.41 2028.11 c.m.	1		0.000	Minimum water level metre"	
•	Rainfall losses 30.063 5.482 28.833 mm"			1.200	Maximum water level metre"	
	Runoff depth 4.196 28.777 5.425 mm"			0.000	Starting water level _ metre"	
	Runott volume 235.99 85.18 321.16 C.m."	·	- C	0	keep Design Data: 1 = Irue; 0 = Faise"	
	Hunorr coerricient 0.122 0.840 0.156	(soc *				
. 40	HYDROGRAPH Add Rupoff "	360			0.1500 0.0400 297.000"	
	4 Add Bunoff "				0.3000 0.01000 635.000"	
	0.062 0.298 0.706 0.742*				0.4500 0.03600 1004.000*	
• 40	HYDROGRAPH Copy to Outflow") =)		0.6000 0.04900 1405.000"	
	8 Copy to Outflow"		1. C		0.7500 0.06000 1847.000"	
	0.062 0.298 0.298 0.742				0.9000 0.06900 2329.000"	
• 40	HYDROGRAPH Combine 2"				1.050 0.5220 2852.000"	
	6 Combine "				1.200 1.100 2900.000	
2	2 Node #"			P	eak outflow 0.037 c.m/sec	
	INLEI 1" Navigue flow 1.040 o g(cool			M		
	Maximum ilow i.040 c.m/sec		((*))	C.	antroidal lan 14.806 hours"	
	0.062 0.298 0.298 1.040"		S.# 2	0	0.723 0.723 0.097 1.040 c.m/sec"	
• 40	HYDROGRAPH Start - New Tributary"		* 40	н	YDROGRAPH Combine 2"	
•	2 Start - New Tributary"			6	Combine "	
	0,062 0.000 0.298 1.040"			2	Node #"	
33	CATCHMENT 109"				INLET 1"	
	1 Triangular SCS"			M	aximum flow 1.043 c.m/sec"	
	3 Specify values"		- C	H	ydrograph vo⊥ume 4823.914 c.m"	
	1 SUS METROD"				U.723 U.723 U.037 1.043"	
. 7	IUS N.U. PESTELI SITE" 5.000 % Impervious"		. 81	2 i	UU COMMENI	
2 (5.000 Total Area"			3 L	TUE2 OI COMMELIC	
1.9	0.000 Flow length*		-	C	atchments South of GEXR, part of Inlet #2"	
10						

2:\348 Printed	96\104\SWM\MIDUSS\Pre\34896-104_Pre-002yr.out Page 9 I at 15:15 on 18 Dec 2018 Page 9	Q:\348 Printe	96\104\SWM\MIDUSS\Pre\34896-104_Pre-002yr.out d at 15:15 on 18 Dec 2018	Page 1
40				
40	2 Start - New Inibutary			
	0.723 0.000 0.037 1.043"		Maximum flow 0.065 c.m/sec*	
33	CATCHMENT 110"	3 5	Hydrograph volume 282.481 c.m"	
	1 Triangular SCS"		0.122 0.122 0.065 0.065*	
	3 Specify values	* 40	HYDROGRAPH Start - New Tributary"	
	1 SCS method"		2 Start - New Tributary"	
	100 Alpine solutions - West SMWP"		0.122 0.000 0.065 0.065"	
		. 33		
	150.000 Flow length"		1 Equal length	
	1.000 Overland Slope"	, e (1 SCS method"	
	1.344 Pervious Area"		111 Woodlot north of Schneider/Good lands"	
	150,000 Pervious length		0.000 % Impervious"	
	1.500 Pervious slope		13.230 Total Area"	
	U,5/5 Impervious Area"		1/0.000 Flow length	
	1 500 Impervious Jone"		2.400 OVERLAND SLOPE"	
	0.250 Pervious Maning 'n'"		170 000 Pervious leadth"	
	80.000 Pervious SCS Curve No."	1040	2.400 Pervious slope"	
	0.249 Pervious Runoff coefficient"	1.00	0.000 Impervious Area"	
	0.100 Pervious Ia/S coefficient®		170.000 Impervious length ^e	
	6.350 Pervious Initial abstraction"		2.400 Impervious slope"	
	0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"	
	98.000 Impervious SCS Curve AG."		70.000 Pervious SCS Curve No."	
	0.100 Impervious failor coefficient*	1.	0.121 Pervious Hunorr coerricient"	
	0.518 Impervious Initial abstraction	14	10.886 Pervious Initial abstraction	
	0.122 0.000 0.037 1.043 c.m/sec*	H .	0.015 Impervious Manning 'n'"	
	Catchment 110 Pervious Impervious Total Area "		98.000 Impervious SCS Curve No."	
	Surface Area 1.344 0.576 1.920 hectare		0.000 Impervious Runoff coefficient"	
	Time of concentration 61.427 5.338 28.077 minutes"		0.100 Impervious Ia/S coefficient	
	lime to centrold 1/9,909 95.036 130.039 minutes"		0.518 Impervious Initial abstraction"	
	Rainfail volume 460.44 197 33 657 76 c m ³		Catchengt 111 Populate Imponying Tatal Appa "	
	Rainfall losses 25,739 5,103 19,548 mm"		Surface Area 13,230, 0,000, 13,230, bectare"	
	Runoff depth 8.520 29.155 14.710 mm"		Time of concentration 90.570 5.923 90.569 minutes"	
	Runoff volume 114.50 167.94 282.44 c.m."		Time to Centroid 207.254 96.935 207.253 minutes*	
	Runoff coefficient 0.249 0.851 0.429 "		Rainfall depth 34.259 34.259 34.259 mm*	
	Maximum flow 0.016 0.120 0,122 c.m/sec*		Rainfall volume 4532.40 0.00 4532.41 c.m*	
40	HYDROGRAPH Add Runoff "		Rainfall losses 30.128 5.160 30.128 mm*	
	4 Add Hunott "		Runoff depth 4.131 29.098 4.131 mm"	
54	POND DESTGN"	2	Runott volume 545.54 0.00 546.54 c.m"	
	0.122 Current peak flow c.m/sec"	1 i i i i i i i i i i i i i i i i i i i	Maximuflow 0.057 0.000 0.721	
	0.070 Target outflow c.m/sec"	40	HYDROBRAPH Add Runoff "	
	282.4 Hydrograph volume c.m°		4 Add Runoff •	
	7. Number of stages"		0.057 0.057 0.065 0.065	
	0.000 Minimum water level metre	* 40	HYDROGRAPH Copy to Outflow"	
	0.000 Maximum water level metre"		8 Copy to Outflow"	
	0,000 Starting water level metre	. 40	0.057 0.057 0.057 0.065*	
	Level Discharge Volume"	. 40	TORONAPA CONDING 3" 5 Combine -	
	0,000 0,000 0,000"		3 Note #*	
	0.2500 0.04200 7.000	(• (INLET 2"	
	0.5000 0.09000 71.000°	1.00	Maximum flow 0.078 c.m/sec"	
	0.7500 0.1250 220.000*		Hydrograph volume 829.020 c.m"	
	0.9000 0.1400 346.000"	1.00	0.057 0.057 0.057 0.078"	
	1,000 0,3110 445,000"	* 81	ADD COMMENT===================================	
			3 Lines of comment"	
	Maximim lovol 0.976 matros		South of CEVE along Netwice Dd. part of Talet 401	
	Maximum storage 39.380 c.m*		South of GEAR along Naiziger NU, part of Intel #3"	
	Centroidal lag 2.248 hours	* 40	HYDROGRAPH Start - New Tributary"	
	0.122 0.122 0.065 1.043 c.m/sec"		2 Start - New Tributary"	
40	HYDROGRAPH Combine 3*	٠	0.057 0.000 0.057 0.078"	

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33 CATCHMENT 112"	1.500 Impervious slope"	
1 Triangular SCS"	* 0.250 Pervious Manning 'n'"	
1 Equal length"	80.000 Pervious SCS Curve No."	
1 SCS method"	0.249 Pervious Runott coefficient"	
1/2 CULTVALEE LAINS EAST OF NATZINE HOAD	6.350 Pervious Initial abstraction"	
7.310 Total Area"	0.015 Impervious Manning 'n'"	
120.000 Flow length"	98.000 Impervious SCS Curve No."	
3.300 Overland Slope"	0.850 Impervious Runoff coefficient"	
7.237 Pervious Area"	0.100 Impervious Ia/S coefficient"	
120.000 Pervious length"	0.518 Impervious Initial abstraction"	
0.073 Impervious Area"	Catchment 113 Pervious Impervious Tatal Area "	
120.000 Impervious length"	Surface Area 1,536 1,024 2,560 hectare"	
3.300 Impervious slope"	Time of concentration 68,528 5,833 24,957 minutes"	
0.250 Pervious Manning 'n'"	Time to Centroid 189.072 96.789 124.938 minutes"	
82.000 Pervious SCS Curve No."	Rainfall depth 34.259 34.259 mm"	
0.284 Pervious Hunott coefficient"	Hainfall volume 526.21 350.81 877.02 c.m"	
5.75 Pervious Initial Abstraction	Bundf denth 8 520 29 118 16 759 mm ⁴	
0.015 Impervious Manning 'n'"	Runoff volume 130.87 298.17 429.04 c.m"	
98.000 Impervious SCS Curve No."	 Runoff coefficient 0.249 0.850 0.489 	
0.844 Impervious Runoff coefficient"	Maximum flow 0.016 0.212 0.213 c.m/sec*	
0.100 Impervious Ia/S coefficient	40 HYDROGRAPH Add Runoff "	
0.518 Impervious Initial abstraction"		
Catchmont 1/2 Recvious Impervious Tatal Area "	* 54 POND DESIGN"	
Surface Area 7.237 0.073 7.310 hectare"	0.213 Current peak flow c.m/sec"	
Time of concentration 39.479 4.368 38.456 minutes"	 0.070 Target outflow c.m/sec" 	
" Time to Centroid 151.498 94.627 149.842 minutes"	 429.0 Hydrograph volume c.m" 	
Rainfall depth 34.259 / 34.259 mm"	 7. Number of stages" 	
Rainfall volume 2479.26 25.04 2504.30 c.m"	0.000 Minimum water level metre"	
Rainfall losses 24.518 5.341 24.327 mm"	1.000 Maximum water level metre"	
Runofi deptin 9.740 28.917 9.952 mmi	0. Keen Design Date: 1 = Tous: 0 = False"	
Bunoff coefficient 0.284 0.844 0.290 "	" Level Discharge Volume"	
Maximum flow 0.135 0.015 0.137 c.m/sec"	• 0,000 0,000 0,000"	
40 HYDROGRAPH Add Runoff "	* 0.1000 0.02000 7.000"	
4 Add Runoff °	• 0.2500 0.04200 64.000"	
0.137 0.137 0.057 0.078"	0.5000 0.09000 343.000"	
40 HYDHOGHAPH CODY TO OUTIOW"		
0.137 0.137 0.137 0.078"	1.000 0.7880 1667.000"	
40 HYDROGRAPH Combine 4"	Peak outflow 0.054 c.m/sec"	
6 Combine "	Maximum level 0.311 metre"	
4 Node #"	Maximum storage 131.699 c.m"	
INLET 3	Centroidal lag 2.531 hours"	
MAXIMUM TIOW 0.137 C.m/SEC"	* 40 HYDPOCRAPH Combine 4*	
0.137 0.137 0.137 0.137	6 Combine "	
40 HYDROGRAPH Start - New Tributary"	• 4 Node #"	
2 Start - New Tributary"	* INLET 3"	
0.137 0.000 0.137 0.137"	Maximum flow 0.189 c.m/sec"	
33 CATCHMENT 113"	Hydrograph volume 1155.306 c.m"	
1 Triangular SCS"	• 0.213 0.213 0.054 0.189"	
o opecity values"	 40 mithougharm start - New mithoutany" 2 Start - New Tributary" 	
113 Aloine Solutions - East SMWP"	0.213 0.000 0.054 0.189"	
40.000 % Impervious"	* 33 CATCHMENT 114"	
2,560 Total Area	* 1 Triangular SCS"	
150.000 Flow length*	• 1 Equal length"	
1.500 Overland Slope"	1 SCS method"	
1,536 FERVIOUS AFER"	- 114 WOODLOT EAST AND WEST OT NATZIGER HOAD"	
1 500 DOV FRIVIOUS LENGTH	13.460 Total Area"	
1.024 Impervious Area"	140.000 Flow length"	
131.000 Impervious length"	3,600 Overland Slope"	

*

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13.056 Pervious Area"	0.100 Twoervious Ta/S coefficient*					
140.000 Pervious length"	0.518 Impervious lays coefficient					
3.600 Pervious slope"	0.768 0.000 0.089 0.246 c.m/sec"					
0.404 Impervious Area"	Catchment 115 Pervious Impervious Total Area "					
140.000 Impervious length"	Surface Area 1.336 3.613 4.950 hectare"					
3.600 Impervious slope"	Time of concentration 24.992 7.105 9.203 minutes"					
• 0.250 Pervious Manning 'n' •	Time to Centroid 132.216 98.734 102.661 minutes"					
70.100 Pervious SCS Curve No."	Rainfall depth 34,259 34.259 mm"					
0.122 Pervious Munort Coefficient	- HAINTAIL VOLUME 457.87 1237.93 1695.80 C.m" Boinfail Losson 23.854 5.202 10.304 mm"					
10.834 Pervious Initial abstraction"	Bunoff death 10 405 29 966 23 955 mm ⁴					
0.015 Impervious Maning 'n'"	Buooff volume 139.06 1046.70 1185.76 cm ⁻¹					
98.000 Impervious SCS Curve No."	Runoff coefficient 0.304 0.846 0.699 *					
• 0.847 Impervious Runoff coefficient	Maximum flow 0.037 0.755 0.768 c.m/sec*					
* 0.100 Impervious Ia/S coefficient"	* 40 HYDROGRAPH Add Runoff "					
0.518 Impervious Initial abstraction"	● 4 Add Runoff *					
0.089 0.000 0.054 0.189 c.m/sec"	• 0.768 0.768 0.089 0.246*					
Catchment 114 Pervious Impervious Iotal Area	54 POND DESIGN"					
Time of componentation 21 133 4 669 50 52 minutes	0.026 Current peak TLOW c.m/sec					
Time to Controld 185 53 95 053 160 48 minutes"	1185 B Hydrograph yolume c.m*					
* Rainfall depth 34.259 34.259 34.259 mm*						
Rainfall volume 4472.87 138.34 4611.20 c.m"	0.000 Minimum water level metre"					
Rainfall losses 30.095 5.255 29.350 mm [*]	1.450 Maximum water level metre"					
Runoff depth 4.164 29.003 4.909 mm	0.000 Starting water level metre"					
* Runoff volume 543,63 117.12 660.75 c.m*	0 Keep Design Data: 1 = True; 0 = False					
Runoff coefficient 0.122 0.847 0.143	Level Discharge Volume"					
Maximum Tlow 0.068 0.084 0.089 c.m/sec"	0.000 0.000 0.000*					
40 NIDRUGHAPH ADD RUNDTT	0.1500 0.00/00 248.000*					
40 HYDROGRAPH Conv to Outflow"						
8 Copy to Outflow"	• 0.5500 0.01500 964.000"					
* 0.089 0.089 0.089 0.189"	0,6500 0.01600 1161,000"					
* 40 HYDROGRAPH Combine 4"	* 0.7500 0.01700 1364.000"					
6 Combine *	0.8500 0.01900 1575.000°					
4 Node #"	• 0.9500 0.02000 1795.000*					
	1.050 0.06600 2025.000					
Maximum TLOW U.246 C.m/Sec"	1.150 0.2080 2263.000*					
* 40 HYDROGRAPH Start - New Tributary"						
2 Start - New Tributary"	Peak outflow 0.015 c.m/sec"					
• 0.089 0.000 0.089 0.246°	Maximum level 0.597 metre"					
* 33 CATCHMENT 115"	Maximum storage 1055.949 c.m*					
1 Triangular SCS"	 Centroidal lag 15.380 hours 					
3 Specify values"	0.768 0.768 0.015 0.246 c.m/sec"					
1 SUS method	40 HYDROGRAPH Combine 4"					
73 DOD % Transpringer	6 Combine					
4 950 Total Acca"						
50.000 Flow length						
2.800 Overland Slope"	$= \frac{1}{1000} + \frac{1}{1000} = \frac{1}{2773} + \frac{1}{1000} = \frac$					
1.336 Pervious Area	• 0.768 0.768 0.015 0.261"					
40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary"					
1.500 Pervious slope"	2 Start - New Tributary"					
3.613 Impervious Area"	0.768 0.000 0.015 0.261 "					
182.000 Impervious length"	33 CATCHMENT 116"					
1.500 Impervious Slope"	1 Triangular SCS [®]					
B 00. Pervious Manning 'n''	1 Equal length"					
0.304 Pervious Bundf coefficient"	115 ST METROD"					
0.100 Pervious Ia/S coefficient"	3 3000 % Tampervious"					
5.202 Pervious Initial abstraction"	7.710 Total Area"					
0.015 Impervious Manning 'n'"	140.000 Flow length					
98.000 Impervious SCS Curve No."	1.600 Overland Slope"					
O.846 Impervious Runoff coefficient"	5.012 Pervious Area"					

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140.	000 Pervious length"	• 40	0 HYDROGRAPH Combine 5"	
1.	.600 Pervious slope"		6 Combine "	
2.	698 Impervious Area"	2	5 Node #"	
140.	000 Impervious length"		u/s of HWY 7&8"	
1.	600 Impervious slope"	- 5	Maximum flow 1.102 c.m/sec"	
0.	250 Pervious Manning 'n'		Hydrograph volume 5652.935 c.m"	
76.	UUU PERVIOUS SUS CUrve No."	• 40	0.559 0.078 0.078 1.102" 0 HVDPOCRAPH Confluence 4"	
0.	100 Pervious fails coefficient*	. 40		
8.	21 Pervious Initial abstraction"		4 Node #*	
0.	Impervious Manning 'n'"	•	INLET 3"	
98.	000 Impervious SCS Curve No."		Maximum flow 0.742 c.m/sec"	
Ο,	.849 Impervious Runoff coefficient"		Hydrograph volume 3882.184 c.m"	
ο.	100 Impervious Ia/S coefficient"	•	0.559 0.742 0.078 0.000"	
Ο,	518 Impervious Initial abstraction"	• 40	0 HYDROGRAPH Copy to Outflow"	
	0.559 0.000 0.015 0.261 c.m/sec"	- C	8 Copy to Outflow"	
	Catchment (16 Pervious Impervious fotal Area bestare)	10	0.559 0.742 0.742 0.000	
	Juirate Area 5,012 2,000 7,10 metale	*	6 Combine "	
	Time to Controld 186.467 96.985 123.128 minutes"		5 Node #"	
	Rainfall depth 34.259 34.259 mm"		u/s of HWY 7&8"	
	Rainfall volume 1716.87 924.47 2641.34 c.m.		Maximum flow 1.844 c.m/sec"	
	Rainfall losses 27.793 5.164 19.873 mm"		Hydrograph volume 9535.115 c.m"	
	Runoff depth 6.466 29.094 14.386 mm"		0.559 0.742 0.742 1.844"	
	Runoff volume 324.04 785.10 1109.15 c.m	• 40	0 HYDROGRAPH Start - New Tributary"	
	Runoff coefficient 0.189 0.849 0.420 "		2 Start - New Tributary"	
	Maximum flow 0.041 0.555 0.559 c.m/sec"		0.559 0.000 0.742 1.844"	
40	HYDRUCHAPH AGG HUNOTT "	- 33	3 CATCHMENT 11/7	
			1 Fuellenoth	
40	HYDROGRAPH Copy to Outflow"	•		
40	8 Copy to Outflow"	5	117 Cultivated Schneider central lands"	
	0.559 0.559 0.559 0.261"	•	0.000 % Impervious"	
40	HYDROGRAPH Combine 4"		7.450 Total Area"	
	6 Combine "	•	140.000 Flow length"	
	4 Node #"		2.000 Overland Slope"	
	INLET 3"	- 2	7.450 Pervious Area"	
	Maximum Tiow 0.742 c.m/sec"		140.000 Pervious length	
	nyurograph vorume 5002.184 C.m		2.000 Fervious Stope	
40	HYDROGRAPH Confluence 2"		140.000 Impervious length"	
	7 Confluence "		2.000 Impervious slope"	
	2 Node #"	•	0.250 Pervious Manning 'n'"	
	INLET 1"	- C	81.400 Pervious SCS Curve No."	
	Maximum flow 1.043 c.m/sec"		0.273 Pervious Runoff coefficient"	
	Hydrograph volume 4823.914 c.m"		0.100 Pervious Ia/S coefficient"	
	0.559 1.043 0.559 0.000"		5.804 Pervious Initial abstraction"	
40	HYDHOGHAPH COPY to OUTTIOW"		0.015 Impervious Manning 'n'"	
		2	96.000 Impervious Sus Curve No.	
40	U-059 1.043 1.043 0.000 HVDP0CPAPH Combine 5*	•	0.100 Impervious Ta/S coefficient	
40	6 Combine "	•	0.518 Impervious Initial abstraction"	
	5 Node #"		0.109 0.000 0.742 1.844 c.m/sec"	
	U/S of HWY 7&8"		Catchment 117 Pervious Impervious Total Area "	
	Maximum flow 1.043 c.m/sec"	•	Surface Area 7.450 0.000 7.450 hectare"	
	Hydrograph volume 4823.914 c.m°	*	Time of concentration 51.398 5.568 51.398 minutes"	
	0.559 1.043 1.043 1.043"		Time to Centroid 167.128 96.358 167.128 minutes"	
40	HYDROGRAPH Confluence 3"	2	Rainfall depth 34.259 34.259 mm"	
	7 Confluence *		Raintall volume 2552.26 0.00 2552.26 c.m"	
	3 Node #"		Haintail losses 24.899 5.120 24.899 mm"	
	INLET 2"		нипотт сертп 9,360 29,138 9,360 mm" Вирос б издитер 607,30 0,00 сод 20 с - "	
	Maximum Tow 0.0/8 C.M/Sec"	2	Runoll volume 697.30 0.00 697.30 C.M."	
	1 you og april votaine 023.020 C.m. 0.559 0.078 1.043 0.000"		Maximum flow 0.109 0.000 0.109 c.m/sec"	
40	HYDROGRAPH Copy to Outflow"	* 40	0 HYDROGRAPH Add Runoff "	
	8 Copy to Outflow"	£	4 Add Runoff "	
	0.559 0.078 0.078 0.000"		0.109 0.109 0.742 1.844"	

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40 HYDROGRAPH Copy to Outflow"	0.009 0.009 0.009 1.869"	
8 Copy to Outflow"	40 HYDROGRAPH Start New Tributary" 2 Start - New Tributary"	
40 HYDROGRAPH Combine 5"	0.009 0.000 0.009 1.869"	
6 Combine "	33 CATCHMENT 119"	
5 Node #"	1 Triangular SCS"	
- u/s or min / xoo Maximum flow 1.861 c.m/sec"	1 SCS method"	
Hydrograph volume 10232.413 c.m"	119 Existing ROW from Hamilton Road®	
0.109 0.109 0.109 1.861"	• 0.000 % Impervious"	
81 ADD COMMENT===================================	40.000 Flow length"	
	2.000 Overland Slope"	
Catchments east of Hamilton Road, part of Inlet #4"	• 0.720 Pervious Area"	
***************************************	40.000 Pervious length"	
40 HYDROGRAPH Start - New Tributary"	 2.000 Fervious slope 0.000 Theoryious Area 	
• 0,109 0,109 1.861"	 40.000 Impervious length" 	
* 33 CATCHMENT 118"	2.000 Impervious slope"	
1 Triangular SCS"	0.250 Pervious Manning 'n'" To provious 000 000 No	
- 1 Equal Length"	 76.000 Pervious SCS Curve No 0.180 Pervious Runoff coefficient* 	
18 Northwest corner of Nithview Heights"	0.100 Pervious Ia/S coefficient"	
* 8.000 % Impervious"	 8.021 Pervious Initial abstraction" 	
0.500 Total Area	• 0.015 Impervious Manning 'n'"	
500.000 F10W length" 5.000 Overland Slope"	OOO Impervious Bunoff coefficient"	
0.460 Pervious Area"	 0.100 Impervious Ia/S coefficient" 	
60.000 Pervious length"	 0.518 Impervious Initial abstraction" 	
5.000 Pervious slope"	• 0.011 0.000 0.009 1.869 c.m/sec"	
60.000 Impervious length"	* Surface Area 0.720 0.000 0.720 hectare"	
5.000 Impervious slope"	 Time of concentration 29.884 2,626 29.884 minutes" 	
* 0.250 Pervious Manning 'n'"	Time to Centroid 139.679 91.908 139.679 minutes"	
74.000 Pervious SCS Curve No."	Rainfall depth 34.259 34.259 34.259 mm ⁻	
0.163 Pervious Hunott coefficient" 0.100 Republics TacS coefficient"	HainTall Volume 245.00 0.00 246.00 C.m. Bainfall losses 27 793 5.525 27 793 mm."	
8.924 Pervices Initial abstraction"	Runoff depth 6.465 28.734 6.465 mm*	
O.015 Impervious Manning 'n'*	Runoff volume 46.55 0.00 46.55 c.m*	
98.000 Impervious SCS Curve No."	Runoff coefficient 0.189 0.000 0.189	
0.839 Impervious Hunott coefficient" 0.100 Impervious Ia/S coefficient"	* AO HYDROGRAPH Add Bunoff "	
0.518 Impervious Initial abstraction	4 Add Runoff "	
0.009 0.000 0.109 1.861 c.m/sec"	• 0.011 0.011 0.009 1.869 [•]	
Catchment 118 Pervious Impervious Total Area "	40 HYDROGRAPH Copy to Outflow"	
 SUFTACE AFEA 0.460 0.040 0.500 nectare Time of concentration 31 745 2.544 22 729 minutes 	- 8 Copy to ULTTOW- 0.011 0.011 1.869"	
Time to Centroid 141.881 91.780 126.413 minutes"	* 40 HYDROGRAPH Combine 5"	
Rainfall depth 34.259 34.259 mm"	* 6 Combine *	
Rainfall volume 157.59 13.70 171.29 c.m"	5 Node #"	
"HAINTALLISSES 28.002 5.015 20.811 MM" Bunoff denth 5.596 28.743 7.448 mm"	- U/S OT HWY /&8" Maximum f1ow 1.872 c.m/sec"	
Runoff volume 25.74 11.50 37.24 c.m"	 Hydrograph volume 10316,208 c.m^a 	
* Runoff coefficient 0.163 0.839 0.217 *	0.011 0.011 1.872*	
Maximum flow 0.006 0.008 0.009 c.m/sec*	81 ADD COMMENT===================================	
40 HYUKUGHAPH AGI KUNOTT " 4 Add Runoff "	3 Lines of comment	
0.009 0.109 1.861"	Catchment to Inlet #5"	
* 40 HYDROGRAPH Copy to Outflow"		
8 Copy to Outflow"	40 HYDROGRAPH Start - New Tributary"	
- 0.009 0.009 1.661" *40 HYDROGRAPH Combing 5"	2 Start - New Tributary"	
6 Combine "	33 CATCHMENT 120"	
* 5 Node #"	* 1 Triangular SCS"	
u/s of HWY 7&8"	1 Equal length"	
Maximum TLOW 1.859 C.m/Sec Hydrograph yolume 10269.655 c.m.	1 SCS method" 120 Rear vards from Hamilton Heights Subdivision"	
	120 Hear yards from hamilton defails substation	

Q:l34896/104/SWM/MIDUSS/Pre/34896-104_Pre-002yr.out Page 19 Printed at 15:15 on 18 Dec 2018	9 0:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-002yr.out Printed at 15:15 on 18 Dec 2018	Page 20
* 5.000 % Impervious"	2.800 Impervious slope"	
1.080 Total Area"	0.250 Pervious Manning 'n'"	
20.000 Flow length"	82.000 Pervious SCS Curve No."	
3.000 Overland Slope"	0.284 Pervious Runoff coefficient"	
1.026 Pervious Area"	0.100 Pervious Ia/S coefficient"	
20.000 Pervious length"	5.576 Pervious Initial abstraction"	
3.000 Pervious slope	0.015 Impervious Manning 'n'"	
20,004 Impervious length"	99.000 Impervious SCS Curve No."	
	0.000 Impervious Runott coetticient"	
0.250 Pervious Manning 'n's	0.518 Impervious Taila abstraction"	
* 76.000 Pervious SCS Curve No."	0.577 0.000 0.024 1.890 c.m/sec"	
* 0.189 Pervious Runoff coefficient"	Catchment 121 Pervious Impervious Total Area "	
• 0.100 Pervious Ia/S coefficient"	 Surface Area 43.240 0.000 43.240 hectare 	
8.021 Pervious Initial abstraction"	Time of concentration 61.277 6.780 61.277 minutes	
0.015 Impervious Manning 'n'"	Time to Centroid 180.139 98.265 160.139 minutes	
0.841 Impervious Busch configurations	Haintail depth 34.259 34.259 mm"	
0.100 Impervious Ta/s coefficient"	Haintall Volume 1.4813 0.0000 1.4813 ha-m"	
0.518 Impervious Initial abstraction*	Runoff doubth 0,742,00,807,24,516 mm"	
0.024 0.000 0.011 1.872 c.m/sec"	Bunoff volume 4212 74 0 01 4212 75 cm"	
* Catchment 120 Pervious Impervious Total Area *	Bunoff coefficient 0.284 0.000 0.284 "	
Surface Area 1.026 0.054 1.080 hectare"	Maximum flow 0.577 0.000 0.577 c.m/sec"	
Time of concentration 17.458 1.534 14.432 minutes"	40 HYDROGRAPH Add Runoff "	
Time to Centroid 124.332 90.156 117.837 minutes"	4 Add Runoff "	
Rainfall depth 34.259 34.259 mm"	• 0.577 0.577 0.024 1.890"	
Rainfall volume 351.49 18.50 369.99 c.m"	40 HYDROGRAPH Copy to Outflow"	
Ruinfail losses 27.800 5.461 26.683 mm	8 Copy to Outflow"	
Bunoff volume 66.27 15.55 81.82 cm ⁺	* 40 HYDROCRAPH Combine F#	
Runoff coefficient 0.189 0.841 0.221		
Maximum flow 0.021 0.012 0.024 c.m/sec"	5 Node #"	
* 40 HYDROGRAPH Add Runoff "		
* 4 Add Runoff "	Maximum flow 1.963 c.m/sec"	
0.024 0.024 0.011 1.872"	Hydrograph volume 14610.775 c.m [*]	
40 HYDROGRAPH Copy to Outflow"	0.577 0.577 0.577 1.963"	
8 Copy to Out+Iow"	B1 ADD COMMENT===================================	
~ 0.024 0.024 0.024 1.872* 4.0 HYDROGRAME Carbina 5*	" 3 Lines of comment"	
5 Node #"	Calchiments to Indet #0"	
u/s of Hwy 7&8"	40 HYDROGRAPH Start - New Tributary"	
Maximum flow 1.890 c.m/sec"	2 Start - New Tributary"	
Hydrograph volume 10398.021 c.m"	0.577 0.000 0.577 1.963"	
0.024 0.024 0.024 1.890"	* 33 CATCHMENT 160"	
81 ADD COMMENT	1 Triangular SCS"	
3 Lines of comment"	3 Specify values"	
	1 SCS method"	
GOOD LANDS"	160 Hamilton Heights Subdivision	
40 HYDROGRAPH Start - New Tributary"		
2 Start - New Tributary	5,100 lotal Alea	
0.024 0.000 0.024 1.890"	1.000 Overland Slope"	
* 33 CATCHMENT 121"	4.406 Pervious Area"	
1 Triangular SCS"	50.000 Pervious length"	
1 Equal length"	3.000 Pervious slope"	
1 SCS method"	3.754 Impervious Area"	
121 Good Lands"	232.000 Impervious length"	
- U.UUU % Impervious"	1,500 Impervious slope"	
40.240 IULALAIEA 230.000 Flow length	75.000 Pervious Manning 'n'"	
2.800 Overland Slope"	0 189 Pervious SUS Curve No."	
43.240 Pervious Area"	0.100 Pervious Ta/S coefficient"	
230.000 Pervious length"	8.021 Pervious Initial abstraction"	
2.800 Pervious slope"	0.015 Impervious Manning 'n'"	
• 0.000 Impervious Area"	98.000 Impervious SCS Curve No."	
230.000 Impervious length"	0.852 Impervious Runoff coefficient"	

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00000000	Contractor and the second	CONTROL CONTROL OF				and the second second	1000
	0.100	Impervious Ia/S c	oefficient"				
	0.516	0.773 0.	000 0.577	1.963	c.m/sec"		
	Ca	tchment 160	Pervious	Impervious	Total Area	р. — — — — — — — — — — — — — — — — — — —	
	Su	urface Area	4.406	3.754	8.160	hectare"	
	Ti	ime to Centroid	140.138	100.395	12.765	minutes"	
	Ra	ainfall depth	34.259	34,259	34.259	mm"	
	Ra	ainfall volume	1509.57	1285,93	2795.50	с.""	
	Ra	ainfall losses	27.793	5.063	17.337	" mm	
	Ru	unoff volume	0.405 284 89	29.195	16.921	៣៣" C.៣"	
	Ru	unoff coefficient	0.189	0.852	0.494		
	Ма	aximum flow	0.065	0.758	0,773	c.m/sec"	
0	HY	DROGRAPH Add Runof	f "				
	4	0.773 0	773 0.577	1 963*			
з	CA	ATCHMENT 161"		1,000			
	1	Triangular SCS*					
	3	Specify values"					
	161	Klassen Bronze Pr	onertv*				
	32.000	% Impervious"	operity				
	2.350	Total Area®					
	100.000	Flow length"					
	2.500	Pervious Area"					
	50.000	Pervious length*					
	2.500	Pervious slope"					
	0.752	Impervious Area*					
	1 500	Impervious lengtr					
	0.250	Pervious Manning	'n'"				
	76.000	Pervious SCS Curv	e No."				
	0.189	Pervious Runoff o	oefficient"				
	0.100	Pervious Ia/S coe Pervious Initial	abstraction"				
	0.015	Impervious Mannir	abstraction				
	98.000	Impervious SCS CL	irve No."				
	0.844	Impervious Runoff	coefficient"				
	0.100	Impervious Ia/S c	oefficient"				
	0.010	0.164 0.	773 0.577	1,963	c.m/sec"		
	Ca	tchment 161	Pervious	Impervious	Total Area	n	
	Su	inface Area	1.598	0.752	2,350	hectare"	
	T1 Ti	lme of concentratio	142 048	6.675	14.813	minutes"	
	Ra	ainfall depth	34.259	34.259	34.259	minutes. mm"	
	Ra	infall volume	547,45	257.62	805,08	c.m"	
	Ra	ainfall losses	27.796	5.336	20.609	mm "	
	Ru	noff depth	6.462	28.922	13.650	mm "	
	Ru	noff coefficient	0 189	0 844	320.77	C.M."	
	Ма	ximum flow	0.022	0.159	0.164	c.m/sec"	
0	HY	DROGRAPH Add Runof	f "				
	4	Add Runoff "	007 0 577	4 0001			
0	ну	U.164 U. DBOGBAPH Copy to C	937 0.577 http://www.	1,963"			
	8	Copy to Outflow"					
		0.164 0.	937 0.937	1.963"			
0	HY	DROGRAPH Combine	5"				
	5	Node #"					
	5	u/s of HWY 7&8°					
	Ma	ximum flow	2.9	00 c.m/s	ec"		
	Hy	drograph volume	16312.3	00 c.m"			
		0.164 0.	937 0.937	2.900"			

Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-002yr.out Printed at 15:15 on 18 Dec 2018 3 Lines of comment" ************** Western catchment along Hamilton Road, diverted to Inlet #6" HYDROGRAPH Start - New Tributary" 2 Start - New Tributary* 0.164 0.000 0,937 2.900* CATCHMENT 170" 1 Triangular SCS" 3 Specify values" SCS method" 1 170 Industrial/Residential area along Hamilton Road" 55,000 % Impervious" 8,450 Total Area" 45.000 Flow length" 2.000 Overland Slope" Pervious Area" 3.802 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'" Pervious SCS Curve No." 76,000 0.189 Pervious Runoff coefficient"

Pervious Ia/S coefficient"

HYDROGRAPH Start - New Tributary"

2 Start - New Tributary"

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8,021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." Impervious Runoff coefficient* 0.852 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 ៣៣ " Rainfall volume 1592.17 2894.85 1302.68 c.m" Rainfall losses 27,801 5,066 15.296 mm " Runoff depth 6.458 29,193 18.962 ۳m Runoff volume 245.56 1356.75 1602.30 с.п" Runoff coefficient 0.189 0.852 0.554 Maximum flow 0,069 0,936 0,959 c.m/sec* HYDROGRAPH Add Runoff * 4 Add Runoff " 0.959 0.959 0.937 2.900" 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 с.п" DIV00006.002hyd* Major flow at 6" 0.959 0.959 0.959 2.900 c.m/sec* HYDROGRAPH Combine 9" 6 Combine " 9 Node #* NODE B" Maximum flow 0.959 c,m/sec" Hydrograph volume 1602.304 с.п" 0.959 0.959 0,959 0.959"

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	0.959 0.000 0.959	0.959"			8	Node #"					
* 47	FILEI_0 Read/Open DIV00006.002hyd"					NODE A"	10				
	1 1=read/open; 2=write/save"			7	N	Maximum flow	1.6	59 c.m/s	ec"		
÷	2 1=rainfall; 2=hydrograph"			÷	ł	Hydrograph volume	16293.0	44 c.m."			
÷ .	1 1=runott; 2=1ntiow; 3=outtiow; 4=]1 DIV00006_002bud#	UNCTION"		0.1		0.000 1.65	9 1.659	1.659"			
	Major flow at 6"			* 01	3 1	abb comment"					
	Total volume 0.000	С. П "			5 1						
	Maximum flow 0.000	c.m/sec"		-	(Catchments South of Hw	v 7/8"				
	0.000 0.000 0.959 0.9	959 c.m/sec"		-					******		
* 40	HYDROGRAPH Add Runoff *			* 40	H	YDROGRAPH Start - New	Tributary"				
<u>.</u>	4 Add Runoff "			5	2	Start - New Tributa	ry"				
. 10		0.959"				0.00 0.00	0 1.659	1.659			
40	HIDRUGHAPH COPY TO UUTTIOW"			- 33		Tojapoulao SCS"					
		0.959*				Specify values"					
• 40	HYDROGRAPH Combine 5"	0,000			ĩ	SCS method"					
	6 Combine "			•	180	Northeast portion o	f Maple Lea	f Foods pro	perty*		
•	5 Node #"			•	26.000	% Impervious*		,			
<u>.</u>	u/s of HWY 7&8"				0.700	Total Area"					
÷.	Maximum flow 2.900	c.m/sec"		2	45.000	Flow length					
	Hydrograph Volume 16312.300	C.m"		2	1.500	Overland Slope"					
. 40	HYDROGRAPH Confluence 5"	2.900			20 000	Pervious Area Pervious length					
* 40	7 Confluence "				2.000	Pervious slope"					
	5 Node #"				0.182	Impervious Area"					
*	u/s of HWY 7&8"			*	68.000	Impervious length"					
<u>7</u>	Maximum flow 2.900	c.m/sec"		<u>.</u>	1.000	Impervious slope"					
÷	Hydrograph volume 16312.300	C. M"			0.250	Pervious Manning 'n					
÷	0.000 2.900 0.000	0.000"			79.000	Pervious SCS Curve	No."				
54	POND DESIGN" 2.900 Cuppett peek flow o m(see"				0.232	Pervious Hunott coe	TT1Clent"				
	0.070 Target outflow c.m/sec"				6.752	Pervious Initial ab	straction"				
	16312.3 Hydrograph volume c.m"				0.015	Impervious Manning	'n'"				
×	Number of stages"			*	98.000	Impervious SCS Curv	e No."				
÷	334.290 Minimum water level metre"				0.845	Impervious Runoff c	oefficient"				
÷	336.800 Maximum water level metre"				0.100	Impervious Ia/S coe	fficient"				
÷ .	334.290 Starting water level metre"			-	0.518	Impervious Initial	abstraction				
	0 Keep Design Data: 1 = True; 0 = Fa. Loval Disabanga Valuma"	Ise -				0.044 0.00	0 1.659	1.659	C.m/sec"		
							0 518	n 182	0 700	hectare"	
	334.500 0.2540 5.000"				-	Time of concentration	17,462	4.445	10.159	minutes"	
	335.000 1.303 390.000"			•	1	Time to Centroid	123.464	94.734	107.346	minutes"	
	335.500 2.800 3269.000"			5	F	Rainfall depth	34.259	34.259	34.259	mm "	
5	336.000 4.639 13030.00"			÷.	F	Rainfall volume	177.46	62.35	239.81	C.M"	
	336.400 6.109 30065.00"				F	Rainfall losses	26.301	5.315	20.845	mm "	
÷ .	336.800 18.376 57257.00"				1	Runott depth	7.957	28.943	13.414	mm"	
	Maximum lovol 335 110	c.m/sec		÷.	, r	Aunoff coefficient	41.22	0 945	93.90	с. "	
	Maximum storage 1075.522	G.m.			, ,	Maximum flow	0.013	0.038	0.044	c.m/sec"	
	Centroidal lag 3.697	hours"		• 40	ŀ	YDROGRAPH Add Runoff	n				
	0.000 2.900 1.659 0.0	DOO c.m/sec"		5	4	Add Runoff "					
* 40	HYDROGRAPH Next link "			•		0.044 0.04	4 1.659	1.659"			
*	5 Next link "			54	F	POND DESIGN"					
	0.000 1.659 1.659	0.000"			0.044	Current peak flow	c.m/sec"				
56	DIVERSION"			÷.	0.070	larget outriow c	.m/sec"				
	7 170 Overflow threshold"				90.9 A	Number of stages"	0.111				
	1.000 Required diverted fraction"				0.000	Minimum water level	metre"				
*	<pre>0 Conduit type: 1=Pipe:2=Channel"</pre>				0.750	Maximum water level	metre"				
*	Peak of diverted flow 0.000	c.m/sec"		•	0.000	Starting water leve	1 metre"				
*	Volume of diverted flow 0.000	C.m"			0	Keep Design Data: 1	= True; O	= False"			
	DIV00007.002hyd"					Level Discharge	Volume"				
÷	Major flow at 7"					0.000 0.000	0.000"				
10		0.000 c.m/sec"		1		0.1500 0.00400	1.000"				
40	6 Combine "			÷ .		0.3500 0.00700	29.000"				

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*	0.4500 0.00800 69.000"	360	0 Keep Design Data: 1 = True; 0 = False"	
Č –	0.6500 0.01000 178.000"		Level Discharge Volume"	
÷ .	0,7000 0.1060 208,000°	2		
÷	0./500 0.2010 240.000 Peak outflow 0.007 c.m/sec*		0.5000 0.1200 97.000"	
	Maximum level 0.391 metre"		0.9000 0.1300 167,000"	
	Maximum storage 45,378 c.m"		1.200 0.1400 254.000"	
â -	Centroidal lag 2.925 hours"		1.500 0.1500 358.000"	
* 40	0.044 0.044 0.007 1.659 c.m/sec"		1.800 1.000 400.000" Pook outflow 0.128 o.m/coo"	
= 40	6 Combine "		Maximum level 0.845 metre"	
	9 Node #"		Maximum storage 154.133 c.m"	
	NODE B"		Centroidal lag 1,797 hours"	
	Maximum flow 0.965 c.m/sec"	(*) (*)	0.372 0.372 0.128 0.965 c.m/sec"	
Q	Hydrograph Volume 1696.154 C.m.	40	HYDHOGHAPH COMDINE 9"	
° 40	HYDROGRAPH Start - New Tributary"	- C	9 Node #"	
*	2 Start - New Tributary"	1 M I	NODE B"	
š	0.044 0.000 0.007 0.965"		Maximum flow 1.080 c.m/sec"	
33	CATCHMENT 181*	<u>_</u>	Hydrograph volume 2204.880 c.m"	
) (riangular 565" 3 Specify values"	• 40	U.372 U.372 U.128 1.080" HYDROGRAPH Start - New Tributary"	
2	1 SCS method"	10	2 Start - New Tributary"	
	181 Western portion of John Bear property"		0.372 0.000 0.128 1.080"	
*	93.000 % Impervious"	* 33	CATCHMENT 182"	
-	1.870 Iotal Area"		1 Triangular SCS"	2
÷	1.000 Overland Slope"	÷.	3 Specify Values" 1 SCS method"	
*	0.131 Pervious Area"		182 Eastern portion of John Bear property"	
*	20.000 Pervious length"		69.000 % Impervious"	
*	2.000 Pervious slope	3 4	1.210 Total Area"	
Q	1.739 Impervious Area"	- C	60.000 Flow length"	
4	1.000 Impervious length"	÷.	0.375 Pervious Area"	
ж.	0.250 Pervious Manning 'n'"		30.000 Pervious length"	
<u>.</u>	65.000 Pervious SCS Curve No."		3.000 Pervious slope"	
ŝ –	0.079 Pervious Runoff coefficient"		0.835 Impervious Area"	
÷	0,100 Pervious Ia/S coefficient"		90.000 Impervious length"	
H.	0.015 Impervious Maning 'n'"	100	0.250 Pervious Manning 'n'"	
	98.000 Impervious SCS Curve No."	570	65.000 Pervious SCS Curve No."	
	0.849 Impervious Runoff coefficient*		0.079 Pervious Runoff coefficient"	
	0.100 Impervious Ia/S coefficient"	0.40	0.100 Pervious Ia/S coefficient	
÷	U.518 IMPERVIOUS INITIAL ADSTRACTION" 0.372 0.000 0.07 0.965 c.m/sec"	2000	13.677 Pervious Initial abstraction"	
	Catchment 181 Pervious Impervious Total Area		98.000 Impervious SCS Curve No."	
÷	Surface Area 0.131 1.739 1.870 hectare"		0.843 Impervious Runoff coefficient"	
.*	Time of concentration 32.274 5.996 6.178 minutes"	2062	0.100 Impervious Ia/S coefficient"	
÷	lime to Centrold 146,000 97.011 97.350 minutes"	1.00	0.518 Impervious Initial abstraction"	
÷ .	Rainfall volume 44.84 595.79 640.64 c.m [*]		Catchment 182 Pervious Impervious Total Area "	
	Rainfall losses 31,568 5.172 7.020 mm"		Surface Area 0.375 0.835 1.210 hectare*	
	Runoff depth 2.690 29.086 27.239 mm*	000	Time of concentration 36.449 4.271 5.564 minutes"	
÷ –	Runoff volume 3.52 505.84 509.36 c.m*		Time to Centroid 150.621 94.478 96.733 minutes"	
<u> </u>	MUNOTT COETIGIENT 0.0/9 0.849 0.795 -		Rainfall depth 34.259 34.259 34.259 mm"	
* 40	HVROGRAPH Add Runoff		nainail volume 120.50 280.02 414.53 C.M ⁻ Rainfall losses 31.567 5.963 19.486 mm ⁻	
3	4 Add Runoff "	(.e)	Runoff depth 2.691 28,896 20,773 mm ^o	
5	0.372 0.372 0.007 0.965"		Runoff volume 10.10 241.25 251.35 c.m"	
54	POND DESIGN"	1	Runoff coefficient 0.079 0.843 0.606	
	U.3/2 CURPENT DEAK TLOW C.M/SEC"	10	Maximum flow 0.002 0.174 0.174 c.m/sec"	
	509.4 Hydrograph volume c.m"	40	4 Add Runoff "	
	7. Number of stages"		0.174 0.174 0.128 1.080*	
*	0.000 Minimum water level metre"	* 54	POND DESIGN"	
<u> </u>	1.800 Maximum water level metre"		0.174 Current peak flow c.m/sec"	
	0.000 Starttig Mater TeAet Weile.	0.54	U.U/U Target outflow c.m/sec*	
Q:\348 Printe	96\104\SWM\MIDUSS\Pre\34896-104_Pre-002yr.out Page d at 15:15 on 18 Dec 2018	e 27	Q:\3489 Printed	95\104\SWM\MIDUSS\Pre\34896-104_Pre-002yr.out Page 28 1 at 15:15 on 18 Dec 2018
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1	251.3 Hydrograph volume c.m* 5. Number of stages"		• 40	HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"
3	0.000 Minimum water level metre* 1.400 Maximum water level metre*		40	1.058 1.058 1.058 1.093" HYDROGRAPH Combine 9"
÷	0.000 Starting water level metre"		•	6 Combine "
	U keep besign bata: i = irue; U = raise" Level Discharge Volume"		2	9 Node #" Node B"
š. –	0.000 0.000 0.000"		5	Maximum flow 2.149 c.m/sec*
:	0.3200 0.04300 276.000"		÷.	Hydrograph volume 5018.236 c.m"
×	1.300 0.08700 371.000"		• 40	HYDROGRAPH Confluence 8"
	1.400 0.5000 400,000"		1	7 Confluence "
:	Peak outflow 0.023 c.m/sec" Maximum Javal 0.123 motor"			8 Node #*
	Maximum storace 148.884 c.m".		*	NODE A' Maximum flow 1.659 c.m/sec"
5	Centroidal lag 3.395 hours"		5	Hydrograph volume 16293.044 c.m"
• 40	0.174 0.174 0.023 1.080 c.m/sec"		40	1.058 1.659 1.058 0.000"
	6 Combine "		*	8 Copy to Outflow"
*	9 Node #"		<u>.</u>	1.058 1.659 1.659 0.000"
÷ .	NODE B"		40	HYDROGRAPH Combine 9*
*	Hydrograph volume 2456.225 c.m"		•	9 Node #"
÷	0.174 0.174 0.023 1.093"		5	NODE B"
÷ 40	HYDROGRAPH Start - New Tributary" 2 Start - New Tributary		2	Maximum flow 3.561 c.m/sec"
χ	0.174 0.000 0.023 1.093"			nydrograph vordnie 21511.227 C.iii
33	CATCHMENT 183"		• 40	HYDROGRAPH Start - New Tributary"
Ç	1 Triangular SCS" 3 Specify values"			2 Start - New Tributary"
•	1 SCS method"		• 33	CATCHMENT 184"
<u>.</u>	183 Area along western tributary, south of Hwy 7/8"			1 Triangular SCS"
÷.	29.000 % Impervious" 23.290 Total Area"		2	1 Equal length" 1 SCS method"
	160.000 Flow length"		•	184 Agricultural lands south of Bleams Road"
÷	2.000 Overland Slope"		1	2.000 % Impervious"
	15.000 Pervious length"			2.950 lotal Area" 80.000 Flow length"
÷	2.200 Pervious slope"		•	3.100 Overland Slope"
÷	6.754 Impervious Area"			2.891 Pervious Area"
	2.000 Impervious length			30.000 Pervious slongtn" 3.100 Pervious slonge"
•	0.250 Pervious Manning 'n'"		¥.	0.059 Impervious Area"
÷ .	68.300 Pervious SCS Curve No."			80.000 Impervious length"
2	0.100 Pervious la/S coefficient			3.100 Impervious Sigpe 0.250 Pervious Mannina (a'"
	11.789 Pervious Initial abstraction"			74.000 Pervious SCS Curve Na."
÷	0.015 Impervious Manning 'n'"			0.163 Pervious Runoff coefficient"
8	0.850 Impervious Runoff coefficient"			8.924 Pervious Initial abstraction"
	0.100 Impervious Ia/S coefficient"			0.015 Impervious Manning 'n'"
÷ .	0.518 Impervious Initial abstraction"			98.000 Impervious SCS Curve No."
•	Catchment 183 Pervious Impervious Total Area "			0.100 Impervious Ia/S coefficient"
•	Surface Area 16.536 6.754 23.290 hectare"			0.518 Impervious Initial abstraction"
÷ .	Time of concentration 91.656 10.359 29.232 minutes" Time to Controld 200 842 103 557 138 230 minutes"			0.030 0.000 1.659 3.561 c.m/sec"
•	Rainfall depth 34.259 34.259 34.259 mm"			Surface Area 2.891 0.059 2.950 hectare"
:	Rainfall volume 5664.96 2313.86 7978.82 c.m"			Time of concentration 43.543 3.490 39.753 minutes"
÷	Haintail losses 30.662 5,132 23.258 mm" Bunoff depth 3.597 29.127 11.000 mm"		1.0	lime to Centroid 155,988 93,332 150,059 minutes" Rainfall denth 34,259 34,259 24,259 mm"
÷	Runoff volume 594.75 1967.26 2562.01 c.m"			Rainfall volume 990.42 20.21 1010.63 c.m"
:	Runoff coefficient 0.105 0.850 0.321 "		1967	Rainfall losses 28.659 5.580 28.197 mm"
. 40	Maximum TioW 0.060 1.053 1.058 C.m/sec" HYDROGRAPH Add Runoff "			кипотт gepth 5.600 28.678 6.061 mm" Виробб volume 161.89 16.92 178.61 с
	4 Add Runoff "			Runoff coefficient 0.163 0.837 0.177 "
•	1.058 1.058 0.023 1.093"			Maximum flow 0.029 0.012 0.030 c.m/sec*

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• 40	HYDROGRAPH Add Runoff "		Runoff volume 200.61 3173.59 3374.20 c.m*	
14 V	4 Add Runoff "		Runoff coefficient 0.074 0.850 0.524 *	
	0.030 0.030 1.659 3.561"		Maximum flow 0.037 1.880 1.883 c.m/sec"	
* 40	HYDROGRAPH Copy to Outflow"	• 40	HYDROGRAPH Add Runoff "	
÷	8 Copy to Outflow"	÷	4 Add Runoff *	
* 40	U.030 U.030 U.030 3.551*	10	1.883 1.883 3.574 3.574*	
=	6 Combine "	- 40	8 Copy to Outriow	
	9 Node #*		1.883 1.883 1.883 1.883 3.574"	
(a)	NODE B"	• 40	HYDROGRAPH Combine 10"	
340	Maximum flow 3.574 c.m/sec"		6 Combine "	
	Hydrograph volume 21490.094 c.m"	•	10 Node #"	
= 40	0.030 0.030 0.030 0.030 3.574"	- C	NODE C	
40 (#)	7 Confluence °	÷	Maximum Tlow 5.446 C.m/sec"	
	9 Node #"		1.883 1.883 1.883 5.446*	
•	NODE B"	* 81	ADD COMMENT===================================	
Field Faco	Maximum flow 3.574 c.m/sec*	- S	3 Lines of comment"	
	Hydrograph volume 21490.092 c.m*		***************************************	
. 40	0.030 3.574 0.030 0.000° HYDEOGRAPH Copy to dutflow!		Catchments north of Hwy 7/8, towards Eastern Tributary"	
40	8 Copy to Outflow"	. 40	HVDRORDADH Start - New Tributary	
940	0.030 3.574 3.574 0.000"		2 Start - New Tributary"	
* 40	HYDROGRAPH Combine 10"		1.883 0.000 1.883 5.446"	
2	6 Combine "	* 33	CATCHMENT 150*	
Q	10 Node #"	÷	1 Triangular SCS	
(#)	NUUE C Mayimum flow 3.574 c.m/soc*		3 Specify values"	
1.00	Hydrograph volume 21490.092 c.m"		1 Sos Metriour	
	0.030 3.574 3.574 3.574 *		0.000 % Impervious"	
* 40	HYDROGRAPH Start - New Tributary"		3.510 Total Area"	
	2 Start - New Tributary"		95.000 Flow length"	
	0.030 0.000 3.574 3.574		1.600 Overland Slope"	
. 33	CALCHMENT 185"	÷	3.510 Pervious Area"	
	3 Specify values"		2 000 Pervious singen	
-	1 SCS method"		0.000 Impervious Area"	
	185 Morningside Retirement Community lands"		296.000 Impervious length"	
	58.000 % Impervious"	- C	2.000 Impervious slope"	
	10,000 Flow Leasts	- S	0.250 Pervious Manning 'n''	
	2.000 Overland Slope"		14.000 Pervious SCS CUTVE NO."	
	7.888 Pervious Area"		0.100 Pervious Ia/S coefficient"	
	25.000 Pervious length"		8.924 Pervious Initial abstraction	
-	2.500 Pervious slope"		0.015 Impervious Manning 'n'"	
÷.	10.892 impervious Area*		98.000 Impervious SCS Curve No."	
	2.500 Impervious length	÷	0.000 Impervious Hunort Coefficient"	
	0.250 Pervious Manning 'n'"		0.510 Impervious fars coefficient	
	64.400 Pervious SCS Curve No."		0.028 0.000 1.883 5.446 c.m/sec*	
5)	0.074 Pervious Runoff coefficient		Catchment 150 Pervious Impervious Total Area "	
	0.100 Pervious Ia/S coefficient	·	Surface Area 3.510 0.000 3.510 hectare"	
	14.041 Pervious Initial Abstraction"		Time of concentration 56.775 8.726 56.775 minutes	
	98.000 Impervious SCS Curve No "	÷	lime to Centroid 171.820 101.065 171.819 minutes"	
•	0.850 Impervious Runoff coefficient"		Rainfall volume 1202.47 0.00 1202.48 cm ⁺	
	0.100 Impervious Ia/S coefficient"		Rainfall losses 28.658 5.078 28.658 mm*	
	0.518 Impervious Initial abstraction"	÷	Runoff depth 5.600 29.180 5.600 mm"	
	1.883 0.000 3.574 3.574 c.m/sec"		Runoff volume 196.56 0.00 196.56 c.m*	
2	Surface Area 7, 888 10,802 10,700	÷	Runoff coefficient 0.163 0.000 0.163	
	Time of concentration 35.504 9.086 10.656 minutes"	. 40	Maximum TLOW 0.028 0.000 0.028 c.m/sec"	
	Time to Centroid 149.968 101.609 104.484 minutes"	40	4 Add Bunoff "	
<u>.</u>	Rainfall depth 34.259 34.259 34.259 mm*	×	0.028 0.028 1.883 5.446"	
	Rainfall volume 2702.18 3731.58 6433.76 c.m*	40	HYDROGRAPH Copy to Outflow"	
	Raintail losses 31.715 5.123 16.292 mm*	1	8 Copy to Outflow"	
	nunuti ueptii 2.543 29.136 17.967 mm"	- C	0.028 0.028 0.028 5.446"	

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2:334896:104:SWM.MIDUSS:Prei34898-104_Pre-002yr.out Page 31 Printed at 15:15 on 18 Dec 2018 40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #" 11 Node #" 11 Node #" 11 Node #" 0.028 c.m/sec" Maximum flow 0.028 c.m/sec" Hydrograph volume 196.564 c.m" 0.028 0.028 0.028" 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028" 0.028" 0.028 0.028" 0.028 0.028" 0.028" 0.028 0.028" 0.028" 0.028" 0.028 0.028" 0.028" 0.028 0.028" 0.028" 0.028 0.028" 0.028" 0.028" 0.028" 0.028" 0.028" 0.028" 0.028" 0.028 0.028" 0.028" 0.028" 0.028 0.028" 0.028" 0.028 0.028" 0.028" 0.028" 0.028" 0.028" 0.028 0.028" 0.028 0.028" 0.028 0.028 0.028 <	O:1348961104/SWMMIDUSSIPre134896-104_Pre-002yr.out Printed at 15:15 on 18 Dec 2018 152 Southern portion of Schneider lands" 5.000 % Impervious" 8.650 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 Pervious slope" 0.250 Pervious SCS Curve No." 0.260 Pervious SCS Curve No." 0.284 Pervious Manning 'n'" 82.000 Pervious SCS Curve No." 0.284 Pervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.151 Impervious SCS Curve No." 0.651 Impervious SCS Curve No." 0.561 Impervious SCS Curve No." 0.561 Impervious SCS Curve No." 0.561 Impervious SCS Curve No." 0.561 Impervious SCS Curve No." 0.141 0.000 0.343 0.346 c.m/sec" Catchment 152 Pervious Impervious Total Area " Surface Area 8.132 0.428 8.550 hectare" Time of concentration 47.803 5.289 42.018 minutes" Time to Centroid 152.440 95.959 153.393 minutes" Time to Centroid 162.440 95.959 153.393 minutes" 7 Mental Manter 152 Pervious Science 153.393 minutes" 150 Surface Area 8.132 0.425 34.259 mm"	Page 32
 0.189 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8.021 Pervious Manning 'n'" 90.000 Impervious SCS Curve No." 0.522 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 0.543 0.000 0.028 0.028 c.m/sec" 	 Rainfall volume 2785.91 146.63 2932.53 c.m" Rainfall losses 24.518 5.106 29.548 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" 	
Catchment 151 Pervious Impervious Total Area " Surface Area 3.866 1.904 5.770 hectare" Time of concentration 15.785 8.726 22.087 minutes" Time to Centroid 166.741 101.065 121.444 minutes" Rainfall depth 34.259 34.259 maintes" 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 coefficient 0.189 0.852 0.408 m"	 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 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 0.457" 	
 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" 6 Combine 11" 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" a Start - New Tributary" 33 CATCHMENT 152" 	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 =reinfall; 2=hydrograph" 2 1 =reinfall; 2=hydrograph" 1 1 =reunoff; 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 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.000 0.457" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.000 0.457"	
1 Triangular SCS" 1 Equal length" 1 SCS method"	40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #"	

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		w/s of each without of th				
		U/S OT EAST CULVERT OF HI	VY / 68-	a		
		Maximum (IOW	0.457	c.m/sec"		
			0 000	0.457		
	40	HYDROGRAPH Confluence	11"	0.407		
1.0	-0	7 Confluence "				
		11 Node #"				
		u/s of east culvert of H	VY 7&8"			
		Maximum flow	0.457	c.m/sec"		
		Hydrograph volume	919.023	C. M*		
12		0.000 0.457	0.000	0.000*		
	54	POND DESIGN®	0.000	0.000		
		0.457 Current peak flow c.m.	(sec"			
		0.070 Target outflow c.m/see	ун.			
12		1919.0 Hydrograph volume c.m	4			
		Number of stages"				
		332.660 Minimum water level me	etre"			
		336.000 Maximum water level me	etre"			
		332.660 Starting water level r	netre"			
		0 Keep Design Data: 1 = Tru	ue; 0 = F	alse"		
		Level Discharge Volu	ume"			
		332.660 0.000 0.0	000"			
		333.000 0.3010 266.0	000"			
		333.500 1.168 1814.0	000"			
- 8		334.000 2.325 4798.0	000 "			
		334.500 3.132 9073.0	000"			
		335.000 3.780 14775	.00"			
- 15		335,500 4,332 22251	,00 *			
- 5		335.750 4.583 26742	.00 "			
		336,000 21,985 31757	.00"			
		Peak outflow	0.274	c.m/sec"		
- C		Maximum level	332.971	metre"		
- 2		Maximum storage	242.984			
		Centroidal lag	2.610	hours"		
	40	0.000 0.457 0.2	274 0	.000 c.m/sec"		
- 2	40	HYDROGRAPH Next link "				
÷.		5 Next Tink -				
	20		Q.274	0.000"		
	00	START/RE-START FUTALS 11"				
		J MUNOTT IDTAIS ON EXII"		000 000	b	
		Total Unconnent area		228.020	nectare"	
		Total Impervious area		50.613	nectare"	
	10	IDIAL & IMPERVIOUS		22.197"		
	19	CXII"				

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Printed at 15:17 on 18 Dec 2018	Printed at 15:17 on 18 Dec 2018
MIDUSS Output>"	Time to Centroid 150.959 93.831 150.959 minutes"
MIDUSS version Version 2.25 rev. 473"	Rainfall depth 47.240 47.240 奶奶"
* MIDUSS created Sunday, February 07, 2010*	Rainfall volume 1403.02 0.00 1403.02 c.m"
* 10 Units used: ie METRIC*	* Rainfall losses 29.424 5.418 29.424 mm"
Job folder: Q:\34896\104\SWM\MIDUSS\Pre"	Runoff depth 17.816 41.822 17.816 mm"
Output filename: 34896-104_Pre-005yr.out	Runoff volume 529.13 0.00 529.13 c.m"
Licensee name: admin	Runoff coefficient 0.377 0.000 0.377
• Company Microsoft	Maximum Tiow 0.107 0.000 0.107 C.m/sec
7 lines of comment"	0.107 0.107 0.000 0.000"
	33 CATCHMENT 102"
* Wilmot Employement Lands"	1 Triangular SCS"
New Hamburg, Ontario"	1 Equallength
5 year Storm Event - Pre-development"	1 SCS method*
• Job No.: 34896-104"	102 Pfenning Farm Development - north of GEXR"
 Calculated by: NED/MSB/GMK[*] 	• 0.000 * Impervious"
	12.070 Iotal Area
3) ILME FARAMELERS	
3,000 line step 240,000 May Storm length"	12.070 Pervious Area"
1 1500.000 Max. Hydrograph"	180.000 Pervious length"
* 32 STORM Chicago storm"	 2.500 Pervious slope"
1 Chicago storm ^o	0.000 Impervious Area"
1593.000 Coefficient A"	180.000 Impervious length*
11.000 Constant B"	2.500 Impervious slope"
0.879 Exponent C"	0.250 Pervious Manning 'n'
0.400 Fraction R"	82.000 Pervious SCS Curve No."
	0.377 Pervious RUNOTT CONTRICTOR
Novinum stepsity 120 250 mm/bp*	5.76 Dervious Initial abstraction
Maximum Intensity 139.200 mm/	0.015 Tenervicus Manina ""
5 ONSNVA Hydrograph extension used in this file"	98.000 Impervious SCS Curve No."
81 ADD COMPENT	0.000 Impervious Runoff coefficient*
3 Lines of comment"	0.100 Impervious Ia/S coefficient
• • • • • • • • • • • • • • • • • • • •	0.518 Impervious Initial abstraction"
Catchments North of GEXR, part of Inlet #1"	• 0.434 0.107 0.000 0.000 c.m/sec*
***************************************	Catchment 102 Pervious Impervious Total Area "
33 CATCHMENT 101"	Surface Area 12.070 0.000 12.070 hectare
1 Triangular SCS"	Time of concentration 43.081 5.428 43.081 minutes
1 Equal length	Prince to centrola 151.105 93.862 151.105 minutes
101 Area Northeast of GEVE"	
* 0.000 % Impervious"	Rainfall losses 29,425 5,409 29,425 mm"
* 2.970 Total Area"	• Runoff depth 17,815 41.830 17.815 mm"
* 80.000 Flow length*	Runoff volume 2150.28 0.01 2150.29 c.m"
0.500 Overland Slope"	Runoff coefficient 0.377 0.000 0.377 "
2.970 Pervious Area"	Maximum flow 0.434 0.000 0.434 c.m/sec*
80.000 Pervious length"	40 HYDROGRAPH Add Runoff "
- U.500 Pervious Slope"	- 4 Add Runott "
0.000 Impervious Area	0,434 0,542 0,000 0.000"
0.250 Parvice Manning 'n'"	
82.000 Pervious SCS Curve No."	* 40 HYDROGRAPH Combine 1*
• 0.377 Pervious Runoff coefficient*	6 Combine "
0.100 Pervious Ia/S coefficient"	* 1 Node #*
5.576 Pervious Initial abstraction"	u/s of GEXR*
0.015 Impervious Manning 'n'"	Maximup-flow 0.542 c.m/sec"
98.000 Impervious SCS Curve No."	Hydrograph volume 2679.419 c.m
U.UUU Impervious Hunott coetticient"	- 0.434 0.542 0.542 0.542*
0.519 Impervious Ia/S coerticient	- 40 HYDHOGHAPH STAFT - NEW IFIDUTAFY"
	2 Start - New Hildutary 0.434 0.000 0.542 0.542
Catchment 101 Pervious Impervious Total Area "	* 33 CATCHMENT 103"
 Surface Area 2.970 0.000 2.970 hectare 	1 Triangular SCS"
Time of concentration 42.921 5.407 42.921 minutes"	1 Equal length*

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SCS method"	* 81 ADD COMMENT===================================	
103 Woodlot - north of GEXR"	3 Lines of comment"	
0.000 % Impervious"	******************	
2.080 Total Area"	Catchments South of GEXR, part of Inlet #1"	
2.500 Overland Slope"	33 CATCHMENT 104"	
2.080 Pervious Area"	1 Triangular SCS"	
80.000 Pervious length"	3 Specify values"	
2.500 Pervious slope"	1 SCS method"	
0.000 Impervious Area"	104 Riverside Brass"	
2 500 Impervious slope"	S9,000 % Impervious"	
0.250 Pervious Manning 'n'"	35.000 Flow length	
* 70.000 Pervious SCS Curve No."	1.200 Overland Slope"	
0.193 Pervious Runoff coefficient"	0.828 Pervious Area"	
0.100 Pervious Ia/S coefficient"	60.000 Pervious length	
0.015 Intervious Manino 'n"	2.000 Pervious slope"	
98.000 Impervious SCS Curve No."	116.000 Impervious length"	
• 0.000 Impervious Runoff coefficient"	0.500 Impervious slope"	
• 0.100 Impervious Ia/S coefficient"	0.250 Pervious Manning 'n'"	
0.518 Impervious Initial abstraction*	76.000 Pervious SCS Curve No."	
- U.U41 U.U00 U.542 U.542 C.m/sec*	0.272 Pervious Runoff coefficient"	
Surface Area 2.080 0.000 2.080 bestara"	0.100 Pervious Ta/S coefficient"	
Time of concentration 38.094 3.337 38.093 minutes"	0.015 Tenervious Antital abstraction	
Time to Centroid 145.176 90.888 145.176 minutes"	98.000 Impervious SCS Curve No."	
Rainfall depth 47.240 47.240 mm"	0.880 Impervious Runoff coefficient"	
Rainfall volume 982.59 0.00 982.59 c.m"	0.100 Impervious Ia/S coefficient"	
Rainfall losses 38.144 5.976 38.144 mm"	0.518 Impervious Initial abstraction"	
" HUNOTT GEDTIN 9.096 41.264 9.096 mm" Bunoff volume 189.20 0.00 189.20 c.m"	0.362 0.000 0.582 0.582 c.m/sec"	
Runoff coefficient 0.193 0.000 0.193 "	Surface Area 0.828 1.192 2.020 bectare"	
* Maximum flow 0.041 0.000 0.041 c.m/sec*	Time of concentration 28.151 6.758 10.546 minutes"	
40 HYDROGRAPH Add Runoff "	* Time to Centroid 132.819 95.789 102.346 minutes*	
4 Add Runoff "	Rainfall depth 47.240 47.240 mm"	
- 0.041 0.041 0.542 0.542"	Rainfall volume 391.24 563.00 954.25 c.m"	
8 Conv to Outflow*	HainTall losses 34.371 5.681 17.444 mm"	
0.041 0.041 0.041 0.542"	" Runoff volume 106 58 495 29 601 87 c m"	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.272 0.880 0.631 "	
* 6 Combine "	Maximum flow 0.029 0.355 0.362 c.m/sec*	
1 Node #"	* 40 HYDROGRAPH Add Runoff "	
u/s of GEXR"	4 Add Runoff "	
Maximum 100 0.502 C.11/58C	54 POND DESTAN	
- 0.041 0.041 0.041 0.582"	0.362 Current neak flow c m/sec"	
* 40 HYDROGRAPH Confluence 1"	0.070 Target outflow c.m/sec"	
7 Confluence "	601.9 Hydrograph volume c.m"	
1 Node #"	4. Number of stages"	
u/s of GEXR"	0.000 Minimum water level metre"	
Maximum (10W 0.552 C.m/SeC"	0.910 MAXIMUM WATER level metre"	
1,941 0,1041 0,582 0,041 0,000"	0 Keen Design Data: 1 = True: 0 = False"	
40 HYDROGRAPH Copy to Outflow"	Level Discharge Volume"	
8 Copy to Outflow"	0.000 0.000 0.000	
0.041 0.582 0.582 0.000	0.3100 0.03090 782.000"	
- 40 HYDROGRAPH Combine 2"	0.6100 0.1232 1619.000"	
2 Node #"	- U.9100 U.2769 2511.000" Pork out-flow	
	Mayimum laval 0.186 matros"	
Maximum flow 0.582 c.m/sec"	Maximum storage 470.022 c.m"	
Hydrograph volume 2868.618 c.m"	Centroidal lag 8.648 hours"	
0.041 0.582 0.582 0.582"	* 0.362 0.362 0.019 0.582 c.m/sec*	
40 HYDROGRAPH Start - New Tributary	40 HYDROGRAPH Combine 2"	
2 Start - New Tributary"	6 Combine "	
0.041 0.000 0.002 0.002		

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			0.015 Transview Namina Lati
÷	INLET I Navimum flow 0.508 o m/cool		0.015 Impervious Manning SC Curren No 1
	Havenous to be a state of the s		0.874 Impervious Dupot no.
	0.362 0.362 0.19 0.598"	•	0.100 Impervious Ia/S coefficient"
• 40	HYDROGRAPH Start - New Tributary"		0.518 Impervious Initial abstraction"
	2 Start - New Tributary"		0.301 0.671 0.019 0.598 c.m/sec"
	0.362 0.000 0.019 0.598"		Catchment 106 Pervious Impervious Total Area
* 33	CATCHMENT 105"		Surface Area 0.192 1.088 1.280 hectare"
	1 Triangular SCS"		Time of concentration 29.128 3.106 4.462 minutes"
	3 Specify values"		Time to Centroid 134.035 90.514 92.783 minutes"
	1 SCS method"		Rainfall depth 47.240 47.240 47.240 mm"
	105 Iron Bridge Manufacturing Property"		Rainfall volume 90.70 513.97 604.67 c.m"
	65.000 % Impervious"	<u>.</u>	Rainfall losses 34,373 5.943 10.207 mm*
	3.570 Total Area"		Runoff depth 12.867 41.297 37.032 mm"
	90.000 Flow length"		Runoff volume 24.71 449.31 474.02 c.m"
	2.000 Overland Slope"	•	Runoff coefficient 0.272 0.874 0.784 "
2	1.250 Pervious Area"		Maximum flow 0.007 0.301 0.301 c.m/sec*
÷	90.000 Pervious length	4 0	HYDROGRAPH Add Runoff •
	2.000 Pervious slope"		4 Add Runoff "
	2.320 Impervious Area	•	0.301 0.967 0.019 0.598"
÷	90.000 Impervious length	• 40	HYDROGRAPH Copy to Outflow"
	2.000 Impervious slope"		8 Copy to Outflow"
	0.250 Pervious Manning 'n'"	÷	0.301 0.967 0.967 0.598"
	B1.000 Pervious SCS Curve No.	• 40	HYDROGRAPH Combine 2"
ē	0.357 Pervious Runott coefficient"		6 Combine *
S	0.100 Pervious 1a/s coerticient	2	2 Node #"
	5.958 Pervious initial abstraction"	- 2	INLET 1"
÷	0,015 Impervious Manning 'n'		Maximum flow 1.077 c.m/sec
<u> </u>	95.000 Impervious SCS Corve No		Hydrograph volume 5093.567 c.m"
	0.5/0 Impervious Autorit Coefficient"		0.301 0.967 0.967 1.077
2	0.510 impervisus fa/s coefficient	40	HYDROGRAPH START - NEW IFIDUTARY
			2 Start - New Inibitary
		. 00	
	Surfare Area 1 250 2 300 3 570 bestare	33	
	Time of concentration 31 200 3 820 8 763 minutae		
	Time to Centroid 135.069 91.609 99.508 minutes		1 EQUAL TENGIN
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	•	10 Jong strid
	Rainfall volume 590.26 1096.20 1886.46 c.m*		40.000 \$ Indestines
	Rainfall losses 30.353 5.873 14.441 mm*	÷ .	2.850 Total Area*
	Runoff depth 16.887 41.366 32.799 mm*		50.000 Elow length"
	Runoff volume 211.00 959.91 1170.91 c.m"	•	1.000 Overland Slope"
	Runoff coefficient 0.357 0.876 0,694 "		1.710 Pervious Area"
	Maximum flow 0.053 0.657 0.671 c.m/sec"		50.000 Pervious length
40	HYDROGRAPH Add Runoff "		1.000 Pervious slope"
	4 Add Runoff "		1.140 Impervious Area"
	0.671 0.671 0.019 0.598*		50.000 Impervious length
* 33	CATCHMENT 106"		1.000 Impervious slope"
	1 Triangular SCS"	*	0.250 Pervious Manning 'n'"
	3 Specify values"		76.000 Pervious SCS Curve No."
·	1 SCS method"	•	0.272 Pervious Runoff coefficient"
	106 N.C. Pestell Head Office and other Industrial"		0.100 Pervious Ia/S coefficient"
	85.000 % Impervious"		8.021 Pervious Initial abstraction"
	1.280 Total Area"		0.015 Impervious Manning 'n'"
8	55.000 Flow length*	•	98.000 Impervious SCS Curve No."
8	1.500 Overland Slope"	<u>*</u>	0.874 Impervious Runoff coefficient*
S	0.192 Pervious Area		0.100 Impervious Ia/S coefficient*
	55.000 Pervious length"		0.518 Impervious Initial abstraction
÷	1.500 Vervious Stope"		0.325 0.000 0.967 1.077 c.m/sec*
6	I.USS IMPERVIOUS Area"		Catchment 107 Pervious Impervious Total Area *
3	55.000 Impervious length	5	Surface Area 1.710 1.140 2.850 hectare"
	1.500 Impervious slope"	- C	Time of concentration 31.067 3.313 12.157 minutes"
	U.200 PERVIOUS MANNING "N"		Ime to Centroid 136.445 90.849 105.379 minutes*
	10,000 Fervious Buschf anothiniant		Haintail deptn 47.240 47.240 mm
	0.100 Pervisus autori COUTILCIUNT"	2	MALITALI VOLUME 807.80 538.53 1346.34 C.M."
× .	8 021 Pervise Initial abstraction	10 m	REALIZED TO THE TOTAL OF THE TRANSPORT
	ALER I STATES THITTET CASH GETON		Runori deptii 12.009 41.2/1 24.230 mm ⁻

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:	Runoff volume 220.05 470.49 690.55 c.m" Runoff coefficient 0.272 0.874 0.513 "	÷	2.000 Overland Slope" 1.383 Pervious Area"	
. 40	Maximum flow 0.055 0.312 0.325 c.m/sec"	÷.	50.000 Pervious length"	
40	4 Add Runoff "		4.148 Impervious Area"	
а а. т.т.	0.325 0.325 0.967 1.077*		192.000 Impervious length"	
- 33	CAICHMENT 108" 1 Trianoular SCS"		0.750 Impervious slope" 0.250 Pervious Manning 'n'"	
	1 Equal length"		75.000 Pervious SCS Curve No."	
	1 SCS method"		0.257 Pervious Runoff coefficient"	
	5.000 % Impervious"	÷	8.467 Pervious Initial abstraction"	
÷	5.920 Total Area"	÷	0.015 Impervious Manning 'n'"	
÷	55.000 Flow length" 3.000 Overland Slope"		98.000 Impervious SCS Curve No." 0.888 Impervious Bunoff coefficient"	
	5.624 Pervious Area"	5	0.100 Impervious Ia/S coefficient"	
÷	65.000 Pervious length"	<u>.</u>	0.518 Impervious Initial abstraction"	
*	0.296 Impervious Area"		Catchment 109 Pervious Impervious Total Area "	
	65.000 Impervious length"	5	Surface Area 1.383 4.148 5.530 hectare"	
ŝ., .	3.000 Impervious slope" 0.250 Renvious Magning lot"	<u>.</u>	Time of concentration 23.025 8.096 9.412 minutes"	
×	70.200 Pervious SCS Curve No."	*	Rainfall depth 47.240 47.240 47.240 mm"	
<u>.</u>	0.195 Pervious Runoff coefficient"	<u>*</u>	Rainfall volume 653.09 1959.27 2612.36 c.m"	
÷	0.100 Pervious Ia/S coefficient" 10 782 Pervious Initial abstraction"	<u> </u>	Rainfall losses 35.076 5.299 12.744 mm" Bunoff depth 12.164 41.940 34.496 mm"	
	0.015 Impervious Manning 'n'"	*	Runoff volume 168.17 1739.48 1907.65 c.m"	
÷	98.000 Impervious SCS Curve No."	9	Runoff coefficient 0.257 0.888 0.730 "	
ŝ.	0.100 Impervious la S coefficient	• 40	MAXIMUM FIOW 0.051 1.193 1.209 C.m/sec" HYDROGRAPH Add Runoff	
×	0.518 Impervious Initial abstraction"	*	4 Add Runoff "	
Ç	0.142 0.325 0.957 1.077 c.m/sec" Catchment 108 Pervinus Tonal Area "	• 54	1.209 1.209 0.428 1.505" POND DESIGN"	
÷ .	Surface Area 5.624 0.296 5.920 hectare*		1.209 Current peak flow c.m/sec"	
	Time of concentration 31,608 2.789 26,117 minutes"		0.070 Target outflow c.m/sec"	
•	Rainfall depth 47.240 47.240 47.240 mm"		9. Number of stages"	
*	Rainfall volume 2656.77 139.83 2796.60 c.m"		0.000 Minimum water level metre"	
:	Rainfall losses 38.034 6.073 36.436 mm" Bunoff depth 9.205 41.157 10.804 mm"	:	1.200 Maximum water level metre" 0.000 Starting water level metre"	
	Runoff volume 517.72 121.85 639.57 c.m."		0 Keep Design Data: 1 = True; 0 = False"	
÷ .	Runoff coefficient 0.195 0.871 0.229 "	÷	Level Discharge Volume"	
. 40	Maximum Tiow 0.127 0.064 0.142 c.m/sec" HYDROGRAPH Add Runoff "	×	0.1500 0.00400 297.000"	
3	Add Runoff "		0.3000 0.01000 635.000"	
40	0.142 0.428 0.967 1.077" HYDPORDARE Conv. to Outflow"	÷	0.4500 0.03600 1004.000"	
	8 Copy to Outflow"		0.7500 0.06000 1847.000"	
	0.142 0.428 0.428 1.077"	- B	0.9000 0.06900 2329.000"	
् 4 0	Combine "	÷	1.000 1.100 2900.000"	
	2 Node #"	*	Peak outflow 0.052 c.m/sec"	
÷ .	INLET 1" Novimum flow 1.505 o.m/0000"	<u>.</u>	Maximum level 0.647 metre"	
÷ .	Hydrograph volume 6423.682 c.m"		Centroidal lag 12.880 hours"	
*	0.142 0.428 0.428 1.505"		1.209 1.209 0.052 1.505 c.m/sec*	
40	HYDROGRAPH Start - New Inibutary" 2. Start - New Tributary"	40	HYDHOGHAPH Combine 2" 6 Combine "	
	0.142 0.000 0.428 1.505"		2 Node #"	
* 33	CATCHMENT 109"	:	INLET 1"	
2	3 Specify values"		Maximum ilow 1.512 C.m/Sec" Hydrograph volume 8017.083 c.m"	
	1 SCS method"		1.209 1.209 0.052 1.512"	
÷ .	109 N.C. Pestell site"	* 81	ADD COMMENT===================================	
	5.530 Total Area"			
•	130.000 Flow length"	× .	Catchments South of GEXR, part of Inlet #2"	

2:1348961104\SWM\MIDUSS\Pre\34896-104_Pre-005yr.out Page 9 Printed at 15:17 on 18 Dec 2018	Q:1348961104ISWM1MIDUSSIPre134896-104_Pre-005yr.out Printed at 15:17 on 18 Dec 2018	Page 10
	6 Combine "	
40 HYDROGRAPH Start - New Tributary"	• 3 Node #"	
2 Start - New Tributary"	INLET 2"	
1,209 0.000 0.052 1.512	 Maximum flow 0.088 c.m/sec" 	
33 CATCHMENT 110"	Hydrograph volume 454.849 c.m"	
1 Triangular SCS"	• 0,175 0.175 0.088 0,088"	
3 Specity values	40 HYDROGRAPH Start - New Iributary"	
110 Alpine Solutions west SMVR"	2 Start - New Intibutary	
30.000 % Impervious"	* 33 CATCHMENT 111"	
1,920 Total Area"	 Triangular SCS" 	
150.000 Flow length"	Equal length	
1.000 Overland Slope"	1 SCS method"	
1.344 Pervious Area"	111 Woodlot north of Schneider/Good lands"	
150.000 Pervious length"	 0.000 % Impervious" 	
1.500 Pervious slope"	• 13.230 Total Area"	
0.576 Impervious Area	170.000 Flow length	
1.500 Impervious rength	13 230 Devious Araa"	
0.250 Parvious Manning 'n'"	170.000 Pervious length"	
80.000 Pervious SCS Curve No."	2.400 Pervious slope"	
0.339 Pervious Runoff coefficient"	• 0.000 Impervious Area"	
0.100 Pervious Ia/S coefficient"	* 170.000 Impervious length"	
6.350 Pervious Initial abstraction	 2.400 Impervious slope" 	
0.015 Impervious Manning 'n'"	* 0.250 Pervious Manning 'n'"	
98.000 Impervious SCS Curve No."	70.000 Pervious SCS Curve No."	
0.883 Impervious Runoff coefficient	0.193 Pervious Runoff coefficient"	
0.100 Impervious Ia/S coefficient	0.100 Pervious Ia/S coefficient"	
0.518 Impervious initial abstraction"	0.05 Terribus Initial abstraction	
Catchment 10 Pervious Impervious Tatal Area "	* 98 000 Theory tous SCS Curve No."	
Surface Area 1.344 0.576 1.920 hectare"	0.000 Impervious Runoff coefficient"	
Time of concentration 47.489 4.785 24.965 minutes"	 0.100 Impervious Ia/S coefficient" 	
Time to Centroid 156.896 92.959 123.174 minutes"	0.518 Impervious Initial abstraction"	
Rainfall depth 47.240 47.240 mm"	* 0.183 0.000 0.088 0.088 c.m/sec*	
Rainfall volume 634.90 272.10 907.01 c.m	Catchment 111 Pervious Impervious Total Area "	
Rainfall losses 31.231 5.549 23.527 mm	Surface Area 13.230 0.000 13.230 hectare"	
Runoff depth 16.009 41.691 23.713 mm"	Time of concentration 60.616 5.309 60.616 minutes"	
Runott volume 215.16 240.14 455.30 C.m.	Prior to Centrold 1/1./53 93.885 1/1./52 minutes"	
Manori coefficient 0.339 0.665 0.302 Maximum flow 0.040 0.168 0.175 c.m/sec"	* Bainfall volume 6240 83 0 01 6240 83 mm	
40 HYDROGRAPH Add Bunoff "	Rainfall losses 38.141 5.461 38.141 mm*	
4 Add Runoff "	Runoff depth 9.099 41.779 9.099 mm"	
0.175 0.175 0.052 1.512"	* Runoff volume 1203.79 0.01 1203.80 c.m*	
54 POND DESIGN"	Runoff coefficient 0.193 0.000 0.193 "	
0.175 Current peak flow c.m/sec"	Maximum flow 0.183 0.000 0.183 c.m/sec"	
0.070 Target outflow c.m/sec"	40 HYDROGRAPH Add Runoff "	
455.3 Hydrograph volume c.m"	4 Add Runott "	
7. NUMBER OF Stages"	* 40 HVDP00PABL Copy to Outflaw .	
1 100 Maximum water level metre	AC INTERVENCE COLLECTION	
0.000 Startinum water level metre"	0.183 0.183 0.088"	
0 Keep Design Data: 1 = True: 0 = False"	40 HYDROGRAPH Combine 3"	
Level Discharge Volume"	6 Combine "	
* 0.000 0.000 0.000"	• 3 Node #"	
0.2500 0.04200 7.000"	INLET 2"	
0.5000 0.09000 71.000"	Maximum flow 0.249 c.m/sec"	
0.7500 0.1250 220.000"	Hydrograph volume 1658.643 c.m"	
- 0.9000 0.1400 346.000"	0.183 0.183 0.249"	
- 1.000 0.3110 445,000"	B1 ADD COMMENT===================================	
	- 3 Lines OT COMMENT [*]	
rean Outriow 0.000 G.M/960" Maximum level 0.428 matrix	South of GEVE along Nafringe Ed. post of Tolot #2"	
Maximum storage 68.189 c.m"	**************************************	
Centroidal lag 2.187 hours"	* 40 HYDROGRAPH Start - New Tributary*	
0.175 0.175 0.088 1.512 c.m/sec*	2 Start - New Tributary"	
40 HYDROGRAPH Combine 3"	• 0.183 0.000 0.183 0.249"	

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33 CATCHMENT 112"	1.500 Impervious slope"	
* 1 Triangular SCS"	• 0.250 Pervious Manning 'n'"	
1 Equal length"	 80.000 Pervious SCS Curve No." 	
1 SCS method"	0.339 Pervious Runoff coefficient"	
112 Culivated lands east of Nafziger Road"	0.100 Pervious Ia/S coefficient"	
1.000 % Impervious"	6.350 Pervious Initial abstraction"	
7.310 Total Area"	* 0.015 Impervious Manning 'n'"	
120.000 Flow length"	98.000 Impervious SCS Curve No."	
3.300 Overland Slope*	0.883 Impervious Runoff coefficient"	
7.237 Pervious Area"	0.100 Impervious Ia/S coefficient"	
120.000 Pervious Length"	0.518 Impervious Initial abstraction"	
3.300 Pervious stope	0.306 0.000 0.331 0.331 c.m/sec"	
120,000 Impervious Area	Catchment 113 Pervious Impervious Total Area "	
2.200 Impervious length	Surface Area 1.536 1.024 2.560 hectare"	
0.250 Papying having tota	Time of concentration 52.979 5.228 22.671 minutes"	
82.000 Pervices SCS Curve No."	Poinfall dopth 43,040 43,040 43,040 45,040 45,040	
0.377 Pervious Bunoff coefficient"	Rainfall volumo 725.60 493.74 100.34 o	
0.100 Pervious Ia/S coefficient"	Bainfall lossoc 91 227 5 505 20.000 mm	
5.576 Pervious Initial abstraction"	" Bunoff doth 16.013 41.735 26.303 mm"	
0.015 Impervious Manning 'n'"	Bunoff dolume 245.96 427.37 673.33 c.m."	
98.000 Impervious SCS Curve No."	Bunoff coefficient 0.339 0.883 0.557	
0.877 Impervious Runoff coefficient"	Maximum flow 0.041 0.300 0.306 c.m/sec*	
0.100 Impervious Ia/S coefficient	40 HYDROGRAPH Add Bunoff "	
0.518 Impervious Initial abstraction	Add Bunoff "	
0.331 0.000 0.183 0.249 c.m/sec"	0.306 0.306 0.331 0.331"	
Catchment 112 Pervious Impervious Total Area "	54 POND DESIGN"	
Surface Area 7.237 0.073 7.310 hectare"	0.306 Current peak flow c.m/sec"	
Time of concentration 31.078 3.915 30.455 minutes"	0.070 Target outflow c.m/sec"	
" Time to Centroid 135.638 91.724 134.630 minutes"	573.3 Hydrograph volume c.m"	
" Rainfall depth 47.240 47.240 mm"	 7. Number of stages" 	
Rainfall volume 3418.70 34.53 3453.23 c.m"	0.000 Minimum water level metre"	
Rainfall losses 29.431 5.805 29.195 mm"	1.000 Maximum water level metre"	
Runoff depth 17.809 41.435 18.045 mm"	🕺 0.000 Starting water level metre"	
Runoff volume 1288.79 30.29 1319.08 c.m"	0 Keep Design Data: 1 = True; 0 = False"	
Runoff coefficient 0.377 0.877 0.382	Level Discharge Volume"	
Maximum flow 0.328 0.021 0.331 c.m/sec*	0.000 0.000 0.000"	
40 HYDROGRAPH Add Hunott "	0.1000 0.02000 7.000"	
4 Add Runott -	0.2500 0.04200 64.000"	
0.331 0.331 0.183 0.249"	0.5000 0.09000 343.000"	
40 HIDHOKAPH COPY to OUTTIOW	0.7500 0.1250 877.000"	
	0,8000 0,1360 1014.000"	
4.0 UVD0020400 Contino 4	Back public 0.7880 1667.000"	
	Heaview Lovel 0.071 C.m/sec"	
INIET 3	Centrolide lag 202.104 C.m	
Maximum flow 0.331 c.m/sec"		
Hydrograph volume 1319.079 c.m"	* 40 HYDROGRAPH Combine 4"	
0.331 0.331 0.331 0.331	6 Combine "	
40 HYDROGRAPH Start - New Tributary"	4 Node #"	
2 Start - New Tributary"	INIET 3"	
0.331 0.000 0.331 0.331"	Maximum flow 0.401 c.m/sec*	
33 CATCHMENT 113"	Hydrograph volume 1992.557 c.m"	
1 Triangular SCS"	0.306 0.306 0.071 0.401"	
3 Specify values"	40 HYDROGRAPH Start - New Tributary"	
1 SCS method"	 Start - New Tributary" 	
113 Alpine Solutions - East SMWP*	• 0.306 0.000 0.071 0.401"	
40.000 % Impervious"	* 33 CATCHMENT 114"	
2.560 Total Area"	* 1 Triangular SCS"	
150.000 Flow length"	1 Equal length"	
1.500 Overland Slope"	1 SCS method"	
1.536 Pervious Area"	114 Woodlot East and West of Nafziger Road"	
180.000 Pervious length"	3.000 % Impervious"	
1.500 Pervious slope"	13.460 Total Area"	
1.024 Impervious Area"	140.000 Flow length"	
- 131.000 Impervious length"	3 600 Overland Slope"	

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13.056 Pervious Area" 140.000 Pervious length"	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	
3.600 Pervious slope"	1.074 0.000 0.232 0.614 c.m/sec"	
0.404 Impervious Area"	Catchment 115 Pervious Impervious Total Area "	
140.000 Impervious length	Surface Area 1.336 3.613 4.950 hectare"	
0.250 Pervious stope"	Time of concentration 19.839 6.369 8.269 minutes"	
70.100 Pervious SCS Curve No."	Rainfall depth 47.240 47.240 mm"	
• 0.194 Pervious Runoff coefficient"	Rainfall volume 631.36 1707.01 2338.37 c.m*	
0.100 Pervious Ia/S coefficient"	Rainfall losses 28.477 5.507 11.709 mm"	
10.834 Pervious Initial abstraction"	Runoff depth 18.763 41.733 35.531 mm"	
98.000 Impervious SCS Curve No "	* Runoff coefficient 0.397 0.883 0.752 *	
0.880 Impervious Runoff coefficient"	Maximum flow 0.087 1.037 1.074 c.m/sec*	
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "	
0.518 Impervious Initial abstraction"	4 Add Runoff *	
0.232 0.000 0.071 0.401 c.m/sec"	1.074 1.074 0.232 0.614"	
Surface Area 13.056 0.404 13.460 hectare"	1.074 Current peak flow c.m/sec"	
Time of concentration 47.595 4.184 42.247 minutes"	0.070 Target outflow c.m/sec"	
Time to Centroid 156.414 92.097 148.490 minutes"	1758.8 Hydrograph volume c.m"	
Rainfall depth 47.240 47.240 47.240 mm"	15. Number of stages"	
HainTall VOLUME 0107.73 190.75 0308.49 C.M Bainfall lossas 38.086 5.652 37.113 mm"	1 450 Maximum water level metre"	
Runoff deth 9.154 41.588 10.127 mm"	0.000 Starting water level metre"	
Runoff volume 1195.13 167.93 1363.06 c.m	• 0 Keep Design Data: 1 = True; 0 = False"	
Runoff coefficient 0.194 0.880 0.214	Level Discharge Volume	
Maximum flow 0.219 0.116 0.232 c.m/sec"	0.000 0.000 0.000	
4 Add Bundf "	0.2500 0.00900 448.000"	
0.232 0.232 0.071 0.401"	0.3500 0.01100 593.000"	
40 HYDROGRAPH Copy to Outflow"	• 0.4500 0.01300 775.000 ^e	
8 Copy to Outflow"	0.5500 0.01500 964.000"	
0.232 0.232 0.232 0.401"	0.6500 0.01600 1161.000"	
6 Combine *		
4 Node #"	0.9500 0.02000 1795.000"	
INLET 3	1.050 0.05600 2025.000"	
Maximum flow 0.614 c.m./sec"	1.150 0.2080 2263.000"	
nydrograph Volume 3355.621 c.m* 0.232 0.232 0.232 0.614"	1,250 0,4600 2511,000"	
40 HYDROGRAPH Start - New Tributary	1,450 6,856 2033.000"	
2 Start - New Tributary"	Peak outflow 0.019 c.m/sec"	
0.232 0.000 0.232 0.614"	Maximum level 0.862 metre"	
33 CAICHMENT 115"	Maximum storage 1600.533 c.m"	
3 Specify values"	1.074 1.074 0.019 0.614 c.m/sec"	
1 SCS method"	40 HYDROGRAPH Combine 4"	
115 Rec Centre - SWMP"	6 Combine "	
73.000 % Impervious"	4 Node # "	
4.950 TOLEL AREA 50.000 Flow length	INLEI 3'	
2.600 Overland Slope"	* Hydrograph volume 4624.574 c.m*	
1.336 Pervious Area"	1.074 1.074 0.019 0.630"	
40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary"	
1.500 Pervious slope"	2 Start - New Tributary"	
182.000 Impervious length"	33 CATCHMENT 116"	
1.500 Impervious slope"	1 Triangular SCS"	
0.250 Pervious Manning 'n'"	1 Equallength"	
83.000 Pervious SCS Curve No."	1 SCS method"	
0.557 FERVIOUS HUNDIT CONTINCIENT" 0.100 Pervious Tals conficient"	110 Industrial lands west of Natziger Road" 35.000 % Impervioue"	
5.202 Pervious Initial abstraction"	7.710 Total Area"	
0.015 Impervious Manning 'n'"	140.000 Flow length"	
98.000 Impervious SCS Curve No."	1.600 Overland Slope"	
0.883 Impervious Hunott coetticient"	5.012 Pervious Area"	

400	2:34896\104\SWM\MIDUSS\Pre\34896-104_Pre-005yr.out Page 15 rrinted at 15:17 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-005yr.out Printed at 15:17 on 18 Dec 2018	Page 16
0 0.200 0.2	<pre>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'" </pre>	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"	
0.485 Toperulate Incorf contributive * Mystropraph volume 0007:085 0.600 <td>0.273 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8,021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SC Curve No."</td> <td>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"</td> <td></td>	0.273 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8,021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SC Curve No."	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"	
Catchest 1:10 Pervious Reprivation Reprivation Pervious Reprivation Pervious Reprivation Pervious Reprivation Pervious Reprivation Pervious Pervious <t< td=""><td>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"</td><td>Hydrograph volume 6397.555 c.m" 0.806 1.118 0.249 0.000" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"</td><td></td></t<>	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"	Hydrograph volume 6397.555 c.m" 0.806 1.118 0.249 0.000" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	
Bainfail volume 287.43 1274.77 3642.19 c.m" * Maximum flow 2.721 c.m"acc Bainfail volume 24.76 2.476 2.477 2.477 2.721 c.m"acc Bundf volume 64.76 2.771 0.771	Catchment 116PerviousImperviousTotal Area"Surface Area5.0122.6987.710hectare"Time of concentration50.0455.33721.608minutes"Time to Centroid160.06693.724117.869minutes"Rainfall depth47.24047.240mm"	0.806 1.118 1.118 0.000" 40 HYDROGRAPH Combine 5" 6 Combine " 5 Node #" u/s of HWY 7&8"	
Maximum low 0.14 0.714	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 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 UPD 2001 1/00 000 000 0.000 0	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"	0.806 0.000 1.118 2.721" 33 CATCHMENT 117" 1 Triangular SCS" 1 Equal length" 1 SCS method"	
Maximu *low 1.11 c.a/sec* 110.000 "Pervious laps" 0.806 0.806 0.806 1.118* 0.000 Ispervious laps" 0.806 0.806 0.806 1.118* 0.000 Ispervious laps" 7 Confluence 2* 2.000 Pervious Manning 'n*	Copy to Outriow" 0.806 0.806 0.606 0.630* 40 HYDROGRAPH Combine 4" 6 Combine " 4 Node #" INITET 3"	 117 Cultivated Schneider central lands" 0.000 % Impervious" 7.450 Total Area" 140.000 Flow length" 2.000 Overland Slope" 7.450 Porvious Area" 	
1 Node #* 0.200 Particus Maning 'n'* 1 Numerican Solution 0.200 Pervious Maning 'n'* 1 Maximum flow 1.512 c.m/sec* 0.806 1 Mydrograph volume 6017.083 c.m* 0.806 0 0.606 1.512 0.500 0.000* 40 HYDROGRAPH Comptie 90.000* Status Maning 'n'* 8 Copy to Outflow* 90.000* Status Maning 'n'* 0.806 1.512 0.500 0.000* 40 HYDROGRAPH Combine 5* 0.000* 90.000 Impervious Runoff coefficient* 0.806 1.512 0.500* 0.000* 90.000 Impervious Status Maning 'n'* 8 Copy to Outflow* 90.000* 90.000 118 2.721 c.m/sec* 0.806 1.512 0.000* 0.000* 7.450 hectare* 1 Mydrograph volume 8017.083 c.m/sec* 118.2 147.567 93.252 147.567 minutes* 0.806 1.512 1.512 c.m/sec* 118.2 14.961 40.251	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 "	140.000 Pervious Alea 2.000 Pervious slope" 0.000 Impervious Area" 140.000 Impervious Length" 2.000 Impervious Length"	
40 HYDROGRAPH Copy to Outflow* 0.000* 0.000* 0.015 Impervious Maning 'n'* 8 Copy to Outflow* 98.000 Impervious SCS Curve No.* 98.000 Impervious SCS Curve No.* 40 HYDROGRAPH Combine 5* 0.000* 0.010 Impervious SCS Curve No.* 6 Combine * 0.100 Impervious SCS Curve No.* 5 Node #* 0.100 Impervious IA/S coefficient* 0.015 Impervious Initial abstraction* 8 Combine * 0.100 Impervious IA/S coefficient* 0.027 0.0000 1.118 2.721 c.m/sec* 0.056 1.512 1.512 0.056 1.512 1.512 0.056 1.512 1.512 0.056 1.512 1.512 0.056 1.512 1.512 1 1 1 0.066 1.512 1.512 1 NCHENCE 3* <	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"	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 Ia/S coefficient"	
6 Combine " 0.518 Impervious Initial abstraction" 5 Node #" 0.270 0.000 1.118 2.721 c.m/sec" u/s of HWY 7&8" Catchment 117 Pervious Impervious Total Area " Maximum flow 1.512 c.m/sec" Surface Area 7.450 0.000 7.450 hectare" 0.806 1.512 1.512 1.512" 1.512" 1.512" inite for concentration 40.251 47.240 47.240 47.240 mm" 7 Confluence " 3 Soft #" Rainfall depth 47.240 47.240 mm" 1NLET 2" INLET 2" Rainfall losses 29.983 5.528 29.983 mm" 0.806 0.249 c.m/sec" Runoff depth 17.256 41.712 17.256 mm" Maximum flow 0.249 c.m/sec" Runoff coefficient 0.365 0.000 1285.60 c.m" 0.806 0.249 1.512 0.000" Maximum flow 0.270 0.000 0.266 " 0.806 0.249 1.512 0.000" Maximu	40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.806 1.512 1.512 0.000" 40 HYDROGRAPH Combine 5"	0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.000 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"	
40 HYDROGRAPH Confluence 3" Rainfall depth 47.507 93.252 147.507 mlnUtes" 40 HYDROGRAPH Confluence 3" Rainfall depth 47.200 47.200 mm" 7 Confluence " Rainfall volume 3519.37 0.00 3519.37 c.m" 3 Node #" Rainfall losses 29.983 5.528 29.983 mm" INLET 2" Runoff depth 17.256 41.712 17.256 mm" Maximum flow 0.249 c.m/sec" Runoff volume 1285.60 0.00 1285.60 c.m" 0.806 0.249 1.512 0.000" Maximum flow 0.270 0.000 0.365 " 40 HYDROGRAPH Copy to Outflow" 40 HYDROGRAPH Add Runoff " 4 Add Runoff " Solo 0.270 c.m/sec"	5 Node #" 5 Node #" u/s of HWY 7&8" 1.512 Maximum flow 1.512 Hydrograph volume 8017.083 0.806 1.512 1.512 1.512"	0.515 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 Concentration 40.251 250 1477 557 minutes"	
Meximum riuw 0.249 C.m/sec FUNDOT V0LUME 1245.60 0.00 1245.60 C.m" Hydrograph volume 1658.643 c.m" Fundot coefficient 0.365 0.00 0.365 " 0.806 0.249 1.512 0.000" Maximum flow 0.270 0.000 0.266 " 40 HYDROGRAPH Copy to Outflow" *40 HYDROGRAPH Gunoff " *4 Add Runoff " *	40 HYDROGRAPH Confluence 3" 7 Confluence " 3 Node #" INLET 2"	Rainfall depth 47.267 93.252 147.567 m101tes" Rainfall depth 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" Pupoff upume 1005 60 20.00 1002 60 mm"	
	Maximum Tiow 0.249 c.m/sec" Hydrograph volume 1658.643 c.m" 0.806 0.249 1.512 0.000" 40 HYDROGRAPH Copy to Outflow" 6 Copy to Outflow"	Kunott 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 "	

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40 HYDROGRAPH Copy to Outflow"	0.019 0.019 0.019 2.788"	
8 Copy to Outflow"	40 HYDROGRAPH Start - New Tributary*	
40 HYDROGRAPH Combine 5"	2 Start - New Tributary"	
6 Combine "	* 33 CATCHMENT 119"	
5 Node #"	1 Triangular SCS*	
u/s of HWY 7&8"	1 Equal length	
Maximum itow 2.//3 c.m/%ec Hydrograph volume 17358.893 c.m*	 1 SCS method" 119 Existing BOW from Hamilton Boad" 	
0.270 0.270 0.270 2.773"		
* 81 ADD COMMENT===================================	• 0.720 Total Area•	
3 Lines of comment"	40.000 Flow length	
Catchments east of Hamilton Road, part of Inlet #4"	0.720 Percenter Stope	
	40.000 Pervious Lenath	
40 HYDROGRAPH Start - New Tributary	* 2.000 Pervious slope*	
2 Start - New Fributary	0.000 Impervious Area"	
33 CATCHNENT 118"	- 40.000 Impervious length 2.000 Impervious slope	
1 Triangular SCS*	0.250 Pervious Manning 'n'*	
1 Equal length"	76.000 Pervious SCS Curve No."	
1 SCS method"	0.272 Pervious Runoff coefficient"	
118 NOTINWEST COTTER OF NITHVIEW HEIGHTS" B 000 - B Tencerviews"	0.100 Pervious Ia/S coefficient"	
0.500 total Area"	0.021 Pervious initial abstraction"	
60.000 Flow length"	98.000 Impervious SCS Curve No."	
5.000 Overland Slope"	0.000 Impervious Runoff coefficient*	
0.460 Pervious Area"	0.100 Impervious Ia/S coefficient	
5 000 Pervious longth	0.518 Impervious Initial abstraction"	
0.040 Impervious Area"	Catchment 119 Pervisus Impervisus Intel Aces *	
60.000 Impervious length	Surface Area 0.720 0.000 0.720 hectare"	
5.000 Impervious slope"	* Time of concentration 22.072 2.354 22.072 minutes*	
0.250 Pervious Manning 'n'" 74.000 Benvious CC Guura Na W	Time to Centroid 125.258 89.353 125.257 minutes	
0.243 Dervious SUS Curve No."	Rainfall depth 47.240 47.240 47.240 mm [*]	
0.100 Pervious Ia/S coefficient"	* Rainfall Joses 34.378 5.879 34.378 mm*	
8.924 Pervious Initial abstraction*	Runoff depth 12.862 41.361 12.862 mm"	
0.015 Impervious Manning 'n'"	Runoff volume 92.61 0.00 92.61 c.m"	
98.000 Impervious SCS Curve No."	Runoff coefficient 0.272 0.000 0.272	
0.100 Impervious Ia/S coefficient"	- MAXIMUM TLOW 0.030 0.000 0.030 c.m/sec"	
0.518 Impervious Initial abstraction"	Add Runoff "	
0.019 0.000 0.270 2.773 c.m/sec"	* 0.030 0.030 0.019 2.768*	
Catchment 118 Pervious Impervious Total Area "	40 HYDROGRAPH Copy to Outflow"	
Surface Area 0.400 0.040 0.500 Rectare	8 Copy to Outflow	
Time to Centroid 126.407 89.228 117.543 minutes"	40 HVDROGRAPH Combine 5"	
Rainfall depth 47.240 47.240 mm*	6 Combine •	
Rainfall volume 217.30 18.90 236.20 c.m"	5 Node #*	
HainTall Losses 35.746 5.862 33.355 mm" Buroff denth 11 404 41 372 13 285	u/s of HWY 7&8"	
Runoff volume 52.87 16.55 69.42 c m ^{**}	Maximum Tlow 2.798 c.m/sec"	
Runoff coefficient 0.243 0.876 0.294		
Maximum flow 0.016 0.012 0.019 c.m/sec"	* 81 ADD COMMENT===================================	
40 HYDROGRAPH Add Runoff "	" 3 Lines of comment"	
40 HYDROGRAPH Copy to Outflow"	carcument to Tuter 42.	
8 Copy to Outflow"	40 HYDROGRAPH Start - New Tributary*	
0.019 0.019 0.019 2.773"	2 Start - New Tributary	
-+υ πτυπουπλα/Η ComDine 5" 6 Combine -	0.030 0.000 0.030 2.798"	
5 Node #*	55 CATCHMENT 120"	
u/s of HWY 7&8"	1 Equal length	
Maximum flow 2.788 c.m/sec"	1 SCS method"	
Hydrograph volume 17428.314 c.m"	120 Rear yards from Hamilton Heights Subdivision"	

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5.000 % Impervious" 1.080 Total Area"	 2.800 Impervious slope" 0.250 Pervious Manning 'n'" 	
20.000 Flow length"	82.000 Pervious SCS Curve No."	
3.000 Overland Slope"	0.377 Pervious Runoff coefficient"	
1.026 Pervious Apea" 20.000 Requipus Apeat"	5.56 Pervious Ta/s coefficient"	
3.000 Pervious slope"	0.015 Impervious Manning 'n'"	
0.054 Impervious Area"	98.000 Impervious SCS Curve No."	
20.000 Impervious length"	0.000 Impervious Runoff coefficient"	
3.000 Impervious slope"	0.100 Impervious Ia/S coefficient"	
0.250 Pervious Manning 'n'' 76 000 - Requiping SCS Curve No "	$1.411 \pm 0.00 \pm 0.60 \pm 2.843 \pm 0.950$	
0.272 Pervious Runoff coefficient"	Catchment 121 Pervious Impervious Total Area "	
• 0.100 Pervious Ia/S coefficient"	• Surface Area 43.240 0.000 43.240 hectare"	
8.021 Pervious Initial abstraction"	Time of concentration 48.238 6.077 48.238 minutes"	
0.015 Impervious Manning 'n'"	Lime to Centrold 15/.836 94.784 15/.836 minutes"	
0.875 Impervious Runof coefficient"	Bainfall volume $2.0426 + 0.0000 + 2.0427$ harm	
0.100 Impervious Ia/S coefficient"	Rainfall losses 29.424 5.425 29.424 mm"	
0.518 Impervious Initial abstraction"	Runoff depth 17.815 41.815 17.815 mm*	
0.060 0.000 0.030 2.798 c.m/sec"	Runoff volume 7703.39 0.02 7703.40 c.m"	
Catchment 120 Pervious Impervious Iotal Area "	HUNDTT COETTICIENT 0.3// 0.000 0.3// -	
Time of concentration 12.894 1.375 11.224 minutes"	* 40 HYDRORAPH Add Runoff "	
Time to Centroid 113.857 87.892 110.092 minutes"	4 Add Runoff "	
Rainfall depth 47.240 47.240 mm"	S#S 1.411 1.411 0.060 2.843"	
Rainfall volume 484.68 25.51 510.19 c.m"	40 HYDROGRAPH Copy to Outflow"	
Raintall Losses 34.405 5.888 32.979 mm"	8 Copy to Outriow"	
Runoff volume 131.69 22.33 154.02 c.m"	40 HYDROGRAPH Combine 5"	
Runoff coefficient 0.272 0.875 0.302 "	6 Combine "	
Maximum flow 0.056 0.017 0.060 c.m/sec"	5 Node #"	
40 HYDROGRAPH Add Runoff "	u/s of HWY 7&8"	
4 Add HUNOTT " 0.060 0.060 0.030 2.798"	MAXIMUM 100 5.734 C.m. St. 1580	
40 HYDROGRAPH Copy to Outflow"	1.411 1.411 1.411 3.794"	
8 Copy to Outflow"	* 81 ADD COMMENT===================================	
0.060 0.060 0.060 2.798"	3 Lines of comment"	
40 HYDROGRAPH Combine 5"	Catchmonts to Inlat #6"	
5 Node #"		
u/s of HWY 7&8"	40 HYDROGRAPH Start - New Tributary"	
Maximum flow 2.843 c.m/sec"	2 Start - New Tributary"	
Hydrograph volume 17674.932 c.m"	1.411 0.000 1.411 3.794	
0.060 0.060 0.060 2.843"	33 GAICHMENT 150"	
3 Lines of comment"	3 Specify values"	
*******	1 SCS method"	
Good Lands"	160 Hamilton Heights Subdivision"	
	- 46.000 % Impervious	
2 Start - New Tributary	50.000 Flow length"	
0.060 0.000 0.060 2.843"	* 1.000 Overland Slope"	
33 CATCHMENT 121"	4.406 Pervious Area"	
1 Triangular SCS"	50.000 Pervious length"	
1 Equal length"	3.754 Impervious stope	
121 Good Lands"	232.000 Impervious length"	
• 0.000 % Impervious"	1.500 Impervious slope"	
43.240 Total Area"	0.250 Pervious Manning 'n'"	
230.000 Flow length"	75.000 Pervious SCS Curve No."	
2.800 OVERLAND SLOPE" 43.240 Pervious Area"	0.272 revious Runori coefficient"	
230.000 Pervious length"	8.021 Pervious Initial abstraction"	
2.800 Pervious slope"	0.015 Impervious Manning 'n'"	
0.000 Impervious Area"	98.000 Impervious SCS Curve No."	
230.000 Impervious length"	 0.884 Impervious Runoff coefficient" 	

0.100 Impervious la/S coefficient' 0.518 Impervious Initial abstraction' 1.618 0.000 1.411 3.764 c.m/sec' Catchenert160 Pervious Impervious Total Area ' Sime of Area Stratting 2014 7.367 11.362 initiats' Time to Centroid 125.604 96.604 100.300 minutes' Time to Centroid 125.604 96.604 100.300 minutes' Rainfall volume 2061.88 1773.20 3864.77 c.m' Rainfall volume 2061.88 1773.20 3864.77 c.m' Rainfall volume 2061.88 1773.20 3864.77 c.m' Runoff cefficient 0.222 0.848 0.554 1.102 1.102 1.161 c.m/sec' Haximum flow 0.131 1.102 1.161 c.m/sec' HVG00GRAPH Add Runoff ' 4 Add Runoff ' 1 Triangular SCS' 3 GACCMENEIG' 1 SSS method' 1 SSS method' 1 SSS method' 2.500 Verland Slope' 2.500 Verland Slope' 2.500 Pervious alper' 0.752 Impervious Area' 5.000 Pervious alper' 0.752 Impervious alper' 0.752 Impervious alper' 0.752 Impervious alper' 0.752 Impervious alper' 0.752 Impervious alper' 0.753 Impervious factor 1 SSS method' 1 SSS method' 2.500 Pervious Starter 5 Soco Pervious Starter No.* 0.222 Pervious Runoff coefficient' 0.518 Impervious Inficient' 0.518 Impervious Isso Cerve No.* 0.223 I.161 I.411 portex Total Area ' Surface Area I.568 0.752 2.250 metre* Time of concentration 23.500 5.047 4.204 47.204 47.204 47.204 metre* Time SS Concentration 23.500 5.047 4.204 47.204 47.204 47.204 47.204 47.204 47.204 47.204 metre* Rainfall volume 754.89 355.24 1110.14 c.m* Rainfall solume 754.89 355.24 1110.14 c.m* Rainfall solume 754.89 35.24 1110.14 c.m* Rainfall solume 754.89 3.794* 4 Add Add Ord 1 1.399 1.399 4.470° 4 Add Storf 1.399 1.399 4.470° 4 Add Storf 1.3	Q:1	34896\104\SWM\MIDUSS\Pre\34896-10-	4_Pre-005yr.	out		삶	Page 21
0.103 "Herridde Haff Construction" 0.103 "Herridde Haff Construct							
 1.161 0.000 1.411 3.794 c.m/sec' Gathemet 160 Pervisus Impervisus Total Area ' Surface Area 4.408 3.754 d. Michael 1.404.300 intutes' Surface Area 4.408 3.754 d. Michael 1.404.300 intutes' Rainfall volume 2.001.581 177.320 3864.77 c.m' Rainfall volume 2.01.61 0.161 0.215.470 c.m' Runoff depth 12.877 44.778 26.160 mm' Runoff volume 2.01.61 0.161 0.215.470 c.m' Maximum Token 1.567 44.778 26.160 mm' Runoff volume 0.161 0.	•	0.518 Impervious Initial a	abstraction'	1			
Catchment 190 Pervices Impervices Iotal Area Surface Area Times to Centroid 125.604 406 3.754 0.160 hetere* Times to Centroid 125.604 98.644 1104.330 mm' Rainfall depth 47.420 47.240 47.240 47.240 Rainfall ioses 34.885 5.462 21.079 mm* Runoff depth 12.857 41.778 26.160 mm* Runoff depth 12.857 41.778 26.160 mm* Runoff depth 0.272 0.884 0.554 * Nunoff volmes 0.66.20 1586 18 2134.70 c.m* Runoff ocofficient 0.272 0.884 0.554 * 1.161 1.161 1.161 0.110 1.161 0.874* 4 Add Runoff * 1 Trianglan SGS 3 Specify value* 1 Trianglan SGS 3 Specify value* 1 CatCheNeNT 161* 1.161 1.161 1.411 3.794* 2.200 We lang free Property* 2.300 Dervices Signe* 1.688 Pervices Area* 1.00.000 Flow length* 2.600 Pervices Signe* 1.680 Impervices lengt* 2.000 Pervices Signe* 1.680 Impervices Signe* 1.690 Pervices Signe* 1.600 Impervices Signe* 1.600 Impervices Runoff coefficient* 0.161 1.161 1.411 3.794 ca/sec* 1.600 Impervices Signe* 1.600 Pervices Signe* 1.600 Pervices Signe* 1.600 Impervices Signe* 0.250 Pervices Signe* 0.250 Pervices Signe* 0.250 Pervices Signe* 0.258 Intervices Runoff coefficient* 0.161 Impervices Runoff coefficient* 0.161 Impervices Signe* 0.258 Intervices Signe* 1.599 Intervices Signe* 1.599 Intervices Signe* 1.599 Intervices Signe* 1.599 Inte		1.161 0.000	1.411	3,794 (c.m/sec"		
Time to formantration 22.344 7.067 11.342 minutes' Time to Connertraid 125.644 96.44 104.330 minutes' Rainfall Oulme 20158 177.32 0.3654 104.30 Rainfall Disses 34.383 5.462 21.079 mm' Runoff collection 2.72 0.364 0.554 '' Runoff collection 2.72 0.364 0.554 '' 1.550 minutes' 3.50 city allocity 2.500 '' 3.500 Verland Slope' 1.559 Pervious Area' 1.500 Impervious Runoff coefficient' 1.500 Impervious Runoff coefficient' 3.021 Pervious Runoff coefficient' 3.022 Pisses Runoff coefficient' 3.021 Pervious Runoff coefficient' 3.021 Pervious Runoff coefficient' 3.021 Pervious Runoff coefficient' 3.023 Pisses 3.271 3.774 c.m/sec' Runoff doefficient 2.680 47.240 mm' Runoff coefficient 2.680 47.240 mm' Runoff coefficient 2.680 47.240 mm' Runoff coefficient 3.794 c.m/sec' 4. Add Runoff '' 4. Add Runoff '' 4. Add Runoff '' 4. Add Runoff '' 4. Add Runoff '' 5. Node #'' 4. Add Runoff '' 4. Add Runoff '' 5. Node		Catchment 160	Pervious	Impervious	P 160	"	
Time to Centrold 125.004 96.644 104.330 minutes' Rainfall volume 2001.58 1773.20 3854.77 c.m' Rainfall loses 34.389 5.462 21.079 mm' Runoff depth 12.857 41.778 26.160 mm' Runoff coefficient 0.272 0.884 0.554 ' Maximum Tow Runoff ' 40 Minutf volume 566.52 1566.19 2134.77 c.m' Runoff coefficient 0.272 0.884 0.554 ' 1.161 1.161 1.101 1.01 c.m/sec' Maximum Tow Runoff ' 1.161 1.161 1.101 1.01 0.554 ' 1.151 1.161 1.411 3.794' 33 CATOMENT 161' 1 Triangular SCS' 3 Specify values' 1 SCS method' 1 Triangular SCS' 3 Specify values' 2.350 Total Area' 100.000 % Impervious Regt' 2.350 Pervious Regt' 50.000 Pervious length' 2.500 Pervious length' 2.500 Pervious length' 1.64.000 Impervious length' 1.658 Pervious SCS Curve No.' 0.227 Pervious SCS Curve No.' 0.250 Pervious Bioff coefficient' 0.050 Impervious SCS Curve No.' 0.228 1.161 1.411 3.794 c.m/sec' Minutes' 1.64.000 Impervious SCS Curve No.' 0.238 1.161 1.411 3.794 c.m/sec' Time to Centroid 1.45 coefficient' 0.635 Impervious Res SC Surve No.' 0.238 1.161 1.411 3.794 c.m/sec' Time to Centroid 1.27.153 9.462 107.439 minutes' Rainfall depth 47.240 47.240 47.240 mi' Rainfall depth 47.240 47.240 mi' Rainfall depth 47.240 47.240 mi' Rainfall depth 47.240 47.240 47.240 mi' Rainfall depth 47.240 47.240 47.240 mi' Rainfall depth 47.240 47.240 47.240 mi' Rainfall depth 47.240 47.240 mi' Rainfall depth 47.240 47.240 mi' Rainfall depth 47.240 47.240 mi' Rainfall depth 47.240 47.240 47.240 mi' Rainfall depth 47.240 47.240 47.240 mi' Rain		Time of concentration	22.344	7.367	11.342	minutes"	
Rainfall Joules 47.240 47.240 mm* Rainfall Joses 34.383 5.452 21.079 mm* Runoff depth 12.857 41.778 25.100 mm* Munoff volume Joint 566.52 1566.18 2194.70 c.m* Munoff volume Joint 0.161 1.064 0.561 c.m* Munoff volume Joint 0.161 1.062 1.161 c.m/sec* Munoff volume Joint 0.161 1.02 1.161 c.m/sec* 4 Add Runoff * 1.161 1.411 3.794* 3 CAICMMENT fol* 1 Triangular SOS* 3 3 Specify values* 2 2.300 Total Area* 100.000 Flow length* 2 2.500 Overland Slope* 1.589 Pervious Rare* 5 5 5 10.000 Ippervious Area* 5 5 5 2.500 Pervious Slope* 2 5 5 5 3.621 Pervious Runoff coefficient* 5 5 5 5 1.631		Time to Centroid	125.604	96.644	104.330	minutes"	
Rainfall volume 2081.58 1773.20 3864.77 c.m* Rinoff depth 12.857 41.778 26.100 mm* Runoff depth 12.857 41.778 26.100 mm* Munoff volumeint 0.661.82 1561.18 214.70 c.m* Meximum flow 0.161 0.164 0.554 * 4 Add Runoff * 1.161 1.411 3.794* 30 CATCHMENT 161* 1.161 1.411 3.794* 31 Triangular SCS* 3 Specify values* 1 SCS method* 1 151 Klassen Bronze Property* 32.000 % Impervious* 7 7.600 7 4.4000 Impervious Import* 7 7.600 7 5.0.000 Pervious SCS Curve No.* 7 7.600 7 7 5.1 Impervious SCS Curve No.* 7 7.600 7 7 6.220 Pervious Maning 'n* 7 7 7 7 7.6 Opervious SCS Curve No.* 7 7 7 7	+	Rainfall depth	47.240	47.240	47.240	៣៣ "	
<pre>MainTail 1058es 34.383 5.462 21.079 mm* Runoff volume 566.52 1566.18 2134.70 c.m* Runoff volume 566.52 1566.18 2134.70 c.m* Muther the the the the the the the the the the</pre>	÷.	Rainfall volume	2081.58	1773.20	3854.77	C.M"	
Runoff Volume 566.52 7660.46 2134.70 m.m. Bunoff volume 0.272 0.884 0.554 * Maximum flow 0.181 1.102 1.161 c.m.*ec* 4 Add Runoff * .161 1.161 c.m.*ec* 4 Add Runoff * .161 1.411 3.794* 3 Specify values' .	÷.	Raintail losses	34,383	5.462	21.079	00°	
Runoff toefficient 0.222 0.884 0.554 ** MAXimum f1ow 0.181 1.102 1.161 c.m/sec* 40 MURDOGRAPH Add Runoff * 4 Add Runoff * 1.161 1.110 3.794* 33 CATCHMENT 161* 1 1.111 3.794* 3.794* 34 Specify values* 1 1.551 1.411 3.794* 35 Specify values* 1 5.50 1.551 1.511 35 Specify values* 1 3.794* 3.794* 36.000 Neprious* 1.501 1.711 3.794* 37.000 Verland Slope* 1.500 1.599* 1.500 1.500 Impervious Slope* 1.500 1.722 Pervious Slope* 1.500 0.752 Pervious Slope* 1.500 1.511 1.500 1.511 0.151 Pervious Slope* 1.502 1.511 1.511 1.511 0.152 Pervious Slope* 1.511 1.711 3.794 c.m/sec* </th <th>÷.</th> <th>Bunoff volume</th> <th>566.52</th> <th>1568.18</th> <th>2134.70</th> <th></th> <th></th>	÷.	Bunoff volume	566.52	1568.18	2134.70		
<pre>Maximum flow 0.181 1.102 1.161 c.m/sec* 4 Add Runoff * 4 Add Runoff * 1,161 1.161 1.411 3.794* 3 CATCHMENT 161* 4 CATCHM</pre>		Runoff coefficient	0.272	0.884	0.554		
 HYDROGRAPH Add Runoff '	•	Maximum flow	0.181	1.102	1.161	c.m/sec"	
<pre>4 Aud Fullor 1</pre>	4	O HYDROGRAPH Add Runoff '	•				
33 CATCOMERT'15'' Intrinue Class 3 Specify values' 3 1 Stage sthod' 151 151 Klassen Bronze Property' 2.350 Total Area' 100.00 Filow length' 2.500 Overland Slope' 1.538 Pervious Area' 50.000 Flow length' 2.501 Overland Slope' 0.752 Impervious Area' 50.000 Impervious Slope' 0.752 Impervious Slope' 0.752 Pervious Manning 'n'' 76.000 Impervious Manning 'n'' 98.000 Impervious Slope' 0.100 Pervious Initial abstraction' 0.101 Impervious Slope'' 0.323 I.161 1.411 0.414 Dervious Slope'' 0.515 Impervious Initial abstraction' 0.516 Impervious Initial abstraction' 0.517 Impervious Initial abstraction' 0.518 Impervious 1A30 Sofe 112.110.14 0 Impervious I		4 AGG RUNDTT -	1 1.411	3 794"			
<pre> 1 TriangularSCS* 3 Specify values* 1 SSS method* 32.000 % Impervious* 2.350 Total Area* 100.000 Flow length* 2.500 Overland Slope* 1.588 Pervious length* 2.500 Pervious length* 3.500 Impervious ScS Curve No.* 3.500 Pervious SCS Curve No.* 3.510 Pervious SCS Curve No.* 3.510 Pervious layS coefficient* 3.511 Impervious layS coefficient* 3.512 Impervious SCS Curve No.* 3.516 Impervious layS coefficient* 3.517 Impervious layS coefficient* 3.518 Impervious layS coefficient* 3.519 Impervious layS coefficient* 3.511 Impervious layS coefficient* 3.511 Impervious layS coefficient* 3.511 Impervious layS coefficient* 3.512 Impervious layS coefficient* 3.514 Pervious Infile abstraction* 3.515 Impervious layS coefficient* 3.516 Impervious layS coefficient* 3.517 Impervious layS coefficient* 3.518 Impervious layS coefficient* 3.519 Pervious Impervious SCS Curve No.* 3.519 Impervious layS coefficient* 3.511 Impervious layS coefficient* 3.512 Impervious layS coefficient* 3.514 Pervious Impervious SCS Curve No.* 3.515 Impervious layS coefficient* 3.514 Pervious Impervious layS coefficient* 3.514 Pervious</pre>	• 3	CATCHMENT 161		0.704			
 3 Specify values' SUS method' SUS SUS SUS SUS SUS SUS SUS SUS SUS SUS	÷.,	1 Triangular SCS"					
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<pre>100 * Labor 100 * 1</pre>	÷.	1 SUS method" 161 Klassen Bronze Prop	actu"				
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<pre>Western catchment along Hamilton Road, diverted to Inlet #6' 40 HYDROGRAPH Start - New Tributary' 2 Start - New Tributary' 2 Start - New Tributary' 3 CATCHMENT 170 1 Triangular SGS' 3 Specify values' 1 SGS method' 170 Industrial/Residential area along Hamilton Road' 55.000 % Impervious' 8.450 Total Area' 4.600 Flow length' 2.000 Overland Slope' 4.648 Impervious langet' 4.648 Impervious langet' 4.648 Impervious Blope' 6.250 Pervious Bunoff coefficient' 0.000 Impervious Slope' 6.250 Pervious SGS Curve No.' 6.272 Pervious Start - New Tributary' 98.000 Impervious Slope' 1.630 Impervious Slope' 1.630 Impervious Slope' 6.250 Pervious Bunoff coefficient' 0.015 Impervious Scafficient' 6.025 Pervious Scafficient' 6.025 Pervious Scafficient' 0.016 Impervious Scafficient' 0.016 Impervious Scafficient' 0.016 Impervious Scafficient' 0.518 Impervious Scafficient' 0.519 Impervious Scafficient' 0.510 Impervious Scafficient' 0.511 Impervious Scafficient' 0.512 Pervious Scafficient' 0.513 Impervious Scafficient' 0.514 Impervious Scafficient' 0.515 Impervious Scafficient' 0.516 Impervious Scafficient' 0.517 Impervious Scafficient' 0.518 Impervious Scafficient' 0.518 Impervious Scafficient' 0.519 Impervious Scafficient' 0.510 Mertions' 8 Add Runoff ' 4 Add Runo</pre>		81 3	ADD COMMENT===================================		***********		*****
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<pre>170 Industrial/Residential area along Hamilton Road* 55.000 % Impervious* 6.460 Total Area* 45.000 Flow length* 2.000 Overland Slope* 3.802 Pervious Area* 30.000 Pervious length* 3.000 Pervious length* 3.000 Impervious Area* 235.000 Impervious Rength* 1.500 Impervious Rength* 1.500 Impervious Slope* 0.250 Pervious Slope* 0.250 Pervious Rength* 1.500 Impervious Rength* 1.600 Pervious Rength* 1.600 Pervious Rength* 1.439 0.000 1.399 4.470 c.m/sec* 1.439 0.000 1.399 4.470 c.m/sec* 1.439 0.000 1.399 5.449 18.450 mminutes* Rainfall volume 1796.30 2195.47 3991.77 c.m* Rainfall Volume 1796.30 2195.47 3991.77 c.m* Rainfall Volume 1796.30 2195.44 18.472 mm* Runoff volume 488.65 1942.25 2430.90 c.m* Runoff coefficient 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 4.470* 1.439 1.439 1.399 1.43</pre>	2		3 Specity Values"				
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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 losses 34.389 5.449 18.472 mm* Runoff depth 12.851 41.791 28.768 mm* Runoff coefficient 0.272 0.865 0.609 " Maximum flow 0.162 1.363 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " 4.440 4.470" Diversion" 6 Node number" 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" " NODE " 0 Conduit type; 1=Aipe;2=Channel" Peakof diverted flow 0.000 c.m/sec" "	•		Catchment 170	Pervious	Impervious	Total Area	
<pre>Time of concentration 16,446 7,424 9,288 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 28,766 mm" Runoff coefficient 0.272 0.865 0.609 " Maximum flow 0.182 1.363 1.439 c.m/sec" 40 HYDROGRAPH 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" DIVOCOS.OoShyd" 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" 40 HYDROGRAPH Start - New Tributary" 41 Start - New Tributary" 42 Start - New Tributary" 43 Start - New Tributary" 44 Start - New Tributary 45 Star</pre>	*		Surface Area	3.802	4,648	8.450	hectare"
<pre>Time to Centroid 118.279 96.726 101.059 minutes" Rainfall depth 47.240 47.240 47.240 mm" Rainfall losses 34.389 5.449 18.472 mm" Rainfall losses 34.389 5.449 18.472 mm" Runoff depth 12.851 41.791 28.768 mm" Runoff coefficient 0.272 0.865 0.609 " Maximum flow 0.182 1.363 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff " 4 Add Runoff " 56 DIVERSION" 6 Node number" 1.560 Overflow threshold" 1.600 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/sec" 40 HYDROGRAPH Combine 9* 6 Combine 9 56 Combine 9 57 1.439 1.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9* 56 Combine 9 57 1.439 1.439 1.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9* 40 HYDROGRAPH Start - New Tributary" 41 Second Start - New Tributary" 42 Start - New Tributary" 43 Start - New Tributary</pre>	•		Time of concentration	16.446	7.424	9.238	minutes"
Hainfall deptn 47.240 47.240 47.240 Rainfall volume 1796.30 2195.47 3991.77 c.m" Rainfall volume 1796.30 2195.47 3991.77 c.m" Rainfall volume 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 " 4.400 .409 4.470" 56 DIVERSION" 6 Node number" .1.439 1.439 4.470" 56 DIVERSION" 6 Node number" .1.600 Required diverted fraction" 0 Conduit type; 1=Pipe;2=Channel" 9 0 Conduit type; 1=Pipe;2=Channel" Peak of diverted flow 0.000 c.m/sec" 0 Conduit type; 1=Pipe;2=Channel" Peak of diverted flow 0.000 c.m 0 Conduit type; 1=Pipe;2=Channel" Poidow the shold" 1.439 1.439 1.439 0 <	2		Time to Centroid	118.279	96.726	101.059	minutes"
Hainfail Volume 179:30 2193:47 0.517 0.111 Rainfail 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 0.865 0.609 " Maximum flow 0.182 1.363 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " - - - - 41 Add Runoff " - <td< td=""><td>2</td><td></td><td>Rainfall depth</td><td>47.240</td><td>47.240</td><td>47.240</td><td>mm."</td></td<>	2		Rainfall depth	47.240	47.240	47.240	mm."
Runoff depth 12.851 41.791 28.768 mm" Runoff coefficient 0.272 0.865 0.609 " Maximum flow 0.182 1.363 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " 1.439 c.m/sec" 41 A dd Runoff * 1.439 1.399 4.470" 56 DIVERSION* 0 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/sec* 1.439 1.439 1.439 4.470 c.m/sec* 40 HYDROGRAPH Combine 9* 6 Combine * 9 Node #* NODE B* NODE B NODE B* 1.439 1.439 1.439 1.439* 40 HYDROGRAPH Start - New Tributary* 2 Start - New Tributary*			Rainfall losses	34.389	5.449	18.472	0.m
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 1.439 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " 1.439 1.439 c.m/sec" 56 DIVERSION" 6 Node number" 1.439 1.439 1.470" 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 1.439 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 2 Start - New Tributary" 2			Runoff depth	12.851	41.791	28.768	mm "
Runoff coefficient 0.272 0.865 0.609 " Maximum flow 0.182 1.363 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " 4.470" 56 0.182 1.399 4.470" 56 DIVERSION" 6 Node number" 1.439 1.399 4.470" 56 DIVERSION" 6 Node number" 1.600 Required diverted fraction" 0 Conduit type; 1=Pipe;2=Channel" 9 Peak of diverted flow 0.000 c.m/sec" Volume of diverted flow 0.000 c.m/sec" 1.439 1.439 1.439 1.439 4.470 c.m/sec" Volume of diverted flow 0.000 c.m" DIV00006.005hyd" Major flow at 6" 1.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9 Node #" 9 Node #" NODE B" 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"	*		Runoff volume	488.65	1942.25	2430.90	С.П.
Maximum flow 0.182 1.363 1.439 c.m/sec" 40 HYDROGRAPH Add Runoff " 1.439 1.439 1.399 4.470" 56 DIVERSION" 6 Node number" 1.560 0verflow threshold" 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/sec" 0 Conduit type; 1=Pipe;2=Channel" Peak of diverted flow 0.000 c.m/sec" 0 Volume of diverted flow 0.000 c.m/sec" 0 0 DIV00006.005hyd" Major flow at 6" 1.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9" Node #" NODE B" Maximum flow 1.439 c.m/sec" 40 HYDROGRAPH start - New Tributary" 1.439 1.439 1.439 1.439	•		Runoff coefficient	0.272	0.885	0.609	4
40 HTURGGRAPH Add HUNOTT " 4 Add RunofT " 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/sec" 0 Volume of diverted flow 0.000 c.m/sec" 0 Volume of diverted flow 0.000 c.m/sec" 0 Obsolve 0.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9" 0 c.m/sec" 1.439 1.439 1.439 9 Node #" NODE B" 1.439 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 2 Start - New Tributary"	2	10	Maximum flow	0.182	1.363	1.439	c.m/sec"
1.439 1.439 1.399 4.470" 56 DIVERSION" 6 1.500 0verflow threshold" 1.000 Required diverted fraction" 0 Conduit type; 1=Pipe;2=Channel" Peak of diverted flow 0.000 volume of diverted flow 0.000 volume of diverted flow 0.000 c.m/sec" Volume of diverted flow 0.000 DIV00006.005hyd" Major flow at 6" 1.439 1.439 40 HYDROGRAPH YDROGRAPH Start - New Tributary" 40 HYDROGRAPH Start - New Tributary"		40	Add Runoff .				
<pre>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"</pre>			1,439 1,439	1.399	4.470"		
<pre>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"</pre>	٠	56	DIVERSION"				
<pre>* 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* 6 Combine 9* 9 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*</pre>	•		6 Node number*				
<pre>1.000 Required diverted fraction" 0 Conduit type; 1=Pipe;2=Channel" Peak of diverted flow 0.000 c.m'scc" 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 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"</pre>	*	1.56	0 Overflow threshold*				
0 Conduit type; 1=ripe;2=Cmannel* 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 4.470 c.m/sec" 40 HYDROGRAPH Combine 9" 6 Combine " 9 9 Node #" NODE B" Maximum flow 1.439 c.m/sec" 1.439 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 1.439 1.439 1.439	2	1.00	0 Required diverted fr	raction"			
Volume 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 * 40 HYDROGRAPH Combine 9* 6 Combine 9 9 Node #* NODE B* Maximum flow 1.439 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary* 2 Start - New Tributary*	2		D Conduit type; 1=Pipe Peak of diverted flow	e;2≃Channel.)0 0 m/e	20 ⁸	
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"			Volume of diverted flow	v 0.00	0 c.m"	50	
Major flow at 6" 1.439 1.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9" 5 Combine " 9 Node #" NODE B" Maximum flow 1.439 c.m/sec" Hydrograph volume 2430.902 c.m" 1.439 1.439 1.439" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"	*		DIV00006.005hyd"				
1.439 1.439 1.439 4.470 c.m/sec" 40 HYDROGRAPH Combine 9" 6 Combine 9" 9 Node #" NDDE B" Maximum flow 1.439 c.m/sec" Hydrograph volume 2430.902 c.m" 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"	•		Major flow at 6"				
40 HYDRUGRAPH Combine 9" 6 Combine 9 9 Node #" NODE B" Maximum flow 1.439 c.m/sec" Hydrograph volume 2430.902 c.m" 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2	2	10	1.439 1.439	9 1.439	4.470	c.m/sec"	
0 0 0.000 H" 9 NoDE B" NODE B" Maximum flow 1.439 c.m/sec" Hydrograph volume 2430.902 c.m" 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2		40	HYDROGRAPH Combine	9"			
NODE B" NODE B" Maximum flow 1.439 c.m/sec" Hydrograph volume 2430.902 c.m" 1.439 1.439 1.439" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"			9 Node #"				
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"	÷		NODE B"				
Hydrograph volume 2430.902 c.m" 1.439 1.439 1.439 1.439 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"			Maximum flow	1.43	39 c.m/s	ec"	
* 1.439 1.439 1.439 1.439 * 40 HYDROGRAPH Start - New Tributary* * 2 Start - New Tributary*	*		Hydrograph volume	2430,90	02 c.m*		
40 MYDRUGKAPH START - New Iributary" 2 Start - New Tributary"	į.	10	1.439 1.439	1.439	1.439*		
and a start by the start with the start of t		40	2 Start - New Tribute	"" "" "" "" "" "" ""			

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1 420 0 000 1 420 1 420	a Node Ht	
47 FILET 0 Bead/Open DIV00006 005bvd"		
1 1≂read/open; 2=write/save"	Maximum flow 3.079 c.m/sec*	
2 1=rainfall; 2=hydrograph"	"Hydrograph volume 28048.670 c.m"	
1 1=runoff; 2=inflow; 3=outflow; 4=junction"	0.000 3.079 3.079 3.079	
* DIV00006.005hyd*	81 ADD COMMENT===================================	
Major flow at 6"	" 3 Lines of comment"	
Total volume 0.000 c.m.	***************************************	
MAX1MUM TLOW 0.000 c.m/sec"	Catchments South of Hwy 7/8"	
* 40 HVDP0GPAPH Add Rupoff *		
4 Add Bunoff "	2 Start - New Tributary	
* 0.000 0.000 1.439 1.439"		
* 40 HYDROGRAPH Copy to Outflow*	33 CATCHMENT 180"	
8 Copy to Outflow"	1 Triangular SCS"	
0.000 0.000 0.000 1.439	3 Specify values"	
40 HYDROGRAPH Combine 5"	1 SCS method"	
6 Combine "	180 Northeast portion of Maple Leaf Foods property"	
5 NODE #"	26.000 % Impervious"	
U/S OT HWY 768"	0.700 Total Area"	
Waximum (10W 4.470 C.m/Sec	45.000 Flow Length	
	0.519 Peruina stope"	
* 40 HYDROGRAPH Confluence 5"	20.00 Pervious length"	
7 Confluence "	2.000 Pervious slope"	
* 5 Node #"	0.182 Impervious Area"	
* u/s of HWY 7&8*	68.000 Impervious length"	
Maximum flow 4.470 c.m/sec"	1.000 Impervious slope"	
Hydrograph volume 28033.303 c.m"	0.250 Pervious Manning 'n'"	
0.000 4.470 0.000 0.000°	79.000 Pervious SCS Curve No."	
54 POND DESIGN"	0.320 Pervious Runoff coefficient"	
4.4/0 Current peak flow c.m/sec*	0.100 Pervious la/S coefficient	
* 28033 3 Hydrograph volume c m"	0.752 Pervious Initial Abstraction"	
7. Number of states"	98.000 Impervious SCS Curve No."	
* 334.290 Minimum water level metre"	0.878 Impervious Bunoff ceefficient"	
336.800 Maximum water level metre"	0.100 Impervious Ia/S coefficient*	
* 334.290 Starting water level metre*	0.518 Impervious Initial abstraction"	
* O Keep Design Data: 1 = True; O = False*	* 0.072 0.000 3.079 3.079 c.m/sec*	
Level Discharge Volume"	Catchment 180 Pervious Impervious Total Area *	
334.290 0.000 0.000"	Surface Area 0.518 0.182 0.700 hectare"	
334.500 0.2540 5.000"	Time of concentration 13,366 3,984 8,764 minutes"	
	lime to Centroid 113,606 91,817 102,919 minutes	
335,500 2,600 3269,000		
336.400 6.109 30065.00"	na.infail Volume 244,70 05.90 550.06 C.m." Bainfail losses 32.102 5.764 25.254 mm"	
* 336,800 18,376 57257.00"	Bunoff deoth 15, 138 41, 476 21, 286 mm"	
Peak outflow 3.079 c.m/sec"	Runoff volume 78.41 75.49 153.90 c.m"	
Maximum level 335.576 metre"	Runoff coefficient 0.320 0.878 0.465	
Maximum storage 4752.075 c.m*	Maximum flow 0.034 0.052 0.072 c.m/sec"	
" Centroidal lag 3.437 hours"	* 40 HYDROGRAPH Add Runoff *	
0.000 4.470 3.079 0.000 c.m/sec"	4 Add Runoff	
40 HYDHOGHAPH Next link "	0.072 0.072 3.079 3.079"	
5 NEXT 110K -	54 POND DESIGN	
* 56 DIVERSION*	0.072 Corrent peak libw c.m/sec	
7 Node number"	153 9 Hydronersh volume c m*	
7.170 Overflow threshold"	8. Number of stages"	
1.000 Required diverted fraction"	0.000 Minimum water level metre	
Conduit type; 1=Pipe;2=Channel"	 0.750 Maximum water level metre" 	
Peak of diverted flow 0.000 c.m/sec*	* 0.000 Starting water level metre*	
Volume of diverted flow 0.000 c.m"	Keep Design Data: 1 = True; 0 = False"	
* DIV00007.005hyd*	Level Discharge Volume	
Major flow at 7"	* 0,000 0,000 0,000*	
0.000 3.079 3.079 0.000 c.m/sec"	0.1500 0.00400 1.000	
40 HYDROGHAPH Combine 8"	0.2500 0.00600 8.000*	
- b compine "	0.3500 0.00700 29.000"	

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0.4500 0.00800 69.000"	Keep Design Data: 1 = True; 0 = False	
0.6500 0.01000 178.000"	Level Discharge Volume"	
	0.000 0.000 0.000"	
Peak outflow 0.008 c m/sec"		
Maximum level 0.488 metre"	* 0,9000 0,1200 97,000*	
Maximum storage 95.201 c.m"	1.200 0.1400 254.000"	
Centroidal lag 3.728 hours"	* 1.500 0.1500 358.000*	
0.072 0.072 0.008 3.079 c.m/sec	1.800 1.000 400.000	
40 HYDRUGARH COMDINE 9"	Peak outflow 0.143 c.m/sec"	
9 Node #"	Maximum storage 291 78 metre	
NODE B"	Centrolial lag 1.883 hours"	
Maximum flow 1.446 c.m/sec"	0.510 0.510 0.143 1.446 c.m/sec"	
Hydrograph volume 2584.698 c.m"	* 40 HYDROGRAPH Combine 9"	
0.0/2 0.0/2 0.008 1.446"	6 Combine "	
2 Start - New Tributary	9 Node #"	
0.072 0.000 0.008 1.446"	NUCLED" * Maximum flow 1.574 c.m/sec"	
33 CATCHMENT 181°	Hydrograph volume 3323.812 c.m ^a	
1 Triangular SCS"	0.510 0.510 0.143 1.574	
3 Specify values"	40 HYDROGRAPH Start - New Tributary	
1 SUS METROD"	2 Start - New Tributary*	
93.000 % Impervious"	- 0.510 0.000 0.143 1.574 32 CATCHUENT 100	
1.870 Total Area"		
120.000 Flow length"	Specify values*	
1.000 Overland Slope"	 1 SCS method* 	
0.131 Pervious Area"	182 Eastern portion of John Bear property"	
20.000 Pervious length	69.000 % Impervious"	
1.739 Impervious Area"	1.210 Total Area"	
112.000 Impervious length"	- b0.000 Flow length	
1.000 Impervious slope"	0.375 Pervious Area*	
0.250 Pervious Manning 'n'"	30.000 Pervious length"	
65.000 Pervious SCS Curve No."	* 3.000 Pervious slope"	
0.140 Pervious Runott coefficient"	" 0.835 Impervious Area"	
13.677 Pervious Initial Astrontin"	90.000 Impervious length"	
0.015 Impervious Manning 'n'"	2.000 Impervious stope"	
98.000 Impervious SCS Curve No."	65.000 Pervious SCS Curve No."	
0.885 Impervious Runoff coefficient"	* 0.140 Pervious Runoff coefficient*	
0.100 Impervious Ia/S coefficient"	0.100 Pervious Ia/S coefficient*	
0.518 Impervious Initial abstraction"	13.677 Pervious Initial abstraction"	
Catchment 181 Pervious Impervious Total Area *	0.015 Impervious Manning 'n'"	
Surface Area 0.131 1.739 1.870 hectare"	99.000 Impervious SCS Curve No.	
Time of concentration 21.064 5.375 5.559 minutes"	0.100 Impervious Ta/S coefficient*	
Time to Centroid 126,420 93,781 94,165 minutes"	0.518 Impervious Initial abstraction"	
Rainfall depth 47.240 47.240 47.240 mm	• 0.238 0.000 0.143 1.574 c.m/sec*	
Rainfall Volume 61.84 821.55 883.39 c.m"	Catchment 182 Pervious Impervious Total Area	
nalinali losses 40.032 5.432 7.896 mm" Bunoff denth 6 6.08 41.809 30.34 mm"	Surface Area 0.375 0.835 1.210 hectare	
Runoff volume 8,65 727.09 735.74 c.m*	Time to Contentration 23, 789 3,829 5,166 minutes	
Runoff coefficient 0.140 0.885 0.833 *	Bainfall denth 47 240 47 240 47 240 47 240	
Maximum flow 0.003 0.509 0.510 c.m/sec"	Rainfall volume 177.20 394.41 571.60 c.m*	
40 HYDROGRAPH Add Runoff "	 Rainfall losses 40.631 5.873 16.648 mm⁴ 	
4 Add Runott "	"Runoff depth 6.609 41.366 30.592 mm"	
0.510 0.510 0.008 1,446" 54 POND DESTAN®	"Runoff volume 24.79 345.37 370.16 c.m"	
0.510 Current pask flow c.m/sec"	Runoff coefficient 0.140 0.876 0.648 "	
0.070 Target outflow c.m/sec"	MAXIMUM TIOW U.U07 0.237 0.238 C.m/sec"	
735.7 Hydrograph volume c.m"		
7. Number of stages"	0.238 0.238 0.143 1.574*	
0.000 Minimum water level metre	54 POND DESIGN	
1.500 MAXIMUM WATER LEVEL metre"	0.238 Current peak flow c.m/sec"	
0.000 Starituñ Matel TaAat Wella.	" 0.070 Target outflow c.m/sec"	

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* 370.2 Hydrograph volume c.m"	* 40 HYDROGRAPH Copy to Outflow"
5. Number of stages"	8 Copy to Outflow"
 0.000 Minimum water level metre" 	1.670 1.670 1.670 1.596"
1.400 Maximum water level metre"	40 HYDROGRAPH Combine 9"
0.000 Starting water level metre"	6 Combine "
0 Keep Design Data: 1 = Irue; 0 = False"	
Level Discharge Volume	Maximum flow 3.266 c.m/sec
0.3200 0.04300 276.000"	Hydrograph volume 7877.743 c.m"
0.7500 0.06600 333.000*	1.670 1.670 3.266"
1.300 0.08700 371.000"	40 HYDROGRAPH Confluence 8"
* 1.400 0.5000 400.000*	7 Confluence "
Peak outflow 0.035 c.m/sec"	8 Node #"
Maximum level 0.263 metre"	NODE A"
Maximum storage 227.248 c.m"	MEXIMUM TIOW 3.0/9 C.m/sec
Centrolaal lag 3.352 nours"	
- 10 UVDB0GBABL Combine Q"	* 40 HYDBOGRAPH Copy to Outflow"
	8 Copy to Outflow"
9 Node #"	1.670 3.079 3.079 0.000"
NODE B"	* 40 HYDROGRAPH Combine 9"
Maximum flow 1.596 c.m/sec"	• 6 Combine "
 Hydrograph volume 3693.965 c.m" 	9 Node #"
• 0.238 0.238 0.035 1.596"	NODE B"
140 HYDROGRAPH Start - New Tributary"	Maximum flow 5.089 c.m/sec"
2 Start - New Tributary"	Hydrograph volume 35926.422 c.m"
0.238 0.000 0.035 1.596"	
3 GAICHMENI 183"	2 Start - New Tributary
	1,670 0,000 3,079 5,089"
1 SCS method"	* 33 CATCHMENT 184"
183 Area along western tributary, south of Hwy 7/8"	1 Triangular SCS*
29.000 % Impervious	1 Equal length*
23.290 Total Area"	1 SCS method"
* 160.000 Flow length"	184 Agricultural lands south of Bleams Road"
* 2.000 Overland Slope"	2.000 % Impervious"
16.536 Pervious Area	2.950 Total Area
150.000 Pervious length	3 100 Overland Slope"
- 2.200 Pervious stope	2 891 Pervisis Area"
5,734 Impervious Alea	80.000 Pervious length"
2.000 Impervious slope"	 3.100 Pervious slope"
0.250 Pervious Manning 'n'"	 0.059 Impervious Area"
68.300 Pervious SCS Curve No."	80.000 Impervious length"
0.173 Pervious Runoff coefficient"	3.100 Impervious slope"
0.100 Pervious Ia/S coefficient"	0.250 Pervious Manning 'n'
11.789 Pervious Initial abstraction"	- 74.000 Pervious Sus Curve No."
0.015 Impervious Manning 'n''	0.100 Pervious Ta/S coefficient"
98.000 Impervious Scs Curve NU.	8.924 Pervious Initial abstraction"
0.100 Impervious Ia/S coefficient"	 0.015 Impervious Manning 'n'"
0.518 Impervious Initial abstraction"	98.000 Impervious SCS Curve No."
1.670 0.000 0.035 1.596 c.m/sec"	* 0.874 Impervious Runoff coefficient"
Catchment 183 Pervious Impervious Total Area "	0.100 Impervious Ia/S coefficient"
Surface Area 16.536 6.754 23.290 hectare"	 0.518 Impervious Initial abstraction"
Time of concentration 61.650 9.286 26.246 minutes"	0.085 0.000 3.079 5.089 c.m/sec
Time to Centroid 172.132 99.328 122.908 minutes"	Catchment 184 Pervious Impervious Iotal Area "
Rainfall depth 47.240 47.240 47.240 mm"	SUFTACE AFEA 2.891 0.059 2.550 mediate
Rainfall volume 0.7812 0.3191 1.1002 na.m"	Time to Content d 136 740 90 552 133 587 minutes"
- RAINAIL 105565 39.045 5.359 29.270 IIIII - Duroff doth 9 105 41 881 17 964 mm*	Rainfall depth 47.240 47.240 47.240 mm"
numuri deputi 0,195 41.001 17.004 illili Bunoff volume 1355 09 2828 69 4183.78 c.m"	Rainfall volume 1365.70 27.87 1393.58 c.m
Bunoff coefficient 0.173 0.887 0.380 "	Rainfall losses 35.737 5.939 35.141 mm"
Maximum flow 0.205 1.651 1.670 c.m/sec"	"Runoff depth 11.503 41.301 12.099 mm"
* 40 HYDROGRAPH Add Runoff "	Runoff volume 332.56 24.37 356.92 c.m"
Add Runoff "	Runoff coefficient 0.244 0.874 0.256
1.670 1.670 0.035 1.596"	• Maximum flow 0.082 0.016 0.085 c.m/sec"

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40 HYDROGRAPH Add Runoff "	"Runoff volume 500,38 4569,37 5069,74 c.m"	
4 Add Runoff "	Runoff coefficient 0.134 0.888 0.571 *	
0.085 0.085 3.079 5.089"	Maximum flow 0.144 3.129 3.162 c.m/sec*	
	40 HYDROGRAPH Add Runoff "	
0.085 0.085 5.089"	3.162 3.162 5.134 5.134"	
40 HYDROGRAPH Combine 9"	40 HYDROGRAPH Copy to Outflow [®]	
6 Combine 9 Node #"	8 Copy to Outflow ^a	
• NODE B*	* 40 HVDROGRAPH Combine 10*	
Maximum flow 5.134 c.m/sec"	6 Combine *	
Hydrograph volume 36283,340 c.m"	10 Node #"	
* 0.085 0.085 0.085 5.134* 40 EVDROGRAPH Confluence 9"		
7 Confluence "	Maximum 110w 6,153 C.m/sec Hydrograph volume 41353,105 C.m*	
9 Node #*	* 3.162 3.162 3.162 8.153 [*]	
NODE B"	81 ADD COMMENT	
Maximum 110w 5.134 c.m.*	3 LINES OT COMMENT	
0.085 5.134 0.085 0.000"	Catchments north of Hwy 7/8, towards Eastern Tributary	
40 HYDROGRAPH Copy to Outflow"		
B COPY TO OUTLOW"	40 HYDROGRAPH Start - New Tributary"	
40 HYDROGRAPH Combine 10"	* 3.162 0.000 3.162 8.153*	
6 Combine "	* 33 CATCHMENT 150"	
10 Node #"	1 Triangular SCS	
Maximum flow 5.134 c.m/sec"	" 3 Specity values"	
Hydrograph volume 36283,344 c.m"	150 Southern portion of Rec Centre fields"	
0.085 5.134 5.134 5.134"	" 0.000 % Impervious"	
40 HYDHOGHAPH Start - New Tributary" 2 Start - New Tributary"	3.510 Total Area*	
0,085 0,000 5,134 5,134	* 1.600 Overland Slope*	
33 CATCHMENT 185"	* 3.510 Pervious Area*	
1 Triangular SCS	100.000 Pervious length"	
" 3 Specify Values"	2.000 Pervious slope"	
185 Morningside Retirement Community lands"	296.000 Impervious length	
58.000 % Impervious"	2.000 Impervious slope"	
18.780 Total Area 100 000 Eleve lacetta	0.250 Pervious Manning 'n'"	
2.000 Overland Slope"	* 0.243 Pervious SUS Curve No."	
7.868 Pervious Area"	0.100 Pervious Ia/S coefficient*	
25.000 Pervious length"	8.924 Pervious Initial abstraction*	
" 2.500 Pervious slope" 10.892 Tunervious Area"	0.015 Impervious Manning 'n'"	
354.000 Impervious length"	0.000 Impervious Runoff coefficient*	
2.500 Impervious slope	• 0.100 Impervious Ia/S coefficient*	
0.250 Pervious Manning 'n'" 64 400 Pervious SCS Curve No "	0.518 Impervious Initial abstraction"	
0.134 Pervious Runoff coefficient"	0.083 0.000 3.152 8.153 C.m/sec*	
0.100 Pervious Ia/S coefficient*	Surface Area 3.510 0.000 3.510 hectare*	
14.041 Pervious Initial abstraction"	Time of concentration 40.652 7.822 40.652 minutes"	
98 DOD Impervious SCS Curve No "	Time to Centroid 146.337 97.287 146.337 minutes"	
0.888 Impervious Runoff coefficient"	natinati cepti 47.240 47.240 mm ⁻ Rainfall volume 1658.12 0.00 1658.12 c.m ⁻	
0.100 Impervious Ia/S coefficient"	* Rainfall losses 35.737 5.363 35.737 mm*	
0.518 Impervious Initial abstraction	Runoff depth 11.503 41.877 11.503 mm"	
ح، 10 کاری کار	Runoff volume 403.75 0.00 403.75 c.m"	
Surface Area 7.888 10.892 18.780 hectare*	Maximum flow 0.083 0.000 0.243 "	
Time of concentration 22.917 8.144 9.602 minutes	40 HYDROGRAPH Add Runoff "	
Time to Centroid 128.820 97.761 100.827 minutes"	4 Add Runoff	
Rainfall volume 3726.09 5145.56 8871.65 c.m*	- U.083 U.083 3.162 B.153" * 40 HYDROGRAPH Copy to Outflow"	
Rainfall losses 40.896 5.290 20.244 mm*	B Copy to Outflow ⁴	
Runoff depth 6.344 41.950 26.996 mm*	0.083 0.083 0.083 8.153"	

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40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #" u/s of east culvert of HWY 7&8"	152 Southern portion of Schneider lands" 5,000 % Impervious" 8,560 Total Area" 170,000 Flow length"	
/ Maximum flow 0.083 c.m/sec* * Hydrograph volume 403.748 c.m" 0.083 0.083 0.083	3,500 Overland Slope" 8,132 Pervious Area" 170,000 Pervious Length"	
40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"	3.500 Pervious slope" 0.428 Impervious Area"	
0.083 0.000 0.083 0.083* '33 CATCHMENT 151" 1 Triangular SCS"	" 170.000 Impervious length" " 3.500 Impervious slope" " 0.250 Pervious Manning 'n'"	
3 Specify values" 1 SCS method"	82.000 Pervious SCS Curve No." 0.377 Pervious Runoff coefficient"	
151 Wilmot Maintenance property, Hwy //8 and Natziger Hoad" 1 33.000 % Impervious" 1 5.770 Total Area"	0.100 Pervious Ia/S coefficient" 5.576 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"	
100.000 Flow length" 2.000 Overland Slope" 2.065 Reprint Action	98.000 Impervious SCS Curve No." 0.883 Impervious Runoff coefficient" 0.100 Impervious Rafe coefficient"	
100.000 Pervious length" 2.000 Pervious slope"	0.518 Impervious Initial abstraction" 0.338 0.000 0.572 0.586 c.m/sec"	
1.904 Impervious Area" 296.000 Impervious length" 2.000 Impervious slope"	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"	
0.250 Pervious Manning 'n'" 76.000 Pervious SCS Curve No." 0.272 Depuisure Reprint Reprint Parts	Time to Centroid 144.114 92.895 138.496 minutes" Rainfall depth 47.240 47.240 47.240 mm" Painfall volume 3841 55 202.19 4043 73 o m"	
0.100 Pervious Ia/S coefficient" 8.021 Pervious Initial abstraction"	Rainfall losses 29.430 5.545 28.236 mm" Runoff depth 17.810 41.694 19.004 mm"	
0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.886 Impervious Runoff coefficient"	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"	
0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 0.52 0.000 0.083 0.083 c.m/sec"	* 40 HYDROGRAPH Add Runoff " * 4 Add Runoff " • 0.338 0.338 0.572 0.586"	
Catchment 151 Pervious Impervious Total Area " Surface Area 3.866 1.904 5.770 hectare"	40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	
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"	40 HYDROGRAPH Combine 11" 6 Combine "	
Rainfall volume 1826.25 899.49 2725.74 c.m" Rainfall losses 34.367 5.363 24.796 mm"	11 Node #" u/s of east culvert of HWY 7&8" Maximum flow 0.779 c.m/sec"	
Runoff volume 497.63 797.37 1295.01 c.m" Runoff coefficient 0.272 0.886 0.475 "	Hydrograph volume 3325.491 c.m* 0.338 0.338 0.338 0.779*	
40 HYDROGRAPH Add Runoff " 4 Add Runoff "	2 Start - New Tributary" 0.338 0.000 0.338 0.779"	
0.572 0.572 0.083 0.083* 40 HYDROGRAPH Copy to Outflow* 8 Copy to Outflow*	47 FILEI_O Read/Open DIV00007.005hyd" 1 1=read/open; 2=write/save" 2 1=rainfall: 2=hydrograph"	
0.572 0.572 0.083 40 HYDROGRAPH Combine 11 5 Combine 11	1 1=runoff; 2=inflow; 3=outflow; 4=junction" DIV00007.005hyd" Maion flow, et 7"	
11 Node #" u/s of east culvert of HWY 7&8"	Total volume 0.000 c.m" Maximum flow 0.000 c.m/sec"	
Maximum flow 0.586 c.m/sec" Hydrograph volume 1698.744 c.m" 0.572 0.572 0.586"	- 0.000 0.000 0.338 0.779 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff "	
40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 6 572 0 000 0 572 0 586	0.000 0.000 0.338 0.779" 40 HYDROGRAPH Copy to Outflow" 8 Conv to Outflow"	
33 CATCHMENT 152" 1 Triangular SCS"	0.000 0.000 0.779" 40 HYDROGRAPH Combine 11"	
1 Equal length" 1 SCS method"	6 Combine " 11 Node #"	

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-		U/S OF EAST CUIVERT OF HWY 748"			
		Hydrograph volume 2025 401			
		0.000 0.000 0.000	0 779"		
	40	HYDROGRAPH Confluence 11"	0.115		
	-0	7 Confluence "			
		11 Node #"			
		u/s of east culvert of HWY 788"			
		Maximum flow 0.779	c.m/sec"		
		Hydrograph volume 3325.491	c.m"		
		0.000 0.779 0.000	0.000*		
-	54	POND DESIGN"	01000		
		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"			
ä.		336.000 21.985 31757.00"			
8		Peak outflow 0.515	5 c.m/sec"		
		Maximum level 333.123	B metre"		
		Maximum storage 647.685	5 C.M"		
×		Centroidal lag 2.480) hours"		
۲		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"		
٠	38	START/RE-START TOTALS 11"	0.000		
		3 Bunoff Totals on EXIT*			
÷		Total Catchment area	228.020	bectare"	
		Total Impervious area	50 613	hectare"	
		Total % impervious	22.197"	noocaro	
	19	FXIT"	221101		
	19	Total % impervious FXIT"	22.197"		

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Q:\34 Printe	896/104/SWM/MIDUSS/Pre/34896-104_Pre-010yr.out d at 15:18 on 18 Dec 2018	Page 1	Q:\3489 Printed	61104ISWMIMIDUSSIPre134896-104_Pre-010yr.out
			CHINES	
	MIDUSS Output>*			Time to Centroid 141,929 92,233 141,929 minutes"
0.00	MIDUSS version Version 2.25 rev. 473"			Rainfall depth 56.290 56.290 56.290 mm"
	MIDUSS created Sunday, February 07, 2010"			Rainfall volume 1671.82 0.00 1671.82 c.m*
•	10 Units used: ie METRIC"			Rainfall losses 32.141 5.688 32.141 mm*
	Job folder: Q:\34896\104\SWM\MIDUSS\Pre"			Runoff depth 24.149 50.602 24.149 mm*
	Output filename: 34896-104_Pre-010yr.out"			Runoff volume 717.23 0.00 717.23 c.m*
	Licensee name: admin"			Runoff coefficient 0.429 0.000 0.429 "
S. 1	Company Microsoft"			Maximum flow 0.167 0.000 0.167 c.m/sec"
	Date & Time last used: 12/7/2018 at 1:01:33 PM"		- 40	HYDROGRAPH Add Runoff "
* 81	ADD COMMENT===================================			4 Add Runoff "
	7 Lines of comment"		•	0.167 0.167 0.000 0.000*
12			* 33	CATCHMENT 102"
- C	Wilmot Employement Lands"		-	1 Triangular SCS"
	New Hamburg, Untario"			1 Equal length"
	lo year storm Event - Pre-development"		-	1 SCS method"
			2	102 Pfenning Farm Development - north of GEXR"
	Calculated by. Neb/Mob/GMA			0.000 % Impervious"
	TTME DADANETEDS"			12.0/0 Total Area
	5 000 Time Step*		-	- Flow length-
	240.000 Max. Storm length"			2.500 Overland Slope
	1500.000 Max Hydrograph"			12.0/0 Pervious Area
• 32	STORM Chicago storm"		<u> </u>	2 500 Pervious length
	1 Chicago storm		÷	
	2221.000 Coefficient A"			180.000 Impervious Area
	12.000 Constant B"			2 500 Impervious close
•	0.908 Exponent C"			0.250 Particus Stope
	0.400 Fraction R [*]			82.000 Pervious SCS Curve No."
	180.000 Duration"			0 429 Pervious Bunoff coefficient*
	1.000 Time step multiplier"			0.100 Pervious Ia/S coefficient*
	Maximum intensity 169.551 mm/hr"			5.576 Pervious Initial abstraction"
	Total depth 56.290 mm*		¥	0.015 Impervious Manning 'n'"
	6 010hyd Hydrograph extension used in this file"		.*:	98.000 Impervious SCS Curve No."
* 81	ADD COMMENT===================================			0.000 Impervious Runoff coefficient"
	3 Lines of comment"			0.100 Impervious Ia/S coefficient*
10	*************************		2	0.518 Impervious Initial abstraction"
12	Catchments North of GEXR, part of Inlet #1"		*	0.674 0.167 0.000 0.000 c.m/sec"
2				Catchment 102 Pervious Impervious Total Area "
3 3	CATCHMENT 101"			Surface Area 12.070 0.000 12.070 hectare"
	1 Triangular SCS"			Time of concentration 37.355 4.993 37.355 minutes"
28	1 Equal length"		•	Time to Centroid 142.108 92.259 142.108 minutes"
	1 SCS method		•	Rainfall depth 56.290 56.290 mm"
1413	101 Area Northeast of GEXN			Rainfall volume 6794.21 0.01 6794.22 c.m*
	0.000 to impervious"		5	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 "
(4)	2.3/0 Perfudus Area		8	Maximum flow 0.674 0.000 0.674 c.m/sec*
	0.500 Pervious length		40	HYDROGRAPH Add Runoff "
				4 Add Runott "
	80.000 Impervious longth"			0.674 0.841 0.000 0.000"
	0.500 Impervious slope"		<u>40</u>	HYDROGHAPH Copy to Outflow"
	0.250 Pervious Manning 'n'"		÷	8 Copy to Outriow.
	82.000 Pervious SCS Curve No "		. 40	UC074 U.841 U.841 U.000*
	0.429 Pervious Bunoff coefficient"		40	
0.00	0.100 Pervious Ia/S coefficient"			
181	5.576 Pervious Initial abstraction"		2	
	0.015 Impervious Maning 'n'"			
	98.000 Impervious SCS Curve No."			Malandah volumo 2621 645 o -*
	0.000 Impervious Bunoff coefficient"			nyurographi volulile 3031.045 C.M."
	0.100 Impervious Ia/S coefficient"		* 40	HYDROGRAPH Start - New Tributary
	0.518 Impervious Initial abstraction"			2 Start - New Tributary
*	0.167 0.000 0.000 0.000 c.m/sec"			
	Catchment 101 Pervious Impervious Total Area *		* 33	CATCHMENT 103"
(*)	Surface Area 2.970 0.000 2.970 hectare"		*	1 Triangular SCS"
	Time of concentration 37.216 4.974 37.216 minutes"			1 Equal length"

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1 SCS method" 103 Woodlot - north of GEXR"	* 81 ADD COMMENT* * 3 Lines of comment*	
• 0.000 % Impervious		
2.080 lotal Area" 80.000 Flow length"	Catcomments south of GEAR, part of Inlet #1"	
2.500 Overland Slope"	* 33 CATCHMENT 104"	
2.080 Pervious Area"	1 Triangular SCS" 3 Specify volume"	
2.500 Pervious slope"	1 SCS method"	
0.000 Impervious Area"	104 Riverside Brass"	
80.000 Impervious length"	59.000 % Impervious"	
0.250 Pervious Mannina 'n'"	35.000 Flow length"	
70.000 Pervious SCS Curve No."	1.200 Overland Slope"	
0.237 Pervious Runoff coefficient"	0.828 Pervious Area" 60.000 Pervious Length"	
10.886 Pervices Initial abstraction"	2.000 Pervious slope"	
0.015 Impervious Manning 'n'"	1.192 Impervious Area"	
98,000 Impervious SCS Curve No."	116.000 Impervious length" 0.500 Impervious slope"	
0.100 Impervious Ia/S coefficient"	0.250 Pervious Manning 'n'	
0.518 Impervious Initial abstraction	76.000 Pervious SCS Curve No."	
0.071 0.000 0.841 0.841 c.m/sec"	0.322 Pervious Runoff coefficient"	
Surface Area 2.080 0.000 2.080 hectare"	8.021 Pervious Initial abstraction"	
Time of concentration 31.163 3.069 31.163 minutes	0.015 Impervious Manning 'n'	
Time to Centroid 135,358 89,471 135,358 minutes" Bainfall doubh 56,200 56,200 56,200 mm"	98.000 Impervious SCS Curve No." 0.901 Impervious Bunoff coefficient"	
Rainfall volume 1170.83 0.00 1170.83 c.m"	0.100 Impervious Ia/S coefficient	
Rainfall losses 42.931 6.208 42.931 mm"	0.518 Impervious Initial abstraction"	
Runoff depth 13.359 50.082 13.359 mm" Bunoff volume 277.86 0.00 277.86 c.m"	Catchment 104 Pervious Impervious Total Area "	
Runoff coefficient 0.237 0.000 0.237 "	Surface Area 0.828 1.192 2.020 hectare"	
Maximum flow 0.071 0.000 0.071 c.m/sec"	Time of concentration 23.839 6.216 9.723 minutes'	
40 HYDROGRAPH Add Nunott " 4 Add Runoff "	 Illme to centrola 125.5/3 93.996 100.2/9 minutes" Bainfall depth 56.290 56.290 mm" 	
0.071 0.071 0.841 0.841"	Rainfall volume 466.19 670.87 1137.06 c.m"	
40 HYDROGRAPH Copy to Outflow"	Rainfall losses 38.162 5.531 18.939 mm"	
- 8 Copy to OutT100" 0.071 0.071 0.841"	"Runoff deplin 16.126 50.709 57.551 mm"	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.322 0.901 0.664	
6 Combine "	Maximum flow 0.047 0.426 0.441 c.m/sec"	
U/S OF GEXR"	* 4 Add Runoff "	
Maximum flow 0.911 c.m/sec"	0.441 0.911 0.911 0.911	
Hydrograph volume 3909,511 c.m"	54 POND DESIGN®	
* 40 HYDROGRAPH Confluence 1"	0.070 Target outflow c.m/sec	
7 Confluence "	754.5 Hydrograph volume c.m"	
1 Node #"	4. Number of stages"	
Maximum flow 0.911 c.m/sec"	0.900 Mariimum water level metre"	
* Hydrograph volume 3909.511 c.m"	0.000 Starting water level metre	
• 0.071 0.911 0.071 0.000"	0 Keep Design Data: 1 = True; 0 = False	
* 8 Copy to Outflow"	0.000 0.000 ".	
0.071 0.911 0.000*	0.3100 0.03090 782.000"	
40 HYDROGRAPH Combine 2"	0.6100 0.1232 1619.000"	
* 2 Node #"	Peak outflow 0.024 c.m/sec"	
INLET 1	Maximum level 0.236 metre"	
Maximum flow 0.911 c.m/sec"	Maximum storage 595.098 c.m" Centroidal lag 8.614 bours"	
nyurograph vozulie osusisti cili" 0.071 0.911 0.911 0.911	0.441 0.441 0.024 0.911 c.m/sec"	
* 40 HYDROGRAPH Start - New Tributary"	40 HYDROGRAPH Combine 2"	
2 Start - New Tributary"	6 Combine " 2 Node #"	

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INLET 1"	• 0.015 Impervious Manning 'n'"
Maximum flow 0.931 c.m/sec"	• 98.000 Impervious SCS Curve No."
Hydrograph volume 4636.752 c.m	0.888 Impervious Runoff coefficient*
0.441 0.441 0.024 0.931 4.0 HVDB0GBAPH Start - New Tributary	 0.100 Impervious 1a/s coerticient 0.518 Impervious Initial abstraction*
2 Start - New Tributary	• 0.382 0.822 0.024 0.931 c.m/sec*
· 0.441 0.000 0.024 0.931"	Catchment 106 Pervious Impervious Total Area "
33 CATCHMENT 105°	Surface Area 0.192 1.088 1.280 hectare
1 IFLANGULAR SUS	Time of concentration 24.666 2.857 4.169 minutes"
1 SCS method"	* Rainfall depth 56.290 56.290 56.290 mm*
105 Iron Bridge Manufacturing Property	• Rainfall volume 108.08 612.44 720.51 c.m°
65.000 % Impervious"	Rainfall losses 38,166 6.322 11.098 mm"
3.5/0 IOTAL AREA"	KUNOTT GEPTIN 18.125 49.966 45.192 mm ⁻
2.000 Overland Slope"	Runoff coefficient 0.322 0.888 0.803 "
1.250 Pervious Area"	* Maximum flow 0.011 0.381 0.382 c.m/sec"
90.000 Pervious length"	40 HYDROGRAPH Add Runoff
2.000 Pervious slope"	4 Add HUNOTT - 0.982 1 180 0.024 0.931"
90.000 Impervious length"	40 HYDROGRAPH Copy to Outflow"
2.000 Impervious slope"	8 Copy to Outflow"
0.250 Pervious Manning 'n'"	0.382 1.180 1.160 0.931"
81.000 Pervious SCS Curve No."	40 HYDROGRAPH Combine 2"
0.409 Pervious Ta/S coefficient	2 Node #"
5.958 Pervious Initial abstraction"	INLET 1"
0.015 Impervious Manning 'n'"	Maximum flow 1.387 c.m/sec"
98.000 Impervious SCS Curve No."	Hydrograph volume 6662.573 c.m"
0.300 Impervious Ta/s coefficient"	* 40 HVDROGRAPH Start - New Tributary"
0.518 Imperious Initial abstraction"	2 Start - New Tributary"
* 0.822 0.000 0.024 0.931 c.m/sec*	0.382 0.000 1.180 1.387"
Catchment 105 Pervious Impervious Total Area "	33 CATCHMENT 107"
"Surface Area 1.250 2.320 3.570 Rectare" Time of concentration 26 664 3.522 8.183 minutes"	T Full lepoth"
Time to controld 128,728 90.164 97.832 minutes"	1 SCS method"
* Rainfall depth 56.290 56.290 mm*	Industrial properties at end of Hamilton Road
Rainfall volume 703.35 1306.21 2009.56 c.m*	* 40.000 % Impervious"
Rainfall losses 33.257 6.320 15.748 mm*	
Runoff volume 287,033 49,970 40,542 mm	1 000 Querland Slope"
Runoff coefficient 0.409 0.888 0.720 *	1.710 Pervious Area
Maximum flow 0.085 0.797 0.822 c.m/sec"	50.000 Pervious length"
40 HYDROGRAPH Add Runoff	1.000 Pervious slope"
A A00 HUIDOT " 0.822 0.822 0.024 0.031"	50.000 Impervious Area"
* 33 CATCHMENT 106*	1.000 Impervious lope"
1 Triangular SCS"	0.250 Pervious Manning 'n'
3 Specify values"	76.000 Pervious SCS Curve No."
1 SUS method" 106 N.C. Pestall Head Office and other Industrial"	0.322 Pervious Runott coetticient*
85.000 % Impervious"	8.021 Pervious Initial abstraction"
1.280 Total Area	0.015 Impervious Manning 'n'"
55.000 Flow length"	98.000 Impervious SCS Curve No."
1.500 Overland Slope"	0.890 Impervious Runoff coefficient"
5.000 Pervices length"	0.518 Impervious Initial abstraction"
1.500 Pervious slope"	0.405 0.000 1.180 1,387 c.m/sec"
1.088 Impervious Area"	* Catchment 107 Pervious Impervious Total Area *
55.000 Impervious length	Surface Area 1.710 1.140 2.850 hectare
1.500 Impervious Slope" 0.250 Pervious Manning 'n'"	IIme of concentration 26.308 3.047 11.232 minutes"
76.000 Pervices SCS Curve No."	" Rainfall depth 56.290 56.290 56.290 mm"
0.322 Pervious Runoff coefficient"	Rainfall volume 962.56 641.71 1604.27 c.m*
0.100 Pervious Ia/S coefficient	" Rainfall losses 38.166 6.216 25.386 mm"
8.021 Pervious Initial abstraction	Runoff depth 18.124 50.074 30.904 mm*

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40	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* HYDROGRAPH Add Runoff " - - - 4 Add Runoff " - - - 0.405 0.405 1.180 1.387" - CATCHMENT 108" - - - 1 Triangular SCS" - - - 1 SCS method" - - - 108 Woodlot and Wetland east of Pestells" - - - 5.900 % Impervious" - - - 5.900 Flow length" - - - 3.000 Overland Slope" - - - 5.624 Pervious Area" - - -	<pre>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 Runoff coefficient" 0.100 Pervious Runoff coefficient" 8.467 Pervious Ia/S coefficient" 0.015 Impervious SCS Curve No." 0.015 Impervious SCS Curve No." 98.000 Impervious SCS Curve No." 0.011 Impervious Runoff coefficient"</pre>				
	<pre>65.000 Pervious length" 3.000 Pervious slope" 0.296 Impervious Area" (55.000 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 Initial abstraction" 0.105 Impervious Initial abstraction" 0.015 Impervious Manning 'n'"</pre>	0.518 Impervious Initial abstraction" 1.540 0.000 0.557 1.944 c.m/sec" Catchment 109 Pervious Total Area Surface Area 1.383 4.148 5.530 Time of concentration 19.407 7.447 8.664 Time of concentration 19.407 7.447 8.290 Rainfall depth 56.290 56.290 mm" Rainfall losses 39.063 5.579 13.950 mm" Runoff depth 17.227 50.711 42.340 mm"				
	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 mm"	Runoff coefficient 0.306 0.901 0.752 Maximum flow 0.084 1.507 1.540 c.m/sec" 40 HYDROGRAPH Add Runoff " -				
40 40	Hainfall 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 tolume 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* HYDROGRAPH Add Runoff * 4 Add Runoff * 0.237 1.387" HYDROGRAPH Copy to Outflow" 1.387" 4 4 Maximum flow *	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 0.0000 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"				
40 40 33	0.237 0.557 1.387" HYDROGRAPH Combine 2" 6 Combine 2" 1 Node #" 1.944 c.m/sec" Hydrograph volume 8450.264 c.m" 0.237 0.557 0.557 1.944" Hydrograph volume 8450.264 c.m" 0.237 0.557 0.557 1.944" HYDROGRAPH Start - New Tributary" 0.237 0.000 0.557 1.944" CATCHMENT 109" 1 Triangular SCS" 3 Specify values" 1 SCS method" 109 N.C. Pestell site" 75.000 % Impervious" 2	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 1.944 c.m/sec" 40 HYDROGRAPH Combine 2" 6 Combine 2" 6 Combine 2" 7 NALET 1" Maximum flow 1.954 c.m/sec" Hydrograph volume 10447.711 c.m" 1.540 1.540 0.061 1.954" ADD COMMENT===================================				
-	5.530 Total Area" 130.000 Flow length"	Catchments South of GEXR, part of Inlet #2"				

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			6 Cambina I
• 40	HYDROGRAPH Start - New Tributary"	2	
-	2 Start - New Tributary"		INLET 2"
*	1.540 0.000 0.061 1.954"		Maximum flow 0.097 c.m/sec"
• 33	CATCHMENT 110"	2	Hydrograph volume 587.274 c.m"
	1 Triangular SCS"		0.219 0.219 0.097 0.097*
<u>.</u>	3 Specify values"	* 40	HYDROGRAPH Start - New Tributary"
	1 SCS method"		2 Start - New Tributary"
	110 Alpine Solutions - west SMWP"	Č	0.219 0.000 0.097 0.097"
	30.000 % Impervious"	- 33	CATCHMENT 111*
2	1,920 IOTAL AFEA"		1 Triangular SCS"
	1.000 Provided Slopp	- C	1 Equal Length
*	1.344 Pervinis Area*	- C	1 SUS method ⁻
•	150.000 Pervious length"		
	1.500 Pervious slope"		
	0.576 Impervious Area"		
	113.000 Impervious length		2.400 Overland Slope"
	1.500 Impervious slope"		13,230 Pervious Area
*	0.250 Pervious Manning 'n'"		170.000 Pervious length"
*	B0.000 Pervious SCS Curve No."		2.400 Pervious slope"
*	0.390 Pervious Runoff coefficient"		0.000 Impervious Area"
	0.100 Pervious Ia/S coefficient"		170.000 Impervious length"
<u> </u>	6.350 Pervious Initial abstraction"		2.400 Impervious slope"
2	0.015 Impervious Manning 'n'"	÷	0.250 Pervious Manning 'n'"
	98.000 Impervious SCS Curve No."	<u>.</u>	70.000 Pervious SCS Curve No."
	0.889 Impervious Runott coetticient"	- C	0.237 Pervious Runoff coefficient
	0.518 Impervious 12/3 Coefficient		0.100 Pervious la/s coerricient"
	0.010 Table 1011 and 200 100 0 0.061 1 954 c m/sec ⁴	2	10.856 Pervious Initial abstraction
WC .	Catchment 110 Pervious Improving Total Area *		0.013 Impervious Maining A
	Surface Area 1.344 0.576 1.920 bectare"	W.	0.000 Impervious sus ourve wo.
•	Time of concentration 40.878 4,401 22.762 minutes"		0.100 Impervious Ia/S coefficient*
*	Time to Centroid 146.877 91.383 119.317 minutes"		0.518 Impervious Initial abstraction"
*	Rainfall depth 56.290 56.290 mm*		0.323 0.000 0.097 0.097 c.m/sec"
•	Rainfall volume 756.54 324.23 1080.77 c.m"	*	Catchment 111 Pervious Impervious Total Area "
*	Rainfall losses 34.319 5.708 25.735 mm"	*	Surface Area 13.230 0.000 13.230 hectare*
	Runoff depth 21.972 50.582 30.555 mm"	1	Time of concentration 49.587 4.884 49.587 minutes"
-	Runoff volume 295.30 291.35 586.65 c.m*		Time to Centroid 157.759 92.103 157.759 minutes"
	Runott coefficient 0.390 0.899 0.543	*	Rainfall depth 56.290 56.290 mm"
- 40	Maximum Tlow 0.064 0.206 0.219 c.m/sec"		Rainfall volume 7447.18 0.01 7447.19 c.m*
40	HINNOGRAPH AGG HUNDIT "		Rainfall losses 42.930 5.698 42.930 mm"
- 1		<u> </u>	Runoft depth 13,360 50,593 13,360 mm"
54	POND DESIGN"	÷.	HUNOTT VOLUMA 1/67.58 0.01 1/67.58 C.m"
	0.219 Current peak flow c.m/sec"		HUNDIT CONTICIENT 0.237 0.000 0.237
	0.070 Target outflow c.m/sec"	* 40	WADAGADH Add Bupaff "
	586.6 Hydrograph volume c.m"	*	
	7. Number of stages"		0.323 0.323 0.097 0.097"
•	0.000 Minimum water level metre"	* 40	HYDROGRAPH Copy to Outflow"
	1.100 Maximum water level metre"		8 Copy to Outflow"
•	0.000 Starting water level metre"		0.323 0.323 0.323 0.097"
	0 Keep Design Data: 1 = True; 0 = False"	* 40	HYDROGRAPH Combine 3"
	Level Discharge Volume"	•	6 Combine "
<u> </u>		<u>.</u>	3 Node #"
		- Č	INLET 2"
		÷	Maximum flow 0.418 c.m/sec
			Hydrograph volume 2354,856 c.m.
	1 000 0 3110 445 000"	. 01	0.323 0.323 0.323 0.418"
	1.100 0.6160 557.000"	61	
•	Peak outflow 0.097 c.m/sec*		S Lines of comment
	Maximum level 0.551 metre"		South of GEVD along Nafrian Ed. part of Tolot #2#
*	Maximum storage 101.655 c.m*		**************************************
•	Centroidal lag 2.180 hours*	* 40	HYDROGRAPH Start - New Tributary"
•	0.219 0.219 0.097 1.954 c.m/sec*		2 Start - New Tributary
4 0	HYDROGRAPH Combine 3"	· P	0.323 0.000 0.323 0.418"

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33 CATCHMENT 112"	• 1.500 Impervious slope"				
1 Triangular SCS"	0.250 Pervious Manning 'n'"				
1 Equal length"	80.000 Pervious SCS Curve No."				
1 SCS method	0.391 Pervious Runoff coefficient"				
112 CULIVATED LANGS BAST OF NATZIGEF HOAD"	6.350 Pervious Tays controllent				
	0.015 Terevious Manning 'n'				
120.000 Flow length	98.000 Impervious SCS Curve No."				
3.300 Overland Slope"	0.899 Impervious Runoff coefficient"				
7.237 Pervious Area	0.100 Impervious Ia/S coefficient"				
* 120.000 Pervious length*	 0.518 Impervious Initial abstraction" 				
3.300 Pervious slope"	0.382 0.000 0.522 0.522 c.m/sec"				
0.073 Impervious Area	Catchment 113 Pervious Impervious Total Area "				
120.000 Impervious length	Surface Area 1,536 1.024 2,560 hectare"				
3,300 Impervious slope	Time of concentration 45,004 4,409 20,909 minutes				
0.250 Pervious Manning "h"					
0.420 Pervious Sus curve No.	Rainfail volume 864.62 576.41 1441.03 c.m*				
0.100 Pervious Ta/S coefficient	Rainfall losses 34.307 5.712 22.869 mm"				
5.576 Pervious Initial abstraction"	Runoff depth 21.983 50.578 33.421 mm"				
0.015 Impervious Manning 'n'"	* Runoff volume 337.66 517.92 855.58 c.m°				
98.000 Impervious SCS Curve No."	Runoff coefficient 0.391 0.899 0.594 °				
• 0.887 Impervious Runoff coefficient"	Maximum flow 0.066 0.370 0.382 c.m/sec"				
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "				
0.518 Impervious Initial abstraction"	4 Add Runoff •				
0.522 0.000 0.323 0.418 c.m/sec	0.382 0.522 0.522"				
Catchment 112 Pervious Impervious Iotal Area	• 54 PUND DESLIN" 0.92 Curpart pack flow a m/sec*				
Time of concentration 25 049 3 602 26 470 micutas"					
Time to content attor 20.540 5.002 20.775 minutes"	855.6 Hydrograph volume c.m"				
Bainfall denth 56.290 56.290 mm"	7. Number of stages"				
Rainfall volume 4073.66 41.15 4114.81 c.m.	0,000 Minimum water level metre				
Rainfall losses 32.150 6.344 31.892 mm"	1.000 Maximum water level metre"				
"Runoff depth 24.140 49.947 24.398 mm"	0.000 Starting water level metre"				
"Runoff volume 1747.01 36.51 1783.52 c.m"	• 0 Keep Design Data: 1 = True; 0 = False"				
Runoff coefficient 0.429 0.887 0.433	Level Discharge Volume"				
Maximum flow 0.517 0.025 0.522 c.m/sec"	0.000 0.000 0.000				
40 HYDROGRAPH Add HUNOTT					
- 4 Add Hullofi	0.5000 0.09000 343.000"				
40 HYDROGRAPH CONV to Outflow"	0.7500 0.1250 877.000"				
8 Copy to Outflow ⁴	0.8000 0.1360 1014.000"				
0.522 0.522 0.522 0.418"	* 1.000 0.7880 1667.000"				
* 40 HYDROGRAPH Combine 4"	Peak outflow 0.088 c.m/sec"				
6 Combine "	Maximum level 0.489 metre"				
4 Node #"	Maximum storage 330.576 c.m.				
INLET 3"	Centroldal lag 2.743 nours				
MAXIMUM TIOW 0.522 C.m/sec					
- Hydrograph Volume 1763.521 0.m					
40 HYDRORBAPH Start - New Tribulary"	4 Node #"				
2 Start - New Tributary	INLET 3"				
0.522 0.000 0.522 0.522	Maximum flow 0.606 c.m/sec"				
33 CATCHMENT 113"	Hydrograph volume 2638.950 c.m"				
1 Triangular SCS"	0.382 0.382 0.088 0.606"				
* 3 Specify values"	40 HYDROGRAPH Start - New Tributary"				
1 SCS method"	2 Start - New Tributary"				
113 Alpine Solutions - East SMWP"	0.382 0.000 0.088 0.606"				
- 40.000 % Impervious"	- 35 VALUTIMENT 114- 1 Triangular SCS"				
- 2.500 IULALAIVA					
1.500 Overland Slope"	1 SCS method"				
1.536 Pervious Area"	114 Woodlot East and West of Nafziger Road				
180.000 Pervious length	3.000 % Impervious"				
1.500 Pervious slope"	13.460 Total Area*				
1.024 Impervious Area"	140.000 Flow length"				
131.000 Impervious length	3.600 Overland Slope"				

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* 13.056 Pervious Area"	0.100 Impervious Ia/S coefficient"			
140.000 Pervious length"	0.518 Impervious Initial abstraction			
3,600 Pervious slope"	1.369 0.000 0.402 0.985 c.m/sec"			
140.000 Impervious length	Catchment (15) Fervices Impervices for the formation of the formation			
 3.600 Impervious slope" 	 Time of concentration 17.262 5.858 7.632 minutes" 			
 0.250 Pervious Manning 'n'" 	* Time to Centroid 115.692 93.486 96.940 minutes"			
70.100 Pervious SCS Curve No."	Rainfall depth 56.290 56.290 mm"			
0.239 Pervious Hunott coefficient"	* Hainfall Volume /52.32 2034,04 2765.36 C.m*			
10.834 Pervious Initial abstraction"	nalinali loses 50,597 5,497 12,502 mm			
• 0.015 Impervious Manning 'n'"	* Runoff volume 338.05 1835.40 2173.45 c.m"			
98.000 Impervious SCS Curve No."	Runoff coefficient 0.449 0.902 0.780 "			
0.892 Impervious Runoff coefficient	Maximum flow 0.134 1.303 1.369 c.m/sec"			
0.100 Impervious La/S coefficient'	40 HYDHOGHAPH Add HUNOTT			
0.402 0.000 0.088 0.606 c.m/sec"	- 1.369 1.369 0.402 0.985"			
Catchment 114 Pervious Impervious Total Area "	* 54 POND DESIGN "			
Surface Area 13.056 0.404 13.460 hectare"	1.369 Current peak flow c.m/sec"			
Time of concentration 38,965 3,849 35,326 minutes"	0.070 Target outflow c.m/sec"			
Painfall denth 56 290 56 290 mm"	21/3.5 Hydrograph Volume C.m"			
Rainfall volume 7349.35 227.30 7576.65 c.m"	0.000 Minimum water level metre"			
Rainfall losses 42.859 6.082 41.755 mm"	1.450 Maximum water level metre"			
Runoff depth 13.431 50.208 14.535 mm"	0.000 Starting water level metre"			
" Runoff volume 1753.62 202.74 1956.36 c.m"	0 Keep Design Data: 1 = True; 0 = False"			
Munori coefficient 0.239 0.892 0.258 " Maximum flow 0.383 0.422 0.402 c.m/sac"				
40 HYDROGRAPH Add Runoff "	0.1500 0.00700 248.000"			
4 Add Runoff "	0.2500 0.00900 418.000"			
• 0.402 0.402 0.088 0.606"	0.3500 0.01100 593.000"			
40 HYDROGRAPH Copy to Outflow"	0.4500 0.01300 775.000"			
40 HYDROGRAPH Combine 4"	0.7500 0.01700 1364.000"			
6 Combine "	0.8500 0.01900 1575.000"			
4 Node #"	0.9500 0.02000 1795.000"			
INLET 3"	1.050 0.05600 2025.000"			
Maximum 110W 0.985 C.m/S8C"				
0.402 0.402 0.402 0.985"	1.350 2.766 2768.000*			
* 40 HYDROGRAPH Start - New Tributary"	* 1.450 6.856 3033.000"			
2 Start - New Tributary"	Peak outflow 0.041 c.m/sec"			
0.402 0.000 0.402 0.985"	Maximum level 1.009 metre			
1 Triangular SCS"	Maximum storage 1930.151 C.m ⁻			
3 Specify values"	1.369 1.369 0.041 0.985 c.m/sec			
1 SCS method"	40 HYDROGRAPH Combine 4"			
115 Rec Centre - SWMP"	6 Combine "			
/3.000 % Impervious"	A Node #*			
	Maximum flow 1.004 c.m/sec"			
2.800 Overland Slope"	Hydrograph volume 6132.250 c.m"			
1.336 Pervious Area"	1.369 1.369 0.041 1.004"			
40,000 Pervious length"	40 HYDROGRAPH Start - New Tributary"			
I SUU FERVIOUS SLOPE"	2 Start - New Tributary"			
182.000 Impervious length"	* 33 CATCHIENT 116"			
1,500 Impervious slope"	 1 Triangular SCS" 			
• 0.250 Pervious Manning 'n'"	1 Equallength"			
83.000 Pervious SCS Curve No."	1 SCS method"			
U.449 FERVIOUS HUNOTT COETICIENT"	The Industrial lands west of Nafziger Road"			
5.202 Pervious Initial Abstraction"	7.710 Total Area"			
• 0.015 Impervious Manning 'n'"	140.000 Flow length"			
98.000 Impervious SCS Curve No."	1.600 Overland Slope"			
0.902 Impervious Runoff coefficient	5.012 Pervious Area"			

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140.000 Pervious length"	40 HYDROGRAPH Combine 5			
* 1.600 Pervious slope"	6 Combine "			
2.698 Impervious Area"	5 Node #"			
140.000 Impervious length	u/s of HWY 7&6"			
1.600 Impervious slope 0.250 Pervious Manning 'n'	Maximum flow 2.084 c.m/sec"			
76.000 Pervious SCS Curve No."	1.011 0.418 0.418 2.084"			
0.322 Pervious Runoff coefficient"	40 HYDROGRAPH Confluence 4"			
0.100 Pervious Ia/S coefficient	Confluence "			
8.021 Pervious Initial abstraction"	4 Node #"			
 0.015 Impervious Manning n° 98.000 Impervious SCS Curve No * 	• INLEI 3" • Navigue 1 473 o m/ood"			
0.899 Impervious Runoff coefficient"	Hydroarab volume 8406.154 c.m"			
• 0.100 Impervious Ia/S coefficient*	1.011 1.473 0.418 0.000"			
 0.518 Impervious Initial abstraction" 	* 40 HYDROGRAPH Copy to Outflow"			
1.011 0.000 0.041 1.004 c.m/sec"	8 Copy to Outflow"			
Surface April 5 Pervious Impervious Iotal Area "	1.011 1.473 1.473 0.000"			
Time of concentration 42.379 4.309 19.880 minutes"				
Time to Centroid 148,997 92.139 114.857 minutes"	5 Node #"			
* Rainfall depth 56.290 56.290 mm"	u/s of HWY 7&8"			
* Rainfall volume 2820.98 1518.99 4339.97 c.m"	Maximum flow 3.556 c.m/sec"			
Rainfall losses 38.161 5.693 26.797 mm*	Hydrograph volume 21208.709 c.m"			
Runoff depth 18.129 50.597 29.493 mm"	1.011 1.473 1.473 3.556"			
- HUNOTT VOLUME 908.53 1355.37 2273.90 C.M.	40 HYDROGHAPH START - New Iributary"			
Maximum Tow 0.189 0.978 1.011 c.m/sec"	1 011 0 000 1 473 3 556"			
40 HYDROGRAPH Add Runoff "	33 CATCHMENT 117"			
4 Add Runoff "	1 Triangular SCS"			
1.011 1.011 0.041 1.004"	1 Equal length"			
40 HYDROGRAPH Copy to Outflow"	1 SCS method"			
B Copy to Outriow"	Cultivated Schneider central lands			
* 40 HYDROGRAPH Combine 4*				
6 Combine "	140.000 Flow length"			
4 Node #"	2.000 Overland Slope"			
INLET 3"	7.450 Pervious Area"			
Maximum flow 1.473 c.m/sec"	140.000 Pervious length"			
Mydrograph volume 8406.153 c.m"	2.000 Pervious slope"			
a HYDROGRAPH Configurate 2"	140.000 Impervious Area			
7 Confluence "	2.000 Impervious slope"			
* 2 Node #"	0.250 Pervious Manning 'n'			
INLET 1"	81.400 Pervious SCS Curve No."			
Maximum flow 1.954 c.m/sec"	0.417 Pervious Runoff coefficient"			
Hydrograph volume 10447.711 c.m"	0.100 Pervious Ia/S coefficient"			
* 40 HVDB0GB4PH Conv f Outflow"	5.004 Pervious Initial abstraction			
8 Copy to Outflow"	98.000 Impervious SCS Curve No."			
1.011 1.954 1.954 0.000"	0.000 Impervious Runoff coefficient"			
* 40 HYDROGRAPH Combine 5"	0.100 Impervious Ia/S coefficient"			
6 Combine "	0.518 Impervious Initial abstraction"			
5 Node #"	0.431 0.000 1.473 3.556 c.m/sec"			
	Catchment 117 Pervious Inpervious Iotal Area			
Maximum Libov 1.994 C.III/860*	Surrace Area 7.450 0.000 7.450 nectare			
1,011 1.954 1.954 1.954 "	Time to Control 138,883 91,669 138,883 minutes"			
* 40 HYDROGRAPH Confluence 3*	 Rainfall depth 56.290 56.290 mm" 			
7 Confluence "	Rainfall volume 4193.61 0.00 4193.62 c.m"			
3 Node #"	Rainfall losses 32.822 5.670 32.822 mm"			
INLET 2"	Runoff depth 23.468 50.620 23.468 mm"			
MAXIMUM TLOW 0.418 C.M./Sec"	HUNDTT VOLUME 1748.35 0.00 1748.35 c.m"			
nyurographi vozume 2354.855 c.m." 1 011 0 418 1 954 0 000"				
* 40 HYDROGRAPH Copy to Outflow	40 HVDR0RBAPH Add Bunoff "			
8 Copy to Outflow"	4 Add Runoff "			
1.011 0.418 0.418 0.000"	• 0.431 0.431 1.473 3.556"	2		

ş

Q:\3489 Printed	I6\104\SWM\MIDUSS\Pre\34896-104_Pre-010yr.out Page 17 at 15:18 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-010yr.out Printed at 15:18 on 18 Dec 2018				
40	HYDROGRAPH Copy to Outflow"	1	0.030 0.030 0.030 3.757*			
	8 Copy to Outflow"	40	HYDROGRAPH Start - New Tributary"			
40	HYDROGRAPH Combine 5"		0.030 0.000 0.030 3.757*			
•	6 Combine "	33	CATCHMENT 119"			
	5 Node #"	2	1 Triangular SCS*			
	U/SOTHWY /&&" Mayimum filow 3,731 c.m/sec"	-	1 Equal length" 1 SCS method"			
•	Hydrograph volume 22957.066 c.m"	-	119 Existing ROW from Hamilton Road®			
	0.431 0.431 0.431 3.731"	•	0.000 % Impervious"			
81	ADD COMMENT===================================	-	0.720 Total Area			
	3 LINES OF COMMENT *	- 4	0.000 Flow Length"			
•	Catchments east of Hamilton Road, part of Inlet #4"	•	0.720 Pervious Area"			
•	•••••••	* 4	0.000 Pervious length*			
40	HYDROGRAPH Start - New Tributary"		2.000 Pervious slope"			
•)	2 Start - New Intertary. 0.431 0.000 0.431 3.731°		U.UUU Impervious Area" 10 000 Impervious length"			
33	CATCHMENT 118"	- ¥	2.000 Impervious slope"			
•0	1 Triangular SCS"		0.250 Pervious Manning 'n'"			
	1 Equal length"	. 7	76.000 Pervious SCS Curve No."			
	1 SUS method 118 Northwest corner of Nithview Heights"	<u>.</u>	0.322 Pervious Kunott coefficient" 0.100 Pervious Ia/S coefficient"			
•	8.000 % Impervious"	a	8.021 Pervious Initial abstraction"			
	0.500 Total Area"		0.015 Impervious Manning 'n'"			
	50.000 Flow length"	្ទុទ	38.000 Impervious SCS Curve No."			
	0.460 Pervious Area"		0.000 Impervious Aunorr coerricient" 0.100 Impervious Ia/S coefficient"			
2	60.000 Pervious length"	*	0.518 Impervious Initial abstraction"			
2	5.000 Pervious slope"	5	0.047 0.000 0.030 3.757 c.m/sec"			
	0.040 Impervious Area"	÷.	Catchment 119 Pervious Impervious Total Area "			
	5.000 Impervious stope"		Surface Area 0.720 0.000 0.720 nectare" Time of concentration 18 601 2 165 18 601 minutee"			
•	0.250 Pervious Manning 'n'"	-	Time to Centroid 119.061 88.064 119.061 minutes			
3	74.000 Pervious SCS Curve No."		Rainfall depth 56.290 56.290 56.290 mm*			
	0.291 Pervious Runoff coefficient"	5	Rainfall volume 405.29 0.00 405.29 c.m [*]			
	0.100 Pervious Initial abstraction"		Haintall Losses 38.178 6.018 38.178 mm" Bunoff depth 18.112 50.272 18.112 mm"			
•	0.015 Impervious Manning 'n'"	5	Runoff volume 130.41 0.00 130.41 c.m [*]			
•	98.000 Impervious SCS Curve No."		Runoff coefficient 0.322 0.000 0.322 "			
•	0.894 Impervious Runoff coefficient"		Maximum flow 0.047 0.000 0.047 c.m/sec"			
	0.518 Impervious 14/5 COETICIENT	- 40	HYDROGHAPH Add Runott "			
	0.030 0.000 0.431 3.731 c.m/sec"		0.047 0.047 0.030 3.757"			
•):	Catchment 118 Pervious Impervious Total Area "	* 40	HYDROGRAPH Copy to Outflow [°]			
	Surtace Area 0.460 0.040 0.500 hectare"		8 Copy to Outflow"			
	Time to Controld 119.935 87.960 113.198 minutes	* 40	U.U47 0.047 0.047 3.757* HYDROGRAPH Combine 5*			
÷.	Rainfall depth 56.290 56.290 mm"		6 Combine "			
0)	Rainfall volume 258.93 22.52 281.45 c.m*		5 Node #"			
	Rainfall Losses 39.898 5.968 37,183 mm"	:	u/s of HWY 7&8"			
ĥf	Runoff volume 75.40 20.13 95.53 c.m"		Maximum Tiow 3.798 c.m/sec* Hydrograph yolume 23183.004 c.m*			
0.0	Runoff coefficient 0.291 0.894 0.339 "		0.047 0.047 0.047 3.798"			
	Maximum flow 0.027 0.015 0.030 c.m/sec"	* 91	ADD COMMENT===================================			
40	HYDROGRAPH Add Runott *	2	3 Lines of comment"			
 (4) 	4 AUG RUNDTI 0.030 0.030 0.431 3.731"	<u>.</u>	Catchmant to Inlet #5"			
40	HYDROGRAPH Copy to Outflow"					
	8 Copy to Outflow"	* 40	HYDROGRAPH Start - New Tributary"			
40	U.030 0.030 0.030 3.731"	<u>.</u>	2 Start - New Tributary"			
4U ()	6 Combine "	. 33	0.047 0.000 0.047 3.798" CATCHMENT 120"			
ų.	5 Node #*		1 Triangular SCS"			
4	u/s of HWY 7&8"		1 Equal length			
0	Maximum Tiow 3.757 c.m/sec"	5	1 SCS method"			
	11yu ogi akir yuzume 2002,530 C.M.	<u> </u>	120 Rear yards from Hamilton Heights Subdivision*			

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	5.000 % Impervious"		2.800 Impervious slope"	
	1.080 Total Area"		0.250 Pervious Manning 'n'"	
	20.000 Flow length"	0.#/ / #/	82.000 Pervious SCS Curve No."	
2	3.000 Overland Slope"		0.429 Pervious Hunott coefficient"	
	1.020 Fervious length"		5.576 Pervious Initial abstraction"	
•	3.000 Pervious slope"		0.015 Impervious Manning 'n'"	
	0.054 Impervious Area"		98.000 Impervious SCS Curve No."	
	20.000 Impervious length"	1	0.000 Impervious Runoff coefficient"	
	3.000 Impervious slope"		0.100 Impervious Ia/S coefficient"	
	0.250 Pervious Manning 'n '' ''		2 231 0.000 0.97 3.847 c m/sec"	
	0.322 Pervious Runoff coefficient"		Catchment 121 Pervious Impervious Total Area "	
•	0.100 Pervious Ia/S coefficient"		Surface Area 43.240 0.000 43.240 hectare"	
•	8.021 Pervious Initial abstraction"		Time of concentration 41.827 5.590 41.827 minutes"	
<u>.</u>	0.015 Impervious Manning 'n'"		Time to Centroid 147.937 93.100 147.937 minutes"	
	H9.000 Impervious SUS Curve No."	2	Haintail depth 56.290 56.290 mm ⁻	
	0.100 Impervious la/S coefficient		Rainfall losses 32,141 5,492 32,141 mm"	
•	0.518 Impervious Initial abstraction"		Runoff depth 24.149 50.798 24.149 mm"	
•	0.097 0.000 0.047 3.798 c.m/sec"		Runoff volume 1.0442 0.0000 1.0442 ha-m"	
	Catchment 120 Pervious Impervious Total Area "		Runoff coefficient 0.429 0.000 0.429 "	
	Surrace Area 1,026 0,054 1,080 nectare"	10	Maximum Tlow 2.231 0.000 2.231 c.m/sec*	
	Time to concentration 10.319 1.205 9.695 minutes	- 40	4 Add Runoff "	
•	Rainfall depth 56.290 56.290 mm"		2.231 2.231 0.097 3.847"	
•	Rainfall volume 577.54 30.40 607.93 c.m"	* 40	HYDROGRAPH Copy to Outflow"	
•	Rainfall losses 38.191 6.254 36.594 mm"		8 Copy to Outflow"	
2	Runoff depth 18.099 50.036 19.696 mm*	40	2.231 2.231 2.231 3.847"	
	Bundf coefficient 0.322 0.889 0.350 "	40		
	Maximum flow 0.089 0.021 0.097 c.m/sec"		5 Node #"	
40	HYDROGRAPH Add Runoff "	15	u/s of HWY 7&8"	
•	4 Add Runoff "		Maximum flow 5.948 c.m/sec"	
	0.097 0.097 0.047 3.798"		Hydrograph volume 33837.750 c.m."	
40	HYDHOGHAPH COPY TO OUTTIOW" 8. Copy to Outflow"	* 81	2.231 2.231 2.231 5.348" ADD COMMENT===================================	
÷.	0.097 0.097 0.097 3.798"		3 Lines of comment"	
• 40	HYDROGRAPH Combine 5"			
•	6 Combine "	2.6	Catchments to Inlet #6"	
	5 Node #"	- 10	***************************************	
	U/S OT HWY / ASS" Maximum flow 3.847 cm/sec"	40	2 Start - New Tributary"	
	Hydrograph volume 23395.723 c.m"	0.000	2.231 0.000 2.231 5.948"	
•	0.097 0.097 0.097 3.847"	* 33	CATCHMENT 160"	
* 81	ADD COMMENT===================================	1	1 Triangular SCS"	
	3 Lines of comment"		3 Specify values"	
	Good Londs"		i SUS metriou" 160 Hamilton Heinbts Subdivision"	
	door Lands		46.000 % Impervious"	
* 40	HYDROGRAPH Start - New Tributary"		8.160 Total Area"	
•	2 Start - New Tributary"	0.00	50.000 Flow length"	
•	0.097 0.000 0.097 3.847"		1.000 Overland Slope"	
33	CATCHMENT 121"		4.406 Pervious Area"	
	1 Frual Jonath		3.000 Pervious Sinne"	
•	1 SCS method"		3.754 Impervious Area"	
•	121 Good Lands"		232.000 Impervious length"	
•	0.000 % Impervious"		1.500 Impervious slope"	
	13.240 Total Area"		0.250 Pervious Manning 'n'" 76.000 - Reprious SCS Curve No."	
- 23	2.800 Overland Slope"		0.322 Pervious Bunoff coefficient"	
÷	3.240 Pervious Area"		0.100 Pervious Ia/S coefficient"	
- 2	30.000 Pervious length"		8.021 Pervious Initial abstraction"	
•	2.800 Pervious slope"	1	0.015 Impervious Manning 'n'"	
	0.000 Impervious Area"	2	98.000 Impervious SCS Curve No."	
2	30.000 Impervious length"	1.5	0.896 Impervious Runott coetticient"	

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	0 100	Impervious Ta/S con	afficient"				
	0.518	Impervious Initial	abstraction	u			
		1.504 0.00	00 2.231	5.948	c.m/sec"		
	Ca	atchment 160	Pervious	Impervious	Total Area	1 ⁴	
	Sı	irface Area	4.406	3.754	8.160	hectare"	
	Ti	ime of concentration	18.921	6.776	10.377	minutes"	
	Ti	ime to Centroid	119.354	94.798	102.079	minutes"	
	Ra	ainfall depth	56.290	56.290	56.290	mm "	
	Ra	ainfall volume	2480.37	2112.91	4593.28	с.п"	
	Ra	ainfall losses	38.185	5.862	23.316	mm "	
	Ru	unoff depth	18.105	50.428	32.974	mm "	
	Ru	unoff volume	797.79	1892.86	2690.65	C.M"	
	Ru	unoff coefficient	0,322	0.896	0,586		
	Ma	aximum flow	0.285	1.384	1.504	c.m/sec"	
40	H	DHOGRAPH Add Runott					
	4	Add RUNOTT "		5 0 40			
00	0	1.504 1.5	2.231	5,946			
33	1	Thiongulon SCS#					
		Specify values"					
	1	SCS method"					
	161	Klassen Bronze Pro	nertv"				
	32,000	% Impervious"	por cy				
	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 co	efficient"				
	0.100	Pervious Ia/S coef	ficient"				
	8.021	Pervious Initial a	bstraction"				
	0.015	Impervious Manning	'n'"				
	98.000	Impervious SCS Cur	ve No."				
	0.902	Impervious Runoff	coefficient"				
	0.100	Impervious Ia/S co	efficient"				
	0.518	Impervious Initial	abstraction				
	0.	0.312 1.5	04 2.231	5.948	c.m/sec"		
	0	Alcoment 161	Pervious	Impervious	s lotal Area	hootopo"	
	31	ima of concentration	10.095	0.752	2.350	minutoe	
	т. т.	ime to Centroid	120 699	02 074	10/ 026	minutes	
	Г. В(ainfall denth	56 200	56 200	56 200	mm"	
	Re	ainfall volume	899 52	423 30	1322 82		
	R	annail Volume	38 185	5 520	27 732	mm "	
	R	noff depth	18 105	50 770	28 558	mm ¹⁰	
	*Bi	unoff volume	289.32	381.79	671.11	с. "	
	Ri	unoff coefficient	0.322	0.902	0.507	u	
	Ma	aximum flow	0.102	0.273	0.312	c.m/sec"	
40	H	DROGRAPH Add Runoff				,	
	4	Add Runoff "					
		0.312 1.8	16 2.231	5.948			
40	H	DROGRAPH Copy to Ou	tflow"				
	8	Copy to Outflow"					
		0.312 1.8	16 1.816	5.948			
40	H	/DROGRAPH Combine	5 "				
	6	Combine "					
	5	Node #"					
		u/s of HWY 7&8"					
			6 5	11 0 m/c	200°		
	Ma	aximum flow	_ 0.0	UTT 0.11/3			

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٠	81	ADD	COMMENT======	======	=======				ⁿ
٠	3	8 Line	es of comment"						
٠			*************				******	**********	
•		West	ern catchment a	long Ha	milton F	Road,	divert	ed to Inlei	t #6"
•							*****		
•	40	HYDF	ROGRAPH Start 👻	New Tri	butary"				
•		2 5	Start - New Trib	utary"					
3			0.312 0	.000	1.816		5.511"		
2	33	CATC	HMENI 170"						
2		2 4	rianguiar sus"						
*		1 0	SCS method"						
	1	70 1	ndustrial/Resid	ential	area alo	na Ha	milton	"head	
÷	55.0	000 9	k Impervious"	OULTRI	uicu uit	ng n	INTICOL	noad	
2	8.4	150 1	Total Area"						
×	45.0	000 F	low length"						
5	2.0	000 0)verland Slope"						
	3.8	302 F	Pervious Area"						
٠	30.0	000 F	Pervious length"						
٠	3.0	000 F	Pervious slope"						
*	4.6	548]	[mpervious Area"						
5	235.0	000 1	[mpervious lengt	h"					
0	1.5	500 1	Impervious slope						
2	0.2	250 H	Pervious Manning	'n'"					
2	76.0	100	Pervious SCS Cur	ve No."	ionti				
਼	0.3	021 1	Pervious Runori	coerric	Teur				
-	9.1	100 P	Pervious Ia/S CO	abetra	ation"				
×	0.0	115 1	Imnervious Manni	na 'n'"	O C LOIT				
	98.0	000 1	Impervious SCS C	urve No					
÷	0.8	396 1	Impervious Runof	f coeff	icient"				
	0.1	00 1	Impervious Ia/S	coeffic	ient"				
×	0.5	518]	Impervious Initi	al abst	raction'	1			
5			1.879 0	.000	1.816	(3.511 c	.m/sec"	
٠		Cato	chment 170	Per	vious	Impe	rvious	Total Area	
*		Surt	face Area	3.8	02	4.648	3	8.450	hectare"
•		Time	e of concentrati	on 13.	927	6.829	9	8.439	minutes"
•		Time	e to Centroid	113	.054	94.8	75	98.998	minutes"
3		Rair	nfall depth	56.	290	56.29	90	56.290	mm "
2		Rair	ifall volume	214	0.43	2616	.08	4756.52	с.т
÷		Hair	ITALL LOSSES	38.	197	5.83)	20.395	mm-
		Bund	off volume	10.	093	2245	10	30.090	NUI-
2		Bund	off coefficient	007	.55	0 2040	. 12	0 639	6.10
្ហ		Maxi	inum flow	0.3	102	1.71	2	1.879	c.m/sec"
	40	HYDE	ROGRAPH Add Rung	ff "			-	11070	
•		4 /	Add Runoff "	÷.					
٠			1.879 1	.879	1.816	(5.511"		
٠	56	DIVE	ERSION"						
		6 1	ode number"						
1	1.5	560 0	Overflow thresho	ld"					
1	1.0	000 F	Required diverte	d fract	ion"				
5		0 (Conduit type; 1=	Pipe;2=	Channel'				
0		Peal	c of diverted fl	.OW	0.31	19	c.m/se	C.	
2		VOTO	ume of diverted	+Tom	100.87	6	C.M."		
2		DIV(nound.urunya"						
2		мајс	1 070 4	970	1 560		S E11 A	m/200	
	40	HVD	1.0/9 I NGRAPH Combin	.0/9	1.000	,	9.911 C	.m/sec	
	10	6 (Combine "	5 3					
		9 1	Node #"						
•			NODE B"						
		Max	imum flow		1.56	50	c.m/se	C "	
۰		Hydi	°ograph volume		2932.23	35	c.m"		
5			1.879 1	.879	1.560		1.560"		
2	40	HYDR	ROGRAPH Start -	New Tri	butary"				
		2 3	Start - New Trib	utary"					

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*	1.879 0.000 1.560 1.560*			8 Node #"
• 47	FILEI O Read/Open DIV00006.010hyd"			NODE A"
	1 1=read/open; 2=write/save"		*	Maximum flow 3.931 c.m/sec*
	2 1=rainfall; 2=hydrograph"		1	Hydrograph volume 37287.613 c.m"
5	1 1=runoff; 2=inflow; 3=outflow; 4=junction"			0.319 3.931 3.931 3.931 "
	DIV00006.010hyd"		" 81	ADD COMMENT===================================
				3 Lines of comment*
	Maximum flow 0.319 c.m/sec"		÷.	Catchments South of Herr 7/8"
	0.319 0.000 1.560 1.560 c.m/sec"		÷ .	oz connenta douch of http://o
* 40	HYDROGRAPH Add Runoff "		• 40	HYDROGRAPH Start - New Tributary"
2	4 Add Runoff "		2	2 Start - New Tributary"
÷	0.319 0.319 1.560 1.560"			0.319 0.000 3.931 3.931"
= 40	HYDROGRAPH Copy to Outflow"		• 33	CATCHMENT 180"
	8 Copy to Outflow"		-	1 Triangular SCS"
. 40	U.319 U.319 U.319 I.300" HVDROGRAPH Combine 5"		÷	3 Specify Values"
40	6 Combine "		<u>.</u>	180 Northeast portion of Maple Leaf Fonds property"
	5 Node #"		×	26.000 % Impervious"
2	u/s of HWY 7&0"			0.700 Total Area"
÷	Maximum flow 6.511 c.m/sec"			45.000 Flow length"
	Hydrograph volume 37300.383 c.m"			1.500 Overland Slope"
	0.319 0.319 0.319 6.511"			0.518 Pervious Area"
40	HYDROGHAPH CONTLUENCE 5"		- C	20.000 Pervious length"
2			<u>_</u>	2.000 Pervious slope"
	U/S of HWY 7&8"			68.000 Impervious leadth
	Maximum flow 6.511 c.m/sec"			1.000 Impervious slope"
	Hydrograph volume 37300.383 c.m"		8	0.250 Pervious Manning 'n'"
	0.319 6.511 0.319 0.000"			79.000 Pervious SCS Curve No."
* 54	POND DESIGN"			0.371 Pervious Runoff coefficient"
2	6.511 Current peak flow c.m/sec"			0.100 Pervious Ia/S coefficient"
÷	0.070 larget outflow c.m/sec"		÷	6.752 Pervious Initial abstraction"
×	7 Number of stanse"		÷	OR THE AND A THE
e -	334.290 Minimum water level metre"			0.887 Impervious Bunoff coefficient"
	336.800 Maximum water level metre"			0.100 Impervious Ia/S coefficient"
	334.290 Starting water level metre"			0.518 Impervious Initial abstraction"
	0 Keep Design Data: 1 = True; 0 = False"			0.101 0.000 3.931 3.931 c.m/sec"
÷	Level Discharge Volume"			Catchment 180 Pervious Impervious Total Area "
S	334.290 0.000 0.000		- 0	Surface Area 0,518 0.182 0.700 hectare"
	334.500 0.2540 5.000		÷.	Time of concentration 11.461 3.665 7.902 minutes"
	335.500 2.800 3269.000		*	Bainfail danth 56 200 56 200 mm ⁴
	336,000 4,639 13030.00*			Rainfall volume 291.58 102.45 394.03 c.m"
	336.400 6.109 30065.00*			Rainfall losses 35.394 6.336 27.839 mm"
	336.800 18.376 57257.00*		•	Runoff depth 20.897 49.954 28.452 mm"
	Peak outflow 3.931 c.m/sec"			Runoff volume 108.24 90.92 199.16 c.m"
÷ .	Maximum level 335.807 metre"			Runoff coefficient 0.371 0.887 0.505 "
C	Maximum storage 9272.186 c.m"			Maximum flow 0.052 0.063 0.101 c.m/sec"
	Centroldal lag 3.423 nours"		- 40	HYDRUGHAPH AGG HUNDTT "
* 40	HYDRORAPH Next link "			
	5 Next link "		• 54	POND DESIGN"
	0.319 3.931 3.931 0.000"			0.101 Current peak flow c.m/sec"
* 56	DIVERSION"			0.070 Target outflow c.m/sec"
÷	7 Node number"		÷	199.2 Hydrograph volume c.m"
<u>.</u>	7.170 Overflow threshold"		÷	B. Number of stages"
	1.000 Hequired givented fraction"		÷	0.000 Minimum water level metre"
	Desk of diverted flow 0.000 c m/cost			U./DU MAXIMUM WATEF 1979 METEF D.OOD Stating water 1979 Meters
	Value of diverted flow 0.000 c.m"		÷	O Keen Design Data: 1 = True: 0 = False"
	DIV0007.010hvd"		÷	Level Discharge Volume"
*	Major flow at 7"		×	0.000 0.000 "
1	0.319 3.931 3.931 0.000 c.m/sec"		*	0.1500 0.00400 1.000"
* 40	HYDROGRAPH Combine 8"		č –	0.2500 0.00600 8.000"
-	6 Combine "		*	0.3500 0.00700 29.000"

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Q:1348961104\SWM\MIDUSS\Pre\34896-104_Pre-010yr.out Page 25 Printed at 15:18 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-010yr.out Printed at 15:18 on 18 Dec 2018	Page 26
0.4500 0.00800 69.000"	* O Keep Design Data: 1 = True: 0 = False"	
• 0.6500 0.01000 178.000"	Level Discharge Volume"	
0.7000 0.1060 208.000"	• 0.000 0.000 C.000"	
0.7500 0.2810 240.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	* 0.3000 0.0900 8.000*	
Maximum lovel 0.571 metros"		
Maximum storage 134.704 c.m [*]		
Centroidal lag 4.279 hours"	* 1.500 0.1500 958,000"	
0.101 0.101 0.009 3.931 c.m/sec*	1.800 1.000 400.000"	
40 HYDROGRAPH Combine 9"	Peak outflow 0.255 c.m/sec*	
e Compile	Maximum level 1,537 metre"	
NODE R"	Maximum storage 363.182 C.m"	
Maximum flow 1.568 c.m/sec"	0.632 0.632 0.255 1.568 c.m/sec*	
Hydrograph volume 3131.366 c.m	* 40 HYDROGRAPH Combine 9"	
0.101 0.101 0.009 1.568"	* 6 Combine "	
40 HYDROGRAPH Start - New Tributary"	9 Node #°	
2 Start - New Indutary"		
33 CATCHMENT 181"	Maximum 1000 1./15 C.m/Sec"	
1 Triangular SCS"	.632 0.632 0.255 1.715"	
3 Specify values"	* 40 HYDROGRAPH Start - New Tributary*	
1 SCS method"	2 Start - New Tributary	
181 Western portion of John Bear property"	0.632 0.000 0.255 1.715"	
	33 CAICHMENT 182"	
120.000 Flow length"		
1.000 Overland Slope"	 1 SCS method" 	
0.131 Pervious Area®	* 182 Eastern portion of John Bear property*	
20.000 Pervious length"	69.000 % Impervious"	
2.000 Pervious slope"	1.210 Total Area [®]	
112 000 Impervious length	2.500 Plow length	
1.000 Impervious slope"	0.375 Percent Area	
0.250 Pervious Manning 'n'"	30.000 Pervious Length"	
55.000 Pervious SCS Curve No."	3.000 Pervious slope"	
0.180 Pervious Runoff coefficient"	• 0.835 Impervious Area"	
0.100 Pervious Ia/S coefficient"	90.000 Impervious length"	
0.015 Impervious Manino 'o''	2.000 Impervious slope"	
98.000 Impervious SCS Curve No."	65.000 Pervious SCS Curve No. "	
0.899 Impervious Runoff coefficient"	0.179 Pervious Runoff coefficient	
0.100 Impervious Ia/S coefficient"	0.100 Pervious Ia/S coefficient	
0.518 Impervious Initial abstraction"	13.677 Pervious Initial abstraction	
Catchment 181 Pervious Imponvious Tatal Acco	0.015 Impervious Manning 'n'"	
Surface Area 0.131 1.739 1.870 hectare [®]	95.000 Impervious Sta Curve No."	
Time of concentration 17.090 4.944 5.124 minutes"	0.100 Impervious Ia/S coefficient*	
Time to Centroid 119.153 92.190 92.590 minutes"	0.518 Impervious Initial abstraction	
Rainfall depth 56.290 56.290 mm"	* 0.291 0.000 0.255 1.715 c.m/sec*	
Rainfall Volume 73.68 978.94 1052.63 c.m"	Catchment 182 Pervious Impervious Total Area	
nalinali 105565 40.170 5.009 8.523 mm ⁻	Surface Area 0.375 0.835 1.210 hectare"	
Runoff volume 13.24 880.01 893.24 c.m ^a	Time of concentration 19,301 3.522 4.835 minutes"	
Runoff coefficient 0.180 0.899 0.849 "	Rainfall deuth 56.290 56.290 mm	
Maximum flow 0.005 0.630 0.632 c.m/sec"	* Rainfall volume 211.14 469.97 681.11 c.m*	
40 HYDROGRAPH Add Runoff "	Rainfall losses 46.193 6.320 18.681 mm*	
4 Add Hunott *	Runoff depth 10.097 49.970 37.610 mm*	
0.552 0.552 0.009 1.558" *54 POND DESTAN*	- Runoff volume 37,87 417.20 455.08 c.m*	
0.632 Current peak flow c.m/sec*	Mavimum flow 0.013 0.287 0.201 c m/coch	
0.070 Target outflow c.m/sec*	* 40 HYDROBAPH Add Runoff	
893.2 Hydrograph volume c.m"	Add Runoff	
7. Number of stages"	* 0.291 0.255 1.715*	
U.UUU MIAIMUM WATER Level metre"	54 POND DESIGN"	
000 Statiud Match Takat Match.	0.291 Current peak flow c.m/sec"	
erere erered witch Teact Witche	O.OVO TATYET OUTTIOW C.M/SEC"	
2:134896\104\SWM\MIDUSS\Pre\34896-104_Pre-010yr.out Page 27 rinled at 15:18 on 18 Dec 2018	Q:\34896\104\SWMIMIDUSS\Pre\34896-104_Pre-010yr.out Printed at 15:18 on 18 Dec 2018	Page 28
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<pre>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"</pre>	 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 2.204 2.204 1.751" 40 HYDROGRAPH Combine 9" 6 Combine " 9 Node #" 	
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"	NODE B* Maximum flow 3.934 c.m/sec" Hydrograph volume 9940.976 c.m" 2.204 2.204 3.934" 40 HYDROGRAPH Confluence 8" 7 Confluence " 8 Node #" Node #" Node #"	
Maximum level 0.332 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 #"	NUDE 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"	
NODE B" 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"	40 HYDROGRAPH Combine 9" 6 Combine " 9 Node #" NODE B" Maximum flow 6.395 c.m/sec" Hydrograph volume 47228.551 c.m"	
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" 28 000 % Imporvioue"	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 Leagth"	
29.000 % Impervious 23.200 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 slope"	1 Equal length 1 SCS method" 184 Agricultural lands south of Bleams Road" 2.950 Total Area" 80.000 Flow length" 3.100 Overland Slope" 2.891 Pervious 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" 	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"	
11.789 Pervious Inital 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"	 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" 	
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 mm" Rainfall volume 0.9308 0.3802 1.3110 ha-m" Rainfall losses 44.097 5.333 32.855 mm"	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"	
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 "	Rainfall depth 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 "	
2.204 2.204 0.046 1.751"	Maximum filow 0.138 0.021 0.141 c.m/sec"	

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• 40	HYDROGRAPH Add Runoff "		Bunoff volume 769 03 5524 52 6293 55 cm*				
•	4 Add Runoff "		Runoff coefficient 0.173 0.901 0.595 "				
٠	0.141 0.141 3.931 6.395"	*	Maximum flow 0.264 3.952 4.045 c.m/sec"				
• 40	HYDROGRAPH Copy_to_Outflow"	* 40	HYDROGRAPH Add Runoff "				
	8 Copy to Outflow"	-	4 Add Runoff "				
. 40	HYDROGRAPH Combine 9"	- 40	4.045 4.045 5.481 5.481" HVDPOCRAPH Copy to Outflow!				
10 T	6 Combine "	* 40	8 Conv to Outflow				
	9 Node #"		4.045 4.045 4.045 6.481"				
	NODE B"	* 40	HYDROGRAPH Combine 10"				
	Maximum flow 6.481 c.m/sec"		6 Combine "				
÷ .	Hydrograph Volume 4//32.2/0 cm	2	10 Node #"				
• 40	HYDROGRAPH Confluence 9"		NOLE C NAVER 10.040 c m/sec"				
	7 Confluence "		Hydrograph volume 54025.816 c.m"				
100	9 Node #"	*	4.045 4.045 4.045 10.040"				
	NODE B"	6 1	ADD COMMENT===================================				
	Maximum flow 6.481 c.m/sec"	÷	3 Lines of comment"				
	nydrograph votulie 4/752.270 c.m."	÷	Cotobanate porth of Univ 7/0, towards Eastern Taikuterul				
* 40	HYDROGRAPH Copy to Outflow"		vation in the subject of the state s				
	8 Copy to Outflow"	- 40	HYDROGRAPH Start - New Tributary"				
	0.141 6.481 6.481 0.000		2 Start - New Tributary"				
* 40	HYDROGRAPH Combine 10"	*	4.045 0.000 4.045 10.040"				
÷.	6 Combine "	* 33	CATCHMENT 150"				
÷.	10 Node #"		1 Triangular SCS"				
		- ē	3 Specify values"				
	MacAllum LOW 0.401 C.III/SEC	÷.	1 SCS methods conting of Dog Contro fields"				
	0.141 6.481 6.481 *		0.00 % Theorytons"				
* 40	HYDROGRAPH Start - New Tributary"		3.510 Total Area"				
	2 Start - New Tributary"		95.000 Flow length"				
÷	0.141 0.000 6.481 6.481 "	•	1.600 Overland Slope"				
33	CATCHMENT 185"		3.510 Pervious Area				
÷.	1 Intangutar SCS	÷ .	100.000 Pervious length"				
	1 SCS method"	÷	2.000 Pervious stope"				
	185 Morningside Retirement Community lands"		296.000 Impervious length"				
	58.000 % Impervious"		2.000 Impervious slope"				
	18.780 Total Area"	*	0.250 Pervious Manning 'n'"				
	190.000 Flow length"		74.000 Pervious SCS Curve No."				
÷.	2.000 Overland Slope"		0.292 Pervious Runoff coefficient"				
	7.000 Pervious Legath		0.100 Pervious Ia/S coefficient"				
	2.500 Pervious slope"		0.015 Tenervicus Initial Abstraction				
1.1	10.892 Impervious Area"		98.000 Impervious SCS Curve No."				
	354.000 Impervious length"		0.000 Impervious Runoff coefficient"				
	2.500 Impervious slope"		0.100 Impervious Ia/S coefficient"				
	0.250 Pervious Manning 'n'"	*	0.518 Impervious Initial abstraction"				
	0.132 Reprint Rest of the second seco		0.140 0.000 4.045 10.040 c.m/sec"				
	0.100 Pervious Tals coefficient"	÷.	Catchment 150 Pervious Impervious Total Area				
	14.041 Pervious Initial abstraction"	•	Time Area 3.510 0.000 3.510 nectare"				
36.	0.015 Impervious Manning 'n'"	÷ .	Time to Centration 04,093 7,193 04,093 minutes				
<u>.</u>	98.000 Impervious SCS Curve No."	*	Rainfall depth 56.290 56.290 mm"				
•	0.901 Impervious Runoff coefficient"		Rainfall volume 1975.78 0.00 1975.78 c.m*				
	0.100 Impervious Ia/S coefficient"	*	Rainfall losses 39.876 5.668 39.876 mm"				
	0.518 Impervious Initial abstraction"	÷	Runoff depth 16.414 50.622 16.415 mm"				
	4.045 0.000 6.461 6.481 C.m/Sec"		Runoff volume 576.15 0.00 576.15 c.m*				
1.5	Surface Area 7.888 10.892 18.780 bortara		NUMOTI CONTICIENT 0.292 0.000 0.292 "				
30	Time of concentration 18.691 7.491 8.860 minutes"	* 40	HYDRORAPH Add Bunoff				
<u>.</u>	Time to Centroid 121.080 95.806 98.894 minutes*		4 Add Runoff "				
	Rainfall depth 56.290 56.290 mm"		0.140 0.140 4.045 10.040"				
S	Rainfall volume 0.4440 0.6131 1.0571 ha-m"	* 40	HYDROGRAPH Copy to Outflow"				
	Haintail losses 46.540 5.571 22.778 mm"		8 Copy to Outflow"				
card 1	Kunori depta 9.750 50.719 33.512 mm"	-	0.140 0.140 0.140 10.040"				

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40 HYDROGRAPH Combine 11"	152 Southern portion of Schneider lands"	
6 Combine "	 5.000 % Impervious" 	
11 Node #"	 8.560 Total Area" 	
u/s of east culvert of HWY 7&8"	170.000 Flow length"	
Maximum Tiow U.140 C.m/sec	8 132 Repuises Acca	
0.140 0.140 0.140 0.140	170.000 Pervious leadth"	
40 HYDROGRAPH Start - New Tributary"	3.500 Pervious slope"	
2 Start - New Tributary"	.* 0.428 Impervious Area"	
0.140 0.000 0.140 0.140"	170.000 Impervious length"	
33 CATCHMENT 151"	3.500 Impervious slope"	
1 Frangular SCS	Privious Maniang "n"	
1 SCS method [®]	0.49 Pervious Bunoff conficient"	
151 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road*	0.100 Pervious Ia/S coefficient"	
33.000 % Impervious"	5.576 Pervious Initial abstraction"	
5.770 Total Area"	0.015 Impervious Manning 'n'"	
100.000 Flow length"	98.000 Impervious SCS Curve No."	
2.000 Overland Slope"	0.898 Impervious Runoff coefficient"	
3.806 PERVIOUS APRA"	0.100 Impervious 1a/S coerticient	
2 000 Pervious slope"		
1.904 Impervious Area"	Catchment 152 Pervious Impervious Total Area	
296.000 Impervious length"	Surface Area 8.132 0.428 8.560 hectare"	
2.000 Impervious slope"	Time of concentration 32.630 4.361 29.823 minutes"	
0.250 Pervious Manning 'n'"	Time to Centroid 135.961 91.328 131.529 minutes"	
76.000 Pervious SCS Curve No."	Rainfall depth 56.290 56.290 mm"	
0.322 Pervious Numoir coefficient"	Hainitall volume 4577.51 240.92 4818.44 C.m"	
8.021 Pervious Initial Astraction"	Bunoff denth 24.141 50.569 25.463 mm"	
0.015 Impervious Manning 'n'	Runoff volume 1963.18 216.43 2179.62 c.m"	
98.000 Impervious SCS Curve No."	Runoff coefficient 0.429 0.898 0.452 *	
0.899 Impervious Runoff coefficient"	Maximum flow 0.502 0.153 0.523 c.m/sec*	
0.100 Impervious Ia/S coefficient	40 HYDROGRAPH Add Runoff "	
0.518 Impervious Initial abstraction	4 Add Hunott "	
Catchment 151 Pervious Impervious Intel Area "	40 HYDROGRAPH Conv to Outflow"	
Surface Area 3.666 1.904 5.770 hectare"	B Copy to Outflow	
Time of concentration 32.389 7.195 17.800 minutes"	• 0.523 0.523 0.523 0.767"	
Time to Centroid 136.372 95.385 112.638 minutes"	40 HYDROGRAPH Combine 11"	
Rainfall depth 56.290 56.290 mm"	6 Combine "	
Rainfall volume 2176.12 1071.82 3247.94 c.m"	11 Node #"	
HainTall losses 38,166 5,668 27,441 mm"	U/S OT EAST CUIVERT OT HWY /AU	
Runoff volume 700 67 963 90 1664 57 c.m [*]	Machine 4420.338 c.m*	
Runoff coefficient 0.322 0.899 0.513 "	• 0.523 0.523 1.047"	
Maximum flow 0,176 0.696 0.737 c.m/sec"	* 40 HYDROGRAPH Start - New Tributary"	
40 HYDROGRAPH Add Runoff "	2 Start - New Tributary"	
4 Add Runoff "	0.523 0.000 0.523 1.047"	
0./3/ 0./3/ 0.140 0.140"	47 FILELO Read/Open Divoduo7.010hyd	
8 Conv to Outflow	2 1=rainfall: 2=hydrograph"	
0.737 0.737 0.737 0.140*	1 1=runoff: 2=inflow: 3=outflow: 4=junction"	
40 HYDROGRAPH Combine 11"	DIV00007.010hyd"	
6 Combine "	Major flow at 7"	
11 Node #°	Total volume 0.000 c.m"	
u/s of east culvert of HWY 788"	Maximum flow 0.000 c.m/sec"	
Maximum Tiow 0./6/ C.m/Sec"	0.000 0.000 0.523 1.047 C.m/sec" ▲ 40 HVDR0R8APH 4d Bunoff "	
1/3/1/3/1/2/1/1/2/2/2/2/2/2/2/2/2/2/2/2/	4 Add Bunoff "	
40 HYDROGRAPH Start - New Tributary"	* 0.000 0.000 0.523 1.047"	
2 Start - New Tributary"	40 HYDROGRAPH Copy to Outflow"	
0.737 0.000 0.737 0.767"	8 Copy to Outflow"	
33 CATCHMENT 152"	0.000 0.000 1.047"	
1 Triangular SCS"	40 HYDROGRAPH Combine 11"	
1 Equal length"		

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		u/s of east culvert of HWY 788"			
		Maximum flow 1.047	c.m/sec"		
		Hydrograph volume 4420.338	C.D"		
		0.000 0.000 0.000	1.047		
10	40	HYDROGRAPH Confluence 11"			
٠		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"			
		Number of stages"			
٠		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 = Fa	alse"		
٠		Level Discharge Volume"			
		332,660 0.000 0.000"			
٠		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"			
1		Peak outflow 0,740	c.m/sec°		
-		Maximum level 333.254	metre"		
		Maximum storage 1052.500	с."п"		
		Centroidal lag 2.425	hours"		
1		0.000 1.047 0.740 0.	000 c.m/sec*		
8	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"			

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UTDISS Output	* Time to Centroid 135 456 01 254 135 456 minutee"
MIDUSS Version - Version 2.25 rev 473*	
MIDUSS created Sunday, February 07, 2010"	Rainfall volume 2022.17 0.00 2022.17 c.m"
10 Units used: ie METRIC*	Rainfall losses 35.056 5.784 35.056 mm [*]
Job folder: Q:\34896\104\SWM\MIDUSS\Pre"	 Runoff depth 33.030 62.303 33.030 mm*
Output filename: 34896-104 Pre-025yr.out"	Runoff volume 981.00 0.00 981.00 c.m
Licensee name: admin"	Runoff coefficient 0.485 0.000 0.485
* Company Microsoft*	 Maximum flow 0.252 0.000 0.252 c.m/sec"
Date & Time last used: 12/7/2018 at 1:21:38 PM"	* 40 HYDROGRAPH Add Runoff *
81 ADD COMMENT===================================	4 Add Runoff
7 Lines of comment"	0.252 0.252 0.000 0.000
	33 CATCHMENT 102"
Wilmot Employement Lands"	- 1 Irlangular SUS"
25 years Starm Event - Pro development"	
Joh No 34896-104	102 Pfenning Farm Development - north of GFXR"
Calculated by: NED/MSB/GMK"	• 0.000 % Impervious*
****	12.070 Total Area"
* 31 TIME PARAMETERS*	* 180.000 Flow length"
5.000 Time Step"	2.500 Overland Slope"
240,000 Max. Storm length"	* 12.070 Pervious Area*
1500.000 Max. Hydrograph"	180.000 Pervious length*
32 STORM Chicago storm"	2.500 Pervious slope
1 Chicago storm	0.000 Impervious Area"
3158.000 COETTICIENT A	Contraction of the second seco
	2.500 Timpervisus stope
0.400 Experience	9 0.250 Pervious maining in
	0.485 Pervious Bunoff coefficient"
1 000 Time ster multiplier"	0.100 Pervious Tal/S coefficient"
Maximum intensity 191.271 mm/hc ⁿ	5.576 Pervious Initial abstraction"
Total depth 68,087 mm ^a	0.015 Impervious Manning 'n'"
6 025hvd Hydrograph extension used in this file*	98.000 Impervious SCS Curve No."
* 81 ADD COMMENT===================================	* 0.000 Impervious Runoff coefficient"
3 Lines of comment	0.100 Impervious Ia/S coefficient"
	0.518 Impervious Initial abstraction"
Catchments North of GEXR, part of Inlet #1"	1.023 0.252 0.000 0.000 c.m/sec"
•	Catchment 102 Pervious Impervious Total Area
33 CAICHMENI 101"	Surtace Area 12.070 0.000 12.070 hectare"
i Frangular SCS"	Time of concentration 33.556 4.739 33.556 minutes
1 CQUAL TENDEN	Painfill doubt 69 097 59 097 mm ⁴
101 Area Northeast of GEVR"	
0.000 % Impervious"	Raiofall losses 35.055 5.782 35.055 am"
2.970 Total Area"	Bunoff depth 33.031 62.305 33.031 mm"
80,000 Flow length"	* Runoff volume 3986.87 0.01 3986.88 c.m*
0.500 Overland Slope"	Runoff coefficient 0.485 0.000 0.485
2.970 Pervious Area"	"Maximum flow 1.023 0.000 1.023 c.m/sec"
80.000 Pervious length"	* 40 HYDROGRAPH Add Runoff *
0.500 Pervious slope"	4 Add Runoff *
0.000 Impervious Area	1.023 1.275 0.000 0.000"
80,000 Impervious length	40 HYDROGRAPH Copy to Outflow"
0.550 Impervious slope	8 Copy to Outflow"
82 000 Pervicus 200 Curve No.	1.023 1.275 1.275 0.000°
0.485 Repuise Burgef conficient"	
0.100 Pervious Ta/S coefficient	
5.576 Pervious Initial abstraction"	u/s of GEXR"
0.015 Impervious Manning 'n'"	Maximum flow 1.275 c.m/sec"
98.000 Impervious SCS Curve No."	Hydrograph volume 4967.877 c.m
0.000 Impervious Runoff coefficient"	1.023 1.275 1.275 1.275*
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Start - New Tributary"
0.518 Impervious Initial abstraction	2 Start - New Tributary"
• 0.252 0.000 0.000 c.m/sec*	1.023 0,000 1.275 1.275*
Catchment 101 Pervious Impervious Total Area "	33 CATCHMENT 103"
Surface Area 2.970 0.000 2.970 hectare	1 Triangular SCS"
The of concentration 33.434 4.721 33.434 minutes"	Equal length
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 1 SCS met 	nod"				* 81	A	DD COMMENT==========		*********			
 103 Woodlot 	- north of GEXR"					3 L	ines of comment"					
 0.000 % Imper 	/ious"									*******		
2.080 Total A	rea"				š.	C	atchments South of GE	XR, part of	f Inlet #1"			
80.000 Flow le	ngth" 1 Slopp"											
2.500 Overian	acea"				- 33	C;	AICHMENT 104"					
80.000 Perviou	length"					3	Specify values"					
 2.500 Perviou 	s slope"					ĩ	SCS method"					
 0.000 Impervi 	ous Area"					104	Riverside Brass"					
80.000 Impervi	ous length"					59.000	% Impervious"					
2.500 Impervi	ous slope"				5	2.020	Total Area"					
0.250 Perviou	Manning 'n'"				2	35.000	Flow length"					
 70.000 Perviou 0.289 Perviou 	Bupoff coefficient"					1.200	Overland Slope"					
• 0.100 Perviou	s Ia/S coefficient"					60.000	Pervious length"					
10.886 Perviou	Initial abstraction"					2.000	Pervious slope"					
 0.015 Impervi 	ous Manning 'n'"					1.192	Impervious Area"					
 98.000 Impervi 	ous SCS Curve No."					116.000	Impervious length"					
0.000 Impervi	ous Runoff coefficient				-	0.500	Impervious slope"					
0.100 Impervi	ous Ia/S coefficient"				- E	0.250	Pervious Manning 'n					
• 0,516 Impervi		[]" 5 1.075 .	o m/coo"		2	76.000	Pervious SCS Curve	NO."				
Catchment	13 Dervious	Impervious	Total Area			0.378	Pervious Hunorr coe Pervious Ia/S coeff	icient"				
 Surface Ar 	2.080	0.000	2.080	hectare"		8.021	Pervious Initial ab	straction"				
 Time of co 	centration 26.728	2.913	26.728	minutes"		0.015	Impervious Manning	'n'"				
 Time to Ce 	ntroid 128.563	88.712	128.563	minutes"		98.000	Impervious SCS Curv	e No."				
Rainfall d	pth 68.087	68.087	68.087	mm°	•	0.917	Impervious Runoff c	oefficient"	1			
Rainfall v	olume 1416.20	0.00	1416.20	C.m*	2	0.100	Impervious Ia/S coe	fficient"	0			
* Rupoff dop	-b 10.690	61 999	48.398	mm "		0.518	Impervious Initial :	abstraction	1	/ 8		
Runoff vol	ime 409.53	0.00	409.53	ала С. П.*	•2	Ca	atchment 104	Pervious	Tmperviou	s Total Aro	a "	
 Runoff coe 	ficient 0.289	0.000	0.289	•		SL	urface Area	0.828	1.192	2.020	hectare"	
 Maximum fl 	ow 0.119	0.000	0.119	c.m/sec"		T:	ime of concentration	20.985	5,900	9.256	minutes"	
40 HYDROGRAPH	Add Runoff "				•	T:	ime to Centroid	120.566	92.933	99.081	minutes"	
4 Add Run	off "				2	Ra	ainfall depth	68.087	68,087	68.087	mm "	
U.	19 0.119 1.27	5 1.275"				Ra	ainfall volume	563.89	811,45	1375.35	c.m"	
40 ATDROGRAFA	Outflow"					Ha Di	alntall losses	42.380	5.660	20.716	mm"	
• • • • • • • • • • • • • • • • • • • •	19 0.119 0.11	9 1.275"			*	Ri	unoff volume	212.90	743.99	956.89	0.00 °	
40 HYDROGRAPH	Combine 1"					Ru	noff coefficient	0.378	0.917	0.696		
 6 Combine 					•	Ма	aximum flow	0,075	0.505	0.533	c.m/sec"	
1 Node #"					• 40	H	DROGRAPH Add Runoff					
u/s of	EXR"		_			4	Add Runoff "					
Maximum fi	W 1.	389 C.m/se	ec"				0.533 0.533	3 1.389	1.389	n		
• Hydrograph	19 0 119 0 11	400 C.III" G 1.380"			54	0 522	JND DESIGN" Cuppont pack flow	0				
* 40 HYDROGRAPH	Confluence 1"	5 1.003				0.070	Target outflow c	.m/sec"				
7 Conflue	ice "				1.5	956.9	Hydrograph volume	C.m"				
1 Node #"						4.	Number of stages"					
u/s of	EXR "					0.000	Minimum water level	metre"				
Maximum fl	-1.	389 c.m/se	ec"			0.910	Maximum water level	metre"				
Hydrograph	volume 5377.	406 C.M"				0.000	Starting water level	l metre"	- 5-1*			
40 HYDROGBAPH	Conv to Outflow"	9 0.000				0	Level Discharge	<pre>> Irue; 0 Volume"</pre>	= False"			
8 Copy to	Outflow"						0.000 0.000	0.000"				
• 0.	19 1.389 1.38	9 0.000"			1.2		0.3100 0.03090	782.000*				
40 HYDRÓGRAPH	Combine 2"						0.6100 0.1232	1619.000"				
6 Combine	n						0.9100 0.2769 2	2511.000"				
2 Node #"					0.00	Pe	eak outflow	0.0)30 c.m/	sec"		
INLET 1		990 a c /			- C	Ma	aximum level	0.3	102 metr	e"		
Maximum Ti	w 1. volume 5377	ວວອ ປ.11/S6 406 ຕ.ຫ"	ec			Ma	aximum storage	/60.5	95 C.M"	e		
* 0.1	19 1,389 1.38	9 1.389"				UE	0.533 0.533	0.030	1.389 0	m/sec"		
40 HYDROGRAPH	Start - New Tributary	*			* 40	HY	/DROGRAPH Combine	2"	11000 01	, 000		
2 Start -	New Tributary"				1	6	Combine "					
• 0.	19 0.000 1.38	9 1.389"				2	Node #"					

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	INLET 1"		0.015 Impervious Manaing 'n'"
.e.	Maximum flow 1.415 c.m/sec"		98.000 Impervious SCS Curve No "
	Hydrograph volume 6299.856 c.m"		0.901 Impervious Runoff coefficient"
ð	0.533 0.533 0.030 1.415"	1	0.100 Impervious Ia/S coefficient"
40	HYDROGRAPH Start - New Tributary"	•	0.518 Impervious Initial abstraction [®]
	2 START - NEW INDUTARY.		0.453 0.961 0.030 1.415 c.m/sec"
* 33	CATCHMENT 105"		Catchment 106 Pervious Impervious Total Area "
	1 Triangular SCS"		Time of concentration 21,713 2,712 4,019 minutes"
	3 Specify values"		Time to Centroid 121,489 88,418 90,693 minutes"
÷.	1 SCS method"		Rainfall depth 68.087 68.087 68.087 mm®
÷	105 Iron Bridge Manutacturing Property" 65 000 % Important		Rainfall volume 130.73 740.78 871.51 c.m"
	3.570 Total Area"		Haintail losses 42.390 6.713 12.065 mm ⁴
	90.000 Flow length"		Runoff volume 49.34 667.74 717.08 c.m.
	2.000 Overland Slope"		Runoff coefficient 0.377 0.901 0.823 "
	1.250 Pervious Area"		Maximum flow 0.017 0.451 0.453 c.m/sec"
	2000 Pervious length"	* 40	HYDROGRAPH Add Runoff "
	2.300 Impervious Area"		4 Add HUNOTT -
	90.000 Impervious length*	* 40	HYDROGRAPH Copy to Outflow*
*	2.000 Impervious slope"		8 Copy to Outflow"
12	0.250 Pervious Manning 'n'	•	0.453 1.385 1.385 1.415"
	81.000 Pervious SCS Curve No."	* 40	HYDROGRAPH Combine 2"
(#)	0.400 Pervisus Ta/S coefficient"	- ÷	6 Combine "
(#)	5.958 Pervious Initial abstraction"	÷	2 NODE #" TNIFT 1"
	0.015 Impervious Manning 'n'		Maximum flow 1.787 c.m/sec*
(4)	98.000 Impervious SCS Curve No."		Hydrograph volume 8841.498 c.m"
	0.904 Impervious Runoff coefficient"	÷	0.453 1.385 1.385 1.787"
	0.100 Impervious Ia/S coefficient"	40	HYDROGRAPH Start - New Tributary"
	0.510 Impervious Initial abstraction	÷	2 Start - New Tributary"
	Catchment 105 Pervious Impervious Total Area "	* 33	CATCHMENT 107"
	Surface Area 1.250 2.320 3.570 hectare"		1 Triangular SCS"
÷	Time of concentration 24,146 3.343 7.860 minutes"		1 Equal length"
÷	lime to centroid 123.696 89.341 96.800 minutes"		1 SCS method
	Rainfall volume 850.74 1579 95 2430 69 cm	਼	10/ Industrial properties at end of Hamilton Road"
	Rainfall losses 36,381 6.531 16.978 mm*		2.850 Total Area"
•	Runoff depth 31.706 61.556 51.108 mm	*	50,000 Flow length*
÷.	Runoff volume 396.16 1428.40 1824.57 c.m		1.000 Overland Slope"
	Runott coefficient 0.466 0.904 0.751 *	<u>.</u>	1.710 Pervious Area"
* 40	HYDROGRAPH Add Bunoff "		50.000 Pervious length"
	4 Add Runoff *	× .	1.140 Twnervious Area"
	0.961 0.961 0.030 1.415"		50.000 Impervious length"
33	CATCHMENT 106"	÷	1.000 Impervious slope"
	i iriangular SCS*		0.250 Pervious Manning 'n'"
	1 SCS method"		76.000 Pervious SCS Curve No."
	106 N.C. Pestell Head Office and other Industrial"		0.377 Pervious Ta/S coefficient"
÷.	85.000 % Impervious"		8.021 Pervious Initial abstraction"
2	1.280 Total Area"		0.015 Impervious Manning 'n'"
	55.000 FLOW Length"	<u>.</u>	98.000 Impervious SCS Curve No."
(#.)	0.192 Pervisis Area"	- C	0.900 Impervious Runoff coefficient"
٠	55.000 Pervious length"	2	0.100 Impervious II/S COETTICIENT" O 518 Impervious Initial abstraction"
	1.500 Pervious slope"	*	0.481 0.000 1.385 1.787 c.m/sec"
	1.088 Impervious Area"	10	Catchment 107 Pervious Impervious Total Area *
	55.000 Impervious length*		Surface Area 1.710 1.140 2.850 hectare"
	1.300 Impervious Stope"		Time of concentration 23.158 2.892 10.715 minutes"
	76.000 Pervious SCS Curve No."		ише то Gentrold 123.297 88.679 102.041 minutes"
340	0.377 Pervious Runoff coefficient"		Rainfall volume 1164 28 776 10 1040 47 or mil
	0.100 Pervious Ia/S coefficient"		Rainfall losses 42,393 6.782 28.149 mm°
520	8.021 Pervious Initial abstraction"		Runoff depth 25.693 61.304 39.937 mm*
			ž.

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×.	Runoff volume 439,35 698,87 1138.22 c.m*	2.000 Overland Slope"	
*	Runoff coefficient 0.377 0.900 0.587	1.383 Pervious Area	
	Maximum flow 0,144 0.465 0.481 c.m/sec*	50.000 Pervious length	
* 40	HYDROGRAPH Add Runoff "	3.000 Pervious slope"	
	4 Add Runoff *	4.148 Impervious Area"	
•	0.481 0.481 1.385 1.787*	192.000 Impervious length"	
• 33	CATCHMENT 108*	0.750 Impervious slope"	
÷ .	1 Triangular SCS"		
2	1 SCS mothod"	0.361 Pervious Bunoff coefficient"	
	108 Woodlot and Wetland east of Pestells"	0.100 Pervious Ia/S coefficient"	
	5.000 % Impervious"	8.467 Pervious Initial abstraction"	
¥.	5.920 Total Area"	0.015 Impervious Manning 'n'"	
•	65.000 Flow length*	98.000 Impervious SCS Curve No."	
*	3.000 Overland Slope"	0.913 Impervious Runoff coefficient"	
•	5.624 Pervious Area"	0.100 Impervious Ia/S coefficient	
<u>.</u>	65.000 Pervious length"	0,518 Impervious initial abstraction	
÷.	3.000 Pervious slope"		2 C.M/SEC
	0.296 Impervious Area		5 590 bectare"
	3 000 Impervious slope"	Time of concentration 17.019 7.069	8.227 minutes"
	0.250 Pervious Manning 'n'"	Time to Centroid 115-785 94-541	97.014 minutes"
	70,200 Pervious SCS Curve No."	 Rainfall depth 68.087 68.087 	68.087 mm"
	0.292 Pervious Runoff coefficient"	Rainfall volume 941.30 2823.89	3765.18 c.m"
	0.100 Pervious Ia/S coefficient*	Rainfall losses 43.502 5.893	15.295 mm"
٠	10.782 Pervious Initial abstraction"	 Runoff depth 24.584 62.193 	52.791 mm"
	0.015 Impervious Manning 'n'"	Runoff volume 339,88 2579.47	2919.35 c.m"
•	98.000 Impervious SCS Curve No."	HUNOTT COETTICIENT 0.361 0.913	
	0.905 Impervious Runoff coefficient"	Maximum Tiow 0.133 1.799	1.861 C.m/Sec-
	0.100 Impervious Ia/S coefficient"		
	0.309 0.481 1.385 1.787 c m/sec"	* 1.861 1.861 0.708 2.43	2"
	Catchment 108 Pervious Impervious Total Area "	* 54 POND DESIGN*	
	Surface Area 5.624 0.296 5.920 hectare"	1.861 Current peak flow c.m/sec"	
	Time of concentration 22.233 2.435 19.452 minutes"	0.070 Target outflow c.m/sec"	
*	Time to Centroid 123.078 87.981 118.149 minutes"	2919.4 Hydrograph volume c.m"	
	Rainfall depth 68.087 68.087 68.087 mm"	9. Number of stages"	
	Rainfall volume 3829.18 201.54 4030.72 c.m"	0.000 Minimum water level metre	
	Rainfall losses 48.230 6.445 46.141 mm"	1.200 Maximum water level metre"	
	Runoff depth 19.856 61.641 21.946 mm"	U.UUU Starting water level metre	
÷ .	Runott volume 1116.72 182.46 1299.18 C.m.	level Discharge Volume"	
2	Runott coetticient 0.292 0.905 0.322 Novimum flow 0.373 0.125 0.399 c.m/sec"		
. 40	HYDROGRAPH Add Runoff "	0.1500 0.00400 297.000"	
*	4 Add Runoff "	0.3000 0.01000 635.000"	
•	0.399 0.708 1.385 1.787"	• 0.4500 0.03600 1004.000"	
40	HYDROGRAPH Copy to Outflow"	0.6000 0.04900 1405.000"	
•	8 Copy to Outflow"	0.7500 0.06000 1847.000"	
	0.399 0.708 0.708 1.787"		
40	HYDROGRAPH Combine 2"		
S	6 COMDINE "	Peak outflow 0.109 c.m	I/SEC"
	Z NODE # T	Maximum level 0.913 met	re"
	Maximum flow 2.432 c.m/sec"	Maximum storage 2376.069 c.m	(¹¹)
	Hydrograph volume 11278.902 c.m"	 Centroidal lag 11.644 hour 	'S "
÷)	0.399 0.708 0.708 2.432"	1.861 1.861 0.109 2.432 0	.m/sec"
40	HYDROGRAPH Start - New Tributary"	* 40 HYDROGRAPH Combine 2*	
÷.	2 Start - New Tributary"	6 Combine "	
5	0.399 0.000 0.708 2.432"	2 Node #"	
• 33	CATCHMENT 109"	INLET 1"	(000 [*]
	1 Triangular SCS"	Maximum TLOW 2.4/6 C.I	/ 200
<u>.</u>	3 Specity values"		ſ6"
	1 OD MC Pestell site"	81 ADD COMMENT===================================	
	75 000 % Impervious"	3 Lines of comment"	
	5.530 Total Area		*******
	130.000 Flow length	Catchments South of GEXR, part of Inlet #2	

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		ě	6 Combine "	
40 HYDROGRAPH Start - New Tributary"			3 Node #"	
2 Start - New Tributary"		×	INLET 2"	
1.861 0.000 0.109 2.476"			Maximum flow 0.114 c.m/sec*	
33 CATCHMENT 110"		÷	Hydrograph volume 766.134 c.m"	
1 Triangular SCS"		10	0.259 0.259 0.114 0.114"	
3 Specily Values"		- 40	HIDROGRAPH START - New Inibutary"	
110 Alpine Solutions - west SMWP"			0.259 0.000 0.114 0.114"	
30.000 % Impervious"		• 33	CATCHMENT 111"	
1.920 Total Area"			1 Triangular SCS"	
150.000 Flow length"		•	1 Equal length"	
1.000 Overland Slope"		5	1 SCS method"	
1.344 Pervious Area"		5 I	11 Woodlot north of Schneider/Good lands"	
150.000 Pervious length"		0.0	00 % Impervious"	
1.500 Pervious stope"		13.2	30 Iotal Area"	
113 000 Impervious length"		170.0		
1 500 Impervious slope"		* 19.2		
0.250 Pervious Manning 'n'"		170.0	00 Pervious length"	
80.000 Pervious SCS Curve No."		. 2.4	00 Pervious slope"	
0.447 Pervious Runoff coefficient"		• 0.0	00 Impervious Area"	
0.100 Pervious Ia/S coefficient"		170.0	00 Impervious length"	
6.350 Pervious Initial abstraction"		* 2.4	00 Impervious slope"	
0.015 Impervious Manning 'n'"		0.2	50 Pervious Manning 'n'"	
98.000 Impervious SCS Curve No."		70.0	00 Pervious SCS Curve No."	
0.912 Impervious Runott coetticient"		0.2	89 Pervious Runott coetticient"	
0.100 Impervious Ia/S coerfictent		- 0.1	00 Pervious 14/S coefficient"	
		. 0.0	oo rervious Manaina 'n' "	
Catchment 110 Pervious Impervious Total Area		- 98.0	00 Impervious SCS Curve No."	
Surface Area 1.344 0.576 1.920 hect	aré"	. 0.0	00 Impervious Runoff coefficient"	
Time of concentration 36.487 4.177 21.412 minu	ites"	• 0.1	00 Impervious Ia/S coefficient"	
Time to Centroid 139.623 90.510 116.708 minu	ites"	• 0.5	18 Impervious Initial abstraction"	
Rainfall depth 68.087 68.087 68.087 mm"			0.547 0.000 0.114 0.114 c.m/sec"	
Rainfall volume 915.08 392.18 1307.26 c.m		÷	Catchment 111 Pervious Impervious Total Area "	
Raintail losses 37.663 5.996 28.163 mm"		2	Surface Area 13.230 0,000 13.230 hectare"	
HUNDIT depth 30.424 62.090 39,924 mm"			lime of concentration 42.530 4.635 42.530 minutes"	
Bunoff coefficient 0.447 0.012 0.586 "		2	Line to centrolo 14/.//o 91.129 14/.//o minutes	
Maximum flow 0.100 0.238 0.259 c.m	Sec."		Rainail depth 06.067 06.067 mm	
* 40 HYDROGRAPH Add Runoff "			Rainfall losses 48.386 5.789 48.386 mm"	
4 Add Runoff *			Runoff depth 19.701 62.297 19.701 mm*	
0.259 0.259 0.109 2.476"		*	Runoff volume 2606.43 0.01 2606.44 c.m.º	
* 54 POND DESIGN*			Runoff coefficient 0.289 0.000 0.289 "	
0.259 Current peak flow c.m/sec*		•	Maximum flow 0.547 0.000 0.547 c.m/sec"	
U.U/U larget outriow c.m/sec"		40	HYDROGRAPH Add Runoff "	
700.5 Hydrograph vorume C.m		2		
0 000 Minimum water level metre"		• 40	U.347 U.347 U.114 U.114 "	
1.100 Maximum water level metre"		*	A CONV to Outflow ^a	
0.000 Starting water level metre"			0.547 0.547 0.547 0.114"	
0 Keep Design Data: 1 = True; 0 = False"		• 40	HYDROGRAPH Combine 3"	
Level Discharge Volume"			6 Combine "	
0.000 0.000 0.000"			3 Node #"	
0.2500 0.04200 7.000"		÷	INLET 2"	
0.5000 0.09000 71.000"		-	Maximum flow 0.661 c.m/sec"	
		-	Hydrograph volume 3372.573 c.m"	
		= 01	U.54/ U.54/ U.54/ U.661"	
1,100 0,6160 557,000"			ADD COMMENT	
Peak outflow 0.114 c.m/sec"			· FTU22 01 CONNELLE	
Maximum level 0.673 metre"			South of GEXR along Nafziger Rd, part of Inlet #3"	
Maximum storage 174 140 c.m"			***************************************	
Centroidal lag 2.233 hours"		. 40	HYDROGRAPH Start - New Tributary"	
0.259 0.259 0.114 2.476 c.m/sec"			2 Start - New Tributary"	
* 40 HYDROGRAPH Combine 3*		*	0.547 0.000 0.547 0.661"	

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33 CATCHMENT 112"	1.500 Impervious slope"	
1 Triangular SCS"	0.250 Pervious Manning 'n'	
1 Equallength"	80.000 Pervious SCS Curve No."	
1 SCS method"	0.447 Pervious Runoff coefficient"	
112 Culivated lands east of Nafziger Road"	0.100 Pervious Ia/S coefficient"	
1.000 % Impervious"	6.350 Pervious Initial abstraction"	
120 000 Elem legeth	0.015 Impervious Manning 'n'"	
	98.000 Impervious SCS Curve No."	
7.237 Pervious Area"	0.100 Impervious Tarks coefficient"	
120.000 Pervious length"	0.518 Impervious Initial abstraction"	
3.300 Pervious slope"	* 0,449 0,000 0,780 0,780 c.m/sec"	
0.073 Impervious Area"	 Catchment 113 Pervious Impervious Total Area 	
120.000 Impervious length"	Surface Area 1.536 1.024 2.560 hectare"	
3.300 Impervious slope"	Time of concentration 40.705 4.565 19.846 minutes"	
0.250 Pervious Manning 'n'"	Time to Centroid 145.013 91.029 113.855 minutes"	
82.000 Pervious SCS Curve No	Haintali depth 68.087 68.087 68.087 mm"	
0.400 Pervious Ta/S coefficient"	Rainfall losses 27 663 5 704 24 015 mm	
5,76 Pervious Initial Astrony	Runoff depth 30,000 57,94 24,910 IIIII	
0.015 Impervious Manning 'n'"	* Bunoff volume 467.30 637.88 1105.18 cm*	
98.000 Impervious SCS Curve No."	Runoff coefficient 0.447 0.915 0.634	
0.904 Impervious Runoff coefficient"	 Maximum flow 0.103 0.429 0.449 c.m/sec" 	
0.100 Impervious Ia/S coefficient*	40 HYDROGRAPH Add Runoff "	
0.518 Impervious Initial abstraction"	4 Add Runoff "	
0.780 0.000 0.547 0.661 c.m/sec"	• 0.449 0.449 0.780 0.780"	
Catchment 112 Pervious Impervious Total Area "	54 POND DESIGN"	
Surrace Area 7.237 0.073 7.310 nectare	0.0449 Current peak TIOW C.m/sec"	
Time to control 123,586 89,462 122,956 minutes"	* 1105 2 Hydrograph volume c m*	
Rainfall depth 68,087 68,087 68,087 mm"	7. Number of stares"	
Rainfall volume 4927.35 49.77 4977.12 c.m"	0.000 Minimum water level metre"	
Rainfall losses 35.059 6.553 34.774 mm"	1.000 Maximum water level metre"	
"Runoff depth 33.027 61.534 33.312 mm"	* 0.000 Starting water level metre"	
Runoff volume 2390.16 44.98 2435.14 c.m"	Keep Design Data: 1 = True; 0 = False"	
Runoff coefficient 0.485 0.904 0.489 "	Level Discharge Volume"	
Maximum flow 0.772 0.029 0.780 c.m/sec"	0.000 0.000 0.000"	
40 ATURUGHAPH AQQ RUNOTT		
40 HYDROGRAPH Copy to Outflow"	0.7500 0.1250 877.000"	
8 Copy to Outflow"	0.8000 0.1360 1014.000"	
0.780 0.780 0.780 0.661"	1.000 0.7880 1667.000"	
40 HYDROGRAPH Combine 4"	* Peak outflow 0.099 c.m/sec"	
6 Combine "	Maximum level 0.568 metre"	
4 Node #"	Maximum storage 487.205 c.m"	
INLE) 3"	Centroldal lag 2.894 hours	
Waximum 10W 0.700 Cinised	* 40 HYDRORADH Combio 4*	
40 HYDROGRAPH Start - New Tributary"	* 4 Node #"	
2 Start - New Tributary"	INLET 3"	
0.780 0.000 0.780 0.780"	Maximum flow 0.873 c.m/sec"	
33 CATCHMENT 113"	Hydrograph volume 3539.936 c.m"	
1 Triangular SCS"	• 0.449 0.449 0.099 0.873"	
3 Specify values"	40 HYDROGRAPH Start - New Tributary"	
1 SUS METROD"	2 START - NEW IFIDUTARY"	
40.00 & Impervise	U.449 U.000 U.099 U.873"	
2.560 Total Area*	Of ONTORINE 114	
150.000 Flow length"		
1.500 Overland Slope"	1 SCS method"	
1.536 Pervious Area"	114 Woodlot East and West of Nafziger Road"	
180.000 Pervious length"	* 3.000 % Impervious"	
1.500 Pervious slope"	13.460 Total Area"	
1.024 Impervious Area"	140.000 Flow length	
131.000 Impervious length"	3.600 Overland Slope"	

Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-025yr.out Printed at 15:20 on 18 Dec 2018	Page 13 Q:1348961104ISWMIMIDUSSIPre134896-104_Pre-025yr.out Printed at 15:20 on 18 Dec 2018
13.056 Pervious Area"	0.100 Impervious Ia/S coefficient
- 140.000 Pervious length	0.518 Impervious initial asstraction"
0.404 Intervious Area"	Catchment 115 Pervious Impervious Total Area
140.000 Impervious length"	 Surface Area 1.336 3.613 4.950 hectare^a
 3.600 Impervious slope" 	Time of concentration 15.557 5.560 7.253 minutes*
0.250 Pervious Manning 'n'" 70 100 Results Anning 'n'"	 Time to Centroid 112.209 92.435 95.783 minutes"
0.291 Pervious SUS Curve NO." 0.291 Pervious Bundf coefficient"	"HAINTALL GEPTN 58,087 58,087 mm" Bainfall volume 200 24 2460 31 3370 29 c m"
0.100 Pervious Ia/S coefficient*	Rainfall Joses 33.745 5.768 13.322 mm*
10.834 Pervious Initial abstraction"	* Runoff depth 34,341 62.318 54.764 mm*
0.015 Impervious Manning 'n'	* Runoff volume 458,97 2251.87 2710.84 c.m*
98.000 Impervious SCS Curve No."	Runoff coefficient 0.504 0.915 0.804
0.100 Impervious Ta/S coefficient*	MAXIMUM TLOW 0.196 1.535 1.538 C.m/sec"
0.518 Impervious Initial abstraction"	4 Add Runoff "
0.667 0.000 0.099 0.873 c.m/sec"	1.638 1.638 0.667 1.511
Catchment 114 Pervious Impervious Total Area	54 POND DESIGN"
Surface Area 13.056 0.404 13.460 hectare"	 1.638 Current peak flow c.m/sec* 0.700 Target subflow
Time of contentiation 33,430 3,655 30,650 minutes"	2710.8 Hydrograph volume c.m."
 Rainfall depth 68,087 68,087 68,087 mm[*] 	15. Number of states"
Rainfall volume 8889.51 274.93 9164.44 c.m"	* 0.000 Minimum water level metre
Rainfall losses 48.294 6.717 47.046 mm*	1.450 Maximum water level metre"
"HUNOTT depth 19.793 61.370 21.040 mm" BUDOT volumo 2584.10 247.91 282.00 cm"	0.000 Starting water level metre"
* Bunoff coefficient 0.291 0.901 0.309 *	level Discharge Volume"
 Maximum flow 0.644 0.162 0.667 c.m/sec* 	0.000 0.000 0.000"
* 40 HYDROGRAPH Add Runoff "	* 0.1500 0.00700 248.000°
4 Add Runoff	0.2500 0.00900 418.000"
- 0.667 0.699 0.873"	0.3500 0.01100 539.000°
0.667 0.667 0.873"	* 0.6500 0.01600 1161.000"
* 40 HYDROGRAPH Combine 4"	• 0.7500 0.01700 1364.000 ^e
6 Combine "	0.8500 0.01900 1575.000°
4 Node #"	• 0.9500 0.02000 1795.000°
MAXIMUM 1.511 c.m/sec*	
 Hydrograph volume 6371.938 c.m" 	* 1.250 0.4600 2511.000*
0.667 0.667 0.667 1.511"	* 1.350 2.766 2768.000*
40 HYDROGRAPH Start - New Tributary"	1.450 6.856 3033.000"
2 Start - New Pributary"	Peak outflow 0.142 c.m/sec*
* 33 CATCHMENT 115"	Maximum 1992 1.107 metre"
1 Triangular SCS"	" Gentroidal lag 15.631 hours"
3 Specify values"	1.638 1.638 0.142 1.511 c.m/sec*
1 SCS method"	40 HYDROGRAPH Combine 4"
73 0.00 % Two evides	6 Combine "
4.950 Total Area"	4 NOUE #"
* 50.000 Flow length"	Maximum flow 1.551 c.m/sec*
2.800 Overland Slope"	Hydrograph volume 8422.059 c.m ⁴
1.336 Pervious Area	1.638 1.638 0.142 1.551"
40.000 Pervious length	40 HYDROGRAPH Start - New Tributary"
3.613 Impervious Area"	2 Start - New Hildurary -
182.000 Impervious length"	33 CATCHMENT 116"
1.500 Impervious slope"	* 1 Triangular SCS*
0.250 Pervious Manning '/'"	1 Equal length
- 0.504 Pervious Runoff coefficient"	1 SCS method*
0.100 Pervious Ia/S coefficient	35 000 % Impervious"
5.202 Pervious Initial abstraction*	7.710 Total Area"
0.015 Impervious Manning 'n'"	140.000 Flow length"
98.000 Impervious SCS Curve No."	1.600 Overland Slope"
0.915 Impervious HUNOTT COETTICIENT"	" 5.012 Pervious Area"

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140.000 Repuipus langth		* 40			
1.600 Pervious slope"		. 40		6 Conhina *	
2.698 Impervious Area"		1.		5 Node #"	
140.000 Impervious length		100		u/s of HWY 7&8"	
1.600 Impervious slope"		1		Maximum flow 3.033 c.m/sec"	
0.250 Pervious Manning 'n'"				Hydrograph volume 17194.467 c.m"	
76.000 Pervious SCS Curve No."		. 10		1.193 0.661 0.661 3.033"	
0.376 Pervious Taris coefficient		40			
A D21 Pervious Initial abstraction"				A Node **	
0.015 Impervious Manning 'n'"		000		INLET 3*	
98.000 Impervious SCS Curve No."		1.00		Maximum flow 2.044 c.m/sec"	
0.915 Impervious Runoff coefficient				Hydrograph volume 11391.565 c.m°	
0.100 Impervious Ia/S coefficient"				1.193 2.044 0.661 0.000"	
0.518 Impervious Initial abstraction"		* 40		HYDROGRAPH Copy to Outflow"	
1.193 0.000 0.142 1.551 c.m/sec"		- C		8 Copy to Outflow 2 Att 2 A Copy	
Suprises Appa 5 012 2 509 7 710 boctare"		- 40		1.193 2.044 2.044 0.000" HVDD00BADH Combine 5"	
Surrace Area 5.012 2.090 7.710 nectare		. 40		n ibroanarn Combina "	
Time to Central 11.029 91.162 112.79 minutes"		0.041		5 Node #"	
Rainfall depth 68.087 68.087 mm"				u/s of HWY 7&8"	
Rainfall volume 3412.16 1837.31 5249.47 c.m°				Maximum flow 5.078 c.m/sec"	
Rainfall losses 42.377 5.790 29.571 mm"				Hydrograph volume 28586.029 c.m"	
Runoff depth 25.709 62.297 38.515 mm*				1.193 2.044 2.044 5.078°	
Runoff volume 1288.43 1681.08 2969.51 c.m"		= 40		HYDROGRAPH Start - New Tributary"	
HUNOTT COETTICIENT 0.3/8 0.915 0.555				2 Start - New Inibutary"	
MAXIMUM LLOW 0.301 1.133 1.193 C.M/SeC		* 33		CATCHMENT 117"	
4 Add Bunoff "				1 Triangular SCS"	
1.193 1.193 0.142 1.551*				1 Equal length"	
40 HYDROGRAPH Copy to Outflow"				1 SCS method"	
8 Copy to Outflow"				117 Cultivated Schneider central lands"	
1,193 1,193 1,193 1,551"			ο.).000 % Impervious"	
40 HYDROGRAPH Combine 4"		÷.	7.	.450 Total Area"	
6 Combine "		0.00	140.	.000 Flow length"	
			2.	2.000 Overland Stope	
Maximum flow 2.044 c.m/sec*			140.		
Hydrograph volume 11391,565 c.m."			2.	.000 Pervious slope"	
1.193 1.193 1.193 2.044"		(M):	ο.	0.000 Impervious Area"	
140 HYDROGRAPH Confluence 2"		3.5	140.).000 Impervious length"	
7 Confluence •			2.	2.000 Impervious slope"	
2 Node #"		1.00	0.	0.250 Pervious Manning 'n'"	
INLET 1"			81.	.400 Pervious SCS Curve No."	
Maximum filow 2.470 G.III/Sec			0.	1.4/3 Fervious Ta/S coefficient"	
1.193 2.476 1.193 0.000"			5.		
40 HYDROGRAPH Copy to Outflow"		0.00	0.).015 Impervious Manning 'n'"	
8 Copy to Outflow"		3.53	98.	3.000 Impervious SCS Curve No."	
1.193 2.476 2.476 0.000"			ο.).000 Impervious Runoff coefficient"	
40 HYDROGRAPH Combine 5"			0.).100 Impervious Ia/S coefficient"	
6 Combine "			0.	0.518 Impervious Initial abstraction"	
5 Node #"		1.5		0.648 0.000 2.044 5.078 c.m/sec"	
				Catchment 117 Pervious Impervious Total Area	
		200		Time of concentration 31 227 4 358 31 227 minutes"	- 2
1,193 2.476 2.476"				Time to Centroid 132.705 90.763 132.705 minutes*	
40 HYDROGRAPH Confluence 3"				Rainfall depth 68.087 68.087 mm*	
7 Confluence "		٠		Rainfall volume 5072.44 0.01 5072.44 c.m"	
3 Node #"				Rainfall losses 35,868 5,903 35,868 mm"	
INLET 2"		0.42		Runoff depth 32.218 62.183 32.218 mm*	
Maximum flow 0.661 c.m/sec		S.		Runoff volume 2400.25 0.00 2400.25 c.m"	
Hydrograph volume 3372,573 c.m"		- C		Runott coetticient 0.473 0.000 0.473 *	
- 1.193 U.661 2.476 U.000"		10		MAXIMUM TIOW U.648 U.000 U.648 C.M/SeC"	
40 NICHARN COULT TOW"		40		A Add Runoff *	
1.193 0.661 0.661 0.000"				0.648 0.648 2.044 5.078"	

2:\3489 Printed	16\104\SWM\MIDUSS\Pre\34896-104_Pre-025yr.out Page 17 at 15:20 on 18 Dec 2018	Q:\3489 Printed	61104/SWM\MIDUSS\Pre\34896-104_Pre-025yr.out at 15:20 on 18 Dec 2018	Page 18
40	HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	40	0.048 0.048 0.048 5.763* HYDROGRAPH Start - New Tributary"	
40	0.648 0.648 0.648 5.078" HYDROGRAPH Combine 5"	- C	2 Start - New Tributary" 0.048 0.000 0.048 5.763"	
	6 Combine "	* 33	CATCHMENT 119"	
	5 Node #"	2	1 Triangular SCS"	
	Maximum flow 5.726 c.m/sec"		1 SCS method"	
	Hydrograph volume 30986.281 c.m"	5	119 Existing ROW from Hamilton Road"	
81	0.648 0.648 0.648 5.726" ADD COMMENT===================================	2	0.000 % Impervious" 0.720 Total Area"	
	3 Lines of comment"	× .	40,000 Flow length"	
	Catchments east of Hamilton Road, part of Tolet #4"		2.000 Overland Slope"	
	or commences eact of namilion noad, part of inter #4		40.000 Pervious length"	
40	HYDROGRAPH Start - New Tributary		2.000 Pervious slope"	
	2 START - NEW IFIDUTARY" 0.648 0.000 0.648 5.726"		0.000 Impervious Area" 40.000 Impervious length"	
33	CATCHMENT 118"	8	2.000 Impervious slope"	
	1 Triangular SCS"		0.250 Pervious Manning 'n'"	
	1 Equal Length	8	0.377 Pervious SCS Curve No."	
5	118 Northwest corner of Nithview Heights"		0.100 Pervious Ia/S coefficient"	
	8.000 % Impervious"	÷.	8.021 Pervious Initial abstraction"	
	0.000 Flow length"		98.000 Impervious SCS Curve No."	
÷	5.000 Overland Slope"	71	0.000 Impervious Runoff coefficient"	
	0.460 Pervious Area"	2	0.100 Impervious Ia/S coefficient"	
	5.000 Pervious slope"	*	0.518 Impervious Initial abstraction* 0.074 0.000 0.048 5.763 c.m/sec*	
	0.040 Impervious Area"		Catchment 119 Pervious Impervious Total Area "	
	60.000 Impervious length" 5.000 Impervious slope"	÷	Surface Area 0.720 0.000 0.720 hectare	
	0.250 Pervious Manning 'n'"	*	Time to Centroid 114.904 87.397 114.904 minutes	
	74.000 Pervious SCS Curve No."	5	Rainfall depth 68.087 68.087 mm"	
	0.346 Pervious Runoff coefficient" 0.100 Pervious Tais coefficient"	2	Rainfall volume 490.22 0.00 490.22 c.m" Bainfall Lapson 42.440 6.232 42.440 mm"	
	8.924 Pervious Initial abstraction"	*	Runoff depth 25.646 61.855 25.646 mm [*]	
	0.015 Impervious Manning 'n'"	5	Runoff volume 184.65 0.00 184.65 c.m"	
	99.000 Impervious SCS CUrve No." 0.908 Impervious Runoff coefficient"	2	Runoff coefficient 0.377 0.000 0.377 " Maximum flow 0.074 0.000 0.074 o m/coos"	
	0.100 Impervious Ia/S coefficient"	* 40	HYDROGRAPH Add Runoff "	
	0.516 Impervious Initial abstraction"	*	4 Add Runoff "	
	0.048 0.000 0.548 5.726 c.m/sec* Catchment 118 Pervious Impervious Total Area "	40	0.074 0.074 0.048 5.763" HYDROGRAPH Copy to Outflow"	
	Surface Area 0.460 0.040 0.500 hectare"	40	8 Copy to Outflow"	
	Time of concentration 16.651 1.991 13.924 minutes"	*	0.074 0.074 0.074 5.763"	
÷	Rainfall depth 68.087 68.087 68.087 mm"	- 40	HYDRUGHAPH COMDINE 5" 6 Combine "	
	Rainfall volume 313.20 27.23 340.43 c.m"		5 Node #"	
	Rainfall losses 44.551 6.253 41.487 mm ^a Bupoff dorth 23.535 45.68 500 mm ^a		u/s of HWY 7&8"	
÷	Runoff volume 108.26 24.73 133.00 C.m"		Maximum flow 5.822 c.m/sec ⁻ Hydrograph volume 31303.930 c.m ^w	
	Runoff coefficient 0.346 0.908 0.391 "		0.074 0.074 0.074 5.822"	
40	Maximum flow 0.043 0.017 0.048 c.m/sec" HYDROGRAPH Add Bunoff "	81	ADD COMMENT===================================	
40	4 Add Runoff *	5	3 Lines of comment.	
	0.048 0.048 0.648 5.726"	ŝ.	Catchment to Inlet #5"	
40	niuhusharn Gopy to Outflow" B _ Copy to Outflow"	- 40	HVDBACBABH Stort - New Tributery"	
	0.048 0.048 0.048 5.726"	40	2 Start - New Tributary"	
40	HYDROGRAPH Combine 5"	÷	0.074 0.000 0.074 5.822"	
	5 Node #"	33	CATCHMENT 120"	
	u/s of HWY 7&8"		1 Equal length"	
	Maximum flow 5.763 c.m/sec"	1	1 SCS method"	
	nyuruyrapn Votume Sill9.275 C.M"	8	120 Hear yards from Hamilton Heights Subdivision"	

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5.000 % Impervious" 1.080 Total Area"	2.800 Impervious slope" 0.250 Pervious Manning 'n'"
3 000 Overland Slope"	0.485 Pervious Runoff coefficient"
1.026 Pervious Area"	0.100 Pervious Ia/S coefficient"
20.000 Pervious length"	5.576 Pervious Initial abstraction"
3,000 Pervious slope" 0.054 Immervious Area"	0.015 Impervious Manning 'n' 98.000 Impervious SC Curve No "
20.000 Impervious length"	0.000 Impervious Runoff coefficient"
3.000 Impervious slope"	0.100 Impervious Ia/S coefficient"
0,250 Pervious Manning 'n'" 76.000 Pervious SCS Curve No "	0.518 Impervious Initial abstraction"
0.376 Pervious Runoff coefficient"	Catchment 121 Pervious Impervious Total Area "
0.100 Pervious Ia/S coefficient	Surface Area 43.240 0.000 43.240 hectare"
8.021 Pervious Initial abstraction"	Time of concentration 37.576 5.306 37.576 minutes"
98.000 Impervious SC Curve No."	Rainfall depth 68.087 68.087 68.087 mm"
0,902 Impervious Runoff coefficient"	Rainfall volume 2.9441 0.0000 2.9441 ha-m"
0.5100 Impervious Ia/S coefficient" 0.518 Impervious Iaital abstraction"	Rainfall losses 35.059 5.885 35.059 mm" Bugoff denth 33.028 62.201 33.028 mm"
0.147 0.000 0.074 5.822 c.m/sec"	Runoff volume 1.4281 0.0000 1.4281 ha-m"
Catchment 120 Pervious Impervious Total Area "	Runoff coefficient 0.485 0.000 0.485 "
 Surface Area 1,026 0,054 1,080 hectare" Time of concentration 6,12 1,200 6,658 minutes" 	Maximum flow 3.370 0.000 3.370 c.m/sec"
Time to Centroid 106.340 86.234 104.084 minutes"	4 Add Runoff
Rainfall depth 68.087 68.087 mm"	3.370 3.370 0.147 5.885"
 Rainfall volume 698.57 36.77 735.33 c.m" Painfall Josepe 42 515 6 669 40 722 mm" 	* 40 HYDROGRAPH Copy to Outflow" B Copy to Outflow"
* Runoff depth 25.572 61.417 27.364 mm"	• 3.370 3.370 5.885"
Runoff volume 262.37 33.17 295.53 c.m"	40 HYDROGRAPH Combine 5"
Hunoff coefficient 0.376 0.902 0.402 " Maximum flow 0.136 0.024 0.147 cm/sec"	5 Node #"
* 40 HYDROGRAPH Add Runoff "	• u/s of HWY 7&8"
4 Add Runoff "	Maximum flow 9.077 c.m/sec"
* 0.147 0.147 0.074 5.822"	Hydrograph volume 45880.566 c.m"
8 Copy to Outflow"	* 81 ADD COMENT
0.147 0.147 0.147 5.822*	3 Lines of comment"
*40 HYDROGRAPH Combine 5" 6 Combine "	Catchments to Inlet #6
5 Node #"	
u/s of HWY 7&8"	40 HYDROGRAPH Start - New Tributary"
 Maximum TLow 5.885 c.m/sec* Hydrograph volume 31594 463 c.m* 	- 2 START - NEW IFIDUTARY" 3.370 0.000 3.370 9.077"
0.147 0.147 0.147 5.885"	33 CATCHMENT 160"
81 ADD COMMENT===================================	1 Triangular SCS"
3 Lines of comment	* 1 SCS method"
Good Lands"	160 Hamilton Heights Subdivision"
	46.000 % Impervious"
40 HYDHOGHAPH Start - New Iributary" 2 Start - New Tributary"	- 8.100 for Length"
• 0.147 0.000 0.147 5.885"	1.000 Overland Slope"
33 CATCHMENT 121"	4.406 Pervious Area
1 Intangutar SGS 1 Equal Length"	3.000 Pervious slope"
1 SCS method"	3.754 Impervious Area"
121 Good Lands"	232.000 Impervious length
- U.UUU % Impervious" 43.240 Total Area"	- 1.500 Impervious Slope" 0.250 Pervious Mannin 'n'"
230,000 Flow length"	76.000 Pervious SCS Curve No."
2.800 Overland Slope"	0.377 Pervious Runoff coefficient"
- 43.240 Pervious Area" 20.000 Pervious length"	0.100 Pervious Ia/S COETTICIENT 8.021 Pervious Initial abstraction"
2.800 Pervices slope"	0.015 Impervious Manning 'n'
0.000 Impervious Area"	98.000 Impervious SCS Curve No."
- 230-000 Impervious length"	0.915 IMPERVIOUS HUNOTT COETTICIENT"

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	0.100	Impervious Ia/S co	efficient"					
	0.518	Impervious Initial	abstraction	17				
	0	1.768 0.0	000 3.370 Repuious	9.077	c.m/sec"	o #		
	Su	irface Area	4.406	3.754	8.160	a - hectare"		
	Ti	ime of concentration	16.656	6.432	9,764	minutes*		
	Ti	ime to Centroid	115.158	93.663	100.668	minutes"		
	Ha	infall depth	68.087	68.087	68.087	""		
	Ra	ainfall losses	42,435	2000.09	25.582	C.m- mm=		
	Ru	noff depth	25,651	62.288	42.504	mm *		
	Ru	noff volume	1130.29	2338,05	3468.34	C.M*		
	HL Ma	INOTT COETTICIENT	0.377	0.915	0.624			
40	H	DROGRAPH Add Runoff	: *	1.5/4	1.700	C.m/sec		
	4	Add Runoff "						
		1.768 1.7	68 3.370	9.077				
33	1	Triangular SCS"						
	3	Specify values"						
	1	SCS method"						
	161	Klassen Bronze Pro	operty"					
	32,000	* Impervious" Total Acea"						
	100,000	Flow length"						
	2.500	Overland Slope"						
	1.598	Pervious Area"						
	2.500	Pervious length" Pervious slope"						
	0.752	Impervious Area"						
	164.000	Impervious length*						
	1,500	Impervious slope"	- 1 4					
	76,000	Pervious SCS Curve	No "					
	0.377	Pervious Runoff co	efficient"					
	0.100	Pervious Ia/S coef	ficient"					
	8.021	Pervious Initial a	bstraction"					
	98.000	Impervious SCS Cur	ve No."					
8	0.914	Impervious Runoff	coefficient"					
	0.100	Impervious Ia/S co	efficient"					
	0,518	impervious Initial	. abstraction	0.077	0			
	Са	itchment 161	Pervious	Impervious	Total Are	a "		
	Su	irface Area	1.598	0.752	2,350	hectare*		
	Ti	me of concentration	17.592	5.223	11.005	minutes"		
	I J Ba	infall depth	116,320	91.982 68.087	103.358	minutes"		
	Ra	infall volume	1088.02	512.01	1600.03	C.m"		
	Ra	infall losses	42.388	5.859	30.699	៣៣ "		
	Ru	noff depth	25.698	62.228	37.388	mm "		
	R	nott volume	410.66	467.95	878.61	c.m"		
	Ma	ximum flow	0.157	0.319	0.390	c.m/sec"		
40	HY	DROGRAPH Add Runoff						
	4	Add Runoff "						
40	ну	DROGRAPH Conv to Du	58 3.370 tflow*	9.077*				
0)	8	Copy to Outflow"						
8		0.390 2.1	58 2.158	9.077"				
40	HY	DROGRAPH Combine	5"					
	5	Node #"						
	-	u/s of HWY 7&8"						
9								
5) 17	Ma	ximum flow	9.9	60 c.m/s	ec*			

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ŗ	nntec	at 15:20 0	In 16 Dec 2018		Carlos of the last	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER	the state of the s	and the second	
¥	81	A	DD COMMENT=====		********			*******	
٠		3 L	ines of comment"						
1		•			*********	********	********	*****	
1		W	estern catchment	alon	g Hamilton	Road, diver	rted to Inle	et #6"	
	40	н	YDBOGRAPH Start	- New	Tributary*				
٠		2	Start - New Tr	ibuta	rv"				
*			0.390	0.00	0 2.158	9.960			
	33	C	ATCHMENT 170*						
0		1	Triangular SCS						
2		3	Specity values						
្		170	Industrial/Res	ident	ial area al	ong Hamilto	n Boad*		
٠		55,000	% Impervious"	200110		ong numitic	in noud		
1		8.450	Total Area"						
1		45.000	Flow length"						
Ĵ.		2.000	Overland Slope	n					
2		3.802	Pervious Area"	.					
		3 000	Pervious slope	4					
÷		4.648	Impervious Are	a"					
*		235.000	Impervious len	gth"					
		1.500	Impervious slo	pe"					
2		0.250	Pervious Manni	ng 'n					
į,		/6,000	Pervious SCS C	urve i	NO." fficient"				
×		0.100	Pervious Ta/S	coeff	icient"				
•		8.021	Pervious Initi	al ab:	straction"				
*		0.015	Impervious Man	ning	'n'"				
1		98.000	Impervious SCS	Curve	e No."				
2		0,915	Impervious Run	off co	pefficient"				
		0.518	Impervious Ia/	tial :	abstraction	v			
		01010	2.247	0.00	2.158	9,960	c.m/sec"		
٠		C	atchment 170		Pervious	Impervious	Total Area	240	
1		S	urface Area		3.802	4.648	0.450	hectare"	
2		<u>1</u>	ime of concentra	tion	12.259	6.482	7.938	minutes"	
*		1. B:	ainfall denth		109.638	93.737	97.744	minutes"	
*		R	ainfall volume		2588.99	3164.32	5753.31		
7		R	ainfall losses		42,444	5.817	22.299	mm "	
		R	unoff depth		25,643	62.270	45.788	រករក "	
2		R	unott volume		975.07	2893.99	3869,06	C.m"	
*		HI M	JHOIT COETTICIEN avimum flow	τ	0.377	0.915	0,672	0 = /000	
۶	40	H	YDROGRAPH Add Rur	noff	•	1.540	2.241	C.m/Sec	
٠		4	Add Runoff "						
			2.247	2.247	7 2.158	9,960"			
÷	56	D	IVERSION"						
		1 560	Overflow three	bold!					
		1.000	Required diver	ted fi	action"				
۲		0	Conduit type;	1=Pipe	;2=Channel				
•		P	eak of diverted t	flow	0,6	37 с.т/з	ec*		
1		V	olume of diverted	d flow	v 347.1	30 c.m"			
		D. M.	ion flow of 6						
		2014	2.247	2 24	7 1 560	9 960	C #/ROC*		
•	40	H	DROGRAPH Comb:	ine	9"	5.500	0.111/000		
٠		6	Combine "						
č		9	Node #						
2			NODE B"		4.5				
		Mi	vdrograph volume		3521 8	26 C.m.º	ec-		
•			2.247	2.247	7 1.560	1.560*			
•	40	H	OROGRAPH Start	- New	Tributary"				
٠		2	Start - New Tr:	ibutaı	"y"				

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		-	0 Nada #				
S	2.24/ 0.000 1.560 1.560"						
4/	FILEI O Head/Open Divoloob.02Shya	2					
	i=read/open; 2=write/save						
	z i-rainai, z-nyurograph		0.687 4.905 4.905 4.905"				
		. 81					
	Moior flow at 6"		3 lines of comment"				
	Total volume 347 180 c.m"	182					
	Maximum flow 0.687 c.m/sec"		Catchments South of Hwy 7/8"				
			••••••				
- 40	HYDROGRAPH Add Bupoff "	* 40	HYDROGRAPH Start - New Tributary"				
	4 Add Bunoff "	5 7 31	2 Start - New Tributary"				
	0.687 0.687 1.560 1.560"		0.687 0.000 4.905 4.905"				
* 40	HYDROGRAPH Copy to Outflow"	* 33	CATCHMENT 180*				
	8 Copy to Outflow"	(#)	1 Triangular SCS"				
(m)	0.687 0.687 0.687 1.560"	100	3 Specify values"				
* 40	HYDROGRAPH Combine 5"		1 SCS method"				
×.	6 Combine "	- Carlo	180 Northeast portion of Maple Leaf Foods property"				
	5 Node #"	(#C	26.000 % Impervious"				
	u/s of HWY 7&8"	1.	0.700 Total Area [*]				
5	Maximum flow 9.960 c.m/sec"		45.000 Flow length"				
	Hydrograph volume 50574.699 c.m"		1.500 Overland Slope"				
	0.687 0.687 0.687 9.960"		0.518 Pervious Area"				
* 40	HYDROGRAPH Confluence 5"	1.1	20.000 Pervious length"				
×.	7 Confluence "		2.000 Pervious slope"				
	5 Node #"		0.182 Impervious Area"				
	u/s of HWY 7&8"		68.000 Impervious length"				
	Maximum flow 9.960 c.m/sec"		1.000 Impervious slope"				
	Hydrograph volume 50574.699 c.m"	•	0.250 Pervious Manning 'n'"				
*	0.687 9.960 0.687 0.000"		79.000 Pervious SCS Curve No."				
• 54	POND DESIGN"		0.427 Pervious Runoff coefficient"				
	9.960 Current peak flow c.m/sec"		0.100 Pervious Ia/S coefficient"				
	0.070 Target outflow c.m/sec"		6.752 Pervious Initial abstraction"				
	50574.7 Hydrograph volume c.m"		0.015 Impervious Manning 'n'"				
•	7. Number of stages"		98.000 Impervious SCS Curve No."				
	334.290 Minimum water level metre"		0.903 Impervious Runott coefficient"				
	336.800 Maximum water level metre"	- C -	0.100 Impervious Ia/S coefficient"				
č –	334.290 Starting water levelmetre"	- C	0.518 Impervious Initial abstraction"				
3	0 Keep Design Data: 1 = True; 0 = Faise"						
	Level Discharge Volume	- C	Supress Appa 0.519 0.182 0.700 bestare"				
2	334.290 0.000 0.000"		Surface Area 0.316 0.102 0.700 Hectare				
<u> </u>	334,500 0.2540 5.000"		Time of concentration 10,150 5.476 7.552 minutes"				
		7.85	Print to Control 100,010 Concord School School Markets				
			Reinfall volume 352.69 123.92 476.61 c.m."				
2			Reinfall losses 39.020 6.588 30.587 mm"				
	396 400 1, 976 57257 00*		Bunoff depth 29.067 61.498 37.499 mm"				
	Pak outflow 4 905 c m/sec"	0.00	Runoff volume 150.57 111.93 262.49 c.m"				
 • 			Bunoff coefficient 0.427 0.903 0.551 "				
	Maximum storage 16121 412 C.m."	*	Maximum flow 0.077 0.073 0.134 c.m/sec"				
	Centrolidal lag 3.414 hours"	* 40	HYDROGRAPH Add Runoff "				
	0.000 c.m/sec"		4 Add Bunoff "				
10	HVDRGRADH Nevt link "		0.134 0.134 4.905 4.905"				
*	5 Next link "	* 54	POND DESIGN"				
	0.687 4.905 4.905 0.000"		0.134 Current peak flow c.m/sec"				
56	DIVERSION"	0.0	0.070 Target outflow c.m/sec"				
*	Z Node number"		262.5 Hydrograph volume c.m"				
•	7.170 Overflow threshold"		8. Number of stages"				
	1.000 Required diverted fraction"		0.000 Minimum water level metre"				
	0 Conduit type: 1=Pipe:2=Channel"	000	0.750 Maximum water level metre"				
•	Peak of diverted flow 0.000 c.m/sec"	120	0.000 Starting water level metre"				
	Volume of diverted flow 0.000 c.m"		0 Keep Design Data: 1 = True; 0 = False"				
	DIV00007.025hvd"	2.41	Level Discharge Volume"				
	Major flow at 7"	0.00	0.000 0.000 0.000"				
×	0.687 4.905 4.905 0.000 c.m/sec°	155	0.1500 0.00400 1.000"				
* 40	HYDROGRAPH Combine 8"		0.2500 0.00600 8.000"				
•	6 Combine "		0.3500 0.00700 29.000"				

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0.4500 0.00800 69.000" 0.6500 0.01000 178.000"	0 Keep Design Data: 1 = True; 0 = False* Level Discharge Volume*	
0.7000 0.1060 208.000"	• 0.000 0.000 0.000*	
0.7500 0.2810 240.000°	0.3000 0.09000 8.000	
Maximum level 0.655 metro"		
Maximum storage 180.740 c.m"	1,200 0.1400 254.000"	
Centroidal lag 4.706 hours"	* 1,500 0.1500 358.000*	
0.134 0.134 0.019 4.905 c.m/sec*	1.800 1.000 400.000"	
6 Combine "	Peak Outflow 0.481 c.m/sec*	
9 Node #*	Maximum storage 375.668 c.m"	
NODE B"	Centroidal lag 1.876 hours"	
Maximum flow 1,569 c.m/sec"	0.735 0.735 0.481 1.568 c.m/sec"	
- Hydrograph Volume 3784.227 c.m." 0.134 0.134 0.019 1.568"	40 HYDROGRAPH Combine 9"	
40 HYDROGRAPH Start - New Tributary"	9 Note #"	
2 Start - New Tributary"	NODE B"	
0.134 0.000 0.019 1.568"	Maximum flow 2.049 c.m/sec"	
1 Triangular SCS"	Hydrograph volume 4893.313 c.m*	
3 Specify values"	40 HYDROGRAPH Start - New Tributary"	
1 SCS method"	2 Start - New Tributary"	
181 Western portion of John Bear property"	• 0.735 0.000 0.481 2.049°	
1.870 Total Area"	33 CATCHMENT 182"	
120.000 Flow length"	3 Specify values"	
1.000 Overland Slope	* 1 SCS method*	
0.131 Pervious Area"	182 Eastern portion of John Bear property	
2.000 Pervious slope"	1 10 Total Acces	
1.739 Impervious Area"	60.000 Flow length	
112.000 Impervious length"	* 2.500 Overland Slope*	
1.000 Impervious slope"	0.375 Pervious Area"	
65.000 Pervious SCS Curve No *	30.000 Pervious length	
0.227 Pervious Runoff coefficient"	0.835 Impervious Area"	
0.100 Pervious Ia/S coefficient"	90.000 Impervious length	
13.677 Pervious Initial abstraction" 0.015 Impervious Heavier let	2.000 Impervious slope"	
98.000 Impervious SCS Curve No."	65 000 Pervious Manalog 'n'	
0.915 Impervious Runoff coefficient*	0.227 Pervious Buoff coefficient"	
0.100 Impervious Ia/S coefficient*	0.100 Pervious Ia/S coefficient*	
0.518 Impervious Initial abstraction"	13.677 Pervious Initial abstraction	
Catchment 181 Pervious Impervious Total Area *	0.015 Impervious Manning 'n'"	
Surface Area 0.131 1.739 1.870 hectare"	0.904 Impervious Runoff coefficient"	
Time of concentration 14,185 4,693 4,867 minutes	0.100 Impervious Ia/S coefficient*	
Illme to Centrold 114.335 91.211 91.635 minutes" Beinfall denth 60.027 60.027 ce.027 mm"	0.518 Impervious Initial abstraction	
Rainfall volume 89.13 1184.09 1273.22 c.m*	0.339 0.000 0.481 2.049 c.m/sec"	
Rainfall losses 52.618 5.788 9.066 mm"	Surface Area 0.375 0.835 1.210 hectare"	
Runoff depth 15.468 62.298 59.020 mm*	Time of concentration 16.020 3.343 4.626 minutes	
Hunott volume 20.25 1083.43 1103.68 c.m*	Time to Centroid 116.535 89.341 92.093 minutes"	
Maximum flow 0.008 0.731 0.735 c.m/sec*	"Rainfall depth 68,087 68,087 68,087 mm"	
40 HYDROGRAPH Add Runoff "	Rainfall losses 52.658 6.531 20.830 mm ⁻¹	
4 Add Runoff "	Runoff depth 15.428 61.556 47.256 mm"	
- 0.735 0.735 0.019 1.568 54 POND DESTON®	Runoff volume 57.87 513.93 571.80 c.m"	
0.735 Current peak flow c.m/sec*	Runoff coefficient 0.227 0.904 0.694	
0.070 Target outflow c.m/sec"	* 40 HYDRORAPH Add Runoff *	
1103.7 Hydrograph volume c.m"	4 Add Runoff *	
7. Number of stages"	0.339 0.481 2.049°	
1.800 Maximum water level metre"	54 POND DESIGN"	
0.000 Starting water level metre	0.009 Current putflow c.m/sec"	

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571.8 Hydrograph volume c.m" 5. Number of stages" 0.000 Minimum weter lavel metre"	40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 2 962 2 962 2 962 2 967
1.400 Maximum water level metre" 0.000 Starting water level metre"	40 HYDROGRAPH Combine 9" 6 Combine "
0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume	9 Node #" NODE B"
0.000 0.000 0.000 0.3200 0.04300 276,000	Maximum flow 4.707 c.m/sec" • Hydrograph volume 12697.145 c.m"
0.7500 0.06600 333,000 1,300 0.08700 371,000	* 2.962 2.962 2.962 4.707" *40 HYDROGRAPH Confluence 8"
" 1.400 0.5000 400,000" "Peak outflow 0.072 c.m/sec"	7 Confluence " 8 Node #"
Maximum level 0.915 metre"	NODE A" Novimum flow 4 905 c m/soo"
Centroidal lag 3.189 hours"	Hydrograph volume 50562.629 c.m"
0.339 0.339 0.072 2.049 C.m/sec 40 HYDROGRAPH Combine 9"	40 HYDROGRAPH Copy to Outflow"
6 Compine " 9 Node #"	2,962 4.905 0.000"
NODE B" Maximum flow 2.097 c.m/sec"	* 40 HYDROGRAPH Combine 9" 6 Combine "
Hydrograph volume 5465.156 c.m" 0.339 0.339 0.072 2.097"	* 9 Node #" NODE B"
40 HYDROGRAPH Start - New Tributary"	Maximum flow 7.635 c.m/sec"
0.339 0.000 0.072 2.097"	2.962 4.905 7.635"
1 Triangular SCS"	2 Start - New Tributary"
3 Specify values" 1 SCS method"	2.962 0.000 4.905 7.635" 33 CATCHMENT 184"
183 Area along western tributary, south of Hwy 7/8" 29.000 % Impervious"	1 Triangular SCS" 1 Equal length"
23.290 Total Area" 160.000 Flow length"	1 SCS method" 184 Agricultural lands south of Bleams Road"
2.000 Overland Slope"	2.000 % Impervious" 2.950 Total Area"
150.000 Pervious length"	80.000 Flow length"
6.754 Impervious Area	2.891 Pervious Area"
394.000 Impervious length" 2.000 Impervious slope"	80.000 Pervious length" 3.100 Pervious slope"
0.250 Pervious Manning 'n'" 68.300 Pervious SCS Curve No."	 0.059 Impervious Area" 80.000 Impervious length"
0.267 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient"	3.100 Impervious slope" 0.250 Pervious Manning 'n'"
11.789 Pervious Initial abstraction"	74.000 Pervious SCS Curve No." 0.346 Pervious Runoff coefficient"
98.000 Impervious SCS Curve No."	0.100 Pervious Ia/S coefficient" 8.024 Pervious Initial abstraction"
0.100 Impervious Ia/S coefficient"	0.015 Impervious Manning 'n'"
0.518 Impervious Initial abstraction 2.962 0.000 0.072 2.097 c.m/sec"	0.901 Impervious Runoff coefficient"
Catchment 183 Pervious Impervious Total Area Surface Area 16.536 6.754 23.290 hectare	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"
Time of concentration 42.247 8.107 22.307 minutes Time to Centroid 147.414 95.971 117.368 minutes	 0.230 0.000 4.905 7.635 c.m/sec" Catchment 184 Pervious Impervious Total Area
Rainfall depth 68.087 68.087 68.087 mm" Reinfall volume 1 1259 0 4599 1 5857 ba.m"	Surface Area 2.891 0.059 2.950 hectare" Time of concentration 22.839 2.731 21.824 minutes"
Rainfall losses 49.895 5.548 37.035 mm"	Time to Centroid 123.209 88.446 121.454 minutes"
Runoff volume 3008.07 4223.92 7231.98 c.m"	Rainfall volume 1968.38 40.17 2008.55 c.m"
Runoff coefficient 0.267 0.919 0.456 Maximum flow 0.632 2.863 2.962 c.m/sec"	- Haintail Losses 44.536 6.713 43.780 mm" Runoff depth 23.550 61.373 24.307 mm"
40 HYDROGRAPH Add Runoff " 4 Add Runoff "	Runoff volume 680.84 36.21 717.05 c.m" Runoff coefficient 0.346 0.901 0.357 "
2.962 2.962 0.072 2.097"	 Maximum flow 0.224 0.024 0.230 c.m/sec"

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40	HYDROGRAPH Add Runoff "					Runoff volume	1181.79	6777.00	7958.79	c m*	
	4 Add Runoff "					Runoff coefficient	0.220	0.914	0.622	*	
	0.230 0.230 4.905	7.635"				Maximum flow	0.476	4.722	4.916	c.m/sec"	
- 40	HYDROGRAPH Copy to Outflow"			- 40		HYDROGRAPH Add Runoff					
50	8 Copy to Outflow"			<u>.</u>	6	4 Add Runoff "					
40	U.230 U.230 U.230 HVDBOGBABH Combine 9	7.635"				4.916 4.91	6 7.788	6 7.788	1 .		
-+0	6 Combine "			- 40		HYDHOGHAPH Copy to Out	Tlow"				
	9 Node #"				(6 4 916	6 7 799			
•	NODE B"			• 40		HYDROGRAPH Combine	10"	0 7.700			
	Maximum flow 7.788	c.m/sec*			(6 Combine "	10				
- C	Hydrograph volume 63976.036	C.M"			1/	0 Node #"					
	0.230 0.230 0.230	7,788"		× .		NODE C*					
40	HYDROGRAPH Confluence 9"					Maximum flow	12.1	106 c.m/s	sec"		
	7 Contluence "			÷		Hydrograph volume	71935.6	617 c.m*			
	9 NODE #*					4.916 4.91	6 4.916	6 12.106	•		
	Maximum flow 7 789	c m/sec*		- 61		ADD COMMENT===================================					
	Hydrograph volume 63976.836	C.m"			3	Littles of commette		*********	*********		
× .	0.230 7,788 0.230	0.000"				Catchments north of Hw	V 7/8 tows	ards Faster	n Tributary		
* 40	HYDROGRAPH Copy to Outflow"					******	*********	**********	*******		
•	8 Copy to Outflow"			. 40		HYDROGRAPH Start - New	Tributary	•			
	0.230 7,788 7.788	0.000"			1	2 Start - New Tributa	Iry"				
40	HYDROGRAPH Combine 10"					4.916 0.00	4.916	6 12,106	•		
	6 Combine "			* 33		CATCHMENT 150"					
						1 Triangular SCS					
	Maximum flow 7 788	c m/sec*		2	;	3 Specity values"					
	Hvdrograph volume 63976.836	C.m"		2	15	A Southern portion of	Bec Centre	a fiolde"			
•	0.230 7.788 7.788	7.788"			0.00	0 % Impervious"	Nec Gentre	e literde			
• 40	HYDROGRAPH Start - New Tributary*			*	3.51	0 Total Area"					
	2 Start - New Tributary"				95.00	0 Flow length"					
	0.230 0.000 7.788	7.788		-	1.60	0 Overland Slope"					
33	CATCHMENT 185"			H	3.510	0 Pervious Area"					
	1 Triangular SCS"			1	100.000	0 Pervious length"					
	3 Specify values"			1	2,000	0 Pervious slope					
	185 Morningside Retirement Community	lande		2	0.000	U Impervious Area"					
	58.000 % Impervious"	tango		*	290,000	0 Impervious slope"					
	18.780 Total Area"				0.25	0 Pervious Manning 'n					
•	190.000 Flow length"				74.00	0 Pervious SCS Curve	No."				
	2.000 Overland Slope"				0.34	6 Pervious Runoff coe	fficient				
	7.888 Pervious Area"				0.10	0 Pervious Ia/S coeff	icient*				
	25.000 Pervious length"			2	8.924	4 Pervious Initial ab	straction"				
	2.500 Pervious slope"			5	0.01	5 Impervious Manning	'n'"				
	354 000 Impervious length"			-	98.000	0 Impervious SCS Curv	e No."				
	2.500 Impervious slope"				0.000	O Impervious Hunort C O Impervious Ta/S coord	oerricient" fficient"	~			
	0.250 Pervious Manning 'n'"				0.10	8 Impervious Initial	abstraction	o.*			
•	64,400 Pervious SCS Curve No."				0.010	0.230 0.00	0 4.916	6 12,106	c.m/sec*		
	0.220 Pervious Runoff coefficient"					Catchment 150	Pervious	Impervious	s Total Area	a "	
	0.100 Pervious Ia/S coefficient*			•		Surface Area	3.510	0.000	3.510	hectare"	
	14.041 Pervious Initial abstraction"			- C		Time of concentration	29.780	6.829	29.780	minutes"	
	0.015 Impervious Manning 'n'"			÷.		Time to Centroid	131.824	94.200	131.824	minutes"	
	0.014 Impervious SUS Curve No."					Rainfall depth	68.087	68.087	68,087	៣៣ "	
	0.100 Impervious Ta/S coefficient"					Rainfall volume	2389.83	0.00	2389.84	C.M"	
	0.518 Impervious Initial abstraction"			2		Haintail losses	44.508	5,986	44,508	៣៣ -	
	4,916 0.000 7.788	7,788 c.m/sec"				Runoff volume	23.5/9	62,100	23.579	mm"	
	Catchment 185 Pervious Im	pervious Total Are	a "	¥3		Runoff coefficient	0.346	0.00	021.01	G. III. 1	
	Surface Area 7,888 10	.892 18.780	hectare"	÷		Maximum flow	0.230	0.000	0.230	C.m/sec"	
	Time of concentration 15.433 7.	110 8.346	minutes"	4 0		HYDROGRAPH Add Runoff	н	0.000	0,200	3111/300	
	Time to Centroid 115.949 94	.598 97.768	minutes*		(4 Add Runoff *					
	Rainfall depth 68.087 68	.087 68.087	"mm"			0.230 0.23	0 4.916	5 12.106	4		
	Hainfall Losson 53404 54	1.2787	Π α- π" ⊐π"	40		HYDROGRAPH Copy to Out	flow"				
	Runoff denth 14 020 co	25,/07	mm "		F	8 Copy to Outflow"					
	14.903 02	42.0/9	1010	51		0.230 0.23	0 0.230	12,106			

:/34896/104/SWM/MIDUSS/Pre/34896-104_Pre-025yr.out Page 31 /rinted at 15:20 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-025yr.out Page 32 Printed at 15:20 on 18 Dec 2018
40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #" u/s of east culvert of HWY 7&6" Maximum flow 0.230 c.m/sec" Hydrograph volume 827.614 0.230 0.230 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.230 0.000 33 CATCHMENT 151" 1 Triangular SCS" 3 Specify values" 1 SCS method" 151 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"	<pre>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 length" 170.000 Impervious length" 3.500 Impervious length" 3.500 Impervious lope" 0.250 Pervious Manning 'n'" 82.000 Pervious SCS Curve No." 0.485 Pervious Runoff coefficient" 0.100 Pervious Initial abstraction"</pre>
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"	0.015 Impervious Manning 'n'" 99.000 Impervious RUSCS 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" Jico of concentration 20.914 4.130 27.047 minutes"
2.000 Impervious slope" 0.250 Pervious Manning 'n'" 76.000 Pervious SCS Curve No." 0.377 Pervious Runoff coefficient" 0.100 Pervious ISC coefficient" 8.021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.912 Impervious Runoff coefficient"	11me to 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 losses 550.79 291.41 5528.20 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 volume 0.648 0.912 0.506 " Maximum flow 0.765 0.177 0.796 c.m/sec"
0.100 Impervious Ia/S coefficient" 0.518 Impervious Ia/S coefficient" 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 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 mm" Rainfall volume 2632.16 1296.44 3928.59 c.m"	40 HIDROGRAFH Add Ruinoff * 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 #"
Rainfall losses 42.407 5.986 30.986 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 " " 0.905 0.905 0.230" "	U/S of east culvert of HWY 7&B" 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_0 Read/Open DIV00007.025hyd"
40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 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" Hydrooraph volume 3002 818 c.m"	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 "
0.905 0.905 0.905 0.901" 40 HYDROGRAPH Start - New Tributary" 2 2 Start - New Tributary" 0.905 0.905 0.9061" 33 CATCHMENT 152" 1 Triangular SCS" 1 SCS method"	4 Add Runoff " 0.000 0.000 0.796 1.481" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 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 1.481"	
U/S OT EAST CULVERT OT HWY 7&8" Maximum flow 1.481 c.m/sec" Hydrograph volume 5953.338 c.m" 0.000 0.000 1.481"	
Maximum tiow 1.481 c.m/sec" Hydrograph volume 5953.338 c.m" 0.000 0.000 1.481"	
0.000 0.000 0.000 1.481"	
II NOTE THE LIVES OF EAST CUIVEST OF HNV 728"	
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 4.583 26742.00*	
330.000 21.985 31/57.00°	
Controldal lag 2,302 house!	
40 HVDROGRAPH Next link "	
38 START/RE-START TOTALS 11"	
3 Bunoff Intals on EXIT	
Total Catchment area 228.020 hectare"	
Total Impervious area 50.613 hectare"	
Total % impervious 22 197"	
19 FXIT*	

Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 1 Printed at 15:21 on 18 Dec 2018			96\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 2 f at 15:21 on 18 Dec 2018
	MIDUSS Output>"		Time to Centroid 131,220 90.546 131,220 minutes"
	MIDUSS version Version 2.25 rev. 473"		Rainfall depth 77.443 77.443 77.443 mm"
200	MIDUSS created Sunday, February 07, 2010"		Rainfall volume 2300.05 0.00 2300.05 c.m"
	10 Units used: ie METRIC"		Rainfall losses 36.991 5.932 36.991 mm"
2	Job Tolder: Q:\34896\104\SWM\MIDUSS\Pre*	÷.	Runoff depth 40.452 71.510 40.452 mm"
6.1	licensee name: 34030-104_Pre-05097.001	÷	Runoff Volume 1201.42 0.00 1201.43 C.m ⁻ Bunoff coefficient 0.522 0.000 0.522
0.00	Company Microsoft"		Maximum flow 0.334 0.000 0.334 c.m/sec"
9	Date & Time last used: 12/7/2018 at 1:44:19 PM"	* 40	HYDROGRAPH Add Runoff "
* 81	ADD COMMENT===================================		4 Add Runoff *
	7 Lines of comment*	. 00	0.334 0.334 0.000 0.000"
	Wilmot Employement Lands"	- 33	CALCHMENT 102"
	New Hamburg, Ontario"		1 Foull length
1	50 year Storm Event - Pre-development"		1 SCS method"
	Job No.: 34896-104"		102 Pfenning Farm Development - north of GEXR"
	Calculated by: NED/MSB/GMK"		0.000 % Impervious"
9.1	TINE DADAMETEDS"	÷	12.070 Total Area"
	5.000 Time Step"	2	2 500 Overland Slope"
	240.000 Max. Storm length"		12.070 Pervious Area"
*	1500.000 Max. Hydrograph"	8	180.000 Pervious length"
* 32	STORM Chicago storm"	- e	2.500 Pervious slope"
	1 Chicago storm"		0.000 Impervious Area"
÷	3886.000 Coefficient A"	÷.	180.000 Impervious length"
	0.950 Evaport C"		2.500 Impervious Stope"
	0.400 Eraction R"		82.000 Pervious SC Curve No "
	180.000 Duration"		0.522 Pervious Runoff coefficient"
17	1,000 Time step multiplier"		0.100 Pervious Ia/S coefficient"
	Maximum intensity 215.474 mm/hr"		5.576 Pervious Initial abstraction®
1080 1180	Total depth 77,443 mm [#]	÷	0.015 Impervious Manning 'n'"
	6 050hyd Hydrograph extension used in this file"	÷ .	98.000 Impervious SCS Curve No."
- 81	ADD COMMENT===================================		0.000 Impervious Runott coefficient"
			0.516 Impervious Tays Coefficient
	Catchments North of GEXR, part of Inlet #1"	<u></u>	1.353 0.334 0.000 0.000 c.m/sec"
	***************************************		Catchment 102 Pervious Impervious Total Area "
* 33	CATCHMENT 101*		Surface Area 12.070 0.000 12.070 hectare"
÷	1 Triangular SCS"	÷ .	Time of concentration 30.883 4.509 30.883 minutes"
	1 Equal Length"	- C	Time to Centroid 131.369 90.570 131.369 minutes"
	101 Area Northeast of GEVR"		Kaintail depth //.443 //.443 mm [*]
	0.000 % Impervious"		Rainfall losses 36.901 5.923 36.901 mm [*]
	2.970 Total Area"		Runoff depth 40.452 71.520 40.452 mm"
() #)	80.000 Flow length"		Runoff volume 4882.52 0.01 4882.53 c.m"
÷	0.500 Overland Slope"		Runoff coefficient 0.522 0,000 0.522 "
÷.	2.970 Pervious Area"	÷	Maximum flow 1.353 0.000 1.353 c.m/sec"
à.	0.500 Pervious length"	40	HYDROGRAPH Add Runoff "
	0.000 Impervious Steps		4 Add Hunott - 1 353 1 687 0 000 0 000"
	80.000 Impervious length"	* 40	HYDROGRAPH Copy to Outflow"
	0.500 Impervious slope"		8 Copy to Outflow"
	0.250 Pervious Manning 'n'"		1.353 1.687 1.687 0.000*
	82,000 Pervious SCS Curve No."	* 40	HYDROGRAPH Combine 1"
2	0.522 PERVIOUS RUNOTT COETICIENT"	÷	6 Combine "
1.	V.IUU PERVIOUS LA/S COTTICIENT" 5.576 Pervious Laitial abstraction"	- C	1 NOde #"
0.00	0.015 Tenerolog Antital Austraction	2	U/SOTUEZAN'' 1.627 E.m/pool*
	98.000 Impervious SCS Curve No."		Maximum ituw 1.007 Cimrsec
٠	0.000 Impervious Runoff coefficient"		1,353 1.687 1.687
161	0.100 Impervious Ia/S coefficient"	* 40	HYDROGRAPH Start - New Tributary"
	0.518 Impervious Initial abstraction*		2 Start - New Tributary"
3	0.334 0.000 0.000 c.m/sec"		1.353 0.000 1.687 1.687*
	Catchment 101 Pervious Impervious Total Area "	33	CATCHMENT 103"
	Surrace Area 2.970 0.000 2.970 hectare" Time of concentration 30.768 4.492 30.768 minutes"	1	1 Triangular SCS" 1 Equal length"

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1 SCS method"	* 81 ADD COMMENT===================================	
103 Woodlot - north of GEXR"	3 Lines of comment"	
0.000 % Impervious"		
POOD Eleventer and the	Catchments South of GEXH, part of Inlet #1	
2.500 Overland Slope"	* 33 CATCHMENT 104"	
2.080 Pervisus Area"	1 Triangular SCS"	
80.000 Pervious length"	3 Specify values"	
2.500 Pervious slope"	1 SCS method"	
0.000 Impervious Area"	104 Riverside Brass"	
80.000 Impervious length	59.000 % Impervious"	
2.500 Impervious slope	2.020 Total Area"	
	1 200 Overland Slopp"	
0.326 Pervious Runoff coefficient"	0.828 Pervious Area"	
0.100 Pervious Ia/S coefficient"	60.000 Pervious lenath"	
10.886 Pervious Initial abstraction"	2.000 Pervious slope"	
0.015 Impervious Manning 'n'"	1.192 Impervious Area"	
98.000 Impervious SCS Curve No."	116.000 Impervious length"	
0.000 Impervious Runoff coefficient"	0.500 Impervious slope"	
0.100 Impervious Ia/s coefficient	76 000 Pervious Manning "n"	
	0 415 Pervious Bunoff coefficient"	
Catchment 103 Pervious Impervious Total Area	0.100 Pervious Ta/S coefficient*	
Surface Area 2,080 0,000 2,080 hectare"	8.021 Pervious Initial abstraction"	
Time of concentration 23.957 2.772 23.957 minutes"	• 0.015 Impervious Manning 'n'"	
* Time to Centroid 124.301 88.103 124.301 minutes*	98.000 Impervious SCS Curve No."	
Rainfall depth 77.443 77.443 mm"	0.924 Impervious Runoff coefficient"	
Rainfall volume 1610.81 0.000 1610.81 c.m"	0.100 Impervious Ia/S coefficient"	
HallTall LOSSES 52,205 0,990 52,205 mm"	0.518 Impervious Initial abstraction	
Number 1 20,200 70,400 20,200 mm	Catchment 104 Pervisus Impervisus Taral Area	
Runoff coefficient 0.326 0.000 0.326	Surface Area 0.828 1.192 2.020 hectare"	
Maximum flow 0.167 0.000 0.167 c.m/sec"	Time of concentration 19.079 5.614 8.817 minutes"	
* 40 HYDROGRAPH Add Runoff "	* Time to Centroid 117.291 92.090 98.084 minutes"	
4 Add Runoff "	Reinfall depth 77.443 77.443 mm"	
0.167 0.167 1.687 1.687"	Reinfall volume 641.38 922.96 1564.34 c.m	
40 HIDHUGHAPH CODY to DUITIOW"	HEINTALL LOSSES 45.307 5.882 22.046 mm ⁻	
	Bunoff volume 266 15 852 87 1119 02 cm	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.415 0.924 0.715 "	
* 6 Combine *	Maximum flow 0.098 0.577 0.619 c.m/sec"	
1 Node #"	40 HYDROGRAPH Add Runoff "	
u/s of GEXR"	4 Add Runoff "	
Maximum flow 1.851 c.m/sec"	0.619 0.619 1.851 1.851"	
Hydrograph Volume 6008.908 C.m."	0.619 Curport pock flow o m/coc"	
40 HVDROGRAPH Confluence 1	0.070 Target outflow c.m/sec"	
7 Confluence "	1119.0 Hydrograph volume c.m"	
1 Node #*	4. Number of stages"	
u/s of GEXR"	0.000 Minimum water level metre"	
 Maximum flow 1.851 c.m/sec" 	0.910 Maximum water level metre"	
Hydrograph volume 6608.908 c.m"	0.000 Starting water level metre"	
0.167 1.851 0.167 0.000°	U Keep Design Data: 1 = IrUe; U = False"	
8 Conv to Outflow"		
0.167 1.851 1.851 0.000"	0.3100 0.03090 782.000"	
40 HYDROGRAPH Combine 2"	0.6100 0.1232 1619.000"	
6 Combine "	0.9100 0.2769 2511.000"	
2 Node #"	Peak outflow 0.042 c.m/sec ⁿ	
INLET 1	Maximum level 0.345 metre"	
Maximum Tiow 1.851 c.m/sec"	Maximum storage 880.598 c.m"	
nyurugraph volume oovo.svo c.m."	$\frac{1}{2} \qquad 0.000 \text{ Ind} \text{I}^{\text{S}}$	
* 40 HYDROGRAPH Start - New Tributary"	* 40 HYDROGRAPH Combine 2"	
2 Start - New Tributary	6 Combine "	
0.167 0.000 1.851 1.851"	• 2 Node #"	

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	INLET 1"			0.015 Impervious Manning 'n'"	
7.1	Maximum flow 1.880 c.m/sec"			98.000 Impervious SCS Curve No."	
•	Hydrograph volume 7689.150 c.m"			0.912 Impervious Runoff coefficient"	
•	0.619 0.619 0.042 1.880"			0.100 Impervious Ia/S coefficient"	
40	HYDROGRAPH Start - New Tributary"			0.518 Impervious Initial abstraction"	
20	2 Start - New Iributary		2	0.522 1.095 0.042 1.880 c.m/sec*	
. 99	0.019 0.000 0.042 1.880" CATCHMENT 105"		<u>.</u>	Catchment 106 Pervious Impervious Iotal Area *	
*	1 Triangular SCS"			Time of concentration 19741 2 580 3 856 minutes"	
÷	3 Specify values"			Time to Centroid 118.131 87.808 90.062 minutes"	
	1 SCS method"			Rainfall depth 77.443 77.443 77.443 mm*	
	105 Iron Bridge Manufacturing Property"			Rainfall volume 148.69 842.58 991.27 c.m"	
*	65.000 % Impervious"			Rainfall losses 45.292 6.781 12.558 mm*	
	3.570 Total Area"			Runoff depth 32.151 70.661 64.885 mm"	
<u>*</u> 0	90.000 Flow length"		<u>*</u>	Runoff volume 61.73 768.79 830.52 c.m*	
	2.000 Overland Slope"			Runoff coefficient 0.415 0.912 0.838	
•	1.250 Pervious Area"		- 40	Maximum flow 0.022 0.519 0.522 c.m/sec"	
•	2.000 Pervious length		40		
-	2.320 Impervious Area"			4 Aug nullott	
*	90.000 Impervious length"		* 40	HYDROGRAPH Conv to Outflow	
₩1	2.000 Impervious slope"			8 Copy to Outflow*	
*	0.250 Pervious Manning 'n'			0.522 1,605 1,605 1,880"	
*	81.000 Pervious SCS Curve No."		* 40	HYDROGRAPH Combine 2"	
•	0.502 Pervious Runoff coefficient"			6 Combine "	
	0.100 Pervious Ia/S coefficient"			2 Node #"	
2	5.958 Pervious Initial abstraction"		÷	INLET 1	
÷.	0.015 Impervious Manning "1"		<u>.</u>	Maximum Tlow 2.352 c.m/sec	
*12	0.912 Impervious Bupoff coefficient"			nyurograph volume 10645.146 C.m ⁻	
	0.100 Impervious Ia/S coefficient		* 40	HYDROGRAPH Start - New Tributary*	
•	0.518 Impervious Initial abstraction"			2 Start - New Tributary"	
	1.095 0.000 0.042 1.860 c.m/sec"			0.522 0.000 1.605 2.352*	
*	Catchment 105 Pervious Impervious Total Area "		* 33	CATCHMENT 107"	
훳	Surface Area 1.250 2.320 3.570 hectare"		*	1 Triangular SCS"	
	Time of concentration 22.178 3.181 7.526 minutes"		.	1 Equal length"	
<u> </u>	Time to Centroid 120.332 88.692 95.929 minutes"			1 SCS method*	
	Haintail depth //.443 //.443 77.443 mm"		5	107 Industrial properties at end of Hamilton Road"	
•	Rainfall Volume 967.65 1797.06 2764.71 C.m ⁻			40.000 % Impervious"	
	Runoff denth 38.908 70.645 50.537 mm ⁴		2	2,850 10781 AP68"	
	Buroff upth 08.66 16 1639 31 2125 46 c m ⁿ				
*):	Runoff coefficient 0.502 0.912 0.769 "			1.710 Pervious Area"	
50	Maximum flow 0.169 1.061 1.095 c.m/sec"			50.000 Pervious length"	
* 40	HYDROGRAPH Add Runoff "			1.000 Pervious slope"	
•	4 Add Runoff "			1.140 Impervious Area"	
	1.095 1.095 0.042 1.880"			50.000 Impervious length"	
33	CATCHMENT 106"			1.000 Impervious slope"	
	1 IFIANGUIAF SUS" 2 Specify webwee		2	0.250 Pervious Manning 'n'"	
¥0	J Specify Values		਼	75.000 Pervious SCS CUIVE NO."	
	106 N.C. Pestell Head Office and other Industrial"		*	0.410 Pervious Tax's coefficient*	
	85.000 % Impervious"			8.021 Pervious Initial abstraction"	
•	1.280 Total Area"			0.015 Impervious Manning 'n'"	
*	55.000 Flow length"			98.000 Impervious SCS Curve No."	
*0	1.500 Overland Slope"			0.910 Impervious Runoff coefficient"	
	0.192 Pervious Area"		*	0.100 Impervious Ia/S coefficient*	
	55.000 Pervious length*		÷	0.518 Impervious Initial abstraction"	
	1.500 Vervious slope"		÷	0.561 0.000 1.605 2.352 c.m/sec"	
	1.005 Impervious Area"			Catchment 107 Pervious Impervious Total Area	
•	55.000 Impervious length"		-	Surface Area 1.710 1.140 2.850 hectare	
	0.250 Parviaus Maning Inte		÷	Time to Contenit 110 782 00 074 10074 minutes	
*	76.000 Pervious SCS Curve No."			Rainfall donth 77.443 77.443 77.449 mil	
•	0.415 Pervious Runoff coefficient"			Rainfall volume 1324.27 882 85 2007.12 6 m ²	
	0.100 Pervious Ia/S coefficient"			Rainfall losses 45.253 6.990 29.948 mm"	
*	8.021 Pervious Initial abstraction"		÷	Runoff depth 32.190 70.452 47.495 mm"	

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Q134896104:SVMMIDUSSPre134896-104_Pre-050yr.out Printed at 15:21 on 18 Dec 2018 Runoff volume 550.44 803.16 1353.60 c.m" Runoff coefficient 0.416 0.510 0.613 " Maximum flow 0.196 0.537 0.561 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.581 0.561 1.605 2.352" 33 CATCHMENT 108" 1 Triangular SCS" 1 Equal length" 1 SCS method' 10 Woodlot and Wetland east of Pestells" 5.920 Total Area" 65.000 Flow length" 3.000 Overland Slope" 0.286 Impervious Area" 65.000 Impervious length" 3.000 Impervious slope" 0.286 Impervious Scs Curve No." 0.287 Pervious Bunoff coefficient" 0.288 Pervious SCS Curve No." 0.289 Pervious SCS Curve No." 0.329 Pervious SCS Curve No." 0.315 Impervious SCS Curve No." 0.518 Impervious SCS Curve No." 0.519 Impervious Initial abstraction" 0.519 Impervious SCS Curve No." 0.519 Impervious Initial abstraction" 0.519 Impervious Initial abstraction" 0.529 0.551 1.655 2.920 hectare" Time of concentration 19.939 2.317 17.685 minutes" Rainfall depth 77.443 77.443 77.443 77.443 mm" Rainfall losses 52.010 6.553 49.738 mm" Runoff depth 25.433 70.860 27.704 mm" Runoff depth 25.433 70.860 27.704 mm"	Page 7	2:34896:104.SWMM.MDUSSIPrn.34896-104_Pre-050yr.out Printed at 15.21 on 18 Dec 2018 2.000 Overland Slope" 1.383 Pervious length" 50:000 Pervious length" 3:000 Pervious length" 4.148 Impervious length" 0.750 Impervious slope" 0.750 Pervious slope" 0.750 Pervious slope" 0.750 Pervious SCS Curve No." 0.99 Pervious SCS Curve No." 0.99 Pervious Initial abstraction" 0.100 Impervious SCS Curve No." 0.101 Impervious Initial abstraction" 0.102 Impervious SCS Curve No." 0.103 Impervious Ingervious Ingervi
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 40 HYDROGRAPH Copy to Outflow" - - -		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"
a Copy to OutTlow" 0.539 0.874 0.874 2.352" 40 HYDROGRAPH Combine 2" 6 Combine 2" 2 Node #" INLET 1" Maximum flow 3.211 c.m/sec" Hydrograph volume 13638.847 c.m" 0.539 0.874 0.873 3.211" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 2 Start - New Tributary" 0.539 0.000 0.874 3.211"		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"
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"		Maximum flow 3.277 c.m/sec" Hydrograph volume 16649.268 c.m" 2.155 2.155 0.248 3.277 81 ADD COMMENT===================================

age 8

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		Finded at 10.21 off 10	0 000 2010					
		* 6 Co	ombine "					
40 HYDROGRAPH Start - New Tributary"		3 No	ode #"					
2 START - NEW IRIDUTARY		IN Novim	NLEI 2°	0 100				
33 CATCHMENT 110"		Hydro	num iium araph volume	913.591	ຍ ເ.ແ/ຣເ ໄ ເ.ຫ"	30 -		
1 Triangular SCS"		•	0,300 0,300	0,129	0.129			
" 3 Specify values"		40 HYDRO	OGRAPH Start - New T	'ributary"				
1 SCS method"		2 St	tart - New Tributary					
110 Alpine Solutions - west SMWP"		- 00 OATOU	0.300 0.000	0,129	0.129"			
1 920 Total Area"		33 CATCH	meni III SCS*					
150.000 Flow length"		1 Eq	ual length"					
1.000 Overland Slope"		* 1 SC	S method"					
1.344 Pervious Area"		111 Wo	podlot north of Schn	eider/Good	lands"			
150.000 Pervious length"		0.000 %	Impervious"					
0.576 Impervious Area"		170 000 FL	low length"					
113.000 Impervious length"		2,400 OV	verland Slope"					
1.500 Impervious slope"		13.230 Pe	ervious Area"					
0.250 Pervious Manning 'n'"		170.000 Pe	ervious length"					
80.000 Pervious SCS Curve No."		2.400 Pe	ervious slope"					
0.465 PERVIOUS HUNOTT COETTICIENT"		170 000 Im	npervious Area"					
6.350 Pervious Initial abstraction*		* 2.400 Im	npervious slope"					
0.015 Impervious Manning 'n'"		* 0.250 Pe	ervious Manning 'n'"					
98.000 Impervious SCS Curve No."		70.000 Pe	ervious SCS Curve No	64 ^{er}				
0.918 Impervious Runoff coefficient"		0.326 Pe	ervious Runoff coeff	icient"				
0.100 Impervious Ia/S coetticient"		0.100 Pe	ervious Ia/S coeffic	ient"				
0.300 0.000 0.248 3.277 c.m/sec"		10.000 Pe	noervious Manning 'n	"action"				
Catchment 110 Pervious Impervious Total Area "		98,000 Im	npervious SCS Curve	No."				
Surface Area 1.344 0.576 1.920 hectare"		• 0.000 Im	npervious Runoff coe	fficient"				
Time of concentration 33.446 3.975 20.238 minutes"		0.100 Im	npervious Ia/S coeff	icient"				
Time to Centroid 134,917 89.837 114.714 minutes"		0.518 Im	npervious Initial ab	straction"	0.100			
Rainfall volume 1040.83 446.07 1486.90 c.m."		• Catch	0.779 0.000	U.129 Pervious 1	U.129 (Impervious	Total Area		
Rainfall losses 39.907 6.317 29.830 mm"		Surfa	ace Area 1	3.230 0	2.000	13.230	hectare"	
Runoff depth 37.535 71.125 47.612 mm"		 Time 	of concentration 3	8.121 4	4.411	38.121	minutes"	
Runoff volume 504.47 409.68 914,16 c.m"		Time	to Centroid 1	41.640 9	90.426	141.640	minutes"	
Runoff coefficient 0.485 0.918 0.615 "		Rainf	fall depth 7	7.443 7	77.443	77.443	om "	
40 HYDROGRAPH Add Bunoff "		Haint Painf	fall loscos 5	.0246 (5.0000	1.0246	na-m"	
4 Add Runoff "	a:	* Bunof	ff denth 2	5.235 7	71.450	25 235	0000 1900 -	
0.300 0.300 0.248 3.277		Runof	ff volume 3	338.60 0	0.01	3338.61	c.m"	
54 POND DESIGN"		Runof	ff coefficient 🛛 🛛	.326 0	0.000	0.326	•	
0.300 Current peak flow c.m/sec"		Maxim	num flow C).779 (0.000	0.779	c.m/sec"	
914.2 Hydrograph volume c.m.		40 HYDHO	JGHAPH Add Runott "					
7. Number of stages"		4 /0	0.779 0.779	0.129	0.129*			
0.000 Minimum water level metre"		* 40 HYDRO	OGRAPH Copy to Outfl	.ow*	0.120			
1.100 Maximum water level metre"		* 8 Co	opy to Outflow"					
0.000 Starting water level metre			0.779 0.779	0.779	0.129"			
V Keep Design Data:) = True; U = Faise"		40 HYDRO	JGRAPH Combine	3-				
0.000 0.000 0.000"		* 3 No	onde #"					
0.2500 0.04200 7.000*		* IN	NLET 2"					
0.5000 0.09000 71.000"		Maxim	num flow	0.905	5 c.m/s	ec"		
0.7500 0.1250 220.000		Hydro	ograph volume	4252.199	9 C.m."			
- U.9000 U.1400 346,000" 1 000 D.3110 445.000"			0.779 0.779	0.779	0,905"			
1.100 0.6160 557.000*		ADD C	COMMENIZESSESSESSESSESSESSESSESSESSESSESSESSESS					
Peak outflow 0.129 c.m/sec"		3 L118S	5 01 000000011 ******	*********	********	*****		
Maximum level 0.787 metre"		• South	h of GEXR along Nafz	iger Rd, pa	art of Inl	et #3"		
Maximum storage 251.403 c.m"								
Centroidal lag 2.276 hours"		40 HYDRO	OGRAPH Start - New T	'ributary"				
40 HVDROGRAPH Combine 3"		2 St	tart - New Tributary	0 770	0.0051			
		24	0.000	0.779	0.905"			

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33 CATCHMENT 112"	* 1.500 Impervious slope"	
1 Triangular SCS	• 0.250 Pervious Manning 'n'"	
Equal length	80.000 Pervious SCS Curve No."	
SCS method"	0.485 Pervious Runoff coefficient"	
112 Cullvated lands east of Nafziger Road"	0.100 Pervious Ia/S coefficient"	
7 310 Total Acoa	6.350 Pervious Initial abstraction"	
120.000 Flow length"	PR 000 Impervious SSS (up to 10 million in the second	
3.300 Overland Slope"	0.022 Impervious Substractions*	
7.237 Pervious Area"	0.100 Impervious Ia/S coefficient"	
120.000 Pervious length"	 0.518 Impervious Initial abstraction" 	
3.300 Pervious slope"	* 0.514 0.000 1.024 1.024 c.m/sec*	
0.073 Impervious Area"	Catchment 113 Pervious Impervious Total Area "	
120.000 Impervious length"	Surface Area 1.536 1.024 2.560 hectare"	
3.300 Impervious slope"	Time of concentration 37.313 4.343 18.881 minutes"	
82.000 Pervious SCS Curve No."	lime to Centrold 139,862 90.328 112.170 minutes"	
0.521 Pervious Bunoff coefficient"	Bainall ueptin //.443 //.443 //.443 mm"	
0.100 Pervious Ia/S coefficient"	Bainfall losses 39.904 6.056 26.364 mm"	
5.576 Pervious Initial abstraction"	* Runoff depth 37,539 71,387 51,078 mm"	
0.015 Impervious Manning 'n'"	Runoff volume 576.60 731.00 1307.61 c.m	
98.000 Impervious SCS Curve No."	Bunoff coefficient 0.485 0.922 0.660 "	
0.912 Impervious Runoff coefficient®	 Maximum flow 0.138 0.484 0.514 c.m/sec" 	
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "	
0.513 Impervious initial abstraction"	4 Add Hunott "	
Catchmant 112 Paperious Impanyious Tatal Apag "	54 DOND DESTANT	
Surface Area 7,237 0,073 7,310 bectare"	0 514 Curpert peak flow c m/sec"	
Time of concentration 22.279 3.253 21.949 minutes"	• 0.070 Target outflow c.m/sec"	
Time to Centroid 120.281 88.790 119.734 minutes"	* 1307.6 Hydrograph volume c.m"	
"Rainfall depth 77.443 77.443 mm"	 7. Number of stages" 	
Rainfall volume 5604.45 56.61 5661.07 c.m"	0.000 Minimum water level metre"	
Rainfall losses 37.060 6.780 36.757 mm"	1.000 Maximum water level metre"	
Runott depth 40.383 70.663 40.685 mm"	0.000 Starting water level metre"	
	0 Keep Design Data: 1 = True; 0 = False"	
Manori coerriccient 0.521 0.912 0.525	Level Discharge Volume"	
40 HYDROGRAPH Add Bunoff "		
4 Add Runoff *	0.2500 0.04200 64.000"	
1.024 1.024 0.779 0.905"	0.5000 0.09000 343.000"	
40 HYDROGRAPH Copy to Outflow"	0.7500 0.1250 B77.000"	
8 Copy to Outflow"	.8000 0.1360 1014.000"	
1.024 1.024 0.905"	1.000 0.7880 1667.000"	
40 HYDRUGHAPH COMDINE 4"	Peak outflow 0.109 c.m/sec"	
	Maximum tovel U.555 metre"	
	Centroidel lag 3.031 bours"	
Maximum flow 1.024 c.m/sec"	* 0.514 0.514 0.109 1.024 c.m/sec"	
Hydrograph volume 2974.100 c.m°	* 40 HYDROGRAPH Combine 4"	
1.024 1.024 1.024 1.024	6 Combine "	
40 HYDROGRAPH Start - New Tributary"	* 4 Node #"	
2 Start - New Tributary"	INLET 3"	
1.024 0.000 1.024 1.024"	Maximum flow 1.122 c.m/sec"	
33 CATCHMENT 113"	Hydrograph volume 4281,934 c.m [*]	
2 Constitution	0.514 0.514 0.109 1.122"	
1 SCS method"	2 Start - New Tributary"	
13 Aloine Solutions - East SMWP*	2 State - New Fibblary	
40.000 % Impervious"	33 CATCHMENT 114"	
2.560 Total Area"	1 Triangular SCS"	
150.000 Flow length"	1 Equallength"	
1.500 Overland Slope"	1 SCS method"	
1.536 Pervious Area"	114 Woodlot East and West of Nafziger Road	
150,000 Pervious length"	3.000 % Impervious"	
1.000 FEIVIOUS SIDE"	10.000 Eleventer	
1.024 Impervious Area"	3 40.000 Film Length"	
TOTAGO Imperators Isigen	Second over taun stope	

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13.056 Pervious Area"	 0.100 Impervious Ia/S coefficient" 	
140.000 Pervious length	0.518 Impervious Initial abstraction	
3.600 Pervious slope"	- 1.900 0.000 0.956 2.011 c.m/sec"	
140,000 Impervious length"	Surface Area 1.336 3.613 4.950 bectare"	
3.600 Impervious slope"	 Time of concentration 14.345 5.291 6.906 minutes" 	
0.250 Pervious Manning 'n'"	Time to Centroid 109.846 91.657 94.901 minutes"	
70.100 Pervious SCS Curve No."	Rainfall depth 77.443 77.443 77.443 mm"	
0.327 Pervious Runoff coefficient"	Rainfall volume 1035.02 2798.39 3833.42 c.m	
0.100 Pervious Taital abstraction"	Runnall Losses 35.506 5.995 13.963 mm"	
0.015 Impervious Manning 'n'"	Runoff volume 560.46 2581.78 3142.24 c.m	
98.000 Impervious SCS Curve No."	Runoff coefficient 0.541 0.923 0.820 "	
0.912 Impervious Runoff coefficient"	" Maximum flow 0.259 1.746 1.900 c.m/sec"	
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "	
0.510 impervious initial abstraction 0.510 0.956 0.000 0.109 1.122 c.m/sec"		
Catchment 114 Pervious Impervious Total Area "	* 54 POND DESIGN	
Surface Area 13.056 0.404 13.460 hectare"	1.900 Current peak flow c.m/sec"	
Time of concentration 29,978 3.476 27.876 minutes"	0.070 Target outflow c.m/sec"	
Time to Centroid 131.659 89.142 128.286 minutes"	3142.2 Hydrograph volume c.m"	
- Hainfall depth //.443 //.443 //.4443 mm" Bainfall volume 1 0111 0 0313 1 0424 ha.m"	 15. NUMDER OT Stäges" 0.000 Minimum vater level metro" 	
Rainfall Josses 52.093 6.805 50.734 mm"	1.450 Maximum water level metre"	
* Runoff depth 25.350 70.637 26.709 mm*	 0.000 Starting water level metre" 	
Runoff volume 3309.74 285.23 3594.97 c.m"	0 Keep Design Data: 1 = True; 0 = False"	
Runoff coefficient 0.327 0.912 0.345 "	Level Discharge Volume"	
MAXIMUM TIOW 0.921 0.183 0.956 C.M/SEC"		
4 Add Runoff "	0.2500 0.00900 418.000	
0.956 0.956 0.109 1.122"	0.3500 0.01100 593.000	
* 40 HYDROGRAPH Copy to Outflow"	0.4500 0.01300 775.000	
8 Copy to Outflow"	0.5500 0.01500 964.000	
0.956 0.956 1.122		
4 Node #"	0.9500 0.02000 1795.000	
INLET 3"	* 1.050 0.05600 2025.000*	
Maximum flow 2.011 c.m/sec	1.150 0.2080 2263.000	
Hydrograph volume /8/6.904 c.m"	1.250 0.4600 2511.000	
40 HYDROGRAPH Start - New Tributary"	1.450 6.856 3033.000	
2 Start - New Tributary"	Peak outflow 0.263 c.m/sec"	
0.956 0.000 0.956 2.011"	Maximum level 1.172 metre"	
33 CATCHMENT 115"	Maximum storage 2318.544 c.m°	
i irlangular SCS"	Centroidal lag 13.769 hours	
1 SCS method"	* 40 HYDROGRAPH Combine 4"	
115 Rec Centre - SWMP"	6 Combine "	
73.000 % Impervious"	4 Node #"	
4.950 Total Area"	INLET 3"	
50.000 Flow length"	Maximum flow 2.191 c.m/sec"	
1 336 Pervious Area"	Hydrograph Volume 10399,007 C.m"	
40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary"	
1.500 Pervious slope"	2 Start - New Tributary"	
3.613 Impervious Area"	1.900 0.000 0.263 2.191"	
182,000 Impervious length"	33 CATCHMENT 116*	
0.250 Pervious Manino 'n'"	- 1 Irlangular SCS*	
8.000 Pervious SCS Curve No."	1 SCS method"	
0.541 Pervious Runoff coefficient"	116 Industrial lands west of Nafziger Road	
0.100 Pervious Ia/S coefficient	35.000 % Impervious"	
5.202 Pervious Initial abstraction"	7.710 Total Area"	
9.000 Impervious SCS Curve No."	- 140.000 FLOW LENGTN" 1 600 Overland Slope"	
0.923 Impervious Runoff coefficient"	5.012 Pervious Area"	

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140.000 Pervious length" 1.600 Pervious slope" 2.600 Impopulate Ange"	40 HYDROGRAPH Combine 5" 6 Combine "
140.000 Impervious length"	5 NOUE # WY 7&8"
1.600 Impervious slope" 0.250 Reprive Reprive Lat"	Maximum flow 4.052 c.m/sec"
76.000 Pervisus SC Surve No."	* 1.373 0.905 0.905 4.052"
0.416 Pervisus Runoff coefficient"	40 HYDROGRAPH Confluence 4"
8.021 Pervious Tata abstraction"	/ Confluence " 4 Node #"
0.015 Impervious Manning 'n'"	INLET 3"
98.000 Impervious SCS Curve No." 0.923 Impervious Runoff coefficient"	Maximum flow 2.621 c.m/sec" Hydrograph volume 1300.764 c.m."
0.100 Impervious Ia/S coefficient"	1.373 2.821 0.905 0.000"
0.518 Impervious Initial abstraction"	40 HYDROGRAPH Copy to Outflow"
Catchment 116 Pervious Impervious Total Area "	• 1.373 2.821 2.821 0.000"
Surface Area 5.012 2.698 7.710 hectare"	40 HYDROGRAPH Combine 5"
Time of concentration 33.917 4.433 17.862 minutes" Time to Centroid 135.944 90.460 111.176 minutes"	5 Node #"
Rainfall depth 77.443 77.443 mm"	u/s of HWY 7&8"
"Rainfall losses 45 254 5 973 31 506 mm"	Maximum flow 6.873 c.m/sec"
Runoff depth 32.189 71.470 45.937 mm ⁴	1.373 2.821 2.821 6.873"
Runoff volume 1613.13 1928.62 3541.75 c.m"	40 HYDROGRAPH Start - New Tributary"
Maximum flow 0.412 1.280 1.373 c.m/sec*	* 1.373 0.000 2.821 6.873"
40 HYDROGRAPH Add Runoff "	33 CATCHMENT 117
4 Add HUNOTT " 1.373 1.373 0.263 2.191"	1 Franzierosta
40 HYDROGRAPH Copy to Outflow"	1 SCS method*
8 Copy to Outflow" 1 373 1 373 1 373 2 101	 117 Cultivated Schneider central lands" 0.000 & Importance
40 HYDROGRAPH Combine 4"	7.450 Total Area
6 Combine "	140.000 Flow length"
INCET 3"	7.450 Veriand Stope
Maximum flow 2.821 c.m/sec"	140.000 Pervious length
nyorograph volume 19900.753 c.m.* 1.373 1.373 1.373 2.821"	2.000 Pervious siope" 0.000 Impervious Area"
40 HYDROGRAPH Confluence 2"	140.000 Impervious length"
7 Confluence " 2 Node #"	2.000 Impervious slope*
INLET 1"	81.400 Pervices SCS Curve No."
Maximum flow 3.277 c.m/sec*	0.511 Pervious Runoff coefficient"
1.373 3.277 1.373 0.000°	5.804 Pervious Initial abstraction"
40 HYDROGRAPH Copy to Outflow"	0.015 Impervious Manning 'n'"
1.373 3.277 3.277 0.000"	96.000 Impervious Ruoff coefficient"
40 HYDROGRAPH Combine 5"	0.100 Impervious Ia/S coefficient"
6 Combine "	0.518 Impervious Initial abstraction" 0.871 0.000 2.821 6.873 c.m/sac"
u/s of HWY 7&8"	Catchment 117 Pervious Inpervious Total Area
' Maximum flow 3.277 c.m/sec" Hydrograph yoluma 1664 268 c.m."	Surface Area 7,450 0.000 7,450 hectare
1.373 3.277 3.277 "	Time to Controid 128.663 90.057 128.663 minutes
40 HYDROGRAPH Confluence 3"	Rainfall depth 77.443 77.443 mm"
3 Node #"	Hainfall Volume 5769.48 0.01 5769.49 c.m ⁻ Rainfall losses 37.903 6.136 37.903 mm ⁺
INLET 2"	Runoff depth 39.540 71.307 39.540 mm"
Maximum flow 0.905 c.m/sec" Hydrograph yolume 4252,199 c.m"	Runoff volume 2945.72 0.01 2945.72 c.m*
1.373 0.905 3.277 0.000"	Maximum flow 0.871 0.000 0.871 c.m/sec
40 HYDROGRAPH Copy to Outflow"	40 HYDROGRAPH Add Runoff "
1.373 0.905 0.905 0.000*	0.871 0.871 2.821 6.873"

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40 HYDROGRAPH Copy to Outflow"		0.064 0.064 0.064 7.789"	
8 Copy to Outflow"	4	40 HYDROGRAPH Start - New Tributary"	
40 HYDROGRAPH Combine 5"		0.064 0.000 0.064 7.789 "	
6 Combine "	• 3	33 CATCHMENT 119"	
5 Node #"		1 Triangular SCS"	
u/s of HWY 7&8"		1 Equal Length"	
Hvdroarab volume 37747.945 c.m"		119 Existing ROW from Hamilton Road"	
0.871 0.871 0.871 7.744"		0.000 % Impervious"	
81 ADD COMMENT===================================		0.720 Total Area"	
3 Lines of comment"		2.000 Overland Slope"	
Catchments east of Hamilton Road, part of Inlet #4"		0.720 Pervious Area"	
		40.000 Pervious length"	
40 HYDROGRAPH Start - New Tributary"		2.000 Pervious slope" 0.000 Impervious Area"	
0.871 0.000 0.871 7.744"		40.000 Impervious length"	
33 CATCHMENT 11B"		2.000 Impervious slope"	
1 Triangular SCS"		0.250 Pervious Manning 'n'"	
1 Equal length"		0.415 Pervious SUS Curve No."	
118 Northwest corner of Nithview Heights"		0.100 Pervious Ia/S coefficient"	
8.000 % Impervious"		8.021 Pervious Initial abstraction"	
0,500 Total Area"	÷	0.015 Impervious Manning 'n'" Re.000 Impenvious SCS Curve No."	
5.000 Overland Slope"		0.000 Impervious Runoff coefficient"	
0.460 Pervious Area"	•	0.100 Impervious Ia/S coefficient"	
60.000 Pervious length"	<u>.</u>	0.518 Impervious Initial abstraction"	
5.000 Pervious slope"		0.099 0.000 0.064 7.789 C.M/Sec" Catchmont 110 — Pervious Impervious Total Area "	
60.000 Impervious length"	Ĩ.	Surface Area 0.720 0.000 0.720 hectare"	
5.000 Impervious slope"	*	Time of concentration 14.959 1.955 14.959 minutes"	Ω.
0.250 Pervious Manning 'n'"	2	Time to Centroid 112.122 86.858 112.122 minutes"	
74,000 Pervious SCS Curve No." 0.384 Pervious Runoff coefficient"	2	Haintail depth //.443 //.443 //.443 mm ⁻ Bainfall volume 557.59 0.00 557.59 c.m ⁺	
0.100 Pervious Ia/S coefficient"		Rainfall losses 45.278 6.397 45.278 mm"	
8.924 Pervious Initial abstraction"	5	Runoff depth 32.165 71.045 32.165 mm*	
0.015 Impervious Manning 'n'"		Runoff volume 231.59 0.00 231.59 c.m" Runoff coefficient 0.415 0.000 0.415 "	
0.918 Impervious Runoff coefficient"	្ទ	Maximum flow 0.099 0.000 0.099 c.m/sec"	
0.100 Impervious Ia/S coefficient"	• 4	40 HYDROGRAPH Add Runoff "	
0.518 Impervious Initial abstraction"		4 Add Runoff "	
0.004 0.000 0.871 7.744 C.m/Sec" Catchment 118 Pervious Tonal Area		40 HYDROGRAPH Conv to Outflow"	
Surface Area 0.460 0.040 0.500 hectare"	×.	B Copy to Outflow"	
Time of concentration 15.072 1.894 12.802 minutes		0.099 0.099 0.099 7.789"	
Time to Centroid 112.666 86.772 108.204 minutes" Poinfall dooth 77.442 77.449 77.449 mm"	4	40 HYDROGRAPH Combine 5"	
Rainfall volume 356.24 30.98 387.21 c.m [*]		5 Node #"	
Rainfall losses 47.736 6.331 44.424 mm"	<u>'</u>	u/s of HWY 7&8"	
Runoff depth 29.707 71.112 33.019 mm"		Maximum flow 7.859 c.m/sec"	
- HUNOTT VOLUME 135.55 28.44 155.10 C.M" Bunoff coefficient 0.384 0.918 0.426 "	<u></u>	Hydrograph volume 38144.621 c.m" 0.099 0.099 7.859"	
Maximum flow 0.058 0.020 0.064 c.m/sec	* e	81 ADD COMMENT===================================	
40 HYDROGRAPH Add Runoff "		3 Lines of comment"	
4 Add Runoff "			
40 HYDROGRAPH Copy to Outflow"		valchiment to futer #2	
B Copy to Outflow"		40 HYDROGRAPH Start - New Tributary"	
0.064 0.064 0.064 7.744"		2 Start - New Tributary"	
40 MIDHUGHAMH COMDINE 5" 6 Combine "	÷,	0.099 0.000 0.099 7.859" 33 CATCHMENT 120"	
5 Node #"		1 Triangular SCS"	
u/s of HWY 7&8"		1 Equal length"	
- Maximum flow 7.789 c.m/sec"		1 SCS method" 120 - Rear words from Hamilton Heighte Subdivision"	
ingerograph vorbine overeiter etm		iso loss Asido Liom Hemittion metânico onpotatori	

Q:\34896\104\SV Printed at 15:21	VM/MIDUSS/Pre\34896-104_Pre-050yr.out on 18 Dec 2018	Page 19	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 20 Printed at 15:21 on 18 Dec 2018
5.000	% Impervious"		2.800 Impervious slope"
1.080	Total Area"		• 0.250 Pervious Manning 'n'"
20.000	Flow length"		82.000 Pervious SCS Curve No."
1.026	Overland Slope" Pervious Area"		0.522 Pervious Runoff coefficient"
20.000	Pervious length"		5.576 Pervious Taisa abtraction"
3.000	Pervious slope"		0.015 Impervious Anning 'n'"
0.054	Impervious Area"		98.000 Impervious SCS Curve No."
20.000	Impervious length"		0.000 Impervious Runoff coefficient"
3.000	Impervious slope"		0.100 Impervious Ia/S coefficient"
76,000	Pervious SCS Curve No "		0.518 Impervious Initial abstraction"
• 0.414	Pervious Runoff coefficient"		Gatchment 121 Pervious Impervious Tatal Acea "
• 0.100	Pervious Ia/S coefficient"		Surface Area 43.240 0.000 43.240 hectare
8.021	Pervious Initial abstraction"		Time of concentration 34.580 5.049 34.580 minutes
0.015	Impervious Manning 'n'"		Time to Centroid 136.143 91.318 136.142 minutes
• 98.000 • 0.908	Impervious SUS Curve No." Impervious Rupoff coofficient"		Rainfall depth 77,443 77,443 77,443 mm"
• 0,100	Impervious Ia/S coefficient"		- Rainfall Josepe 36.045 5.022 36.005 mm"
0.518	Impervious Initial abstraction"		Runoff depth 40.448 71.460 40.448 mm"
*	0.192 0.000 0.099 7.859 c.m/sec"		Runoff volume 1.7490 0.0000 1.7490 ha-m"
•	Catchment 120 Pervious Impervious Total Area "		* Runoff coefficient 0.522 0.000 0.522 "
	Surface Area 1.026 0.054 1.080 hectare"		Maximum flow 4.477 0.000 4.477 c.m/sec
	Time to Centroid 104 291 85 784 102 375 minutes"		40 HYDROGRAPH Add Runoft "
•	lainfall depth 77.443 77.443 77.443 mm [*]		
5 E	Rainfall volume 794.56 41.82 836.38 c.m"		* 40 HYDROGRAPH Copy to Outflow"
	Rainfall losses 45.378 7.102 43.464 mm"		8 Copy to Outflow"
	Aunoff depth 32.065 70.341 33.978 mm"		4.477 4.477 4.477 7.930"
*)	Aunoff volume 328.98 37.98 366,97 C.m" Runoff coefficient 0.414 0.908 0.439 "		40 HYDROGRAPH Combine 5"
÷	Maximum flow 0.180 0.028 0.192 c.m/sec"		5 Node #"
• 40 H	TYDROGRAPH Add Runoff "		u/s of HWY 7&8"
• 4	Add Runoff "		Maximum flow 12.242 c.m/sec"
	0.192 0.192 0.099 7.859"		Hydrograph volume 56001.172 c.m"
40 1	TYDHOGRAPH Copy to Outflow"		4.477 4.477 4.477 12.242"
(*)	0 192 0 192 0 192 7 850°		ADD COMMENT===================================
• 40	YDROGRAPH Combine 5"		
* 6	Combine "		Catchments to Inlet #6"
• 5	Node #"		* ****************
	u/s of HWY 7&8"		40 HYDROGRAPH Start - New Tributary"
	Aaximum Tiow /.930 C.m/sec*		2 Start - New Tributary"
	0.192 0.192 0.192 7.930"		4.4// 0.000 4.4// 12.242" 33 Catchiest 160"
* 81 /	ADD COMMENT===================================		1 Triangular SCS"
* 3 1	lines of comment"		3 Specify values"
	***************************************		1 SCS method"
	Good Lands		160 Hamilton Heights Subdivision"
· 40	YVDROGRAPH Start - New Tributary"		40.000 * Impervious"
2	Start - New Tributary"		5.000 Flow leadth"
	0.192 0.000 0.192 7.930"		1.000 Overland Slope"
* 33 (CATCHMENT 121"		4.406 Pervious Area"
1	Triangular SCS		50.000 Pervious length"
. 1	Equal length =		3.000 Pervious Slope"
121	Good Lands"		232.000 Impervious Area
0.000	% Impervious"		* 1.500 Impervious slope"
43.240	Total Area"		* 0.250 Pervious Manning 'n'"
230.000	Flow length		76.000 Pervious SCS Curve No."
2.800	Overland Slope"		0.415 Pervious Runoff coefficient"
43.240	Fervious Area" Pervious length"		- U.1UU Pervious Ia/S coefficient"
2.800	Pervious slope"		0.011 Fervious Initial abstraction"
• 0.000	Impervious Area"		98.000 Impervious SC Curve No."
230.000	Impervious length*		* 0.925 Impervious Runoff coefficient"

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	0 100 Impervious Ta/S co	efficient"					
	0.518 Impervious Initial	abstraction	8				
	2.122 0.0	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"		
100	Painfall dopth	112.357	92.817	99.501	minutes"		
1	Bainfall volume	3412 44	2006 80	6910 39			
	Rainfall losses	45.272	5.794	27.112	mm"		
•).	Runoff depth	32,171	71,649	50.331			
•	Runoff volume	1417.59	2689.42	4107.00	C.M.		
<u>.</u>	Runoff coefficient	0.415	0.925	0.650			
• >	Maximum flow	0.605	1,809	2.122	c.m/sec"		
40	HYDROGRAPH Add Runoff	E N					
	4 Add Runoff "						
00	2.122 2.1 CATCHNENT 1618	22 4.4//	12,242"				
33	1 Triangular SCS"						
6	3 Specify values"						
<u>(</u>	1 SCS method"						
ii.	161 Klassen Bronze Pro	perty"					
0	32.000 % Impervious"						
8 -	2.350 Total Area"						
<u>10</u> –	100.000 Flow length"						
	2.500 Overland Slope"						
2	1.598 Pervious Area"						
2	2 500 Pervious length						
	0 752 Impervious Area*						
3	164 000 Impervious length						
0	1.500 Impervious slope"						
	0.250 Pervious Manning '	n'"					
8	76.000 Pervious SCS Curve	No."					
•	0.415 Pervious Runoff co	efficient"					
•	0.100 Pervious Ia/S coef	'ficient"					
	8.021 Pervious Initial a	ubstraction"					
6	0.015 Impervious Manning	j'n'"					
	0.023 Impervious Sus Cur	ve No."					
	0 100 Impervious Ta/S co	officient					
•	0.518 Impervious Initial	abstraction	4				
÷1	0,463 2.1	22 4.477	12,242	c.m/sec"			
(Ca	Catchment 161	Pervious	Impervious	Total Area	¥		
	Surface Area	1.598	0.752	2,350	hectare"		
1 - E	Time of concentration	15.995	4,970	10.355	minutes"		
	Time to Centroid	113.448	91.205	102.069	minutes"		
2	Rainfall depth	77.443	77.443	77.443	" ma		
	Rainfall volume	1237.54	582.37	1819,90	C.m"		
	Raintail losses	45.309	5.928	32.707	mm "		
	Runott depth	32.133	/1.515	44.735			
÷2	Pupoff coefficient	0 415	0 000	0 579	G.III*		
• 11	Maximum flow	0.213	0.362	0.378	c m/sec"		
• 40	HYDROGRAPH Add Runoff	: "	0.002	0.400	0.111/000		
0.1	4 Add Runoff *						
0	0.463 2.5	685 4.477	12.242"				
40	HYDROGRAPH Copy to Ou	itflow"					
•	8 Copy to Outflow"						
	0.463 2.5	2.585	12.242"				
40	HYDROGRAPH Combine	5"					
-	6 Combine "						
	5 NOGE #"						
	u/SOTHWY/665" Maximum flow	19.0	83 0 = / 0	ec."			
60	Hydrograph volume	61159 4	61 c.m./S				
	Uler of this second	01100.4	- UIM				

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•	81	ADD COMMENT=======				
٠	Э	Lines of comment"				
٠		*******	*********			*****
5		Western catchment alon	g Hamilton F	load, diver	ted to Inle	et #6"
•					•••••	*****
	40	HYDROGRAPH Start - New	Tributary"			
2	:	2 Start - New Tributa	ry"			
2		0.463 0.00	0 2.585	13.283*		
2	33	CATCHMENT 170				
ŝ.		Consider SCS				
		S Specify Values				
÷	17	Industrial/Basidant	ial area ald	na Hamilto	n Road#	
÷	55 00) & Impervious"	Tat alea alt	ng namitio	ir nuau	
	8 45) Total Area"				
•	45.00) Flow length				
٠	2.00	Overland Slope"				
٠	3,80	2 Pervious Area"				
٠	30.00	D Pervious length"				
•	3,00) Pervious slope"				
٠	4,64	3 Impervious Area"				
٠	235,00) Impervious length"				
•	1.50) Impervious slope"				
*	0.25	D Pervious Manning 'n	1.4			
*	76.00	D Pervious SCS Curve	No."			
•	0.41	5 Pervious Runoff coe	fficient"			
	0.10	D Pervious Ia/S coeff	icient"			
0	8.02	l Pervious Initial ab	straction"			
2	0.01	Impervious Manning	'n'			
2	98.00	J Impervious SCS Curv	'e NO."			
਼	0.92	5 Impervious Runott C	oerricient.			
÷	0.10	J Impervious Ia/S coe	enticient [*]			
-	0.51	2 EBY 0 00	abstraction	10 000		
		Catchment 170	Pervioue	Tmoervious	Total Apor	
្		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"
٠		Rainfall depth	77.443	77.443	77.443	mm "
•		Rainfall volume	2944.76	3599.15	6543.91	c.m*
٠		Rainfall losses	45.302	5.811	23,582	mm *
2		Runoff depth	32.141	71.631	53.861	mm "
٠		Runoff volume	1222.17	3329.07	4551.24	C.M°
		Runoff coefficient	0.415	0.925	0.695	
č		Maximum flow	0.597	2.238	2.684	c.m/sec"
ŝ	40	HYDROGRAPH Add Runoff	•			
2		Add Runott *		10 0000		
ŝ	50	2.684 2.68	4 2.585	13.283*		
÷	00	DIVERSION"				
	1 56	S Node Humber ⁻				
-	1.00	D Dogwinod divected f	nontion			
÷	1.00	Conduit type: 1-Bin	Chapter 1			
		Peak of diverted flow	1 12	0	00 ^{°°}	
٠		Volume of diverted flo	w 630.52	29 c.m."	ec	
٠		DTV00006.050bvd*				
٠		Major flow at 6"				
		2.684 2.68	4 1.560	13,283	c.m/sec"	
٠	40	HYDROGRAPH Combine	9"		,	
٣		6 Combine "				
	3	9 Node #"				
*		NODE B"				
*		Maximum flow	1.56	50 c.m/s	ec"	
1		Hydrograph volume	3920.70	09 c.m*		
ŝ		2.684 2.68	4 1.560	1.560*		
÷	40	HYDHOGRAPH Start - New	/ Tributary*			
		💈 Start - New Tributa	iry"			

Q:\348 Printec	96/104/SWM/MIDUSS/Pre/34896-104_Pre-050yr.out Page 23 I at 15:21 on 18 Dec 2018	Q:\3489 Printed	61104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out at 15:21 on 18 Dec 2018
		12	9 Mode #1
• 47	2.004 0.000 1.500 1.500 ETLET 0.004 DEV0006 0.50bvd*	2	
* *	1 ==pea/open: 2=write/save"	*	NODE A Maximum flow 5.518 cm/sec"
A	2 1=rainfall; 2=hydrograph"		Hydrograph volume 61813.508 c.m"
÷	1 1=runoff; 2=inflow; 3=outflow; 4=junction"		1.124 5.518 5.518 5.518"
	DIV00006.050hyd"	 81 	ADD COMMENT===================================
*	Major flow at 6"	*	3 Lines of comment"
÷	Total volume 630.529 c.m"		*****
÷ .	Maximum TLOW 1.124 C.m/Sec"	- E1	Catchments South of Hwy 7/8"
* 10	1.124 0.000 1.560 1.560 C.m/Sec ⁻	. 10	
. 40		40	2 Start - New Tributary"
	1.124 1.124 1.560 1.560"		1.124 0.000 5.518 5.518"
* 40	HYDROGRAPH Copy to Outflow"	• 33	CATCHMENT 180"
	8 Copy to Outflow"		1 Triangular SCS"
<u>*</u>	1.124 1.124 1.124 1.560"		3 Specify values"
• 40	HYDROGRAPH Combine 5*		1 SCS method"
:	6 Combine "		180 Northeast portion of Maple Leaf Foods property"
	5 NODE #"		25.000 % Impervious"
2	u/s of mar / aco Maximum flaw 19,283 c.m/coct		45.000 Elogath"
¥.	Hydrograph volume 61789 988 c m"		1.500 Overland Slope"
× .	1,124 1.124 1.124 1.128 "	(*)	0.518 Pervious Area"
* 40	HYDROGRAPH Confluence 5"	1.20	20.000 Pervious length"
	7 Confluence "		2.000 Pervious slope"
	5 Node #"		0.182 Impervious Area"
*	u/s of HWY 7&8"	000	68.000 Impervious length"
5	Maximum flow 13.283 c.m/sec"		1.000 Impervious slope"
÷ .	Hydrograph volume 61789.988 c.m"		0.250 Pervious Manning 'n'"
	1.124 13.283 1.124 0.000		79.000 Pervious SCS Curve No."
54	POND DESIGN"		0.465 Pervious Hunott coetticient"
	0.020 Current peak itow c.m/sec		0.100 Pervious 14/5 COEFFICIENT"
	0.070 Target Outitow c.m/sec		6.752 Pervious initial abstraction"
+)		1.00	98.000 Impervious SCS Curve No "
	334.290 Minimum water level metre"		0.913 Impervious Runoff coefficient"
•	336,800 Maximum water level metre"		0.100 Impervious Ia/S coefficient"
	334.290 Starting water level metre"		0.518 Impervious Initial abstraction"
•	0 Keep Design Data: 1 = True; 0 = False"	0.00	0.169 0.000 5.518 5.518 c.m/sec"
÷	Level Discharge Volume"		Catchment 180 Pervious Impervious Total Area "
	334.290 0.000 0.000"		Surface Area 0.518 0.182 0.700 hectare"
÷	334.500 0.2540 5.000		Time of concentration 9.328 3.310 6.871 minutes"
	335.000 1.303 390.000"		Lime to Centrold 104.332 88.880 98.024 minutes"
	335,500 2,600 325,000		$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	336 400 6 109 30065 00"		Rainfail losses 41 454 6 765 32 435 mm"
	336.800 18.376 57257.00"		Runoff depth 35.989 70.678 45.008 mm"
*	Peak outflow 5.518 c.m/sec"	10.00	Runoff volume 186.42 128.63 315.06 c.m"
•	Maximum level 336.240 metre"		Runoff coefficient 0.465 0.913 0.581 "
*	Maximum storage 23235.170 c.m"	*	Maximum flow 0.101 0.082 0.169 c.m/sec"
*	Centroidal lag 3.419 hours"	* 40	HYDROGRAPH Add Runoff "
	1.124 13.283 5.518 0.000 c.m/sec"	-	4 Add Runoff "
40	HYDROGRAPH Next link "		0.169 0.169 5.518 5.518"
2	5 NEXT LINK "	54	POND DESIGN [*]
. 56	1.124 5.516 5.516 0.000 DIVERSION®		0.020 Target outfillow c m/sec
	7 Node number *		315.1 Hydrograph volume c.m"
	7.10 Overflow threshold"		8. Number of stages"
	1.000 Required diverted fraction"		0.000 Minimum water level metre"
•	0 Conduit type; 1=Pipe;2=Channel*	(m)	0.750 Maximum water level metre"
5	Peak of diverted flow 0.000 c.m/sec"	1.5	0.000 Starting water level metre"
*	Volume of diverted flow 0.000 c.m"		0 Keep Design Data: 1 = True; 0 = False*
	DIV00007.050hyd"		Level Discharge Volume"
*)	Major flow at 7"		0.000 0.000 0.000"
	1.124 5.518 5.518 0.000 c.m/sec"		U.1500 0.00400 1.000"
40	MYUHUGKAPH COMDINE B" 6 Combine "		0.3500 0.00700 29.000"

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0.4500 0.00800 69.000" 0.6500 0.01000 178.000" 0.7000 0.1060 208.000"	<pre>0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume" 0.000 0.000 0.000"</pre>
0.7500 0.2210 240.000"	• 0.3000 0.9000 8.000*
Peak outflow 0.048 c.m/sec*	0.6000 0.1200 97.000*
Maximum level 0.670 metre"	0.9000 0.1300 167.000"
Centroidal lag 4.278 hours"	1.500 0.1400 254.000 1.500 3.58.000*
0.169 0.169 0.048 5.518 c.m/sec"	1.800 1.000 400.000*
• 40 HYDROGRAPH Combine 9"	Peak outflow 0.548 c.m/sec
9 Node #*	Maximum storage 385.161 c.m"
NODE B"	Centroidal lag 1.872 hours"
MAXIMUM TLOW 1.569 C.M/Sec*	* 0.832 0.832 0.548 1.569 c.m/sec*
0.169 0.169 0.048 1.569"	* 6 Combine *
40 HYDROGRAPH Start - New Tributary"	9 Node #
2 Start - New Filbutary" 0.169 0.000 0.048 1.569"	* NODE B* * Maximum flow 2,116 c.m/sec*
* 33 CATCHMENT 181*	Hydrograph volume 5436.226 c.m*
1 Triangular SCS"	0.832 0.832 0.548 2.116"
3 Specity Values"	* 40 HYDROGRAPH Start - New Tributary" 2. Start - New Tributary"
181 Western portion of John Bear property"	0.832 0.000 0.548 2.116"
93.000 % Impervious"	* 33 CATCHMENT 182*
1.8/0 IOTAL AREA 120.000 Flow length"	1 Triangular SCS 3 Specify values
1.000 Overland Slope"	1 SCS method"
0.131 Pervious Area"	182 Eastern portion of John Bear property
20.000 Pervious length" 2 000 Pervious slope"	59.000 % Impervious"
1.739 Impervious Area"	60.000 Flow length"
112.000 Impervious length	* 2.500 Overland Slope*
1.000 Impervious slope" 0.250 Pervious Manning 'n'"	0.375 Pervious Area"
65.000 Pervious SCS Curve No."	3.000 Pervious slope*
0.261 Pervious Runoff coefficient"	0.835 Impervious Area"
0.100 Pervious Ia/S coefficient" 13.677 Pervious Initial abstraction"	90.000 Impervious length"
0.015 Impervious Manning 'n'"	0.250 Pervious Stope 0.251 Pervious Stope
98.000 Impervious SOS Curve No."	65.000 Pervious SCS Curve No."
0.923 Impervious Hunott coetticient"	 0.262 Pervious Runoff coefficient" 0.100 Requirem Los coefficient"
• 0.518 Impervious Initial abstraction	13.677 Pervious Initial abstraction*
0.832 0.000 0.048 1.569 c.m/sec"	0.015 Impervious Manning 'n'"
Surface Area 0.131 1.739 1.870 bectare	98.000 Impervious SCS Curve No."
Time of concentration 12.513 4.465 4.632 minutes"	0.10 Impervious Ia/S coefficient"
Time to Centroid 111.346 90.506 90.940 minutes"	0.518 Impervious Initial abstraction
Haintali depth 77.443 77.443 77.443 mm* Bainfall volume 101 37 1346 81 1448 18 c m*	0.387 0.000 0.548 2.116 c.m/sec*
Rainfall losses 57.250 5.949 9.540 mm*	Surface Area 0.375 0.835 1.210 hectare"
Runoff depth 20.193 71.493 67.902 mm	Time of concentration 14.132 3.181 4.430 minutes"
"Hunort volume 26.43 1243.34 1269.78 c.m" Bunoff coefficient 0.261 0.923 0.877 *	* Time to Centroid 113,260 88,692 91,496 minutes* Pointful donth 77,443 77,449 minutes*
Maximum flow 0.012 0.826 0.832 c.m/sec*	Rainfall volume 290.49 646.57 937.06 c.m"
40 HYDROGRAPH Add Runoff	Rainfall losses 57.190 6.798 22.419 mm
- 4 Add HUNOTT *	* Runoff depth 20.253 70.645 55.023 mm*
* 54 POND DESIGN*	Runoff coefficient 0.262 0.912 0.711
0.832 Current peak flow c.m/sec"	Maximum flow 0.032 0.382 0.387 c.m/sec"
- U.U/U LATGET OUTTLOW C.M/SEC"	40 HYDROGRAPH Add Runoff
7. Number of stages	4 Aug Runott - 0.387 0.387 0.548 2.116*
0.000 Minimum water level metre	54 POND DESIGN*
1.800 MAXIMUM WATER LEVEL metre"	0.387 Current peak flow c.m/sec"
	ororo larger ouritow c'm/260
Q:13489611041SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 27	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 28
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Printed at 15:21 on 18 Dec 2018	Printed at 15:21 on 18 Dec 2018
<pre>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"</pre>	 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 3.473 3.473 2.183" 40 HYDROGRAPH Combine 9" 6 Combine " 9 Node #"
Level Discharge Volume"	NODE B"
0.000 0.000 0.000"	Maximum flow 5.231 c.m/sec"
0.3200 0.04300 276.000"	Hydrograph volume 14821.966 c.m"
0.7500 0.06600 333.000"	3.473 3.473 5.231"
1.300 0.08700 371.000"	40 HYDROGRAPH Confluence 8"
1.400 0.5000 400.000"	7 Confluence "
Peek outflow 0.133 c.m/sec"	8 Node #"
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 "	NODE A" NODE A" Maximum flow Hydrograph volume 3.473 5.518 3.473 0.000" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"
9 Node #"	3.473 5.518 5.518 0.000"
NODE B"	40 HYDROGRAPH Combine 9"
Maximum flow 2.183 c.m/sec"	6 Combine "
Hydrograph volume 6098.461 c.m"	9 Node #"
0.387 0.133 2.183"	NODE B"
40 HYDROGRAPH Start - New Tributary"	Maximum flow 8.454 c.m/sec"
2 Start - New Tributary"	Hydrograph volume 76635.461 c.m"
0.387 0.000 0.133 2.183"	3.473 5.518 5.518 8.454"
33 CATCHMENT 183"	40 HYDROGRAPH Start - New Tributary"
1 Triangular SCS"	2 Start - New Tributary"
3 Specify values"	3.473 0.000 5.518 8.454"
1 SCS method"	33 CATCHMENT 184"
183 Area along western tributary, south of Hwy 7/8"	1 Triangular SCS"
29.000 % Impervious	1 Equal length"
23.290 Total Area"	1 SCS method"
160.000 Flow length"	184 Agricultural lands south of Bleams Road"
2.000 Overland Slope"	2.000 % Impervious"
16.536 Pervious Area"	2.950 Total Area"
150.000 Pervious length"	80.000 Flow length"
2.000 Pervious length"	3.100 Overland Slope"
6.754 Impervious Area"	2.891 Pervious Area"
394.000 Impervious length"	80.000 Pervious length"
2.000 Impervious slope"	3.100 Pervious slope"
0.250 Pervious Manning 'n'"	0.059 Impervious Area"
68.300 Pervious SCS Curve No."	80.000 Impervious length"
0.303 Pervious Runoff coefficient"	3.100 Impervious slope"
 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" 0.519 Impervious Ia/S coefficient 	 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'"
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 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 mm"	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
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"	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 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"
40 HYDROGRAPH Add Runoff *	"Hunoff volume 859.64 41.68 901.31 c.m"
4 Add Runoff *	Runoff coefficient 0.384 0.912 0.395 "
3.473 3.473 0.133 2.183*	Maximum flow 0.306 0.028 0.312 c.m/sec"

Q:\348 Printee	96\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 24 d at 15:21 on 18 Dec 2018	9 Q:\348 Printe	896\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page ed at 15:21 on 18 Dec 2018	e 30
* 40	HYDROGRAPH Add Runoff "	38	Runoff volume 1551.82 7769.97 9321.79 c.m"	
-	4 Add Runoff "		Runoff coefficient 0.254 0.921 0.641 *	
	0.312 0.312 5.518 8.454"	*	Maximum flow 0.670 5.424 5.768 c.m/sec	
- 40	8 CODA to Ontflow.	* 40	HYDROGRAPH Add Runoff "	
	0.312 0.312 0.312 8.454"	2	4 AUU AUNOT	
• 40	HYDROGRAPH Combine 9"	- 40	HYDROGRAPH Copy to Outflow"	
1	6 Combine "	*	8 Copy to Outflow"	
5	9 Node #"		5.768 5.768 5.768 8.686"	
2	NODE B"	* 40	HYDROGRAPH Combine 10"	
	Maximum Tiow 8.886 C.m/S8C"	÷	6 Combine "	
÷.	0.312 0.312 0.312 0.312 0.312	*		
* 40	HYDROGRAPH Confluence 9"		Maximum flow 13.944 c.m/sec"	
÷.	7 Confluence "		Hydrograph volume 86858.641 c.m"	
	9 Node #"	•	5.768 5.768 5.768 13.944"	
2		* 81	ADD COMMENT===================================	
	Maximum liuw 5.000 C.m/Sec"	<u>_</u>	3 Lines of comment"	
*	0.312 8.686 0.312 0.000"	1	Catchments porth of Hwy 7/8, towards Eastern Tributary"	
* 40	HYDROGRAPH Copy to Outflow"		atatatatatatatatatatatatatatatatatatat	
*	8 Copy to Outflow"	* 40	HYDROGRAPH Start - New Tributary"	
*	0.312 8.686 8.686 0.000"		2 Start - New Tributary"	
- 40	HYDROGRAPH Combine 10"		5.768 0.000 5.768 13.944"	
	6 COMDINE "	* 33	CATCHMENT 150"	
	NODE #	<u></u>	1 Irlangular SCS"	
	Maximum flow 8.686 c.m/sec"		1 SCS method"	
5 0	Hydrograph volume 77536.797 c.m"		150 Southern portion of Rec Centre fields*	
•	0.312 8.686 8.686 8.686"		0.000 % Impervious"	
- 40	HYDROGRAPH Start - New Tributary"	•	3.510 Total Area"	
	2 Start - New Tributary"	÷	95.000 Flow length"	
. 99	0.312 0.000 8.686 8.686"	:	1.600 Overland Slope	
. 33	1 Triangular SCS"		3.510 Pervious Area*	
	3 Specify values"	÷ .	2.000 Pervious singen	
•	1 SCS method"	-	0.000 Impervious Area"	
<u>.</u>	185 Morningside Retirement Community lands"	-	296.000 Impervious length"	
2	58.000 % Impervious"		2.000 Impervious slope"	
	18.780 lotal Area"	÷	0.250 Pervious Manning 'n'"	
	2.000 Diverland Slope"		74.000 Pervious SCS Curve No."	
•	7.888 Pervious Area*		0.364 Pervious Aunort Coerticient"	
-	25.000 Pervious length"		8.924 Pervious faital abstraction"	
	2.500 Pervious slope"		0.015 Impervious Manning 'n'"	
	10.892 Impervious Area		98.000 Impervious SCS Curve No."	
2	354.000 Impervious length"		0.000 Impervious Runoff coefficient"	
	2.500 Impervious Stope	਼ੁ	0.100 Impervious Ia/S coefficient"	
	64.400 Pervious SCS Curve No."	<u> </u>	0.518 Impervious Initial abstraction	
•	0.254 Pervious Runoff coefficient"		Catchment 150 Pervious Tempervious Tetal Area "	
•	0.100 Pervious Ia/S coefficient"		Surface Area 3.510 0.000 3.510 hectare"	
•	14.041 Pervious Initial abstraction"		Time of concentration 26.957 6.498 26.957 minutes"	
	0.015 Impervious Manning 'n'"		Time to Centroid 127.483 93.327 127.483 minutes"	
3	98.000 Impervious SCS Curve No."	:	Rainfall depth 77.443 77.443 mm"	
	0.321 Impervious numbri COPTICIENT"		Hainfall volume 2718.24 0.00 2718.24 c.m"	
•	0.518 Impervious Initial Astraction"	<u> </u>	HainTall losses 47,693 5,933 47,692 mm [*]	
	5,768 0.000 8.686 8.686 c.m/sec"	4	Runoff volume 1044.23 0.00 1044.23 c.m."	
•	Catchment 185 Pervious Impervious Total Area "	*	Runoff coefficient 0.384 0.000 0.384 "	
	Surface Area 7.888 10.892 18.780 hectare"		Maximum flow 0.311 0.000 0.311 c.m/sec"	
• /1 • 5	Time of concentration 13.582 6.766 7,900 minutes"	40	HYDROGRAPH Add Runoff "	
= C	Time to Centroid 112.718 93.679 96.848 minutes"		4 Add Runoff "	
	naumali depin //.443 //.443 77.443 mm" Rainfall volumo 0.6100 0.6455 1.4544 ba	*	0.311 0.311 5.768 13.944"	
• 1	Rainfall losses 57.769 6.109 27.806 mm*	- 40	HYDHUGHAPH Copy to Outflow"	
	Runoff depth 19.674 71.334 49.637 mm"		0.311 0.311 0.311 13.944"	

0:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Page 31 Printed at 15:21 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out Printed at 15:21 on 18 Dec 2018	Page 32
Oligitades 104/SWMMMIDUSS/Preijades 104_Pre-050yr.out Prege 31 *40 HYDROGRAPH Combine 11* 6 * 6 Combine * 11 * 10 Node #* 0.311 * 11 Node #* 0.311 * 0 0.311 0.311 * 0 0.311 0.311 * 0 0.311 0.311 * 0 0.311 0.311 * 0 0.311 0.311 * 0 0.311 0.311 * 0.311 0.000 0.311* * 40 HVDROGRAPH Start - New Tributary* 0.311 * 0.311 0.000 0.311 0.311* * 40 HVDROGRAPH Start - New Tributary* 0.311 0.311* * 33 CATCHWERT 151* 0.000 0.311 0.311* * 33.000 % Impervious* \$ \$ \$ * 100.000 Fervious Sciente* \$ \$ * 100.000 Fervious Sciente* \$ \$ * 266000 Impervious Sciente*	C:348961104/SWMAIDUSSIPre134896-104_Pre-050yr.out Printed at 15:21 on 18 Dec 2018 152 Southern portion of Schneider lands" 5.000 % Impervious" 8.050 Total Area" 170.000 Flow length" 8.132 Pervious Area" 170.000 Fervious length" 3.500 Overland Slope" 0.428 Impervious Area" 170.000 Impervious length" 3.500 Impervious slope" 0.428 Impervious ScG Curve No." 0.200 Pervious ScG Curve No." 0.200 Pervious ScG Curve No." 0.522 Pervious Runoff coefficient" 0.100 Impervious ScG Curve No." 0.515 Impervious ScG Curve No." 0.516 Impervious ScG Curve No." 0.517 Pervious Runoff coefficient" 0.101 Impervious ScG Curve No." 0.518 Impervious ScG Curve No." 0.518 Impervious Runoff coefficient" 1.040 0.000 1.027 1.131 c.m/sec" Time of concentration 26.977 3.939 25.027 minutes" Time to Centroid 126.332 89.786 123.239 minutes" Time to Centroid 126.332 89.786 123.239 minutes" Rainfall depth 77.443 77.443 77.443 minutes" Time to Centroid 126.392 89.786 123.239 minutes" Rainfall depth 40.448 71.443 33.466 522.10 c.m" Rainfall depth 40.448 71.070 41.980 mm" Runoff depth 40.449 71.070 1.980 mm" Runoff depth 40.449 71.070 1.131" 40 HYDROGRAPH dd Runoff " 4 Add Runoff " 4 Add Runoff " 1.040 1.040 1.040 1.040 1.131" 40 HYDROGRAPH dc nuber 11" 40 HYDROGRAPH dc nuber 11" 40 HYDROGRAPH dc mubric 11" 41 Node #" 1.040 1.040 1.040 1.131"	Page 32
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	1.040 1.040 1.027 1.131" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	
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"	1.040 1.040 1.040 1.131" 40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #"	
 Rainfall losses 45.275 5.933 32.292 mm[*] Runoff depth 32.168 71.509 45.160 mm[*] Runoff volume 1243.57 1361.61 2605.18 c.m[*] Runoff coefficient 0.415 0.923 0.583 " 	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 1.969"	
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 HYDHOGHAPH Start - New FribUtary" 2 Start - New TribUtary" 2 1.040 0.000 1.969" 47 FLEIO Read/Open DIV00007.050hyd" 1 1.000 <th1.000< th=""> <th1.000< th=""></th1.000<></th1.000<>	
40 HYDROGRAPH COpy to Outriow" 8 Copy to Outriow" 1.027 1.027 0.311" 40 HYDROGRAPH Combine 11" 6 Combine "	2 ==rainfall; 2=write/save 1 ==rainfall; 2=hydrograph" 1 ==runoff; 2=inflow; 3=outflow; 4=junction" D_V00007.050hyd" Major flow at 7"	
11 Node #" U/s of east culvert of HWY 7&8" Maximum flow 1.131 c.m/sec" Hydrograph volume 3649.413 c.m"	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 "	
- 1.02/ 1.02/ 1.03/ 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 1.027 0.000 1.027 1.131" 33 CATCHMENT 152"	40 HVDR0GRAFH Copy to Outflow" 8 Copy to Outflow" 0.000 1.040 1.969" 40 HVDR0GRAFH Copy to Outflow" 8 Copy to Outflow" 0.000 0.000 1.969	
1 Triangular SCS" 1 Equal length" 1 SCS method"	40 HYDROGRAPH Combine 11" 6 Combine " 11 Node #"	

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Q:\348 Printe	96\104\SWM\MIDUSS\Pre\34896-104_Pre-050yr.out d at 15:21 on 18 Dec 2018	Page 33
	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	u
* 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	я
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"	
<u> </u>	336.000 Maximum water level metre	
	332.660 Starting water level metre	
÷	0 Keep Design Data: 1 = True; 0 = Faise- Lough Discharge Values!	
	333.000 0.0010 200.000	
	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 metr	e"
	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	u la
* 38	START/RE-START TOTALS 11"	
<u>.</u>	3 Runoff Totals on EXIT [®]	
	Total Catchment area 22	8.020 hectare*
	Total Impervious area 5	0.613 hectare
	Total % impervious 2	2.197"
* 19	EXIT"	

Q:134 Print	896\104\SWM\MIDUSS\Pre\34896-104_Pre-100yr.out Page 1 rd at 15:22 on 18 Dec 2018	Q:13489 Printed	6\104\SWM\MIDUSS\Pre\34896-104_Pre-100yr.out at 15:22 on 18 Dec 2018	Page 2
	MIDUSS Output>"	*	Time to Contraid 107 786 90 007 107 786	
	MIDUSS version Version 2.25 rev. 473"		Rainfall denth A7 263 87 263 87 263 mm	
	MIDUSS created Sunday, February 07, 2010"		Rainfall volume 2591.72 0.00 2591.72 c.m"	
0.00	10 Units used: ie METRIC"	-	Rainfall losses 38.763 6.170 38.763 mm*	
2	Job folder: Q:\34896\104\SWM\MIDUSS\Pre*		Runoff depth 48.500 81.093 48.500 mm"	
÷.	Output filename: 34896-104_Pre-100yr.out	2	Runoff volume 1440.46 0.00 1440.46 c.m ^u	
	Licensee name: admin"		Runoff coefficient 0.556 0.000 0.556	
	Company Microsoft" Date & Time last used: 12/7/2018 at 140-95 DW	. 40	Maximum flow 0.431 0.000 0.431 c.m/sec*	
* 81	ADD COMMENT===================================	40		
	7 Lines of comment*			
٠	***************************************	* 33	CATCHMENT 102"	
	Wilmot Employement Lands"		1 Triangular SCS*	
	New Hamburg, Ontario"	Č	1 Equal length"	
	100 year Storm Event - Pre-development"	<u>.</u>	1 SCS method	
	JOD NO.: 34895-104- Calculated by: NED/NED/ONK#		102 Pfenning Farm Development - north of GEXR"	
	Calculated by: NCD/MSD/GMK		0.000 % Impervious"	
• 31	TIME PARAMETERS"	2	12.0/0 IOLALAPET	
	5,000 Time Step"	2	2 500 Overland Slope*	
•	240,000 Max. Storm length"	1	12.070 Pervious Area"	
.*	1500.000 Max. Hydrograph"		180.000 Pervious length"	
* 32	STORM Chicago storm"		2.500 Pervious slope"	
	1 Chicago storm"		0.000 Impervious Area"	
	4688.000 Coefficient A"	-	180.000 Impervious length"	
	17.000 Constant B		2.500 Impervious slope"	
÷.	0.902 Exponent C		0.250 Pervious Manning 'n'	
	180 OD Duration"		82.000 Pervious SCS Curve No."	
	1.000 Time step multiplier"	¥.	0.500 Pervious Runott Coetticient"	
	Maximum intensity 239.650 mm/hr"		5.576 Pervious Tays Coefficient	
	Total depth 87.263 mm*		0.015 Impervious Manning 'n'"	
•	6 100hyd Hydrograph extension used in this file"		98.000 Impervious SCS Curve No."	
* 81	ADD COMMENT ====================================		0.000 Impervious Runoff coefficient	
÷.	3 Lines of comment"		0.100 Impervious Ia/S coefficient"	
		Č.	0.518 Impervious Initial abstraction"	
	Calchiments North of GEAH, part of Inlet #1		1.750 0.431 0.000 0.000 c.m/sec*	
. 33	CATCHMENT 101"		Catchment 102 Pervious Impervious Total Area "	
	1 Triangular SCS"		Time of concentration 02.222 4 214 00.200 nectare"	
	1 Equal length		Time to Control 127 023 80 050 127 023 minutes"	
	1 SCS method"		Rainfall denth 87 263 87 263 87 263 mm"	
•	101 Area Northeast of GEXR"		Rainfall volume 1.0533 0.0000 1.0533 ba-m"	
•	0.000 % Impervious"	*	Rainfall losses 38,762 6.163 38,762 mm"	
	2.970 Total Area"		Runoff depth 48.502 81.100 48.502 mm*	
	80.000 Flow length"	÷	Runoff volume 5854.17 0.01 5854.18 c.m*	
÷1	0.500 Overland Slope"		Runoff coefficient 0.556 0.000 0.556 •	
	2.970 Pervisus Area		Maximum flow 1.750 0.000 1.750 c.m/sec"	
(a.)		<u>40</u>	HYDROGRAPH Add Runoff "	
100	0.000 Impervious Area"		4 Add Runott -	
	80.000 Impervious length*	* 40	1.750 2.181 0.000 0.000" HVDB0GBPH Conv.to Outflow"	
	0.500 Impervious slope"	*		
0 # 22	0.250 Pervious Manning 'n'"		1.750 2.181 2.181 0.000"	
÷.	82,000 Pervious SCS Curve No."	* 40	HYDROGRAPH Combine 1	
	0.556 Pervious Runoff coefficient"	*	6 Combine "	
	U.IUU PERVIOUS IA/S coefficient"		1 Node #*	
000	5.570 PERVIOUS INITIAL ADSTRACTION"		u/s of GEXR*	
	98.000 Impervious SCS Curve No *	5	Maximum flow 2.181 c.m/sec"	
	0.000 Impervious Runoff coefficient"		Hydrograph volume 7294.638 c.m"	
	0.100 Impervious Ia/S coefficient"	- 40	1./50 2.181 2.181 2.181*	
(#))	0.518 Impervious Initial abstraction*	40	niunuunarn olait - New Iributary"	
•	0.431 0.000 0.000 0.000 c.m/sec*		2 Glait - New In LUULARY -	
(*)	Catchment 101 Pervious Impervious Total Area "	* 33	CATCHMENT 103"	
	Surface Area 2.970 0.000 2.970 hectare	*	1 Triangular SCS"	
	Time of concentration 28.626 4.298 28.626 minutes"		1 Equal length"	

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<pre>Printed at 15:22 on 15 Dec 2018 1 SCS method" 103 Woodlot - north of GEXR" 2.080 Total Area" 2.080 Total Area" 2.080 Flow length" 2.080 Pervious Alope" 2.080 Pervious Area" 80.000 Pervious slope" 2.000 Impervious Area" 80.000 Impervious Area" 80.000 Impervious Area" 80.000 Impervious slope" 0.250 Pervious Slope" 10.861 Pervious Runoff coefficient" 10.886 Pervious Initial abstraction" 0.101 Impervious SCS Curve No." 98.000 Impervious Super " 0.000 Impervious SC Curve No." 0.115 Impervious Super " 0.000 Impervious SUPE" 0.000 Impervious SUPE" 0.111 Abstraction" 0.115 Impervious SUPE SUPE " 0.000 Impervious SUPE" 0.000 Impervious SUP" 0</pre>	81 ADD COMMENT======*******************************
 0.000 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.228 0.000 2.181 2.181 c.m/sec" Catchment 103 Pervious Inprovidus 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 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 0.288 c.m/sec" 40 HYDROGRAPH Add Runoff " 	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 SCS Curve No." 98.000 Impervious SCS Curve No." 0.930 Impervious SCS Curve No." 0.930 Impervious SCS Curve No." 0.930 Impervious SCS Curve No." 0.100 Impervious Initial abstraction" 0.707 0.000 2.394 2.394 c.m/sec" 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" Bainfall deuth 87.263 87.263 mm"
0.228 0.228 2.181 2.181" 40 HYDROGRAPH Copy to Outflow" 0.228 0.228 2.181" 40 HYDROGRAPH Combine 0.228 0.228 2.181" 40 HYDROGRAPH Combine 1" 6 Combine " 1 Node #"	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 " 54 POND DESIGN" 0.707 2.394 2.394" 54 POND DESIGN" 0.707 C.m/sec" 0.707 Current peak flow c.m/sec" . 0.707 Target outflow c.m/sec" .
7 Confluence " 1 Node #" u/s of GEXR" Maximum flow 2.394 c.m" 0.228 2.394 0.228 2.394 0.228 2.394 0.228 2.394 0.228 2.394 0.228 2.394 0.228 2.394 0.228 2.394 0.228 2.394 0.200" 40 HYDROGRAPH Combine 0.228 2.394 2 Node #" 2 Node #" 2 Node #" INLET 1" Maximum flow 2.394 0.228 2.394 0.228 2.394 2.394 2.394 0.228 2.394 2.394 2.394 2.394 2.394 2.394 2.394 2 Start - New Tributary"	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" 0.000 Starting water level metre" 0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume" 0.000 0.000 0.3100 0.03090 0.6100 0.1232 16100 0.2769 2511.000" Peak outflow 0.055 0.9100 0.2769 2511.000" Peak outflow 0.055 Centroidal lag 8.024 Maximum storage 1002.651 0.707 0.707 0.707 0.705 2.394 c.m/sec" 40 HYDROGRAPH Combine 41 HYDROGRAPH Combine

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Finited	at 10.22 of 10 Doc 2010	Finneu	at 15.22 On 16 Dec 2016
	INLET 1"	π.	0.015 Impervious Manning 'n'"
	Maximum flow 2.434 c.m/sec"		98.000 Impervious SCS Curve No."
)	Hydrograph volume 9199.539 c.m	+	0.921 Impervious Runoff coefficient"
	0.707 0.707 0.055 2,434"		0.100 Impervious Ia/S coefficient"
40	HYDHOGRAPH Start - New Tributary"	2	0.518 Impervious Initial abstraction
	2 Start - New IFLOUTARY"	2	0.591 1.234 0.055 2.434 C.m/sec"
- 33	CATCHMENT 105"	*	Surface Area 0 192 1 088 1 290 bostare"
	1 Triangular SCS"		Time of concentration 18 180 2 469 3 719 minutes"
	3 Specify values"		Time to Centroid 115.452 87.314 89.553 minutes"
	1 SCS method"	*	Rainfall depth 87.263 87.263 87.263 mm*
	105 Iron Bridge Manufacturing Property"	×	Rainfall volume 167.55 949.43 1116.97 c.m"
	65.000 % Impervious"	÷	Rainfall losses 47.911 6.904 13.055 mm"
*	3.570 Total Area"	·	Runoff depth 39.352 80.359 74.208 mm*
*	90.000 Flow length"		Runoff volume 75.56 874.31 949.87 c.m*
	2.000 Overland Stope"	÷.	Runoff coefficient 0.451 0.921 0.850
÷	1.200 Pervious Area	÷ 40	Maximum Tiow 0.029 0.586 0.597 C.m/sec"
	2.000 Pervious slope	40	A Add Bunoff "
•	2.320 Impervious Area"		0.591 1.825 0.055 2.434"
•	90.000 Impervious length"	* 40	HYDROGRAPH Copy to Outflow"
•	2.000 Impervious slope"		8 Copy to Outflow"
	0.250 Pervious Manning 'n'"		0.591 1.825 1.825 2.434"
	81,000 Pervious SCS Curve No."	- 40	HYDROGRAPH Combine 2"
•	0.537 Pervious Runoff coefficient"		6 Combine "
	0.100 Pervious Ia/S coefficient"	<u>.</u>	2 Node #"
Č	5,958 Pervious Initial abstraction"		INLET 1"
	0,015 Impervious Manning 'n'"		Maximum flow 2.984 c.m/sec"
	98.000 Impervious SCS Curve No		Hydrograph volume 12593.299 c.m ⁻
	0.300 Impervious Autori coefficient	= 40	U.591 I.625 I.625 2.964" HYDROCRAPH Start - New Tributary
	0.518 Impervious Initial Astraction"	. +0	2 Start - New Tributary
•	1.234 0.000 0.055 2.434 c.m/sec*	*	0.591 0.000 1.825 2.984"
•	Catchment 105 Pervious Impervious Total Area	T 33	CATCHMENT 107"
•	Surface Area 1.250 2.320 3.570 hectare"	•	1 Triangular SCS"
	Time of concentration 20.599 3.043 7.252 minutes"		1 Equal length"
•	Time to Centroid 117.627 88.184 95.242 minutes"	*	1 SCS method"
÷ –	Rainfall depth 87.263 87.263 87.263 mm"	÷	107 Industrial properties at end of Hamilton Road"
<u> </u>	Rainfall volume 1090.36 2024.95 3115.30 c.m"	÷	40.000 % Impervious"
	Haintail 105565 40.380 7.190 18.807 mm"	÷	2.850 lotal Area"
	Runoff Geptin 40,000 00.075 00.457 mm ²	*	1 000 Overland Sleps"
	Bunoff coefficient 0.537 0.918 0.784 "		1.710 Devious Aroas
*	Maximum flow 0.216 1.202 1.234 c.m/sec*	÷	50.000 Pervious length*
• 40	HYDROGRAPH Add Runoff "		1.000 Pervious slope"
	4 Add Runoff *		1.140 Impervious Area"
÷.	1.234 1.234 0.055 2.434"	<u>*</u>	50.000 Impervious length"
* 33	CATCHMENT 106"		1.000 Impervious slope"
	1 Triangular SCS		0.250 Pervious Manning 'n'"
	3 Spectry Values"	:	76.000 Pervious SCS Curve No.
	I SUS METHOD ²		0.450 Pervious Runoff coefficient"
•	R5 000 % Tenerviaus"		0.100 Pervious Ta/S coefficient
•	1.280 Total Area"	÷	0.015 Impervious Manning 'n'
•	55.000 Flow length"	*	98.000 Impervious SCS Curve No."
*	1.500 Overland Slope"		0.919 Impervious Runoff coefficient"
	0.192 Pervious Area"		0.100 Impervious Ia/S coefficient"
	55.000 Pervious length"		0.518 Impervious Initial abstraction"
	1.500 Pervious slope"		0.647 0.000 1.825 2.984 c.m/sec*
<u>.</u>	1.088 Impervious Area		Catchment 107 Pervious Impervious Total Area "
5	55.000 Impervious length"	<u>.</u>	Surface Area 1.710 1.140 2.850 hectare"
	1.500 Impervious slope"	÷	Time of concentration 19.391 2.633 9.732 minutes"
	U.200 Fervious Manning "N"		Time to Centroid 116.983 87,574 100.032 minutes"
	0.451 Parvious Punoff coefficient"	-	Haintall depth 87.263 87.263 87.263 mm"
	0.100 Pervious Ia/S coefficient"		naindii VUlume 1492.20 994.80 2487.01 C.M" Rainfall losses 47.079 7.070 91.616 mm#
•	8.021 Pervious Initial abstraction"		Runoff denth 39.290 80.185 55.648 mm*

Q:\348 Printe	96\104\SWM\MIDUSS\Pre\34896-104_Pre-100yr.out d at 15:22 on 18 Dec 2018	Page 7	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-100yr.out Printed at 15:22 on 18 Dec 2018
	Dupoff volume 671 96 014 10 1505 06 a m"		
-	Runoff coefficient 0.450 0.010 0.638 "		1 2000 Overview Society
	Maximum flow 0.249 0.609 0.647 c.m/sec"		50.000 Pervious leadth"
• 40	HYDROGRAPH Add Runoff "		3.000 Pervious slope"
	4 Add Runoff *		4.148 Impervious Area"
•	0.647 0.647 1.825 2.984"		192.000 Impervious length"
33	CATCHMENT 108"		0.750 Impervious slope"
	1 Triangular SCS"		0.250 Pervious Manning 'n'"
2	1 Equal length"		75.000 Pervious SCS Curve No."
	1 SGS method 109 Woodlat and Watland aget of Postalla"		0.434 Pervious Hunott coetticlent"
	5.00. % Impervious"		8 467 Pervious Ta/s Coeffictent"
	5.920 Total Area"		0.015 Impervious Maning 'n'
×.	65.000 Flow length*		98.000 Impervious SCS Curve No."
- 12	3.000 Overland Slope"		0.931 Impervious Runoff coefficient"
	5.624 Pervious Area"		0.100 Impervious Ia/S coefficient"
	65.000 Pervious length"		0.518 Impervious Initial abstraction"
	3.000 Pervious slope"		2.370 0.000 1.154 4.056 c.m/sec"
- S	U.296 Impervious Area"		Catchment 109 Pervious Impervious Iotal Area
2	3.000 Impervious length		Surface Area 1.305 4.140 5.530 mectare
	0.250 Pervious Moning 'n'"		Time of concentration 14,194 0.450 7.460 minutes
10 C	70.200 Pervious SCS Curve No."		Bainfall deoth 87,263 87,263 87,263 mm"
	0.363 Pervious Runoff coefficient"		Rainfall volume 1206.42 3619.25 4825.67 c.m"
	0.100 Pervious Ia/S coefficient"		Rainfall losses 49.377 6.039 16.874 mm*
- e	10.782 Pervious Initial abstraction"		* Runoff depth 37.887 81.224 70.390 mm*
	0.015 Impervious Manning 'n'"		Runoff volume 523.78 3368.77 3892.55 c.m*
- S	98.000 Impervious SCS Curve No."		Runoff coefficient 0.434 0.931 0.807 "
- 2	0.924 Impervious Runoff coefficient"		Maximum flow 0.238 2.237 2.370 c.m/sec"
	0.510 Impervious 1a/S coerticent		40 HIDHUGHAPH AGO HUNOTT *
	0.516 Impervises initial abstraction 0.721 0.647 1.825 2.984 c.m/sec ⁿ		
	Catchment 108 Pervious Impervious Total Area *		54 POND DESIGN"
	Surface Area 5.624 0.296 5.920 hectare"		2.370 Current peak flow c.m/sec"
	Time of concentration 18.161 2.217 16.280 minutes"		0.070 Target outflow c.m/sec"
· ·	Time to Centroid 116.426 86.942 112.948 minutes"		3892.5 Hydrograph volume c.m"
	Rainfall depth 87.263 87.263 87.263 mm"		9. Number of stages"
	Rainfall volume 4907.70 258.30 5166.00 c.m"		0.000 Minimum water level metre
	Haintall losses 55.550 6.662 53.106 mm"		1.200 Maximum water level metre"
	HUNDITT GEDTIN 31.713 60.002 34.155 million		0.000 Starting water level metre
	Runoff coefficient 0.363 0.924 0.391		level Discharge Volume"
	Maximum flow 0.671 0.161 0.721 c.m/sec"		0.000 0.000 0.000"
• 40	HYDROGRAPH Add Runoff "		0.1500 0.00400 297.000"
•	4 Add Runoff "		0.3000 0.01000 635.000*
	0.721 1.154 1.825 2.984"		0.4500 0.03600 1004.000"
- 40	HYDROGRAPH Copy to Outflow"		0.6000 0.04900 1405.000"
	B Copy to Outflow		
• 40	U.721 1.154 1.154 2.364"		
* 40			1 200 1 100 2900 000"
			Peak outflow 0.403 c.m/sec"
•	INLET 1"		Maximum level 1.011 metre"
	Maximum flow 4.056 c.m/sec"		Maximum storage 2715.037 c.m"
	Hydrograph volume 16201.398 c.m"		Centroidal lag 9.340 hours"
•	0.721 1.154 1.154 4.056"		2.370 2.370 0.403 4.056 c.m/sec"
• 40	HYDROGRAPH Start - New Tributary"		40 HYDROGRAPH Combine 2"
	2 Start - New Tributary"		6 Combine "
	0.721 0.000 1.154 4.056"		- 2 NOGE #" TNUET 4N
- 33	CALOMMENT 1097		
	a Specify values"		Hydrograph volume 19713.098 c.m"
	1 SCS method"		2.370 2.370 0.403 4.299"
× .	109 N.C. Pestell site		* 81 ADD COMMENT===================================
5	75.000 % Impervious'		 3 Lines of comment"
•	5.530 Total Area"		• • • • • • • • • • • • • • • • • • • •
•	130.000 Flow length"		Catchments South of GEXR, part of Inlet #2"

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8				6 Combine	
40	HYDROGRAPH Start - New Tributary"	*		3 Node #*	
0	2 Start - New Tributary"			INLET 2"	
2. T	2,370 0.000 0.403 4.299"			Maximum flow 0.141 c.m/sec"	
33	CATCHMENT 110"			Hydrograph volume 1072.464 c.m*	
	1 Triangular SCS"			0.342 0.342 0.141 0.141"	
	3 Specify values"	* 40		HYDROGRAPH Start - New Tributary"	
ту	1 SCS method"	-		2 Start - New Tributary"	
30,00	J & Imparvious"	* 33		0.342 0.000 0.141 0.141" CATCHMENT 111"	
1 92		: 33		1 Triangular SCS"	
150.00	Flow length"			1 Equal Jength"	
1,00	O Overland Slope"	2		1 SCS method"	
1.34	4 Pervious Area"		11	1 Woodlot north of Schneider/Good lands"	
150,00	0 Pervious length*		0.00	0 % Impervious"	
1,50	0 Pervious slope"		13.23	0 Total Area"	
0.57	6 Impervious Area"	•	170.00	0 Flow length	
113.00	D Impervious length"	- ÷	2.40	0 Overland Slope	
1.50	J Impervious slope	਼	13,23	U Pervious Area	
90.20	D Pervious SCS Curve No."	÷.	2.40	0 Pervious length	
0.51	Pervious Bus du ve no. Pervious Busneff coefficient*		0.00	O Tmnervious Area"	
0.10	0 Pervious Ia/S coefficient		170.00	0 Impervious length"	
6.35	Pervious Initial abstraction"		2.40	0 Impervious slope"	
0.01	5 Impervious Manning 'n'"		0.25	O Pervious Manning 'n'"	
98,00	0 Impervious SCS Curve No."	2	70.00	0 Pervious SCS Curve No."	
0.92	1 Impervious Runoff coefficient"	÷	0,36	1 Pervious Runoff coefficient"	
0,10	D Impervious Ia/S coefficient"	÷	0.10	0 Pervious Ia/S coefficient"	
0.51	B Impervious Initial abstraction"	-	10.88	6 Pervious Initial abstraction	
	0,342 0.000 0.403 4.299 C.M/Sec	÷	0.01	5 Impervious Manning 'n'	
÷	Surface Area 1 344 0 576 1 920 hertare"	2	0.00	0 Impervious 303 ourve NO. D Impervious Runoff coefficient*	
•	Time of concentration 31,013 3,803 19,260 minutes"		0.10	0 Impervious Ta/S coefficient*	
	Time to Centroid 131.131 89.275 113.050 minutes"		0.51	8 Impervious Initial abstraction*	
	Rainfall depth 87.263 87.263 87.263 mm"			1.047 0.000 0.141 0.141 c.m/sec"	
•	Rainfall volume 1172.82 502.64 1675.46 c.m*			Catchment 111 Pervious Impervious Total Area	
•	Rainfall losses 41.950 6.859 31.423 mm*	•		Surface Area 13.230 0.000 13.230 hectare*	
•	Runoff depth 45.313 80.404 55.841 mm*	*		Time of concentration 34.708 4.220 34.708 minutes"	
	Runoff volume 609.01 463.13 1072.14 c.m"	÷ .		Time to Centroid 136.800 89.831 136.800 minutes"	
	Runott coefficient 0.519 0.921 0.640	- C		Rainfall depth 87.263 87.263 87.263 mm"	
40	MAXIMUM TLOW U.169 U.297 U.342 C.M/SeC"	÷.		Hainfall Volume 1.1545 0.0000 1.1545 na-m"	
40				Rainfall losses 55,800 0.200 55,800 IMM	
e .)				Runoff volume 4162.61 0.01 4162.62 c.m*	
54	POND DESIGN"			Bunoff coefficient 0.361 0.000 0.361	
0,34	2 Current peak flow c.m/sec"			Maximum flow 1.047 0.000 1.047 c.m/sec*	
• 0.07	0 Target outflow c.m/sec"	* 40		HYDROGRAPH Add Runoff "	
1072.	1 Hydrograph volume c.m*			4 Add Runoff "	
7	. Number of stages"	÷		1.047 1.047 0.141 0.141"	
0.00	O Minimum water level metre"	<u> </u>		HYDROGRAPH Copy to Outflow"	
1.10	0 Maximum water level metre"			8 Copy to Outflow"	
0.00	O Starting water level metre-	. 40		1.04/ 1.04/ 1.04/ 0.141"	
	level Discharge Volume"	- 40		A Combine "	
#]				3 Node #"	
7.):	0.2500 0.04200 7.000"			TNIFT 2"	
<	0.5000 0.09000 71.000"			Maximum flow 1.183 c.m/sec*	
	0.7500 0.1250 220.000"			Hydrograph volume 5235.080 c.m"	
*	0.9000 0.1400 346.000"			1.047 1.047 1.047 1.183"	
	1.000 0.3110 445.000"	* 81		ADD COMMENT===================================	
7	1.100 0.6160 557.000"	5	з	Lines of comment"	
	Peak outflow 0.141 c.m/sec"	÷		***************************************	
	Maximum level 0.901 metre"	÷		South of GEXR along Nafziger Rd, part of Inlet #3"	
	Maximum storage 346.549 C.M."			***************************************	
	0 942 0 942 0 14 4 299 c m/sec*	- 40		ntukuuharn start - New Inibutary" 2. Start - New Tributary"	
* 40	HYDROGRAPH Combine 3"			1.047 0.000 1.047 1 189*	
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nted at 15:22 on 18 Dec 2018	Printed at 15:22 on 18 Dec 2018 Pag
CATCHMENT 112"	1.500 Impervious slope"
1 Triangular SCS"	0.250 Pervious Manning 'n'"
1 Equal length"	80.000 Pervious SCS Curve No."
1 SCS method"	0.519 Pervious Bupoff coefficient"
112 Culivated lands east of Nafziger Road"	0.100 Pervious Ta/S coefficient"
1.000 % Impervious"	6.350 Pervious Initial abstraction"
7.310 Total Area"	0.015 Impervious Manning 'n'"
120.000 Flow length"	98.000 Timpervious SCS Curve No."
3 300 Overlad Sine"	0.928 Impervious Bunchficient"
7.237 Pervious Area"	0.100 Impervious Ta/S coefficient"
120,000 Pervious length"	0.518 Impervious Initial abstraction
3.300 Pervious since"	
0.073 Impervious Area"	Catchment 113 Pervious Impervious Tatal Area
120.000 Impervious length"	Surface Area 1536 1.024 2.560 hostana"
3 300 Impervious elope"	Time of concentration 24,500 4,156 18,044 microstructor
0.250 Pervious Vanina 'n'"	
82.000 Pervious SCS Curve No "	Bainfall denth 87 269 87 269 and 269 and 269
0.556 Pervious Bunoff coefficient"	Bainfall volume 1300 97 203 26 203 01/205
0 100 Pervious TalS coefficient"	Bainfall locese 41 057 6 255 07 575
5.576 Dervious Initial Astraction	Bunoff danth 45 306 91 000 50 57
0.015 Tenervious Manniao (n.º	Bunoff volume 605 00 820 53 1525 / IIIII
98.000 Timpervices SCS Curve No."	
0.018 Impervious Buroff coefficient"	
0.100 Impervious Ta/S coefficient"	WAXING TION OF US 0.155 0.551 C.III/SEC
0.540 Impervious Tajs dell'itient	
Catchmont 112 Dervious Impervious Total Area "	
Surface Area 7,237,0,079,7,310, bootara"	
Time of concentration 20,728 9,112 20,439 minutes"	0.70 Terrot outflow c m/soc
Time to concentration 20.725 3.112 20.435 Milliotes	1525 A Hydrograph volume of all
	0.000 Minimum vistor lavel metro"
Bainal Volume Gran Gina Gord Guna Guna	1.000 Walfillidii water level metre
Bundf doubh /8 518 90 1/8 /8 29/ mm*	0.000 Starting water level metro"
	0 Keen Design Date: 1 = There $0 = Ealers"$
Bunoff conficient 0.556 0.019 0.550	l loval Discharge Volume"
North Coefficient 0.300 0.309 1.306 c.m/sec*	
Maximum Files 1.237 0.000 1.000 0.11/000	
A HYDROGRAPH Copy to Dutflow"	
8 Conv to Outflow"	0.8000 0.1350 1014.000"
1.306 1.306 1.306 1.183"	1,000 0,7880 1667,000"
0 HYDROGRAPH Combine 4"	Peak outflow 0.119 c.m/sec"
6 Combine "	Maximum level 0.709 matron"
4 Node #"	Maximum storage 748.718 c m*
INLET 3"	Centroidal lag 3,165 bours"
Maximum flow 1.306 c.m/sec"	0.581 0.581 0.119 1.306 c.m/sec"
Hydrograph volume 3569 791 c.m."	* 40 HYDROGRAPH Combine 4"
1.306 1.306 1.306	6 Combine "
0 HYDROGRAPH Start - New Tributary"	4 Node #"
2 Start - New Tributary"	INFT 3"
1.306 0.000 1.306 1.306"	Maximum flow 1.410 cm/sec"
3 CATCHMENT 113"	Hydrograph volume 505 293 cm ⁻
1 Triangular SCS"	0.581 0.581 0.119 1.410"
A Sherify values"	40 HVDRORBAPH Start - New Tributary"
1 SCS method"	2 Start - New Tributary
113 Along Solutions - Fast SMWP"	
AO AD A Emparyonal - Last omm	
	1 Triangular SCS
2.300 IULAL AFEA	- I Frangular SoS"
150.000 FIDW LENGLIT	i Edhar Teullitu
1.500 OVERTAND STOPE"	1 SUS method
1.000 Pervious Area"	2 OOO 2 TEAST AND WEST OF NATZIGER HOAD"
HOULUUU PERVIOUS LENGTN"	3.000 % Impervious"
1.500 Pervious slope"	13.460 Total Area"

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13.056 Pervious Area"	0.100 Impervious Ia/S coefficient"
140.000 Pervious length"	 0.518 Impervious Initial abstraction"
3.600 Pervious slope"	2.166 0.000 1.266 2.638 c.m/sec"
0.404 Impervious length"	Gatchment 115 Pervious Impervious Total Area Surface Area 1 336 3 613 4 950 bectare
3.600 Impervious slope"	 Time of concentration 13.369 5.062 6.605 minutes"
0.250 Pervious Manning 'n'"	Time to Centroid 107.903 91.005 94.142 minutes"
0.362 Pervious Rupoff coefficient"	Rainfall depth 87,263 87,263 87,263 mm" Bainfall volume 1166 28 3153 26 4319 54 cm"
0.100 Pervious Ia/S coefficient"	* Rainfall losses 37.213 6.070 14.478 mm*
10.834 Pervious Initial abstraction"	Runoff depth 50.051 81.193 72.785 mm*
0.015 Impervious Manning 'n'' 9 000 Impervious SCS Curve No "	Runoff volume 668.93 2933.93 3602.85 c.m"
0.920 Impervious Runoff coefficient"	* Maximum flow 0.315 1.953 2.166 c.m/sec*
0.100 Impervious Ia/S coefficient	* 40 HYDROGRAPH Add Runoff *
0.518 Impervious Initial abstraction" 1 266 0.000 0.119 1.410 c.m/sec"	4 Add Runoff "
Catchment 114 Pervious Impervious Total Area "	* 54 POND DESIGN*
Surface Area 13.056 0.404 13.460 hectare"	* 2.166 Current peak flow c.m/sec"
Time of concentration 27.300 3.326 25.554 minutes"	0.070 Target outflow c.m/sec"
Rainfall deoth 87.263 87.263 87.263 mm	3602.9 Hydrograph Volume C.m" 15 Number of starges"
Rainfall volume 1.1393 0.0352 1.1746 ha-m"	* 0.000 Minimum water level metre"
Rainfall losses 55.661 7.005 54.201 mm"	1.450 Maximum water level metre"
HUNOTT depth 31,603 80.258 33,062 mm"	0.000 Starting water level metre"
Runoff coefficient 0.362 0.920 0.379 "	<pre>besign bala: i = ifue; 0 = raise*</pre>
Maximum flow 1.226 0.206 1.266 c.m/sec"	0.000 0.000 0.000"
40 HYDROGRAPH Add Runoff "	0.1500 0.00700 248,000"
4 Add HUROTT - 1.266 1.266 0.119 1.410"	
40 HYDROGRAPH Copy to Outflow"	0.4500 0.01300 775.000*
8 Copy to Outflow*	• 0.5500 0.01500 964.000 [*]
* 1.266 1.266 1.266 1.410"	0.6500 0.01600 1161.000"
s 6 Combine "	0.7500 0.01700 1364.000" 0.8500 0.01900 1575.000"
4 Node #"	0.9500 0.02000 1795.000°
INLET 3"	1.050 0.05600 2025.000"
MaXImum flow 2.638 C.m/SeC" Hydrograph ynlune 9545 d71 c.m"	1.150 0.2080 2263.000"
1,266 1.266 2.638°	1,350 2,766 2768.000"
40 HYDROGRAPH Start - New Tributary"	1.450 6.856 3033.000"
2 Start - New Tributary	Peak outflow 0.427 c.m/sec"
33 CATCHMENT 115"	Maximum level 1.237 metre" Maximum storage 2478.470 c.m"
1 Triangular SCS"	Centroidal lag 12.276 hours"
3 Specify values"	2.166 2.166 0.427 2.638 c.m/sec*
1 15 Rec Centre - SWAP"	40 HYDROGRAPH Combine 4"
73.000 % Impervious"	4 Node #*
4.950 Total Area"	INLET 3"
50.000 Flow length"	Maximum flow 2.949 c.m/sec"
1.336 Veriana Shee	Hydrograph volume 12485.763 c.m" 2 166 2 166 0 427 2 949"
40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary"
1.500 Pervious slope"	2 Start - New Tributary"
3.013 Impervious lenoth"	2.166 0.000 0.427 2.949"
1.500 Impervious slope"	1 Triangular SCS"
0.250 Pervious Manning 'n'"	1 Equal length°
53.000 Fervious SCS Curve No."	1 SCS method"
0.100 Pervious Ia/S coefficient*	andustrial lands west of Nafziger Road" 35.000 % Impervious"
5.202 Pervious Initial abstraction"	7.710 Total Area"
0.015 Impervious Manning 'n'* 9.000 Impervious SCS Curve Ne *	140.000 Flow length*
0.930 Impervious Runoff coefficient*	1.600 Overland Slope"
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140.000 Pervious length"	* 40 HYDROGRAPH Combine 5"
* 1.600 Pervious slope"	* 6 Combine "
* 2.698 Impervious Area"	* 5 Node #"
140.000 Impervious length	u/s of HWY 7&8"
1.600 Impervious slope"	Maximum flow 5.435 c.m/sec
0.250 Pervious Manning 'n'"	Hydrograph Volume 24948.180 C.m"
0.451 Parvius Bundt coefficient"	* 40 HYDROGRAPH Confluence 4"
0.100 Pervious Ia/S coefficient"	7 Confluence "
 8.021 Pervious Initial abstraction" 	4 Node #"
• 0.015 Impervious Manning 'n'"	INLET 3"
98.000 Impervious SCS Curve No."	Maximum flow 3.848 c.m/sec
0.929 Impervious Auroff coefficient"	Hydrograph volume 16646.459 c.m"
0.100 Impervious Ia/S coerticient	* 1.552 3.848 1.183 0.000"
0.516 Imploved function abstraction $0.427 = 2.949$ c m/sec*	A Convita Outflow ⁿ A Convita Outflow ⁿ
Catchment 116 Pervious Impervious Total Area "	1.562 3.848 3.848 0.000"
 Surface Area 5.012 2.698 7.710 hectare" 	* 40 HYDROGRAPH Combine 5"
* Time of concentration 31.236 4.242 17.040 minutes*	6 Combine "
Time to Centroid 131.908 89.859 109.795 minutes"	5 Node #"
Rainfall depth 87.263 87.263 87.263 mm"	u/s of HWY 7&8"
- Haintall volume 43/3.21 2354.80 5/28.01 C.m"	Maximum Tlow 9.184 C.m.sec
* Bunoff doubh 39,352 81,066 53,952 mm*	1 562 3 848 3 848 9 184
Bunoff volume 1972.12 2187.57 4159.69 c.m"	40 HYDROGRAPH Start - New Tributary"
Runoff coefficient 0.451 0.929 0.618	2 Start - New Tributary"
 Maximum flow 0.539 1.425 1.562 c.m/sec" 	1.562 0.000 3.848 9.184"
* 40 HYDROGRAPH Add Runoff "	33 CATCHMENT 117"
4 Add Runoff "	1 Triangular SCS"
1.562 1.562 0.427 2.949"	1 Equal length"
40 HYDRUGRAPH CODY TO UUTTIOW"	1 SUS method
1 562 1 562 1 562 2 949"	0.00 % Impervious"
40 HYDROGRAPH Combine 4	7,450 Total Area"
6 Combine "	140.000 Flow length"
4 Node #"	2.000 Overland Slope"
INLET 3	7.450 Pervious Area"
Maximum flow 3.848 c.m/sec"	140.000 Pervious length"
nyurograph volume 1040.459 c.m	0.000 Tempervisus Area"
40 HYDROGRAPH Confluence 2"	140.000 Impervious length"
7 Confluence "	2.000 Impervious slope"
2 Node #"	0.250 Pervious Manning 'n'"
INLET 1"	81.400 Pervious SCS Curve No."
Maximum flow 4.299 c.m/sec"	0.545 Pervious Hunoff coefficient"
Hydrograph Volume 19/13.096 c.m ⁻	5.804 Dervious Initial abstraction"
40 HYDROGRAPH Conv to Outflow"	0.015 Impervious Mannino 'n'"
8 Copy to Outflow"	98.000 Impervious SCS Curve No."
1.562 4.299 4.299 0.000"	0.000 Impervious Runoff coefficient"
* 40 HYDROGRAPH Combine 5"	 0.100 Impervious Ia/S coefficient"
6 Combine "	0.518 Impervious Initial abstraction"
5 Node #"	1.090 0.000 3.848 9.184 c.m/sec"
	Surface Aprox 7, 450 0,000 7,460 bestapo"
Maximum Liuw 4,239 Cim/Sec	Time of concentration 26.679 3.967 26.679 minutes
1,562 4.299 4.299	Time to Centroid 125.368 89.504 125.368 minutes
* 40 HYDROGRAPH Confluence 3*	Rainfall depth 87.263 87.263 87.263 mm"
7 Confluence "	* Rainfall volume 6501.12 0.01 6501.13 c.m"
* 3 Node #"	Rainfall losses 39.716 6.500 39.716 mm*
INLET 2"	Runoff depth 47.548 80.764 47.548 mm*
Maximum flow 1.183 c.m./sec"	Runott volume 3542.31 0.01 3542.31 c.m
- Hyarograph volume 5235.080 c.m*	Maximum flow 1.000 0.000 1.000 c.m/coo"
* 40 HYDROGRAPH Conv to Outflow"	"40 HYDROGRAPH Add Runoff"
8 Copy to Outflow"	4 Add Runoff "
1.562 1.183 1.183 0.000"	* 1.090 1.090 3.848 9.184 [*]

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2:\3489 Printed	6/104/SWM/MIDUSS/Pre/34896-104_Pre-100yr.out Page 17 at 15:22 on 18 Dec 2018	Q:13489 Printed	6)104\SWMIMIDUSS\Pre\34896-104_Pre-100yr.out at 15:22 on 18 Dec 2018	Page 18
40	HYDROGRAPH Copy to Outflow"	×	0.083 0.083 0.083 10.326"	
	8 Copy to Outflow*	* 40	HYDROGRAPH Start - New Tributary"	
40	1.090 1.090 1.090 9.184" HVDP0GPADH Compiles 5"	- C	2 Start - New Tributary"	
40	6 Combine "	. 33	0.083 0.000 0.083 10.326" CATCHNENT 110"	
	5 Node #*		1 Triangular SCS"	
	u/s of HWY 7&8"		1 Equal length	
	Maximum flow 10.274 c.m/sec"		1 SCS method"	
	Hydrograph volume 45136,914 c.m"		119 Existing ROW from Hamilton Road"	
81		- C	0.000 % Impervious"	
· ·	3 Lines of comment"		40.000 Flow length"	
	**********************		2.000 Overland Slope"	
	Catchments east of Hamilton Road, part of Inlet #4"		0.720 Pervious Area"	
40		- t	40.000 Pervious length"	
40	MIDHOUGHAMH STAFT - New Inibutary" 2 Staft - New Tributary"	<u>.</u>	2.000 Pervious slope	
	2 otdar i hove i rottariy 1.090 0.000 1.090 10.274"		40.000 Impervious length	
33	CATCHMENT 118"		2.000 Impervious slope"	
	1 Triangular SCS"		0.250 Pervious Manning 'n'"	
	1 Equal length"		76.000 Pervious SCS Curve No."	
	1 SUS method" 110 Northwest corport of Nithview Heights"	÷.	0.450 Pervious Runoff coefficient"	
	8.000 % Impervious"	÷	0.100 Pervious Ia/S coefficient	
	0.500 Total Area"		0.015 Impervious Manning 'n'"	
	60.000 Flow length"		98.000 Impervious SCS Curve No."	
	5.000 Overland Slope"		0.000 Impervious Runoff coefficient"	
	0.400 Pervious larget	÷	0.100 Impervious Ia/S coefficient	
	5.000 Pervious slope"		0.518 Impervious initial abstraction"	
	0.040 Impervious Area"		Catchment 119 Pervious Impervious Total Area "	
	60.000 Impervious length"	- E	Surface Area 0.720 0.000 0.720 hectare"	
	5.000 Impervious slope"		Time of concentration 13.776 1.871 13.776 minutes"	
	0.250 Pervious Manning 'n'"		Time to Centroid 109.926 86.432 109.926 minutes"	
	A 419 Revious Rupoff coofficient"	- ÷	Rainfall depth 87.263 87.263 87.263 mm*	
	0.100 Pervious Ja/S coefficient"	<u>,</u>	Rainfall Volume 628.30 0.00 628.30 c.m"	
	8.924 Pervious Initial abstraction"		Runoff denth 39,293 80,793 39,293 mm*	
	0.015 Impervious Manning 'n'"		Runoff volume 282.91 0.00 282.91 c.m*	
	98.000 Impervious SCS Curve No."	<u>a</u>	Runoff coefficient 0.450 0.000 0.450 *	
	0.926 Impervious Hunott coefficient"	÷	Maximum flow 0.130 0.000 0.130 c.m/sec"	
	0.100 Impervious fa/s coefficient"	40	HYDROGRAPH Add Runoff "	
	0.083 0.000 1.090 10.274 c.m/sec*		4 Aud Rumon -	
	Catchment 118 Pervious Impervious Total Area "	. 40	HYDROGRAPH Copy to Outflow"	
	Surface Area 0.460 0.040 0.500 hectare"	÷	8 Copy to Outflow"	
	Lime of concentration 13.831 1.813 11.893 minutes"	÷	0.130 0.130 0.130 10.326"	
	Rainfall denth 87 263 87 263 87 263 minutes"	40	HYDROGRAPH Combine 5"	
	Rainfall volume 401.41 34.91 436.32 c.m*		5 Node #"	
	Rainfall losses 50.709 6.442 47.168 mm*		u/s of HWY 7&8"	
	Runoff depth 36.554 80.821 40.095 mm*	*	Maximum flow 10.416 c.m/sec"	
	Runoff volume 168.15 32.33 200.48 c.m"		Hydrograph volume 45620.305 c.m"	
	MUNOTT COETTICIENT 0.419 0.926 0.459 "		0.130 0.130 0.130 10.416"	
40	HYDROGRAPH Add Runoff	81	ADD COMMENT###################################	
	4 Add Runoff *			
2	0.083 0.083 1.090 10.274"		Catchment to Inlet #5"	
40	HYDROGRAPH Copy to Outflow"		***************************************	
	8 Copy to Outflow"	- 40	HYDROGRAPH Start - New Tributary"	
40	U.UG3 U.UG3 U.UG3 10,274" HYDROGRAPH Combine 5"	÷.	2 Start - New Tributary"	
0	6 Combine "		U.130 0.000 0.130 10.416"	
	5 Node #*	. 33	1 Triangular SCS"	
	u/s of HWY 7&8"	*	1 Equal length"	
	Maximum flow 10.326 c.m/sec*		1 SCS method"	
	Hydrograph volume 45337.402 c.m°		120 Rear yards from Hamilton Heights Subdivision"	

Q:134896\104\SWMIMIDUSSIPre\34896-104_Pre-100yr.out Printed at 15:22 on 18 Dec 2018	Page 19	19 Q:\34896\104\SWMIMIDUSS\Pre\34896-104_Pre-100yr.out Printed at 15:22 on 18 Dec 2018	Page 20
5.000 % Impervious"		* 2.800 Impervious slope"	
1.080 Total Area"		0.250 Pervious Manning 'n'"	
20.000 Flow length"		82.000 Pervious SCS Curve No."	
1 026 Pervious Area"		0.100 Pervious Ta/S coefficient"	
20.000 Pervious length"		5.576 Pervious Initial abstraction"	
3.000 Pervious slope"		 0.015 Impervious Manning 'n'" 	
0.054 Impervious Area"		98.000 Impervious SCS Curve No."	
20.000 Impervious length"		• 0.000 Impervious Runoff coefficient"	
3.000 Impervious slope"		0.100 Impervious lais coefficient	
76 000 Pervious SCS Curve No."		5.669 0.000 0.248 10.597 c.m/sec	
0.450 Pervious Runoff coefficient"		Catchment 121 Pervious Impervious Total Area	
0.100 Pervious Ia/S coefficient"		Surface Area 43.240 0.000 43.240 hectare"	
8.021 Pervious Initial abstraction"		Time of concentration 32.173 4.831 32.173 minutes"	
0.015 Impervious Manning 'n'"		 If the to Centrold 132.351 90.508 132.351 minutes" Bainfall denth B7 263 87 263 mm^a 	
98.000 Impervious SUS Curve No." 0.913 Impervious Bunoff coefficient"		 Rainfall volume 3.7733 0.0000 3.7733 ha-m" 	
0.100 Impervious Ia/S coefficient"		 Rainfall losses 38.746 5.976 38.746 mm* 	
 0.518 Impervious Initial abstraction" 		🔭 Runoff depth 48.518 81.288 48.518 mm"	
0.248 0.000 0.130 10.416 c.m/sec"		Runoff volume 2.0979 0.0000 2.0979 ha-m"	
Catchment 120 Pervious Impervious Total Area "		Runoff coefficient 0.556 0.000 0.556	
Surface Area 1.026 0.054 1.080 Nect		* 40 HYDROBAPH Add Rupoff "	
Time to Centraid 102 747 85 426 101 074 minu	tes"	4 Add Bunoff "	
Rainfall depth 87.263 87.263 87.263 mm"		5.669 5.669 0.248 10.537"	
Rainfall volume 895.32 47.12 942.45 c.m"		* 40 HYDROGRAPH Copy to Outflow"	
Rainfall losses 48.019 7.569 45.997 mm [*]		8 Copy to Outflow"	
Runoff depth 39.244 79.694 41.267 mm"		5.669 5.669 10.537"	
Runoff volume 402.64 43.03 445.68 C.m."		40 INDRUGRAPH COMDINE 5	
Maximum flow 0.227 0.031 0.248 c.m/	sec."	5 Node #"	
* 40 HYDROGRAPH Add Runoff "		u/s of HWY 7&8"	
4 Add Runoff "		Maximum flow 16.161 c.m/sec"	
0.248 0.248 0.130 10.416"		Hydrograph volume 67045.117 c.m"	
40 HYDROGRAPH Copy to Outflow"		5.669 5.669 5.669 16.161"	
		3 Lines of comment"	
40 HYDROGRAPH Combine 5"			
* Combine "		Catchments to Inlet #6"	
5 Node #"			
u/s of HWY 7&8"		40 HYDROGRAPH Start - New Tributary"	
Maximum flow 10.537 c.m/sec"		- 2 Start - New Intibutary	
0.248 0.248 0.248 10.537		* 33 CATCHMENT 160"	
81 ADD COMMENT===================================	= "	1 Triangular SCS"	
3 Lines of comment"		 3 Specify values" 	
***************************************		1 SCS method"	
Good Lands"		160 Hamilton Heights Subdivision"	
		8 160 Total Area"	
2 Start - New Tributary		50.000 Flow length"	
0.248 0.000 0.248 10.537"	5	1.000 Overland Slope"	
33 CATCHMENT 121"		4.406 Pervious Area"	
1 Triangular SCS"		50.000 Pervious length"	
1 Equal length"		3.000 Pervious stope"	
- 1 SUS method" 121 Good Lands"		232.000 Impervious length"	
0.000 % Impervious"		1.500 Impervious slope"	
43.240 Total Area"		 0.250 Pervious Manning 'n'" 	
* 230.000 Flow length"		76.000 Pervious SCS Curve No."	
2.800 Overland Slope"		0.450 Pervious Runoff coefficient"	
43.240 Pervious Area"		8.021 Pervisus Ta/s coefficient"	
230.000 Pervious length"		0.015 Intervious Maning 'n'"	
0.000 Impervious Area"		98.000 Impervious SCS Curve No."	
230.000 Impervious length"		0.932 Impervious Runoff coefficient	

rinter	1 at 15:22 c	n 18 Dec 2018		dits and Si			Ha hard
	0.100	Impopyious To/S or	officient				
	0.518	Impervious Initia	abstraction				
		2.502 0.0	000 5.669	16.161	c.m/sec"		
	C	atchment 160	Pervious	Impervious	Total Area	L *	
	S	urface Area	4.406	3.754	8.160	hectare"	
	T:	ime of concentratio	n 13.946	5.856	8.783	minutes"	
	T:	ime to Centroid	110,138	92.108	98.631	minutes"	
	Ha	ainfall depth	87.263	87.263	87.263	mm"	
	H	aintall volume	3845.18	3275.52	7120.70	C.M"	
	ni Di	alliall losses	47.979	5.905	28.625	mm "	
		unoff volume	1791 05	2052 86	4784 01	0	
	Ri	unoff coefficient	0 450	0 932	0 672		
	Ma	aximum flow	0.791	2.041	2.502	C.∏/Sec"	
40	H	DROGRAPH Add Runof	f "		2.002	0.1, 0000	
	4	Add Runoff "					
		2.502 2.	502 5,669	16.161'			
33	C	ATCHMENT 161"					
	1	Triangular SCS"					
	3	Specify values"					
	1	SCS method"					
	161	Klassen Bronze Pr	operty"				
	32,000	* Impervious"					
	2.350	Flow longth"					
	2.500	Overland Slope"					
	1.598	Pervious Area"					
	50,000	Pervious length"					
	2,500	Pervious slope"					
	0.752	Impervious Area"					
	164.000	Impervious length	14				
	1.500	Impervious slope"					
	0.250	Pervious Manning	'n'"				
	76.000	Pervious SCS Curve	e No."				
	0.451	Pervious Runoff c	pefficient"				
	0.100	Pervious Ia/S coe	TT1Clent"				
	0.021	Impocyjoue Machine					
	98,000	Impervious SCS Cu	g II rve No "				
	0.932	Impervious Runoff	coefficient"				
	0.100	Impervious Ia/S c	pefficient"				
	0,518	Impervious Initia	l abstraction	-			
		0,554 2.5	502 5.669	16.161	c.m/sec"		
	Ca	atchment 161	Pervious	Impervious	; Total Area	L [#]	
	Si	urface Area	1.598	0,752	2.350	hectare"	
	<u></u>	ime of concentration	n 14.730	4.756	9.811	minutes"	
	1:	Lme to Centroid	111.127	90.555	100.982	minutes"	
	Ha	aintail depth	87.263	87.263	87.263	ព៣។	
	na Br	ainfall volume	1394.47	5 074	2050.69	C.M"	
	R	unoff denth	39 315	5,974 81 280	52 747	0184 °	
	B	unoff volume	628 25	611 30	1239 55		
	R	unoff coefficient	0.451	0.932	0.604	a	
	Ma	aximum flow	0.284	0.404	0.554	c.m/sec"	
40	H	DROGRAPH Add Runof	f "				
	4	Add Runoff "					
		0.554 3.0	5.669	16.161	L. C.		
40	H	/DROGRAPH Copy to O	utflow"				
	8	Copy to Outflow"					
		0.554 3.0	3.056	16.161			
40	_H,	OHOGRAPH Combine	5"				
	6	COMDING "					
	5	NOUS F					
	11/	u/SUTHWI/665" avimum flow	17.9	06 0 0 0			
	Ma Ha	Armon itow	73069 6	09 0.00	ieu '		
	112	a of the sorone	10009.0	00 V+III	6		

GP	:\34896\104\SWM\MIDUSS\Pre\34896-10 rinted at 15:22 on 18 Dec 2018	04_Pre-100yr.	out		
	81 ADD COMMENT============				
•	3 Lines of comment"				
ð	*******	******	*********	*********	****
÷	Western catchment alon	g Hamilton I	Road, divert	ted to Inle	t #6"
	40 HYDROGRAPH Start - New	Tributary*			
2	2 Start - New Tributa	ry"			
	33 CATCHMENT 170*	0 3,056	17.396		
3	1 Triangular SCS*				
٠	3 Specify values"				
Ċ	1 SCS method"				
2	170 Industrial/Resident	ial area al	ong Hamiltor	n Road"	
	8 450 Total Area"				
	45.000 Flow length*				
	2.000 Overland Slope"				
•	3.802 Pervious Area"				
ŝ	30.000 Pervious length"				
਼	4 648 Impervious Area"				
	235.000 Impervious length"				
5	1.500 Impervious slope"				
•	0,250 Pervious Manning 'n				
÷	76.000 Pervious SCS Curve	No."			
	0.449 Pervious Runott Coe 0.100 Pervious Ta/S coeff	icient"			
	8.021 Pervious Initial ab	straction			
٠	0.015 Impervious Manning	'n'"			
	98.000 Impervious SCS Curv	e No."			
਼	0.932 Impervious Runoff c	oefficient"			
	0.518 Impervious Initial	abstraction			
	3.151 0.00	0 3.056	17.396 (c.m/sec*	
1	Catchment 170	Pervious	Impervious	Total Area	
2	Surface Area	3.802	4.648	8.450	hectare
਼	Time to Centroid	10.265	5.901	7.135	minutes"
3	Rainfall depth	87.263	87.263	87.263	
*	Rainfall volume	3318.19	4055.57	7373.76	C.m"
1	Rainfall losses	48.050	5.893	24.863	mm =
÷	Runoff depth	39.214	81.371	62.400	
	Runoff coefficient	0 449	3/81.70	52/2./9	C.m"
7	Maximum flow	0.773	2.526	3.151	c.m/sec*
	40 HYDROGRAPH Add Runoff				
÷	4 Add Runoff				
	3.151 3.15 56 DIVERSION"	1 3.056	17.396*		
	6 Node number"				
+	1.560 Overflow threshold"				
*	1.000 Required diverted f	raction"			
2	0 Conduit type; f=Pip	e;2=Channel	•	#	
	Volume of diverted flow	1.53 w 1002.01	91 C.M/S6 11 C.M*	3C "	
٠	DIV00006.100hvd"	1002.0			
٠	Major flow at 6"				
5	3.151 3.15	1 1.560	17.396 0	c.m/sec*	
÷.	40 HYDROGRAPH Combine	9"			
	9 Node #"				
t,	NODE B"				
*	Maximum flow	1.5	50 c.m/se	ec "	
0	Hydrograph volume	4270.70	B3 c.m*		
	3.151 3.15 40 HVDB0GBABH Stort Mow	1 1.560	1.560"		
		in tourary-			

2 Start - New Tributary*

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Q:\34 Printe	396(104/SWM/MIDUSS/Pre/34896-104_Pre-100yr.out Page 23 d at 15:22 on 18 Dec 2018	Q:\3489 Printed	61104\SWM\MIDUSS\Pre\34896-104_Pre-100yr.out Page 24 at 15:22 on 18 Dec 2018
	3,151 0,000 1,560 1,560"		8 Node #"
47	FILEI O Read/Open DIV00006.100hvd"		NODE A"
•	1 1=read/open; 2=write/save"		Maximum flow 6.593 c.m/sec"
•	2 1=rainfall; 2=hydrograph"	.) *)	Hydrograph volume 74062.672 c.m"
	1 1=runoff; 2=inflow; 3=outflow; 4=junction"		1.591 6.593 6.593 6.593"
	DIV00006.100hyd"	81	ADD COMMENT===================================
÷ .	Major flow at 6"		3 Lines of comment"
2	lotal volume 1002.011 C.m."		Cotobecoto South of Hum 7/0
			Galchment's South of hwy 776
40	HYDROGRAPH Add Runoff "	• 40	HYDROGRAPH Start - New Tributary"
*	4 Add Runoff "	0.002	2 Start - New Tributary"
<u>.</u>	1.591 1.591 1.560 1.560"		1.591 0.000 6.593 6.593"
• 40	HYDROGRAPH Copy to Outflow"	* 33	CATCHMENT 180"
	8 Copy to Outflow"		1 Triangular SCS"
*	1.591 1.591 1.591 1.560"	0.*0	3 Specify values"
40	HYDROGRAPH Combine 5"	- C	1 SCS method"
2	6 Compine -	- C	180 Northeast portion of Maple Leaf Foods property"
	5 NODE#**		
	Maximum flow 17.396 c.m/sec"		45.000 Flow length"
	Hydrograph volume 74071.625 c.m"		1.500 Overland Slope"
	1.591 1.591 1.591 1.591 17.396"		0.518 Pervious Area"
• 40	HYDROGRAPH Confluence 5"	0 ж 0	20.000 Pervious length"
*	7 Confluence "		2.000 Pervious slope"
*	5 Node #"		0.182 Impervious Area"
÷	u/s of HWY 7&8"	-	68.000 Impervious length"
*	Maximum flow 17.396 c.m/sec"		1.000 Impervious slope"
8	Hydrograph volume 74071.625 c.m"	- C	0.250 Pervious Manning 'n'"
3	1.591 17.396 1.591 0.000"	- C	79.000 Pervious SCS Curve No."
54	PUND DESIGN"		0.499 Pervious Runott coefficient"
	17.390 Current peak itow C.m/sec		6 759 Pervious Ta/3 coefficient
	74071 6 Hydrograph volume c.m."		0.015 Impervious Maning 'n'"
	7. Number of states"	1.0	98.000 Impervious SCS Curve No."
•	334.290 Minimum water level metre"		0.919 Impervious Runoff coefficient"
5	336.800 Maximum water level metre"		0.100 Impervious Ia/S coefficient"
	334.290 Starting water level metre"		0.518 Impervious Initial abstraction"
	0 Keep Design Data: 1 = True; 0 = False"		0.205 0.000 6.593 6.593 c.m/sec"
	Level Discharge Volume"		Catchment 180 Pervious Impervious Total Area
3	334.290 0.000 0.000	1.1	Surrace Area 0.518 0.182 0.700 nectare"
<u>.</u>	334,500 0.2540 5.000"		Time to Control 102 72 8 360 97 085 minutes"
	335.500 1.803 3269.000"	((#))	Bainfall denth 87 263 87 263 87 263 mm"
2 2	336.000 4.639 13030.00"	1.7.1	Rainfall volume 452.02 158.82 610.84 c.m"
	336,400 6,109 30065,00"		Rainfall losses 43.691 7.069 34.169 mm"
8	336.800 18.376 57257.00"		Runoff depth 43.572 80.194 53.094 mm"
	Peak outflow 6.593 c.m/sec"		Runoff volume 225.71 145.95 371.66 c.m"
*	Maximum level 336.416 metre"		Runoff coefficient 0.499 0.919 0.608 "
<u>1</u>	Maximum storage 31138.162 c.m"	- C.	Maximum flow 0.127 0.094 0.205 c.m/sec"
5	Centroidal lag 3.469 hours"	- 40	HYDROGRAPH Add Runoff "
	1.591 17.396 6.593 0.000 c.m/sec"		4 Add KUNOTT -
- 40	HTUHUGHAPH NEXT LINK "	* 54	0.205 0.205 0.535 0.585 POND DESTGN
÷	9 Next Link	* 04	Constant neek flow c m/sec"
• 56	DIVERSION"		0.070 Tarret outflow c.m/sec"
. 50	7 Node number"	2000	371.7 Hydrograph volume c.m"
	7.170 Overflow threshold"	121	8. Number of stages"
	1.000 Required diverted fraction"		0.000 Minimum water level metre"
	0 Conduit type; 1=Pipe;2=Channel"		0.750 Maximum water level metre"
	Peak of diverted flow 0.000 c.m/sec"		0.000 Starting water level metre"
<u>*</u>	Volume of diverted flow 0.000 c.m"		0 Keep Design Data: 1 = True; 0 = False"
	DIV00007.100hyd"	2	Level Discharge Volume"
÷	Major flow at 7"		
	1.591 6.593 6.593 0.000 c.m/sec*		
40			
	O COMPTIC		010000 0100/00 201000

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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 #"	0 Keep Design Data: 1 = True; 0 = False Level Discharge Volume* 0.000 0.000 0.000* 0.3000 0.9900 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* 1.600 1.000 400.000* Peak outflow 0.827 c.m/sec* Maximum level 1.756 metre* Maximum storage 339.788 c.m*
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" 2 Start - New Tributary" 0.205 0.000 1.595" 33 CATCHMENT 181" 1 Triangular SCS" 3 Specify values"	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"
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 length" 1.739 Impervious Area" 112.000 Impervious length"	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"
 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 SCS Curve No." 0.929 Impervious SCS Curve No." 0.929 Impervious Ia/S coefficient" 0.100 Impervious Ia/S coefficient" 0.101 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 	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"
0.930 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 of concentration 11.258 4.272 4.435 minutes* Rainfall depth 07.263 87.263 87.263 mm* Rainfall volume 114.23 1517.60 1631.83 c.m* Rainfall volume 114.23 1517.60 1631.83 c.m* Runoff depth 25.695 81.079 77.202 mm* Runoff depth 25.695 81.079 77.202 mm* Runoff coefficient 0.294 0.929 0.885 *	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"
Maximum flow 0.015 0.920 0.930 c.m/sec* 40 HYDROGRAPH Add Runoff "	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 - 4 Add Runoff - - 0.440 0.427 2.396* 54 POND DESIGN* 0.440 0.440 c.m/sec* - 0.070 Target outflow c.m/sec*

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764.7 Hydrograph volume	C.m"				* 40		HYDROGRAPH Copy to Out	flow"				
5. Number of stages"						i i	B Copy to Outflow"					
0.000 Minimum water leve	el metre"						4.012 4.01	2 4.012	2.448	в		
1.400 Maximum water leve	el metre"				- 40		HYDROGRAPH Combine	9"				
0 Keen Design Data:	1 = True: 0 = False"					1	5 Combine "					
Level Discharge	Volume"						NODE B"					
0.000 0.000	0.000"				*		Maximum flow	6.4	60 c.m/	sec"		
0.3200 0.04300	276.000"						Hydrograph volume	17267.9	79 c.m"			
0.7500 0.06600	333.000"						4.012 4.01	2 4.012	6.460	м		
1,300 0.08700	400.000"				40		H*DROGRAPH Confluenc	e 8"				
Peak outflow	0.200 c.m	i/sec"					B Node #"					
 Maximum level 	1.337 met	re"					NODE A"					
 Maximum storage 	381.694 с.л	1"					Maximum flow	6.5	93 c.m/	sec"		
Centroidal lag	2.883 hour	`S"			0.00		Hydrograph volume	74062.6	72 c.m"			
0.440 0.440	0.200 2.396 c	.m/sec"					4.012 6.59	3 4.012	0.000	n.		
40 HIDROGRAPH COMDINE	9				40		ATDROGRAPH Copy to Out	TIOW"				
9 Node #"					0.00		4.012 6.59	a 6.593	0.000			
NODE B"					* 40		HYDROGRAPH Combine	9"	01000			
Maximum flow	2.448 c.m	n/sec"					6 Combine "					
Hydrograph volume	6910.331 с.п	1"				1	9 Node #"					
	140 0.200 2.44	8"					NODE B"	0.4	50 a a /			
2 Start - New Tribut	arv"						Maximum Tiow	9.4	53 C.M/	sec"		
0.440 0.0	00 0.200 2.44	8"					4.012 6.59	3 6.593	9,453	н		
33 CATCHMENT 183"					* 40		HYDROGRAPH Start - New	Tributary"				
1 Triangular SCS"					1		2 Start - New Tributa	гу"				
3 Specify values"					· · · ·		4.012 0.00	0 6.593	9.453	11		
182 Appa alapa waatapa	tothutopy couth of	Lun 7/0"			33		CATCHMENT 184"					
29.000 % Impervious"	i ci ibucary, souch of	nwy //o					Fousl length"					
23.290 Total Area"							SCS method"					
160.000 Flow length"						184	Agricultural lands	south of Bl	eams Road*			
2.000 Overland Slope"					. . .	2.00) % Impervious"					
16.536 Pervious Area"					÷.	2.95	D Total Area"					
2.200 Pervious slope"					1	3 10	Overland Slope"					
6.754 Impervious Area"					((+))	2.89	Pervious Area"					
394.000 Impervious length"					(1)	80.00) Pervious length"					
2.000 Impervious slope"						3.10	D Pervious slope"					
0.250 Pervious Manning	'n'''					0.05	9 Impervious Area"					
68.300 Pervious SCS Curve	NO."					80.000) Impervious length"					
0 100 Pervious Ta/S coef	ficient"					0.25) Pervious Manning 'n	1.0				
11.789 Pervious Initial a	abstraction"					74.000) Pervious SCS Curve	No."				
 0.015 Impervious Manning) 'n'"				(#)	0.419	Pervious Runoff coe	fficient"				
98.000 Impervious SCS Cur	ve No."					0.100) Pervious Ia/S coeff	icient"				
0.931 Impervious Runoff	coefficient"					8.924	Pervious Initial ab	straction"				
0.100 Impervious Ia/S CC	erricient"				10 C	0.01	Impervious Manning Impervious SCS Curv	'n'" • No "				
4.012 0.0	00 0.200 2.44	a c.m/sec"			0.00	0.92	I Impervious Bunoff c	e NO. oefficient"				
Catchment 183	Pervious Impervio	us Total Are	a "			0.100) Impervious Ia/S coe	fficient"				
Surface Area	16.536 6.754	23.290	hectare"			0.518	B Impervious Initial	abstraction				
Time of concentration	34.184 7.381	19.979	minutes"		2.40		0.400 0.00	0 6.593	9.453	c.m/sec*		
Painfall dooth	136.252 94,189	113,960	minutes"				Catchment 184	Pervious	Imperviou	s lotal Area	a "	
Rainfall volume	1,4430 0.5894	2,0324	ha-m"				Time of concentration	18.971	2.486	∠.950 18.263	minutes"	
Rainfall losses	57,821 5,992	42,791	·· 和而 "		(m.)		Time to Centroid	116.786	87,343	115.522	minutes"	
Runoff depth	29.442 81.271	44.473	mm "				Rainfall depth	87.263	87.263	87.263	" mm	
Runoff volume	0.4869 0.5489	1.0358	ha-m"				Rainfall volume	2522.79	51.49	2574.27	C.M"	
Runoff coefficient	0.337 0.931	0.510			÷.		Rainfall losses	50.707	6.917	49.832	៣៣ "	
Maximum flow	1.231 3.757	4.012	C.M/SEC"		0.60		Hunott depth	36.556	80.346	37.432	" mm	
4 Add Runoff "							Runoff coefficient	0.419	47.40	0.429	u.Ⅲ #	
4.012 4.0	0.200 2.44	8"					Maximum flow	0.392	0.032	0.400	c.m/sec"	

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40	HYDROGRAPH Add Runoff "					Runoff volume 0.1972 0.8847 1.0819 ha-m"	
•	4 Add Runoff "					Runoff coefficient 0.287 0.931 0.660 *	
40	0.400 0.400 6.593	9,453"			1 40	Maximum flow 0.876 5.869 6.412 c.m/sec"	
40	8 Copy to Outflow"				- 40	0 HYDROGRAPH ADD HUNOTT *	
•	0.400 0.400 0.400	9.453"				6,412 6.412 9.780 9.780	
40	HYDROGRAPH Combine 9"				* 40	,0 HYDROGRAPH Copy to Outflow®	
#.) #.)	6 Combine " 9 Node #"					8 Copy to Outflow"	
•	NODE B"				* 40	0 HYDROGRAPH Combine 10"	
	Maximum flow 9.780	c.m/sec"				6 Combine •	
#\\ 	Hydrograph volume 92434.875	с.п"			*	10 Node #*	
40	0.400 0.400 0.400 HVDPOGRAPH Confluence 0*	9.780"					
. 40	7 Confluence "					Maxingin 100 100 c.m.ºsec	
•	9 Node #"				*	6.412 6.412 6.412 16.061"	
	NODE B"				* 61	ADD COMMENT===================================	
	Maximum Tiow 9.780 Hydrograph yolume 92434 875	C.m/sec"			÷	3 Lines of comment"	
	0.400 9.780 0.400	0.000"				Catchments north of Hwy 7/8, towards Eastern Tributary*	
• 40	HYDROGRAPH Copy to Outflow"					***************************************	
	B Copy to Outflow [*]	0.0001			* 40	,0 HYDROGRAPH Start - New Tributary	
40	U.400 9.780 9.780 HYDROGRAPH Combine 10"	0.000-			÷.	2 Start - New Tributary"	
•	6 Combine "				• 33	3 CATCHMENT 150"	
•	10 Node #"					1 Triangular SCS"	
2	NODE C"	/			÷	3 Specify values"	
ж.)	Hvdrograph volume 92434.875	C.m"			2	1 SUS method [*] 150 Southern portion of Ber Centre fielde [*]	
	0,400 9,780 9.780	9.780"			*	0.00 % Impervious"	
40	HYDROGRAPH Start - New Tributary"				đ.	3.510 Total Area"	
	2 Start - New Tributary"	0.700*			ā	95.000 Flow length*	
33	CATCHMENT 185"	9,780				1.500 UVerland Slope" 3.510 Pervious Area"	
0	1 Triangular SCS"					100.000 Pervious length"	
2	3 Specify values"				- č	2.000 Pervious slope"	
•	1 SCS method 195 Morpingside Reticement Community	londo"			<u></u>	0.000 Impervious Area"	
	58,000 % Impervious"	Lanus			*	290,000 Impervious iength" 2.000 Impervious slope"	
•	18.780 Total Area"				(T);	0.250 Pervious Manning 'n'"	
	190.000 Flow length"					74.000 Pervious SCS Curve No."	
*1	7 888 Pervious Area"				÷	0.419 Pervious Runoff coefficient"	
	25.000 Pervious length"					8.924 Pervious Ta/s coerficient 8.924 Pervious Toitial Astraction*	
	2.500 Pervious slope"					0.015 Impervious Manning 'n'"	
*/: */:	10.892 Impervious Area"				- C	98.000 Impervious SCS Curve No."	
	2.500 Impervious slope"					0.000 Impervious Hunott coefficient" 0.100 Impervious Ia/S coefficient"	
•	0,250 Pervious Manning 'n'"					0.518 Impervious Initial abstraction"	
#34 #33	64.400 Pervious SCS Curve No."					0.409 0.000 6.412 16.061 c.m/sec"	
	0.287 Pervious Runott coefficient"					Catchment 150 Pervious Impervious Total Area "	
•	14.041 Pervious Initial abstraction"					Surface Area 3.510 0.000 3.510 hectare"	
	0.015 Impervious Manning 'n'"					Time to Centrolad 124,000 92.616 124,000 minutes"	
0 • 1	98.000 Impervious SCS Curve No."					Rainfall depth 07.263 87.263 87.263 mm	
	0.931 Impervious Hunott coefficient" 0.100 Impervious Ia/S coefficient"					Rainfall volume 3062.94 0.00 3062.95 c.m*	
	0.518 Impervious Initial abstraction*				÷	Hainfall Losses 50,668 5,932 50,668 mm ²	
	6.412 0.000 9.780	9.780 c.m/sec"				Runoff volume 1284.50 0.00 1284.50 c.m."	
	Catchment 185 Pervious Im	pervious Total Are	a "			Runoff coefficient 0.419 0.000 0.419	
	SUFTACE Area 7.888 10 Time of concentration 12 199 6	474 7 517	hectare"		* 40	Maximum flow 0.409 0.000 0.409 c.m/sec*	
•	Time to Centroid 110.243 92	.945 96.098	minutes"		40	4 Add Bunoff *	
1	Rainfall depth 87.263 87	.263 87.263	m m *			0.409 0.409 6.412 16.061*	
	Rainfall volume 0.6883 0.	9505 1.6388	ha-m"		* 40	0 HYDROGRAPH Copy to Outflow*	
	Raintall Losses 62.261 6. Bunoff depth 25.002 81	045 29.656	mm "		÷	8 Copy to Outflow*	
	nunori deptir 20.003 81	.213 0(.000	NUM			0.409 0.409 0.409 16.061"	

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40 HYDROGRAPH Combine 11" 6 Combine "	 152 Southern portion of Schneider lands" 5.000 % Impervious" 	
11 Node #"	8.560 Total Area	
U/S OT EAST CUIVERT OT HWY / ACC.	3 500 Overland Slope	
Hydrograph volume 1284.501 c.m"	8.132 Pervious Area	
0.409 0.409 0.409 0.409"	170.000 Pervious length*	
40 HYDROGRAPH Start - New Tributary"	3.500 Pervious slope"	
2 Start - New Tributary	0.428 Impervious Area"	
* 0.409 0.000 0.409 0.409* * 33 CATCHIENT 16**	3 500 Impervious length"	
1 Triangular SCS"	0.250 Pervious Manning 'n'"	
3 Specify values	* 82.000 Pervious SCS Curve No."	
1 SCS method"	 0.556 Pervious Runoff coefficient* 	
151 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"	0.100 Pervious Ia/S coefficient*	
5.000 % Impervious 5.770 Total Aces"	0.015 Tenervicus Initial abstraction	
100.000 Flow length	98.000 Impervious SCS Curve No."	
2.000 Overland Slope"	0.920 Impervious Runoff coefficient"	
3.866 Pervious Area	0.100 Impervious Ia/S coefficient	
100.000 Pervious length	0.518 Impervious Initial abstraction"	
1.904 Tonervious Area"	Catchment 152 Pervious Impervious Total Area *	
296.000 Impervious length*	Surface Area 8,132 0.428 8,560 hectare"	
2.000 Impervious slope	Time of concentration 25.099 3.769 23.388 minutes"	
0.250 Pervious Manning 'n'	Time to Centroid 123.224 89.227 120.498 minutes*	
76.000 Pervious SCS Curve No."	Rainfall depth 87.263 87.263 87.263 mm"	
0.451 Pervious Hunort coefficient"	Rainfall Volume / V96.26 3/3/49 / 469.75 C.m" Paiofall losses 39.700 6.042 37.198 mm"	
8.021 Pervious Initial abstraction"	* Runoff depth 48,483 80.322 50.075 mm*	
• 0.015 Impervious Manning 'n'*	Runoff volume 3942.65 343.78 4286.43 c.m*	
98.000 Impervious SCS Curve No."	🗶 Runoff coefficient 0.556 0.920 0.574 "	
0.932 Impervious Runoff coefficient	Maximum flow 1.268 0.220 1.328 c.m/sec"	
0.100 Impervious la/S coefficient"	40 HYDROGHAPH Add HUNOTT	
1,199 0.000 0.409 0.409 c.m/sec*	* 1.328 1.328 1.199 1.347"	
Catchment 151 Pervious Impervious Total Area "	* 40 HYDROGRAPH Copy to Outflow"	
Surface Area 3.866 1.904 5.770 hectare"	8 Copy to Outflow"	
Time of concentration 23.873 6.217 14.968 minutes"	1.328 1.328 1.347"	
lime to centrolo 122.033 92.010 107.493 minutes" Bainfall darth 87.263 87.263 mm"	40 DIDRUGRAPH CONDITIE IT	
Rainfall volume 3373.52 1661.59 5035.10 c.m"	11 Node #"	
• Rainfall losses 47.899 5.932 34.050 mm"	u/s of east culvert of HWY 7&8"	
Runoff depth 39.365 81.331 53.214 mm"	Maximum flow 2.529 c.m/sec"	
Runoff volume 1521.80 1548.62 3070.43 c.m"	Hydrograph volume 8641.354 c.m"	
Marginum Flow 0.501 1.031 1.199 c.m./sec*	40 HYDROGRAPH Start - New Tributary"	
40 HYDROGRAPH Add Runoff "	2 Start - New Tributary"	
4 Add Runoff "	1.328 0.000 1.328 2.529"	
1.199 1.199 0.409 0.409"	47 FILEI_O Read/Open DIV00007.100hyd"	
40 HYDROGRAPH Copy to Outflow	1 1=read/open; 2=write/save"	
	2 I=rainail; 2=nyorograph" 1 1=runoff: 2=inflow: 3=outflow: 4=iunction"	
40 HYDROGRAPH Combine 11	DIV00007.100hvd"	
6 Combine "	Major flow at 7*	
11 Node #"	* Total volume 0.000 c.m"	
u/s of east culvert of HWY 7&8"	Maximum flow 0.000 c.m/sec"	
- Maximum TLOW 1.347 C.m/S8C* Hydrograph ynlume 4354 928 c.m.*	0.000 0.000 1.328 2.529 C.M/SeC" 40 HVDROGRAPH Add Bunoff "	
1.199 1.199 1.199 1.397	4 Add Runoff *	
40 HYDROGRAPH Start - New Tributary"	0.000 0.000 1.328 2.529"	
2 Start - New Tributary	* 40 HYDROGRAPH Copy to Outflow"	
1.199 0.000 1.199 1.347"	B Copy to Outflow"	
33 CAICHMENT 152"	0.000 0.000 2.529"	
i Filangular Sus-	6 Combine "	
1 SCS method*	11 Node #"	

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2	W/o of cost sulvest of LNN 788			
	Maximum flow 2 520	c m/sec"		
	Hydrograph volume 8641 354	c.m*		
		2 529"		
* 40	HYDROGRAPH Confluence 11"	2.023		
	7 Confluence *			
	11 Node #"			
	u/s of east culvert of HWY 7&8"			
	Maximum flow 2.529	c.m/sec"		
	Hydrograph volume 8641,354	с.п"		
	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"			
(#))	Number of stages"			
1711	332.660 Minimum water level metre"			
	336.000 Maximum water level metre"			
(# 1)	332.660 Starting water level metre"			
(#))	0 Keep Design Data: 1 = True; 0 = 1	False"		
	Level Discharge Volume"			
2. L	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*			
1407	335.000 3.780 14775.00"			
08.0	335.500 4.332 22251.00*			
	335.750 4.583 26742.00*			
	336,000 21.985 31757,00"			
2	Peak outflow 1.534	c.m/sec"		
	Maximum level 333.658	metre"		
2	Maximum storage 2758.176	.c.m°		
<u> </u>	Centroldal lag 2.359	nours"		
. 10	U.UUU 2.529 1.534 (0.000 c.m/sec"		
40	TIDHUGHAMM NEXT LINK "			
	5 NEXT LINK "	0.000#		
	U.UUU 1.534 1.534	0.000-		
. 30	GIARI/RE-START TUTALS []"			
	J HUNOTT LOTAIS ON EXIL	000 000	hantonal	
	Total Catchment area	228.020	nectare"	
S	Total impervious area	50.613	nectare.	
1 10	TOTAL & Imperivious	22.197"		
- 19	EXTI.			

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MIDUSS Output	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 "
Job folder: Q:\34896\104\SMM\MIDUSS\Pre" Output filename: 34896-104_Pre-Regional.out" Licensee name: admin" Company Microsoft"	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"
Date & Time last used: 12/7/2016 at 2:04:24 PM* 81 ADD COMMENT===================================	33 CATCHMENT 102" 1 Triangular SCS" 1 Equal length" 1 SCS method" 102 Pfanging Earg Development - parth of GEYB"
New Hamburg, Ontario" Regional Storm Event - Pre-development" Job No.: 34896-104" Calculated by: NED/MSB/GMK"	0.000 % Impervious" 12.070 Total Area" 180.000 Flow length" 2.500 Overland Slope"
31 TIME PARAMETERS" 5.000 Time Step" 2880.000 Max. Storm length	12.070 Pervious Area" 180.000 Pervious length" 2.500 Pervious slope" 0.000 Impervious Area" 100 Output
32 STORM Mass Curve" 3 Mass Curve" 285,000 Rainfall depth" 2860.000 Duration"	2.500 Impervious slope" 0.250 Pervious Manning 'n" 82.000 Pervious Supper No." 0.817 Pervious Runoff coefficient"
 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" 	 0.100 Pervious Ia/S coefficient" 5.576 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No."
81 ADD COMMENT===================================	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
* 33 CATCHMENT 101" * 1 Triangular SCS" 1 Equal length" 1 SCS method"	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 mm"
 101 Area Northeast of GEXR* 0.000 % Impervious* 2.970 Total Area* 80.000 Flow length* 0.500 Overland Store* 	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 volume 2.8113 0.000 0.817
2.970 Pervious Area" 80.000 Pervious length" 0.500 Pervious slope" 0.000 Impervious Area"	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"
<pre>80.000 Impervious length" 0.500 Impervious slope" 0.250 Pervious Manning 'n'" 82.000 Pervious SCS Curve No."</pre>	40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 1.795 2.238 2.238 0.000" 40 HYDROGRAPH Combine 1"
0.010 Pervious Rultor Coefficient" 5.576 Pervious Initial abstraction" 0.015 Impervious Manning "n" 98.000 Impervious SCS Curve No."	1 Node #" u/s of GEXR" Maximum flow 2.238 c.m/sec" Hydrograph yolume 35030.832 c.m"
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	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
Gatchment 101 Pervious Impervious Total Area Surface Area 2.970 0.000 2.970 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 mm"	33 CATCHMENT 103" 1 Triangular SCS 1 Equal length" 1 SCS method" 103 Woodlot - north of GEXR"
* Rainfall volume 8464.49 0.01 8464.50 c.m*	0.000 % Impervious*

2:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-Regional.out Page 3 Printed at 15:22 on 18 Dec 2018	Q:(34896)104)SWMIMIDUSS\Pre\34896-104_Pre-Regional.out Printed at 15:22 on 18 Dec 2018	Page 4
2.080 Total Area" 80.000 Flow Length"	Catchments South of GEXR, part of Inlet #1"	
2.500 Overland Slope"	* 33 CATCHMENT 104"	
2.080 Pervious Area"	1 Triangular SCS"	
2 500 Pervious length"	3 Specify values"	
0.000 Impervious Area"	10 Piuroside Bross"	
80.000 Impervious length"	59.000 % Interviews"	
2.500 Impervious slope"	2.020 Total Area"	
0.250 Pervious Manning 'n'	35.000 Flow length"	
70.000 Pervious SCS Curve No."	1.200 Overland Slope"	
0,000 Pervious Hulloin Coefficient"	" 0.328 Pervious Area" 60.000 Receives Logate"	
10,886 Pervious Initial abstraction"	2.000 Pervious slope"	
0,015 Impervious Manning 'n'"	1.192 Impervious Area"	
98,000 Impervious SCS Curve No."	116.000 Impervious length"	
0.000 Impervious Hunort coefficient"	0.500 Impervious slope"	
0.500 Impervious Initial abstraction"	76 000 Pervious SCS Curve No "	
0.285 0.000 2.238 2.238 c.m/sec"	0.753 Pervious Aunoff coefficient"	
Catchment 103 Pervious Impervious Total Area "	• 0.100 Pervious Ia/S coefficient"	
Surface Area 2.080 0.000 2.080 hectare	8.021 Pervious Initial abstraction"	
lime of concentration 27.287 4.818 27.287 minutes"	0.015 Impervious Manning 'n'"	
Bainfall depth 285.000 225.000 mm"	0.976 Impervious Sus Guive No.	
Rainfall volume 5927.99 0.01 5928.00 c.m"	O.100 Impervious Ia/S coefficient"	
Rainfall losses 88.888 6.718 88.888 mm"	0.518 Impervious Initial abstraction*	
Runoff depth 196.112 278.282 196.112 mm"	0.291 0.000 2.511 2.511 c.m/sec"	
HUNDIT VOLUME 40/9.13 0.01 40/9.14 C.M" Bundf coefficient 0.688 0.000 0.688 "	Catchment 104 Pervious Impervious Total Area "	
Maximum flow 0.285 0.000 0.285 c.m/sec"	Time of concentration 24.130 9.759 14.775 minutes"	
40 HYDROGRAPH Add Runoff "	Time to Centroid 2507.916 2278.793 2358.770 minutes"	
4 Add Runoff "	Rainfall depth 285.000 285.000 mm*	
0.285 0.285 2.238 2.238*	Rainfall volume 2360.37 3396.63 5757.00 c.m"	
40 ntbroughArn Copy to Outflow"	Haintali losses /0.315 6.777 32.828 mm"	
0.285 0.285 0.285 2.238"	Runoff volume 1778.02 3315.86 5093.88 c.m"	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.753 0.976 0.885 "	
6 Combine "	Maximum flow 0.119 0.184 0.291 c.m/sec"	
	40 HYDROGRAPH Add Runoff "	
Maximum flow 2.511 c.m/sec"		
Hydrograph volume 39109.953 c.m"	54 POND DESIGN"	
0.285 0.285 0.285 2.511"	 0.291 Current peak flow c.m/sec" 	
40 HYDROGRAPH Confluence 1"	0.070 Target outflow c.m/sec"	
/ Contluence "	5093.9 Hydrograph volume c.m"	
U/S Of GEXR"	0.000 Minimum water level metre"	
Maximum flow 2.511 c.m/sec"	" 0.910 Maximum water level metre"	
Hydrograph volume 39109.953 c.m"	0.000 Starting water level metre"	
0.285 2.511 0.285 0.000"	0 Keep Design Data: 1 = True; 0 = False"	
40 ntbhogharn copy to Outflow"	Level Discharge Volume"	
0.285 2.511 2.511 0.000"	0.3100 0.03090 782.000"	
40 HYDROGRAPH Combine 2"	0.6100 0.1232 1619.000"	
6 Combine "	0.9100 0.2769 2511.000"	
2 Node #"	Peak outflow 0.172 c.m/sec"	
Maximum flow 2.511 c.m/sec"	Maximum storace 1904 550 c m"	
Hydrograph volume 39109.953 c.m*	Centroidal lag 44,467 hours"	
0.285 2.511 2.511 2.511*	0.291 0.291 0.172 2.511 c.m/sec"	
40 HYDROGRAPH Start - New Tributary"	40 HYDROGRAPH Combine 2"	
2 Start - New Tributary"	6 COMDINE "	
B1 ADD COMMENT===================================	Z NUCE #- TNIFT 1"	
3 Lines of comment"	Maximum flow 2.649 c.m/sec"	
*****	Hydrograph volume 44202.363 c.m"	

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0.291 0.291 0.172 2.649"	• 0.100 Impervious Ia/S coefficient"
40 HYDROGRAPH Start - New Tributary"	 0.518 Impervious Initial abstraction"
2 Start - New Tributary"	• 0.186 0.527 0.172 2.649 c.m/sec*
• 0.291 0.000 0.172 2.649" • 33 CATCHMENT 105"	Catchment 106 Pervious Impervious Iotal Area "
1 Triangular SCS"	Time of concentration 24.967 4.485 6.943 minutes"
* 3 Specify values"	Time to Centroid 2508.820 2271.816 2300.254 minutes"
1 SCS method"	Rainfall depth 285.000 285.000 285.000 mm"
105 IFON BYIDGE MANUTACTURING PROPERTY" 65 000 & Impervious"	Haintall Volume 547.20 3100.80 3646.00 C.m ⁻ Baintall losses 70.499 7.398 16.863 mm ⁻
3.570 Total Area"	Runoff depth 214.501 277.602 268.137 mm*
90.000 Flow length"	Runoff volume 411.84 3020.31 3432.15 c.m"
2.000 Overland Slope"	Runoff coefficient 0.753 0.974 0.941 "
90.000 Pervious lennth"	40 HYDROGRAPH Add Runoff "
2.000 Pervious slope"	4 Add Runoff
2.320 Impervious Area	0.186 0.713 0.172 2.649"
90.000 Impervious elegen" 2 000 Impervious elegen	40 HYDRUGHAPH COPY to OUTTIOW"
0.250 Pervious Manning 'n'"	• 0.186 0.713 0.713 2.649"
81.000 Pervious SCS Curve No."	40 HYDROGRAPH Combine 2"
0.806 Pervious Runoff coefficient"	6 Combine "
5 958 Pervious Initial abstraction"	- 2 NOGE # - INIET 1 =
0.015 Impervious Manning 'n'"	Maximum flow 3.318 c.m/sec"
98.000 Impervious SCS Curve No."	Hydrograph volume 56941.270 c.m*
0.973 Impervious Runoff coefficient"	• 0.186 0.713 0.713 3.318"
 0.500 Impervious Initial abstraction" 	
0.527 0.000 0.172 2.649 c.m/sec*	• 0.186 0.000 0.713 3.318 [*]
Catchment 105 Pervious Impervious Total Area	33 CATCHMENT 107"
Surface Area 1.250 2.320 3.570 hectare"	• 1 Friangular SCS"
Time to concentration 50.436 5.329 10.216 minutes"	1 SCS method"
Rainfall depth 285.000 285.000 mm"	107 Industrial properties at end of Hamilton Road"
Rainfall volume 0.3561 0.6613 1.0174 ha-m"	40.000 % Impervious"
Hainfall losses 55,182 7.681 24,306 mm* Bunoff denth 229,818 277,319 260,604 mm*	 2.850 IOTAL APRA" 50.00 Flow length"
Runoff volume 2871.57 6455.19 9306.77 c.m"	1.000 Overland Slope"
Runoff coefficient 0.806 0.973 0.915 "	1.710 Pervious Area
Maximum flow 0.186 0.354 0.527 c.m/sec"	50.000 Pervious length"
4 Add Runoff "	1.100 Intervious Area"
0.527 0.527 0.172 2.649"	50.000 Impervious length
33 CATCHMENT 106"	1.000 Impervious slope"
1 Intangular SCS" 3 Sperify values"	0.250 Pervious Manning 'n' 76.00 Pervious SC Curve No "
1 SCS method"	0.753 Pervious Runoff coefficient*
106 N.C. Pestell Head Office and other Industrial*	• 0.100 Pervious Ia/S coefficient"
85.000 % Impervious"	8.021 Pervious Initial abstraction"
5.000 Flow length"	98 DOD Tmpervious Manning ""
1.500 Overland Slope"	0.976 Impervious Runoff coefficient"
0.192 Pervious Area	0.100 Impervious Ia/S coefficient"
55.000 Pervious length"	0.518 Impervious Initial abstraction"
1.088 Impervious Area"	Catchment 107 Pervious Impervious Impervious Area
55.000 Impervious length"	Surface Area 1.710 1.140 2.850 hectare"
1.500 Impervious slope"	Time of concentration 26.629 4.784 16.502 minutes
OLZSU PERVIOUS Manning 'n'" 76 000 Pervious SCS Curve No "	Time to Centroid 2511.443 2272.190 2400.531 minutes"
0.753 Pervices Runoff coefficient"	Rainfall volume 4873.50 3249.00 8122.50 c.m*
0.100 Pervious Ia/S coefficient"	Rainfall losses 70.314 6.701 44.869 mm"
8.021 Pervious Initial abstraction"	Runoff depth 214.686 278.299 240.131 mm"
9 000 Impervious SCS Curve No "	Runoff volume 3671.13 3172.61 6843.74 c.m"
0.974 Impervious Runoff coefficient"	Maximum flow 0.246 0.171 0.413 c.m/sec

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40 HYDROGRAPH Add Runoff " 4 Add Runoff "	3.000 Pervious slope" 4.148 Impervious Area"
• 0.413 0.413 0.713 3.318 [*]	 192.000 Impervious length"
33 CATCHMENT 108	0.750 Impervious slope"
1 Frangular SCS"	0.250 Pervious Manning 'n'"
1 SCS method"	0.741 Pervious Bundf coefficient"
* 108 Woodlot and Wetland east of Pestells"	0.100 Pervious Ia/S coefficient"
5.000 % Impervious"	8.467 Pervious Initial abstraction"
5.920 Total Area"	0.015 Impervious Manning 'n'"
3.000 Verlagti	98.000 Impervious SCS Curve No."
5.624 Pervious Area"	0.100 Impervious Ia/S coefficient"
* 65.000 Pervious length"	0.518 Impervious Initial abstraction"
3.000 Pervious slope"	• 0.817 0.000 1.219 4.507 c.m/sec"
0.296 Impervious Area" 65.000 Impervious legath"	Catchment 109 Pervious Impervious Total Area "
3.000 Impervious slope"	Surface Area 1,383 4,148 5,530 Nectare"
• 0.250 Pervious Manning 'n'"	Time to Centroid 2506.556 2282.697 2327.829 minutes"
70.200 Pervious SCS Curve No."	• Rainfall depth 285.000 285.000 mm"
0.690 Pervious Runoff coefficient"	Rainfall volume 0.3940 1.1820 1.5761 ha-m"
10.782 Pervious Initial abstraction"	Haintall losses /3.//4 6.180 23.078 mm" Bunoff denth 211 226 278 820 261 022 mm"
0.015 Impervious Manning 'n'"	* Runoff volume 0.2920 1.1564 1.4484 ha.m."
98,000 Impervious SCS Curve No."	* Runoff coefficient 0.741 0.978 0.919 *
0.966 Impervious Runoff coefficient"	Maximum flow 0.196 0.642 0.817 c.m/sec"
 0.100 Impervious la/s coerticient" 0.518 Impervious Initial abstraction 	40 HYDROGRAPH Add Runoff "
0.810 0.413 0.713 3.318 c.m/sec"	* 0.817 0.817 1.219 4.507"
* Catchment 108 Pervious Impervious Total Area "	54 POND DESIGN"
Surface Area 5.624 0.296 5.920 hectare	0.817 Current peak flow c.m/sec"
Time of concentration 22.793 4.027 21.505 minutes"	0.070 Target outflow c.m/sec"
Alinfall depth 285.000 285.000 285.000 mm"	9. Number of states"
* Rainfall volume 1.6028 0.0844 1.6872 ha-m°	• 0.000 Minimum water level metre"
Rainfall losses 88.411 9.617 84.471 mm"	1.200 Maximum water level metre"
* Hunoff depth 196.589 275.383 200.529 mm* Bunoff volume 1 1055 0.0415 1 1071 be m*	0.000 Starting water level metre"
Bunoff coefficient 0.690 0.966 0.704 "	even Discharge Volume
Maximum flow 0.768 0.043 0.810 c.m/sec"	• 0.000 0.000 0.000"
40 HYDROGRAPH Add Runoff "	0.1500 0.00400 297.000"
4 Add Runott "	0.3000 0.01000 635.000"
* 40 HYDROGRAPH Copy to Outflow"	0.4500 0.03600 1004.000"
8 Copy to Outflow"	0.7500 0.06000 1847.000"
0.810 1.219 1.219 3.318"	0.9000 0.06900 2329.000"
40 HYDROGRAPH Combine 2"	1.050 0.5220 2852.000"
2 Node #"	
INLET 1"	Maximum level 1.125 metre"
Maximum flow 4.507 c.m/sec	Maximum storage 2876.116 c.m"
"Hydrograph volume 75556.320 c.m"	Centroidal lag 44.039 hours"
40 HYDROGRAPH Start - New Tributary	* 40 HYDRORAPH Combine 2"
2 Start - New Tributary	6 Combine "
* 0.810 0.000 1.219 4.507°	* 2 Node #"
" 33 CATCHMENT 109"	INLET 1"
a interruption of a specify values"	Meximum tuow 5.303 C.m/sec" Hydrograph volume 90041.180 c.m."
1 SCS method"	0.817 0.817 0.817 0.817 0.817
109 N.C. Pestell site"	* 81 ADD COMMENT======="
75.000 % Impervious"	3 Lines of comment"
5.550 IUTH APR	Catchmants South of GEVE part of Tolet #2"
2.000 Overland Slope"	excommence over or deally part of anget mz
1.383 Pervious Area"	40 HYDROGRAPH Start - New Tributary"
50.000 Pervious length"	2 Start - New Tributary"

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* 0.617 0.000 0.811 5.303" * 33 CATCHMENT 110"	Maximum flow 0.240 c.m/sec" Hydrograph yolume 4644 540 c.m"	
1 Triangular SCS"	* 0.274 0.274 0.240 0.240*	
3 Specify values"	* 40 HYDROGRAPH Start - New Tributary*	
1 SCS method*	2 Start - New Tributary"	
30.000 % Impervious"	* 33 CATCHMENT 111"	
1.920 Total Area"	1 Triangular SCS"	
150.000 Flow length"	1 Equal length	
1.344 Pervious Area"	11 Woodlat parts of Scheeider/Good lands"	
150.000 Pervious length*	* 0.000 % Impervious*	
1.500 Pervious slope"	13.230 Total Area"	
0.576 Impervious Area"	170.000 Flow length"	
1.500 Impervious slope"	13.230 Pervious Area"	
0.250 Pervious Manning 'n'"	* 170.000 Pervious length*	
80.000 Pervious SCS Curve No."	2.400 Pervious slope"	
0.100 Pervious Ta/S coefficient"	170.000 Impervious Area"	
6.350 Pervious Initial abstraction*	2.400 Impervious slope"	
0.015 Impervious Manning 'n'"	0,250 Pervious Manning 'n'"	
98.000 Impervious SCS Curve No."	70.000 Pervious SCS Curve No."	
0.100 Impervious Talk coefficient"	0.589 Pervious Hunott coetticient"	
0.518 Impervious Initial abstraction*	10.886 Pervious Initial abstraction	
0.274 0.000 0.811 5.303 c.m/sec"	0.015 Impervious Manning 'n'"	
Catchment 110 Pervious Impervious Total Area Surface Acea 1 344 0 575 1 920 bootanes	96.000 Impervious SCS Curve No."	
Time of concentration 45.172 6.909 32.027 minutes"	0.100 Impervious la/s coefficient	
Time to Centroid 2512.022 2273.901 2430.219 minutes"	0.518 Impervious Initial abstraction"	
Rainfall depth 285,000 285,000 mm"	1.805 0.000 0.240 0.240 c.m/sec	
Rainfall Volume 5850.40 1041,00 5472.00 C.m ⁻	Catchment 111 Pervious Impervious Iotai Area Surfare Area 13,230 0,000 13,230 bectare*	
Runoff depth 226.906 277.067 241.954 mm*	Time of concentration 43,420 7,667 43,420 minutes"	
Runoff volume 3049.62 1595.90 4645.52 c.m"	Time to Centroid 2569.298 2276.816 2569.298 minutes"	
- HUNOTT COETTICIENT 0.795 0.972 0.849	Rainfall depth 285,000 285,000 285,000 mm"	
* 40 HYDROGRAPH Add Runoff *	Rainfall losses 88.871 6.688 88.871 mm*	
4 Add Runoff "	Runoff depth 196.129 278.312 196.129 mm*	
- 0.274 0.274 0.811 5.303"	Runoff volume 2.5948 0.0000 2.5948 ha-m"	
O.274 Current peak flow c.m/sec*	- HUNDIT COUTLOIGHT 0.088 0.000 0.688 - m/cac"	
0.070 Target outflow c.m/sec"	40 HYDROGRAPH Add Runoff "	
4645.5 Hydrograph volume c.m"	4 Add Runoff *	
/, NUMDER OF Stages" 0.000 Minimum water lavel metre"	1.805 1.805 0.240 0.240*	
1.100 Maximum water level metre"	8 Copy to Outflow	
0.000 Starting water level metre"	1.805 1.805 1.805 0.240*	
• 0 Keep Design Data: 1 = True; 0 = False"	40 HYDROGRAPH Combine 3"	
	- to Compine -	
0.2500 0.04200 7.000"	INLET 2°	
0.5000 0.09000 71.000*	Maximum flow 2.023 c.m/sec*	
	Hydrograph volume 30592.369 c.m"	
1.000 0.3110 445.000"	* 81 ADD COMMENT===================================	
1.100 0.6160 557.000"	* 3 Lines of comment*	
Peak outflow 0.240 c.m/sec"		
Maximum isvei 0,359 metre Maximum storace 404.004 c.m."	soutn of GEXR along Nafziger Rd, part of Inlet #3"	
Centroidal lag 40.792 hours	* 40 HYDROGRAPH Start - New Tributary*	
0.274 0.274 0.240 5.303 c.m/sec*	2 Start - New Tributary"	
- 40 MYUHUHAPH COMDINE 3" 6 Combine "	1.805 0.000 1.805 2.023"	
3 Node #*	1 Triangular SCS*	
INLET 2*	1 Equallength*	

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1 SCS method"		•	0.796 Pervious Runoff coefficient"	
112 Culivated lands east of Nafziger Road"		• (0.100 Pervious Ia/S coefficient"	
1.000 % Impervious"		- 6	3.350 Pervious Initial abstraction"	
7.310 Total Area"			0.015 Impervious Manning 'n'"	
120.000 Flow length"		96	1.000 Impervious SCS Curve No."	
3.300 Overland Slope"			.9/6 Impervious Hunott coetticient"	
120,000 Pervious length"			. Too Impervises fairs coefficient	
3.300 Pervious slope"			0.362 0.000 1.097 1.097 c.m/sec*	
0.073 Impervious Area"			Catchment 113 Pervious Impervious Total Area "	
120.000 Impervious length"			Surface Area 1.536 1.024 2.560 hectare"	
3.300 Impervious slope"		1.002	Time of concentration 50.393 7.550 31.125 minutes"	
0.250 Pervious Manning 'n'"		1.5	Time to Centroid 2519.385 2276.079 2409.962 minutes*	
82.000 Pervious SCS Curve No."			Rainfall depth 285.000 285.000 mm"	
0.817 Pervious Runoff coefficient"			Rainfall volume 4377.60 2918.40 7296.00 c.m"	
0.100 Pervious Ia/S coetticient"			Haintall losses 58.154 6.895 37.650 mm"	
			Runoii depth 220.040 2/0.105 247.350 mm"	
98.000 Impervious SCS Curve No."			Runoff coefficient 0.706 0.976 0.968 "	
0.972 Impervious Runoff coefficient"			Maximum flow 0.220 0.154 0.362 c.m/sec"	
0.100 Impervious Ia/S coefficient*		* 40	HYDROGRAPH Add Runoff *	
0.518 Impervious Initial abstraction [®]			4 Add Runoff "	
1.097 0.000 1.805 2.023 c.m/sec"			0.362 0.362 1.097 1.097"	
Catchment 112 Pervious Impervious Total Area		* 54	POND DESIGN"	
Surface Area 7.237 0.073 7.310	hectare"		.362 Current peak flow c.m/sec"	
Time to Controld 9477 782 9271 151 9475 209	minutes"		.U/U larget outflow c.m/sec"	
 Rainfall denth 2477.762 2277.157 2475.526 	mm"		7 Number of stans"	
Bainfall volume 2.0625 0.0208 2.0833	ha-m"	* 0	. Nomber of stages	
Rainfall losses 52.223 8.092 51.781	መጠ [®]		.000 Maximum water level metre"	
Runoff depth 232.777 276.908 233.219	mm "	•	0.000 Starting water level metre"	
Runoff volume 1.6846 0.0202 1.7048	ha-m"	() *)	0 Keep Design Data: 1 = True; 0 = False*	
Runoff coefficient 0.817 0.972 0.818		(#S)	Level Discharge Volume"	
Maximum flow 1.086 0.011 1.097	c.m/sec"		0.000 0.000 0.000"	
40 HYDROGRAPH Add Runoff			0.1000 0.02000 7.000"	
4 Add Runott *			0.2500 0.04200 64.000"	
40 HVDROGRAPH Copy to Outflow ⁶		÷		
* 8 Copy to Outflow"			0.800 0.1250 1014.000	
* 1.097 1.097 1.097 2.023*		(0 8)	1.000 0.7880 1667.000"	
40 HYDROGRAPH Combine 4"			Peak outflow 0.289 c.m/sec"	
* Combine *			Maximum level 0.847 metre"	
* 4 Node #"		1.00	Maximum storage 1168,009 c.mª	
INLET 3"			Centroidal lag 41.204 hours"	
Maximum flow 1.097 c.m/sec"		- 40	0.362 0.362 0.289 1.097 c.m/sec"	
Mydrograph volume 17048.285 c.m ⁻		40	NYDRUGHAPH COMDINE 4	
* 40 HYDROGRAPH Start - New Tributary*		())		
2 Start - New Tributary"		12	INLET 3"	
1.097 0.000 1.097 1.097			Maximum flow 1.226 c.m/sec"	
33 CATCHMENT 113"			Hydrograph volume 23380.988 c.m"	
1 Triangular SCS"		(0.362 0.362 0.289 1.226*	
3 Specify values"		* 40	HYDROGRAPH Start - New Tributary"	
1 SCS method"			2 Start - New Tributary"	
113 Alpine Solutions - East SMWP"			0.362 0.000 0.289 1.226"	
40.000 % Impervious		- 33	CALCHMENT 114-	
150 000 Flow length"			i Frangular 505	
1.500 Overland Slope"			1 SCS method"	
1.536 Pervious Area"			14 Woodlot East and West of Nafziger Road*	
180.000 Pervious length*		े क े 3	3,000 % Impervious"	
1.500 Pervious slope"		. 13	.460 Total Area"	
1.024 Impervious Area"		* 140	.000 Flow length	
131.000 Impervious length"		1.4.7 S	5.600 Overland Slope	
1.500 (mpervious slope"		13	1056 Pervious Area"	
U.250 Pervious Manning 'n'"		140		
an'non letators 202 critae Mo'		2	1000 LELATORS STORE	

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	0.000	Teenandaria					-							
	140.000	Impervious Area"					-	C	atchment 115	Pervious	Impervious	Total Area	a "	
	3:600	Impervious slope"						5	Urtace Area	1,336	3.613	4.950	nectare	
*	0.250	Pervious Manning 'n	1.4						ime to Centralion	20.324	9.19/ 2277 810	2320 160	minutes"	
	70.100	Pervious SCS Curve I	No."					R	ainfall depth	285.000	285.000	285.000	mm"	
	0.689	Pervious Runoff coe	fficient"					R	ainfall volume	0.3809	1.0298	1.4107	ha-m"	
	0.100	Pervious Ia/S coeff.	icient"				•	R	ainfall losses	49.235	7.174	18.531	" mm	
	10.834	Transviewa Manaiaa	straction"					R	unoff depth	235,765	277.826	266.469	" mm	
	98.000	Impervious SCS Curve	e No "					R	unott volume	0.3151	1.0039	1.3190	ha-m"	
	0.972	Impervious Runoff c	oefficient"					M	avinum flow	0.827	0.975	0.935	c m/coo*	
	0.100	Impervious Ia/S coe	fficient"				* 40	H	YDROGRAPH Add Runoff	,	0.000	0.720	0.111/300	
3	0.518	Impervious Initial :	abstraction	1"				4	Add Runoff "					
÷.		1.868 0.00	0.289	1.226	c.m/sec"	3 C	- C		0.728 0.72	28 1.868	3,082"			
	C	atchment 114	Pervious	Impervious	5 Total Area	bastanal	54	P	OND DESIGN"					
	T	ime of concentration	34 208	6 042	13.460	nectare"	÷.	0.728	Current peak flow	c.m/sec"				
	Ť	ime to Centroid	2555.880	2272.527	2544.038	minutes"		13190.2	Hydrograph volume	.m/sec				
	R	ainfall depth	285.000	285.000	265.000	mm "		15.	Number of stages"	0.111				
()	R	ainfall volume	3.7210	0.1151	3.8361	ha-m"		0.000	Minimum water level	l metre"				
	R	ainfall losses	88.597	8.043	86,181	mm "		1.450	Maximum water level	L metre*				
	R	unoff depth	196.403	276.957	198.819	mm"		0.000	Starting water leve	el metre"				
	H R	unoff coefficient	2.5643	0.1118	2.6/61	na-m"	- C	0	Keep Design Data: 1	= True; 0	= False"			
3 9 3	M	aximum flow	1.809	0.062	1 868	C m/sec"			Level Discharge	vorume.				
* 40	н	YDROGRAPH Add Runoff		0100L	11000	0111/000	*		0.1500 0.00700	248.000*				
	4	Add Runoff "							0.2500 0.00900	418,000"				
		1.868 1.86	8 0.289	1.226"	•				0.3500 0.01100	593,000"				
40	H	YDROGRAPH Copy to Out	flow"						0.4500 0.01300	775.000"				
	8	L PER 1 PER	0 1 060	1 006			-		0.5500 0.01500	964.000"				
* 40	К	YDROGRAPH Combine	4"	1.220					0.6500 0.01600	1161.000*				
*	6	Combine "							0.8500 0.01900	1575.000*				
	4	Node #"							0.9500 0.02000	1795.000"				
÷		INLET 3"					-		1.050 0.05600	2025.000°				
	M	aximum flow	3.0	082 c.m/s	sec"		5		1.150 0.2080	2263,000"				
	п	ydrograph votulle 1 868 - 1 861	50142.0 9 1.869	159 C.M." 1 3 083"			- C		1.250 0.4600	2511.000*				
• 40	H	YDROGRAPH Start - New	Tributarv"	0.002					1.350 2.765	2768.000*				
	2	Start - New Tributa	ry"					P	eak outflow	0.7	27 c.m/s	ec"		
		1.868 0.000	0 1.868	3.082*	·			Ma	aximum level	1.2	62 metre			
• 33	C,	ATCHMENT 115"						Ma	aximum storage	2540.7	62 c.m"			
	1	Triangular SCS"					÷	C	entroidal lag	45.3	09 hours"			
÷.	1	SCS method"							0.728 0.728	0.727	3.082 c.m	/sec"		
×	115	Rec Centre - SWMP"					40	л 6	Combine "	4"				
	73,000	% Impervious"						4	Node #"					
	4.950	Total Area"							INLET 3"					
÷	50.000	Flow length"					2	Ma	aximum flow	3.8	00 c.m/s	ec"		
	2.800	Overland Slope"					÷	H	ydrograph volume	63275.1	17 c.m"			
	40.000	Pervious length"					. 10		0.728 0.72	28 0.727	3.800"			
	1.500	Pervious slope"					40	2	Start - New Tribute	V IFIDUTARY"				
	3.613	Impervious Area"						2	0.728 0.00	0 0 7 2 7	3 800"			
	182,000	Impervious length"					* 33	C	ATCHMENT 116"		0.000			
	1.500	Impervious slope"						1	Triangular SCS"					
2	0.250	Pervious Manning 'n	* u					1	Equal length"					
	0.827	Pervious SUS CUrve I	nu." fficient"					1	SCS method"					
	0.100	Pervious Ia/S coeff	icient"				÷	116	Industrial lands we	est of Nafzi	ger Road"			
•	5.202	Pervious Initial abs	straction"					7 710	Total Area"					
	0.015	Impervious Manning	'n'"					140.000	Flow length"					
	98.000	Impervious SCS Curve	e No."					1.600	Overland Slope"					
	0.975	Impervious Runoff co	oefficient"				÷	5.012	Pervious Area"					
	0.100	Impervious Ia/S coet	TT1C1ent"					140.000	Pervious length"					
	0.010	0.728 0.000	abstraction	3 082	c.m/sec"			1.600	Fervious slope"					
				3.002	, 000			5.030	impervious Area"					

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	2000 Impervious length"		U/S of HWY 788"
140	500 Impervious clerch		
	300 Impervious subpervious sub	5463	Hudrooraph volume 120633 516 c m"
- 76	200 Pervices Mainting II		1 106 2 023 2 023 7 208"
,0	JOU Pervious Sus curve NO.	* 40	HYDEGERAPH Confluence A*
	100 Pervious Taylo coefficient	40	
0	100 Pervious Ia/S coerticient	Carlo	
в	021 Pervious Initial abstraction		
0	015 Impervious Manning 'n'	20	
98	1000 Impervious SCS Curve No."	121	Maximum flow 4.902 c.m/sec
0	977 Impervious Runott coefficient"		Hydrograph volume 81549.648 C.m"
• 0	100 Impervious Ia/S coefficient"		1.106 4.902 2.023 0.000"
0	518 Impervious Initial abstraction"	- 40	HYDROGRAPH COPY TO OUTTIOW"
	1.106 0.000 0.727 3.800 c.m/sec"		8 Copy to Outflow"
•	Catchment 116 Pervious Impervious Total Area "		1.106 4.902 4.902 0.000"
	Surface Area 5.012 2.698 7.710 hectare"	* 40	HYDROGRAPH Combine 5"
-	Time of concentration 42.896 7.706 28.431 minutes"		6 Combine "
÷	Time to Centroid 2534.450 2276.989 2428.618 minutes™	17.	5 Node #"
•	Rainfall depth 285.000 285.000 285.000 mm"		u/s of HWY 7&8°
-	Rainfall volume 1.4283 0.7691 2.1974 ha-m"		Maximum flow 12.109 c.m/sec"
	Rainfall losses 70.243 6.632 47.979 mm"	(E)	Hydrograph volume 202182.938 c.m"
	Runoff depth 214.757 278.368 237.021 mm"		1.106 4.902 4.902 12.109"
	Runoff volume 1.0763 0.7512 1.8274 ha-m*	* 40	HYDROGRAPH Start - New Tributary"
	Runoff coefficient 0.754 0.977 0.832 "	0.60	2 Start - New Tributary"
	Maximum flow 0.719 0.408 1.106 c.m/sec"	17	1.106 0.000 4.902 12.109"
* 40	HYDROGRAPH Add Runoff "	* 33	CATCHMENT 117"
•	4 Add Runoff "	0.00	1 Triangular SCS'
	1.106 1.106 0.727 3.800"	100	1 Equal length"
40	HYDROGRAPH Copy to Outflow"	100	1 SCS method"
*)	8 Copy to Outflow"	۲	117 Cultivated Schneider central lands"
	1.106 1.106 1.106 3.800"		0.000 % Impervious"
- 40	HYDBOGBAPH Combine 4"	200	7.450 Total Area"
	6 Combine "	1.5	140.000 Flow length"
	4 Node #"	•	2.000 Overland Slope"
	IN ET 3"		7.450 Pervious Area"
			140.000 Pervious length"
(2 000 Pervious slope"
	1 106 1 106 4 902"		0.000 Impervious Area"
. 40			140.000 Impervious length"
40			2 000 Impervious slope"
•		2.80	0.250 Pervious Manning 'n'"
			81 400 Pervious SCS Curve No "
			0.811 Pervious Bunoff coefficient"
	Waling here and the and the and		0.100 Parvious Ja/S coefficient"
			5.804 Pervious Initial abstraction"
. 40	1.100 5.505 1.100 0.000		
40			OR OTO TIMPERVIOUS WATHING IN
			0.000 Impervious Bunoff coefficient"
. 40			0.100 Impervious Ia/S coefficient*
40			O File Impervious Taris toterniteretion"
3)			
3	5 Node #"		Catabrant 117 Deputieur Transvieur Tatal Appa "
	U/S OT HWY 7&8"		Catchingent (17) Pervious Impervious rotar Area
	Maximum flow 5.303 c.m/sec"	- 22	Surface Area 7.450 0.000 7.450 nectare
5 I I I I I I I I I I I I I I I I I I I	Hydrograph volume 90041.164 c.m"	- A	lime of concentration 39.647 7.207 39.647 minutes"
	1.106 5.303 5.303 5.303"	- C.	lime to centroid 2494.457 2274.493 2494.457 minutes"
* 40	HYDROGRAPH Confluence 3"		Rainfall depth 285.000 285.000 285.000 mm"
*	7 Confluence "		Reinfall volume 2.1232 0.0000 2.1233 ha-m"
5)	3 Node #"	1.2	Reinfall losses 53.900 7.352 53.899 mm"
	INLET 2"		Runoff depth 231.100 277.648 231.101 mm"
•	Maximum flow 2.023 c.m/sec"		Runoff volume 1.7217 0.0000 1.7217 ha-m"
•	Hydrograph volume 30592.369 c.m"		Runoff coefficient 0.811 0.000 0.811 "
•	1,106 2.023 5.303 0.000"		Maximum flow 1.114 0.000 1.114 c.m/sec"
40	HYDROGRAPH Copy to Outflow"	* 40	HYDROGRAPH Add Runoff "
	8 Copy to Outflow"		4 Add Runoff "
¥2	1,106 2,023 2,023 0,000"		1.114 1.114 4.902 12.109"
* 40	HYDROGRAPH Combine 5"	* 40	HYDROGRAPH Copy to Outflow"
ŧ	6 Combine "		8 Copy to Outflow"
	5 Node #"		1.114 1.114 1.114 12.109"

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40 HYDROGRAPH Combine 5"	* 0.070 0.000 0.070 13.284*	
6 Combine "	* 33 CATCHMENT 119"	
5 Node #"	 1 Triangular SCS" 	
U/s of HWY 788"	1 Equal length"	
Maximum ilow is.217 c.m/sec*	 SCS method SCS method SCS method 	
1.114 1.114 1.114 1.21	0 000 % Impervious"	
81 ADD COMMENT===================================	0.720 Total Area"	
3 Lines of comment"	 40.000 Flow length* 	
	* 2.000 Overland Slope*	
Catchments east of Hamilton Hoad, part of Indet #4"	0.720 Pervious Area	
40 HYDROGRAPH Start - New Tributary*	40.000 Pervious length	
2 Start - New Tributary"	0.000 Impervious Area"	
1.114 0.000 1.114 13.217"	40.000 Impervious length*	
33 CATCHMENT 118"	* 2.000 Impervious slope*	
1 Flangular SCS	0.250 Pervious Manning 'n'"	
1 Equal Length	76,000 Pervious SCS Curve No."	
118 Northwest corner of Nithview Heights"	0.100 Pervisus Ta/s coefficient*	
8.000 % Impervious"	8.021 Pervious Initial abstraction"	
0.500 Total Area"	• 0.015 Impervious Manning 'n'"	
60.000 Flow length	98.000 Impervious SCS Curve No.*	
0.460 Pervious Area*	0.000 Impervious Runoff coefficient"	
60.000 Pervicus length"	0.100 Impervious Ia/S coefficient*	
5.000 Pervious slope	103 0.000 0.070 13.284 c.m/sec*	
0.040 Impervious Area"	Catchment 119 Pervious Impervious Total Area "	
60.000 Impervious length"	Surface Area 0.720 0.000 0.720 hectare	
5.000 Impervious slope"	Time of concentration 18.919 3.399 18.919 minutes"	
0.250 Pervious Manning ""	Time to Centroid 2500.229 2264.844 2500.229 minutes"	
0.731 Pervious Runoff coefficient"	Rainfall depth 285.000 285.000 285.000 mm"	
0.100 Pervious Ia/S coefficient"	Rainfall Volume 2052.00 0.00 2052.00 c.m [*]	
8.924 Pervious Initial abstraction"	Bunoff depth 214.410 273.916 214.410 mm ⁻	
0.015 Impervious Manning 'n'"	Runoff volume 1543.75 0.00 1543.75 c.m"	
98.000 Impervious SCS Curve No."	Runoff coefficient 0.752 0.000 0.752	
0.302 Impervious Hunort Coefficient"	Maximum flow 0.103 0.000 0.103 c.m/sec"	
0.518 Impervious Initial abstraction"	40 HYDROGRAPH Add Runott "	
0.070 0.000 1.114 13.217 c.m/sec"		
Catchment 118 Pervious Impervious Total Area 🖷	* 40 HYDROGRAPH Copy to Outflow"	
Surface Area 0.460 0.040 0.500 hectare"	8 Copy to Outflow	
lime of concentration 18.427 3.293 16.873 minutes"	0.103 0.103 0.103 13.284"	
Rainfall denth 285,000 285,000	40 HYDROGRAPH Combine 5"	
Rainfall volume 1311.00 114.00 1425.00 c.m*	5 Node #"	
Rainfall losses 76.545 10.723 71.280 mm*	U/s of HWY 7&8"	
Runoff depth 208.455 274.277 213.720 mm*	Maximum flow 13.382 c.m/sec"	
Runoff volume 958,89 109.71 1068.60 c.m"	Hydrograph volume 222012.359 c.m*	
HUNOTT COETTICIENT 0.731 0.962 0.750	* 0.103 0.103 0.103 13.382*	
MAXIMUM (IDW 0.005 0.006 0.070 C.m/sec-	81 ADD COMMENT===================================	
4 Add Runoff "	3 Lines of comment*	
0.070 0.070 1.114 13.217"	Catchment to Inlet #5%	
40 HYDROGRAPH Copy to Outflow*		
8 Copy to Outflow"	* 40 HYDROGRAPH Start - New Tributary*	
0.070 0.070 0.070 13.217*	2 Start - New Tributary"	
6 Combine "	- 0.103 0.000 0.103 13.382"	
5 Node #*	SS GAIGHMENT 120"	
u/s of HWY 7&6"	1 Full length	
Maximum flow 13.284 c.m/sec"	1 SCS method"	
Hydrograph volume 220468.594 c.m"	120 Rear yards from Hamilton Heights Subdivision	
40 HVDPCCPADE Start New Tributeou	5.000 % Impervious"	
2 Start - New Tributary"	1.080 Total Area"	
_ clait - new introducty	- 20.000 Flow length"	

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3.000 Overland Slope"	0.817 Pervious Runoff coefficient	
1.026 Pervious Area"	• 0.100 Pervious Ia/s coefficient"	
20.000 Pervious length"	• 0.015 Improvidus Initial abstraction	
0.054 Impervious Area"	98.000 Impervious SCS Curve No."	
20.000 Impervious length"	0.000 Impervious Runoff coefficient"	
" 3.000 Impervious slope"	 0.100 Impervious Ia/S coefficient 	
0.250 Pervious Manning 'n'"	0.518 Impervious Initial abstraction"	
76.000 Pervious SCS Curve No."	6.329 0.000 0.152 13.530 C.m/sec"	
0.751 Pervious Ta/S coefficient"	* Surface Area 43.240 0.000 43.240 hectare"	
8.021 Pervious Initial abstraction"	 Time of concentration 48.223 8.776 48.223 minutes" 	
0.015 Impervious Manning 'n'"	Time to Centroid 2502.464 2277.522 2502.464 minutes"	
98.000 Impervious SCS Curve No."	Rainfall depth 285.000 285.000 285.000 mm"	
• 0.962 Impervious Runott coefficient"	Bainfall losses 52.089 6.683 52.089 mm"	
0.518 Impervious Initial abstraction"	 Runoff depth 232.911 278.307 232.911 mm" 	
0.152 0.000 0.103 13.382 c.m/sec"	 Runoff volume 10.0710 0.0000 10.0711 ha-m" 	
Catchment 120 Pervious Impervious Total Area "	Runoff coefficient 0.817 0.000 0.817 "	
Surface Area 1.026 0.054 1.080 hectare"	Maximum flow 6.329 0.000 6.329 c.m/sec"	
Time of concentration 11.052 1.986 10.480 minutes"		
Bainfall denth 285.000 285.000 mm"	* 6.329 6.329 0.152 13.530"	
Rainfall volume 2924.10 153.90 3078.00 c.m"	* 40 HYDROGRAPH Copy to Outflow"	
Rainfall losses 70.882 10.824 67.879 mm"	8 Copy to Outflow"	
Runoff depth 214,118 274.176 217.121 mm"	6.329 6.329 13.530"	
Runott volume 2196.85 148.05 2344.91 C.m ⁻	40 NUNUMARA CONDITIE 5	
Maintin flow 0.144 0.008 0.152 c.m/sec*	5 Node #"	
40 HYDROGRAPH Add Runoff "	" u/s of HWY 7&8"	
4 Add Runoff "	Maximum flow 19.719 c.m/sec"	
0.152 0.152 0.103 13.382"	Hydrograph volume 3225067.875 C.m."	
40 HYDROGRAPH CODY TO OUTTIOW"	8.1 ADD COMMENT===================================	
0.152 0.152 0.152 13.382"	 3 Lines of comment" 	
40 HYDROGRAPH Combine 5"		
6 Combine "	Catchments to Inlet #6"	
5 Node #"	40 HYDRORDADH Start - New Tributary"	
− u/s or mar / αα Maximum flow 13,530 c.m/sec"	2 Start - New Tributary"	
Hydrograph volume 224357,266 c.m"	• 6.329 0.000 6.329 19.719"	
0.152 0.152 0.152 13.530"	33 CATCHMENT 160"	
81 ADD COMMENT===================================	1 Triangular SCS"	
3 Lines of comment"	3 Specity Values"	
Good Lands"	 160 Hamilton Heights Subdivision" 	
	• 46.000 % Impervious"	
* 40 HYDROGRAPH Start - New Tributary"	8.160 Total Area"	
2 Start - New Tributary"	50.000 Flow length"	
0.152 0.000 0.152 13.530"	4 406 Pervious Area"	
1 Triangular SCS"	 50.000 Pervious length" 	
1 Equal length"	3.000 Pervious slope"	
1 SCS method"	3.754 Impervious Area"	
121 Good Lands"	232.000 Impervious length"	
0.000 % Impervious" 43.240 Total Acca"	0.250 Pervious Manning 'n'"	
230.000 Flow length	76.000 Pervious SCS Curve No."	
2.800 Overland Slope"	0.752 Pervious Runoff coefficient"	
43.240 Pervious Area	0.100 Pervious Ia/S coefficient"	
230.000 Pervious length	B.U21 PERVIOUS INITIAL ADSTRACTION"	
 2.800 Pervious slope" 0.000 Impervious Apag" 	98.000 Impervious SCS Curve No."	
230.000 Impervious length"	 0.978 Impervious Runoff coefficient" 	
2.800 Impervious slope"	0.100 Impervious Ia/S coefficient"	
0.250 Pervious Manning 'n'"	0.518 Impervious Initial abstraction	
82,000 Pervious SCS Curve No."	1.180 0.000 6.329 19.719 c.m/sec"	

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τ	Catchment 160 Pervious Impervious Total Area "		Western catchment along Hamilton Road, diverted to Talat #5"	
	Surface Area 4.406 3.754 8.160 hectare"	÷	**************************************	
	Time of concentration 19.152 10.638 14.677 minutes"	÷.	40 HYDROGRAPH Start - New Tributary"	
÷ –	Time to Centroid 2500.401 2280.953 2385.057 minutes*	*	2 Start - New Tributary"	
	Hainfail depth 285,000 285,000 285,000 mm"	-	0.338 0.000 1.518 21.146	
	Rainfall Volume 1.2006 1.0096 2.3256 Na-m" Rainfall losses 70.711 6.284 41.075 mm"	÷	33 CATCHMENT 170°	
•	Runoff depth 214.289 278.716 243.925 mm*	*	1 ITALIGULATIOS" 9 Specify values"	
*	Runoff volume 0.9442 1.0462 1.9904 ha-m"	.	" 1 SCS method"	
	Runoff coefficient 0.752 0.978 0.856 •		170 Industrial/Residential area along Hamilton Road"	
. 10	Maximum flow 0.630 0.575 1.180 c.m/sec"		55.000 % Impervious	
. 40	A Add Runoff "		8.450 Total Area*	
			45.000 Flow length	
* 33	CATCHMENT 161	<u>,</u>	3.802 Pervise Argan	
* 0	1 Triangular SCS"		30.000 Pervious length	
	3 Specify values"		* 3.000 Pervious slope*	
	1 SCS method"		4.648 Impervious Area"	
	161 KLASSEN Bronze Property" 32 000 k Janopulation		235.000 Impervious length"	
			1.500 Impervious slope	
1 11	100.000 Flow length*		U.250 Pervious Manning 'n'	
*	2.500 Overland Slope"		0.752 Pervious Runoff coefficient"	
	1.598 Pervious Area"		0.100 Pervious Ia/S coefficient"	
	50.000 Pervious length"		8.021 Pervious Initial abstraction"	
	2.500 Pervious slope"		0.015 Impervious Manning 'n'"	
	0.752 Impervious Area		98.000 Impervious SCS Curve No."	
	1.500 Impervious since*	÷	0.978 Impervious Runoff coefficient"	
	0.250 Pervious Manning 'n'"		0.510 Impervious 1a/S Coerticient"	
	76.000 Pervious SCS Curve No."		1.241 0.000 1.518 21 146 c m/sac ⁴	
•	0.753 Pervious Runoff coefficient"		Catchment 170 Pervious Impervious Total Area "	
	0.100 Pervious Ia/S coefficient"		* Surface Area 3.802 4.648 8.450 hectare*	
	8.021 Pervious Initial abstraction"		Time of concentration 14.097 10.721 12.024 minutes"	
	98.000 Impervious Science No."		Time to Centroid 2493.259 2281.054 2363.002 minutes"	
21	0.976 Impervious Runoff coefficient"		Rainfail depth 285.000 285.000 mm"	
•	0.100 Impervious Ia/S coefficient"		nalifall volume 1.0837 1.3245 2.4082 Na-m" Bainfall losses 70.705 6.210 25.080	
	0.518 Impervious Initial abstraction"		Runoff depth 214.295 278.688 249 111 mm*	
	0.338 1.180 6.329 19.719 c.m/sec"	•	* Runoff volume 0.8149 1.2952 2.1101 ha-m"	
ç	Catchment 161 Pervious Impervious Total Area "		Runoff coefficient 0.752 0.978 0.876 "	
	June of concentration 20 220 9 640 15 927 minutes"		Maximum flow 0.536 0.711 1.241 c.m/sec	
	Time to Centrold 2502.276 2277.514 2417.098 minutes"	្ទ	40 HYDHOGHAPH Add Runott	
	Rainfall depth 285.000 285.000 285.000 mm"		4 AUG RUIDH - 1 241 1 518 21 146*	
	Rainfall volume 4554.30 2143.20 6697.50 c.m"	÷ 5	* 56 DIVERSION"	
	Rainfall losses 70.406 6.727 50.029 mm*	2	6 Node number	
	Hunoff deptn 214.594 278.273 234.971 mm"		1.560 Overflow threshold	
÷	Runoff (defficient 0.753 0.976 0.924 "		1.000 Required diverted fraction"	
	Maximum flow 0.228 0.116 0.336 c.m/sec"		Dock of divorted flow	
* 40	HYDROGRAPH Add Runoff "		Volume of diverted flow 0.000 c.m/sec*	
•	4 Add Runoff "		DIV00006.250hvd	
	0.338 1.518 6.329 19.719"		Major flow at 6"	
40	AVDROGRAPH Copy to Outflow"		1.241 1.241 1.241 21.146 c.m/sec*	
			40 HYDROGRAPH Combine 9"	
* 40	HYDROGRAPH Combine 5"	3	- 6 Combine -	
	6 Combine *			
	5 Node #"		* Maximum flow 1.241 c.m/sec*	
	u/s of HWY 7&8"		Hydrograph volume 21100,600 c.m"	
÷	Maximum flow 21.146 c.m/sec"		1.241 1.241 1.241 1.241"	
	Hydrograph Volume 350493,969 c.m"	• 4	40 HYDROGRAPH Start - New Tributary*	
* 81	0.030 1.018 1.018 21.146"		2 Start - New Tributary"	
	'3 Lines of comment"		- 1.241 0.000 1.241 1.241°	
	*********		1 1=read/open; 2=write/save*	

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<pre>2 1=rainfall; 2=hydrograph" 1 1=runoff; 2=inflow; 3=outflow; 4=junction" Diverse acceleration</pre>	Hydrograph volume 288969.156 c.m" 0.000 16.661 7.170 7.170"	
Major flow at 6"	3 Lines of comment"	
Maximum flow 0.000 c.m/sec"	Catchments South of Hwy 7/8"	
40 HYDROGRAPH Add Runoff "	* 40 HYDROGRAPH Start - New Tributary"	
4 Add Runoff " 0.000 0.000 1.241 1.241"	2 Start - New Tributary" 0.000 0.000 7.170 7.170	Э
40 HYDROGRAPH Copy to Outflow"	33 CATCHMENT 180"	
0.000 0.000 0.000 1.241"	3 Specify values"	
40 HYDROGRAPH Combine 5" 6 Combine "	180 Northeast portion of Maple Leaf Foods property	
5 Node #" u/s of HWY 7&8"	26.000 % Impervious" 0.700 Total Area"	
Maximum flow 21.146 c.m/sec"	45.000 Flow length"	
Hydrograph volume 350493.969 C.m 0.000 0.000 0.000 21.146"	0.518 Pervious Area"	
40 HYDROGRAPH Confluence 5" 7 Confluence "	20.000 Pervious length" 2.000 Pervious slope"	
5 Node #"	0.182 Impervious Area" 68.000 Impervious lenath"	
Maximum flow 21.146 c.m/sec"	* 1.000 Impervious slope"	
Hydrograph Volume 350493.969 C.m 0.000 21.146 0.000 0.000°	79.000 Pervious SCS Curve No."	
54 POND DESIGN" 21.146 Current peak flow c.m/sec"	0.784 Pervious Runott coefficient" 0.100 Pervious Ia/S coefficient"	
0.070 Target outflow c.m/sec" 350494 0 Hydrograph volume c.m"	6.752 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"	
7. Number of stages"	98.000 Impervious SCS Curve No."	
334.290 Minimum water level metre" 336.800 Maximum water level metre"	0.100 Impervious Ia/S coefficient"	
334.290 Starting water level metre" O Keep Design Data: 1 = True; 0 = False"	0.518 Impervious Initial abstraction 0.102 0.000 7.170 7.170 c.m/sec"	
Level Discharge Volume"	Catchment 180 Pervious Impervious Total Area Surface Area 0.518 0.182 0.700 hectare	
334.500 0.2540 5.000"	Time of concentration 12.395 5.753 10.380 minutes	
335.500 1.303 390.000" 335.500 2.800 3269.000"	Rainfall depth 285.000 285.000 885.000 mm"	
336.000 4.639 13030.00" 336.400 6.109 30065.00"	Rainfall volume 1476.30 518.70 1995.00 C.m." Rainfall losses 61.623 8.047 47.694 mm"	
336.800 18.376 57257.00" Reak outflow 16.661 c.m/sec"	Runoff depth 223.377 276.953 237.306 mm" Runoff volume 1157.09 504.05 1661.14 c.m"	
Maximum level 336.744 metre"	Runoff coefficient 0.784 0.972 0.833 "	
Maximum storage 53455.402 c.m ⁻ Centroidal lag 42.478 hours"	40 HYDROGRAPH Add Runoff "	
0.000 21.146 16.661 0.000 c.m/sec° 40 HYDROGRAPH Next link "	4 Add Hunoff " 0.102 0.102 7.170 7.170"	
5 Next link " 0.000 16.661 16.661 0.000"	* 54 POND DESIGN" * 0.102 Current peak flow c.m/sec"	
56 DIVERSION"	0.070 Target outflow c.m/sec" 1661.1 Hydrograph volume c.m"	
7,170 Overflow threshold"	8. Number of stages"	
1,000 Required diverted fraction" O Conduit type; 1=Pipe;2=Channel"	0.000 Maximum water level metre"	
Peak of diverted flow 9.491 c.m/sec" Volume of diverted flow 61558.906 c.m"	0.000 Starting water level metre" 0 Keep Design Data: 1 = True; 0 = False	
DIV00007.250hyd"	Level Discharge Volume" 0.000 0.000 0.000	
0.000 16.661 7.170 0.000 c.m/sec"	0.1500 0.00400 1.000"	
40 HYDROGRAPH Combine 8° 6 Combine "	• 0.2500 0.00500 8.000 • 0.3500 0.00700 29.000"	
8 Node #"	• 0.4500 0.00800 69.000" • 0.6500 0.01000 178.000"	
Maximum flow 7.170 c.m/sec"	• 0.7000 0.1060 208.000 ["]	

0.7200 0.2800 2.800 0.880 8.8000 8.2001 0.8000 8.10000 8.10000	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-Regional.out Printed at 15:22 on 18 Dec 2018	Page 25	Q:\34896\104\SWM\MIDUSS\Pre\34896-104_Pre-Regional.out Page 26 Printed at 15:22 on 18 Dec 2018
Pack strills 0.200 0.41000 0	0.7500 0.2810 240.000"		0 2000 0 00000 8 0001
Bactlen i ord, Maction i ord, Maction i lag, Maction i lag	 Peak outflow 0.098 c.m/sec* 		0.6000 0.1200 97.000"
Restant storage 200	Maximum level 0,696 metre"		* 0.9000 0.1300 167.000*
000000000000000000000000000000000000	Maximum storage 205.634 c.m"		1.200 0.1400 254.000"
0 MMBB020000 Grants at 100 MARKAN - France (100 MARKAN ALL (100 MARKA	0.102 0.102 0.098 7.170 c.m/sec*		1.500 0.1500 358.000"
6 Combine 1.550 Entry 7 8 Combine 1.550 Entry 8 Combine 2.587 C.77 C.77 C.77 9 Combine 2.587 C.77 C.77 C.77 C.77 9 Combine C.78 C.77 C.77 C.77 C.77 9 Combine Combine Combine Combine Combine Combine 9 Combine Combine Combine Combine Combine Combine 0 Combine Com	40 HYDROGRAPH Combine 9"		1.800 1.000 400.000" Perk outflow 0.271 o m/cool
* Mode * * Muticing intring 20.586 5.07* Muticing intring 2.010 0.0000 0.0000 0.0000 0.0000 0.0000 0.000 0.0000 0.000 0.0000 0.000 0	6 Combine "		Naximum level 1.543 matrice"
NGC 8 98.35 Power's Wydrografs Nubes 2271.35 c.at 60 Wydrografs Nubes 1.335 c.at 40 Wydrografs Nubes 2271.35 c.at 60 Wydrografs 1.335 c.at 40 Wydrografs Nubes 0.00 1.335 c.at 60 Wydrografs C.at 60 Wydrografs C.at 60 Wydrografs C.at 60 C.at 60 C.at C.at 60 C.at 60 C.at C.at 60 C.at	9 Node #"		Maximum storage 363.985 c.m.
Middling 1000 223 20 0.028 0.278	NODE B		Centroidal lag 38.335 hours"
0 000000000000000000000000000000000000	Maximum Tiow 1.335 c.m/sec"		0.279 0.279 0.271 1.335 c.m/sec"
0 VPD0004/Vi Start . New Trubury' Note Trubury' Note Trubury' 2 Start . New Trubury' Note Trubury' Note Trubury' 3 CATCHERT 109 ' 0.00 0.000 1.385' Note Trubury' Note Trubury' 3 CATCHERT 109 ' 0.000 0.000 1.385' Note Trubury' Note Trubury' 3 CATCHERT 109 ' 0.000 0.000 1.385' Note Trubury' Note Trubury' 3 CATCHERT 100 - 0.000 0.000 1.385' Note Trubury' Note Trubury' 3 CATCHERT 100 - 0.000 0.000 1.385' Note Trubury' Note Trubury' 3 CATCHERT 100 0.000 0.000 1.300 0.000 0.	0.102 0.102 0.098 1.335"		40 HYDROGRAPH Combine 9"
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3 CALTWEET 181' Hydraugus by E285.746 c.a* 4 Hydraugus by Extra file Hydraugus by Extra file 1.50° 4 Hydraugus by Extra file Hydraugus by Extra file 1.50° 4 Hydraugus by Extra file Hydraugus by Extra file 1.50° 5 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Extra file Hydraugus by Extra file 1.50° 7 Hydraugus by Ex	0.102 0.000 0.098 1.335"		 Maximum flow 1.570 c.m/sec*
1 1 0.278 0.279 0.271 1.570* 1 0.55 sethod* 0.278 0.200 0.271 1.570* 1 10 0.278 0.200 0.271 1.570* 1 0.000 0.271 0.500 0.271 1.570* 1.570 0.000 0.271 0.500 0.271 1.570* 1.570 0.000 0.271 0.500 0.271 1.570* 1.500 0.000 0.271 0.500 0.271 1.570* 1.500 0.000 0.271 0.500 0.271 1.570* 1.500 0.000 0.271 0.500 0.271 1.570* 1.500 0.000 0.071* 0.000 0.271 1.570* 1.500 0.000 0.000 0.000 0.000 0.000 0.000 1.500 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.	33 CATCHMENT 181"		Hydrograph volume 27826.746 c.m"
1 363 attow 40 TROUGNAME List I. Start I. May Tructury" 1 363 attow 1	3 Specify values"		0.279 0.279 0.271 1.570"
181 Restern portion of John Baar property* 0.273 0.000 0.271 1.570* 5.000 Flow hash 1 Transplane 50* 1 1 1.570* 1.000 Privise Statut 1 1 1 1 1 1 1.570* 1.000 Privise Statut 1 <t< td=""><td>1 SCS method"</td><td></td><td>40 HYDROGRAPH Start - New Tributary"</td></t<>	1 SCS method"		40 HYDROGRAPH Start - New Tributary"
93.000 % Inpervious 33 CONTRAINT 1000 1000 Overland Slope 1 Trianplane 505* 1000 Overland Slope 3 Specify value* 1000 Overland Slope 1 Trianplane 505* 0.131 Pervious Area* 1 Status and 1 June 1 J	181 Western portion of John Bear property"		0.279 0.000 0.271 1.570
1.270 Total Area* 1 Triangular 503* 12.000 Dear langth 3 Decide area 0.101 Pervises langth* 1 District area 2.0000 Pervises langth* 120 District area District area 2.0000 Pervises langth* 120 District area District area 1.200 Dervises langth* 0.000 Pervises langth* District area 1.200 Dervises langth* 0.000 Pervises langth* District area 1.200 Dervises langth* 0.000 Pervises langth* District area 0.000 Pervises langth* 0.000 Pervises langth* District area 0.000 Pervises langth* 0.000 Pervises langth* District area 0.000 Pervises langth* 0.000 District area District area	• 93.000 % Impervious*		33 CATCHMENT 182"
1.000 1.001 <td< td=""><td>1.870 Total Area"</td><td></td><td>1 Triangular SCS*</td></td<>	1.870 Total Area"		1 Triangular SCS*
0.139 Pervises Area 120 December 2001 December 2001 20.000 Pervises 10pe ⁺⁺ 1.210 Total Area* 112.000 Depervises 10pe ⁺⁺ 1.210 Total Area* 112.000 Depervises 10pe ⁺⁺ 0.200 Pervises 10pe ⁺⁺ 112.000 Depervises 10pe ⁺⁺ 0.200 Pervises 10pt ⁺⁺ 112.000 Depervises 10pe ⁺⁺ 0.200 Pervises 10pt ⁺⁺ 112.000 Depervises 10pe ⁺⁺ 0.200 Pervises 10pt ⁺⁺ 0.200 Depervises 10pt ⁺⁺ 0.200 Depervis	120.000 Flow Length"		3 Specify values
2.000 Pervious limit Pervious limit Pervious limit 2.000 Pervious limit Pervious limit Pervious limit 1.730 Expervious limit Pervious limit Pervious limit 0.250 Pervious limit Pervious limit Pervious limit 0.300 Pervious limit Pervious limit Pervious limit 0.300 Pervious limit Pervious limit Pervious limit 0.301 Ipervious Solutions Pervious limit Pervious limit 0.302 Pervious limit Pervious limit Pervious limit 0.303 Ipervious limit Pervious limit Pervious limit 0.304 Pervious limit Pervious limit Pervious limit 0.305 Ipervious limit Pervious limit Pervious limit 0.306 Pervious limit Pervious limit	0.131 Pervious Area"		1 SCS method
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1.739 Impervious Area* 60.000 Flow Length* 112.000 Engervious Length* 2.500 Overland Slope* 1.739 Impervious Length* 0.000 Flow Length* 1.720 Engervious Runoff coefficient* 0.000 Flow Length* 0.000 Pervious Initial astration* 0.000 Impervious Length* 1.739 Impervious Slope* 0.000 Impervious Runoff coefficient* 0.000 0.000 Pervious Initial astration* 0.000 Impervious Slope* 0.000 1.739 Impervious Slope* 0.000 Impervious Slope* 0.000 0.777 Impervious Slope* 0.000 Impervious Slope* 0.000 Impervious Slope* 0.711 Impervious Slope* 0.000 Impervious Slope* 0.000 Impervious Slope* 0.777 Impervious Slope* 0.000 Impervious Slope* 0.000 Impervious Slope* 0.787 Impervious Slope* 0.000 Impervious Slope* 0.000 Impervious Slope* 0.771 Impervious Slope* 0.000 Impervious Slope* 0.000 Impervious Slope* <	2.000 Pervious slope"		1.210 Total Area"
112.000 Impervious langth* 1.000 Impervious Schore Mo.* 0.000 Pervious Schore Mo.* 0.001 Pervious Schore Mo.* 0.002 Impervious Schore Mo.* 0.003 Impervious Schore Mo.* 0.004 Impervious Schore Mo.* 0.005 Impervious Schore Mo.* 0.001 Impervious Schore Mo.* 0.002 Impervious Schore Mo.* 0.001 Impervious Schore Mo.* 0.002 Impervious Schore Mo.* 0.003 Impervious Schore Mo.* 0.010 Impervious Schore Mo.* 0.027 0.000 Impervious Schore Mo.* 0.028 Impervious Schore Mo.* 0.101 Impervious Schore Mo.* 0.102 Impervious Schore Mo.* 0.102 Impervious Schore Mo.* 0.103 Impervious Schore Mo.* 0.104 Pervious Schore Mo.*	1.739 Impervious Area"		* 60.000 Flow length*
0.200 Pervious Saude 0.375 Pervious Arms* 0.200 Pervious Arms* 0.300 Pervious Arms* 0.600 Impervious Arms* 0.300 Pervious Arms* 0.611 Impervious Arms* 0.000 Impervious Arms* 0.611 Impervious Arms* 0.000 Pervious Arms* 0.611 Impervious Arms* 0.011 Pervious Arms* 0.611 Impervious Arms* 0.011 Pervious Arms* 0.611 Impervious Arms* 0.011<	112.000 Impervious length"		2.500 Overland Slope"
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0.680 Pervisus Functions World' coefficient' 0.100 Pervisus Initial abstraction' 2.000 1.567 Pervisus Initial abstraction' 2.000 0.015 Impervisus Rend 0.058 0.016 Impervisus Rend 0.058 0.027 0.000 0.096 1.335 0.028 Pervisus Rend 0.051 0.027 0.000 Impervisus Rend 0.062 0.027 0.000 Impervisus Rend 0.005 0.027 0.000 Impervisus Rend 0.007 0.027 0.000 1mpervisus Rend 0.007 0.000 Impervisus Rend 0.000 1mpervisus Rend 0.007 0.008 0.277 0.000 0.271 1.000 Rend 1.700	65.000 Pervious SCS Curve No."		30.000 Pervious length"
0.100 Pervious IA/S coefficient* 90.000 Impervious Iangth* 15.677 Pervious IA/S coefficient* 0.250 Pervious Storue No.* 0.101 Impervious IA/S coefficient* 0.250 Pervious Storue No.* 0.107 Impervious IA/S coefficient* 0.250 Pervious Storue No.* 0.107 Impervious IA/S coefficient* 0.652 Pervious Storue No.* 0.108 Impervious IA/S coefficient* 0.652 Pervious Storue No.* 0.101 Informations 1.355 c.n/sc* 0.000 Impervious Infitial abstraction* 0.108 Impervious Infitial abstraction* 0.000 Impervious Infitial abstraction* 0.108 Impervious Infitial abstraction* 0.000 Impervious Infitial abstraction* 0.107 Extendent IB 80.000 Impervious Infitial abstraction* 1 Surface Area 0.130 1.729 1.870 heatre* 1 Borno 2550 Impervious Infitial abstraction* 0.100 0.271 1.700 c.m/sec* 1 Surface Area 0.135 Impervious Intial abstraction* 0.170 0.000 2251 1.200 c.m/sec*	0.630 Pervious Runoff coefficient"		0.835 Tenerviaus stope
13.677 Pervious Initial abstraction* 2.000 Impervious SCS Curve No.* 0.105 Impervious SCS Curve No.* 0.256 Pervious SCS Curve No.* 0.015 Impervious Initial abstraction* 0.656 Pervious SCS Curve No.* 0.105 Impervious Initial abstraction* 0.650 Pervious Initial abstraction* 0.513 Impervious Initial abstraction* 0.650 Pervious Initial abstraction* 0.513 Impervious Initial abstraction* 0.670 Pervious Initial abstraction* 0.514 Impervious Initial abstraction* 0.670 Pervious Initial abstraction* 0.514 Impervious Initial abstraction* 0.671 1.570 c.m/sec* Catchment 18 Pervious Initial abstraction* 0.170 0.000 0.271 Time to Concretration 12.582 7.761 8.001 minute* 0.170 0.000 0.271 1.570 c.m/sec* Mainfail lepth 285.000 285.000 ams* 0.170 0.600 287.001 1.570 c.m/sec* Runoff depth 179.653 278.464 277.564 mm* 0.170 0.600 285.000 285.000 mm* R	0.100 Pervious Ia/S coefficient"		90.000 Impervious length"
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0.518 Impervious Initial abstraction* 0.79 0.000 0.098 1.335 c.m/sec* 0.000 0.008 0.000	0.100 Impervious Ia/S coefficient"		0.632 Pervious Runoff coefficient"
0.279 0.000 0.098 1.335 c.m/sec* 0.015 Impervious teaming 'n'* Gatchment 181 Pervious Impervious 1000 Unpervious 2000 0.0973 Impervious 2000 No.48 Surface Area 0.131 1.739 1.870 hectare* 0.973 Impervious 2000 No.48 Time of concentration 12.932 7.761 8.001 minutes* 0.973 Impervious 10.310 1.570 c.m/sec* Asinfall depth 2552.958 2277.105 2289.851 minutes* 0.518 Impervious Initial abtraction* Asinfall volume 373.07 4955.44 5329.50 c.m* Catchment 182 Pervious Impervious Total Area* Runoff depth 179.533 278.464 277.97 c.m* Time of concentration 14.605 5.529 7.579 minutes* Runoff cofficient 0.830 0.977 0.953 * Time of concentration 14.605 5.529 7.579 minutes* Munoff cofficient 0.830 0.977 0.953 * Mainufiall depth <td< td=""><td>0.518 Impervious Initial abstraction"</td><td></td><td>0.100 Pervious Ta/s coefficient"</td></td<>	0.518 Impervious Initial abstraction"		0.100 Pervious Ta/s coefficient"
Catchment 181 Pervious Total Area * 98.000 Impervious Sos Curve No.* Surface Area & 0.131 1.739 1.870 hectare* 0.973 Impervious Buorf coefficient* Time of concentration 12.932 7.761 8.001 minutes* 0.100 Impervious Sos Curve No.* Aniardal Journes 285.000 285.000 285.000 285.000 285.000 285.000 285.000 285.000 1.365 Aainfall Journes 105.867 6.556 13.454 ma* Surface Area 0.170 0.000 285.002 285.000 minutes* Runoff volume 235.14 442.77 507.79 c.* minutes* Surface Area 0.835 1.210 hectare* Maximur flow 0.630 0.977 0.264 0.279 c.* minutes* Ald Runoff 285.000 285.000 285.000 285.000 285.000 285.000 285.000 285.000 285.000 285.000 minutes* Audorf * 0.279 0.290 0.290 1.395* Time of concentration 14.605 5.292 minutes* minutes* 0.279	0.279 0.000 0.098 1.335 c.m/se	c"	0.015 Impervious Manning 'n'
SUrface Area 0.131 1.739 1.870 hectare' Time of concentration 12.932 7.761 6.001 minutes' 0.973 Impervious Runoff coefficient' Time to Concentration 2552.368 2277.105 2289.861 minutes' 0.518 Impervious Initial abstraction' Aminfall depth 255.006 285.000 mm' 0.538 Impervious Initial abstraction' Aminfall losses 106.367 6.536 13.454 mm' 0.170 0.000 0.271 1.570 c.m/sec' Runoff depth 179.863 278.464 271.546 mm' Surface Area 0.375 0.000 285.000 meintus' Runoff coefficient 0.630 0.977 0.573 c.m/sec' Time of concentration 14.605 5.29 7.579 minutes' Munoff volume 285.14 4492.77 0.573 c.m/sec' Time of concentration 14.605 5.29 7.579 minutes' Munoff volume 0.617 0.617 0.600 285.000	Catchment 181 Pervious Impervious Total	Area *	98.000 Impervious SCS Curve No."
1 Imme to Concentration 12.592 7.761 5.001 minutes* 1 Time to Centroid 2552.362 2277.105 2289.851 minutes* 0.170 0.000 0.271 1.570 c.m/sec* Rainfall volume 235.02 285.000 285.000 285.000 mm* 0.170 0.000 0.271 1.570 c.m/sec* Runoff depth 179.633 278.464 mm* Surface Area 0.375 0.835 1.210 hectare* Runoff volume 235.14 4842.77 5077.91 c.m* Time to Centroid 255.069 2271.590 2356.622 minutes* 0.279 0.279 0.270 0.981 1.335* Rainfall volume 106.085 277.191 c.m* 0.279 0.279 0.279 0.279 c.m/sec* Runoff coefficient 1682.0973 0.867 - 0.279 0.279 0.279 0.991 1.335* Runoff coefficient 1680.082 2375.34 2490.84 c.m* 0.000 Maximum flow 0.279 0.279 0.991 1.335* Rainfall depth 180.085 27	Surface Area 0.131 1.739 1.870	hectare"	0.973 Impervious Runoff coefficient*
Rainfail depth 285.000 285.000 285.000 285.000 285.000 285.000 1.570 c.m/sec* Rainfail losses 0.570 c.m/sec* 0.770 0.000 n.770 0.635 1.570 c.m/sec* Rainfail losses 105.80 n.9er/1008 n.111al abstraction* 0.700 0.000 n.271 1.570 c.m/sec* Runoff volume 235.14 542 pervisus Impervisus Total Area * Nunoff volume 235.14 442.71.546 mm* Surface Area * 0.770 0.053 f.528 minutes* Runoff volume 0.500 0.977 0.953 * c.m/sec* Time of concentration 14.605 5.529 7.579 minutes* Maximum flow 0.017 0.264 0.279 c.m/sec* c.m/sec* Rainfail volume 1069.04 2379.47 3448.50 c.m* 0.279 0.279 0.098 1.335* - Rainfail volume 1069.04 2379.47 3448.50 c.m* Rainfail volume 1069.04 2379.47 3448.50 c.m* 0.279 0.279 0.098 1.335* - - Runoff volume 1069.04 2379.47 3448.50 c.m* Runoff volume 1069.04 2379.47 3448.50 c.m* 0.279 0.279 0.098 1.335* - - Runoff volume 1069.04 2379.47 3448.50 c.m* 0.279 0.279 0.098 1.335* - - Runoff volume 675.50 229.08 c.m* - 0.279 0.279 0.098 1.335* - - - Munoff * <td< td=""><td>Time to Centroid 2552 368 2277 105 2280</td><td>MINUTES" 851 minutes</td><td>0.100 Impervious Ia/S coefficient</td></td<>	Time to Centroid 2552 368 2277 105 2280	MINUTES" 851 minutes	0.100 Impervious Ia/S coefficient
Rainfall volume 373.07 4956,44 5029,50 c.m* Rainfall losses 105.307 6,556 13.454 mm* Impervious	Rainfall depth 285,000 285,000 285,0	00 mm"	0.516 Impervious Initial abstraction
Aainfall losses 105.367 6.536 13.454 mm" Runoff depth 179.633 278.646 271.546 mm" Runoff volume 235.14 4442.77 5077.91 c.m" Time of concentration 14.605 5.529 7.579 minutes" Runoff coefficient 0.630 0.977 0.953 " Add Runoff 285.069 225.000 285.000 mm" Maximum flow 0.017 0.264 0.279 c.m/sec" Rainfall volume 106.065 277.319 37.823 mm" 40 HYDPDGRAPH Add Runoff * 400 Add Runoff * Rainfall volume 675.50 2315.34 290.64 c.m" 0.279 0.279 0.098 1.335" * Maximum flow 0.048 0.127 0.163 * 0.279 Current peak flow c.m/sec* * Munoff coefficient 0.632 0.973 0.867 * 0.279 Current peak flow c.m/sec* * 0.170 0.127 0.170 c.m/sec* 0.000 Maximum water level	Rainfall volume 373.07 4956.44 5329.	50 c.m"	Catchment 182 Pervious Impervious Total Area "
Hunort depth 179.633 278.464 271.546 mm* Runoft volume 255.14 484.277 507.91 c.m* Maximum flow 0.630 0.977 0.953 "Ime to Concentration 14.605 5.529 7.579 minutes" Maximum flow 0.017 0.264 0.279 c.m* Rinfall depth 285.000 285.000 285.000 285.000 285.000 mm* 4 Add Runoff *	Rainfall losses 105.367 6.536 13.45	4 mm "	Surface Area 0.375 0.835 1.210 hectare"
Runoff Volume 235,14 4842.7/ 50/7.9 c.m* Runoff coefficient 0.630 0.977 0.953 " Rainfall depth 285.069 2271.599 235.622 minutes" Maximum flow 0.017 0.264 0.279 c.m/sec" Rainfall depth 285.000 285.00	Hunoff depth 179.633 278.464 271.5	46 mm"	Time of concentration 14.605 5.529 7.579 minutes
Maximum flow 0.017 0.264 0.279 c.m/sec" 40 HYDROGRAPH Add Runoff " 0.264 0.279 c.m/sec" 60 HAInfall volume 1069.04 2379.47 3448.50 c.m* 74 Add Runoff " 1800 8.000 285.000 285.000 mm" 6.279 0.279 0.098 1.335" PND DESIGN" Runoff depth 180.085 277.319 247.177 mm" 6.279 Current peak flow c.m/sec" 0.632 0.973 0.867 " 0.279 Current peak flow c.m/sec" 0.632 0.973 0.867 " 60.779 Hydrograph volume c.m" 4 Add Runoff " 4 Add Runoff " 7 Number of stages" 0.170 0.170 c.m/sec" 0.170 0.170 c.m/sec" 0.000 Mainfall volume 0.000 0.000 0.000 0.000 0.000 1.570* 54 POND DESIGN* 0.170 0.170 0.271 1.570* 1.800 Maximum water level metre" <td>Runoff coefficient 0.630 0.977 0.959</td> <td>91 C.m"</td> <td>Time to Centroid 2555.069 2271.599 2335.622 minutes"</td>	Runoff coefficient 0.630 0.977 0.959	91 C.m"	Time to Centroid 2555.069 2271.599 2335.622 minutes"
40 HYDROGRAPH Add Runoff * 104.915 7.681 37.823 nm* 4 Add Runoff * 0.279 0.279 0.098 1.335" Rainfall losses 104.915 7.681 37.823 nm* 54 POND DESIGN* Runoff coefficient 0.632 0.973 0.867 * 0.279 Current peak flow c.m/sec* 0.048 0.127 0.170 c.m* 0.279 Current peak flow c.m/sec* 0.048 0.127 0.170 c.m/sec* 0.070 Target outflow c.m* 0.048 0.127 0.170 c.m/sec* 5077.9 Hydrograph volume c.m* 0.048 0.127 0.170 c.m/sec* 0.000 Minimum water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 c.m/sec* 0.170	Maximum flow 0.017 0.264 0.279	C.m/sec*	Hainfail depth 285,000 285,000 285,000 mm*
4 Add Runoff * 0.279 0.279 0.098 1.335" Runoff depth 180.085 277.319 247.177 mm* 54 POND DESIGN* Runoff depth 0.632 0.973 0.867 * 0.279 Current peak flow c.m/sec* 0.0048 0.127 0.170 c.m/sec* 0.070 Target outflow c.m/sec* 40 HYDROGRAPH Add Runoff * 0.170 0.170 c.m/sec* 5077.9 Hydrograph volume c.m* 0.170 0.170 0.271 1.570* 7. Number of stages* 0.170 0.170 0.271 1.570* 0.000 Maximum water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.000 0.000 0.000 0.000 1.5 Number of stages* 0.000 0.000 0.000 0.000 0.000 0.000 1.5 Number of stages* </td <td>40 HYDROGRAPH Add Runoff "</td> <td>01117,000</td> <td>Rainfall Josses 104.915 7 681 37 832 mm*</td>	40 HYDROGRAPH Add Runoff "	01117,000	Rainfall Josses 104.915 7 681 37 832 mm*
0.279 0.279 0.098 1.335" 54 POND DESIGN" Runoff volume 675.50 2315.34 2990.84 c.m" 54 POND DESIGN" Runoff volume 0.632 0.973 0.867 " 0.279 Current peak flow c.m/sec" Maximum flow 0.048 0.127 0.170 c.m/sec" 0.070 Target outflow c.m/sec" 40 HYDROGRAPH Add Runoff " 0.170 0.170 0.271 1.570" 0.000 Minimum water level metre" 0.170 0.170 0.271 1.570" 0.000 Starting water level metre" 0.170 0.170 0.271 1.570" 0.000 Starting water level metre" 0.170 0.170 0.271 1.570" 0 Keep Design Data: 1 = True; 0 = False" 0.170 Current peak flow c.m/sec" 0.170 Current peak flow c.m/sec" 0.000 0.000 0.000 0.000 0.2990.8 Hydrograph volume c.m" 5. 0.000 0.000 0.0000 0.000 0.000 <td< td=""><td>4 Add Runoff *</td><td></td><td>Runoff depth 180.085 277.319 247.177 mm*</td></td<>	4 Add Runoff *		Runoff depth 180.085 277.319 247.177 mm*
54 POND DESIGN* Runoff coefficient 0.632 0.973 0.867 * 0.279 Current peak flow c.m/sec* Maximum flow 0.048 0.127 0.170 c.m/sec* 0.070 Target outflow c.m/sec* 40 5077.9 Hydrograph volume c.m* 4.040 Runoff * 7. Number of stages* 0.170 0.170 0.271 1.570* 0.000 Maximum water level metre* 0.170 0.170 0.271 1.570* 0.000 Maximum water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 0.170 0.271 1.570* 0.000 Starting water level metre* 0.170 0.170 0.271 1.570* 0.000 Keep Design Data: 1 = True; 0 = False* 0.170 Current peak flow c.m/sec* 0.000 0.000 0.000* 5. Number of stages* 0.000 0.000 0.000* 0.000	0.279 0.279 0.098 1.335"		Runoff volume 675.50 2315.34 2990.84 c.m.*
0.010 Target outflow c.m/sec" Maximum flow 0.048 0.127 0.170 c.m/sec" 5077.9 Hydrograph volume c.m" 4 Add Runoff " 7. Number of stages" 0.170 0.170 0.271 1.570" 0.000 Minimum water level metre" 0.170 0.170 0.271 1.570" 1.800 Maximum water level metre" 0.170 0.170 0.271 1.570" 0.000 Starting water level metre" 0.170 0.170 0.271 1.570" 0.000 Starting water level metre" 0.170 Current peak flow c.m/sec" 0.070 Target outflow c.m/sec" 0 Keep Design Data: 1 = True; 0 = False" 0.070 Target outflow c.m/sec" 2990.8 Hydrograph volume c.m" 0.000 0.000 0.000 0.000 0.000 5. Number of stages"	0 279 Current peak flow o m/see"		Runoff coefficient 0.632 0.973 0.867
5077.9 Hydrograph volume c.m" 7. Number of stages" 40 0.000 Minimum water level metre" 0.000 Minimum water level metre" 0.000 Starting water level metre" 0.000 Starting water level metre" 0.000 Starting water level metre" 0.000 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume" 0.000 Starting water level metre"	0.070 Target outflow c m/sec"		Maximum flow 0.048 0.127 0.170 c.m/sec*
7. Number of stages" 4 Aud numtr" 0.000 Minimum water level metre" 0.170 0.271 1.570" 1.800 Maximum water level metre" 54 POND DESIGN" 0.000 Starting water level metre" 0.170 Current peak flow c.m/sec" 0.000 Starting water level metre" 0.070 Target outflow c.m/sec" 0 Keep Design Data: 1 = True; 0 = False" 2990.8 Hydrograph volume c.m" Level Discharge Volume" 5. Number of stages" 0.000 0.000 0.000 5.	5077.9 Hydrograph volume c.m"		40 NUUGHAPH AGG HUNOTT " 4 Add Bunoff "
0.000 Minimum water level metre" 54 POND DESIGN" 1.370 1.800 Maximum water level metre" 0.170 Current peak flow c.m/sec" 0.000 Starting water level metre" 0.070 Target outflow c.m/sec" 0 Keep Design Data: 1 = True; 0 = False" 2990.8 Hydrograph volume c.m" Level Discharge 0.000 0.000 5. Number of stages" 0.000 0.000 0.000 0.000 metre"	7. Number of stages"		
1.800 Maximum water level metre" 0.170 Current peak flow c.m/sec" 0.000 Starting water level metre" 0.070 Target outflow c.m/sec" 0 Keep Design Data: 1 = True; 0 = False" 2990.8 Hydrograph volume c.m" Level Discharge Volume" 5 Number of stages" 0.000 0.000" 0.000 0.000	0.000 Minimum water level metre"		* 54 POND DESIGN"
0.000 starting water level metre" 0.070 Target outflow c.m/sec" 0 Keep Design Data: 1 = True; 0 = False" 2990.8 Hydrograph volume c.m" Level Discharge Volume" 5. Number of stages" 0.000 0.000" 0.000 metre"	1.800 Maximum water level metre"		• 0.170 Current peak flow c.m/sec"
0 Neep Destyli Data; i = inde; 0 = raise* 2990.8 Hydrograph volume c.m* Level Discharge Volume* 5. Number of stages* 0.000 0.000* 0.000 metroa*	0.000 Starting water level metre"		0.070 Target outflow c.m/sec*
0.000 0.000* 5. Number of stages*	level Discharge Volume"		2990.8 Hydrograph volume c.m"
AZERAZI MATTERIAN ANTERI DEVEL DEVEL DEVEL	0.000 0.000 0.000"		 Number of Stages" O DOD Minigum water layel metros
2:34896/104/SWMIMIDUSSIPre/34896-104_Pre-Regional.out Page 27 Printed at 15:22 on 18 Dec 2018	Q:\34896\104\SWMMIDUSS\Pre\34896-104_Pre-Regional.out Page 28 Printed at 15:22 on 18 Dec 2018		
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1.400 Maximum water level metre"	* 40 HYDROGRAPH Combine 9"		
0.000 Starting water level metre"	* 6 Combine *		
0 Keep Design Data: 1 = True; 0 = False"	9 Node #"		
Level Discharge Volume"	NODE B"		
0.000 0.000 0.000"	Maximum flow 4.924 c.m/sec"		
0.3200 0.04300 276.000"	Hyarograph volume Bill91.539 C.m ⁻		
	* 40 HYDROGRAPH Confluence 8"		
	7 Confluence "		
Peak outflow 0.170 c.m/sec"	• 8 Node #"		
Maximum level 1.320 metre"	NODE A"		
Maximum storage 376.845 c.m"	Maximum flow 7.170 c.m/sec"		
Centroidal lag 40.352 hours"	Hydrograph volume 288969.156 c.m"		
0.170 0.170 0.170 1.570 c.m/sec"	- 3.188 /1/0 3.188 0.000"		
40 HYDRUGHAPH COMDINE 9"			
9 Node #"	3.188 7.170 7.170 0.000"		
	* 40 HYDROGRAPH Combine 9"		
Maximum flow 1.739 c.m/sec"	6 Combine "		
Hydrograph volume 30817.129 c.m"	9 Node #"		
0.170 0.170 0.170 1.739"	NODE B"		
40 HYDROGRAPH Start - New Tributary"	MAXIMUM TLOW 12.094 C.M/SeC°		
2 Start - New Inibitary	3 188 7.170 7.170 12.094"		
33 CATCHMENT 183"	* 40 HYDROGRAPH Start - New Tributary"		
1 Triangular SCS"	 2 Start - New Tributary" 		
3 Specify values"	* 3.188 0.000 7.170 12.094"		
1 SCS method"	* 33 CATCHMENT 184"		
183 Area along western tributary, south of Hwy 7/8"	1 Triangular SCS"		
29.000 % Impervious"	Equal length"		
23.290 Total Area"	18 Acciention and south of Bleams Road"		
2.000 Overland Slope"	2.000 % Impervious"		
16.536 Pervious Area"	2.950 Total Area"		
150.000 Pervious length"	* 80.000 Flow length"		
2.200 Pervious slope"	3.100 Overland Slope"		
6.754 Impervious Area"	2.891 Pervious Area"		
394.000 Impervious length"	80.000 Pervious length"		
2.000 Impervious slope			
6.200 Pervious Maining II 68.300 Pervious SCS Curve No "	80,000 Impervious length"		
0.669 Pervious Bunof coefficient"	3.100 Impervious slope"		
0.100 Pervious Ia/S coefficient"	• 0.250 Pervious Manning 'n'"		
11.789 Pervious Initial abstraction"	74.000 Pervious SCS Curve No."		
0.015 Impervious Manning 'n'"	0.731 Pervious Runott coetticient"		
98.000 Impervious SCS Curve No."	P 0.100 Pervious Ta/S coefficient"		
0.978 Impervious Autort coericcent	0.015 Impervious Manning 'n'"		
0.500 Impervious laital abstraction"	98.000 Impervious SCS Curve No."		
3.188 0.000 0.170 1.739 c.m/sec"	0.975 Impervious Runoff coefficient"		
Catchment 183 Pervious Impervious Total Area "	 0.100 Impervious Ia/S coefficient" 		
Surface Area 16.536 6.754 23.290 hectare"	0.518 Impervious Initial abstraction"		
Time of concentration 41.583 13.409 31.052 minutes"	0.419 0.000 7.170 12.094 c.m/sec"		
Time to Centroid 2575.672 2285.137 2467.080 minutes"	Catchment 184 Pervious Indervious Iotal Area		
Rainfall depth 285.000 285.000 285.000 mm"	" Time of concentration 25 276 4 517 24.726 microare"		
HainTall Volume 4./12/ 1.9249 0.03// Ha-m Poinfall losses 94.226 6.233 68.708 mm"	Time to Centroid 2521.159 2271.813 2514.554 minutes"		
Runoff depth 190.774 278.767 216.292 mm"	 Rainfall depth 285.000 285.000 mm" 		
Runoff volume 3.1546 1.8828 5.0374 ha-m"	* Rainfall volume 8239.35 168.15 8407.50 c.m"		
Runoff coefficient 0.669 0.978 0.759 "	Rainfall losses 76.690 7.247 75.301 mm"		
Maximum flow 2.236 1.048 3.188 c.m/sec"	Runoff depth 208.310 277.753 209.699 mm"		
40 HYDROGRAPH Add Runoff "	- KUNOTT VOLUME 6022.25 153.87 5186.13 C.M."		
4 Add Hunott "	Maximum flow 0.410 0.009 0.419 c.m/sec		
40 HYDROGRAPH Conv to Ultflow"	40 HYDROGRAPH Add Runoff "		
8 Copy to Outflow	Add Runoff "		
3.188 3.188 3.188 1.739*	* 0.419 0.419 7.170 12.094"		

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* 40	HYDROGRAPH Copy to Outflow"	* 40 HYDROGRAPH Add Runoff *	
	8 Copy to Outflow"	4 Add Runoff "	
• 40	HYDROGRAPH Combine 9"	* 2.671 2.671 12.498 12.498" * 40 HYDROGRAPH Copy to Outflow"	
	6 Combine "	 Copy to Outflow" 	
	9 Node #"	2.671 2.671 2.671 12.498°	
	Maximum flow 12.498 c.m/sec*	40 HYDROGRAPH Combine 10" 6 Combine "	
	Hydrograph volume 376347.250 c.m"	10 Node #"	
. 40	0.419 0.419 12.498"	NODE C"	
. 40	7 Confluence	Maximum flow 15.075 c.m/sec" Hydrograph yolume 420772 156 c.m"	
	9 Node #*	2.671 2.671 2.671 15.075"	
	NODE B"	* 81 ADD COMMENT===================================	-= "
	Maximum flow 12.495 c.m/sec* Hydrograph volume 376347.250 c.m/	3 Lines of comment"	
	0.419 12.498 0.419 0.000"	Catchments north of Hwy 7/8, towards Eastern Tributary"	
* 40	HYDROGRAPH Copy to Outflow"	***************************************	
	B COPY TO ULTION" 0.419 12 498 12 498 0.000"	40 HYDROGRAPH Start - New Tributary"	
* 40	HYDROGRAPH Combine 10"	2 Start - New Intibulary" 2.671 0.000 2.671 15.075"	
	6 Combine "	* 33 CATCHMENT 150"	
	10 Node #*	1 Triangular SCS"	
	Maximum flow 12.498 c.m/sec"	3 Specity values" 1 SCS method"	
020	Hydrograph volume 376347.250 c.m"	150 Southern portion of Rec Centre fields"	
	0.419 12.498 12.498 12.498" HVDPDCPLU Stort New Tobuttory	0.000 % Impervious"	
* 40	2 Start - New Tributary"	" 3.510 Total Area" " 95.000 Elow longth"	
2.61	0.419 0.000 12.498 12.498*	1.600 Overland Slope"	
* 33	CATCHMENT 165"	3.510 Pervious Area"	
	3 Specify values"	" 100.000 Pervious length" " 2.000 Pervious close"	
	1 SCS method"	 0.000 Impervious Area" 	
	185 Morningside Retirement Community lands*	296.000 Impervious length"	
	18.780 Total Area"	" 2.000 Impervious slope"	
	190.000 Flow length"	74,000 Pervious SCS Curve No."	
	2.000 Overland Slope"	0.732 Pervious Runoff coefficient"	
	7.000 Pervious lenoth" 25.000 Pervious lenoth"	0.100 Pervious Ia/S coefficient"	
•	2.500 Pervious slope*	0.015 Impervious Manning 'n'"	
	10.692 Impervious Area"	98.000 Impervious SCS Curve No."	
	354.000 Impervious length" 2 500 Impervious slopa"	0.000 Impervious Runoff coefficient"	
*	0.250 Pervious Maning 'n'"	0.100 Impervious Ia/S coefficient"	
÷	64.400 Pervious SCS Curve No."	0.501 0.000 2.671 15.075 c.m/sec"	
÷.	0.625 Pervious Runoff coefficient"	Catchment 150 Pervious Impervious Total Area	
	14.041 Pervious Initial abstraction"	Surface Area 3.510 0.000 3.510 hect	are"
	0.015 Impervious Manning 'n'"	Time to Centroid 2532.309 2281.667 2532.308 min	ites"
	98.000 Impervious SCS Curve No."	Rainfall depth 285.000 285.000 285.000 mm"	
	0.300 Impervious Runorr coerricient"	Rainfall volume 1.0003 0.0000 1.0003 ha-r	1"
•	0.518 Impervious Initial abstraction*	Rainfail losses 76.445 6.416 76.445 mm" Runoff depth 208.555 278.584 208.555 mm"	
	2.671 0.000 12.498 12.498 c.m/sec"	Runoff volume 7320.26 0.01 7320.27 c.m	í.
	Catchment 185 Pervious Impervious Total Area " Surface Area 7, 888, 10,892, 18,780, bostano"	Runoff coefficient 0.732 0.000 0.732	
•	Time of concentration 13.861 11.761 12.425 minutes"	MAXIMUM TIOW 0.501 0.000 0.501 c.m. 40 HYDROGRAPH Add Bunoff "	sec"
140	Time to Centroid 2556.982 2282.928 2369.608 minutes"	4 Add Runoff "	
580	маллалі deptn 285.000 285.000 285.000 mm" Rainfall volume 2.2400 3.1043 E 2523 bo.m"	0.501 0.501 2.671 15.075"	
	Rainfall losses 106.859 6.146 48.445 mm"	40 HYDRUGRAPH Copy to Outflow"	
141	Runoff depth 178.141 278.854 236.555 mm"	0.501 0.501 0.501 15.075"	
	Hunoff coefficient 0.625 0.0374 4.4425 ha-m"	40 HYDROGRAPH Combine 11"	
	Maximum flow 0.991 1.688 2.671 c.m/sec"	б Combine " 11 Nade #"	

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	u/s of east culvert of HWY 7&8"		2.5	170.000 Flow length"
×.	Maximum flow 0.501 c.m/sec"			3,500 Overland Slope"
	Hydrograph volume 7320.275 c.m"			8.132 Pervious Area"
•	0.501 0.501 0.501 0.501"		((*)	170.000 Pervious length"
• 40	HYDROGRAPH Start - New Tributary"			3,500 Pervious slope"
2	2 Start - New Tributary"			U,428 Impervious Area" 170.000 Impervious Jacoth"
- 33			0.00	3 500 Impervious Store"
	1 Triangular SCS"			0.250 Pervious Manning 'n'"
	3 Specify values"			82.000 Pervious SCS Curve No."
	1 SCS method"			0.817 Pervious Runoff coefficient"
•	151 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road*		N.	0.100 Pervious Ia/S coefficient"
•	33.000 % Impervious"			5.576 Pervious Initial abstraction"
<u>.</u>	5.770 Total Area"			0.015 Impervious Manning 'n''
5	100.000 Flow length"			98.000 Impervious SCS Curve No."
	2.000 Overland Stope"			0.100 Impervious Ia/S coefficient"
	3.000 Pervious leath			0.518 Impervious Initial abstraction"
	2.000 Pervious slope"			1.282 0.000 0.840 1.341 c.m/sec"
	1.904 Impervious Area"			Catchment 152 Pervious Impervious Total Area "
•	296.000 Impervious length"		1.5	Surface Area 8.132 0.428 8.560 hectare"
•	2.000 Impervious slope"			Time of concentration 37.620 6.846 35.807 minutes"
š. –	0.250 Pervious Manning 'n'"			Time to Centroid 2487.191 2273.686 2474.610 minutes"
*	76,000 Pervious SCS Curve No."			Rainfall depth 265.000 285.000 mm"
÷	0.753 Pervious Runoff coefficient"		- C	Rainfail Volume 2,3176 0.1220 2.4396 na-m ⁻
2	0.100 Pervious Ia/S coetricient			Rafiliali 105565 52.177 6.059 49.971 100 Bunoff danth 232.823 276.941 235.029 mm ⁴
<u>.</u>	0.015 Tenevious Initial Abstraction		(Runoff volume 1.8933 0.1185 2.018 ha-m"
÷1	98.000 Impervious SCS Curve No."		1.00	Runoff coefficient 0.817 0.972 0.825 "
	0.977 Impervious Runoff coefficient"			Maximum flow 1.221 0.065 1.282 c.m/sec"
•	0.100 Impervious Ia/S coefficient"		* 40	HYDROGRAPH Add Runoff "
	0.518 Impervious Initial abstraction"		*	4 Add Runoff "
	0.840 0.000 0.501 0.501 c.m/sec"			1.282 1.282 0.840 1.341"
<u>.</u>	Catchment 151 Pervious Impervious Total Area "		40	HYDROGRAPH Copy to Outflow"
÷ .	Surface Area 3.866 1.904 5.770 nectare"			
	Time of concentration 32.784 11.295 24.405 minutes"		* 40	HYDRORAPH Combine 11"
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$. 40	6 Combine "
÷ .	Rainfall volume 1.1018 0.5427 1.6445 ha-m			11 Node #"
2	Rainfall losses 70.298 6.416 49.217 mm"		•	u/s of east culvert of HWY 7&8°
*	Runoff depth 214.702 278.584 235.783 mm"		2	Maximum flow 2.621 c.m/sec"
*	Runoff volume 0.8300 0.5305 1.3605 ha-m*		•2	Hydrograph volume 41043.434 c.m"
5	Runoff coefficient 0.753 0.977 0.827 "			1.282 1.282 1.282 2.621"
	Maximum flow 0.560 0.293 0.840 c.m/sec"		40	HYDHOGHAPH START - New Fributary"
40	HYDROGRAPH Add Runott "			2 Start - New Inductary
2	4 Add Hullori 0.840 0.840 0.501 0.501		• 47	FILEL 0. Bead/Open DIV00007.250bvd"
- 40	HYDROGRAPH Copy to Outflow"		•	1 1=read/open: 2=write/save"
*	8 Copy to Outflow"			2 1=rainfall; 2=hydrograph"
	0.840 0.840 0.840 0.501"			1 1=runoff; 2=inflow; 3=outflow; 4=junction"
* 40	HYDROGRAPH Combine 11"			DIV00007.250hyd"
*	6 Combine "			Major flow at 7"
	11 Node #"		2	Total volume 61558.906 c.m.
<u>.</u>	u/s of east culvert of HWY 7&8"			Maximum Tlow 9.491 c.m/sec ²
÷	Maximum flow 1.341 c.m/sec"		40	9.491 0.000 1.282 2.621 C.m/Sec"
	nyorograph volume 20924.961 C.m ⁻		*	4 Add Bunoff "
* 40	U.540 U.540 U.540 I.541 HVRDARAH Start Now Tributary"			9.491 9.491 1.282 2.621"
	2 Start - New Tributary		* 40	HYDROGRAPH Copy to Outflow"
•	0.840 0.000 0.840 1.341"			8 Copy to Outflow"
* 33	CATCHMENT 152"		+:	9.491 9.491 9.491 2.621"
*	1 Triangular SCS"		* 40	HYDROGRAPH Combine 11"
*	1 Equal length"			6 Combine "
÷	1 SCS method"			11 Node #"
5	152 Southern portion of Schneider lands"			U/S OT EAST CUIVERT OT HWY /&U"
÷ .	5.000 % Impervious"		친	Maximum ilow 11.391 c.m/sec~
	0.200 LOTAT ALGA			nyarograph vozane rozoozioro cim

Q:\34 Printe	896\104\SWM\MIDUSS\Pre\34896-104_Pre-Regional.out ed at 15:22 on 18 Dec 2018	Page 33
. 40	9,491 9,491 9,491 11.391"	
. 40		
	μ/ϵ of past culvent of LWAY 700"	
. 54	POND DESIGN"	
	11.391 Current peak flow c.m/sec"	
Χ.	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"	
<u> </u>	333.000 0.3010 266.000"	
÷	333.500 1.168 1814.000"	
	334,000 2.325 4798,000"	
	334,500 3.132 9073.000"	
<u> </u>	335.000 3.780 14775.00"	
	335.500 4.332 22251.00"	
	335.750 4.583 25742.00"	
	Next Outling 10.297 C.M/Sec*	
	Maximum Storage 29150,390 C.m.	
	43,451 NOUTS	
* 40	HYDRORADH Next lick "	
	5 Next link	
	9 491 10 291 10 291 0 000"	
* 38	START/RE-START TOTALS 11"	
A	3 Runoff Totals on EXIT"	
	Total Catchment area 228.020 hectare	
	Total Impervious area 50,613 hectare*	
×	Total % impervious 22.197"	
N 19	EXIT*	

*



Proposed Conditions Catchment Parameters and MIDUSS Modeling

Drawing on experience...Building on

gth.

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)

			Hy	drologic Soil G	roup		
Land Use	А	AB	В	BC	С	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
201 202 203	C C C	100	100		100		100 100 100	82.0 70.0 76.0	Agricultural north of GEXR Woodlot north of GEXR developed Pfenning Farm
204 205 206 207 208	C C C B	100 50 95	100		50	5	100 100 100	76.0 70.0 76.0 70.2	From M.N. Engineering SWM Report (1994) From MTE Consultants SWM
209 210	C C	100	100				100	80.0 70.0	From R.J. Burnside SWM Report (1998).
211	С		100				100	76.0	Furture STREMMA
212 213	C C	97	100			3	100	80.0 70.1	(1998).
214 215 216 217	B C C C		100 100 100 100				100 100 100	83.0 76.0 76.0 76.0	From Stantec Consulting SWM Approach (2010).
218 219	C C		100 100				100 100 100	76.0 76.0	From Stantec Consulting SWM Approach (2018). Ex. Pestell's Head Office From Stantec Consulting SWM
220 221 222 223 224 225	0 0 0 0 0		100 100 100 100 100			100	100 100 100 100	74.0 76.0 76.0 76.0 76.0 74.0	Approach (2006). NHI Lands BDI Lands MTO
260 261 270	C C C		100 100 100				100 100 100	76.0 76.0 76.0	
250 251 252	C C C		100 100			100	100 100	76.0 76.0 74.0	From Stantec Consulting SWM Approach (2010).
280 281 282 283 284 285	B B B B B		100 100 20 85	30	50 100	15	100 100 100 100 100	79.0 65.0 68.3 74.0 64.4	Report (1994)

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

Post Development Conditions

A SHARE AND A CANADA AND		Dercont	Percent	Quarland	Overland	Dominue	Demission	の開始に、中華に見		in the state of the state	SCS Cur	ve Number	A STATE OF THE PARTY OF	
Sub-Catchment Number	Area	Impervious	Impervious (Quality)	Length	Slope	Length	Slope	Pervious IA	Length	Slope	Pervious (AMC II)	Impervious	Land Use	Comment
·哈哈和希望只能是一种发展。他们	(ha)	(%)	(%)	(m)	(%)	(m)	(%)	(mm)	(m)	(%)			好。我被認識的	
Catchments Draining to V	Vestern For	ebav												
Catchments Draining to Inle	t #1													
201	2.97	0	0	80	0.5			56			82.0	08	Agricultural	Area North of CEVE
202	2.08	0	0	80	2.5			10.9			70.0	98	Woodlot	Area North of CEXP
203	18.51	60	60	90	1.0			4.0			76.0	98	Agricultural	(Port of Bfonning Form Subdivision)
								1.0			70.0	90	Ayncultural	(Part of Prenning Parm Subdivision)
204	2.02	59	85	35	12	60	2.00	80	116	0.50	76.0	09	la du catal a l	Riverside Brass
	2.02	00	00	00	1.4	00	2.00	0.0	110	0.50	76.0	98	Industrial	(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)
206	2.85	35	35	50	1.0			8.0			76.0	98	Industrial	(Stantec Consulting - SWM Report - 2018) 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 Postills)
208	5 53	75	75	100	2.0	50	2.00	0.5	400				vvoodiot	N C Pestill's
200	0.00	75	75	130	2.0	50	3.00	8.5	192	0.75	75.0	98	Industrial	(MTE Consultants Inc SWM Report - 2005)
Catchments Draining to Inle	<u>t #4</u>													
218	2.06	85	85	230	1.7			3.6			76.0	98	Industrial	Ex. Controlled Iron Bridge Property
219	1 28	85	85	75	15			22.5			70.0	00		(Stantec Consulting - SWM Report - 2018)
220	0.50	8	8	60	5.0			22.5			76.0	98	Industrial	Ex. Pestell's Head Office
221	0.81	81.5	81.5	40	2.0			0.9 8 0			74.0	98	Residential	Northeast corner of Nithview Heights Subdivision
		01.0	01.0	-0	2.0			0.0			70.0	90	Road Allowance	Roadway corridor from Hamilton Road
Catchments Draining to Inlet	t #5													
222	1.08	5	5	20	3.0			8.0			76.0	98	Residential	Eastern part of Hamilton Heights Subdivision
											1010		Rooldonida	Eastern part of Hamilton Heights Cabdivision
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 E	astern Fore	bay												
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
210	13.23	5	5	170	2.4			10.9			70.0	98	Woodlot	Northern portion of Good Schneider Lands



nd Us	e

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 Cur Pervious (AMC II)	ve Number Impervious	Land Use	Comment
后:时没 <u>最</u> ,是时前,会会全	(ha)	(%)	(%)	(m)	(%)	(m)	(%)	(mm)	(m)	(%)	的通知科学的			
211	<u>#3</u> 7 31	1	85	120	3 3			56			76.0	98	Agricultural	Area East of Nafziger Road
040	0.50	1	05	120	0.0	400	4 50	0.0	404	4.50	00.0	00	Industrial	Alpine Solutions - East SWMP
212	2.50	40	85	150	1.5	180	1.50	6.4	131	1.50	80.0	98	industrial	(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	(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
I otal to Eastern Forebay	63.71													
Total to SWM Eacility	152 71		57.9											
Catchments Draining to Wes	t Culvert - Un	controlled												
225	1.67	30	N/A	75	2.0			8.0			74.0	98	Residential	Uncontrolled Flow from highway 7/8
Catchments Draining to Wes	t Culvert - Inle	<u>et #6</u>												
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
	0.45						0.00	0.0	005	4.50	70.0	00	Desides Kalilados kita	
270 Total to Weat Culvert	8.45	55	N/A	45	2.0		3.00	8.0	235	1.50	76.0	98	Residentiai/industria	I 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
251	5 77	22	NI/A	100	2.0	100	2 00	63	206	2 00	76.0	08	Industrial	(Stantec Consulting - SWM Report - 2010) Northwestern corner of Hwy 7/8 & Nafziger Road
252	2.87	5	N/A	65	2.0	100	2.00	3.5	230	2.00	70.0	98	Roadway	MTO Expropriated Lands
Total to East Culvert	12.15		14/1 \		1.0			0.0					. couchay	
Grand Total (North Hwy 7/8)	186.49													





December 12, 2018 – 9:53 a.m. – Plotted By: Mbrown

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2		MIDUSS Output		Time to Contraid 200 Die 400 Th and the to	
		MIDUSS version Version 2.25 rev. 473"		Paintes"	
2		MIDUSS created Sunday, February 07, 2010"		naliiall ueptin 12.440 12.440 12.440 mm ⁻	
	1	0 Units used: ie METRIC"		Bainfall losses 11 688 4 150 11 60 mm	
		Job folder: Q:\34896\104\SWM\MIDUSS\Post"	1.41	Runoff depth 0,752 8,281 0,752 mm*	
		Output filename; 34896-104_Post-0012mm.out"	(#)	Runoff volume 22.35 0.00 22.35 c.m*	
÷ .		Licensee name: admin"	1.00	Runoff coefficient 0.060 0.000 0.060	
÷		Company Microsoft"		Maximum flow 0.001 0.000 0.001 c.m/sec"	
S		Date & Time last used: 12/17/2018 at 2:52:26 PM*	• 40	0 HYDROGRAPH Add Runoff	
. 01	7			4 Add Runoff •	
		LINES OF COMMENT"		0.001 0.001 0.000 0.000"	
÷		Wilmot Funloymont lands"	33	3 CATCHMENT 202"	
		New Hambiron Ontario"		1 Triangular SCS"	
		12.5mm Storm Fvert - Post development"		1 Equal length	
ж.		Job No.: 34896-104"			
1		Calculated by: NED/MSB*		202 WOODICL - NOTIN OF GEAR"	

* 31		TIME PARAMETERS"		80.000 Flow length"	
*	5.00	O Time Step"	200	2.500 Overland Slope"	
•	240.00	0 Max. Storm length"		2.080 Pervious Area"	
÷	1500.00	0 Max, Hydrograph"		80.000 Pervious length"	
32		STORM Chicago storm"	0.00	2.500 Pervious slope"	
÷	053 00	1 Chicago storm"		0.000 Impervious Area"	
	253.00	G Coefficient A-		80.000 Impervious length"	
	0.00	Generat C	- C.	2.500 Impervious slope"	
	0.40	G Experience		0.250 Pervious Manning 'n'"	
	240.00	O Duration"	- C	70.000 Pervious SCS Curve No."	
	1.00	O Time step multiplier"		0.002 Pervious Humort Coefficient"	
•		Maximum intensity 35,771 mm/hr"	1.0	10.886 Parvious Initial abstraction	
•		Total depth 12.440 mm"		0.015 Impervious Manning 'n'"	
•		7 0012hyd Hydrograph extension used in this file"		98,000 Impervious SCS Curve No."	
* 81		ADD COMMENT===================================		0.000 Impervious Runoff coefficient"	
8	3	Lines of comment"		0.100 Impervious Ia/S coefficient*	
÷ .		***************************************		0.518 Impervious Initial abstraction"	
		Catchments worth of GEAR, part of Inlet #1-	•	0.000 0.001 0.000 0.000 c.m/sec"	
. 33		CATCHMENT 201*		Catchment 202 Pervious Impervious Total Area *	
				Surface Area 2.080 0.000 2.080 hectare	
*		I Equal length		Time of concentration 521.075 5.343 520.843 minutes"	
		1 SCS method*		Paint to centrold (00.979 130.097 /00.764 minutes"	
×.	20	1 Area Northeast of GEXR"		Rainfall Volume 258 75 0.00 259 75 0.00	
*	0.00	0 % Impervious"		Rainfall losses 12 418 4 194 12 418 mm"	
÷	2.97	O Total Area"		Runoff depth 0.022 8.246 0.022 mm"	
÷ –	80.00	0 Flow length	3	Runoff volume 0.45 0.00 0.45 c.m.	
÷ .	0.50	0 Overland Slope"	1	Runoff coefficient 0.002 0.000 0.002 *	
	2.97	D Pervious Area*		Maximum flow 0.000 0.000 0.000 c.m/sec"	
	0.50		40	0 HYDROGRAPH Add Runoff "	
7 0	0.00	O Tmpervious Area"	- C	4 Add Runoff •	
	80.00	Jupervious length"	40	0.000 0.001 0.000 0.000"	
	0.50	0 Impervious slope"	40		
#S	0.25	0 Pervious Manning 'n'"			
*	82.00	0 Pervious SCS Curve No."	- 40	0 HYDROGRAPH Combine 1"	
.	0,06	0 Pervious Runoff coefficient"		6 Combine *	
5	0.10	0 Pervious Ia/S coefficient"		1 Node #"	
8	5.57	6 Pervious Initial abstraction"		u/s of GEXR"	
2	0.01	5 Impervious Manning 'n'"		Maximum flow 0.001 c.m/sec"	
÷	98.00	Impervious SCS Curve No."		Hydrograph volume 22.802 c.m°	
2	0.00	J IMPERVIOUS HUNOTT COEfficient"		0.000 0.001 0.001 0.001 0.001 0.001	
	0.10	u impervious ia/s COETTICIENT"	* 40	0 HYDROGRAPH Start - New Tributary"	
•	0.51	a miller a root in internal abstraction.	5	2 Start - New Tributary"	
÷		Catchment 201 Pervious Impervious Tatal Aper		0.000 0.000 0.001 0.001*	
		Surface Area 2,970 0.000 2,970 hectare*	- 33	3 GATCHMENT 2037	
•		Time of concentration 208.014 10.280 208.011 minutes"			
				· Edger TellArit	

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				6 Combine "	
	1 SUS method" 202 - Récolog Form Residential Development"			1 Node #"	
	60.000 % Impervious"			u/s of GEXR"	
	18.510 Total Area"			Maximum flow 0.052 c.m/sec"	
	90.000 Flow length"		3 . .	Hydrograph volume 1000.315 c.m"	
	1.000 Overland Slope"		· · · ·	0.512 0.512 0.051 0.052"	
	7.404 Pervious Area"		40	HYDROGRAPH Confluence 1"	
	90.000 Pervious length"				
	1.000 Pervious slope"		2.40	u/s of GEXR"	
	90.000 Impervious length"			Maximum flow 0.052 c.m/sec"	
	1.000 Impervious slope"			Hydrograph volume 1000.315 c.m"	
•	0.250 Pervious Manning 'n'"		2.40	0.512 0.052 0.051 0.000"	
	76.000 Pervious SCS Curve No."		* 40	HYDROGRAPH Copy to Outflow"	
•	0.064 Pervious Runoff coefficient"		12	B Copy to Outflow	
	0.050 Pervious Ia/S coefficient"		- 10		
4	4.011 Pervious Initial abstraction"		-+0		
a))	98.000 Impervious SCS Curve No."			2 Node #"	
10	0.665 Impervious Runoff coefficient"			INLET 1"	
•	0.100 Impervious Ia/S coefficient"			Maximum flow 0.052 c.m/sec"	
•	0.518 Impervious Initial abstraction"			Hydrograph volume 1000.315 c.m"	
19 C	0.512 0.000 0.001 0.001 c.m/sec"		÷.	0.512 0.052 0.052 0.052"	
	Catchment 203 Pervious Impervious Total Area "		- 40	HYDROGRAPH Start - New Tributary"	
	Surface Area 7.404 11.106 18.510 hectare			2 Start - New Information	
2	Time to Contration 155.200 8.962 17.832 minutes	а И	* 81	ADD COMMENT===================================	
#7)	Rainfall denth 12,440 12,440 12,440 mm"			3 Lines of comment"	
	Rainfall volume 921.06 1381.60 2302.66 c.m"			*********	
•	Rainfall losses 11.639 4.165 7.155 mm"			Catchments South of GEXR, part of Inlet #1"	
•	Runoff depth 0.802 8.275 5.286 mm"		-	****	
•	Runoff volume 59.34 919.02 978.36 c.m"		33	CATCHMENT 204"	
	Runoff coefficient 0.064 0.665 0.425 "			1 Intangular SCS" 2 Specify volues"	
40	Maximum flow 0.003 0.512 0.512 C.m/sec			1 SCS method"	
40	A Add Runoff "		•	204 Riverside Brass"	
	0.512 0.512 0.001 0.001"			59.000 % Impervious"	
54	POND DESIGN"		•	2.020 Total Area"	
•	0.512 Current peak flow c.m/sec"		1	35.000 Flow length"	
	2.303 Target outflow c.m/sec"			1.200 Overland Slope"	
5	978.4 Hydrograph volume c.m [®]		- 2	0.828 Pervious Area"	
÷	6. Number of stages"		•	2 000 Pervious slope"	
	343.600 Maximum water level metre"			1.192 Impervious Area"	
	341.500 Starting water level metre"			116.000 Impervious length"	
	O Keep Design Data: 1 = True: O = False"			0.500 Impervious slope"	
•	Level Discharge Volume"			0.250 Pervious Manning 'n'"	
•	341,500 0.000 0.000"			76.000 Pervious SCS Curve No."	
5	342.000 0.1541 1746.000"		- 2	0.019 Pervious Runott coetticient"	
	342.500 0.2669 3784.000"			8 021 Pervious Initial abstraction"	
-	343,000 0.3897 7652,000"			0.015 Impervious Manning 'n'"	
- :	343.600 2.941 9295.000"			98.000 Impervious SCS Curve No."	
•	1. WEIRS"		*	0.665 Impervious Runoff coefficient"	
*	Crest Weir Crest Left Right*		8	0.100 Impervious Ia/S coefficient"	
	elevation coefficie breadth sideslope sideslope		2	0.518 Impervious Initial abstraction	
	343.300 0.900 10.000 0.000 0.000		*	0.045 0.000 0.052 0.052 C.M/SEC" Catchmont 204	
	Delfice Opifice Opifice Number of			Surface Area 0.828 1.192 2.020 hectare"	
	invert coefficie diameter orifices"			Time of concentration 244,389 12.848 17.248 minutes"	
	341,500 0,630 0,3750 1,000"		*	Time to Centroid 375.656 140.760 145.225 minutes"	
	Peak outflow 0.051 c.m/sec"		*	Rainfall depth 12.440 12.440 12.440 mm"	
	Maximum level 341.666 metre"		8	Rainfall volume 103.03 148.26 251.29 c.m"	
-	Maximum storage 580.955 c.m"		<u>.</u>	Rainfall losses 12.209 4.164 7.463 mm"	
<u>.</u>	Centroidal lag 5.573 hours"		÷	Runoft depth 0.231 8.276 4.977 mm"	
	0.512 0.512 0.051 0.001 c.m/sec"			Runoli Volume 1.91 98.53 100.54 C.M" Runoff coefficient 0.019 0.665 0.400 "	
- 40	HYDHUGHAMH COMDINE 1"			Renort Coerticient 0.013 0.003 0.400	

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•	Maximum flow 0.000 0.046 0.046 c.m/sec*		
* 40	HYDROGRAPH Add Runoff *		Runoff coefficient 0.001 0.667 0.034 "
	4 Add Runoff "		Maximum flow 0.000 0.002 0.002 c.m/sec"
* 54	0.046 0.046 0.052 0.052 POND DESTGN"	40	HYDROGRAPH Add Runoff "
	0.046 Current peak flow c.m/sec*		
	0.070 Target outflow c.m/sec*	40	HYDROGRAPH Copy to Outflow"
	100.5 Hydrograph volume c.m"		8 Copy to Outflow"
	 A control of stages 0.000 Minimum water level metre" 	. 10	0.002 0.002 0.002 0.054"
	0.910 Maximum water level metre"	* 40	6 Combine 2
	0.000 Starting water level metre	•	2 Node #*
÷	0 Keep Design Data: 1 = True; 0 = False"		INLET 1"
(a)		-	Maximum flow 0.055 c.m/sec"
	0.3100 0.03090 782.000"		myurograph votume 1101.893 c.m."
	0.6100 0.1232 1619.000"	* 40	HYDROGRAPH Start - New Tributary"
÷	0.9100 0.2769 2511.000" Peak outflow		2 Start - New Tributary
	Maximum level 0.029 metre"		0.002 0.000 0.002 0.055"
(9)}	Maximum storage 72.639 c.m ^o	. 33	CALCHIMENT 200°
2	Centroidal lag 9.353 hours"		1 Equal length
• 40	0.046 0.046 0.003 0.052 c.m/sec"	-	1 SCS method"
. 40	6 Combine *		206 Industrial properties at end of Hamilton Road"
	2 Node # "	8	35.000 % Impervious 2.850 Total Area*
÷	INLET 1"		50.000 Flow length"
÷ .	Maximum flow 0.054 c.m/sec*	•	1.000 Overland Slope"
	nyurograph volume 1095.791 c.m."	3	1.852 Pervious Area"
• 40	HYDROGRAPH Start - New Tributary"	2	SULUUU PERVIDUS LENGTN'
1	2 Start - New Tributary"		0.997 Impervious Area ^a
	0.046 0.000 0.003 0.054"		50.000 Impervious length
. 33	CALCHMENT 205"		1.000 Impervious slope*
•	3 Specify values		0.250 Pervious Manning 'n''
	1 SCS method"	 •• 	0.019 Pervious Runoff coefficient"
	205 Iron Bridge Manufacturing Property 👻 Woodlot		0.100 Pervious Ia/S coefficient"
2			8.021 Pervious Initial abstraction*
	255.000 Flow length*	1.00	0.015 Impervious Manning 'n'" 98.000 Impervious SC Curve No.
	1.800 Overland Slope"		0.663 Impervious Runoff coefficient"
	1.131 Pervious Area		0.100 Impervious Ia/S coefficient*
	1 800 Pervious slope"		0.518 Impervious Initial abstraction"
	0.060 Impervious Area"		0.056 0.000 0.002 0.055 c.m/sec"
	255.000 Impervious length"		Surface Area 1.852 0.997 2.850 hectare"
:	1.800 Impervious slope"		Time of concentration 269.698 6.298 19.303 minutes"
	0.200 Pervious SCS curve No *		Time to Centroid 397.343 130.618 143.787 minutes"
*	0.001 Pervious Runoff coefficient"		Rainfall colume 230 45 12.440 12.440 mm"
* · · ·	0.100 Pervious Ia/S coefficient"		Rainfail losses 12.209 4.189 9.402 mm [*]
2	10.886 Pervious Initial abstraction"		Runoff depth 0.231 8.251 3.038 mm*
*	0.015 Impervious Manning 'n'' 98.000 Impervious SC Gurve No "		Runoff volume 4.27 82.30 86.58 c.m"
7	0.667 Impervious Runoff coefficient"		MUNOTT COETICIENT 0.019 0.663 0.244 *
	0.100 Impervious Ia/S coefficient"	* 40	Walindin 100 0.000 0.056 0.056 C.m/sec
	0.518 Impervious Initial abstraction"	0.62	4 Add Runoff *
	Catchment 205 Pervious Innervious Total Acces "		0.056 0.056 0.002 0.055"
ŧ	Surface Area 1.131 0.060 1.190 hectare	- 33	CALCHMENT 20/7 1 Triangular SCS*
:	Time of concentration 1374.088 14.034 57.950 minutes*		1 Equal length*
	Time to Centroid 1011.902 142.584 170.654 minutes*		1 SCS method"
	Rainfall volume 140.64 7.40 12.440 mm"		207 Woodlot and Wetland east of Pestells"
÷	Rainfall losses 12.426 4.140 12.011 mm"		5.920 Total Area*
	Runoff depth 0.015 8.300 0.429 mm*	100	65.000 Flow length

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* 3.000 Overland Slope"		0.667 Impervious Runoff coefficient"
5.624 Pervious Area"		0.100 Impervious Ia/s coefficient"
65.000 Pervious length"		0.516 Impervious Initial abstraction
0.296 Impervious Area"		Catchment 208 Pervious Impervious Total Area "
65.000 Impervious length"		Surface Area 1.383 4.148 5.530 hectare"
3.000 Impervious slope"		Time of concentration 223,483 15,392 16,871 minutes
0.250 Pervious Manning 'n'"		Time to Centrold 353.812 144./19 146.205 minutes"
70,200 Pervious SUS Curve No." 0.002 Pervious Bunoff coefficient"		Rainfall volume 171.98 515.95 687.94 c.m"
0.100 Pervious Ia/S coefficient"		Rainfall losses 12.262 4.146 6.175 mm"
10.782 Pervious Initial abstraction"		Runoff depth 0.178 8.294 6.265 mm"
0.015 Impervious Manning 'n'"		Runoff volume 2.46 343.98 346.44 c.m"
98.000 Impervious SCS Curve No."		Manine flow 0.000 0.148 0.148 c.m/sec"
0.100 Impervious Ia/S coefficient		40 HYDROGRAPH Add Runoff "
0.518 Impervious Initial abstraction"		4 Add Runoff "
0.016 0.056 0.002 0.055 c.m/sec"		0.148 0.148 0.073 0.090"
Catchment 207 Pervious Impervious lotal Area "		- 54 FUND DESIGN- - 0.148 Current peak flow c m/sec"
Tipe of concentration 504.098 5.302 32.432 minutes"		* 0.070 Target outflow c.m/sec"
Time to Centroid 604.336 129.030 154.882 minutes"		🐮 346.4 Hydrograph volume c.m"
Rainfall depth 12.440 12.440 12.440 mm"		9. Number of stages"
Rainfall volume 699.63 36.82 736.45 c.m"		0.000 Minimum water level metre"
Runoff depth 0.025 8.281 0.438 mm"		0.000 Starting water level metre
Runoff volume 1.41 24.51 25.92 c.m"		• O Keep Design Data: 1 = True; 0 = False"
Runoff coefficient 0.002 0.666 0.035 "		Level Discharge Volume"
Maximum flow 0.000 0.016 0.016 c.m/sec"		
4 Add Runoff "		0.3000 0.01000 635.000"
0.016 0.073 0.002 0.055"		• 0.4500 0.03600 1004.000"
40 HYDROGRAPH Copy to Outflow"		0.6000 0.04900 1405.000"
8 Copy to Outflow"		
40 HYDROGRAPH Combine 2"		1.050 0.5220 2852.000"
6 Combine "		1.200 1.100 2900.000"
2 Node #"		Peak outflow 0.004 c.m/sec"
INLELI" Maximum flow 0.090 c.m/sec"		Maximum storace 302.024 c.m"
Hydrograph volume 1214.392 c.m"		Centroidal lag 20.735 hours"
0.016 0.073 0.073 0.090"		0.148 0.148 0.004 0.090 c.m/sec"
40 HYDROGRAPH Start - New Tributary"		40 HYDHOGHAPH COMDINE 2"
0.016 0.000 0.073 0.090"		• 2 Node #"
* 33 CATCHMENT 208"		INLET 1"
1 Triangular SCS"		Maximum flow 0.091 c.m/sec
3 Specify values"		" " " " " " " " " " " " " " " " " " "
208 N.C. Pestell site"		81 ADD COMMENT===================================
75.000 % Impervious"		3 Lines of comment"
5.530 Total Area"		Catabrants South of GEVE point of Talat #0
130,000 Flow length" 2,000 Overland Slope"		Gatemments South of dexh, part of filter #2
1.383 Pervious Area"		40 HYDROGRAPH Start - New Tributary"
50.000 Pervious length"		2 Start - New Tributary"
3.000 Pervious slope"		- 0.148 0.000 0.001" 33 CATCHMENT 200
4.146 Impervious Area 192.000 Impervious length		1 Triangular SCS"
0.750 Impervious slope"		3 Specify values"
0.250 Pervious Manning 'n'"		1 SCS method"
75.000 Pervious SCS Curve No."		30 000 % Impervious"
0.100 Pervious Ta/S coefficient"		1.920 Total Area"
8.467 Pervious Initial abstraction"		150.000 Flow length
0.015 Impervious Manning 'n'"		1,000 Overland Slope"
95.000 Impervious Sos curve No."		11017 LELATORS VIET

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150.000 Pervious length"	5.000 * Impervious"	
1.500 Pervious slope"	13.230 Total Area"	
0.576 Impervious Area"	170.000 Flow length*	
113.000 Impervious length"	2.400 Overland Slope"	
0.250 Pervious Manning 'n'"	12.568 Pervious Area	
80.000 Pervious SCS Curve No."	170.000 Pervious length"	
0.043 Pervious Runoff coefficient"	0.661 Impervious Area"	
0.100 Pervious Ia/S coefficient"	170.000 Impervious length"	
6.350 Pervious Initial abstraction"	2.400 Impervious slope"	
98.000 Impervious SSS Curve No -	0.250 Pervious Manning 'n'"	
0.665 Impervious Buodi coefficient"	70.000 Pervious SCS Curve No."	
0.100 Impervious Ia/S coefficient	0.002 PERVIOUS RUNOTT COETTICIENT"	
0.518 Impervious Initial abstraction"	10.886 Pervious Initial abstraction*	
0.026 0.000 0.004 0.091 c.m/sec*	0.015 Impervious Manning 'n'"	
Catchment 209 Pervious Inpervious Total Area •	98.000 Impervious SCS Curve No."	
Junace Area 1.344 0.576 1.920 Nectare"	0.665 Impervious Runoff coefficient"	
Time to Centroid 435 468 134 909 174 196 minutes"	0.100 Impervious Ia/S coefficient"	
Rainfall depth 12.440 12.440 mm"	0.518 Impervious Initial abstraction"	
Rainfall volume 167.19 71.65 238.85 c.m	Catchment 210 Pervious Impervious Intel Area	
Rainfall losses 11.907 4.170 9.586 mm"	Surface Area 12.568 0.661 13.230 hectare"	
Runoff depth 0.533 8.270 2.854 mm*	Time of concentration 988.276 10.094 52.356 minutes"	
Runott volume 7.16 47.64 54.80 c.m Bunoff confficient 0.042 c.555	Time to Centroid 919.320 136.494 170.316 minutes"	
	Rainfall depth 12.440 12.440 12.440 mm"	
40 HYDROGRAPH Add Bunoff	Hainfall volume 1563.53 82.29 1645.82 c.m	
4 Add Runoff *	Rainall LOSSES 12,420 4,168 12,008 mm ⁻ Runoff depth 0,020 8,272 0,432 mm ⁻	
0.026 0.026 0.004 0.091"	Runoff volume 2.47 54.72 57.19 c.m [*]	
54 POND DESIGN"	Runoff coefficient 0.002 0.665 0.035 "	
0.026 Current peak flow c.m/sec"	Maximum flow 0.000 0.028 0.028 c.m/sec"	
54.8 Hydrograph volume c.m"	40 HYDROGRAPH Add Runoff "	
7. Number of states"	4 ADD HUNDT *	
0.000 Minimum water level metre	40 HYDROGRAPH Conv to Outflow*	
1.100 Maximum water level metre	8 Copy to Outflow"	
0.000 Starting water level metre	0.028 0.028 0.028 0.024"	
V Keep Design Data: 1 = Irue; 0 = False"	40 HYDROGRAPH Combine 3"	
	6 Combine "	
0.2500 0.04200 7.000*	3 NODE #**	
0.5000 0.09000 71.000"	Maximum flow 0.051 c.m/sec"	
0.7500 0.1250 220.000"	Hydrograph volume 111.992 c.m"	
0.9000 0.1400 346.000"	0.028 0.028 0.028 0.051*	
	81 ADD COMMENT	
Peak outflow 0.024 c.m/sec"	3 Lines of comment"	
Maximum level 0.143 metre"	South of GEXB along Nafziger Rd, part of Tolet #3"	
Maximum storage 4.007 c.mª	***************************************	
Centroidal lag 2.950 hours"	40 HYDROGRAPH Start - New Tributary"	
0.026 0.026 0.024 0.091 c.m/sec"	2 Start - New Tributary"	
6 Combine "	0.028 0.000 0.028 0.051"	
3 Node #"	1 Triangulan SCS*	
INLET 2"	1 Equal length	
Maximum flow 0.024 c.m/sec"	* 1 SCS method"	
Hydrograph volume 54,798 c.m*	211 Culivated lands east of Nafziger Road"	
0.020 0.020 0.024 0.024 40 Hydrograph Start - New Tributary	1.000 % Impervious"	
2 Start - New Tributary	120 000 Flow longth	
0.026 0.000 0.024 0.024*	3.300 Overland Slope"	
33 CATCHMENT 210"	7.237 Pervious Area"	
1 Triangular SCS*	120.000 Pervious length"	
i Equal Length"	3.300 Pervious slope"	
 Gos method 210 Woodlot porth of Hamburgir/Redenview lands* 	0.073 Impervious Area	
TTT TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	a i≥0.000 Impervious Lengtn"	

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:	3.300 Impervious slope" 0.250 Pervious Manning 'n'" 75.000 Pervious SCS Curve No."		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 mm"
÷	0.019 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8.021 Pervious Ia/S coefficient		 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"
:	0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.665 Impervious Runoff coefficient"		* 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"
•	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 0.004 0.000 0.028 0.051 c.m/sec"		40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.044 0.004 0.004"
•	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 mm"		 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"
	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"		 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" Lavel Discharce Volume"
40	Maximum flow 0.001 0.003 0.003 0.004 Maximum flow 0.001 0.004 0.004 c.m/sec" HYDROGRAPH Add Runoff " 4 Add Runoff " 0.004 0.004 0.028 0.051"		• 0.000 0.000" • 0.1000 0.000" • 0.1000 0.000" • 0.2500 0.04200 • 0.5000 0.000" • 0.5000 0.400"
40 40	HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.004 0.004 0.051" HYDROGRAPH Combine 4" 6 Combine 4"		 0.7500 0.8000 0.1360 1014.000" 1.000 0.7880 1667.000" Peak outflow 0.024 c.m/sec" Maximum Level 0.132 metros"
:	4 Node #" INLET 3" Maximum flow 0.004 c.m/sec" Hydrograph volume 22.742 c.m"		Maximum storage 19.037 c.m" Centroidal lag 2.893 hours" 0.044 0.024 0.024 0.004 c.m/sec" 40 HYDROGRAPH Combine 4"
40	0.004 0.004 0.004 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.004 0.000 0.004 0.004"		6 Combine " 4 Node #" INLET 3" 0.026 c.m/sec" Maximum flow 0.026 c.m/sec"
33	CAICHMENT 212" 1 Triangular SCS" 3 Specify values" 1 SCS method" 212 Alpine Solutions - East SMMP"		0.044 0.024 0.026" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.044 0.000 0.024 0.026"
	40.000 % Impervious" 2.560 Total Area" 150.000 Flow length" 1.500 Overland Slope"		<pre>33 CATCHMENT 213" " 1 Triangular SCS" 1 Equal length" 1 SCS method"</pre>
	1.536 Pervious Area" 180.000 Pervious length" 1.500 Pervious slope" 1.024 Impervious Area" 101.025 Impervious charath"		213 Woodlot East and West of Nafziger Road" 3.000 % Impervious" 13.460 Total Area" 140.000 Flow length" 3.600 Overland Slope"
	1.500 Impervious slope" 0.250 Pervious Manning 'n'" 80.000 Pervious SCS Curve No." 0.043 Pervious Runoff coefficient"		* 13.056 Pervious Area" * 140.000 Pervious length" * 3.600 Pervious slope" • 0.404 Impervious Area"
2012 - 2012 2012	0.100 Pervious Ia/S coefficient" 6.350 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No."		* 140.000 Impervious length" 3.600 Impervious slope" 0.250 Pervious Manning 'n'" 70.100 Pervious SCS Curve No."
10 X 10	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"		0.002 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 10.834 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"
:	Catchment 212 Pervious Impervious Total Area " Surface Area 1.536 1.024 2.560 hectare"		 98.000 Impervious SCS Curve No." 0.667 Impervious Runoff coefficient"

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• 0.100 Impervious Ia/S coefficient"	
0.518 Impervious Initial abstraction	40 https://www.add.nu/off
0.022 0.000 0.024 0.026 c.m/sec"	0.142 0.142 0.022 0.046"
Catchment 213 Pervious Impervious Total Area "	54 POND DESIGN*
Jurrate Area 13.05b 0.404 13.460 Rectare"	0.142 Current peak flow c.m/sec*
Time to Centroid 806.813 133.171 188.935 minutes"	311.7 Hydrograph volume c m ²
Rainfall depth 12.440 12.440 mm"	15. Number of stages"
Rainfall volume 1624.20 50.23 1674.44 c.m"	0.000 Minimum water level metre
Runtall Losses 12.417 4.144 12.169 mm*	1.450 Maximum water level metre
Runoff volume 3.02 33.50 36.52 c.m."	0.000 Starting water level metre"
* Runoff coefficient 0.002 0.667 0.022 *	Level Discharge Volume*
Maximum flow 0.000 0.022 0.022 c.m/sec*	* 0.000 0.000 0.000*
40 HYDROGRAPH Add Runoff	0.1500 0.00700 248.000
* 40 HYDROGRAPH Copy to Outflow"	0.4500 0.01300 775.000"
8 Copy to Outflow"	• 0.5500 0.01500 964.000*
0,022 0,022 0.022 0.026"	• 0.6500 0.01600 1161.000"
40 RTUHUKAPH COMDINE 4" 6 Combine "	• 0.7550 0.01700 1364.000*
* 4 Node #"	
INLET 3'	1.050 0.05500 725.000"
Maximum flow 0.046 c.m/sec"	1,150 0.2060 2263.000*
Hydrograph volume 152.059 c.m"	1.250 0.4600 2511.000"
* 40 HYDROGRAPH Start - New Tributary"	
2 Start - New Tributary"	Peak outflow 0.007 c.m/sec"
0.022 0.000 0.022 0.046"	Maximum level 0.147 metre"
33 CATCHMENT 214"	Maximum storage 242.871 c.m"
" 3 Specify values"	Centroidal lag 11.899 hours"
1 SCS method*	40 HYDROGRAPH Combine 4"
* 214 Rec Centre - SWMP"	6 Combine "
73.000 % Impervious"	* 4 Node #*
4.95U IOTAL APEA"	INLET 3"
2.800 Overland Slope"	Maximum Tiow 0.047 c.m/sec*
* 1.336 Pervious Area*	0.142 0.142 0.007 0.047"
40.000 Pervious length*	* 40 HYDROGRAPH Start - New Tributary*
1.500 Pervious slope"	2 Start - New Tributary*
32.000 Impervious length"	• 0.142 0.000 0.007 0.047*
1.500 Impervious slope"	1 Triangular SCS"
0.250 Pervious Manning 'n'"	* 1 Equal length*
53.000 Pervious SCS Curve No."	1 SCS method*
0.100 Pervious la/s coefficient"	215 Vacant Industrial lands west of Nafziger Road"
5.202 Pervious Initial abstraction	2.860 Total Area"
0.015 Impervious Manning 'n'"	105.000 Flow length*
90.000 Impervious SCS Curve No." 0.667 Impervious Bunoff coefficient"	2.000 Overland Slope"
0.100 Impervious Ia/S coefficient	105 000 Pervious Area"
0.518 Impervious Initial abstraction	* 2.000 Pervisus Stope"
0.142 0.000 0.022 0.046 c.m/sec*	1.267 Impervious Area
Supface Area 1 296 a 210 Total Area *	105.000 Impervious length"
Time of concentration 90.626 12.107 15.083 minutes*	- 2.000 Impervious slope" 0.250 Reprious Anging 'n'"
Time to Centroid 248.400 139.571 143.696 minutes	76.000 Pervious SCS Curve No."
Rainfall depth 12.440 12.440 12.440 mm*	0.019 Pervious Runoff coefficient*
"Rainfall volume 166.26 449.52 615.78 c.m"	0.100 Pervious Ia/S coefficient"
Runoff denth 0.884 8.300 6.297 mm"	 8.021 Pervious Initial abstraction 0.045 Improvide Heaping Learning
Runoff volume 11.81 299.90 311.72 c.m"	98.000 Timpervious Manning "n" 98.000 Timpervious SCS Curve No "
Runoff coefficient 0.071 0.667 0.506 •	0.667 Impervious Runoff coefficient*

Q:\348 Printe	996\104\SWM\MIDUSS\Post\34896-104_Post-0012mm.out d at 15:40 on 18 Dec 2018	Page 15	C:34895104/SWMMIDUSSIPost/34895-104_Post-0012mm.out Printed at 15:40 on 18 Dec 2018	
	0.518 Impervious Initial abstraction"		4 Add Runoff *	
	0.069 0.000 0.007 0.047 c.m/sec"		0.069 0.069 0.069 0.117	• 8
	Catchment 215 Pervious Impervious Total Area "		40 HYDROGRAPH Copy to Outflow"	
	Surface Area 1.573 1.287 2.860 hectare*		B Copy to Outflow	
	Time of concentration 341.901 7.984 18.961 minutes"		0.069 0.069 0.069 0.117	11
	Time to Centroid 459.181 133.218 143.933 minutes"		40 HYDROGRAPH Combine 4"	
	Rainfall depth 12.440 12.440 mm*		5 Combine "	
	Rainfall volume 195.68 160.10 355.79 c.m"		* 4 Node #"	
	Rainfall losses 12.209 4.143 8.580 mm [®]		INLET 3"	
(.)	Runoff depth 0.231 8.297 3.860 mm"		Maximum flow 0.185 c.m/	sec"
	Runoff volume 3.63 106.78 110.41 c.m*		Hydrograph volume 653.294 c.m"	
- C	Runoff coefficient 0.019 0.667 0.310		0.069 0.069 0.069 0.185)"
. 10	MAXIMUM TIOW 0.000 0.069 0.069 C.W/Sec		40 Intonodran Start - New Intodally	
40				
			* 33 CATCHMENT 217"	,
- 40	HVDP/GRAPH Copy to Dutflow"		1 Triangular SCS"	
	8 Conv to Outflow		1 Equal length	
	0.069 0.069 0.069 0.047"		1 SCS method"	
- 40	HYDROGRAPH Combine 4"		 Existing ROW west of Nafziger Road" 	
	6 Combine "		* 75.000 % Impervious"	
	4 Node #*		* 0.730 Total Area*	
	INLET 3"		.000 Flow length"	
	Maximum flow 0.117 c.m/sec"		* 2.100 Overland Slope*	
	Hydrograph volume 542.845 c.m"		 0.183 Pervious Area* 	
	0.069 0.069 0.069 0.117°		90.000 Pervious length	
* 40	HYDROGRAPH Start - New Tributary"		2.100 Pervious slope"	
	2 Start - New Tributary*		0.54B Impervious Area"	
	0.069 0.000 0.069 0.117"		90.000 Impervious length"	
- 33	CATCHMENT 216"		2.100 Impervious stope	
÷.	1 Friangular SCS"		76 000 Pervious SCS Curve No "	
	i Equal Length		 0.019 Pervious Bunoff coefficient* 	
	216 Industrial lands west of Nafziger Road"		0.100 Pervious Ia/S coefficient"	
100	45.000 % Impervious"		8.021 Pervious Initial abstraction"	
	2.860 Total Area"		0.015 Impervious Manning 'n'"	
	110.000 Flow length*		98.000 Impervious SCS Curve No."	
1411	2.000 Overland Slope"		• 0.663 Impervious Runoff coefficient"	
181	1.573 Pervious Area"		0.100 Impervious Ia/S coefficient*	
	110.000 Pervious length"		0.518 Impervious Initial abstraction"	
	2.000 Pervious slope"		0.030 0.000 0.069 0.185	5 c.m/sec"
	1.287 Impervious Area"		 Catchment 217 Pervious Imperviou 	is Total Area "
0.0	110.000 Impervious length"		Surface Area 0.183 0.548	0.730 h
	2.000 Impervious slope		Time of concentration 307.171 7.173	9.947 m
120	0.250 Pervious Manning 'n'"		lime to Centroid 429.453 132.025	134.775 m
	76.000 Pervious SCS CUrve No		Rainfall ueptin 12.440 12.440	12.440 III
	0.019 Pervious Hunort coetticient"		Rainfall Joseph 12 200 4 109	90.81 U
	0.100 Pervious la/s coefficient		Bunoff denth 0 231 8 242	6 239 m
1.0			Bunoff volume 0.42 45.12	45 54 0
	OR OO TRADEVIOUS MAINTING IN		Bunoff coefficient 0.019 0.663	0.502 *
	0.667 Impervious Rupoff coefficient"		Maximum flow 0.000 0.030	0.030 c
	0.100 Impervious Ja/S coefficient"		* 40 HYDROGRAPH Add Bunoff "	
1. C	0.518 Impervious Initial abstraction"		4 Add Bunoff "	
100	0.069 0.000 0.069 0.117 c.m/sec*		• 0.030 0.030 0.069 0.185	5"
٠	Catchment 216 Pervious Impervious Total Area "		# 40 HYDROGRAPH Copy to Outflow"	
	Surface Area 1.573 1.287 2.860 hectare"		8 Copy to Outflow"	
	Time of concentration 351.582 8.210 19.493 minutes"		• 0.030 0.030 0.030 0.185	5"
(9)	Time to Centroid 467.444 133.579 144.550 minutes"		* 40 HYDROGRAPH Combine 4*	
	Rainfall depth 12.440 12.440 12.440 mm"		6 Combine "	
	Rainfall volume 195.68 160.10 355.79 c.m"		* 4 Node #*	
200	Rainfall losses 12.209 4.140 8.578 mm"		INLET 3"	
	Runoff depth 0.231 8.300 3.862 mm*		Maximum flow 0.216 c.m/	sec"
	Runoff volume 3.63 106.82 110.45 c.m"		Hydrograph volume 698.838 c.m	
	Runott coefficient 0.019 0.667 0.310		- 0.030 0.030 0.030 0.216	.
	Maximum 110W 0.000 0.069 0.069 c.m/sec*		40 HYDHOGHAPH CONTLUENCE 2"	
40	HTURUGHAPH ADD HUNOTT -		7 Continence	

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hectare" minutes" minutes"

om "

c.m" ៣៣ "

mm "

C.m"

c.m/sec"

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	2 Node #*	0.250 Bervieus Manning 'n'
	INLET 1"	
	Maximum flow 0.091 c.m/sec*	0.019 Pervious Bunoff coefficient*
*	Hydrograph volume 1444.971 c.m"	0.100 Pervious Ta/S coefficient
÷	0.030 0.091 0.030 0.000*	8 O21 Pervious Taitial abstraction
• 40	HYDROGRAPH Copy to Outflow"	
÷ .	8 Conv to Outflow"	
*		
* 40	HYDROGRAPH Combine 5"	
*	6 Combine *	
*	5 Node #*	0.518 Impervious Initial abstraction
		0.493 0.000 0.216 0.353 c.m/sec*
× .		Catchinent 223 Pervious Impervious Total Area
		Surface Area 1.885 10.684 12.570 hectare"
		lime of concentration 383.748 8.962 10.796 minutes"
. 10		lime to Centrola 494.853 134.696 136.459 minutes"
0		Haintall depth 12.440 12.440 mm"
		Rainfall volume 234.56 1329.16 1563.72 c.m*
÷	J NODE #-	Rainfall losses 12,209 4.165 5.372 mm*
÷.		" Runoff depth 0.231 8.275 7.068 mm"
<u>.</u>	Maximum TLOW 0.051 C.m/sec"	"Runoff volume 4.35 884.14 888.49 c.m"
2	Hydrograph Volume 111.992 c.m"	Runoff coefficient 0.019 0.665 0.568
	0.030 0.051 0.091 0.000*	Maximum flow 0.000 0.493 0.493 c.m/sec"
<u>40</u>	HYDROGRAPH Copy to OUTTIOW.	* 40 HYDROGRAPH Add Runoff "
8	B Copy to Outflow"	" 4 Add Runoff "
÷	0.030 0.051 0.051 0.000"	" 0.493 0.493 0.216 0.353"
- 40	HYDROGRAPH Combine 5"	40 HYDROGRAPH Copy to Outflow ^a
<u>.</u>	6 Combine "	" B Copy to Outflow"
ŝ.	5 Node #"	0.493 0.493 0.493 0.353°
	U/S OT HWY 7&8"	40 HYDROGRAPH Combine 5"
2	Maximum tlow 0.138 c.m/sec"	6 Combine "
<u>.</u>	Hydrograph volume 1556.964 c.m"	" 5 Node #"
ā	0.030 0.051 0.051 0.138"	u/s of HWY 7&8"
40	HYDROGRAPH Confluence 4"	Maximum flow 0.846 c.m/sec"
	7 Confluence "	"Hydrograph volume 3144.286 c.m"
2	4 Node #"	" 0.493 0.493 0.493 0.846"
2 · · · ·	INLET 3"	* 81 ADD COMMENT===================================
Ş	Maximum flow 0.216 c.m/sec*	" 3 Lines of comment"
	Hydrograph volume 698.838 c.m"	* *************************************
	0.030 0.216 0.051 0.000*	Catchments east of Hamilton Road, part of Inlet #4"
40	HYDROGRAPH Copy to Outflow"	• • • • • • • • • • • • • • • • • • • •
	8 Copy to Outflow"	# 40 HYDROGRAPH Start - New Tributary"
· · · ·	0.030 0.216 0.216 0.000*	2 Start - New Tributary
* 40	HYDROGRAPH Combine 5"	• 0.493 0.000 0.493 0.846 [°]
<u>.</u>	6 Combine "	" 33 CATCHMENT 218"
÷	5 Node #"	" 1 Triangular SCS"
<u>.</u>	u/s of HWY 7&8™	1 Equal length
•	Maximum flow 0.353 c.m/sec"	1 SCS method"
÷	Hydrograph volume 2255.803 c.m"	"218 Ironbridge Manufacturing Property"
	0.030 0.216 0.216 0.353"	* 85.000 % Impervious*
* 40	HYDROGRAPH Start - New Tributary"	* 2.060 Total Area*
	2 Start - New Tributary"	230,000 Flow length
	0.030 0.000 0.216 0.353"	" 1.700 Overland Slope"
* 33	CATCHMENT 223°	* 0.309 Pervious Area*
š. –	1 Triangular SCS"	230.000 Pervious length"
•	1 Equal length"	* 3.000 Pervious slope*
*	1 SCS method"	1.751 Impervious Area
5	223 New Hamburglr Inc. lands"	230.000 Impervious length*
<u>*</u>	85.000 % Impervious"	" 3.000 Impervious slope"
	12.570 Total Area"	0.250 Pervious Manning 'n'
•	90.000 Flow length"	76,000 Pervious SCS Curve No."
5	1.000 Overland Slope"	0.053 Pervious Runoff coefficient"
	1.885 Pervious Area"	0.060 Pervious Ia/S coefficient
	90.000 Pervious length"	4.813 Pervious Initial abstraction"
*	1.000 Pervious slope*	0.015 Impervious Manning 'n'"
÷.	10.684 Impervious Area"	98.000 Impervious SCS Curve No."
•	90.000 Impervious length"	0.666 Impervious Runoff coefficient"
•	1.000 Impervious slope"	0.100 Impervious Ia/S coefficient"

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• 0.518 Impervious Initial abstraction*		* 3.000 Pervious slope"	
0.069 0.000 0.493 0.846 c.m/sec		1.088 Impervious Area"	
Catchment 218 Pervious Impervious Total Area		75.000 Impervious length"	
 Surface Area 0.309 1.751 2.060 hectare* 		3.000 Impervious slope"	
Time of concentration 234.471 11.317 14.420 minutes"		0.250 Pervious Manning 'n'"	
Time to Centroid 409.930 138.359 142.134 minutes"	24	76.000 Pervious SCS Curve No."	
Rainfall depth 12.440 12.440 12.440 mm"		0.000 Pervious Hunort coerticient"	
Painfall Volume 30.44 217.03 230.27 C.mm Painfall losses 11.778 / 150 5.20/ mm ^m		22 Sq. Pervious Initial abstraction"	
Bunoff depth 0.662 8.290 7.146 mm"		0.015 Therefore Manning 'n'"	
Runoff volume 2.05 145.16 147.21 c.m"		98.000 Impervious SCS Curve No."	
* Runoff coefficient 0.053 0.666 0.574 "		0.665 Impervious Runoff coefficient"	
Maximum flow 0.000 0.069 0.069 c.m/sec"		* 0.100 Impervious Ia/S coefficient"	
40 HYDROGRAPH Add Runoff "		0.518 Impervious Initial abstraction*	
4 Add Runoff *		0.060 0.000 0.068 0.903 c.m/sec"	
0.069 0.069 0.493 0.846"		Catchment 219 Pervious Impervious Total Area "	
54 POND DESIGN"		Surface Area 0.192 1.088 1.280 hectare"	
4.094 Target outfillow c m/sec"		Time to construct 0,000 129 760 129 760 minutes	
147 2 Hydrograph volume c m*		Rainfall denth 12 440 12 440 mm"	
15. Number of stages"		Rainfall volume 23.88 135.35 159.23 c.m"	
344.700 Minimum water level metre"		 Rainfall losses 12.440 4.162 5.404 mm" 	
345.400 Maximum water level metre"		 Runoff depth 0.000 8.278 7.036 mm" 	
0.000 Starting water level metre"		Runoff volume 0.00 90.07 90.07 c.m"	
Monopole Control Market M Market Market Mar Market Market Mark		Runoff coefficient 0.000 0.665 0.566 "	
Level Discharge Volume"		Maximum flow 0.000 0.060 0.060 c.m/sec"	
344.700 0.1250 0.000"		40 HYDROGRAPH Add Runott "	
344.750 0.1270 9.000*			
344 200 0.1200 35.000"		* 40 HYDROGRAPH Copy to Outflow"	
344.900 0.1450 136.000"		8 Copy to Outflow ^a	
344-950 0.1820 209.000"		0.060 0.060 0.060 0.903"	
* 345.C00 0.2220 297.000"		• 40 HYDROGRAPH Combine 5"	
* 345.050 0.2690 400.000"		6 Combine "	
345.100 0.2710 519.000"		5 Node #"	
345.150 0.2740 653.000"		u/s of HWY 7&8"	
345.200 0.2760 804.000"		Maximum flow 0.963 c.m/sec"	
345,250 0.2790 971.000		Hydrograph Volume 3381.563 c.m"	
345.300 0.2820 1354.000*			
345.400 0.2860 1571.000"		Start - New Tributary"	
Peak outflow 0.068 c.m/sec"		0.060 0.000 0.060 0.83"	
Maximum level 344.727 metre"		* 33 CATCHMENT 220"	
Maximum storage 4.849 c.m"		1 Triangular SCS"	
Centroidal lag 2.389 hours"		1 Equal length"	
0.069 0.069 0.068 0.846 c.m/sec"		1 SCS method"	
40 HYDROGRAPH Combine 5"		220 Northwest corner of Nithview Heights"	
5 COMDINE 5		0.500 * Impervious"	
5 NULL #		60.000 Flow length"	
Maximum flow 0.903 c.m/sec		5.000 Overland Slope"	
Hydrograph volume 3291.496 c.m"		0.460 Pervious Area"	
0,069 0.069 0.068 0.903		60.000 Pervious length"	
40 HYDROGRAPH Start - New Tributary"		5,000 Pervious slope"	
2 Start - New Tributary"		0.040 Impervious Area"	
0.069 0.000 0.068 0.903"		60.000 Impervious length"	
33 CATCHMENT 219"		5.000 Impervious slope"	
1 Intangular SCS"		74 U.250 Pervious Manning 'n'"	
I Equal length"		0.011 Pervious SUS Curve NO."	
219 N.C. Pestells Head Office & other Industrial"		0.100 Pervious Ta/S coefficient"	
85.000 % Impervious"		8.924 Pervious Initial abstraction"	
1.280 Total Area"		O.015 Impervious Manning 'n'"	
75.000 Flow length"		98.000 Impervious SCS Curve No."	
1.500 Overland Slope"		0.661 Impervious Runoff coefficient"	
0.192 Pervious Area"		0.100 Impervious Ia/S coefficient"	
75.000 Pervious length"		0.518 Impervious Initial abstraction"	

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	0,002 0.000 0.060 0.963 c.m/sec"		
	Catchment 220 Pervious Impervious Total Area "	200	40 HYDROGRAPH CODY to Outflow"
	Surface Area 0.460 0.040 0.500 hectare"		8 Copy to Outflow"
	Time of concentration 246.805 4.335 42.440 minutes"		0.037 0.037 0.037 0.965"
<u></u>	lime to centrold 370.191 127.600 165.724 minutes"	*	40 HYDROGRAPH Combine 5"
	Rainfall volume 57.22 4 98 62 20 c m ⁴		6 Combine " 5 Nada 4"
	Rainfall losses 12,307 4,222 11,660 mm ^a		5 NODE # - U/c of HWY 789"
	Runoff depth 0.133 8.218 0.780 mm*		Maximum flow 1.002 c.m/sec*
	Runoff volume 0.61 3.29 3.90 c.m"		Hydrograph volume 3440.096 c.m ^a
- Q	Runort coefficient 0.011 0.661 0.063		0.037 0.037 0.037 1.002"
* 40	Malindin 110W 0.000 0.002 0.002 C.m/sec*	- 5	81 ADD COMMENT===================================
	4 Add Runoff "		J LINES OF COMMENT"
	0.002 0.002 0.060 0.963"	(*)	Catchment to Inlet #5"
* 40	HYDROGRAPH Copy to Outflow"	(*)	***********
- C	8 Copy to Outflow"		40 HYDROGRAPH Start - New Tributary"
. 40	U.002 0.002 0.002 0.963"	1.5	2 Start - New Tributary"
. 40			0.037 0.000 0.037 1.002"
	5 Node #"		1 Triangular SCS*
	u/s of HWY 7&8"		1 Equal length"
2	Maximum flow 0.965 c.m/sec"		1 SCS method"
2	Hydrograph volume 3385.463 c.m"	0.45	222 Rear yards from Hamilton Heights Subdivision
* 40	HYDROGRAPH Start - New Tributary"		5.000 % Impervious"
	2 Start - New Tributary"		20 000 Flow length"
	0.002 0.000 0.002 0.965"		3.000 Overland Slope"
* 33	CATCHMENT 221"		1.026 Pervious Area"
	Triangular SCS"		20.000 Pervious length"
	1 Equal length		3.000 Pervious slope"
	221 Proposed ROW from Hamilton Road"		0.054 Impervious Area*
	81.500 % Impervious"		3.000 Impervious stope"
÷	0.810 Total Area"	•	0.250 Pervious Manning 'n'"
਼	40.000 Flow length"		76.000 Pervious SCS Curve No."
÷.	2.000 Overland Slope"		0.019 Pervious Runoff coefficient"
*	40.000 Pervious length"		0.100 Pervious Ia/S coefficient"
	2.000 Pervious slope"		0.015 Impervious Maning 'n'"
<u>.</u>	0.660 Impervious Area"		98,000 Impervious SCS Curve No."
	40.000 Impervious length"	•	0.656 Impervious Runoff coefficient"
	2.000 Impervious Stope		0.100 Impervious Ia/S coefficient"
	76.000 Pervious SCS Curve No."		0.518 Impervious initial abstraction"
	0.019 Pervious Runoff coefficient"		Catchment 222 Pervious Impervious Total Area "
	0.100 Pervious Ia/S coefficient"		Surface Area 1.026 0.054 1.080 hectare*
÷	8.021 Pervious Initial abstraction"		Time of concentration 111.939 2.614 40.828 minutes"
	0.000 Impervious SC Curve No "		Time to Centroid 262.159 124.905 172.880 minutes"
	0.661 Impervious Runoff coefficient"		HainTall Gepth 12,440 12,440 12,440 mm"
*	0.100 Impervious Ia/S coefficient"		Rainfall Joses 12 209 4 282 11 813 mm"
10	0.518 Impervious Initial abstraction"	140	Runoff depth 0.231 8.158 0.627 mm"
- ÷	0.037 0.000 0.002 0.965 c.m/sec"	1.0	Runoff volume 2.37 4.41 6.77 c.m"
*	Surface Area 0 150 0.660 0.910 bootoos"		Runoff coefficient 0.019 0.656 0.050 "
1	Time of concentration 191.612 4.475 5.659 minutes"		Maximum flow 0.000 0.003 0.003 c.m/sec" 0 HVD0CBADH Add Bupoff "
	Time to Centroid 330.432 127.812 129.094 minutes"	500 C	4 Add Runoff *
0	Rainfall depth 12.440 12.440 mm*	(#3)	0.003 0.003 0.037 1.002"
	Rainfall volume 18.64 82.12 100.76 c.m		40 HYDROGRAPH Copy to Outflow"
	natiliati tusses 12.209 4.217 5.595 mm" Runoff depth 0.231 8.224 6.245 mm"		8 Copy to Outflow"
•	Runoff volume 0.35 54,29 54,63 c.m		U.003 0.003 0.003 1.002" 40 HYDROGRAPH Combine 5"
	Runoff coefficient 0.019 0.661 0.542 "		6 Combine "
÷	Maximum flow 0.000 0.037 0.037 c.m/sec"		5 Node #"
40	MYDRUGRAPH Add Runoff "		u/s of HWY 7&8"
	4 Add RUNOTT ~	(#))	Maximum flow 1.004 c.m/sec*

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	Hudagagaab yaluma 2446 959 a m"			ADD COMMENT
	Nyarograph vorume 3440.003 0.003 1.004"			7 Lines of comment"
* 81	ADD COMMENT		•	•••••••
	3 Lines of comment"		•	***************************************
		54	•	
	Badenview Developments Inc. lands"			PROPOSED SWM POND DESIGN
40	HYDROGRAPH Stort New Tributory	- 3		······
. 40	2 Start - New Tributary	1	÷.	***************************************
*	0.003 0.000 0.003 1.004"		54	POND DESIGN"
* 33	CATCHMENT 224"	17		2.698 Current peak flow c.m/sec"
5	1 Triangular SCS"	1.1		4.094 Target outflow c.m/sec"
	1 Equal length"			6500.4 Hydrograph volume c.m"
	1 SCS method" 224 Badesuise Londe"			33. Stor Minimum water level metre"
	224 Date Friend Lands			337.850 Maximum water level metre"
	43.200 Total Area"	1	÷1	334.550 Starting water level metre"
	90.000 Flow length"	0	*C	0 Keep Design Data: 1 = True; 0 = False"
Č. –	1.000 Overland Slope"	1		Level Discharge Volume"
:	6.480 Pervious Area"		2	334.550 0.000 0.000"
÷	90.000 Pervious length"		e c	334,500 0.00400 1187,000° 347,700 0.02830 3607 0.00°
	1.000 references stope	1.7		334.800 0.06350 609.000"
÷	90.000 Impervious length"		•	334,900 0,08900 8636,000"
	1.000 Impervious slope"	10		335.000 0.1880 11246.00"
	0.250 Pervious Manning 'n'"		*	335.100 0.3430 13920.00"
	76.000 Pervious SCS Curve No."	1		335.200 0.5360 16658.00°
	0.019 Pervious Runoff coefficient"			335,300 0.7599 19459.00"
<u> </u>	0.100 Pervisus Ia/S coefficient"	- 5		335.400 1.011 22323.00"
	0.015 Impervious Initial abstraction			335.600 1.583 2829.00"
	98.000 Impervious SCS Curve No."		•	335.700 1.901 31294.00"
	0.665 Impervious Runoff coefficient"			335.800 2.238 34414.00"
	0.100 Impervious Ia/S coefficient		•	335.900 2.593 37599.00"
e	0.518 Impervious Initial abstraction"			336.000 2.966 40851.00"
<u> </u>	1.694 0.000 0.003 1.004 C.m/sec*			335.100 3.427 43455.00" 336.200 3.52 46848.00"
	Surface Area 6 480 36.720 43.200 hectare"	- 19	80°	336.300 4.543 50286.00"
2	Time of concentration 383.748 8.962 10.796 minutes"	1	•	336,400 5,171 53779.00"
a	Time to Centroid 494.852 134.696 136.459 minutes"			336,500 5.840 57328.00"
	Rainfall depth 12.440 12.440 mm"			336.600 6.544 60933.00"
	Rainfall volume 806.12 4568.00 5374.12 c.m"			336,700 7.284 64595.00"
	Hainfall losses 12.209 4.165 5.3/2 mm ²			336,800 8.055 58313.00" 336,000 8.959 73089.00"
	Runoff deplin 0.231 0.275 7.000 mm	9	•	337-000 9.690 75920.00"
	Runoff coefficient 0.019 0.665 0.568 "	10	•	337,100 10.550 79809.00"
*	Maximum flow 0.001 1.694 1.694 c.m/sec"		•	337,200 11.437 83755.00"
• 40	HYDROGRAPH Add Runoff "			337.300 12.351 87759.00"
÷	4 Add Runoff "	- 8		337,400 13,291 91821.00"
* 40	1.094 1.094 0.003 1.004 HVDP0CB2H Cocy to Outflow"			337,500 14.255 35340.00 337,550 14.746 98022.00"
	8 Copy to Outflow"			337.600 16.027 100118.0"
	1.694 1.694 1.694 1.004"			337.700 20.027 104352.0"
* 40	HYDROGRAPH Combine 5"		•	337,800 25,280 108643.0"
	6 Combine "	- 2		337.850 28.277 110810.0"
<u> </u>	5 Node #"	- 8		Peak outtiow 0.049 c.m/sec"
÷	u/su/in/////////////////////////////////	- 5		maximum Level حمة, رجع التلالة. Maximum storane 5075.638 د. س∎
	Hardwarsh volume 6500.375 c.m"	- 23		Centroidal lag 31.211 hours"
a	1.694 1.694 1.694 2.698"		•	1.694 2.698 0.049 0.000 c.m/sec"
* 40	HYDROGRAPH Confluence 5"	- 2	* 40	HYDROGRAPH Combine 12"
	7 Confluence "		•	6 Combine "
	5 Node #"			12 Node #"
2	U/SOTHWY/&8"	- 3		a/s of Froposea SWMF" Navimum flow 0.049 c.m/soc"
	Mataluum iluw 2,090 C.III/Sec Hydrograph volume 6500.375 c.m"	- 6	•	Hodrograph volume 3173.026 c.m*
	1.694 2.698 1.694 0.000"	9		1.694 2.698 0.049 0.049"

Q:\348 Printe	996/104/SWM/MIDUSS/Post/34896-104_Post-0012mm.out Page 25 d at 15:40 on 18 Dec 2018	Q:\3489 Printed	96\104\SWM\MIDUSS\Post\34896-104_Post-0012mm.out d at 15:40 on 18 Dec 2018	Page 26
. 61	ADD COMMENT=====#===============================	140	8 021 Pervious Initial abstraction#	
*	3 Lines of comment"	(Sei)	0.015 Impervious Manning 'n'"	
	********	(e)	98.000 Impervious SCS Curve No."	
	Catchments to Inlet #6"	1.7	0.667 Impervious Runoff coefficient*	
. 40	HVDRORAPH Start - New Tributerstation	S.	0.100 Impervious Ia/S coefficient"	
. 40	2 Start - New Fributary		0.518 Impervious Initial abstraction"	
*	1.694 0.000 0.049 0.049"	100	0.030 0.140 0.049 0.049 C.m/sec° Catchment 261 Pervious Imponvious Intel Appa *	
* 33	CATCHMENT 260"		Surface Area 1.598 0.752 2.350 hectare"	
	1 Triangular SCS	19 8 1	Time of concentration 204.880 11.374 22.178 minutes"	
	3 Specify Values"		Time to Centroid 341.802 138.447 149.801 minutes*	
	260 Hamilton Heights Subdivision"		Rainfall depth 12.440 12.440 mm"	
	46.000 % Impervious"		Rainfall losses 12 200 4 140 0 520 mm	
	8.160 Total Area"	29415	Runoff depth 0.231 8.291 2.810 mm*	
	50.000 Flow length"	1.0	Runoff volume 3.69 62.35 66.04 c.m*	
	1.000 Overland Slope"		Runoff coefficient 0.019 0.667 0.226 "	
	4.400 Pervious Area"	÷	Maximum flow 0.000 0.030 0.030 c.m/sec*	
	3.000 Pervious shope"	40	HYDROGRAPH Add Runott "	
	3.754 Impervious Area"			
*	232.000 Impervious length"	* 40	HYDROGRAPH Copy to Outflow"	
	1.500 Impervious slope"		8 Copy to Outflow"	
2	U.250 Pervious Manning 'n'"		0.030 0.170 0.170 0.049"	
	0.019 Pervious Bundf coefficient"	* 40	HYDROGRAPH Combine 12"	
•	0.100 Pervious Ia/S coefficient"	÷		
	8.021 Pervious Initial abstraction*	S	d/s of Proposed SWMF"	
÷ .	0.015 Impervious Manning 'n'	•	Maximum flow 0.179 c.m/sec"	
	98.000 Impervious SCS Curve No."		Hydrograph volume 3560.750 c.m"	
	0.100 Impervious Runoir Coerricient"	÷	0.030 0.170 0.170 0.179"	
	0.518 Impervious Initial abstraction"	40	HYDROGRAPH START - New Inibutary"	
*	0.140 0.000 0.049 0.049 c.m/sec*		0.030 0.000 0.170 0.179"	
-	Catchment 260 Pervious Impervious Total Area *	* 33	CATCHMENT 225"	
	Surrace Area 4.406 3.754 8.160 hectare		1 Triangular SCS"	
4	Time to Controld 332 456 142 541 148 543 minutes"		1 Equal length"	
*	Rainfall depth 12.440 12.440 12.440 mm*		225 HWY 7/8 and north ditching"	
ē.	Rainfall volume 548.16 466.95 1015.11 c.m°		30.000 % Impervious"	
÷ .	Rainfall losses 12.209 4.141 8.498 mm"		1.670 Total Area"	
	Runoff deptn 0.231 8.299 3.342 mm*		75.000 Flow length"	
	Runoff coefficient 0.019 0.667 0.317 *	÷.	2.000 Overland Slope"	
•	Maximum flow 0.001 0.140 0.140 c.m/sec"		75.000 Pervious Jenth [®]	
40	HYDROGRAPH Add Runoff •		2.000 Pervious slope"	
*	4 Add Runott *		0.501 Impervious Area"	
• 33	CATCHMENT 261"		75.000 Impervious length	
	1 Triangular SCS"		2.000 Impervious stope" O 250 Pervious Manning 'n'"	
-	3 Specify values"		74.000 Pervious SCS Curve No."	
÷ .	1 SCS method		0.011 Pervious Runoff coefficient*	
<u> </u>	261 KLassen Bronze Property" 32 000 k Importance in Contraction		0.100 Pervious Ia/S coefficient"	
•	2.350 Total Area"		8.924 Pervious Initial abstraction"	
	100.000 Flow length"		O.DIS Impervious Manning 'n''	
÷ .	2.500 Overland Slope"		0.661 Impervious Runoff coefficient"	
	1.598 Pervious Area		0.100 Impervious Ia/S coefficient*	
	Solution Pervious Length"		0.518 Impervious Initial abstraction*	
	0.752 Impervious Area*	2	0.028 0.000 0.170 0.179 c.m/sec"	
	164.000 Impervious length*		Surface Area 1 169 0 501 1 570 bootanot	
•	1.500 Impervious slope"		Time of concentration 371.435 6.525 19.813 minutes"	
*	0.250 Pervious Manning 'n'"		Time to Centroid 468.336 131.017 143.301 minutes*	
*	/D.000 PERVIOUS SUS CURVE No."	÷	Rainfall depth 12.440 12.440 mm	
	0.100 Pervious Ia/S coefficient"		Haintall volume 145.42 62.32 207.75 c.m"	
			Harmart TOSSES 15'30\ 4'513 8'8\8 WW.	

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Pri	Inted at 15:40 on 18 Dec 2018	1011-0-16	1			 an ann a' Ch
	Runoff depth	0.133	8,227	2.561	mm *	
	Runoff volume	1.56	41.22	42.77	C.M"	
-	HUNOTT COETTICIENT Maximum flow	0.011	0.028	0.206	C.m/sec*	
	40 HYDROGRAPH Add Runoff '		0.020	0.020	01111) 000	
	4 Add Runoff "					
Č.,	0.028 0.028	3 0,170	0.179"			
§ 1	40 HYDROGHAPH CODY to OUTT 8 Copy to Outflow"	LTOM.				
	0.028 0.028	0.028	0.179"			
× 4	40 HYDROGRAPH Combine	12"				
÷.	6 Combine "					
÷.	12 Node #" d/s of Proposed SWMF	c *				
	Maximum flow	0.1	99 c.m/s	ec"		
	Hydrograph volume	3603.5	24 c.m"			
÷.,	0.028 0.028	3 0.028	0.199"			
. e . 1	3 Lines of comment"					
8	******************	********	********	*********	****	
1	Western catchment along	g Hamilton	Road, diver	ted to Inle	t #6"	
ς.	40 HYDROGRAPH Start - New	Tributary"	*********	**********		
<u>.</u>	2 Start - New Tributar	ry"				
	0.028 0.000	0.028	0.199"			
. ÷	33 CATCHMENT 270"					
	3 Specify values"					
	1 SCS method"					
	270 Industrial/Resident:	ial area al	ong Hamilto	n Road"		
14	55.000 % Impervious"					
	45.000 Flow length"					
	2.000 Overland Slope"					
	3.802 Pervious Area"					
÷.	30.000 Pervious slope"					
	4.648 Impervious Area"					
	235.000 Impervious length"					
1	1.500 Impervious slope"					
÷.	76 000 Pervious SCS Curve f	No."				
	0.019 Pervious Runoff coet	fficient"				
	0.100 Pervious Ia/S coeff:	icient"				
÷.	8.021 Pervious Initial abs	straction" 'n'"				
	98.000 Impervious SCS Curve	e No."				
	0.667 Impervious Runoff co	oefficient"				
2	0.100 Impervious Ia/S coet	fficient"				
÷.	0.518 Impervious Initial a	abstraction	0 199	c m/sec"		
	Catchment 270	Pervious	Impervious	Total Area		
÷.	Surface Area	3.802	4.648	8.450	hectare*	
2	Time of concentration	142.768	14.114	16.975	minutes"	
100	Bainfall depth	12,440	12.440	12.440	mm"	
٠	Rainfall volume	473.03	578.15	1051.19	c.m"	
	Rainfall losses	12.209	4.140	7.771	mm "	
100	RUNOTT GEPTN Runoff volume	0.231	8,301 385.77	394.54		
	Runoff coefficient	0.019	0.667	0.375		
٠	Maximum flow	0.001	0.173	0.173	c.m/sec*	
040	40 HYDROGRAPH Add Runoff					
	4 Add HUNOTT " 0.173 0.17	3 0.028	0.199"			
	56 DIVERSION"	- 0.020	51,00			
٠	6 Node number"					

Q:1348961104\SWM\MIDUSS\Post\34896-104_Post-0012mm.out Printed at 15:40 on 18 Dec 2018 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 с.п" DIV00006.0012hyd" Major flow at 6" 0.173 0.173 0.173 0.199 c.m/sec" HYDROGRAPH Combine 9" * 40 6 Combine " 9 Node #" NODE B" Maximum flow c.m/sec" 0.173 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 FILEI_0 Read/Open DIV00006.0012hyd" 0.173" * 47 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" HYDROGRAPH Add Runoff " * 40 4 Add Runoff " 0.000 0.000 0.173 0.173" HYDROGRAPH Copy to Outflow" * 40 8 Copy to Outflow" 0.000 0.000 0.000 0.173" HYDROGRAPH Combine 12" * 40 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" HYDROGRAPH Confluence * 40 12" 7 Confluence " 12 Node #" d/s of Proposed SWMF" Maximum flow 0.199 c.m/sec* Hydrograph volume 3603.524 Ċ.m" 0.000 0.199 0.000 0,000" POND DESIGN" * 54 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" Maximum water level metre" 337,000 334.290 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" 6.665 3967.000" 336,550 337.000 23.484 6569.000" Peak outflow 0,196 c.m/sec* Maximum level 334.452 metre"

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Maximum storage 3,849 c.m" Maximum flow 0.000 0.010 0.	.010 c.m/sec*
Centroidal lag 11.230 hours" 40 HYDROGRAPH Add Runoff "	
0.000 0.199 0.196 0.000 c.m/sec* 4 Add Runoff	
5 Next link "	
0.000 0.196 0.196 0.000"	
56 DIVERSION" 0.070 Target outflow c.m/sec"	
7 Node number" 7 170 Drugsfow theosheld	
1.000 Required diverted fraction" 8. Number of stages"	
0 Conduit type; 1=Pipe;2=Channel" 0.750 Maximum water level metre"	
Peak of diverted flow 0.000 c.m/sec" 0.000 Starting water level metre	
Volume of diverted flow 0.000 c.m" DIV0007_0012004	
Major flow at 7"	
0.000 0.196 0.196 0.000 c.m/sec" 0.1500 0.0040 1.000"	
40 HYDROGRAPH Combine 8" 0.2500 0.00600 8.000"	
6 Combine " 0.3500 0.00700 29.000"	
NODE A" 0.4500 0.00800 69.000"	
Maximum flow 0.196 c.m/sec" 0.7000 0.0000 17/8.000"	
Hydrograph volume 3603.021 c.m* 0.7500 0.2810 240.000"	
0.000 0.196 0.196 0.196 0.005 c.m/sec	•
a lies of comment" Maximum level 0.183 metre"	

Catchments South of Hwy 7/8 0.010 0.010 0.005 0.196 c.m/se	ec"
40 HYDROGRAPH Combine 9°	
40 HYDROGRAPH Start - New Tributary" 6 Combine "	
2 Grant - New Inducary 9 Node #*	
33 CATCHMENT 280' NOVE 5	N
1 Triangular SCS" Hydrograph volume 411.865 c.m"	
3 Specify values" 1 SCS mathed" 1 SCS mathed"	
280 Northeast portion of Manle Leaf Fonds property" 40 HyDROGRAPH Start - New Tributary"	
26.000 % Impervious" 2 Start - New Inducary 0.005 0.177*	
0.700 Total Area 33 CATCHMENT 281	
45.000 Flow length 1 Triangular SCS 1	
0.518 Pervious Area" - 3 Specify Values"	
20.000 Pervious length"	
2.000 Pervious slope 93.000 % Impervious	
0.182 Impervious Area" 1.870 Total Area"	
1.000 Impervious slope"	
0.250 Pervious Manning 'n'" 0.131 Pervious Area"	
79.000 Pervious SCS Curve No." 20.000 Pervious length	
0.038 Pervious Runoff coefficient" 2.000 Pervious slope"	
6.752 Pervious Initial abstraction"	
0.015 Impervious Manning 'n'* 1.000 Impervious Slope"	
98.000 Impervious SCS Curve No." 0.250 Pervious Manning 'n'"	
0.666 Impervious Runoff coefficient" 65.000 Pervious SCS Curve No.*	
0.100 Impervious lars coefficient" 0.518 Impervious Initial abstraction"	
0.010 0.000 0.196 0.196 c.m/sec" 13.677 Pervious Initial abstraction"	
Catchment 280 Pervious Impervious Total Area " 0.015 Impervious Manning 'n'	
Surface Area 0.518 0.162 0.700 hectare" 98.000 Impervious SCS Curve No."	
Time to Control 239 220 132 600 146 661 minutes" 0.666 Impervious Runoff coefficient	
Rainfall depth 12.440 12.440 12.440 mm" 0.518 Impervious la/s coefficient"	
Rainfall volume 64.44 22.64 87.08 c.m* 0.073 0.000 0.005 0.177 c.m	m/sec"
Rainfall Josses 11.998 4.160 9.960 mm Catchment 281 Pervious Impervious To	otal Area "
nunuru uepun 0.442 8.280 2.480 mm" Surface Anea 0.131 1.739 1. Bundf volume 2.29 15.07 17.36 c.m"	.870 hectare
Runoff coefficient 0.036 0.666 0.199 " Time to Centroid 0.000 136.680 13	0.210 minutes" 36.680 minutes"

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	Rainfall depth 12.440 12.440 12.440	mm "		0.046 0.000 0.071 0.248 c.m/sec"	
	Rainfall volume 16.28 216.35 232.63	c.m."		Catchment 282 Pervious Impervious Total Area "	
	Rainfall losses 12.440 4.161 4.741	mm "	- C	Surface Area 0.375 0.835 1.210 hectare"	
1	Runoff depth 0.000 8.279 7.699	mm "		Time of concentration 7.279 7.279 minutes"	
÷.	Runoff coofficient 0.000 0.666 0.619	C		Bainfall denth 12 440 12 440 12 440 m ^{μ}	
	Maximum flow 0.000 0.073 0.073	c.m/sec*		Rainfall volume 46.66 103.86 150.52 c.m"	
* 40	HYDROGRAPH Add Runoff "			Rainfall losses 12.440 4.187 6.745 mm*	
(#))	4 Add Runoff "		1.00	Runoff depth 0.000 8.253 5.695 mm"	
(#C)	0.073 0.073 0.005 0.177"		1	Runoff volume 0.00 68.91 68.91 c.m"	
54	POND DESIGN"			HUNOTT COETTICIENT 0.000 0.055 0.455 "	
	0.070 Target outflow c.m/sec"		* 40	MAXIMUM FIGW 0.000 0.000 0.000 0.000 0.000	
0.00	144.0 Hydrograph volume c.m"		1.00	4 Add Runoff "	
10.2	7. Number of stages"			0.046 0.046 0.071 0.248"	
<u>.</u>	0.000 Minimum water level metre"		- 54	4 POND DESIGN"	
	1.800 Maximum water level metre"			0.046 Current peak flow c.m/sec ⁻	
	0.000 Starting water level metre" 0 Keen Design Data: 1 = True: 0 = False"			68.9 Hydrograph volume c.m"	
	Level Discharge Volume"			5. Number of stages"	
2 .	0.000 0.000 0.000"		(H)	0.000 Minimum water level metre"	
•	0.3000 0.09000 8.000"			1.400 Maximum water level metre"	
88	0.6000 0.1200 97.000"			0.000 Starting water level metre"	
÷.	0.9000 0.1300 167.000"			U Reep Design Data: 1 - True; 0 - Faise	
	1.500 0.1500 358.000"		7 3	0.000 0.000 0.000"	
(9)	1.800 1.000 400.000"			0.3200 0.04300 276.000"	
•	Peak outflow 0.071 c.m/sec*			0.7500 0.06600 333.000"	
	Maximum level 0.237 metre"			1,300 0.08700 371.000"	
	Maximum storage 6.312 c.m"				
	0.073 0.073 0.071 0.177 c.m/sec"			Maximum level 0.045 metre"	
• 40	HYDROGRAPH Combine 9"		÷	Maximum storage 38.386 c.m"	
	6 Combine "			Centroidal lag 3.986 hours"	
÷.	9 Node #"			0.046 0.046 0.006 0.248 c.m/sec*	
÷	NODE B"		- 40	0 HYDROGRAPH COMDINE 9"	
· · ·	Hydrograph volume 555.843 C.m"		1 2	9 Node #"	
×.	0.073 0.073 0.071 0.248"			NODE B"	
* 40	HYDROGRAPH Start - New Tributary*			Maximum flow 0.253 c.m/sec*	
	2 Start - New Tributary"			Hydrograph volume 624.748 c.m"	
	0.073 0.000 0.071 0.248" CATCHNENT 282"		- 41	0 HVDROGBAPH Start - New Tributary"	
. 33	1 Triangular SCS"			2 Start - New Tributary	
÷.	3 Specify values"			0.046 0.000 0.006 0.253"	
	1 SCS method"		* 33	3 CATCHMENT 283"	
10	282 Eastern portion of John Bear property"			1 Triangular SCS"	
÷	59.000 % Impervious" 1.210 Total Area"			S Specify values	
	60.000 Flow length"			283 Area along western tributary, south of Hwy 7/8"	
383	2.500 Overland Slope"			29.000 % Impervious"	
	0.375 Pervious Area"			23.290 Total Area"	
٠	30.000 Pervious length"			160.000 Flow length	
1.00	3.000 Pervious slope"	×		2.000 Overland Slope"	
	90.000 Impervious length"			150.000 Pervious length"	
	2.000 Impervious slope"			2.200 Pervious slope"	
2 4 2	0.250 Pervious Manning 'n'"		*	6.754 Impervious Area"	
94	65.000 Pervious SCS Curve No."		<u>.</u>	394.000 Impervious length"	
20	0.000 Pervious Runoff coefficient"		1	2.000 Impervious Slope" 0.250 Pervious Manning 'n'"	
1	0.100 PERVIOUS 12/S COETTICIENT" 13.677 Pervious Initial abstraction"			68.300 Pervious SCS Curve No."	
100	0.015 Impervious Manning 'n'"			0,000 Pervious Runoff coefficient"	
	98.000 Impervious SCS Curve No."			0.100 Pervious Ia/S coefficient"	
21 8 1	0.663 Impervious Runoff coefficient"		*	11.789 Pervious Initial abstraction"	
0.45	0.100 Impervious Ia/S coefficient"		5	0.015 Impervious Manning 'n'"	
2016	U.518 IMPERVIOUS INITIAL ADSTRACTION"			30,000 TubblivIons 202 COLAG MOT.	

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8	0.667 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"	8.924 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"		
¥.	0.516 Impervious initial abstraction	98.000 Impervious SCS Curve No."		
	Catchment 283 Pervious Impervious Total Area "	0.505 Impervious Runott coetticient"		
<u>*</u>	Surface Area 16.536 6.754 23.290 hectare"	0.518 Impervious Initial abstraction*		
*	Time of concentration 1383.480 17.653 18.522 minutes"	0.003 0.000 0.196	0.651 c.m/sec*	
:	Time to Centroid 1031.692 148.211 148.773 minutes"	Catchment 284 Pervious Impe	rvious Total Area "	
	Hainfail depth 12.440 12.440 mm"	Surface Area 2.891 0.05	9 2.950 hectar	re"
	Rainfall losses 12 438 4 138 10 031 mm"	Time of concentration 338.532 5.94	7 152.629 minute	es"
÷	Runoff depth 0.002 8.302 2.409 mm"	Rainfall depth 12,440 12,4	10 12.440 mm*	es
•	Runoff volume 0.36 560.74 561.09 c.m"	Rainfall volume 359.64 7.34	366.98 c.m"	
÷	Runoff coefficient 0.000 0.667 0.194 "	Rainfall losses 12.307 4.16	5 12.144 mm"	
÷ 40	Maximum flow 0.000 0.205 0.205 c.m/sec"	Runoff depth 0.133 8.27	5 0.296 mm"	
÷ 40	Add Bunoff "	Runoff volume 3.85 4.88	8.73 c.m"	
	0.205 0.205 0.006 0.253*	HUNOTT COETTICIENT 0.0011 0.66 Maximum flow 0.000 0.000	5 0.024 " 3 0.003 c.m/s	ac."
* 40	HYDROGRAPH Copy to Outflow"	HYDROGRAPH Add Runoff "	0.000 0.000	ec
÷	8 Copy to Outflow"	4 Add Runoff "		
	0.205 0.205 0.205 0.253*	0.003 0.003 0.196	0.651	
40	HYDROGRAPH Combine 9"	HYDROGRAPH Copy to Outflow"		
2 C -		8 Copy to Outflow"		
÷	NODE B"	U.003 U.003 U.003 U.003 U.003	J.651*	
Ψ.	Maximum flow 0.455 c.m/sec*	6 Combine "		
	Hydrograph volume 1185.841 c.m"	9 Node #"		
÷	0.205 0.205 0.205 0.455*	NODE B"		
40	HYDROGRAPH Confluence 8"	Maximum flow 0.653	c.m/sec"	
	8 Node #"	Hydrograph volume 4797.595	C.m"	
	NODE A"	HVDROGRAPH Confluence 9"	1,653"	
	Maximum flow 0.196 c.m/sec"	7 Confluence "		
÷	Hydrograph volume 3603.021 c.m°	9 Node #"		
	0.205 0.196 0.205 0.000"	NODE B"		
40	HYDHOGHAPH Copy to Outflow"	Maximum flow 0.653	c.m/sec"	
÷		Hydrograph volume 4797.595	c.m"	
* 40	HYDROGRAPH Combine 9"	HYDROGRAPH Conv to Outflow"		
<u>.</u>	6 Combine "	8 Copy to Outflow"		
<u>.</u>	9 Node #"	0,003 0,653 0,653	0.000 "	
Ç		HYDROGRAPH Combine 10"		
*	Maximum itow 0.051 C.m/sec"	6 Combine "		
s	1941 09 1491 00 1496 0.196 0.196 0.651"	NODE C		
* 40	HYDROGRAPH Start - New Tributary"	Maximum flow 0.653	c m/sec*	
<u> </u>	2 Start - New Tributary"	Hydrograph volume 4797,595	C.m"	
	0.205 0.000 0.196 0.651*	0.003 0.653 0.653	0.653"	
- 33	CALCHMENI 284"	HYDROGRAPH Start - New Tributary"		
		2 Start - New Iributary"	652	
	1 SCS method"	CATCHMENT 285"	1.053	
<u>.</u>	284 Agricultural lands south of Bleams Road"	1 Triangular SCS"		
2	2.000 % Impervious"	3 Specify values"		
÷ .	2.950 lotal Area"	1 SCS method"		
	3 100 Overland Slope"	285 Morningside Retirement Community la	ıds"	
	2.891 Pervisus Area"	30.000 % Impervious" 18 780 Total Area"		
	80.000 Pervious length*	190.000 Flow length"		
	3.100 Pervious slope"	2.000 Overland Slope"		
÷	0.059 Impervious Area"	7.888 Pervious Area"		
÷	SULUU Impervious length"	25.000 Pervious length"		
	0.250 Pervisus Mannino 'n'"	2.500 Pervious slope"		
*	74.000 Pervious SCS Curve No."	354.000 Impervious length"		
<u>*</u>	0.011 Pervious Runoff coefficient"	2.500 Impervious slope"		
•	0.100 Pervious Ia/S coefficient"	0.250 Pervious Manning 'n'"		

 (\bullet)

	ALL	at 15:40 on 18 Dec 2018	Printed at 15:40 on 18 Dec 2018
		64.400 Pervious SCS Curve No."	• 0.000 0.000 0.387 1.040 c.m/sec*
	2.57	0.000 Pervious Runoff coefficient"	Catchment 250 Pervious Impervious Total Area
		0.100 Pervious Ia/S coefficient"	Surface Area 3.510 0.000 3.510 hectare"
		14.041 Pervious Initial abstraction"	* Time of concentration 332.037 14.870 332.025 minutes"
		0.015 Impervious Manning 'n'"	* Time to Centroid 450.750 143.887 450.739 minutes"
		98.000 Impervious SCS Curve No."	Rainfall depth 12.440 12.440 mm"
		0.667 Impervious Runoff coefficient"	Rainfall volume 436.65 0.00 436.65 c.m"
		0.100 Impervious Ia/S coefficient"	Haintall losses 12.209 4.136 12.209 mm"
		U.518 Impervious initial abstraction	Mullori deptii 0.251 0.304 0.251 inii
		Catchment 285 Pervious Intervious Intral Area "	Bunoff coefficient 0.019 0.000 0.019
	1.0	Surface Area 7,888 10.892 18.780 hectare"	Maximum flow 0.000 0.000 0.000 c.m/sec
	000	Time of concentration 15.483 15.483 minutes"	* 40 HYDROGRAPH Add Runoff "
	200	Time to Centroid 0.000 144.862 144.862 minutes"	4 Add Runoff "
		Rainfall depth 12.440 12.440 mm"	0.000 0.000 0.387 1.040"
		Rainfall volume 981.22 1355.02 2336.25 c.m"	* 40 HYDROGRAPH Copy to Outflow"
	-	Rainfall losses 12.440 4.148 7.631 mm"	8 Copy to Outflow"
*		Runoff depth 0.000 8.292 4.809 mm"	0.000 0.000 0.000 1.040"
	1.2	Runoff volume 0.00 903.20 903.20 c.m"	40 HYDROGHAPH COMDINE 11"
		Hunort coefficient 0.000 0.667 0.387	tit Node #n
	= 10	MAXIMUM IIOW 0.000 0.387 0.387 C.Mysec	uls of east culvert of HWV 788"
	40		Maximum flow
		0.387 0.387 0.653 0.653"	Hydrograph volume 8.099 c.m."
	- 40	HYDROGRAPH Copy to Outflow"	0.000 0.000 0.000 0.000"
	((e)	8 Copy to Outflow"	* 40 HYDROGRAPH Start - New Tributary"
		0.387 0.387 0.387 0.653"	2 Start - New Tributary"
	* 40	HYDROGRAPH Combine 10"	• 0.000 0.000 0.000 0.000"
		6 Combine "	33 CATCHMENT 251"
		10 Node #"	1 Triangular SCS
	12		3 Specity values
		Maximum itow 1.040 c.m/sec	251 Willingt Maintanance property, Hwy 7/8 and Nafziger Road"
	0.000	Nydrograph Voldine 0.000.002 C.in	33.000 % Interviews"
	* 81	ADD COMMENT===================================	5.770 Total Area"
		3 Lines of comment"	100.000 Flow length"
		***********************	2.000 Overland Slope"
		Catchments north of Hwy 7/8, towards Eastern Tributary"	3.866 Pervious Area"
*		***************************************	100.000 Pervious length
	40	HYDROGRAPH Start - New Tributary"	2.000 Pervious slope"
		2 Start - New Tributary"	1 904 Impervious Area"
		0.387 0.000 0.387 1.040"	200 Impervious length
	. 55	1 Triangular SCS"	0.250 Pervious Anning 'n'"
		3 Specify values"	76.000 Pervious SCS Curve No."
		1 SCS method"	0.019 Pervious Runoff coefficient"
		250 Southern portion of Rec Centre fields	0.100 Pervious Ia/S coefficient"
		0.000 % Impervious"	8.021 Pervious Initial abstraction"
		3.510 Total Area"	0.015 Impervious Manning 'n'"
		95.000 Flow length"	98.000 Impervious SCS Curve No."
		1.600 Overland Slope"	0.668 Impervious Runott coetticient"
	12	3.510 Pervious Area	0.100 Impervious 12/S coefficient"
		2 000 Reprives slops"	
			Catchand 251 Pervious Impervious Tatal Area "
		0.000 Impervious leadh"	Surface Area 3.866 1.904 5.770 hectare"
		2.000 Impervious slope"	Time of concentration 332.041 14.870 31.807 minutes"
		0.250 Pervious Manning 'n'"	Time to Centroid 450.752 143.887 160.274 minutes"
		76.000 Pervious SCS Curve No."	Rainfall depth 12.440 12.440 mm"
~		0.019 Pervious Runoff coefficient"	Rainfall volume 480.92 236.87 717.79 c.m*
	1.0	0.100 Pervious Ia/S coefficient"	Rainfall losses 12.209 4.136 9.545 mm
		8.021 Pervious Initial abstraction"	Runoff depth 0.231 0.304 2.895 mm
	2	0.015 Impervious Manning 'n'"	- HUNDIT VOLUME 8.92 158.12 167.04 C.M"
	2	98.000 impervious SUS CUIVE NO."	Novimum flow 0.000 0.068 0.0233 "
		0.100 Impervious Ta/S coefficient"	MAXIMUM IVW 0.000 0.009 0.009 0.009 0.009
	100	0.518 Imperious Initial abstraction	4 Add Runoff

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40 HYDROGRAPH Copy to Outflow* 1	
8 Copy to Outflow" 2 1=rainfail; z=hydrograph" 40 HYDROGRAPH Combine 11" 1=runoff; z=inflow; 3=outflow; 3=out	
0.069 0.069 0.000" 1	
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Major 1/w dis #* Major 1/w dit /* u/s of east culvert of HWY 7&3* Total volume 0.000 c.m* Maximum flow 0.069 c.m/sec* 0.000 0.000 c.m* Maximum flow 0.069 c.ms* 40 HYDROGRAPH Add Runoff* 0.000 c.o00 0.000	
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33 CATCHMENT 252* 0.000 0.000 0.000 0.0075* 1 Triangular SCS* 40 HVDROGRAPH Combine 11* 1 SCS method* 61 61 62 60 60 60 62 62 62 63 64 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 <td></td>	
1 Triangular SCS* 40 HYDROGRAPH Combine 1100 1 Equal length* 6 Combine 11 Node #* 252 Southern portion of Hamburglr lands* 11 Node #* 1/2 252 Southern portion of Hamburglr lands* 11 Node #* 1/2 253 Total Area* 0.0075 c.m/sec* 65.000 Flow length* 0.000 0.000 0.000 0.0075 c.m* 1.500 Overland Slope* 40 HYDROGRAPH Confluence 11* 7 confluence 11* 2.726 Pervious Area* 7 Confluence ** 7 confluence ** 1 Node #* U/s of east culvert of HWY 7&* 0.075 c.m* 1.500 Pervious Area* 7 Confluence ** 1 Node #* 0.000 0.000 0.005 c.m/sec* 1.500 Impervious Slope* 11 Node #* 0.000 0.005 c.m/sec* 1.500 Impervious Slope* 1 Note #* 0.000 0.075 c.m* 1.500 Impervious Slop	
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74.000 Pervious SCS Curve No." 0.075 Current peak flow c.m/sec" 0.011 Pervious Runoff coefficient" 0.075 Current peak flow c.m/sec" 0.100 Pervious Ia/S coefficient" 0.070 Target outflow c.m/sec" 8.924 Pervious Initial abstraction" 9. Number of stages"	
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8.924 Pervious Initial abstraction" 9. Number of stages"	
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0.661 Impervious Sus Surve No." 336.000 Maximum water level metre"	
0.100 Impervious Ia/S coefficient"	
0.518 Impervious Initial abstraction"	
0.008 0.000 0.069 0.069 c.m/sec" 332.660 0.000 "	
Catchment 252 Pervious Impervious Total Area " 333.000 0.3010 198.000"	
Surface Area 2.726 0.144 2.870 hectare" 333.500 1.168 1165.000"	
Time of concentration 3/1.600 6.528 92.439 minutes" 334.000 2.325 2695.000"	
Bainfall denth 12 440 12 440 12 440 mm ^a	
Rainfall volume 339,18 17.85 357.03 c." 335.500 3.780 876.000	
Rainfall losses 12.307 4.213 11.902 mm" 335.750 4.583 14551.00"	
Runoff depth 0.133 8.227 0.538 mm" 336.000 21.985 17113.00*	
Runoff volume 3.63 11.81 15.44 c.m" Peak outflow 0.052 c.m/sec"	
Hundri coetricient 0.011 0.661 0.043 Maximum flow	
40 HYDROBAPH Add Runoff " Maximum storage 34.017 c.m"	
4 Add Bundf * centroidal lag 3.127 hours*	
0.008 0.008 0.069 0.069" 40 HYDROGRAPH Next link	
* 40 HYDROGRAPH Copy to Outflow" 5 Next link *	
8 Copy to Outflow" 0.000 0.052 0.052 0.000"	
0.008 0.008 0.008 0.069" 38 START/RE-START TOTALS 11"	
6 Combine 11" 3 Runoff Totals on EXIT*	
11 Node #"	hectare"
u/s of east culvert of HWY 7&8"	nectare"
Maximum flow 0.075 c.m/sec" 19 FXTT	
Hydrograph volume 190.575 c.m"	
0.008 0.008 0.008 0.075"	
40 HYUHUGHAPH Start - New Tributary"	

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MIDUSS Output	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"
Date & Time last used: 12/17/2018 at 1:27:12 PM" 81 ADD COMMENT============"""""""""""""""""""""""""	40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.015 0.015 0.000" 33 CATCHMENT 202" 1 Triangular SCS" 1 Triangular SCS" 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 length" 2.500 Pervious length" 2.500 Pervious length" 2.500 Impervious Area" 80.000 Impervious Area" 80.000 Impervious Area" 0.000 Impervious Slope" 0.2500 Pervious SCS Curve No." 0.065 Pervious SCS Curve No." 0.065 Pervious Initial abstraction" 0.015 Impervious Kenficient" 10.886 Pervious Scy Curve No." 98.000 Impervious Scy Curve No."
<pre>81 ADD COMMENT===================================</pre>	 35.000 Impervious Funct coefficient" 0.000 Impervious Ta/S coefficient" 0.100 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 mm" Rainfall losses 23.402 4.987 23.402 mm" Runoff depth 1.626 20.041 1.626 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 0.003 c.m/sec" 4 Add Runoff " 4 Add Runoff " 4 Add Runoff " 8 Copy to Outflow" 0.003 0.018 0.018 0.000* HYDROGRAPH Add Runoff 1" 1 Node #" U/s of GEXR" Maximum flow 0.018 c.m/sec" Hydrograph volume 183.235 c.m" 0.030 0.018 0.018 0.018* 0.033 0.018 0.018 0.004 #" 0.033 0.018 0.018 0.018* 0.033 0.018 0.018 0.018* 1 Node #" 0.033 0.018 0.018 0.018* 4 Adre Hundf 100 0.033 0.018 0.018 0.018*

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1 SCS method"	• 6 Combine "
203 Pfenning Farm Residential Development"	1 Node #"
60.000 % Impervious"	" u/s of GEXR"
18.510 Total Area"	 Maximum flow 0.151 c.m/sec"
90.000 Flow length"	Hydrograph volume 2735.136 c.m"
1.000 Overland Slope"	1.556 1.556 0.133 0.151"
7.404 Pervious Area"	
1 000 Pervious slope"	
11.106 Impervious Area"	u/s of GEXR"
90.000 Impervious length"	Maximum flow 0.151 c.m/sec"
1.000 Impervious slope"	Hydrograph volume 2735.136 c.m"
0.250 Pervious Manning 'n'"	1.556 0.151 0.133 0.000"
76.000 Pervious SCS Curve No."	40 HYDROGRAPH Copy to Outriow"
0.1/4 Pervious Hunort Coefficient" 0.050 Pervious Ta/S coefficient"	* 1,556 0,151 0,000"
4.011 Pervious Initial abstraction"	40 HYDROGRAPH Combine 2"
0.015 Impervious Manning 'n'"	• 6 Combine "
98.000 Impervious SCS Curve No."	2 Node #*
0.803 Impervious Runoff coefficient"	INLET 1"
0.100 Impervious Ia/S coefficient"	Maximum tiow 0.151 c.m/sec"
U.518 Impervious Initial abstraction"	• nyurograph votume 2735,130 C.m
Catchment 203 Pervious Impervious Total Area	40 HYDROGRAPH Start - New Tributary"
Surface Area 7.404 11.106 18.510 hectare"	2 Start - New Tributary"
Time of concentration 67.455 6.301 14.037 minutes"	1.556 0.000 0.151 0.151"
Time to Centroid 228.396 127.158 139.965 minutes"	B1 ADD COMMENT=========""
Rainfall depth 25.028 25.028 25.028 mm"	3 Lines of comment"
HainTall Volume 1853.05 2//9.57 4652.62 C.m ⁻	Catchments South of GEVE part of Tolat #1"
Bunoff deth 4.363 20.087 13.797 mm"	decommente obten of density part of angle and
Runoff volume 323.07 2230.84 2553.91 c.m*	* 33 CATCHMENT 204*
Runoff coefficient 0.174 0.803 0.551 "	* 1 Triangular SCS"
Maximum flow 0.036 1.551 1.556 c.m/sec"	3 Specify values"
40 HYDROGRAPH Add Runoff "	1 SCS method"
	SQ 000 % Imperviaus"
54 POND DESTRN"	2.020 Total Area"
1.556 Current peak flow c.m/sec"	35.000 Flow length"
2.303 Target outflow c.m/sec"	1.200 Overland Slope"
2553.9 Hydrograph volume c.m"	0.828 Pervious Area"
6. Number of stages"	60.000 Pervious length"
341.500 Minimum water level metre"	1 102 Imperviaus Stope
341.500 Maximum water level metre"	116.000 Impervious length"
0 Keep Design Data: 1 = True; 0 = False"	* 0.500 Impervious slope"
Level Discharge Volume"	0.250 Pervious Manning 'n'"
341.500 0.000 0.000"	76.000 Pervious SCS Curve No."
342,000 0,1541 1746,000"	0.109 Pervious Ta(s coefficient"
343.000 0.3446.6114.000	8.021 Pervious Initial abstraction"
343.300 0.3837 7652.000"	0.015 Impervious Manning 'n'"
343.600 2.941 9295.000"	 98.000 Impervious SCS Curve No."
1. WEIRS"	0.805 Impervious Runoff coefficient"
Crest Weir Crest Left Right"	0.100 Impervious Ia/S coefficient"
elevation coefficie breadth sideslope sideslope"	0.518 Impervious Initial abstraction"
1 ORFICES"	Catchment 204 Pervious Impervious Total Area "
Orifice Orifice Number of	Surface Area 0.828 1.192 2.020 hectare
invert coefficie diameter orifices"	Time of concentration 57.064 9.033 13.503 minutes
341.500 0.630 0.3750 1.000"	Time to Centroid 211.602 131.429 138.889 minutes
Peak outflow 0.133 c.m/sec"	Rainfall depth 25.028 25.028 mm*
Maximum level 341,933 metre"	- HELTITALI VOLUME 207.28 295.28 505.56 C.M" Poinfoll Lossos 22.053 4.884 11.023 mm"
Matimum storage 1511.222 C.M Centroidal Ian 5.462 hours"	Runoff depth 2.974 20.144 13.104 mm ⁿ
1.556 1.556 0.133 0.018 c.m/sec"	Runoff volume 24.63 240.07 264.71 c.m"
40 HYDROGRAPH Combine 1*	* Runoff coefficient 0.119 0.805 0.524 *

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	Maximum flow 0.003 0.139 0.140 c.m/sec*		S. • 2	Runoff volume 18.38 11.97 30.35 c.m*	
40	ATCHOUGHAPH Add Runott "			Runoff coefficient 0.065 0.804 0.102 "	
			. 40	Maximum flow 0.001 0.007 0.007 c.m/sec*	
• 54	POND DESIGN*		40	A Add Bunoff "	
	0.140 Current peak flow c.m/sec"		2.8	- AU RUIDT 0.007 0.008 0.158"	
	0.070 Target outflow c.m/sec"		* 40	HYDROGRAPH Copy to Outflow"	
÷	264.7 Hydrograph volume c.m"			8 Copy to Outflow"	
÷ .	4. Number of stages"			0.007 0.007 0.007 0.158"	
¥	0.000 Matilium watch lavel metro		40	HYDROGRAPH Combine 2"	
	0.000 Starting water level metre			b compine -	
	0 Keep Design Data: 1 = True; 0 = False*			INLET 1	
÷	Level Discharge Volume"		•	Maximum flow 0.159 c.m/sec"	
:	0.000 0.000 0.000*			Hydrograph volume 3019.663 c.m [°]	
â			÷	0.007 0.007 0.007 0.159"	
	0.9100 0.2759 2511 000*		40	HYDROGRAPH Start - New Tributary"	
	Peak outflow 0.008 c.m/sec"			2 START - NEW IFIDUTARY"	
	Maximum level 0.076 metre"		* 33	CATCHMENT 206"	
<u>.</u>	Maximum storage 192.103 c.m"			1 Triangular SCS*	
1	Centroidal lag 9,249 hours"			1 Equal length*	
	0.140 0.140 0.008 0.151 c.m/sec*			1 SCS method®	
40	ATUROGRAPH COMDINE 2"			206 Industrial properties at end of Hamilton Road"	
			- C.	35.000 % Impervious"	
	INLET 1"		100	2.850 10721 AP82*	
	Maximum flow 0.158 c.m/sec"		353	1.000 Overland Slone"	
	Hydrograph volume 2989.318 c.m"			1.852 Pervious Area*	
÷	0.140 0.140 0.008 0.158"		1.4	50.000 Pervious length"	
40	HYDROGRAPH Start - New Tributary"		1. # 11.	1.000 Pervious slope"	
<u> </u>	2 Start - New Fributary		S.#01	0.997 Impervious Area"	
* 33	CATCHMENT 205*			50.000 Impervious length*	
÷ .	1 Triangular SCS"			1.000 Impervious slope"	
÷	3 Specify values"		000	76.000 Pervious SCS Curve No."	
	1 SCS method"		171	0.119 Pervious Runoff coefficient"	
	205 Iron Bridge Manufacturing Property = Woodlot"		2	0.100 Pervious Ia/S coefficient"	
	5.000 % Impervious"			8.021 Pervious Initial abstraction"	
	255.000 Flow length			0.015 Impervious Manning 'n''	
	1.800 Overland Slope"			0.801 Impervious Sub curve No."	
÷ .	1.131 Pervious Area"			0.100 Impervious Ia/S coefficient"	
<u>.</u>	255.000 Pervious length		(41)	0.518 Impervious Initial abstraction*	
÷	1.800 Pervious slope"			0.133 0.000 0.007 0.159 c.m/sec"	
	0.000 Impervious Area" 255.000 Impervious Jeneta"		- C	Catchment 206 Pervious Impervious Total Area *	
	1.800 Impervious slope"			Surface Area 1.852 0.997 2.850 nectare	
	0.250 Pervious Manning 'n'"		1000	Time to Control 219 049 124 213 144 704 minutes"	
	70,000 Pervious SCS Curve No."			Rainfall depth 25.028 25.028 25.028 mm"	
*	0.065 Pervious Runoff coefficient"			Rainfall volume 463.64 249.65 713.29 c.m"	
÷ .	0.100 Pervious Ia/S coefficient"			Rainfall losses 22.053 4.986 16.080 mm"	
<u> </u>	10.886 Pervious initial abstraction"			Runoff depth 2.974 20.041 8.948 mm"	
	98.000 Impervious SCS Curve No. "			Runoff volume 55.10 199.91 255.01 c.m"	
*	0.804 Impervious Runoff coefficient"			Munori coeri icient 0.119 0.801 0.338 - #/coo*	
	0.100 Impervious Ia/S coefficient"		* 40	HYDROGRAPH Add Runoff "	
:	0.518 Impervious Initial abstraction			4 Add Runoff "	
	0.007 0.000 0.008 0.158 c.m/sec"			0.133 0.133 0.007 0.159*	
	Catchment 205 Pervious Impervious Total Area "		* 33	CATCHMENT 207"	
¥	Time of concentration 206 526 9.867 109 000 1.190 mettare"			1 iriangular SCS"	
	Time to Centroid 379.239 132.805 282.069 minutes"			I Equal length"	
(7)	Rainfall depth 25.028 25.028 25.028 mm*		3 .	207 Woodlot and Wetland east of Pestells"	
8	Rainfall volume 282.94 14.89 297.83 C.m [*]		2.0	5.000 % Impervious"	
5	Rainfall losses 23.402 4.916 22.477 mm"		10	5.920 Total Area	
-10-	нипотт depth 1,626 20,111 2.550 mm°		3	65.000 Flow length*	

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			0.006 Teopring Duroff confficient"	
	5.624 Pervious Area"		0.000 Impervious Ia/S coefficient"	
	65.000 Pervious length*		0.518 Impervious Initial abstraction"	
	3.000 Pervious slope"		* 0.426 0.000 0.171 0.243 c.m/sec*	
	0.296 Impervious Area		Catchment 208 Pervious Impervious Total Area	
	65.000 Impervious length		SUFFACE AFEA 1,383 4,148 5,530 RECTARE"	
	0.250 Pervious Maning 'n'"		Time to Centroid 200.128 134.265 137.085 minutes"	
	70.200 Pervious SCS Curve No."		* Rainfall depth 25.028 25.028 25.028 mm*	
	0.066 Pervious Runoff coefficient"		Rainfall volume 346.01 1038.02 1384.03 c.m*	
	0.100 Pervious Ia/S coefficient		Rainfall losses 22.319 4.844 9.213 mm	
	10.782 Pervious Initial abstraction		"Bunoff volume 37.45 837.11 874.56 c.m"	
	98.000 Impervious SCS Curve No."		Runoff coefficient 0,108 0,806 0,632	
	0.793 Impervious Runoff coefficient"		Maximum flow 0.005 0.425 0.426 c.m/sec [*]	
	0.100 Impervious Ia/S coefficient*		40 HYDROGRAPH Add Runoff	
	0.518 Impervious Initial abstraction"		4 Add Runoff "	
	0.038 0.133 0.007 0.159 C.M/Sec*		54 PONDESTGN"	
	Surface Area 5.624 0.296 5.920 hectare"		0.426 Current peak flow c.m/sec"	
	Time of concentration 77.117 3.728 48.800 minutes"		 0.070 Target outflow c.m/sec* 	
	Time to Centroid 233.588 123.194 190.992 minutes"		874.6 Hydrograph volume c.m	
	Rainfall depth 25.028 25.028 mm"		9, NUMBER OF STAGES"	
	Rainfall Volume 1407.55 74.06 1401.64 C.m Rainfall Joses 23.365 5.185 22.456 mm ⁴		1.200 Maxinum water level metre"	
	Runoff depth 1.662 19.842 2.571 mm"		0.000 Starting water level metre"	
	Runoff volume 93.49 58.73 152.22 c.m"		0 Keep Design Data: 1 = True; 0 = False"	
	Runoff coefficient 0.066 0.793 0.103		Level Discharge Volume"	
	Maximum TLOW 0.009 0.038 0.038 C.m/sec"			
	A dd Runoff °		0.3000 0.01000 635.000"	
	0.038 0.171 0.007 0.159		0.4500 0.03600 1004.000"	
	HYDROGRAPH Copy to Outflow"		• 0.6000 0.04900 1405.000"	
	8 Copy to Outflow"		0.7500 0.06000 1847.000"	
	0.038 0.171 0.159*			
	6 Combine "		1.200 1.100 2900.000*	
	2 Node #*		Peak outflow 0.017 c.m/sec"	
	INLET 1"		Maximum level 0.338 metre"	
	Maximum flow 0.243 c.m/sec"		Maximum storage 729.270 c.m"	
	Hyorograph volume 3425.895 C.m ⁻		- centrotatat tag 10,414 10015- 0.426 0.426 0.017 0.243 c.m/sec."	
3	HYDROGRAPH Start - New Tributary"		* 40 HYDROGRAPH Combine 2*	
	2 Start - New Tributary"		6 Combine •	
	0.038 0.000 0.171 0.243*		2 Node #"	
3	CATCHMENT 208"		- INLET 1" Maximum flow 0.245 o m/soc"	
	I IFIANGULAR SUS"		Machania Luow 0,245 0,11/560	
	1 SCS method"		• 0.426 0.426 0.017 0.245"	
	208 N.C. Pestell site"		* 81 ADD COMMENT===================================	
	75.000 % Impervious"		3 Lines of comment"	
	5.530 Total Area"		Catchmonte South of CEVP and of Tolot #03	
	2 000 Overland Slope"		of comments gouth of devin part of filter #2	
	1.383 Pervious Area"		* 40 HYDROGRAPH Start - New Tributary*	
	50.000 Pervious length"		2 Start - New Tributary	
	3.000 Pervious slope"		• 0.426 0.000 0.017 0.245*	
	4.148 Impervious Area"		- 33 GAICHMENT 209"	
	192.000 Impervious length" D.750 İmpervious slone"		3 Specify values"	
	0.250 Pervious Manning 'n'"		1 SCS method	
	75.000 Pervious SCS Curve No."		* 209 Alpine Solutions - west SMWP*	
	0.108 Pervious Runoff coefficient"		30.000 % Impervious"	
	0.100 Pervious Ia/S coefficient"		- 1,920 Total Area"	
	0.46/ PERVIOUS INITIAL ADSTRACTION"		1.000 Overland Slope"	

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150.000 Pervious length"	5.000 % Impervious*	
* 1.500 Pervious slope"	13.230 Total Area"	
0.576 Impervious Area	170.000 Flow length"	
113.000 Impervious length	2.400 Overland Slope"	
1.500 Impervious slope"	12.568 Pervious Area	
0.250 Pervious Manning 'n'	170.000 Pervious length"	
0.170 Pervious Bundf coefficient"	2.400 Pervious slope"	
0.100 Pervious Ia/S coefficient*	170.00 Impervious locath	
6.350 Pervious Initial abstraction"	2 400 Impervious elope"	
• 0.015 Impervious Manning 'n'"	0.250 Pervious Manning 'n'"	
* 98.000 Impervious SCS Curve No.*	70.000 Pervious SCS Curve No."	
0.802 Impervious Runoff coefficient"	0.065 Pervious Runoff coefficient"	
0.100 Impervious Ia/S coefficient"	0.100 Pervious Ia/S coefficient"	
0.518 Impervious Initial abstraction"	10.886 Pervious Initial abstraction"	
0.081 0.000 0.017 0.245 c.m/sec"	0.015 Impervious Manning 'n'	
Surface to an 1 244 0 576 1 000 hoters	98.000 Impervious SCS Curve No."	
Time of concentration 85-517 6 395 32 540 minutes"	0.800 Impervious Kunott coetticient"	
Time to Centroid 252.590 127 322 168 715 minutes	0.510 Impervious Initial abstraction"	
Rainfall depth 25.028 25.028 mm"		
Rainfall volume 336.37 144.16 480.53 c.m"	Catchment 210 Pervious Impervious Total Area "	
Rainfall losses 20.783 4.959 16.036 mm"	Surface Area 12.568 0.661 13.230 hectare"	
* Runoff depth 4.245 20.069 8.992 mm*	Time of concentration 148.538 7.097 92.903 minutes"	
Runoff volume 57.05 115.60 172.65 c.m"	Time to Centroid 314.035 128.488 241.051 minutes*	
Runoff coefficien: 0.170 0.802 0.359	* Rainfall depth 25.028 25.028 mm*	
Maximum flow 0.005 0.080 0.081 c.m/sec*	* Rainfall volume 3145.60 165.56 3311.16 c.m*	
40 HYDRUGHAPH AGG HUNDTT	Rainfall losses 23.402 4.997 22.481 mm"	
	Runoff depth 1.626 20.031 2.546 mm"	
54 POND DESTRON"	Runott volume 204.36 132.50 336.86 c.m ⁻	
0.081 Current peak flow c.m/sec*		
• 0.070 Target outflow c.m/sec"	* 40 HYDRORAPH Add Bunoff "	
172.6 Hydrograph volume c.m"	4 Add Bunoff *	
7. Number of stages"	• 0,092 0,092 0,050 0,050°	
0.000 Minimum water level metre	* 40 HYDROGRAPH Copy to Outflow*	
1.100 Maximum water level metre	8 Copy to Outflow"	
0.000 Starting water level metre	0.092 0.092 0.092 0.050"	
lovel Discharge Mellere	40 HYDROGRAPH Combine 3"	
	S Node #1	
0,2500 0,04200 7,000"	TNIET 2*	
* 0.5000 0.09000 71,000"	Maximum flow 0.138 c.m/sec*	
0,7500 0.1250 220.000"	 Hydrograph volume 509,806 c.m[*] 	
0.9000 0.1400 346.000"	0.092 0.092 0.092 0.138"	
1.000 0.3110 445.000"	81 ADD COMMENT===================================	
1.100 0.6160 557.000"	3 Lines of comment*	
Peak outriow 0.050 c.m/sec		
MAXIMUM IEVEL U.294 METE	South of GEXR along Nafziger Rd, part of Inlet #3"	
	40 ATDHOGHAPH Start - New Inibutary"	
* 40 HYDROGRAPH Combine 3"		
6 Combine "	33 CATCHMENT 211*	
3 Node #"	1 Triangular SCS"	
INLET 2"	1 Equallength	
Maximum flow 0.050 c.m/sec"	1 SCS method"	
Hyarograph Volume 172,946 c.m."	211 Culivated lands east of Nafziger Road"	
4.0 HYDPOGRADE Start 0.050 0.050"	1.000 % Impervious"	
Or Unvonwern otart - New Tributary" Start - New Tributary"	- 7.310 IOtal Area"	
0.081 0.000 0.050 0.050"	3 300 Overland Slope"	
* 33 CATCHMENT 210*	7.237 Pervious Area*	
1 Triangular SCS	120.000 Pervious Length"	
1 Equal length"	3.300 Pervious slope"	
1 SCS method"	* 0.073 Impervious Area*	
210 WoodLot north of Hamburglr/Badenview lands"	120.000 Impervious length"	

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 3.300 Impervious slope" 0.250 Pervious SCS Curve No." 0.119 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 3.021 Pervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.805 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.100 Impervious Initial abstraction" 0.101 Impervious Initial abstraction" 0.102 0.000 0.092 0.138 c.m/sec" 	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 " " 0.023"
Catchment 211 Pervious Impervious Total Area " Surface Area 7.237 0.073 7.310 hectare" Time of concentration 233.480 125.465 226.564 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 21.681 mm" Runoff depth 2.975 20.148 3.147 mm" Runoff coefficient 0.19 0.805 0.126 " Maximum flow 0.022 0.010 0.023 c.m/sec" 4 Add Runoff " 0.023 0.092 0.138"	54 FOND 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" 0.000 Starting water level metre" 0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume" 0.000 0.1000 0.0000 0.1000 0.0000 0.2500 0.04200 0.5000 0.09000 0.5000 0.9000
40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.023 0.023 0.138" 40 HYDROGRAPH Combine 4" 6 Combine 4" 4 Node #" INLET 3" Maximum flow 0.023 c.m/sec" Hydrograph volume 230.012 c.m" 0.023 0.023 0.023" 40 HYDROGRAPH Start - New Tributary" 2 2 Start - New Tributary" 0.023	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" INLET 3" Maximum flow 0.056 c.m/sec"
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" 1.536 Pervious Area" 1.536 Pervious Area" 1.536 Pervious Area" 1.536 Pervious slope"	Hydrograph volume 500.145 c.m" 0.142 0.142 0.056" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.142 0.000 0.044 33 CATCHMENT 213" 1 Triangular SCS" 1 Equal length" 1 SCS method" 213 Woodlot East and West of Nafziger Road" 3.460 Total Area"
<pre>1.024 Impervious Area" 131.000 Impervious length" 1.500 Impervious slope" 0.250 Pervious SCS Curve No." 80.000 Pervious SCS Curve No." 0.170 Pervious SCS Curve No." 0.100 Pervious In/s coefficient" 0.100 Pervious Initial abstraction" 0.015 Impervious Curve No." 98.000 Impervious SCS Curve No." 0.800 Impervious SCS Curve No." 0.800 Impervious Runoff coefficient" 0.100 Impervious Runoff coefficient" 0.100 Impervious SCS Curve No." 0.142 0.000 0.023 0.023 c.m/sec" Catchment 212 Pervious Intal Area " Surface Area 1.536 1.024 2.560 hectare"</pre>	<pre>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 Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.806 Impervious Runoff coefficient"</pre>

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#2	0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff *	
1	0.518 Impervious Initial abstraction*	4 Add Runoff "	
2	0.055 0.000 0.044 0.056 c.m/sec* Catchment 213 Pervious Impervious Total Appa *	0.441 0.441 0.055 0.099"	
	Surface Area 13.056 0.404 13.460 hectare"	0.441 Current peak flow c.m/sec"	
	Time of concentration 116.375 5.593 85.904 minutes"	• 0.070 Target outflow c.m/sec"	
2	Time to Centroid 277.843 126.027 236.085 minutes"	803.1 Hydrograph volume c.m*	
	Rainfail ueptin 25.028 25.028 26.028 mm" Rainfail volume 3267.66 101.06 3368.72 c.m."	15. Number of stages"	
•	Rainfall losses 23.384 4.859 22.826 mm"	1.450 Maximum water level metre	
5	Runoff depth 1.644 20.169 2.200 mm"	• 0.000 Starting water level metre"	
2	Runoff volume 214.65 81.44 296.09 c.m ⁴	0 Keep Design Data: 1 = True; 0 = False"	
*	Maximum flow 0.016 0.055 0.055 c.m/sec*	.0.000 0.000 0.000*	
* 40	HYDROGRAPH Add Runoff •	0.1500 0.00700 248.000"	
2	4 Add Runoff *	* 0.2500 0.00900 418.000"	
- 40	U.US5 U.US5 U.044 U.056" HYDROGRAPH Conv. to Outfilow"	0.3500 0.01100 593.000"	
*	8 Copy to Outflow"	0.5500 0.01500 964.000"	
5	0.055 0.055 0.056 0.056*	* 0.6500 0.01600 1161.000°	
40	HYDROGRAPH Combine 4"	0.7500 0.01700 1364.000"	
*	4 Node #	0.8500 0.01900 1575.000"	
*:	INLET 3"	1.050 0.05600 2025.000"	
1	Maximum flow 0.099 c.m/sec"	* 1.150 0.2080 2263.000"	
- S	Hydrograph volume 796.239 c.m"	1.250 0.4600 2511.000"	
* 40	HYDROGRAPH Start - New Tributary*	1.450 6.856 3033.000"	
52	2 Start - New Tributary"	Peak outflow 0.012 c.m/sec*	
	0.055 0.000 0.055 0.099"	Maximum level 0.397 metre	
*	CALOMMENT 214"	Maximum storage 678.481 c.m"	
*	3 Specify values*	0.441 0.441 0.012 0.099 c.m/sec"	
	1 SCS method	* 40 HYDROGRAPH Combine 4"	
- D	214 Rec Centre - SWMP" 72 000 % Tensorique"	6 Combine "	
× .	4.950 Total Area"	4 NOGE #**	
5	50.000 Flow length*	Maximum flow 0.104 c.m/sec"	
2	2.800 Overland Slope"	Hydrograph volume 1481.678 c.m"	
*	1.330 Pervious length*	0.441 0.441 0.012 0.104"	
÷.	1.500 Pervious slope*	2 Start - New Tributary	
1	3.613 Impervious Area	0.441 0.000 0.012 0.104"	
	182.000 Impervious length*	33 CATCHMENT 215"	
1 2	0.250 Pervious Manning 'n'	1 Equal length	
	83,000 Pervious SCS Curve No."	1 SCS method"	
2	0.219 Pervious Runoff coefficient"	215 Vacant Industrial lands west of Nafziger Road"	
	5.202 Pervious Initial abstraction"	45.000 % Impervious" 2.860 Total Area"	
	0.015 Impervious Manning 'n'"	105.000 Flow length"	
	98.000 Impervious SCS Curve No.	2.000 Overland Slope"	
	0.807 Impervious Runoff coefficient"	1.573 Pervious Area"	
	0.518 Impervious Initial abstraction*	2.000 Pervious slope"	
	0.441 0.000 0.055 0.099 c.m/sec*	1.287 Impervious Area"	
*	Catchment 214 Pervious Impervious Total Area "	105.000 Impervious length"	
	Surnade Area 1.335 3.513 4.550 Nectare" Time of concentration 33.552 8.513 10.801 minutes"	2.000 Impervious slope"	
÷ .	Time to Centroid 180.684 130.578 135,139 minutes*	76.000 Pervious SCS Curve No."	
:	Rainfall depth 25.028 25.028 25.028 mm*	0.119 Pervious Runoff coefficient*	
	Maintall Volume 334,49 904,37 1288,87 C.m" Rainfall Josses 19 559 4.826 8.804 mm"	0.100 Pervious Ia/S coefficient 0.21 Pervious Initial abstraction	
	Runoff depth 5.469 20.202 16.224 mm"	0.015 Impervious Manning 'n'"	
:	Runoff volume 73.09 729.98 803.07 c.m"	9B.000 Impervious SCS Curve No."	
	HUNDTT COETTLGIENT 0.219 0.807 0.648 " Maximum Flow 0.014 0.437 0.444 = -/	0.806 Impervious Runoff coefficient"	
	maximum (100 0,014 0,407 0,441 0,0/860	outoo imbellatons isto coellitetelli.	
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	0.518 Impervious Initial abstract	ion"	
	0.174 0.000 0.0	012 0.104 c.m/sec"	
۲	Catchment 215 Pervious	s 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"	
<u>.</u>	Runoff volume 46.79	259.58 306.38 c.m"	
	Rupott coetticient 0.119	0.806 0.428 "	
	Maximum flow 0.005	0.174 0.174 C.m/sec"	
40	HYDROGRAPH Add Runott		
8	4 Add Runott "		
	0.174 0.174 0.0	0.104"	
40	HYDROGHAPH Copy to Outflow"		
8	a copy to outriow"		
10	0.174 0.174 0.1	174 0.104"	
40	A Combine "		
	TNLET 3"		
	Maximum flow	278 c m/sec"	
	Hydrograph volume 178	3.056 c.m*	
	0.174 0.174 0.1	174 0.278"	
* 40	HYDROGRAPH Start - New Tributa	~v"	
	2 Start - New Tributary"	,	
2.40	0.174 0.000 0.1	174 0.278"	
* 33	CATCHMENT 216"		
•	1 Triangular SCS"		
	1 Equal length"		
/ #	1 SCS method*		
	216 Industrial lands west of Na	fziger Road"	
	45.000 % Impervious"		
•	2.860 Total Area"		
	110.000 Flow length"		
2	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"		
	76 000 Pervious SCS Cuove No. "		
	0 110 Pervious Sub Curve NO."		
	0.100 Pervious Ta/S coefficient"		
	8 021 Pervious Initial abetraction	a"	
	0.015 Impervious Manning 'n'"		
	98 000 Impervious SCS Curve No."		
	0.806 Impervious Runoff coefficie	nt"	
	0.100 Impervious Ia/S coefficient		
	0.518 Impervious Initial abstract	ion"	
	0,180 0,000 0.1	174 0.278 c.m/sec"	
	Catchment 216 Perviou	s 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"	
٠	Rainfall losses 22.053	4.858 14.315 mm"	
3. C	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 "	
2	Maximum flow 0.004	0.180 0.180 c.m/sec"	
- 40	HYDHOGHAPH Add Runoff "		

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	A Add Bunoff				
2	0.180 0.180	0.174	0.278"		
1	40 HYDROGRAPH Copy to Outf	low"			
	B Copy to Outflow"	0 100	0.070		
	40 HYDROGRAPH Combine	4"	0.270		
-	6 Combine "				
	4 Node #"				
2	INLET 3" Maximum flow	0.45	50 c m/c		
÷	Hydrograph volume	2094.42	27 c.m"		
	0.180 0.180	0.180	0.459"		
1	40 HYDROGRAPH Start - New	Tributary*			
2	2 Start - New Fributar	'y" 0.190	0 450*		
	33 CATCHMENT 217"	0.100	0.405		
×.	1 Triangular SCS"				
1	1 Equal length"				
2	1 SUS method" 217 Existing ROW west of	Nafziger P	"beo		
	75.000 % Impervious"	Marziger i	load		
5	0.730 Total Area"				
1	90.000 Flow length"				
-	0.183 Pervious Area"				
5	90.000 Pervious length"				
1	2.100 Pervious slope"				
2	0.548 Impervious Area"				
5	2.100 Impervious slope"				
	0.250 Pervious Manning 'n'	в			
2	76.000 Pervious SCS Curve N	lo."			
	0.119 Pervious Hunott coet 0.100 Pervious Ia/S coeffi	cient"			
	8.021 Pervious Initial abs	traction"			
	0.015 Impervious Manning	n'"			
	98.000 Impervious SCS Curve	No."			
	0.100 Impervious Ia/S coef	ficient"			
	0.518 Impervious Initial a	bstraction'	0		
	0.074 0.000	0.180	0.459 0	c.m/sec"	
	Catchment 217	Pervious	Impervious	Total Area	*
	Time of concentration	71.723	5.043	8.177	minutes"
	Time to Centroid	230.071	125.174	130.103	minutes"
1	Rainfall depth	25.028	25.028	25.028	mm"
-	Bainfall losses	45.08	4.917	9.201	C.M"
-	Runoff depth	2.975	20.111	15.827	mm "
•	Runoff volume	5.43	110.11	115.53	C.m"
3	Runoff coefficient	0.119	0.804	0.632	* • • /••••
	40 HYDROGRAPH Add Runoff "	0.001	0.074	0.074	c.m/sec
1	4 Add Runoff "				
1	0.074 0.074	0.180	0,459"		
3	40 HYDROGRAPH Copy to Outf	low"			
	0.074 0.074	0.074	0.459"		
1	40 HYDROGRAPH Combine	4 °			
2	6 Combine "				
	4 NODE #" TNIFT 3"				
	Maximum flow	0.53	32 c.m/se	ec"	
	Hydrograph volume	2209.96	52 c.m"		
	0,074 0.074 40 HVDBOGBAPH Coofluoroo	0.074	0.532"		
	7 Confluence "	2			

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	2 Node #°				
	INIET 1"				0.250 Pervious Manning "
	Maximum flow	0.245	c.m/sec"		0.100 Fervious Sus Curve No.
	Hydrograph volume	4055.545	c.m"		0.100 Pervisus Ta/S coefficient
	0.074 0.245	0.074	0.000*	(#	8.021 Pervious Ta/s Coefficient
* 40	HYDROGRAPH Copy to Outflow"			1 A C	
	8 Copy to Outflow"				98 DOD Impervious SCS Clove No."
ж.	0.074 0.245	0.245	0.000"		0.803 Impervious Runoff coefficient"
* 40	HYDROGRAPH Combine 5"				0.100 Impervious Ta/S coefficient"
	6 Combine "			04	0.518 Impervious Initial abstraction"
	5 Node #"			21	1.493 0.000 0.532 0.915 c.m/sec"
	u/s of HWY 7&8"				Catchment 223 Pervious Impervious Total Area
<u>.</u>	Maximum flow	0.245	c.m/sec"		Surface Area 1.885 10.684 12.570 hectare
<u>.</u>	Hydrograph volume	4055.545	C.m"		Time of concentration 89.604 6.301 8.422 minutes
÷	0.074 0.245	0.245	0.245"	2	Time to Centroid 252.604 127.158 130.353 minutes*
- 40	HYDROGRAPH Confluence	3"			Rainfall depth 25.028 25.028 25.028 mm*
÷	7 Contluence "				Rainfall volume 471.90 2674.08 3145.98 c.m*
<u> </u>	3 NODE #"				Rainfall losses 22.053 4.941 7.508 mm*
	INLET 2"				Runoff depth 2.975 20.087 17.520 mm*
	Maximum flow	0.138	C.m/sec"		Runoff volume 56.09 2146.18 2202.27 c.m*
	Hydrograph Volume	509.806	C.m"		Runoff coefficient 0.119 0.803 0.700
. 10	U.U/4 U.138	0.245	0.000-		Maximum flow 0.005 1.492 1.493 c.m/sec"
40	P Copy to Outflow"			40	HYDROGRAPH Add Runoff "
ž.		0 129	0.000	2	4 Add Hunott
· 40	HYDBOGBAPH Combine 5"	0.150	0:000	. 10	1.493 1.493 0.532 0.915"
	6 Combine "			40	HYDROGRAPH COPY TO DUTTIOW"
	5 Node #"				8 Copy to outriow
	u/s of HWY 788"			. 10	1.493 1.493 1.493 0.915
	Maximum flow	0.383	c.m/sec"	40	6 Combino - S
5.	Hydrograph volume	4565.351	с		5 Node #"
•	0,074 0,138	0.138	0.383"		u/c of HWY 78.9"
* 40	HYDROGRAPH Confluence	4"			Maximum flow 2 409 c m/coc"
	7 Confluence "				Hydrogerand volume 8977 582 c m [*]
<u>.</u>	4 Node #"				1,493 1,493 1,493 2,408°
<u>*</u>	INLET 3"			* 81	ADD COMMENT===================================
<u>.</u>	Maximum flow	0,532	c.m/sec"		3 Lines of comment"
•	Hydrograph volume	2209.962	с. m "		*******
2.1	0.074 0.532	0.138	0.000"		Catchments east of Hamilton Road, part of Inlet #4"
40	HYDROGRAPH Copy to Outflow"				*******
2	8 Copy to Outflow"		6	* 40	HYDROGRAPH Start - New Tributary"
	0.074 0.532	0.532	0.000		2 Start - New Tributary"
40	HYDROGHAPH COMDINE 5"			÷	1.493 0.000 1.493 2.408"
	5 Nodo #"			33	CATCHMENT 218"
	U/s of HWY 729'			2	1 Triangular SCS"
*	Maximum flow	0.015	0		1 Equal Length"
2	Hydrograph volume	6775 312	C m"	1	1 SUS method"
	0.074 0.532	0.532	0.915"		218 Ironbridge Manufacturing Property"
* 40	HYDROGRAPH Start - New Trib	utary"	0.010		2.000 Tatal Apag
*	2 Start - New Tributary"			÷	230.000 Filtar length
7)	0.074 0.000	0.532	0.915"	12	1 700 Overland Slope"
* 33	CATCHMENT 223"			÷	
	1 Triangular SCS'				230.000 Pervious length"
*	1 Equal length*				3.000 Pervious slope"
<u>.</u>	1 SCS method"				1.751 Impervious Area"
	223 New Hamburglr Inc. lands	•			230.000 Impervious length"
85	5.000 % Impervious"			15	3.000 Impervious slope"
12	2.570 Total Area"				0.250 Pervious Manning 'n'"
90	0.000 Flow length"				76.000 Pervious SCS Curve No."
1	.000 Overland Slope"				0.163 Pervious Runoff coefficient"
<u> </u>	.885 Pervious Area"	28			0.060 Pervious Ia/S coefficient"
- 90	.000 Pervious length"			÷	4.813 Pervious Initial abstraction"
- 1 • 10	.000 Pervious stope"				0.015 Impervious Manning 'n'"
10	000 Impervious Area"				98.000 Impervious SCS Curve No.
. 90	000 Impervious length"				0.807 Impervious Runoff coefficient"
1	.000 impervious stope"				0.100 Impervious Ia/S coefficient"

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•	0.518 Impervious Initial abstraction"			3.000	Pervious slope"	
	0.238 0.000 1.493 2.408 c.m/sec"		÷	1.088	Impervious Area"	
	Catchment 218 Pervious Impervious lotal Area "		- 2	3.000	Impervious slope"	
	Time of concentration 88.697 7.957 10.728 minutes"		*	0.250	Pervious Manning 'n'"	
•	Time to Centroid 258.166 129.790 134.196 minutes"		<u>*</u>	76.000	Pervious SCS Curve No."	
	Rainfall depth 25.028 25.028 25.028 mm"			0.003	Pervious Runoff coefficient"	
	Rainfall volume 77.34 438.23 515.57 c.m"			0.281	Pervious Ia/S coefficient"	
•	Haintall losses 20.959 4.824 7.244 mm ⁻ Bunoff dootb 4.069 20.204 17.784 mm ⁻			22.539	Tervious Manning 'n'"	
	Runoff volume 12.57 353.77 366.34 c.m"			98.000	Impervious SCS Curve No."	
	Runoff coefficient 0.163 0.807 0.711 "			0.799	Impervious Runoff coefficient"	
•	Maximum flow 0.001 0.238 0.238 c.m/sec"		•	0.100	Impervious Ia/S coefficient"	
40	HYDROGRAPH Add Runoff "		÷	0.518	Impervious Initial abstraction"	
2	4 Add Hunott "		<u>_</u>	0.0	0.141 0.000 0.129 2.535 C.M/Sec"	
54	POND DESIGN"		÷.	Su	rface Area 0.192 1.088 1.280 hectare"	
	0.238 Current peak flow c.m/sec"		<u>*</u>	Ti	ne of concentration 317.189 4.062 4.269 minutes"	
•	4.094 Target outflow c.m/sec"			Ti	ne to Centroid 472.737 123.646 123.877 minutes"	
•	366.3 Hydrograph volume c.m"		<u>.</u>	Ra	infall depth 25.028 25.028 25.028 mm"	
	15. Number of stages"		÷	Ha	Lofall volume 48.05 272.30 320.35 C.m"	
- 34 - 34	14./00 Minimum Water level metre"			Ha Bu	noff denth 0.075 19.992 17.004 mm"	
•	0.000 Starting water level metre"			Ru	noff volume 0.14 217.51 217.65 c.m"	
•	0 Keep Design Data: 1 = True; 0 = False"		¥	Ru	noff coefficient 0.003 0.799 0.679	
•	Level Discharge Volume"			Ma	kimum flow 0.000 0.141 0.141 c.m/sec"	
<u>.</u>	344.700 0.1250 0.000"		40	HY	DROGRAPH Add Runoff "	
	344.750 0.1270 9.000" 344.800 0.1280 95.000"		÷	4	Add Hunott " 0 141 0 141 0 129 2 535"	
•	344.850 0.1300 77.000"		* 40	HY	DROGRAPH Copy to Outflow"	
•	344.900 0.1450 136.000"			8	Copy to Outflow"	
•	344,950 0.1820 209.000"		5		0.141 0.141 2.535"	
	345.000 0.2220 297.000"		* 40	HY	DROGRAPH Combine 5"	
	345.050 0.2690 400.000"			6	Compine "	
•	345.150 0.2740 653.000"				u/s of HWY 7&B"	
	345.200 0.2760 804.000"			Ма	kimum flow 2.676 c.m/sec"	
	345.250 0.2790 971.000"			Hy	irograph volume 9562.794 c.m"	
	345.300 0.2820 1154.000"				0.141 0.141 0.141 2.676"	
	345.350 0.2840 1355.000"		40	HY 2	HUGHAPH START - New Inibutary" Start - New Tributary"	
	Peak outfillow 0.2000 15/1.000 0.129 c.m/sec*		*	2	0.141 0.000 0.141 2.676"	
	Maximum level 344.819 metre"		. 33	CA	TCHMENT 220"	
•	Maximum storage 51.339 c.m"			1	Triangular SCS"	
	Centroidal lag 2.285 hours"		*	1	Equal length"	
. 40	0.238 0.238 0.129 2.408 c.m/sec"			220	SCS method" Northwest corpor of Nithview Heights"	
40	6 Combios "			8.000	% Impervious"	
	5 Node #"			0.500	Total Area"	
•	u/s of HWY 7&8"		*	60.000	Flow length"	
	Maximum flow 2.535 c.m/sec"		<u>.</u>	5.000	Overland Slope"	
	Hydrograph volume 9345.138 c.m"		- S	0.460	Pervious Area"	
40	U.230 U.230 U.129 Z.535 HVDROGRAPH Start - New Tributary"		*	5.000	Pervious slope"	
	2 Start - New Tributary"			0.040	Impervious Area"	
•	0.238 0.000 0.129 2.535"			60.000	Impervious length"	
. 33	CATCHMENT 219"		*	5.000	Impervious slope"	
	1 Triangular SCS"		÷	0.250	Pervious Manning 'n'" Pervious SCS Curve No. "	
	1 SCS method"		*	0.098	Pervious Runoff coefficient"	
	219 N.C. Pestells Head Office & other Industrial"			0.100	Pervious Ia/S coefficient"	
• 8	35.000 % Impervious"		*	8.924	Pervious Initial abstraction"	
<u>.</u>	1.280 Total Area"		1	0.015	Impervious Manning 'n'"	
7	75.000 Flow length"		÷	98,000	Impervious SUS Curve No." Impervious Rupoff coefficient"	
•	0.192 Pervious Area"		*	0,100	Impervious Randon coefficient"	
• 7	75.000 Pervious length"			0.518	Impervious Initial abstraction"	

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	0.005 0.0	000 0.141	2,676	c.m/sec*		
	Catchment 220	Pervious	Impervious	Total Area	D	
÷	Surface Area	0,460	0.040	0.500	hectare"	
	Time of concentration	n 50.584	3.048	30.948	minutes"	
	Time to Centroid	201.260	122.026	168.529	minutes"	
÷ .	Rainfall volume	25.028	25.028	125.028	mm ⁻	
•	Rainfall losses	22,567	5,111	21.170	o	
	Runoff depth	2.461	19.917	3,857	" " " "	
	Runoff volume	11.32	7.97	19.29	C.m"	
÷	Runoff coefficient	0.098	0.796	0.154		
40	Maximum flow	0.002	0.005	0.005	c.m/sec"	
. 40	Add Bunoff "	r -				
	0.005 0.1	0.141	2.676"			
• 40	HYDROGRAPH Copy to O	utflow"	21010			
	8 Copy to Outflow"					
•	0.005 0.0	005 0.005	2.676*			
* 40	HYDROGRAPH Combine	5"				
	o compine " 5 Node #"					
	u/s of HWY 7&8"					
*	Maximum flow	2.6	i81 c.m/s	ec"		
	Hydrograph volume	9582.0	180 c.m."			
÷	0.005 0.0	0.005	2.681"			
40	HYDROGRAPH Start - N	ew Tributary"				
	2 Start - New Iribu	cary" n nos	2 691			
* 33	CATCHMENT 221 "	0.000	2.001			
÷	1 Triangular SCS"					
	1 Equal length"					
	1 SCS method"					
Ş	221 Proposed ROW from	Hamilton Roa	ıd "			
2	0.810 Total Area"					
	40.000 Flow length"					
•	2.000 Overland Slope"					
<u>*</u>	0.150 Pervious Area"					
÷	40.000 Pervious length"					
	2.000 Pervious slope"					
	0.660 Impervious Area"					
	2.000 Impervious slope"					
	0.250 Pervious Manning	'n'"				
	76.000 Pervious SCS Curv	e No."				
÷	0.119 Pervious Runoff c	oefficient"				
Ş	0.100 Pervious Ia/S coe	TT1Cient"				
	0.015 Impervious Mannio	abstraction" n'"				
	98.000 Impervious SCS Cu	rve No."				
	0,795 Impervious Runoff	coefficient*				
	0.100 Impervious Ia/S c	oefficient"				
÷ .	0.518 Impervious Initia	l abstraction				
	Catchmont 221	DUU 0.005	2.681	C.M/Sec"	и	
	Surface Area	0.150	0.660	0.810	hectare"	
×.	Time of concentratio	n 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 "	
ê	Rainfall volume	37.50	165.22	202.72	с.п.	
	Haintall losses	22.053	5.124	8,256	mm "	
	Runott deptn Runoff volume	2.9/4	19.904	10.//2	6 m ¹	
	Runoff coefficient	0.119	0.795	0.670	9 . III 1	
	Maximum flow	0.001	0.089	0.089	c.m/sec"	
* 40	HYDROGRAPH Add Runof	f"				
	4 Add Runoff "					

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	0.080 0.08	0 0.005	0 6018		
* 40	HYDROGRAPH Copy to Out	flow"	2.001		
đ. –	8 Copy to Outflow"				
40	0,089 0.08 HYDEOGRAPH Combine	9 0.089	2.681"		
	6 Combine "	0			
	5 Node #"				
	U/S OT HWY 7&8" Maximum flow	2.71	50 c.m/se	°.	
34	Hydrograph volume	9717.93	39 c.m"		
	0.089 0.08	9 0.089	2.760"		
. 01	3 Lines of comment"				

	Catchment to Inlet #5"				
• 40	HYDROGRAPH Start - New	Tributary"			
	2 Start - New Tributa	гу"			
	0.089 0.00	0.089	2.760"		
	1 Triangular SCS"				
÷.	1 Equal length				
	1 SCS method" 222 Bear yards from Ham	ulton Heigh	ts Subdivis	ion"	
×	5.000 % Impervious"	irread in the right		Lott	
	1.080 Total Area"				
(H) (3.000 Overland Slope"				
21	1.026 Pervious Area"				
÷	20.000 Pervious length"				
	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 coe	fficient"			
2	0.100 Pervious Ia/S coeff 8 021 Pervious Initial ab	icient" straction"			
	0.015 Impervious Manning	'n'"			
	98.000 Impervious SCS Curv	e No."			
	0.100 Impervious Ia/S coe	fficient"			
	0.518 Impervious Initial	abstraction			
	0.009 0.00	0 0.089	2.760 (C.m/sec"	
	Surface Area	1.026	0.054	1,080	hectare"
÷.	Time of concentration	26,137	1.838	19.789	minutes"
	Rainfall depth	172.629	119,953	25.028	minutes" mm®
•	Rainfall volume	256.78	13.51	270.30	C.m*
÷	Rainfall losses	22,055	5.055	21.205	mm"
	Runoff volume	2.972	19.973	3.822 41.28	mm." C.M."
	Runoff coefficient	0.119	0.798	0.153	u
. 40	Maximum flow	0.006	0.008	0,009	c.m/sec"
*	4 Add Runoff *				
÷.	0.009 0.00	0.089	2.760"		
40	HYDROGRAPH Copy to Out	"tlow"			
	0.009 0.00	0.009	2.760*		
40	HYDROGRAPH Combine	5"			
	6 Combine " 5 Node #"				
	u/s of HWY 7&8"				
- M	Maximum flow	2.7	67 c.m/s	ec"	

Q:\348 Printed	96\104\SWM\MIDUSS\Post\34896-104_Post-0025mm.out Page 23 d at 15:39 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-0025mm.out Printed at 15:39 on 18 Dec 2018
	Hydrograph volume 9759.221 c.m"	81 ADD COMMENT===================================
	0.009 0.009 0.009 2.767"	7 Lines of comment
81	ADD COMMENT===================================	•
	S Lifes of comment.	
	Badenview Developments Inc. lands"	PROPOSED SWM POND DESIGN
-	••••••	• •• ••
- 40	HYDROGRAPH Start - New Tributary"	***************************************
	2 START - NEW ITIDUTARY" 0.009 0.000 0.009 2.767"	54 POND DESTON
• 33	CATCHMENT 224"	7.897 Current peak flow c.m/sec"
	1 Triangular SCS®	 4.094 Target outflow c.m/sec
÷.	1 Equal length"	17327.9 Hydrograph volume c.m"
	224 Badenview lands"	30, Number of stages" 334,550 Minimum water level metre"
(*)	85.000 % Impervious*	337.850 Maximum water level metre"
12	43.200 Total Area [®]	334.550 Starting water level metre"
- C	90.000 Flow length"	0 Keep Design Data: 1 = True; 0 = False"
1062	6.480 Pervisia Araa*	S34 550 0.000 0.000"
15	90.000 Pervious length"	* 334.600 0.00400 1187.000"
	1.000 Pervious slope"	334.700 0.02830 3607.000"
	36,720 Impervious Area"	334.800 0.06350 6090.000"
	90,000 Impervious length"	334,900 0.08900 8636.000"
	0.250 Pervious Manning 'n'"	" 335.100 0.3430 13920.00"
	76.000 Pervious SCS Curve No."	335.200 0.5360 16658.00"
	0.119 Pervious Runoff coefficient"	335.300 0.7599 19459.00"
	U.10U PERVIOUS IA/S CONTICIENT" 8.021 Pervious Initial abstraction"	335.400 1.011 22323.00° 335.500 1.386 35340.00°
	0.015 Impervious Manning 'n'"	335.600 1.583 28239.00"
	98.000 Impervious SCS Curve No."	335.700 1.901 31294.00*
	0.803 Impervious Runoff coefficient"	335.800 2.238 34414.00"
	0.518 Impervious 14/5 Coerficient"	335.900 2.593 37599.00" 336.000 2.966 40051.00"
2 8 2	5.130 0.000 0.009 2.767 c.m/sec*	336.100 3.427 43465.00"
2	Catchment 224 Pervious Impervious Total Area *	* 336.200 3.959 46848.00"
2	Surface Area 6.480 36.720 43.200 hectare"	336.300 4.543 50286.00*
	Time to Control 252.604 127.158 130.353 minutes"	336.400 5.1/1 53//3.00°
0.000	Rainfall depth 25.028 25.028 26.028 mm*	* 336,600 6,544 60933.00°
10 A	Rainfall volume 0.1622 0.9190 1.0812 ha-m*	336.700 7.284 64595.00"
÷.	Rainfall losses 22.053 4.941 7.508 mm*	336.800 B.055 68313.00°
	Bunoff volume 192.77 20.067 17.520 mm ⁻	335.900 8.858 /2088.00"
	Runoff coefficient 0.119 0.803 0.700 "	337.100 10.550 79809.00"
	Maximum flow 0.017 5.129 5.130 c.m/sec*	337.200 11.437 83755.00"
40	HYDROGRAPH Add Runoff "	337.300 12.351 87759.00"
	4 AUG RUIDT - 5 130 5 130 0 009 2 767	- 337.400 13.291 91821.00"
* 40	HYDROGRAPH Copy to Outflow"	* 337.550 14.746 98022.00"
•	8 Copy to Outflow"	337.600 16.027 100118.0"
	5.130 5.130 5.130 2.767*	337.700 20.027 104352.0"
40	NYJKUGKAPH COMDINE 5" 6 Combine "	337.800 25.280 108643.0"
	5 Node #"	Peak outflow 0.257 c.m/sec"
	u/s of HWY 7&8°	Maximum level 335.045 metre"
	Maximum flow 7.897 c.m/sec"	Maximum storage 12441.788 c.m*
-	Hygrograph Volume 17327.877 c.m" 5 130 5 130 5 130 7 897"	Centroidal lag 22.593 hours
* 40	HYDROGRAPH Confluence 5"	* 0.130 7.897 0.257 0.000 C.m/Sec" * 40 HYDROGRAPH Combine 12"
1	7 Confluence •	* 6 Combine *
•	5 Node #"	12 Node #"
1.0	U/S OT HWY 7&8"	d/s of Proposed SWMF"
	المعرية (۲۰۱۳/۱۹۵۲) من (۲۰۱۳/۱۹۵۶) المعرفة (۲۰۱۳/۱۹۵۶) المعرفة (۲۰۱۳/۱۹۵۶) المعرفة (۲۰۱۳) المعرفة (۲۰۱۳	Maximum Tiow 0.257 c.m/sec"

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* 81	ADD COMMENT===================================	8.021 Pervious Initial abstraction"	
÷	3 Lines of comment"	 0.015 Impervious Manning 'n' 	
<u> 1</u>		98.000 Impervious SCS Curve No."	
*	catchinents to injet #0"	 0.807 Impervious Runott coetticient* 0.100 Impervious Runott coetticient* 	
1 40	HYDROGRAPH Start - New Tributary"	0.518 Impervious la/s coertifient	
*	2 Start - New Tributary"	0.103 0.417 0.257 0.257 c.m/sec"	
	5.130 0.000 0.257 0.257* CATCHIEN DEAL	Catchment 261 Pervious Impervious Total Area	
- 33	CALCHMENT 200" 1 Triangular SCS"	Surface Area 1.598 0.752 2.350 hectare Time of concentration 47 830 7.997 17 400 minutes	
	3 Specify values"	Time to Centroid 199.975 129.846 146.555 minutes"	
*	1 SCS method"	Rainfall depth 25.028 25.028 mm*	
	260 Hamilton Heights Subdivision"	Rainfall volume 399.94 188.21 568.15 c.m [*]	
-	40.000 % Impervious" 8 160 Total Area"	Rainfall losses 22.053 4.821 16.539 mm	
	50.000 Flow length"	" Runoff volume 47 53 151 95 199 48 c m"	
	1.000 Overland Slope'	Runoff coefficient 0.119 0.807 0.339 "	
	4.406 Pervious Area"	Maximum flow 0.007 0.102 0.103 c.m/sec"	
÷	50.000 Pervious length"	40 HYDROGRAPH Add Runoff	
	3.754 Impervious Area	4 Add Hunott *	
•	232.000 Impervious length"	40 HYDROGRAPH Copy to Outflow*	
•	1.500 Impervious slope"	 8 Copy to Outflow" 	
8	0.250 Pervious Manning 'n'"	0.103 0.520 0.520 0.257"	
2	10.000 Pervious Ruorf coefficient"	40 HYDROGRAPH Combine 12"	
<u>e</u>	0.100 Pervious Ia/S coefficient"	* 12 Node #"	
	8.021 Pervious Initial abstraction"	d/s of Proposed SWMF*	
2	0.015 Impervious Manning 'n'"	Maximum flow 0.550 c.m/sec	
	0.804 Impervious Sus Curve NO."	Hydrograph volume 12026.003 c.m*	
5 - C	0.100 Impervious IA/S coefficient"	* 40 HYDROGRAPH Start - New Tributary"	
š. –	0.518 Impervious Initial abstraction"	2 Start - New Tributary"	
:	0.417 0.000 0.257 0.257 c.m/sec	0.103 0.000 0.520 0.550"	
	Surface Acea 4 406 3 754 8 160 bootana"	33 CATCHMENT 225	
	Time of concentration 45,292 9,847 15,090 minutes"		
•	Time to Centroid 196.766 132.772 142.238 minutes"	• 1 SCS method*	
-	Rainfall depth 25.028 25.028 25.028 mm*	225 HWY 7/8 and north ditching"	
-	Rainfall volume 1102.82 939.44 2042.26 c.m°	30.000 % Impervious"	
	Runoff denth 2 974 20 113 10 858 mm ^a	1.5/0 IOTALAREA	
•	Runoff volume 131.07 754.96 886.02 c.m"	2.000 Overland Slope*	
	Runoff coefficient 0.119 0.804 0.434	1.169 Pervious Area"	
40	Maximum flow 0.019 0.414 0.417 c.m/sec"	75.000 Pervious length	
.40	4 Add Runoff "	2.000 Pervious slope"	
•	0.417 0.417 0.257 0.257	 75.000 Impervious length" 	
33	CATCHMENT 261"	2.000 Impervious slope"	
2	1 Irtangutar SCS'	0.250 Pervious Manning 'n'"	
	1 SCS method"	* 0.008 Pervious Suboff conficient*	
	261 Klassen Bronze Property"	0.100 Pervious Ia/S coefficient*	
8	32.000 % Impervious"	8.924 Pervious Initial abstraction"	
	2.350 1011 AP64* 100.000 Elow longth"	0.015 Impervious Manning 'n'"	
	2.500 Overland Slope ⁴	98.000 Impervious SCS Curve No." 0.800 Impervious Bunoff coefficient"	
÷	1.598 Pervious Area"	0.100 Impervious Ia/S coefficient*	
÷	50.000 Pervious length	0.518 Impervious Initial abstraction"	
÷	2.500 Pervious stope"	0.067 0.000 0.520 0.550 c.m/sec"	
	0.752 Impervious Area	- Gatchment 225 Pervious Impervious Total Area "	
	1,500 Impervious slope*	Time of concentration 76.128 4.587 20.527 minutes"	
÷	0.250 Pervious Manning 'n'	Time to Centroid 231.268 124.481 148.273 minutes"	
	76.000 Pervious SCS Curve No."	Rainfall depth 25.028 25.028 mm"	
	0.100 Pervious Ia/S coefficient"	наллтан volume 292.5/ 125.39 417.96 с.m" Ваілбаіі losses 22.566 4.995 17.295 mm"	

Printe	d at 15:39 on 18	Dec 2018			Sec. 19	· · · · · · · · · · · · · · · · · · ·	
•	Runof	f deoth	2,461	20.032	7.733	10 m **	
9	Runof	f volume	28.77	100.36	129.13	C.M"	
<u>.</u>	Runof	f coefficient	0.098	0.800	0.309	н	
40	Maxim	um flow	0.003	0.067	0.067	c.m/sec"	
40	0HUTH 4 Ad	d Runoff "					
•	- //u	0.067 0.06	0.520	0.550"			
40	HYDRO	GRAPH Copy to Out	tflow"				
•	8 Co	py to Outflow"		0 550			
40	HYDRO	0.067 0.06 GRAPH Combine	12"	0.550"			
	6 Co	mbine "					
-	12 No	de #"					
	/b	s of Proposed SWN	/F"	47			
	Maxim	um tiow araph volume	12155 1	.17 C.m/s 39 c.m*	sec-		
	nyaro	0.067 0.06	67 0.067	0.617"			
81	ADD C	OMMENT========				======="	
	3 Lines	of comment"					
	Weste	rn catchmont alor	A Hamilton	Road divor	ted to Inl	ot #6"	
•	****	********	*******	**********	********	****	
40	HYDRO	GRAPH Start - New	v Tributary"				
	2 St	art • New Tributa	ary"				
22	CATCH	0.067 0.00	0.067	0.617"			
	1 Tr	iangular SCS"					
	3 Sp	ecify values"					
	1 SC	S method"					
•	270 In	dustrial/Resident	tial area al	ong Hamilto	on Road"		
	6.450 To	impervious" tal Area"					
	45.000 F1	ow length"					
•	2.000 Ov	erland Slope"					
÷ .	3.802 Pe	rvious Area"					
	30.000 Pe	rvious length" rvious slope"					
•	4.648 Im	pervious Area"					
2	235.000 Im	pervious length"					
	1.500 Im	pervious slope"					
	0.250 Pe	rvious Manning 'r	No "				
	0.119 Pe	rvious Runoff coe	efficient"				
÷	0.100 Pe	rvious Ia/S coeff	ficient"				
	8.021 Pe	rvious Initial ab	ostraction"				
	0.015 Im	pervious Manning	'n'"				
2	98.000 Im	pervious SCS Curv pervious Bunoff c	/e NO." Coefficient"				
	0.100 Im	pervious Ia/S coe	efficient"				
•	0.518 Im	pervious Initial	abstraction	n			
1		0.514 0.00	0.067	0.617	c.m/sec"		
	Catch	ment 270	Pervious	Impervious	s Total Are	a	
÷	Time	of concentration	33.336	4.040	12,450	nectare minutes"	
•	Time	to Centroid	181,695	132.892	138.160	minutes"	
2	Rainf	all depth	25.028	25.028	25.028	mm "	
	Rainf	all volume	951.68	1163.16	2114.84	c.m"	
•	Raint	all losses f denth	22.053	4.914	12.626	ממ" שמ"	
	Bunof	f volume	113.11	934.80	1047.91	c.m"	
	Runof	f coefficient	0.119	0.804	0.496		
	Maxim	um flow	0.020	0.510	0.514	c.m/sec"	
40	HYDRO	GRAPH Add Runoff	п				
	4 Ad		14 0.067	0.617	1		
56	DIVER	SION"	- 0.007	0.017			
•: T	6 No	de number"					

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Q	:\3489 rinted	at 15:39 o	11MIDUSS\Post\3489 n 18 Dec 2018	6-104_Post-0025m	m.out	
		1.560 1.000 0 Pe	Overflow threshol Required diverted Conduit type; 1=P ak of diverted flo	d" fraction" 'ipe;2=Channel" w 0.000	c.m/sec"	
:		DI Ma	V00006.0025hyd" jor flow at 6"	104 0.000	0.11	
1	40	НҮ 6	0.514 0. DROGRAPH Combine Combine "	514 0.514 9"	0.617 c.m/sec"	
		9	Node #" NODE B"			
-		Ma Hv	X1MUM TIOW	0.514	c.m/sec"	
٠		,	0.514 0.	514 0.514	0.514"	
1	40	HY	DROGRAPH Start - N	lew Tributary"		
4		2	0.514 0.	000 0.514	0.514"	
	47	FI	LEI_O Read/Open DI	V00006.0025hyd*	01014	
1		1	1=read/open; 2=wr	ite/save"		
		2	1=raintail; 2=nyo	irograpn" w: 3=outflow: 4=	iunction"	
		DI	V00006.0025hyd"	ing o outritonig t	Junetion	
1		Ma	jor flow at 6"	0.000		
*		Ma	ximum flow	0.000	c.m/sec"	
5			0.000 0.000	0.514 0	.514 c.m/sec*	
ŝ	40	HY	DROGRAPH Add Runof	f "		
*		4	0.000 0.	000 0.514	0.514*	
Ť.	40	HY	DROGRAPH Copy to C	utflow"		
÷.		8	Copy to Outflow"	000 0.000	0.514*	
+	40	HY	DROGRAPH Combine	12"	01011	
2		6	Combine "			
		12	d/s of Proposed S	WMF"		
*		Ма	ximum flow	0.617	c.m/sec*	
2		Hy	drograph volume	12155.139	C.M" 0.617"	
4	40	HY	DROGRAPH Conflue	ince 12"	0.017	
5		12	Node #"			
1			d/s of Proposed S	WMF"	8 87 W	
-		Ma Hv	ximum fiow drograph volume	0.617	C.m/sec*	
5			0.000 0.	617 0.000	0.000*	
5	54	PO	ND DESIGN"			
*		0.070	Target outflow	c.m/sec"		
5		12155.1	Hydrograph volume	c.m"		
2		8.	Number of stages"			
+		337.000	Maximum water lev	el metre"		
5		334.290	Starting water le	vel metre"		
j,		0	Keep Design Data:	1 = True; 0 = F	alse"	
÷			334.290 0.000	0.000"		
1			334.500 0.2540	5.000"		
į.			335.000 1.303	110.000" 674.000"		
×			336.000 4.639	1910.000"		
2			336.500 6.480	3748.000"		
2			337.000 23.484	6569.000"		
+		Pe	ak outflow	0.573	c.m/sec*	
5		Ma	ximum level	334.660	metre"	

Multine storage Dot 2.57 Description 6 Multine storage 0.258 0.258 0.258 0.258 0.258 6 Multine storage 0.258 0.258 0.258 0.258 0.258 6 Multine storage 0.258 0.258 0.258 0.258 0.258 7 DotBallo 0.258 <td< th=""><th>Q:\348 Printec</th><th>96\104\SWM\MIDUSS\Post\34896-104_Post-0025mm.out Page 29 I at 15:39 on 18 Dec 2018 Page 29</th><th>Q:\348 Printer</th><th>96/104/SWM/MIDUSS/Post/34896-104_Post-0025mm.out Pa d at 15:39 on 18 Dec 2018 Pa</th><th>ige 30</th></td<>	Q:\348 Printec	96\104\SWM\MIDUSS\Post\34896-104_Post-0025mm.out Page 29 I at 15:39 on 18 Dec 2018 Page 29	Q:\348 Printer	96/104/SWM/MIDUSS/Post/34896-104_Post-0025mm.out Pa d at 15:39 on 18 Dec 2018 Pa	ige 30
Centrol Lig A.G.D. A.G.D. A.G.D. A.G.D. 0 M.S.D. D.O. D. A.G.D. A.G.D. A.G.D. A.G.D. 6 M.S.D. D.O. D.C. D.O. D.C. A.G.D. 7 M.S.D. D.O. D.C. D.O. D.C. D.O. S.T.D. 7 M.S.D. D.O. T.D. D.O. D.C. D.O. S.T.D. 7 M.S.D. D.O. T.D. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. 7 M.S.D. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. 7 M.S.D. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. 7 M.S.D. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. D.O. T.G. 7 M.S.D. T.G. D.O. T.G. D.T.T.G. D.O. T.G. D.T.T.G. D.O. T.G. D.T.T.G. D.O. T.G. D.T.T.G. 7 M.S.D. T.G. D.T.T.G. D.T.T.G. D.T.T.G. D.T.T.G. D.O. T.G. D.T.T.G. D.T.T.G. D.O. T.G. D.T.T.G. D.T.T.G. 7 M.S.T.T.G. D.T.T.G. D.T.T.T.T.T.T.T.T.T.T		Maximum storage 38.660 c.m.	•		
0.000 0.879 <td< td=""><td>H</td><td>Centroidal lag 9.98 hours"</td><td>- 40</td><td>MAXIMUM TLOW 0.004 0.025 0.026 c.m/sec"</td><td></td></td<>	H	Centroidal lag 9.98 hours"	- 40	MAXIMUM TLOW 0.004 0.025 0.026 c.m/sec"	
40 NORMERSHY Mail Link* - 0.028 0.028 0.029 0.039 50 Difference - 0.008 0.079 0.039 51 Difference - 0.008 0.079 0.039 52 Difference - 0.008 0.079 53 Difference - 0.008 0.079 54 Difference - 0.008 0.079 55 Difference - 0.008 0.079 56 Difference - 0.008 0.079 57 Difference - 0.008 0.079 58 Difference - 0.008 0.079 59 Difference - 0.008 0.079 50 Difference - 0.008 0.079 60 Difference - 0.008 0.079 60 Difference - 0.008 0.079 70 Difference - 0.008 0.079 71 Differenc		0.000 0.617 0.573 0.000 c.m/sec"	. 40	4 Add Runoff "	
9 ARE 1.0.0 0.073 0.000* 0.000* 9 000*00*0*****************************	40	HYDROGRAPH Next link "	•	0.026 0.026 0.573 0.573*	
0 DUBBLOG 0.000 0	1	5 Next link "	* 54	POND DESIGN"	
- -	• 56	DIVERSION*	਼	0.026 Current peak flow c.m/sec"	
1.100 Derflag threshold •	•	7 Node number"		56.8 Hydrorabh volume c.m*	
1.00 PRAINER 0.000 0.57 0.50 5.000 5.000 1.00 PRAINER 0.000 0.57 0.500 5.000 5.000 1.00 PRAINER 0.000 0.57 0.57 5.000 5.000 1.00 PRAINER 0.000 0.57 5.000 5.000 5.000 1.00 PRAINER 0.000 0.57 5.100 5.000 5.000 1.00 0.577 0.58 5.000 5.000 5.000 1.00 0.577 0.577 5.000 5.000 5.000 5.000 1.00 0.577 5.300 5.000 5.000 5.000 5.000 2.000 0.577 5.300 5.000 5.000 5.000 5.000 5.000 5.000 <t< td=""><td></td><td>7.170 Overflow threshold</td><td></td><td>8. Number of stages"</td><td></td></t<>		7.170 Overflow threshold		8. Number of stages"	
• Pres of divertion flow 0.000 c.a/wer • Vision flow	2	1.000 Required diverted fraction"	<u>.</u>	0.000 Minimum water level metre	
Volume of diversed file UNDERCONCENT 0.000 0.73 <td>5</td> <td>Peak of diverted flow 0.000 c m/sec*</td> <td>Q.</td> <td>0.750 Maximum water level metre"</td> <td></td>	5	Peak of diverted flow 0.000 c m/sec*	Q.	0.750 Maximum water level metre"	
BUYOND / COSENJY" Initial Sciences Vilue* 40 MCROSCHM* 0.000 0.007 41 MCROSCHM* 0.000 0.007 42 MCROSCHM* 0.000 0.007 43 MCROSCHM* 0.000 0.007 44 MCROSCHM* 0.000 0.000 45 MCROSCHM* 0.000 0.000 46 MCROSCHM* 0.000 0.000 0.000 4		Volume of diverted flow 0.000 c.m"	¥	0 Keep Design Data: 1 = True: 0 = False"	
Major 7 D.73 O.87 O.87 <tho.87< th=""> O.87 O.87 <</tho.87<>	1	DIV00007.0025hyd*		Level Discharge Volume*	
40 HV00002M# 0xab.rs 9		Major flow at 7"		0.000 0.000 0.000"	
6 Continue Control B context 8 Context Context Context 9 Context Context Context 10 Context Context Context 10 Context Context Context 11 Context Context Context 11 Context Context Context 12 Context Context Context 13 Context Context Context 14 Context Context Context 15 Context Context Context 16 Context Context Context 15 Context Context Context 16 Context Context Context </td <td>• 40</td> <td>HYDROGRAPH Combine 8"</td> <td>÷.</td> <td>0.1500 0.00400 1.000" 0.2500 0.00500 R.000"</td> <td></td>	• 40	HYDROGRAPH Combine 8"	÷.	0.1500 0.00400 1.000" 0.2500 0.00500 R.000"	
B Node #" 0.4500 0.0000 0.573 0.4780C* B Node 10* 0.573 0	•	6 Combine *	×	0.2500 0.00700 29.000"	
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0.026 0.000 0.573 0.573 c.m/sec" 13.677 Pervious Infitial abstraction" Catchment 280 Pervious Impervious Total Area " 0.015 Impervious Manning 'n'" Surface Area 0.518 0.182 0.700 hectare 98.000 Impervious SCS Curve No." Time of concentration 24.655 5.325 12.178 minutes 0.601 Impervious SCS Curve No." Time to Centroid 169.975 125.607 141.338 minutes 0.100 Impervious Initial abstraction" Rainfall depth 25.028 25.028 mm" 0.518 0.900 0.000 0.006 0.520 c.m/sec" Rainfall losses 21.137 4.869 16.908 mm" 0.240 0.000 0.006 0.520 c.m/sec" Runoff depth 3.890 20.158 8.120 mm" Surface Area 0.131 1.739 1.870 hectare" Runoff coefficient 0.155 0.805 0.324 ''' Time of concentration 165.090 7.184 7.373 minutes"	÷.	0.518 Impervious Initial abstraction"	਼	U.U35 Pervious Runott coetticient"	
Catchment 280PerviousImpervious Total Area "0.015Impervious Manning 'n'"Surface Area0.5180.1820.700hectare98.000Impervious SCS Curve No."Time of concentration24.6555.32512.178minutes0.015Impervious SCS Curve No."Time to Centroid169.975125.607141.338minutes0.010Impervious Runoff coefficient"Rainfall depth25.02825.028c.m"0.518Impervious Initial abstraction"Rainfall volume129.6445.55175.19c.m"0.2400.0000.0060.520 c.m/sec"Runoff depth3.89020.1588.120mm"Catchment 281Pervious Impervious Total Area "Runoff coefficient0.1550.324"Surface Area0.1311.7391.870Runoff coefficient0.1550.324"Time of concentration 65.0907.1847.373minutes"	*	0.026 0.000 0.573 0.573 c.m/sec"		13.677 Pervious Initial abstraction"	
SUFTACE Area 0.518 0.182 0.700 hectare 98.000 Impervious SCS Curve No." Time of concentration 24.655 5.325 12.178 minutes 0.801 Impervious Runoff coefficient" Time to Centroid 169.975 125.607 141.338 minutes 0.801 Impervious Runoff coefficient" Rainfall depth 25.028 25.028 mm" 0.518 Impervious Initial abstraction" Rainfall volume 129.64 45.55 15.91 c.m" 0.518 Impervious Initial abstraction" Runoff depth 3.890 20.158 8.120 mm" 0.400 0.000 0.006 0.520 c.m/sec" Runoff volume 20.15 36.69 56.84 c.m" Surface Area 0.131 1.739 1.870 hectare" Runoff coefficient 0.155 0.805 0.324 Time of concentration 65.090 7.184 7.373 minutes"	-	Catchment 280 Pervious Impervious Total Area *		0.015 Impervious Manning 'n'"	
Time of control (180.975) 125.050 127.175 mInutes" 0.801 Impervious Runoff coefficient" Time to Centroid 189.975 125.050 141.338 minutes" 0.100 Impervious Runoff coefficient" Rainfall depth 25.028 25.028 mm" 0.518 Impervious Initial abstraction" Rainfall volume 129.64 45.55 175.19 c.m" 0.240 0.000 0.006 0.520 c.m/sec" Rainfall losses 21.137 4.869 16.908 mm" Catchment 281 Pervious Total Area " Runoff depth 3.890 20.158 8.120 mm" Surface Area 0.131 1.739 1.870 hectare" Runoff coefficient 0.155 0.805 0.324 " Time of concentration 65.090 7.164 7.373 minutes"		Surface Area 0.518 0,182 0.700 hectare Time of concentration 04 655 5 205 10 170 minutes	÷ .	98.000 Impervious SCS Curve No."	
Rainfall depth 25.028 25.028 25.028 mm" 0.100 Impervious In/S corrElent" Rainfall volume 129.64 45.55 175.19 c.m" 0.518 Impervious In/S corrElent" Rainfall volume 129.64 45.55 175.19 c.m" 0.240 0.000 0.006 0.520 c.m/sec" Rainfall losses 21.137 4.869 16.908 mm" Catchment 281 Pervious Impervious Total Area " Runoff depth 3.890 20.158 8.120 mm" Surface Area 0.131 1.739 1.870 hectare" Runoff coefficient 0.155 0.805 0.324 " Time of concentration 65.090 7.184 7.373 minutes"		Time to Contentration 24.000 5.320 12.178 minutes" Time to Centroid 169.975 125 607 141 338 minutes"		0.801 Impervious Runoff coefficient"	
Rainfall volume 129.64 45.55 175.19 c.m" 0.240 0.000 0.006 0.520 c.m/sec" Rainfall losses 21.137 4.869 16.908 mm" 0.240 0.000 0.006 0.520 c.m/sec" Runoff depth 3.890 20.158 8.120 mm" Catchment 281 Pervious Impervious Total Area " Runoff volume 20.15 36.69 56.84 c.m" Surface Area 0.131 1.739 1.870 hectare" Runoff coefficient 0.155 0.805 0.324 " Time of concentration 65.090 7.373 minutes"		Rainfall depth 25.028 25.028 25.028 mm*	÷	0.518 Impervious Initial abstraction*	
Rainfall losses 21,137 4.869 16.908 mm" Catchment 281 Pervious Impervious Total Area " Runoff depth 3.890 20.158 8.120 mm" Surface Area 0.131 1.739 1.870 hectare Runoff volume 20.15 36.69 56.84 c.m" Time of concentration 65.090 7.184 7.373 minutes" Runoff coefficient 0.155 0.805 0.324 " Time to Centroid 219.733 128.615 28.612 minutes"	1	Rainfall volume 129.64 45.55 175.19 c.m."		0.240 0.000 0.006 0.520 c.m/sec*	
HUNDIT GEPTI 3.890 20.158 8.120 mm" Surface Area 0.131 1.739 1.870 hectare" Runoff volume 20.15 36.69 56.84 c.m" Time of concentration 65.090 7.184 7.373 minutes" Runoff coefficient 0.155 0.805 0.324 " Time to Centroid 219.733 128.615 128.912 minutes"		Rainfall losses 21.137 4.869 16.908 mm*	*	Catchment 281 Pervious Impervious Total Area "	
Runoff coefficient 0.155 0.805 0.324 " Time to Centrol 218.615 128.615 128.919 minutes"	÷	παιτοιία αυρτή 3.890 20,158 8,120 mm ⁴ Bunoff volume 20,15 96.60 56.94 o.m ⁴	2	Surface Area 0.131 1.739 1.870 hectare"	
	*	Runoff coefficient 0.155 0.805 0.324 *		Time to Concentration 05.090 7.164 7.373 minutes"	

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Rainfall depth 25.028 25.028 mm" Rainfall volume 32.76 435.26 468.02 c.m" Bainfall losse 24.158 4.975 6.318 mm"	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 bestare"	
Runoff depth 0.870 20.053 18.710 mm"	Time of concentration 73.509 5.118 6.420 minutes"	
Runoff volume 1.14 348.74 349.87 c.m*	Time to Centroid 227.975 125.283 127.239 minutes"	
Runoff coefficient 0.035 0.801 0.748 Mayimum flow 0.000 0.240 0.240 c.m/sec"	"Rainfall depth 25.028 25.028 25.028 mm" Rainfall volume 93.88 208.96 302.83 c.m"	
4 40 HYDROGRAPH Add Runoff "	* Rainfall losses 24.158 4.901 10.871 mm"	
4 Add Runoff "	" Runoff depth 0.870 20.126 14.157 mm"	
• 0.240 0.240 0.006 0.520"	Runoff volume 3.26 168.04 171.30 c.m" Runoff coefficient 0.035 0.804 0.556	
0.240 Current peak flow c.m/sec"	Maximum flow 0.000 0.112 0.112 c.m/sec"	
0.070 Target outflow c.m/sec"	40 HYDROGRAPH Add Runoff "	
349.9 Hydrograph volume c.m"	4 Add Runoff 0 112 0 111 0 620"	
0.000 Minimum water level metre"	* 54 POND DESIGN"	
1.800 Maximum water level metre"	" 0.112 Current peak flow c.m/sec"	
0.000 Starting water level metre"	0.070 larget outflow c.m/sec"	
Level Discharge Volume"	5. Number of stages"	
• 0.000 0.000 0.000*	0.000 Minimum water level metre"	
• 0.3000 0.09000 8.000" • 0.5000 0.1200 87.000"	1.400 Maximum water level metre"	
0.9000 0.1300 167.000"	0 Keep Design Data: 1 = True; 0 = False"	
* 1.200 0.1400 254.000"	Level Discharge Volume"	
* Peak outflow 0.111 c.m/sec"	0.7500 0.06600 333.000	
Maximum level 0.517 metre"	1.300 0.08700 371.000	
Maximum storage 72.364 c.m"	1.400 0.5000 400.000"	
- Centrolal lag 2.232 nours 0.240 0.240 0.111 0.520 c.m/sec"	Maximum level 0.113 metre"	
* 40 HYDROGRAPH Combine 9"	 Maximum storage 97.471 c.m" 	
6 Combine "	Centroidal lag 3.904 hours"	
* NODE B"	* 40 HYDROGRAPH Combine 9"	
Maximum flow 0.620 c.m/sec"	• 6 Combine "	
Hydrograph volume 1454.778 c.m"	9 Node #"	
40 HYDROGRAPH Start - New Tributary"	Maximum flow 0.629 c.m/sec	
2 Start - New Tributary"	Hydrograph volume 1626.074 c.m"	
• 0.240 0.000 0.111 0.620"	0.112 0.112 0.015 0.629"	
1 Triangular SCS"	2 Start - New Tributary"	
3 Specify values"	0.112 0.000 0.015 0.629"	
1 SCS method" 202 Eastern parties of John Rear property"	- 33 CAICHMENI 283"	
69.000 & Impervious"	 Specify values" 	
1.210 Total Area"	1 SCS method"	
60.000 Flow length" 2.500 Overland Slope"	283 Area along western tributary, south of Hwy 7/8" 29 00 & Impervious"	
0.375 Pervious Area"	23.290 Total Area"	
30.000 Pervious length"	" 160.000 Flow length"	
3.000 Pervious slope"	2.000 Overland Slope" 16.536 Pervious Area"	
90.000 Impervious length"	" 150.000 Pervious length"	
2.000 Impervious slope"	2.200 Pervious slope"	
• 0.250 Pervious Manning 'n'" • 65 000 Pervious SCS Cluve No "	5.754 Impervious Area" 394.000 Impervious length"	
0.035 Pervious Runoff coefficient"	2.000 Impervious slope"	
0.100 Pervious Ia/S coefficient"	0.250 Pervious Manning 'n'"	
 13.677 Pervious Initial abstraction" 0.015 Impervious Manning Int" 	68.300 Pervious SCS Curve No." 0.053 Pervious Bunoff coefficient"	
98.000 Impervious SCS Curve No."	• 0.100 Pervious Ia/S coefficient"	
0.804 Impervious Runoff coefficient°	* 11.789 Pervious Initial abstraction"	
0.100 Impervious Ia/S coefficient"	0.015 Impervious Manning 'n'"	
0.516 Impervious initial abstraction	20.000 Tillherators 202 Cullag MD.	

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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"		 8.924 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.800 Impervious Runoff coefficient" 	
Catchment 283 Pervious Impervious Total Area " Surface Area 16.536 6.754 23.290 hectare"		0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	
Time of concentration 150.013 12.412 32.723 minutes" Time to Centroid 323.063 136.779 162.765 minutes"		0.008 0.000 0.573 1.846 c.m/sec"	
Rainfall depth 25.028 25.028 25.028 mm"		Surface Area 2.891 0.059 2.950 hectare"	
Rainfall losses 23.691 4.842 18.225 mm"		Time of concentration 69.384 4.181 60.103 minutes" Time to Centroid 223.349 123.816 209.181 minutes"	
"Hunoff depth 1.337 20.186 6.803 mm" Runoff volume 221.02 1363.35 1584.37 c.m"		Rainfall depth 25.028 25.028 mm" Rainfall volume 723.55 14.77 738.32 c.m"	
"Runoff coefficient 0.053 0.807 0.272 " Maximum flow 0.014 0.663 0.663 c.m/sec"		Rainfall losses 22.567 5.012 22.215 mm" Bunoff depth 2.461 20.015 2.812 mm"	
40 HYDROGRAPH Add Runoff " 4 Add Runoff "		Runoff volume 71.15 11.81 82.96 c.m°	
0.663 0.663 0.015 0.629 40 HVDROGRAPH Copy to Outflow"		Maximum flow 0.008 0.008 0.008 c.m/sec*	
B Copy to Outflow"		40 HIDROGRAPH Add Runoff " 4 Add Runoff "	
40 HYDROGRAPH Combine 9"		0.008 0.008 0.573 1,846" 40 HYDROGRAPH Copy to Outflow"	
9 Node #"		8 Copy to Outflow" 0.008 0.008 0.008 1.846"	
NODE B" Maximum flow 1.272 c.m/sec"		40 HYDROGRAPH Combine 9" 6 Combine "	
Hydrograph volume 3210.439 c.m" 0.663 0.663 0.663 1.272"		9 Node #" NODE B"	
40 HYDROGRAPH Confluence 8" 7 Confluence "		Maximum flow 1.850 c.m/sec"	
8 Node #" NODE A"		0.008 0.008 1.850"	
Maximum flow 0.573 c.m/sec" Hydrograph yolympo 12452,771 c.m/		7 Confluence "	
10000000 100000 10000 10000 10000 10000 10000		9 Node #" NODE B"	
8 Copy to Outflow"		Maximum flow 1.850 c.m/sec" Hydrograph volume 15447.175 c.m"	
40 HYDROGRAPH Combine 9"		0.008 1.850 0.008 0.000" 40 HYDROGRAPH Copy to Outflow"	
9 Node #"		8 Copy to Outflow" 0.008 1.850 1.850 0.000"	
NODE B" Maximum flow 1.846 c.m/sec		40 HYDROGRAPH Combine 10" 6 Combine "	
Hydrograph volume 15364.212 c.m" 0.663 0.573 0.573 1.846"		10 Node #" NODE C"	
40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"		Maximum flow 1.650 c.m/sec" Hydrograph volume 15447.175 c.m"	
" 0,663 0,000 0.573 1.846" 33 CATCHMENT 284"		0.008 1.650 1.850 1.850 40 HYDROGRAPH Start - New Tributary"	
1 Triangular SCS' 1 Equal length"		2 Start - New Tributary"	
1 SCS method" 284 Agricultural lands south of Bleams Road		33 CATCHMENT 285"	
2.000 % Impervious" 2.950 Total Area"		3 Specify values"	
80.000 Flow length" 3.100 Overland Slope"		285 Morningside Retirement Community lands"	
2.891 Pervious Area" 80.000 Repuise lagath"		18.780 Total Area*	
3.100 Pervious slope'		2.000 Verland Slope"	
80.000 Impervious length"		7.888 Pervious Area" 25.000 Pervious length"	
0.250 Pervious Manning 'n'"		" 2.500 Pervious slope" 10.892 Impervious Area"	
74.000 Pervious SCS Curve No." 0.098 Pervious Runoff coefficient 0.100 Pervious Ia/S coefficient"		354.000 Impervious length" 2,500 Impervious slope" 0.250 Reprimer 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" 	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 mm" Rainfall volume 878.47 0.00 878.47 c.m" Ruinfall losses 22.053 4.857 22.053 mm"	
1.111 0.000 1.850 1.850 c.m/sec" Catchment 285 Pervious Impervious Total Area " Scrface Area 7.688 10.892 18.780 Time of concentration 73.186 10.896 12.618 minutes" Time to Centroid 227.667 134.366 136.966 minutes" Rainfall depth 25.028 25.028 mm" Rainfall volume 1974.08 2726.11 4700.20 c.m" Reinfall losses 24.231 4.842 12.985 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" 	
R.noff volume 62.88 2198.71 2261.59 nm" R.noff 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 1.850 1.850" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 1.850"	40 HYDROGRAPH Combine 11" 6 Combine 1 11 Node #" 12 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" 40 HYDROGRAPH Start - New Tributary"	
1.111 1.111 1.850" 40 HYDROGRAPH Combine 6 Combine 10" 10 Node #" Nobe 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===================================	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"	
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"	<pre>* 100.000 Flow length* * 2.000 Overland Slope* 3.666 Pervious Area* * 100.000 Pervious length* * 2.000 Pervious slope* * 1.904 Impervious Area* * 296.000 Impervious length* * 2.000 Impervious length*</pre>	
 1 Friangular 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" 	 0.250 Pervious Manning 'n' 76.000 Pervious SCS Curve No." 0.119 Pervious Runoff coefficient" 0.010 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" 	
100.000 Pervious length" 2.000 Pervious slope" 0.000 Impervious length" 296.000 Impervious length" 2.000 Impervious slope" 0.250 Pervious Manning 'n'" 76.000 Pervious SC Curve No." 0.119 Pervious Runoff coefficient"	0.518 Impervious Initial abstraction" 0.202 0.000 0.010 c.m/sec" Catchment 251 Pervious Impervious Total Area " Surface Area 3.866 1.904 5.770 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 mm" Rainfall volume 967.54 476.55 1444.10 c.m"	
 0.100 Pervious Ia/S coefficient" 8.021 Pervious Initial abstraction" 0.015 Impervious Maning 'n'" 98.000 Impervious SCS Curve No." 0.000 Impervious Ia/S coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 	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 HYDROBRAPH Add Runoff " 4 Add Runoff "	

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40	0.202 0.202 0.010 0.010" HYDROGRAPH Copy to Outflow"	47 FILEI_O Read/Open DIV00007.0025hyd*
	8 Copy to Outflow"	1 I=read/open; 2=write/save
× .	0.202 0.202 0.202 0.010"	1 1=runoff: 2=inflow: 3=outflow: 4=iunction"
• 40	HYDROGRAPH Combine 11°	DIV00007.0025hvd
1	6 Combine "	 Major flow at 7"
12	11 Node #"	* Total volume 0.000 c.m"
	u/s of east culvert of HWY 7&8"	Maximum flow 0.000 c.m/sec"
	Maximum TLOW 0.202 c.m/sec*	0.000 0.000 0.020 0.222 c.m/sec"
		4U HYDROGRAPH Add Runott "
* 40	HYDROGRAPH Start - New Tributary	
	2 Start - New Tributary"	40 HVDRORAPH Copy to 014510w"
	0.202 0.000 0.202 0.202"	8 Copy to Outflow
* 33	CATCHMENT 252"	0.000 0.000 0.222"
.*\	1 Triangular SCS"	40 HYDROGRAPH Combine 11"
	1 Equal length"	6 Combine "
	1 SCS method"	11 Node #"
	252 Southern portion of Hamburgir lands"	u/s of east culvert of HWY 7&8"
		Maximum flow 0.222 c.m/sec"
	5.000 Flow length*	Hydrograph Volume 699.346 C.m.
	1.500 Overland Slope"	40 HVDB0CBABH Confluence 11*
. T.	2.726 Pervious Area"	
	65.000 Pervious length"	11 Node #"
	1.500 Pervious slope [®]	 u/s of east culvert of HWY 7&8"
	0.144 Impervious Area	Maximum flow 0.222 c.m/sec"
- C	65.000 Impervious length	* Hydrograph volume 699.346 c.m*
	1.500 Impervious slope"	0.000 0.222 0.000 0.000"
(4)	0.200 Pervious SCS Care No. 1	54 POND DESIGN
100	0.000 Pervious Burdit coefficient"	0.222 Current peak tlow c.m/sec
17	0.100 Pervisus Ia/S coefficient"	599 Hudget bulliow C.il/Sec
	6.924 Pervious Initial abstraction"	9 Number of states"
	0.015 Impervious Manning 'n'"	332.660 Minimum water level metre"
(* (98.000 Impervious SCS Curve No."	336.000 Maximum water level metre"
1	0.800 Impervious Runoff coefficient"	* 332.660 Starting water level metre*
2	0.100 Impervious Ia/S coefficient"	8 0 Keep Design Data: 1 = True; 0 = False*
	0.518 Impervious Initial abstraction"	Level Discharge Volume"
		332.660 0.000 0.000
	Surface Area 2 726 0 144 2 870 hortare	
	Time of concentration 76.162 4.589 54.697 minutes"	334.000 2.325 2895.000"
	Time to Centroid 231.308 124.484 199.270 minutes*	334,500 3,132 5301,000"
	Rainfall depth 25.028 25.028 mm*	* 335.000 3.780 8376.000*
	Rainfall volume 682.38 35.91 718.29 c.m*	* 335.500 4.332 12258.00"
2	Hainfall losses 22.566 4.995 21.688 mm"	335.750 4.583 14551.00"
	Runoff depth 2.461 20,032 3.340 mm ⁻	336.000 21.985 17113.00
	Runoff Coefficient 0.08 0.800 0.133 "	Peak OUTIOW 0.151 c.m/sec*
	Maximum flow 0.007 0.019 0.020 c.m/sec*	Maximum storana 09 274 c m ⁴
* 40	HYDROGRAPH Add Runoff "	Centroidal Jag 3.103 bours"
(#)	4 Add Runoff "	• 0.000 0.222 0.151 0.000 c.m/sec"
<u>.</u>	0.020 0.020 0.202 0.202"	* 40 HYDROGRAPH Next link *
* 40	HYDROGRAPH Copy to Outflow"	5 Next link "
	8 Copy to Outflow"	0.000 0.151 0.151 0.000"
. 40	U.020 U.020 0.020 0.202*	36 START/RE-START TOTALS 11
40	FURVORAPH COMDINE 11"	3 Runoff Totals on EXIT"
	11 Node #*	Total Gatoment area 234,030 Nectare
	u/s of east culvert of HWY 7&8"	Total & impervious area 110.433 nectare Total & impervious 47 12"
	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 STRITT - NEW HIZDUTARY"	



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MIDUSS Output		:	Time to Centroid Rainfall depth Rainfall volume Rainfall losses Runoff depth Runoff volume Runoff coefficient	171.264 34.259 1017.48 24.517 9.742 289.33 0.284	97.071 34.259 0.00 5.180 29.079 0.00 0.00	171.264 34.259 1017.48 24.517 9.742 289.34 0.284	minutes" mm" c.m" mm" c.m" *	
Company Microsoft" Date & Time last used: 12/17/2018 at 2:54:15 PM" ADD COMMENT===================================		40 33	Maximum flow HYDROGRAPH Add Runoff 4 Add Runoff " 0.044 0.0 CATCHMENT 202"	0.044 f" 044 0.000	0.000	0.044	c.m/sec"	
Wimdt Employment Lands" New Hamburg, Ontario" 2 Year Storm Event - Post development" Job No.: 34896-104" Calculated by: NED/MSB"		:	1 Triangular SCS" 1 Equal length" 1 SCS method" 202 Woodlot - north of 0.000 % Impervious" 2.080 Total Area"	f GEXR"				
31 TIME PARAMETERS" 5.000 Time Step" 240.000 Max. Storm length" 1500.000 Max. Hydrograph" 32 STORM Chicago storm" 1 Chicago storm"		* 8 • 8	0.000 Flow length" 2.500 Overland Slope" 2.080 Pervious Area" 0.000 Pervious length" 2.500 Pervious slope" 0.000 Impervious Area"					
743.000 Coefficient A" 6.000 Constant B" 0.799 Exponent C" 0.400 Fraction R" 180.000 Duration"		8	0.000 Impervious length 2.500 Impervious slope" 0.250 Pervious Manning 0.000 Pervious SCS Curve 0.121 Pervious Runoff co	" PNO." Defficient"				
Maximum intensity 109.374 mm/hr" Total depth 34.259 mm" 6 002hyd Hydrograph extension used in this file 81 ADD COMMENT===================================		1 9:	0.100 Pervious Ia/S coel 0.886 Pervious Initial a 0.015 Impervious Manning 8.000 Impervious SCS Cur 0.000 Impervious Runoff 0.100 Impervious Ia/S cc	fficient" abstraction" g 'n'" rve No." coefficient" pefficient"	s.			
Catchments North of GEXR, part of Inlet #1" 33 CATCHMENT 201" 1 Triangular SCS"			0.518 Impervious Initial 0.013 0.0 Catchment 202 Surface Area Time of concentration	l abstraction 044 0.000 Pervious 2.080 n 56.918	0.000 Imperviou 0.000 3.722	c.m/sec" s Total Area 2.080 56.918	hectare" minutes"	
1 SCS method" 201 Area Northeast of GEXR" 0.000 % Impervious" 2.970 Total Area" 80.000 Flow length"		-	lime to Centrold Rainfall depth Rainfall volume Rainfall losses Runoff depth Bunoff volume	169.776 34.259 712.58 30.128 4.130 85.91	93.696 34.259 0.00 5.618 28.641 0.00	169.775 34.259 712.58 30.128 4.130 85.91	minutes" mm" c.m" mm" mm" c.m"	
0.500 Overland Slope" 2.970 Pervious Area" 80.000 Pervious length" 0.500 Pervious slope" 0.000 Impervious Area"		40	Runoff coefficient Maximum flow HYDROGRAPH Add Runoff 4 Add Runoff " 0.013 0.0	0.121 0.013 f "	0.000 0.000 0.000	0.121 0.013	c.m/sec"	
0.500 Impervious Iength" 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"		40 40	HYDROGRAPH Copy to Ou 8 Copy to Outflow" 0.013 0.0 HYDROGRAPH Combine 6 Combine " 1 Node #"	utflow" 056 0,056 1"	5 0,000	•		
 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" 0.002 = 2/202 = 2/202 		40	u/s of GEXR" Maximum flow Hydrograph volume 0.013 0.0 HYDROGRAPH Start - Ne 2 Start - New Tribut	0.0 375.2 056 0.056 ew Tributary tary"	056 c.m/ 247 c.m [*] 6 0.056	sec"		
Catchment 201 0.000 0.000 Total Area " 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"		33	0.013 0.0 CATCHMENT 203" 1 Triangular SCS" 1 Equal length"	0,056	o 0.056			

Q:134896/104/SWM/MIDUSS/Post/34896-104_Post-002yr.out Pag Printed at 15:38 on 18 Dec 2018	Page 3 Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Page 4 Printed at 15:38 on 18 Dec 2018
1 SCS method"	6 Combine "
203 Pfenning Farm Residential Development"	* 1 Node #"
60.000 % Impervious"	u/s of GEXR"
* 18.510 Total Area"	 Maximum flow 0.247 c.m/sec"
90.000 Flow length	Hydrograph volume 4223.111 c.m"
1.000 Overland Slope"	2.336 2.336 0.195 0.247"
20.000 Repuise leasth"	40 HYDROGRAPH CONTINENCE 1"
1 000 Pervious slope"	1 Nada #"
11.106 Impervious Area"	u/s of GEXR"
90.000 Impervious length"	Maximum flow 0.247 c.m/sec"
* 1.000 Impervious slope"	Hydrograph volume 4223.111 c.m*
0.250 Pervious Manning 'n'"	2.336 0.247 0.195 0.000"
76.000 Pervious SCS Curve No."	* 40 HYDROGRAPH Copy to Outflow"
0.242 Pervious Runoff coefficient"	B Copy to Outflow"
0.050 Pervious Ia/S coefficient"	2.336 0.247 0.247 0.000"
4.011 Pervious Initial abstraction"	6 Combine 2
9. 000 Impervious SCS Curve No."	
0.851 Impervious Runoff coefficient"	
0.100 Impervious Ia/S coefficient"	Maximum flow 0.247 c.m/sec"
0.518 Impervious Initial abstraction"	Hydrograph volume 4223.111 c.m"
* 2.336 0.000 0.056 0.056 c.m/sec*	2.336 0.247 0.247 0.247"
* Catchment 203 Pervious Impervious Total Area *	* 40 HYDROGRAPH Start - New Tributary"
Surface Area 7.404 11.106 18.510 hectare"	2 Start - New Tributary"
Time of concentration 50.679 5.259 12.490 minutes"	2.336 0.000 0.247 0.247"
Painfall dooth 24 050 24 250 mm"	8) ADD COMMENTERSET
Rainfall ueptin 34,259 34,259 34,259 min Bainfall volume 2536 50 3804 76 6341 26 cm*	3 Lifes of comment
Rainfall losses 25.978 5.108 13.456 mm*	Catchments South of GEXR, part of Inlet #1
Runoff depth 8.280 29.150 20.802 mm"	*
Runoff volume 613.07 3237.45 3850.52 c.m"	* 33 CATCHMENT 204"
Runoff coefficient 0.242 0.851 0.607	1 Triangular SCS"
Maximum flow 0.096 2.320 2.336 c.m/sec"	3 Specify values"
40 HYDROGRAPH Add Runoff	1 SCS method"
4 Add HUNOTT "	204 Hiverside Brass"
2.330 2.330 0.050 0.050	2 020 Total Area
2.336 Current peak flow c.m/sec"	35.000 Flow length"
2.303 Target outflow c.m/sec"	1 200 Overland Slope"
3850.5 Hydrograph volume c.m"	• 0.828 Pervious Area"
6. Number of stages"	60.000 Pervious length"
341.500 Minimum water level metre"	2.000 Pervious slope"
343.600 Maximum water level metre"	1.192 Impervious Area"
341.500 Starting water level metre"	116,000 Impervious length"
level Discharge Volume	
341.500 0.000 "	* 76.000 Pervious SCS Curve No."
342.000 0.1541 1746.000"	0.189 Pervious Runoff coefficient"
* 342.500 0.2669 3784.000"	0.100 Pervious Ia/S coefficient"
343.000 0.3446 6114.000"	8.021 Pervious Initial abstraction"
343.300 0.3837 7652.000"	0.015 Impervious Manning 'n'"
343,600 2.941 9295.000"	98,000 Impervious SCS Curve No."
1. WEIRS"	0.850 Impervious Runoff coefficient"
elevation coefficient breadth sideslane sideslane"	0.518 Impervious Ta/s coertice
343.300 0.900 10.000 0.000 0.000"	0.248 0.000 0.247 0.247 c.m/sec"
1. ORIFICES"	Catchment 204 Pervious Impervious Total Area
Orifice Orifice Orifice Number of	Surface Area 0.828 1.192 2.020 hectare"
invert coefficie diameter orifices"	Time of concentration 38.115 7.539 11.625 minutes
* 341.500 0.630 0.3750 1.000"	Time to Centroid 149.858 99.373 106.120 minutes"
Peak outflow 0.195 c.m/sec"	Rainfall depth 34.259 34.259 mm'
Maximum level 342.180 metre"	Rainfall volume 283.73 408.29 692.02 c.m"
- maximum storage 24/9.268 c.m"	- HAINTALL LOSSES 27.795 5.138 14.427 MM ²
ventriotual lag 5.000 in0075* 2.336 2.336 0.155 0.056 c.m/sec*	nunun uepun 0,404 23,121 19,531 mm² Bunoff valuma 53,53, 347,06, 400,50, c.m.ª
40 HYDROGRAPH Combine 1"	

Q:\348 Printe	996104/SWM/MIDUSS\Post\34896-104_Post-002yr.out Page 5 d at 15:38 on 18 Dec 2018	Q:\3489 Printed	361104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Page at 15:38 on 18 Dec 2018 Page	e 6
•	Maximum flow 0.010 0.246 0.248 c.m/sec*		Runoff volume 46.70 17.37 64.07 c.m"	
40	HYDROGRAPH Add Runoff "	1	Runoff coefficient 0.121 0.852 0.157 "	
	4 AGG HUNDTT *		Maximum flow 0.004 0.012 0.012 c.m/sec*	
• 54	POND DESIGN"	- 40	HYDROGRAPH Add Runoff "	
	0.248 Current peak flow c.m/sec"		4 Add Hulloff "	
•	0.070 Target outflow c.m/sec"	• 40	HYDROGRAPH Copy to Outflow"	
÷ .	400.6 Hydrograph volume c.m"		8 Copy to Outflow"	
2	4. Number of stages"		0.012 0.012 0.012 0.258"	
× .	0.910 Maximum water level metre"	40	HYDROGRAPH Combine 2"	
5	0.000 Starting water level metre"		o compine "	
	0 Keep Design Data: 1 = True; 0 = False*	_ ÷	INLET 1"	
÷	Level Discharge Volume"		Maximum flow 0.261 c.m/sec"	
		3	Hydrograph volume 4673.092 c.m"	
	0.6100 0.03090 782.000*		0.012 0.012 0.012 0.261"	
	0.9100 0.2769 2511.000"	40	HYDHOGRAPH Start - New Tributary"	
	Peak outflow 0.012 c.m/sec"		2 Start - New Intibutary	
*	Maximum level 0.122 metre	* 33	CATCHMENT 206"	
1	Maximum storage 308.035 c.m"		1 Triangular SCS [®]	
2	Centroidal lag 8.710 hours"	*	1 Equal length"	
• 10	U.245 U.248 U.012 U.247 C.m/sec"		1 SCS method"	
*	6 Combine "		206 Industrial properties at end of Hamilton Road" 25 000 B. Importance at an	
	2 Node #"	<u>_</u>		
	INLET 1"		50.000 Flow length"	
2	Maximum flow 0.258 c.m/sec"		1.000 Overland Slope"	
	Hydrograph volume 4609.018 c.m"		1.852 Pervious Area"	
- 40	U.248 U.248 U.012 U.258" HYDROGRAPH Start - New Tributary"		50.000 Pervious length"	
•	2 Start - New Tributary"	÷.	1.000 Pervious Stope"	
•	0.248 0.000 0.012 0.258"		50.000 Impervious length"	
• 33	CATCHMENT 205"		1.000 Impervious slope"	
	1 Triangular SCS		0.250 Pervious Manning 'n'"	
2	3 Specity Values"	- 1	76.000 Pervious SCS Curve No."	
•	205 Iron Bridge Manufacturing Property - Woodlot*	<u> </u>	0.189 Pervious Runott coefficient"	
	5.000 % Impervious"	ŝ.	0.100 Pervious Ta/s coefficient"	
5	1.190 Total Area"		0.015 Impervious Manning 'n'"	
	255.000 Flow length"	2	98.000 Impervious SCS Curve No."	
	1.800 Overland Slope		0.836 Impervious Runoff coefficient"	
	1.131 PERVIDUS AREA 255 OLO Repruise Lapatha	- 0	0.100 Impervious Ia/S coefficient"	
	1.600 Pervious shoe"		0.518 Impervious Initial abstraction"	
•	0.060 Impervious Area"	÷	Catchment 206 Bervious Impervious Total Area "	
•	255.000 Impervious length"		Surface Area 1.852 0.997 2.850 hectare"	
5	1.800 Impervious slope"	*	Time of concentration 42.063 3.696 15.034 minutes"	
	U.250 PERVIOUS MANNING 'N' 70.000 Pervious SCS Curve No "	4	Time to Centroid 154.727 93.661 111.707 minutes*	
	0.121 Pervious Runoff coefficient"	- Ç	Rainfail depth 34.259 34.259 mm"	
	0.100 Pervious Ia/S coefficient"		Halinali Volume 534,54 341,73 9/5.37 C.m ⁻	
•	10.886 Pervious Initial abstraction"	X	Runoff depth 6.465 28.623 14.220 mm"	
	0.015 Impervious Manning 'n'*	÷	Runoff volume 119.76 285.51 405.28 c.m"	
2	98.000 Impervious SCS Curve No."		Runoff coefficient 0.189 0.836 0.415 "	
	0.100 Impervious Runoli Coefficient"	* 40	Maximum flow 0.022 0.203 0.207 c.m/sec"	
	0.518 Impervious Initial abstraction"	40	HTUHUGHAPH AGG KUNOTT "	
	0.012 0.000 0.012 0.258 c.m/sec"	*	0.207 0.207 0.012 0.261"	
1	Catchment 205 Pervious Impervious Total Area "	• 33	CATCHMENT 207"	
÷	Surface Area 1.131 0.060 1.190 hectare"		1 Triangular SCS"	
	lime of concentration 125.928 8.235 94.020 minutes"	<u>0</u>	1 Equal length"	
	rame to centrioita 240.529 100.420 206.990 minutes" Bainfall denth 34.259 34.259 34.259 mm"	<u>.</u>	1 SCS method"	
	Rainfall volume 387.29 20.38 407.68 c.m*	*	207 WOODLOT AND WELLAND EAST OT PESTELLS" 5 000 % Impervious"	
	Rainfall losses 30.127 5.064 28.874 mm"		5.920 Total Area"	
	Runoff depth 4.131 29.195 5.384 mm"		65.000 Flow length"	

 3.001 Deridus Stoper 0.005 Peridus Loger 0.006 Theories Stoper 0.006	Q:\3 Prin	14896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Page 7 Ited at 15:38 on 18 Dec 2018	7 Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Pa Printed at 15:38 on 18 Dec 2018	ige 8
* 5.624 Provisos Arés' 0.105 Deprisos Laf confrictant' * 6.000 Provisos Laf confrictant' 0.000 Expression Area 1.80 0.000 * 0.000 Expression Area 1.80 0.000 Expression Area 1.80 0.100 Expression Area 1.80 0.	181.	3.000 Overland Slope"	• 0.851 Impervious Runoff coefficient"	
6.500 Pervisus longit* 0.430 Status Structure 0.430 Status Structure	0.00	5.624 Pervious Area"	0.100 Impervious Ia/S coefficient"	
* 3.00 Pervicus slop* - 0.23 0.00 b.128 0.018		65.000 Pervious length"	• 0.518 Impervious Initial abstraction"	
 U.200 Impervious Areas U.200 Impervious Areas U.200 Impervious Algos U.200 Impervious Algos U.200 Impervious Algos U.200 Pervious Sch Grve mp. Pervious		3.000 Pervious slope"	- 0.723 0.000 0.259 0.388 c.m/sec*	
5.000 Dervious adoption Time of construction 91.68g 9.02g 6.000 Pervious Manning "n" File of construction 91.68g 9.02g 7.0.200 Pervious Manning "n" File of construction 91.68g 9.02g 7.0.200 Pervious Manning "n" File of construction 91.68g 9.02g 7.0.200 Pervious Maining "n" File of construction 91.68g 9.02g 8.0.201 Pervious Maining "n" File of construction 91.68g 9.02g 9.0.201 Dervious Maining "n" File of construction 91.68g 9.02g 9.0.201 Dervious Maining "n" File of construction 91.68g 9.02g 9.0.201 Dervious Aunoff corficient" File of construction 91.68g 9.02g 9.0.201 Dervious Munoff corficient" File of construction 91.68g 9.02g 9.0.201 Dervious Munoff corficient" File of construction 91.68g 9.02g 9.0.201 Dervious Munoff corficient" File of construction 91.68g 9.02g 9.0.201 Dervious Munoff corficient" File of construction 91.68g 9.02g 9.0.201 Dervious Munoff corficient" File of construction 91.68g 9.02g 9.0.201 Dervious Munoff corficient" File of construction 91.68g 9.02g <tr< td=""><td></td><td>0.296 Impervious Area"</td><td>- Catchment 208 Pervious inpervious lotar Area -</td><td></td></tr<>		0.296 Impervious Area"	- Catchment 208 Pervious inpervious lotar Area -	
 C.260 Per/Los Ben/Los Ben/Los Mund? Cost Clarker Time to Centrol 11, 11 dett 41, 283 101, 287 C.120 Per/Los Starve Sc Sturve Kontor Rainfall volume 23, 283 C.120 Per/Los Starve Kontor Rainfall volume 23, 283 C.130 Per/Los Starve Kontor Rainfall volume 23, 283 C.151 Per/Los Starve Kontor Rainfall volume 23, 283 C.165 Imper/Los Starve Kontor C.161 Imper/Los Kannor Runor Kontor Runor Kontor Runor Kontor C.162 Imper/Los Kannor Runor Kontor C.162 Imper/Los Kannor Runor Kontor C.162 Imper/Los Kannor Runor Kontor<!--</td--><td></td><td>5.000 Impervious tength</td><td>Time of concentration 31.632 9.032 10.487 minutes"</td><td></td>		5.000 Impervious tength	Time of concentration 31.632 9.032 10.487 minutes"	
 72200 Fervious SCS Curve No." Bainfall depth 64.289 84.289 C.122 Pervious Lip Sufficient" Bainfall depth 6.018 C.122 Pervious SCS Curve No." Bainfall depth 6.018 Coll dependent 6.018		0.250 Pervious Maning 'n'"	Time to Centroid 141.833 101.527 104.121 minutes"	
 0.122 Pervious Runoff costficient* 0.122 Pervious Runoff costficient* 0.122 Pervious Runoff costficient* 0.125 Repervious Runoff costficient* 0.125 Repervious Runoff costficient* 0.126 Repervious Runoff costficient* 0.126 Repervious Runoff costficient* 0.127 Repervious Runoff costficient* 0.128 Repervision Runoff Runof		70.200 Pervious SCS Curve No."	 Rainfall depth 34.259 34.259 mm* 	
• 0.100 Pervisus 1a/5 coefficient* Rainfail bases 28.243 5.146 • 10.722 Pervisus SGS turve No.* Rainfail bases 28.243 5.146 • 0.600 Impervisus SGS turve No.* Rainfail bases 28.243 5.146 • 0.604 Impervisus SGS torre No.* Rainfail bases 28.243 5.146 • 0.604 Impervisus SGS torre No.* Rainfail bases 0.635 • 0.610 Impervisus SGS torre No.* Rainfail bases 0.636 • 0.610 Dervisus Tafs torficient* 4 0.773 0.729 0.289 0.389 • 0.610 Dervisus Tafs torficient 0.753 0.729 0.289 0.389 • 0.614 20.811 c.m* 0.000 Stats 0.000 0.620 0.289 • Rainfail bases 0.029 0.281 c.m* 0.000 Stats 0.000 Stats 0.000 Stats 0.000 Stats 0.0000 Stats	(#)	0.122 Pervious Runoff coefficient"	.≛ Rainfall volume 473.62 1420.87 1894.50 c.⊓"	
10.782 Privious Initial Bastration* 98.000 Ingervious SiS Ourse No.* 0.101 Ingervious Factoricant* 0.102 Initial Outcome 0.103 Integritation Sister 0.104 Ingervious Factoricant* 0.105 Integritation Sister 0.101 Integritation Sister 0.102 Outcome Sister 0.101 Integritation Sister Outcome 0.102 Outcome Sister 0.101 Integritation Sister Outcome 1126/15 Outcome Sister 1126/15 Outcome Outcome	19. E	0.100 Pervious Ia/S coefficient"	Rainfall losses 28.243 5.116 10.897 mm	
0.103 impervious Monf coefficient' number coefficient' number coefficient' 0.100 impervious Last coefficient' 40 impervious Last coefficient' 0.100 impervious Last coefficient' 40 impervious Last coefficient' 0.100 impervious Last coefficient' 40 impervious Last coefficient' 0.100 impervious Test Area ' 50 POND DESIGN' 0.101 impervious Test Area ' 50 POND DESIGN' 0.101 impervious Test Area ' 50 POND DESIGN' 0.101 impervious Test Area ' 50 POND DESIGN' 1 is to Contentration 47,251 3.11 55.45 intree* 1 is to Contentration 47,251 3.11 55.45 intree* 1 is to Contentration 47,251 0.11.41 20.83 intree* 1 is to Contentration 47,251 0.260 0.260 intree* 0.000 intriam water level metre* 0.000 intree* 0.000 0.0150 0.269 0.269 intree* 0.0000 0.026 0.269 <td></td> <td>10.782 Pervious Initial abstraction"</td> <td>Hunort depth 6.016 29.143 23.361 mm</td> <td></td>		10.782 Pervious Initial abstraction"	Hunort depth 6.016 29.143 23.361 mm	
 a.240 inpervious Ruorff confrictent* 0.261 inpervious Ruorff confrictent* 0.261 inpervious Ruorff confrictent* 0.261 0.270 0.272 0.273 0.276 0.386* C.272 0.272 0.278 0.386* C.272 0.280 0.288 3.423 8.428 Ruorf f confright A.184 hourd f Ruorf f confright A.184 hourd f Ruorf f confright A.186 28.77 5.428 Ruorf f confright A.186 28.77 Ruorf f confright A.28 0.188 c.47 c.47 C.28 0.480 0.388 C.28 0.480 0.388 C.28 0.480 0.388 C.28 0.480 0.388 C.28 0.280 0.281 0.388 C.28 0.280 0.280 0.282 0.281 0.388* C.28 0.280 0.280 0.282 0.281 0.388* C.28 0.280 0.280 0.288 0.285* C.28 0.280 0.280 0.288 0.285* C.28 0.280 0.288 0.285* C.28 0.280 0.288 0.288* C.28 0.28 0.280 0.288 0.285* C.28 0.280 0.288 0		0.015 Impervious Manning 'n''	- HUNDIT VOLUME 05.17 1206.70 1291.87 C.M	
 0.100 impervious Initial Societ Lister* 0.100 impervious Initial Societ Lister* 0.100 0.100 0.100 0.101 0.201 0.201 0.201 0.201 0.201 0.201 0.201 0.201 0.200 0.200 0.200 0.200 0.200 0.201 0.201 0.201 0.201 0.201 0.201 0.201 0.200 0		98.000 Impervious ses curve No. O 840 Impervious Runoff coefficient"	Maximum flow 0.018 0.719 0.723 c.⊓/sec"	
 0.518 Inservices Intial abstraction" 0.620 0.207 0.012 0.201 c.#/sec" 0.620 0.207 Pervices Desrvices Total Area 0.620 0.017 Pervices Desrvices Total Area 0.620 0.018 Pervices Desrvices Total Area 0.620 0.017 Pervices Desrvices Total Area 0.620 0.018 Pervices Desrvices Total Area 0.620 0.018 Pervices Desrvices Total Area 0.620 0.010 Pervices Desrvices Total Area 0.620 0.018 Pervices Desrvices Total Area 0.620 0.0100 Pervices Desrvices Total Area 0.620 0.020 0.0100 Pervices Desrvices Total Area 0.620 0.020 0.020 0.020 Pervices 0.620 0.020 0.020 0.020 Pervices 0.620 0.020 0.020 0.020 Pervices 0.620 0.020 0.020 0.020 0.020 Pervices 0.620 0.020 0.020 0.020 0.020 0.020 Pervices 0.620 0.02		0.100 Impervious Ia/S coefficient"	* 40 HYDROGRAPH Add Runoff "	
 0.082 0.207 0.012 0.201 0.728 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738 0.738		0.518 Impervious Initial abstraction"	 4 Add Runoff " 	
Catchment 207 Fervious Tapervious Total Area Fervious Total Area Fervious Total Area Surface Area extension Scade 0.226 Scade 0.226 Scade 0.226 Scade 0.226 High Area extension Time to Centroid 158.658 Scare 2.828 Scare 2.828 Rainfall volume 159.25 Scare 2.828.53 Scare 2.828.53 Scare 2.828.53 Rainfall volume 1526.70 101.41 2228.11 C.m* Scare 2.828.53 Rainfall volume 1526.70 101.41 2228.11 C.m* Scare 2.828.53 Runoff depth 4.1568 28.777 Scare 2.828.53 Scare 2.828.53 Scare 2.828.53 Runoff depth 4.1568 28.777 Scare 2.828.53 Scare 2.828.53 Scare 2.828.50 Runoff depth 4.1568 28.777 Scare 2.828.50 Scare 2.828.50 Scare 2.828.50 Mutation flow 0.039 0.058 0.062 C.m/sec* Scare 2.828.500* Mutation flow 0.0390 0.058 0.251* Scare 2.828.500* Scare 2.828.500* Scarea extension		0.062 0.207 0.012 0.261 c.m/sec*	• 0.723 0.723 0.269 0.386"	
Suprace Arise 5.226 No.226 N		Catchment 207 Pervious Impervious Total Area "	• 54 POND DESIGN"	
1 153 00 Controlled Control 141 300 4 minute* 1291.9 Hydrograph volume C.a* Rainfall volume 1928.7 volume 1291.9 Hydrograph volume C.a* Rainfall volume 1928.7 volume 1281.9 Hydrograph volume C.a* Rainfall volume 1928.7 volume 1281.9 Hydrograph volume 2.** Rainfall volume 1928.7 volume 228.9 Hydrograph volume 12.00 Minimus water level metre* Runoff volume 238.9 Hydrograph volume 0.000 Starting water level metre* 0.000 Starting water level metre* Runoff volume 238.9 Hydrograph volume 0.030 0.038 0.038 0.038 0.030 0.039 0.039 0.038 Hydrograph volume 0.269 0.012 0.261* 0.0300 0.0300 0.038 0.062 0.260 0.00* Hydrograph volume 0.268 0.024 0.251* 0.0300 0.0400 27.00° 0.0300 0.0400 27.00° Hydrograph volume 0.269 0.021 0.251* 0.0300 0.0260 127.00° 0.022 022.0220.00° Hydrograph volume 0.269 0.251* 0.020 0.260 0.220 0.252.00° 0.020 0.260 0.020 Hydrograph volume 0.269 0.261* 0.020 0.260 0.260* 0.262 0.220* Hydrograph volume 0.269 0.269* 0.2600 0.269* 0.262 0.22		Surface Area 5.624 0.296 5.920 nectare	0.723 Current peak tiow c.m/sec	
 Hainfill depth 34.259 34.259 34.259 at 258 at 25.0 at 25.		Time of Concentration 47.254 5.111 55.345 minutes	1291 9 Hydrograph volume c.m [*]	
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		0.100 Pervious Tal's coefficient"	1.920 Total Area"	
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0.015 Impervious Manning 'n'" 1.000 Overland Slope"		0.015 Impervious Manning 'n'"	1.000 Overland Slope"	
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•	50.000 Pervious length"		5.000 % Impervious"
	1.500 Pervious slope"		13.230 Total Area"
<u>.</u>	0.576 Impervious Area		170.000 Flow length"
3	13.000 Impervious length"		2.400 Overland Slope"
2	1.500 Impervious slope"		12.568 Pervious Area"
	0.250 Pervious Manning 'n'"		170.000 Pervious length [®]
	0.200 Pervious Russifi cost		2.400 Pervious slope"
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¥(6.350 Pervious Initial abstraction*		2 400 Impervious length
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5	98.000 Impervious SCS Curve No."	÷	70.000 Pervious SC Curve No "
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	Surface Appendix Appe		98.000 Impervious SCS Curve No."
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	Time to Controld 170 00 06 026 120 020 mioutool	· .	0.100 Impervious la/s coefficient
	Rainfall denth 34.259 34.259 34.259 34.259	2	0.518 Impervious initial abstraction"
•	Rainfall volume 460.44 197.33 657.76 c m"		
	Rainfall losses 25.739 5.103 19.548 mm"		Surface Area 12 569 0 661 13 20 bostone"
	Runoff depth 8.520 29.155 14.710 mm"		Time of concentration 90.570.5.923.67.676 minutes"
1	Runoff volume 114.50 167.94 282.44 c.m"		Time to Centroid 207.254 96.935 177.417 minutes"
·	Runoff coefficient 0.249 0.851 0.429 *		Rainfall depth 34,259 34,259 mm"
	Maximum flow 0.016 0.120 0.122 c.m/sec"		Rainfall volume 4305.79 226.62 4532.41 C.m°
• 40	HYDROGRAPH Add Runoff "	3	Rainfall losses 30.128 5.160 28.879 mm*
	4 Add Runoff "		Runoff depth 4.131 29.098 5.379 mm"
	0.122 0.122 0.037 0.391"	•	Runoff volume 519.21 192.49 711.69 c.m"
54	PUND DESIGN"		Runoff coefficient 0.121 0.849 0.157 "
	0.122 Content peak LLOW C.M.Sec"	<u></u>	Maximum flow 0.054 0.136 0.139 c.m/sec"
•2	282.4 Hydrograph volume c.m"	40	HYDROGHAPH AGG HUNOTT
•	7. Number of states"		
	0.000 Minimum water level metre"	* 40	HYDROGRAPH Conv to Outflow"
	1.100 Maximum water level metre"		8 Copy to Outflow"
•	0.000 Starting water level metre"		0.139 0.139 0.139 0.065"
2	0 Keep Design Data: 1 = True; 0 = False"	* 40	HYDROGRAPH Combine 3"
3	Level Discharge Volume"	•	6 Combine "
2	0.000 0.000 0.000	<u>_</u>	3 Node #"
		- C	INLET 2"
÷	0.7500 0.1250 720.000		Maximum Tiow 0.195 c.m/sec"
2	0.9000 0.1200 346.000"		Hydrograph Volume 994.175 c.m."
•	1.000 0.3110 445.000"	* 81	ADD COMMENT===================================
	1.100 0.6160 557.000"		3 Lines of comment"
5 C	Peak outflow 0.065 c.m/sec"	*	
	Maximum level 0.376 metre"		South of GEXR along Nafziger Rd, part of Inlet #3
	Maximum storage 39.380 c.m*		***************************************
2	Centroidal lag 2.248 hours"	* 40	HYDROGRAPH Start - New Tributary"
40	0.122 0.122 0.065 0.391 c.m/sec"	*	2 Start - New Tributary"
40	RTURUGHAPH COMDINE 3"		0.139 0.000 0.139 0.195*
• •	3 Node #"	33	CATCHNEN 211
		0	1 Frangular ScS-
	Maximum flow 0.065 c.m/sec"		i Equal Jength 1 SCS method"
F)	Hydrograph volume 282.481 c.m"		211 Cultivated lands east of Nafziner Road"
	0.122 0.122 0.065 0.065"		1.000 % Impervious"
* 40	HYDROGRAPH Start - New Tributary"		7.310 Total Area"
	2 Start - New Tributary"		120,000 Flow length"
	0.122 0.000 0.065 0.065"		3.300 Overland Slope"
- 33	CATCHMENT 210"		7.237 Pervious Area"
	i intangutar SCS	*	120.000 Pervious length"
	E FINAL PRIDUI		3.300 Pervious slope"
÷.	1 SCS method"		

•5

34896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out nted at 15:38 on 18 Dec 2018	Page 11	11 Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Pai Printed at 15:38 on 18 Dec 2018
3.300 Impervious slope"		Time of concentration 68.528 5.833 24.957 minutes"
0.250 Pervious Manning 'n'"		Time to Centroid 189.072 96.789 124.938 minutes"
76.000 Pervious SCS Curve No."		Hainfail depth 34,259 34,259 34,259 mm"
0.189 Pervious Hunort Coefficient"		- Hallitall Volume 525.21 550.01 577.02 C.m Bainfall losses 25.738 5.140 17.499 mm ^m
8.021 Pervious Initial abstraction"		Runoff depth 8.520 29.118 16.759 mm"
0.015 Impervious Manning 'n'"		Runoff volume 130.87 298.17 429.04 c.m [°]
98.000 Impervious SCS Curve No."		Runoff coefficient 0.249 0.850 0.489
0.844 Impervious Hunott coetticient" 0.100 Impervious Tais coefficient"		* MAXIMUM TIOW U.UTB U.212 U.213 C.M/SeC" * 40 HYDRORBAPH Add Bunoff "
0.518 Impervious Initial abstraction		4 Add Runoff "
0.076 0.000 0.139 0.195 c.m/sec"		0.213 0.213 0.076 0.076"
Catchment 211 Pervious Impervious Total Area "		54 POND DESIGN"
Surface Area 7.237 0.073 7.310 hectare"		0.213 Current peak flow c.m/sec"
Time to Concentration 49.713 4.360 47.735 minutes		429.0 Hydroarab volume c.m"
Rainfall depth 34.259 34.259 34.259 mm"		7. Number of stages"
Rainfall volume 2479.26 25.04 2504.30 c.m"		0.000 Minimum water level metre"
Haintall Losses 27.793 5.341 27.568 mm" Bunoff depth 5.466 28.017 6.601 mm"		- 1.000 MAXIMUM WATEF LEVEL METRE" 0.000 Starting water level metre"
Bunoff volume 467.94 21.14 489.08 c.m."		 O Keep Design Data: 1 = True: 0 = False"
Runoff coefficient 0.189 0.844 0.195 "		Level Discharge Volume"
Maximum flow 0.075 0.015 0.076 c.m/sec"		0.000 0.000 0.000"
0 HYDROGRAPH Add Runoff "		
4 Add Hulloll " 0.076 0.076 0.139 0.195"		0.5000 0.09000 343.000"
10 HYDROGRAPH Copy to Outflow"		• 0.7500 0.1250 877.000 ⁺
8 Copy to Outflow"		0.8000 0.1360 1014.000"
0.076 0.076 0.076 0.195"		1.000 0.7880 1667.000"
10 HYDROGRAPH Combine 4"		Peak outriow U.U54 C.m/sec"
4 Node #*		Maximum storage 131.699 c.m"
INLET 3"		 Centroidal lag 2.531 hours"
Maximum flow 0.076 c.m/sec*		0.213 0.213 0.054 0.076 c.m/sec"
Hydrograph volume 489.081 c.m		40 HYDRUGRAPH COMDINE 4 6 Compline -
40 HYDROGRAPH Start - New Tributary"		4 Node #"
2 Start - New Tributary"		INLET 3"
0.076 0.000 0.076 0.076		Maximum flow 0.126 c.m/sec"
33 CATCHMENT 212" 1 Triangular SCS"		- муагодгарл volume 918.301 С.М" * 0.213 0.213 0.054 0.128"
3 Specify values"		40 HYDROGRAPH Start - New Tributary"
1 SCS method"		2 Start - New Tributary
212 Alpine Solutions - East SMWP"		0.213 0.000 0.054 0.128"
40.000 % Impervious" 2.550 Total Apag"		33 CATCHMENT 213"
150.000 Flow length"		
1,500 Overland Slope"		1 SCS method"
1.536 Pervious Area"		" 213 Woodlot East and West of Nafziger Road"
180.000 Pervious length"		■ 3.000 % Impervious"
1.500 PERVIOUS SLOPE" 1.024 Impervious Area"		140.000 Flow length"
131.000 Impervious length"		3.600 Overland Slope"
1.500 Impervious slope"		* 13.056 Pervious Area"
0.250 Pervious Manning 'n'"		" 140.000 Pervious length"
U.UUU MERVIOUS SUS CURVE NO." 0.249 Pervious Runoff coefficient"		- J.OUD FETVLOUS SLOPE" - 0.404 Impervious Area"
0.100 Pervious Ia/S coefficient"		140.000 Impervious length"
6.350 Pervious Initial abstraction"		3.600 Impervious slope"
0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"
98.000 Impervious SCS Curve No."		- /U,100 PERVIOUS SUS CURVE NO." 0.122 Dervious Bunoff coefficient"
0.100 Impervious Kunoff coefficient"		0.100 Pervious Ia/S coefficient"
0.518 Impervious Initial abstraction"		10.834 Pervious Initial abstraction"
0.213 0.000 0.076 0.076 c.m/sec"		0.015 Impervious Manning 'n'
Redebrach 040 Requires Transmisus Tatel Apon I		BUDDEN STATE AND A STATE AN

Q:\348 Printe	96\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out d at 15:38 on 18 Dec 2018	Page 13	Q:\34896 Printed	6104\SWM\MIDUSS\Post\34896-104_Post-002yr.out at 15:38 on 18 Dec 2018
	0.100 Impervious Ia/S coefficient"		* 40	HYDBOGBAPH Add Bunoff "
	0.518 Impervious Initial abstraction"		. 40	4 Add Runoff *
3	0.089 0.000 0.054 0.128 c.m/sec"			0.768 0.768 0.089 0.196"
2	Catchment 213 Pervious Impervious Total Area *		54	POND DESIGN"
•	Time of concentration 71.133 4.668 59.353 minutes"			0.768 Current peak flow c.m/sec" 0.070 Tappat outflow c.m/sec"
	Time to Centroid 185.523 95.053 169.488 minutes"			1185.8 Hydrograph volume c.m"
	Rainfall depth 34.259 34.259 mm"			15. Number of stages"
	Rainfall volume 4472.87 138.34 4611.20 c.m"			0.000 Minimum water level metre"
	Rainfall losses 30,095 5,255 29,350 mm"			1.450 Maximum water level metre"
	Runoff volume 548 62 117 12 660 75 c =			0.000 Starting water level metre"
	Runoff coefficient 0.122 0.847 0.143 "		Q	U Keep Design Data: 1 = True; U = False"
•	Maximum flow 0.068 0.084 0.089 c.m/sec"			
* 40	HYDROGRAPH Add Runoff "			0.1500 0.00700 248.000"
	4 Add Runoff "			0.2500 0.00900 418.000"
. 10	0.089 0.089 0.054 0.128"			0.3500 0.01100 593.000"
40	A CODY to OUTTION"			0.4500 0.01300 775,000"
	0.089 0.089 0.089 0.128"			0.5500 0.01500 964,000"
• 40	HYDROGRAPH Combine 4"			0.7500 0.01700 1364.000"
•	6 Combine "			0.8500 0.01900 1575.000"
*	4 Node #"			0.9500 0.02000 1795.000"
2	INLET 3"			1.050 0.05600 2025.000"
- E	Maximum flow 0.196 c.m/sec"			1.150 0.2080 2263.000"
	Hydrograph Volume 1579.110 c.m."			1.250 0.4600 2511.000"
. 40	HVDROGRAPH Start - New Tributary"		<u> </u>	1.350 2.766 2768.000"
	2 Start - New Tributary			1.450 0.850 3033.000" Reak outflow 0.015 c.m/cood
	0.089 0.000 0.089 0.196"			Maximum level 0.597 metre"
3 3	CATCHMENT 214"			Maximum storage 1055,949 c.m"
•	1 Triangular SCS*			Centroidal lag 15.380 hours"
3	3 Specify values*			0.768 0.768 0.015 0.196 c.m/sec"
- R	1 SCS method"		40	HYDROGRAPH Combine 4"
•	214 Nec Centre - SWMP" 73.000 & Impervises		÷	6 Combine "
	4.950 Total Area"		2	4 NODE #" TNIET 2"
•)	50.000 Flow length"			Maximum flow 0.210 cm/sec"
	2.800 Overland Slope*			Hydrograph volume 2536.092 c.m"
•	1.336 Pervious Area"			0.768 0.768 0.015 0.210"
÷ .	40.000 Pervious length"		* 40	HYDROGRAPH Start - New Tributary"
- E	1.500 Pervious slope		*	2 Start - New Tributary"
	3.5.05 Timpervious Area"			0.768 0.000 0.015 0.210"
22	1.500 Impervious slope"		- 33	CAICHMENT 215"
	0.250 Pervious Manning 'n'"			1 Equal length*
1	83.000 Pervious SCS Curve No."			1 SCS method"
	0.304 Pervious Runoff coefficient"		8	215 Vacant Industrial lands west of Nafziger Road"
2	0.100 Pervious Ia/S coefficient"			45.000 % Impervious"
2	5.202 Pervious Initial abstraction"			2.860 Total Area"
	0.015 Impervious Manning "" 98.000 Impervious SCS Curve No."		- ÷	105.000 Flow length"
*	0.846 Impervious Bunoff coefficient"			1 573 Bopvieve Aper
<u>.</u>	0.100 Impervious Ia/S coefficient"			105.000 Pervious length*
•)	0.518 Impervious Initial abstraction"			2.000 Pervious slope"
	0.768 0.000 0.089 0.196 c.m/sec*			1.287 Impervious Area"
	Catchment 214 Pervious Impervious Total Area		÷	105.000 Impervious length*
	Surrace Area 1,336 3.613 4.950 hectare"			2.000 Impervious slope"
	Time to Contentration 24,992 7,105 9,203 minutes"			0.250 Pervious Manning 'n'"
	Rainfall denth 34 250 34 250 34 250 mm ^m			70.000 Pervious SCS Curve No."
- C	Rainfall volume 457.87 1237.93 1695.80 c.m"			0.100 Pervious Ta/S coefficient"
	Rainfall losses 23,854 5,292 10.304 mm"		*	8.021 Pervious Initial abstraction"
	Runoff depth 10.405 28.966 23.955 mm"		2	0.015 Impervious Manning 'n'"
	Runoff volume 139.06 1046.70 1185.76 c.m"			98,000 Impervious SCS Curve No."
	HUNDIT coefficient 0.304 0.846 0.699 "		3 4	0.847 Impervious Runoff coefficient"
1.22	Maximum 110W 0.037 0.755 0.768 C.m/sec"		-	0.100 Impervious Ia/S coefficient"

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	0.518 Impervious Initial abstraction*		* 4 Add Runoff "
	0.271 0.000 0.015 0.210 c.m/sec*		0.271 0.271 0.271 0.436"
7	Catchment 215 Pervious Impervious Total Area "		* 40 HYDROGRAPH Copy to Outflow"
•	Surface Area 1.573 1.287 2.860 hectare		8 Copy to Outflow"
	Time of concentration 53.324 4.685 15.099 minutes"		0.271 0.271 0.271 0.436"
÷.	lime to Centroid 168.840 95.055 110.809 minutes"		40 HIDRUGHAPH COMDINE 4"
	Rainfall volume 538.89 440.91 979.79 c.m*		* 4 Node #"
	Rainfall losses 27.793 5.253 17.650 mm"		* INLET 3*
•	Runoff depth 6.465 29.005 16.608 mm"		Maximum flow 0.707 c.m/sec"
	Runoff volume 101.70 373.30 474.99 c.m"		Hydrograph volume 3486.326 c.m"
2	Runoff coefficient 0.189 0.847 0.485		0.271 0.271 0.271 0.707"
• 10	MAXIMUM TLOW 0.015 0.269 0.271 C.M/Sec		2 Start - New Tributary
*	4 Add Bunoff *		0.271 0.000 0.271 0.707"
	0.271 0.271 0.015 0.210"		* 33 CATCHMENT 217"
- 40	HYDROGRAPH Copy to Outflow"		1 Triangular SCS"
	B Copy to Outflow"		• 1 Equal length"
- 40	0.2/1 0.2/1 0.2/1 0.210°		 Sub method /ul>
. 40	6 Combine "		* 75.000 % Impervious"
	4 Node #"		• 0.730 Total Area"
•	INLET 3"		90.000 Flow length"
5	Maximum flow 0.436 c.m/sec"		2.100 Overland Slope"
÷	Hydrograph volume 3011.084 c.m"		0.183 Pervious Area"
	0.271 0.271 0.436"		90.000 Pervious length"
- 40	A Start - New Tributary"		* 0.548 Impervious Area"
	0.271 0.000 0.271 0.436*		90.000 Impervious length"
• 33	CATCHMENT 216"		 2.100 Impervious slope"
*	1 Triangular SCS"		0.250 Pervious Manning 'n'"
	1 Equal length		76.000 Pervious SCS Curve No."
5	1 SCS method"		0.189 Pervious Runott coetticient"
*	210 Bindestrial lands west of Natziger Hoad		8.021 Pervious Initial abstraction"
	2.860 Total Area"		0.015 Impervious Manning 'n'"
	110.000 Flow length"		98.000 Impervious SCS Curve No."
•	2.000 Overland Slope"		0.843 Impervious Runoff coefficient"
	1.573 Pervious Area"		0.100 Impervious Ia/S coefficient"
- 2	110.000 Pervious length"		
	2.000 Fervious Stope		Catchment 217 Pervious Impervious Total Area *
	110.000 Impervious length"		Surface Area 0.183 0.548 0.730 hectare
	2.000 Impervious slope"		Time of concentration 47.907 4.209 7.243 minutes
	0.250 Pervious Manning 'n'"		Time to Centroid 161.951 94.385 99.076 minutes
	76.000 Pervious SCS Curve No."		" Rainfall depth 34.259 34.259 34.259 mm"
	0.189 Pervious Hunort coefficient"		Rainfall Volume 62.52 187.57 250.09 C.M" Rainfall Joseas 27 704 5 373 10 078 mm"
	8.021 Pervious 14/s Coefficient		Rainall 103585 27.794 5.575 10.976 mm
	0.015 Impervious Manning 'n'"		* Runoff volume 11.80 158.15 169.95 c.m"
	98.000 Impervious SCS Curve No."		Runoff coefficient 0.189 0.843 0.680
* .	0.847 Impervious Runoff coefficient"		Maximum flow 0.002 0.114 0.114 c.m/sec
	0.100 Impervious Ia/S coefficient		40 HYDROGRAPH Add Runoff "
	0.518 Impervious Initial abstraction		* 4 Add Hunott "
	0.2/1 0.000 0.2/1 0.436 C.M/Sec ⁻		* 40 HYDEOGRAPH Copy to Outflow"
÷	Surface Area 1.573 1.287 2.860 hectare"		8 Copy to Outflow
	Time of concentration 54.833 4.818 15.523 minutes"		• 0.114 0.114 0.114 0.707"
*	Time to Centroid 170.505 95.252 111.359 minutes"		* 40 HYDROGRAPH Combine 4"
5	Rainfall depth 34.259 34.259 mm"		6 Combine "
3	Rainfall volume 538.89 440.91 979.79 c.m"		4 Node #"
2	H81NT811 105565 27.792 5.236 17.642 mm*		- INLEI 3" Maximum flow 0.821 c.m/ccc"
÷	nchuin depthi 0.407 29.023 10.017 mm." Rinoff volume 101.72 973.52 475.24 c.m."		Maximum riow 0.021 C.m/sec Mydrooraph volume 3656.272 c.m/
	Runoff coefficient 0.189 0.847 0.485 "		0.114 0.114 0.114 0.821"
	Maximum flow 0.015 0.269 0.271 c.m/sec"		* 40 HYDROGRAPH Confluence 2"
* 40	HYDROGRAPH Add Runoff "		* 7 Confluence *

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	2 Node #"		
			75.000 Pervious Maining (1)
	Maximum flow 0.391 c.m/sec"	- C	0.000 Pervious SUS Curve No.
	Hudeograph volume 6410 420 or mil	- 3	0.189 Pervious Hunort Coetticient
		- E	0.100 Pervious la/S coefficient
. 40		-	8.021 Pervious Initial abstraction
40	Record to Outriow"	- C	0.015 Impervious Manning 'n'
	a copy to dutition.	- 8	98.000 Impervious SCS Curve No."
. 10			0.851 Impervious Runoff coefficient"
- 40	AYDROGRAPH COMDINE 5"	•	0.100 Impervious Ia/S coefficient"
S	6 COMDING "		0.518 Impervious Initial abstraction"
÷ .	5 Node #"		2.234 0.000 0.821 1.408 c.m/sec"
	u/s of HWY 7&8"	5	Catchment 223 Pervious Impervious Total Area "
	Maximum flow 0.391 c.m/sec"		Surface Area 1.885 10.684 12.570 hectare"
<u>*</u> }	Hydrograph volume 6419.479 c.m"		Time of concentration 59,850 5.259 7.315 minutes"
÷	0.114 0.391 0.391 0.391"		Time to Centroid 176.700 95.913 98.956 minutes"
= 40	HYDROGRAPH Confluence 3"		Rainfall depth 34.259 34.259 mm"
•	7 Confluence "		Rainfall volume 645.95 3660.36 4306.30 c.m*
	3 Node #"		Rainfall losses 27,793 5,108 8,511 mm"
*	INLET 2"		Runoff depth 6,465 29,150 25,748 mm"
*.	Maximum flow 0.195 c.m/sec"		Runoff volume 121.90 3114.58 3236.48 c.m"
	Hydrograph volume 994.175 c.m"		Runoff coefficient 0.189 0.851 0.752 "
•	0.114 0.195 0.391 0.000"		Maximum flow 0.017 2.232 2.234 c.m/sec"
* 40	HYDROGRAPH Copy to Outflow"	* 40	HYDROGRAPH Add Runoff "
•	8 Copy to Outflow"		4 Add Bunoff "
•	0.114 0.195 0.195 0.000*	÷ .	2.234 2.234 0.821 1.408*
* 40	HYDROGRAPH Combine 5"	- 40	HYDROGRAPH CODY to Outflow"
•	6 Combine "		8 Copy to Qutflow"
•	5 Node #"		2 234 2 234 2 234 1 408"
	u/s of HWY 7&8"	* 40	HVDROGRAPH Combine 5"
*	Maximum flow 0.587 c m/sec"	. 40	6 Combine I
	Hydrograph volume 7413 651 c m ²		
- 40	HYDROGRAPH Confluence 4*		
		2	Hydrograph Volume 14306,400 C.m ²
		* 04	
		81	
	Hydpograph volume 2555.021 c.m/Secil	<u> </u>	3 Lines of comment
		<u>_</u>	
* 40		- 2	Catchments east of Hamilton Hoad, part of Inlet #4"
. 40			
¥.		- 40	HYDROGRAPH START - New Iributary
. 40		2	2 Start - New Fributary
		- S	2.234 0.000 2.234 3.642
	6 CONDINE "	- 33	CATCHMENT 218
			1 Triangular SCS"
			1 Equal length"
	Maximum flow 1.408 c.m/sec"	<u>.</u>	1 SCS method"
	Hydrograph Volume 11069,923 c.m.		218 Ironbridge Manufacturing Property"
. 10	0.114 0.821 0.821 1.408"		85,000 % Impervious"
40	HYDROGRAPH START - New Tributary"	- <u>-</u>	2.060 Total Area"
	2 Start - New Tributary"	8	230.000 Flow length
	0.114 0.000 0.821 1.408"		1.700 Overland Slope"
33	CATCHMENT 223"	•	0.309 Pervious Area*
<u>.</u>	1 Triangular SCS"		230.000 Pervious length"
	1 Equal length"		3.000 Pervious slope"
•	1 SCS method*		1.751 Impervious Area*
	223 New Hamburglr Inc. lands"		230.000 Impervious length"
2	85.000 % Impervious"	<u>*</u>	3.000 Impervious slope"
	12.570 Total Area"	•	0.250 Pervious Manning 'n'"
•	90.000 Flow length"		76.000 Pervious SCS Curve No."
•	1.000 Overland Slope"	×	0.231 Pervious Runoff coefficient"
•	1.885 Pervious Area"		0.060 Pervious Ia/S coefficient"
•	90.000 Pervious length"		4.813 Pervious Initial abstraction"
•	1.000 Pervious slope"		0.015 Impervious Manning 'n'
.	10.684 Impervious Area"		98,000 Impervious SCS Curve No."
•	90.000 Impervious length"	<u>*</u>	0.845 Impervious Runoff coefficient*
•	1.000 Impervious slope"		0.100 Impervious Ia/S coefficient*

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0.518 Impervious Initial abstraction"		3.000 Pervious slope"	
0.370 0.000 2.234 3.642 c.m/sec"		1 OB8 Impervious Area"	
Catchment 218 Pervious Impervious Total Area "		75.000 Impervious length"	
Surface Area 0.309 1.751 2.060 hectare"		 3,000 Impervious slope" 	
Time of concentration 65,728 6,641 9,359 minutes"		* 0.250 Pervious Manning 'n'"	
Time to Centroid 186.200 98.042 102.098 minutes"		76.000 Pervious SCS Curve No."	
Rainfall depth 34.259 34.259 34.259 mm"		0.044 Pervious Runoff coefficient"	
Rainfall volume 105.86 599.87 705.73 c.m"		0.281 Pervious Ia/S coefficient"	
Haintall losses 26.353 5.326 8.480 mm"		22.539 Pervious Initial abstraction"	
Hunort depth 7.905 28.953 25.779 IIIII"		98-000 Impervious Manining The	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.838 Impervious Bundf coefficient"	
Maximum flow 0.003 0.370 0.370 c.m/sec"		0-100 Impervious Ia/S coefficient"	
40 HYDROGRAPH Add Bunoff		0.518 Impervious Initial abstraction"	
4 Add Runoff "		0.218 0.000 0.144 3.771 c.m/sec"	
0.370 0.370 2.234 3.642"		Catchment 219 Pervious Impervious Total Area "	
54 PCND DESIGN"		* Surface Area 0.192 1.088 1.280 hectare"	
0.370 Current peak flow c.m/sec"		Time of concentration 105.590 3.390 4.320 minutes"	
4.094 Target outflow c.m/sec"		Time to Centroid 215.973 93.149 94.266 minutes"	
531.0 Hydrograph volume c.m"		Rainfall depth 34.259 34.259 mm"	
15. Number of stages"		Rainfall volume 65.78 372.73 438.51 c.m"	
344.700 Minimum Water level metre		Haintali losses 32.765 5.538 9.622 mm ⁻	
000 Startinuk Water Ievel intere		$\frac{1}{2} = \frac{1}{2} $	
0 Keen Design Date: $1 = True: 0 = False$		Bundif coefficient 0.044 0.838 0.710 "	
level Discharge Volume"		Maximum flow 0.000 0.218 0.218 c.m/sec"	
344.700 0.1250 0.000"		* 40 HYDROGRAPH Add Runoff "	
344.750 0.1270 9.000"		* 4 Add Runoff "	
344.800 0.1280 35.000"		• 0.218 0.218 0.144 3.771"	
344.850 0.1300 77.000"		* 40 HYDROGRAPH Copy to Outflow"	
344.900 0.1450 136.000"		8 Copy to Outflow"	
344.950 0.1820 209.000"		0.218 0.218 0.218 3.771"	
345.000 0.2220 297.000"		• 40 HYDROGRAPH Combine 5"	
345.050 0.2690 400.000"		6 Combine "	
345.100 0.2/10 519.000"			
345.150 0.2740 653.000"			
345.250 0.2700 971.000"		Maximum ilum 5,365 C.m/sec	
345.300 0.2820 1154.000"		0.218 0.218 0.218 0.218 0.218	
345.350 0.2840 1355.000"		40 HYDROGRAPH Start - New Tributary"	
345.400 0.2860 1571.000"		 Start - New Tributary" 	
Peak outflow 0.144 c.m/sec"		* 0.218 0.000 0.218 3.989"	
Maximum level 344.896 metre"		1 33 CATCHMENT 220"	
Maximum storage 131.763 c.m"		1 Triangular SCS"	
Centroidal lag 1.821 hours"		1 Equal length	
0.370 0.370 0.144 3.642 c.m/sec"		1 SCS method"	
0 HYDROGRAPH Combine 5"		220 Northwest conner of Nithview Heights"	
		60.000 Flow longth"	
Maximum flow 3.771 cm/sec"		5.000 Overland Slope"	
Hydrograph volume 14839.653 c.m ^e		0.460 Pervious Area"	
0.370 0.370 0.144 3.771"		60.000 Pervious length"	
0 HYDROGRAPH Start - New Tributary"		* 5.000 Pervious slope"	
2 Start - New Tributary"		0.040 Impervious Area"	
0.370 0.000 0.144 3.771"		60.000 Impervious length"	
3 CATCHMENT 219"		5.000 Impervious slope"	
1 Triangular SCS"		* 0.250 Pervious Manning 'n'"	
1 Equal length"		74.000 Pervious SCS Curve No."	
1 SCS method"		0.163 Pervious Runoff coefficient"	
219 N.C. Pestells Head Office & other Industrial"		0.100 Pervious Ia/S coefficient"	
85.000 % Impervious"		8.924 Pervious Initial abstraction"	
1.280 Total Area"		0.015 Impervious Manning 'n'"	
75.000 Flow length"		98.000 Impervious SCS Curve No."	
1.500 Overland Slope"		0.839 Impervious Runoff coefficient"	
U.192 Pervious Area"		0.100 Impervious Ia/S coefficient"	
ZE UNU Hoovious locath		U.518 Impervious Initial abstraction"	

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Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Page 21 Printed at 15:38 on 18 Dec 2018	Q:\34896\104\SWMIMIDUSS\Post\34896-104_Post-002yr.out Printed at 15:38 on 18 Dec 2018
Catchment 220 Pervious Incervious Total Area "	* 40 HVDROGRAPH Copy to 0.1471 0.009 3.997"
Surface Area 0.460 0.040 0.500 hectare	* 8 Copy to Outflow
Time of concentration 31,745 2,544 22,729 minutes	• 0.137 0.137 0.137 3.997*
Time to Centroid 141.881 91.780 126.413 minutes*	* 40 HYDROGRAPH Combine 5"
Rainfall depth 34.259 34.259 mm"	6 Combine "
Rainfall volume 157,59 13,70 171,29 c.m"	5 Node #"
Raintail losses 28.662 5.515 26.811 mm"	U/s of HWY 7&8"
"Hunoit depth 5.596 28.743 /.448 mm" Bupoff volume 25.74 14.50 27.24 or "	Maximum flow 4.121 c.m/sec"
Bunoff coefficient 0 163 0 839 0 217	
Maximum flow 0.006 0.008 0.009 c.m/sec	* 81 ADD COMMENT===================================
* 40 HYDROGRAPH Add Runoff "	3 Lines of comment"
4 Add Runoff "	* *************************************
0.009 0.009 0.218 3.989"	Catchment to Inlet #5"
40 HYDROGRAPH Copy to Outflow"	
	40 HYDROGRAPH Start - New Tributary"
* 40 HYDROGRAPH Combine 5"	2 Start - New Intbutary"
6 Combine "	* 33 CATCHNENT 202*
5 Node #"	1 Triangular SCS"
u/s of HWY 7&8'	 fillingial beoth figual length
Maximum flow 3.997 c.m/sec"	* 1 SCS method"
Hydrograph volume 15192.235 c.m"	222 Rear yards from Hamilton Heights Subdivision"
0.009 0.009 3.997"	5.000 % Impervious"
40 HYDROGRAPH START - New Fributary"	1.080 Total Area"
	2.000 Flow length
33 CATCHMENT 221"	1 1 0 6 Parvious Anas
1 Triangular SCS	20.000 Pervious length"
1 Equallength"	3.000 Pervious slope"
1 SCS method"	• 0.054 Impervious Area"
221 Proposed ROW from Hamilton Road	20.000 Impervious length"
81,500 % Impervious"	3.000 Impervious slope"
0.810 IOTAL AFEA"	0.250 Pervious Manning 'n'"
2 000 Overland Slope	- 76.000 Pervious SCS Curve No."
0.150 Pervious Area"	0.100 Pervious Tails coefficient*
40.000 Pervious length"	* 8.021 Pervious Initial abstraction"
2,000 Pervious slope '	0.015 Impervious Manning 'n'*
0.660 Impervious Area"	98.000 Impervious SCS Curve No."
40.000 Impervious length"	0.841 Impervious Runoff coefficient
2.000 Impervious slope	0.100 Impervious Ia/S coefficient"
76.000 Pervious SCS Curve No."	0.518 Impervious Initial abstraction
0.189 Pervious Runoff coefficient"	Catchment 222 Pervisus Imnervisus Intel Area
• 0.100 Pervious Ia/S coefficient"	Surface Area 1.026 0.054 1.080 hectare"
8.021 Pervious Initial abstraction"	Time of concentration 17.458 1.534 14.432 minutes"
0.015 Impervious Manning 'n'"	Time to Centroid 124.332 90.156 117.837 minutes"
98.000 Impervious SCS Curve No."	Rainfall depth 34.259 34.259 mm"
- 0.839 Impervious Hunott coetticient"	Rainfall volume 351.49 18.50 369.99 c.m"
0.518 Impervious ta/s coerrictent	- Hainfall Losses 27.800 5.451 25.563 mm ⁻
0.137 0.000 0.099 3.997 c.m/sec	= Bunoff volume 66.27 15 55 81.82 c.m™
Catchment 221 Pervious Impervious Total Area "	Runoff Coefficient 0.189 0.841 0.221 "
Surface Area 0.150 0.660 0.810 hectare"	Maximum flow 0.021 0.012 0.024 c.m/sec"
Time of concentration 29.884 2.626 3.950 minutes	* 40 HYDROGRAPH Add Runoff *
Time to Centroid 139.679 91.908 94.229 minutes"	4 Add Runoff "
Haintali depth 34.259 34.259 34.259 mm"	0.024 0.024 0.137 4.121"
Rainfall Jusepe 27 793 5 525 0 645 mm"	- 40 HYDHOGHAPH Copy to Outflow"
Runoff depth 6.465 28.734 24.614 mm"	0 024 0 024 0 024 4 121"
Runoff volume 9.69 189.68 199.37 c.m*	40 HYDROGRAPH Combine 5"
Runoff coefficient 0.189 0.839 0.718 *	6 Combine "
Maximum flow 0.002 0.137 0.137 c.m/sec"	* 5 Node #"
40 HYDRUGRAPH Add Runoff	u/s of HWY 7&8"
4 AGG KUNOTT "	Maximum flow 4.138 c.m/sec"

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Printed	at 15:38 on 18 Dec 2018	. oge ze	Printed at 15:38 on 18 Dec 2018
N	0.024 0.024 0.024 4.138"		 7 Lines of comment"
* 81	ADD COMMENT===================================		•
	3 Lines of comment"		
×.	Badenview Developments Inc. lands"		* ** PROPOSED SWM POND DESTGN ***
			* ** ***
• 40	HYDROGRAPH Start - New Tributary		• • • • • • • • • • • • • • • • • • • •
	2 Start - New Tributary"		
• 33	CATCHMENT 224"		34 FOND LESIGN 11.817 Current peak flow c.m/sec"
	1 Triangular SCS*		4.094 Target outflow c.m/sec"
	1 Equal length"		26596.4 Hydrograph volume c.m"
÷.	1 SCS method" 224 Badeouiew lande"		36. Number of stages"
	65.000 % Impervious"		334,350 Malfillium water level metre"
	43.200 Total Area"		 334.550 Starting water level metre"
	90.000 Flow length"		0 Keep Design Data: 1 = True; 0 = False"
2	1.000 Overland Slope"		Level Discharge Volume"
	0.000 Pervious lenath"		334,550 0,000 0167,000"
	1.000 Pervious slope"		* 334.700 0.02830 3607.000*
*	36.720 Impervious Area"		334.800 0.06350 6090.000*
÷ .	90.000 Impervious lengt"		334,900 0,08900 8636,000
	1.000 Impervious Stope" 0.250 Pervious Manino "n'"		- 335.000 0.1880 11246.00*
	76.000 Pervious SCS Curve No."		335.200 0.5360 16658.00"
	0.189 Pervious Runoff coefficient"		335.300 0.7599 19459.00"
	0.100 Pervious Ia/S coefficient"		335.400 1.011 22323.00°
	6.021 PERVIOUS INITIAL ADSTRACTION" 0.015 Impervious Manning 'n'"		" 335.500 1.286 25249.00" " 335.600 1.583 28230.00"
	98,000 Impervious SCS Curve No."		335.700 1.901 31294.00"
	0.851 Impervious Runoff coefficient"		• 335.800 2.238 34414.00°
	0.100 Impervious Ia/S coefficient"		* 335.900 2.593 37599.00*
2	U.518 Impervious Initial abstraction"		336.000 2.966 40851.00°
	Catchment 224 Pervious Inpervious Total Area		336.200 3.959 46848.00"
	Surface Area 6.480 36.720 43.200 hectare"		* 336.300 4.543 50286.00"
÷	Time of concentration 59,850 5.259 7.315 minutes		336.400 5.171 53779.00"
	lime to Centrold 1/6./00 95.913 98.956 minutes" Rainfall denth 34.259 34.259 34.259 mm ²		336.500 5.840 57328.00°
	Rainfail volume 0.2220 1.2580 1.4800 ha-m*		336.700 7.284 64595.00*
	Rainfall losses 27.793 5.108 8.511 mm"		* 336.800 8.055 68313.00"
2	Runoff depth 6.465 29,150 25,748 mm"		336.900 8.858 72088.00"
	RUNDIT VOLUME 0.0419 1.0704 1.1123 Na-m" Runoff coefficient 0.189 0.851 0.752 "		- 337.000 9.690 75920.00°
đ.	Maximum flow 0.058 7.672 7.678 c.m/sec"		337.200 11.437 83755.00"
* 40	HYDROGRAPH Add Runoff "		* 337.300 12.351 87759.00*
	4 Add Hunoff *		337.400 13.291 91821.00"
* 40	1.678 1.678 0.024 4.138 ⁻ HYDBOGRAPH Copy to Outflow"		- 337.500 14.255 55940.00*
	8 Copy to Outflow"		337.600 16.027 100118.0"
	7.678 7.678 7.678 4.138		• 337.700 20.027 104352.0°
40	HYDROGRAPH Combine 5"		337.600 25.280 108643.0°
	5 Node #"		" Saf.850 28.277 110810.0" " Perkoutflow 0.627 c.m/sec"
	u/s of HWY 7&8"	1	Maximum level 335.241 metre"
	Maximum flow 11.817 c.m/sec*		* Maximum storage 17799.023 c.m*
	Hydrograph volume 26596.412 c.m"		Centroidal lag 17.720 hours
• 40	/.0/8 /.0/8 /.0/8 11.81/" HYDROGRAPH Confluence 5"		" (.5/8 11.817 0.627 0.000 c.m/sec" *40 HVDRORAPH Compine 12"
	7 Confluence "		6 Combine "
•	5 Node #*		12 Node #*
<u>.</u>	u/s of HWY 7&8"		d/s of Proposed SWMF"
	Maximum filow 11.81/ C.M/SéC" Hydrograph yolume 26596 412 c.m"		MAXIMUM TLOW U.627 C.m/SeC"
	7.678 11.817 7.678 0.000"		7.678 11.817 0.627 0.627"

	at 15:38 on 18 Dec 2018	Printed	1 at 15:38 on 18 Dec 2018	Page 26
81	ADD COMMENT===================================		0.004 Derviews Tritical statestations	
	3 Lines of comment"		0.015 Impervious Manning 'n'"	
	*********		98.000 Impervious SCS Curve No."	
	Catchments to Inlet #6"		0.844 Impervious Runoff coefficient"	
40			0.100 Impervious Ia/S coefficient"	
40	nibhounarn stait - New Fributary" 2 Start - New Tributary"	÷.	0.518 Impervious Initial abstraction [®]	
1 C	7.678 0.000 0.627 0.627"		Catchment 261 Pervious Impervious Total Area *	
33	CATCHMENT 260"		Surface Area 1.598 0.752 2.350 hectare"	
3	1 Triangular SCS"	•	Time of concentration 31.953 6.675 14.813 minutes"	
	3 Specity values"		Time to Centroid 142.248 98.096 112.311 minutes"	
	1 SUS MECHOD 260 Hamilton Heights Subdivision"	<u></u>	Rainfall depth 34.259 34.259 34.259 mm"	
1	46.000 % Impervious"	÷	Rainfall losses 27 796 5 336 20 609 mm*	
	8.160 Total Area"	×	Bunoff depth 6,462 28,922 13,650 mm"	
	50.000 Flow length"		Runoff volume 103.27 217.50 320.77 c.m"	
	1.000 Overland Slope"	•	Runoff coefficient 0.189 0.844 0.398	
	4.400 Pervious legath"		Maximum flow 0.022 0.159 0.164 c.m/sec"	
3	3.000 Pervious slope"	40	A Add Runott	
	3.754 Impervious Area"		0.164 0.937 0.627 0.627*	
•	232.000 Impervious length"	* 40	HYDROGRAPH Copy to Outflow"	
5	1.500 Impervious slope"	•	8 Copy to Outflow	
	0.250 Pervious Manning 'n'"		0.164 0.937 0.937 0.627"	
	0.189 Pervious Bunoff coefficient"	40	HYDROGRAPH COMDINE 12"	
	0.100 Pervious Ia/S coefficient"		12 Node #*	
	8.021 Pervious Initial abstraction"		d/s of Proposed SWMF"	
2	0.015 Impervious Manning 'n'	•	Maximum flow 0.997 c.m/sec*	
8	98.000 Impervious SCS Curve No."	÷	Hydrograph volume 21281.508 c.m"	
	0.100 Impervious Tailor, coefficient"	÷ 40	0.164 0.937 0.937 0.997" HVDPOCDARH Stort New Tributary"	
•	0.518 Impervious Initial abstraction"	+ +0	2 Start - New Tributary	
•	0.773 0.000 0.627 0.627 c.m/sec*		0.164 0.000 0.937 0.997"	
	Catchment 260 Pervious Impervious Total Area *	* 33	CATCHMENT 225"	
	Surrace Area 4.406 3.754 8.160 hectare		1 Triangular SCS"	
ê	Time to Centroid 140.138 100.395 108.595 minutes*		1 CQUAL Length	
	Rainfall depth 34.259 34.259 mm*		225 HWY 7/8 and north ditching"	
	Rainfall volume 1509.57 1285.93 2795.50 c.m*		30.000 % Impervious"	
	Haintail losses 27,793 5.063 17.337 mm*		1.670 Total Area	
8	Runoff volume 284.89 1095.88 1380 76 c m*	÷	75.000 Flow Length"	
0	Runoff coefficient 0.189 0.852 0.494 "		1.169 Pervious Area"	
<u>.</u>	Maximum flow 0.065 0.758 0.773 c.m/sec*		75.000 Pervious length"	
40	HYDROGRAPH Add Runoff "		2.000 Pervious slope"	
÷	4 Add Runott *	÷	0.501 Impervious Area"	
33	CATCHIENT 261"	<u> </u>	/5.000 Impervious length"	
9	1 Triangular SCS"	× .	0.250 Pervious Manning 'n'"	
£	3 Specify values"	<u>.</u>	74.000 Pervious SCS Curve No."	
	1 SCS method"	•	0.163 Pervious Runoff coefficient"	
	251 Klassen Bronze Property" 32 000 & Terpaniaus		0.100 Pervious Ia/S coefficient	
8	2.350 Total Area"		8.924 Pervious Initial abstraction"	
• S	100.000 Flow length*		98.000 Impervious SCS Curve No."	
2	2.500 Overland Slope*		0.838 Impervious Runoff coefficient"	
6	1.598 Pervious Area"	*	0.100 Impervious Ia/S coefficient"	
	50.000 Pervious length*	÷	0.518 Impervious Initial abstraction"	
0	2.500 retrividus stope	÷	U.104 0.000 0.937 0.997 c.m/sec"	
	164.000 Impervious length*	*	Surface Area 1.169 0.501 1.670 hectare"	
	1.500 Impervious slope"		Time of concentration 47.775 3.829 17.575 minutes"	
	0.050 Demoisure Managine (1-1)		Time to Controld 161 054 03 927 114 956 minutoo	
ŝ.	0.250 Pervious Manning 'N'	114	Time to delitiond 101.034 33:027 114:030 MILIDIES	
	76.000 Pervious SCS Curve No."	1	Rainfall depth 34.259 34.259 34.259 mm"	

Printee	d at 15:38 on 18 Dec 2018	0-104_POSt-00	zynout	100			Fage 21
•	Runoff depth	5.600	28.708	12.533	mm "		
	Runoff volume	65.47	143.83	209.29	C.M"		
2	Runoff coefficient	0.163	0.838	0.366	0 7/000*		
• 40	HYDROGRAPH Add Runof	f "	0,103	0.104	C.11/Sec		
•	4 Add Runoff "						
•	0.104 0.	104 0.93	0.997	н			
- 40	HYDROGRAPH Copy to 0	utflow"					
	0.104 0.	104 0.10	4 0.997				
• 40	HYDROGRAPH Combine	12"					
	6 Combine "						
	12 Node #"	MALER					
	Maximum flow	1.	101 c.m/	sec"			
-	Hydrograph volume	21490.	803 c.m"				
•	0.104 0.	104 0.10	4 1.101				
81	ADD COMMENT========				"		
	5 LITES OF COUNDERL	********	*******	********	*****		
2	Western catchment al	ong Hamilton	Road, dive	rted to In	let #6"		
• 40	**************************************	ew Tributary	**********	********	*****		
	2 Start - New Tribu	tarv"					
•	0.104 0.	000 0.10	4 1.101				
33	CATCHMENT 270"						
2	 IFIANGULAR SUS* Specify values* 						
	1 SCS method"						
•	270 Industrial/Reside	ntial area a	long Hamilt	on Road"			
	55.000 % Impervious"						
	45 000 Flow length"						
10	2.000 Overland Slope"						
	3.802 Pervious Area"						
3	30.000 Pervious length"						
	4 648 Impervious Area"						
	235.000 Impervious length					\$F	
•	1.500 Impervious slope"						
	0.250 Pervious Manning	'n'"					
	0 189 Pervious SUS Curv	e No.					
	0.100 Pervious Ia/S coe	fficient"					
•	8.021 Pervious Initial	abstraction"					
	0.015 Impervious Mannin	g 'n'"					
-	0 852 Impervious Sucoff	coefficient					
3	0.100 Impervious Ia/S c	oefficient"					
•)	0.518 Impervious Initia	l abstractio	n"				
	0.959 0.	000 0.10	4 1.101	c.m/sec"			
	Sucface Area	9 BO2	1mperviou 4 648	S IOTAL AP	ea " bectace"		
	Time of concentratio	n 22.267	8.282	10,425	minutes"		
5	Time to Centroid	130,295	100,493	105.060	minutes"		
2	Rainfall depth	34.259	34.259	34.259	mm"		
	Rainfall losses	1302,68	1592.17	2894.85	C.M." mm"		
	Runoff depth	6.458	29.193	18,962	៣៣ "		
	Runoff volume	245.56	1356.75	1602.31	с.т"		
•	Runoff coefficient	0.189	0.852	0.554			
• ⊿∩	MAXIMUM TIOW	0.069	0.936	0.959	c.m/sec"		
0	4 Add Runoff "	1					
	0.050 0	959 0.10	4 1.101	n			
•	0.939 0.						

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•		1.560	Overflow threshold			
2		1.000	Required diverted	fraction"		
3		0	Conduit type; 1=Pi	pe;2=Channel"		
5		Pe	eak of diverted flow	0.000	c.m/sec"	
			NOUDOE OUSpryl	.0w 0.000	C . III	
		Ma	ior flow at 6"			
			0.959 0.9	0.959	1.101 c.m/se	c*
٠	40	HY	DROGRAPH Combine	9*		
5		6	Combine "			
\$		9	Node #"			
3			NODE B"	0.050	(1	
		Ma	drograph volume	1602 305	c_m/sec	
;		113	0.959 0.9	0.959	0.959*	
÷	40	HY	DROGRAPH Start - Ne	w Tributary"	01000	
		2	Start - New Tribut	ary"		
1			0.959 0.0	00 0.959	0.959"	
*	47	FI	LEI_O Read/Open DIV	'00006.002hyd"		
3		1	1=read/open; 2=wri	te/save"		
		2	1=raintail; 2=nydr	ograph" 	upotion	
		'n	V00006.002bvd*	, 3-00tilow, 4-j	unction	
		Ma	aior flow at 6"			
		To	tal volume	0.000	C.m"	
•		Ma	aximum flow	0,000	c.m/sec"	
1			0.000 0.000	0.959 0.	959 c.m/sec"	
3	40	H	DROGRAPH Add Runoff			
		4		00 0 959	0 959"	
	40	н	DROGRAPH Copy to OL	itflow"	0.909	
٠		8	Copy to Outflow"			
			0.000 0.0	000.000	0.959"	
÷	40	H	DROGRAPH Combine	12"		
0		6	Combine "			
÷		12	Node #" d/s of Proposed SW	\$.4 ⊑ "		
		Ma	aximum flow	1.101	C.M/SEC"	
		Hy	/drograph volume	21490.801	C.M"	
•			0.000 0.0	000.00	1.101"	
•	40	H	/DROGRAPH Confluer	ice 12"		
2		7	Confluence "			
2		12	NOGE #" d/e of Proposed SW	\$.4⊑"		
		Ma	aximum flow	1,101	c.m/sec"	
5		Hy	/drograph volume	21490.801	C.M"	
1			0.000 1.1	01 0.000	0.000"	
8	54	PC	OND DESIGN"			
		1.101	Current peak tiow	c.m/sec"		
		21490 8	Hydrograph volume	c.m/sec		
		£1430.0	Number of stages"	0.1		
		334.290	Minimum water leve	1 metre"		
*		337.000	Maximum water leve	1 metre"		
1		334.290	Starting water lev	el metre"		
ĩ		0	Keep Design Data:	1 = True; 0 = Fa	LISE"	
			334 290 0 000	0 000 "		
٠			334.500 0.2540	5.000"		
٠			335.000 1.303	110.000"		
٠			335.500 2.800	674.000"		
ŝ			336.000 4.639	1910.000"		
ŝ			336.500 6.480	3/48.000"		
			337 000 23 494	6569 000"		
		Pe	ak outflow	0.960	c.m/sec"	
٠		Ma	aximum level	334.869	metre"	

Q:\3489 Printed	36\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Page 29 at 15:38 on 18 Dec 2018	Q:1348 Printed	96\104\SWM\MIDUSS\Posti34896-104_Post-002yr.out J at 15:38 on 18 Dec 2018	Page 30
8	Maximum storage 82.525 c.m [*]		Maximum flow 0.013 0.038 0.044 c.m/sec*	
	Centroidal lag 8.127 hours	* 40	HYDROGRAPH Add Runoff *	
* 40	0.000 1.101 0.960 0.000 c.m/sec" HYDENGBARN Next link "	1	4 Add Runoff "	
*	5 Next link *	• 54	0.044 0.044 0.960 0.960" POND DESIGN"	
•	0.000 0.960 0.960 0.000*		0.044 Current peak flow c.m/sec"	
56	DIVERSION"	5	0.070 Target outflow c.m/sec"	
*	7 Node number* 7.170 Overflow threshold"	<u> </u>	93.9 Hydrograph volume c.m"	
•	1.000 Required diverted fraction*		0.000 Minimum water level metre"	
5	O Conduit type; 1=Pipe;2=Channel	2	0.750 Maximum water level metre"	
	Peak of diverted flow 0.000 c.m/sec"		0.000 Starting water level metre"	
	DIVODOD: DO2bud" 0.000 C.m"	÷	0 Keep Design Data: 1 = True; 0 = False"	
•	Major flow at 7"			
	0.000 0.960 0.960 0.000 c.m/sec"	8	0.1500 0.00400 1.000"	
40	HYDROGRAPH Combine 8"	1	0.2500 0.00600 8.000"	
	8 Nade #*		0.3500 0.00700 29,000"	
•	NODE A"	1	0.6500 0.01000 178.000"	
	Maximum flow 0.960 c.m/sec"		0,7000 0,1060 208.000°	
	Hydrograph volume 21484.318 c.m"		0.7500 0.2810 240.000"	
. 81	ADD COMMENT===================================		Peak outflow 0.007 c.m/sec"	
	3 Lines of comment"		Maximum storage 45.378 c.m"	
*	******		Centroidal lag 2.925 hours"	
2	Catchments South of Hwy 7/8		0.044 0.044 0.007 0.960 c.m/sec*	
• 40	HYDROGRAPH Start - New Tributary"	40	HYDROGHAPH COMDINE 9" 6 Combine "	
*	2 Start - New Tributary"		9 Node #"	
*	0.000 0.000 0.960 0.960*		NODE B"	
- 33	CATCHMENT 280°		Maximum flow 0.965 c.m/sec"	
	3 Specify values*	÷	Hydrograph volume 1696.155 c.m"	
*	1 SCS method"	• 40	HYDROGRAPH Start - New Tributary"	
3	280 Northeast portion of Maple Leaf Foods property"		2 Start - New Tributary"	
2	26.000 % Impervious"		0.044 0.000 0.007 0.965"	
•	45.000 Flow length*	- 33	CAICHMENI 281" 1. Triangular SCS"	
5	1.500 Overland Slope"	÷ .	3 Specify values"	
2	0.518 Pervious Area	*	1 SCS method"	
	20.000 Pervious length" 2.000 Pervious slops"	- i	281 Western portion of John Bear property"	
•	0.182 Impervious Area"	3	93.000 % 1@pervious" 1.870 Total Area"	
•	68.000 Impervious length"		120.000 Flow length"	
5	1.000 Impervious slope"		1.000 Overland Slope"	
*	U.250 Pervious Manning 'n'' 79 DOD - Pervious SCS Curve No "	÷.	0.131 Pervious Area"	
•	0.232 Pervious Runoff coefficient"		2.000 Pervious slope"	
š –	0.100 Pervious Ia/S coefficient"	2	1.739 Impervious Area"	
	6.752 Pervious Initial abstraction"		112.000 Impervious length"	
	U.U.S IMPERVIOUS MANNING 'N'' 98.000 IMPERVIOUS CLUDVO NO "	- C	1.000 Impervious slope"	
•	0.845 Impervious Runoff coefficient"		65.000 Pervious SCS Curve No."	
	0.100 Impervious Ia/S coefficient"		0.079 Pervious Runoff coefficient"	
2	0.518 Impervious Initial abstraction"		0.100 Pervious Ia/S coefficient"	
	Catchment 280 Pervious Tonervious Total Area "		13.6// Pervious Initial abstraction" 0.015 Impervious Manning (n)"	
	Surface Area 0.518 0.182 0.700 hectare*		98.000 Impervious SCS Curve No."	
*	Time of concentration 17.462 4.445 10.159 minutes		0.849 Impervious Runoff coefficient"	
	Time to Centroid 123,464 94,734 107,546 minutes" Baiofall doubh 24,050 04,050 04,050	:	0.100 Impervious Ia/S coefficient"	
	nalniali ueptni 34.259 34.259 34.259 mm" Rainfall volume 177 46 62.35 230.91 c.m"		0.518 Impervious Initial abstraction"	
•	Rainfall losses 26.301 5.315 20.845 mm"		Catchment 281 Pervious Impervious Total Area	
2	Runoff depth 7.957 28.943 13.414 mm*		Surface Area 0.131 1.739 1.870 hectare"	
	Runoff volume 41.22 52.68 93.90 c.m" Runoff coefficience 0.322 0.45 0.022		Time of concentration 32.274 5.996 6.178 minutes"	
	Nonon Coefficient 0.232 0.645 0.332	55.	μημε το Gentroid 146.000 97.011 97.350 minutes"	

Q:\348 Printe	96/104/SWM/MIDUSS/Post/34896-104_Post-002yr.out I at 15:38 on 18 Dec 2018	Page 31	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-002yr.out Page 32 Printed at 15:38 on 18 Dec 2018
	Rainfall depth 34.259 34.259 34.259 mm"		" 0.174 0.000 0.128 1.080 c.m/sec"
	Rainfall volume 44.84 595.79 640.64 c.m		Catchment 282 Pervious Impervious Total Area "
	Rainfall losses 31.568 5.172 7.020 mm"		Surface Area 0.375 0.835 1.210 hectare"
	Runoff depth 2.690 29.086 27.239 mm"		Time of concentration 36.449 4.271 5.564 minutes"
	Runoff volume 3.52 505.84 509.36 c.m*		Time to Centroid 150.621 94.478 96.733 minutes"
÷	Ruboff coefficient 0.079 0.849 0.795		Rainfall depth 34.259 34.259 mm"
* 40	Waximum Liow 0.001 0.372 0.372 C.m/Sec		A A A A A A A A A A A A A A A A A A A
			" Bunoff depth 2.691 28.896 20.773 mm"
	0.372 0.372 0.007 0.965"		Runoff volume 10.10 241.25 251.35 c.m"
* 54	POND DESIGN"		Runoff coefficient 0.079 0.843 0.606 "
	0.372 Current peak flow c.m/sec"		Maximum flow 0.002 0.174 0.174 c.m/sec"
	0.070 Target outflow c.m/sec"		* 40 HYDROGRAPH Add Runoff *
•	509.4 Hydrograph volume c.m"		4 Add Runoff "
<u>.</u>	7. Number of stages"		0.174 0.174 0.128 1.080*
- C	0.000 Minimum water level metre"		54 POND DESIGN"
	1.800 Maximum water level metre		0.174 Current peak ribbw c.m/sec
÷.	0.000 Starting water level metre		
¥.	level Discharge Volume"		5. Number of stanes"
	0.000 0.000 0.000*		0.000 Minimum water level metre"
	0.3000 0.09000 8.000"		* 1.400 Maximum water level metre"
. A.	0.6000 0.1200 97.000"		• 0.000 Starting water level metre"
	0.9000 0.1300 167.000"		0 Keep Design Data: 1 = True; 0 = False"
	1.200 0.1400 254.000"		Level Discharge Volume"
÷.	1.500 0.1500 358.000"		
- Q:	1.500 1.000 400.000" Peak outflow		0.2500 0.06600 333.000"
	Maximum level 0.845 metre"		1.300 0.08700 371.000"
1.0	Maximum storage 154.133 c.m"		1.400 0.5000 400.000"
	Centroidal lag 1.797 hours"		* Peak outflow 0.023 c.m/sec*
	0.372 0.372 0.128 0.965 c.m/sec"		Maximum level 0.173 metre"
40	HYDROGRAPH Combine 9"		Maximum storage 148.884 c.m"
÷.	5 Combine "		Centroidal Lag 3.395 hours"
2			40 HVDD0284PH Combine 0
1	Nobe State 1 080 c.m/sec*		6 Combine "
	Hydrograph volume 2204,880 c.m"		9 Node #*
•	0.372 0.372 0.128 1.080"		NODE B"
* 40	HYDROGRAPH Start - New Tributary"		Maximum flow 1.093 c.m/sec"
	2 Start - New Tributary"		Hydrograph volume 2456.226 c.m"
	0.372 0.000 0.128 1.080"		0.174 0.174 0.023 1.093"
. 33			2 Start - New Tributary
	3 Specify values"		0.174 0.000 0.023 1.093"
15	1 SCS method"		* 33 CATCHMENT 283"
	282 Eastern portion of John Bear property"		1 Triangular SCS"
	69.000 % Impervious"		3 Specify values
	1.210 Total Area"		1 SCS method"
÷.	60.000 Flow length*		283 Area along western tributary, south of Hwy 7/8"
÷.	2.500 Overland Stope"		29,000 Total Argan
÷.	30.000 Pervious Jeanth		160.00 Flow length"
5 4 5	3.000 Pervious slope"		2.000 Overland Slope"
	0.835 Impervious Area"		16.536 Pervious Area"
	90.000 Impervious length"		150.000 Pervious length
	2.000 Impervious slope"		* 2.200 Pervious slope"
	0.250 Pervious Manning 'n'"		6.754 Impervious Area
÷.	65.000 Pervious SCS Curve No."		394.000 Impervious length"
1	U.U/9 PERVIOUS MUNOTT COETTICIENT"		- 2.000 Impervious slope
	0.100 relations tails coefficient		68.300 Pervisits SCS Curve No."
	0.015 Impervious Maning 'n'*		0.105 Pervious Runoff coefficient"
•	98.000 Impervious SCS Curve No."		0.100 Pervious Ia/S coefficient"
	0.843 Impervious Runoff coefficient"		* 11.789 Pervious Initial abstraction*
٠	0.100 Impervious Ia/S coefficient"		0.015 Impervious Manning 'n'"
	0.518 Impervious Initial abstraction"		98.000 Impervious SCS Curve No."

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0.850 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"	 8.924 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"
0.518 Impervious Initial abstraction"	98.000 Impervious SCS Curve No."
1.058 0.000 0.023 1.093 c.m/sec"	0.837 Impervious Runoff coefficient"
Surface Area 16.536 6.754 23.290 bectare"	- 0.100 Impervious 1a/s coeticient" 0.518 Immervious Thital abstraction"
Time of concentration 91.656 10.359 29.232 minutes"	0.030 0.000 0.960 3.047 c.m/sec"
Time to Centroid 209.842 103.557 128.230 minutes"	Catchment 284 Pervious Impervious Total Area "
"HainTall Gepth 34.259 34.259 mm" Bainfall volume 5664 06 2313.86 707.82 cm"	Surface Area 2.891 0.059 2.950 hectare"
Rainfall Losses 30.662 5.132 23.258 mm"	Time to Centroid 15.989 93.332 150.059 minutes"
Runoff depth 3.597 29.127 11.000 mm"	* Rainfall depth 34.259 34.259 mm*
 Hunoff volume 594,75 1967.26 2562.01 c.m⁺ Bunoff coefficient 0.105 0.850 0.331 " 	Rainfall volume 990.42 20.21 1010.63 c.m"
Maximum flow 0.060 1.053 1.058 c.m/sec*	Runoff depth 5.600 28.678 6.061 mm"
40 HYDROGRAPH Add Runoff "	* Runoff volume 161.89 16.92 178.81 c.m."
4 Add Runoff "	Runoff coefficient 0.163 0.837 0.177 "
* 40 HYDROGRAPH Copy to Outflow"	* MAXIMUM TLOW 0.029 0.012 0.030 C.m/sec*
8 Copy to Outflow"	4 Add Runoff "
1.058 1.058 1.093"	• 0.030 0.030 0.960 3.047°
40 HYDHOGKAPH COMDINE 9" 6 Combine "	40 HYDROGRAPH Copy to Outflow"
9 Node #*	0,030 0,030 0,030 3,047"
NODE B"	40 HYDROGRAPH Combine 9"
Maximum flow 2.149 c.m/sec*	6 Combine "
- Hydrograph Volume 5018.236 c.m- 1.058 1.058 2.140	9 Node #" Node B"
* 40 HYDROGRAPH Confluence 8"	Maximum flow 3.063 c.m/sec"
7 Confluence "	• Hydrograph volume 26681.346 c.m"
- 8 Node #"	* 0.030 0.030 0.030 3.053* * 40 HVDP0CRDHL COCELUPORO 0*
Maximum flow 0.960 c.m/sec"	Confluence "
Hydrograph volume 21484.318 c.m"	9 Node #"
- 1.058 0.960 1.058 0.000" *40 HYDROGRAPH Conv to Unition"	NODE B"
8 Copy to Outflow"	MacAndin Luw 5:05 c.m/s
1.058 0.960 0.960 0.000"	0.030 3.063 0.030 0.000"
40 HYDHOGHAPH COMDINE 9"	* 40 HYDROGRAPH Copy to Outflow"
9 Node #"	- 0.030 3.063 3.063 0.000"
NODE B"	40 HYDROGRAPH Combine 10"
Maximum flow 3.047 c.m./sec*	6 Combine "
	10 Node #" Node C
* 40 HYDROGRAPH Start - New Tributary"	Maximum flow 3.063 c.m/sec"
2 Start - New Tributary"	Hydrograph volume 26681.344 c.m"
- 1.055 0.000 0.960 3.047" * 33 CATCHMENT 284"	" 0.030 3.063 3.063 3.063 "
1 Triangular SCS*	2 Start - New Tributary"
1 Equal length"	0.030 0.000 3.063 3.063 ^u
 1 SUS method* 284 Agricultural lands south of Blooms Bood* 	33 CATCHMENT 285"
2.000 % Impervious"	Specify values"
2.950 Total Area"	1 SCS method"
80.000 Flow length"	285 Morningside Retirement Community lands"
2.891 Pervious Area"	18.700 Total Area"
80.000 Pervious length"	190.000 Flow length"
- 3.100 Pervious slope" 0.059 Impervious Area"	2.000 Overland Slope"
80.000 Impervious length"	 7.000 Pervious length* 25.000 Pervious length*
3.100 Impervious slope"	2.500 Pervious slope"
0.250 Pervious Manning 'n' 74 000 Pervious Ref. Cuput No *	10.892 Impervious Area"
0.163 Pervious Runoff coefficient*	 - 394.000 impervious length" 2.500 impervious slope"
0.100 Pervious Ia/S coefficient"	0.250 Pervious Manning 'n'"

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*	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'"		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"
	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 "		Rainfall depth 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
-	Surface Area 7.888 10.892 18.780 hectare" Time of concentration 35.504 9.086 10.656 minutes" Time to Centroid 149.958 101.609 104.484 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"		Maximum flow 0.035 0.000 0.035 c.m/sec" 40 HYDROGRAPH Add Runoff " 4
40	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" HYDROGRAPH Add Runoff " 4 Add Runoff "		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"
40 40	1.883 1.883 3.063 3.063" HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 1.883 1.883 3.063" HYDROGRAPH Combine 10" 6 Combine 10		Hydrograph volume 226.970 c.m" 0.035 0.035 0.035" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.035 0.035 0.035 0.035 33 CATCHMENT 251"
81	10 Node #" NODE C" Maximum flow 4.946 c.m/sec" Hydrograph volume 30055.555 c.m" 1.883 1.883 4.946" ADD COMMENTS		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"
40	3 Lines of comment" Catchments north of Hwy 7/8, towards Eastern Tributary" HYDROGRAPH Start - New Tributary"		100.000 Flow length" 2.000 Overland Slope" 3.866 Pervious Area" 100.000 Pervious length" 2.000 Pervious slope"
33	2 Start - New Fribulary* 1.883 0.00 1.883 4.946* CATCHMENT 250* 1 Triangular SCS* 3 Specify values* 1 SCS method*		 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"
	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"		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"
	100.000 Pervious length" 2.000 Pervious slope" 0.000 Impervious Area" 296.000 Impervious length" 2.000 Impervious length"		0.518 Impervious Initial abstraction" 0.343 0.000 0.035 0.035 c.m/sec" Catchment 251 Pervious Intervious Total Area " Surface Area 3.866 1.904 5.770 hectare" Time of concentration 51.786 8.726 22.087 minutes"
	0.250 Fervious 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'"		Imme to Gentrold 165.741 101.065 121.444 minutes" Rainfall depth 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"
÷	98.000 Impervious SCS Curve No." 0.000 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"		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 "

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* 40	0.343 0.343 0.035 0.035" HYDROGRAPH Copy to Outflow"	• 47	FILEI_0 Read/Open DIV00007.002hyd" 1 1=read/open; 2=write/save"
÷	8 Copy to Outflow" 0.343 0.343 0.343 0.035"		2
- 40	HYDHOGHAPH Combine 11" 6 Combine "	1	DIVOOO7.002hyd° Major flow at 7°
÷	11 Node #*		Total volume 0.000 c.mª
÷	U/S OT EAST CULVERT OT HWY 788" Navimum flow	:	Maximum flow 0.000 c.m/sec*
*	Hydrograph volume 1032.575 c.m"	- 40	HYDROGRAPH Add Runoff "
:	0.343 0.343 0.343 0.347"	(4 Add Runoff "
40	HYDHOGRAPH START - New Iributary" 2 Start - New Tributary"	. 40	0,000 0.000 0.033 0.380" HVDPOCRAPH Copy to Outflow"
	0.343 0.000 0.343 0.347"	40	8 Copy to Outflow"
* 33	CATCHMENT 252"	2005	0.000 0.000 0.000 0.380"
÷	1 Triangular SCS"	40	HYDROGRAPH Combine 11
	1 SCS method"		11 Node #"
*	252 Southern portion of Hamburglr lands"	(m) (u/s of east culvert of HWY 7&8"
Ş –	5.000 % Impervious" 2.870 Total Accas"		Maximum flow 0.380 c.m/sec"
Ň.	5.000 Flow Hength		0.000 0.000 0.000 0.380"
*	1.500 Overland Slope"	= 40	HYDROGRAPH Confluence 11"
<u>.</u>	2.726 Pervious Area"		7 Confluence
4	1.500 Pervicus slope"		u/s of east culvert of HWY 788"
*	0.144 Impervious Area"		Maximum flow 0.380 c.m/sec"
<u>.</u>	65.000 Impervious length"		Hydrograph volume 1226.466 c.m"
	0.250 Pervious Manning 'n'"	* 54	POND DESIGN"
¥	74.000 Pervious SCS Curve No."	(a)	0.380 Current peak flow c.m/sec*
-	0.163 Pervious Runoff coefficient"		0.070 Target outflow c.m/sec"
	8.924 Pervious Initial abstraction"		1226.5 Hydrograph volume c.m ⁻ 9. Number of stages"
12	0.015 Impervious Manning 'n'"	• 6	332.660 Minimum water level metre"
	98.000 Impervious SCS Curve No."		336.000 Maximum water level metre"
Ð.	0.000 Impervious Runott Coefficient" 0.100 Impervious Ia/S coefficient"	340	332,660 Starting water level metre" 0 Keen Design Data: 1 = True: 0 = False"
	0.518 Impervious Initial abstraction"		Level Discharge Volume"
:	0.033 0.000 0.343 0.347 c.m/sec*		332.660 0.000 0.000"
	Surface Area 2.726 0.144 2.870 hectare"	(#0)	333.000 0.3010 198.000" 333.500 1.168 1165.000"
	Time of concentration 47.796 3.831 38.454 minutes*		334.000 2.325 2895.000*
	Time to Centroid 161,080 93,830 146,790 minutes"		334.500 3.132 5301.000"
	Rainfall volume 934.06 49.16 983.22 c.m*	190	335.000 3.780 8376.000" 335.500 4.332 12258.00"
÷	Rainfall losses 28.658 5.549 27.503 mm"	(5)	335.750 4.583 14551.00"
÷	Runoff depth 5.600 28.709 6.756 mm [*]	1. A	336.000 21,985 17113.00" Dack sutfile:
	Runoff coefficient 0.163 0.838 0.197 "		Peak outflow 0,251 c.m/sec ⁻ Maximum level 332.944 metre"
8	Maximum flow 0.025 0.029 0.033 c.m/sec"		Maximum storage 165.435 c.m"
40	HYDROGRAPH Add Runoff "		Centroidal lag 2.413 hours"
	0.033 0.033 0.343 0.347"	* 40	HYDROGRAPH Next link "
* 40	HYDROGRAPH Copy to Outflow"		5 Next link *
	8 Copy to Outflow*		0.000 0.251 0.251 0.000"
* 40	HYDROGRAPH Combine 11"	- 38	START/HE-START TOTALS 11" 3 Runoff Totals on FXIT"
•	6 Combine "		Total Catchment area 234,030 hectare*
÷	11 Node #*	•	Total Impervious area 110.433 hectare"
	u/s of east cultert of HWY 748" Maximum flow 0.380 c.m/sec"	" 1Q	Total % impervious 47.187"
8	Hydrograph volume 1226.466 c.m"	13	what
. 40	0.033 0.033 0.033 0.380"		
*	2 Start - New Tributary"		
	0.033 0.000 0.033 0.380"		

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MIDUSS Output	
MIDUSS version Version 2.25 rev. 473*	Bainfall doubt 47 240 47 240 47 240 mm
MIDUSS created Sunday, February 07, 2010"	Rainfall volume 1403.02 0.00 1403.02 c.m"
10 Units used: ie METRIC*	Rainfall losses 29,424 5,418 29,424 mm*
Job folder: Q:\34896\104\SWM\MIDUSS\Post"	* Runoff depth 17.816 41.822 17.816 mm*
Output filename: 34896-104_Post-005yr.out*	"Runoff volume 529.13 0.00 529.13 c.m"
Licensee name: admin	Runoff coefficient 0.377 0.000 0.377
Data & Time last used: 12/17/2018 of 2:5:07 DH	Maximum flow 0.107 0.000 0.107 c.m/sec
81 ADD COMMENT===================================	- 40 HYDRUGHAPH Add Hunott -
7 Lines of comment"	
*******	* 33 CATCHIENT 202"
Wilmot Employment Lands"	1 Triangular SCS"
New Hamburg, Ontario"	1 Equallength"
5 Year Storm Event - Post development"	1 SCS method"
	202 Woodlot - north of GEXR"
	0.000 % Impervious"
* 31 TIME PARAMETERS*	- 2.080 lotal Area*
5.000 Time Step"	2 500 Overlag Slope"
240.000 Max. Storm length"	2.080 Pervious Area"
1500,000 Max. Hydrograph"	80.000 Pervious length"
32 STORM Chicago storm"	* 2.500 Pervious slope"
1 Chicago storm	. 0.000 Impervious Area"
1593.000 Coefficient A	80.000 Impervious length"
11.000 Constant B"	2.500 Impervious slope"
0.400 Eraction B"	0.250 Pervious Manning 'n'"
	70.000 Pervious SCS CUrve No."
1.000 Time step multiplier"	0.193 Pervicus Autori Coefficient"
Maximum intensity 139.250 mm/hr"	10.886 Pervious Initial abstraction"
Total depth 47.240 mm"	0.015 Impervious Manning 'n'"
6 005hyd Hydrograph extension used in this file"	98.000 Impervious SCS Curve No."
81 ADD COMMENT===================================	0.000 Impervious Runoff coefficient"
3 Lines of comment"	0.100 Impervious Ia/S coefficient"
Catchments North of GEVD part of Julat 41%	0.518 Impervious Initial abstraction
	0.041 0.107 0.000 0.000 c.m/sec
33 CATCHMENT 201 "	Surface Area 2.080 0.000 2.080 bectare"
1 Triangular SCS"	Time of concentration 38.094 3.337 38.093 minutes"
1 Equal length"	Time to Centroid 145.176 90.888 145.176 minutes"
1 SCS method"	Rainfall depth 47.240 47.240 mm"
201 Area Northeast of GEXR"	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"
0.500 Overland Slope"	HUNDTT VOLUME 189.20 0.00 189.20 c.m"
2.970 Pervious Area"	
80.000 Pervious length*	40 HYDROGRAPH Add Runoff
 0.500 Pervious slope" 	4 Add Runoff "
0.000 Impervious Area"	0.041 0.147 0.000 0.000"
80.000 Impervious length	* 40 HYDROGRAPH Copy to Outflow"
0.500 Impervious slope"	8 Copy to Outflow"
82.000 Pervious SCS Curve No."	0.041 0.147 0.147 0.000"
0.377 Pervious Runoff coefficient"	40 HIDRUGHAPH COMDINE 1"
0.100 Pervious Ia/S coefficient"	1 Node #"
5.576 Pervious Initial abstraction"	u/s of GEXR"
0.015 Impervious Manning 'n'"	Maximum flow 0.147 c.m/sec
98.000 Impervious SCS Curve No."	Hydrograph volume 718.330 c.m [*]
0.000 Impervious Runoff coefficient"	• 0.041 0.147 0.147 0.147"
- 0.100 Impervious Ta/S coefficient"	40 HYDROGRAPH Start - New Tributary"
	2 Start - New Tributary"
Catchment 201 Pervious Impervious Tatal Acco.*	- 0.041 0.000 0.147 0.147"
Surface Area 2,970 0,000 2,970 hectare"	
Time of concentration 42.921 5.407 42.921 minutes"	• 1 Equal length*

:(34896/104)SWM/MIDUSS(Post/34896-104_Post-005yr.out Page 3 rinted at 15:37 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-005yr.out Printed at 15:37 on 18 Dec 2018	Page 4
1 SCS method*	* 6 Combine "	
203 Pfenning Farm Residential Development"	1 Node #"	
60.000 % Impervious"	u/s of GEXR"	
18.510 Total Area"	Maximum flow 0.406 c.m/sec"	
90.000 Flow length"	Hydrograph Volume 6466.409 c.m."	
7.000 Overland Slope"	40 HVDROGRAPH Confluence 1"	
90.000 Pervious length"	7 Confluence "	
1.000 Pervious slope"	1 Node #"	
11.106 Impervious Area"	u/s of GEXR"	
90.000 Impervious length"	Maximum flow 0.406 c.m/sec	
1.000 Impervious slope"	- Hydrograph Volume 6466.410 c.m."	
76.000 Pervious Maining II 76.000 Pervious SCS Curve No."	40 HYDROGRAPH Copy to Outflow"	
0.320 Pervious Runoff coefficient"	8 Copy to Outflow"	
0.050 Pervious Ia/S coefficient"	• 3.285 0.406 0.406 0.000"	
4.011 Pervious Initial abstraction"	40 HYDROGRAPH Combine 2"	
0.015 Impervious Manning 'n'"	6 Combine 7	
98.000 Impervious SUS curve No."		
0.005 Impervious Ta/S coefficient"	Maximum flow 0.406 c.m/sec"	
0.518 Impervious Initial abstraction"	Hydrograph volume 6466.410 c.m"	
3.285 0.000 0.147 0.147 c.m/sec"	3.285 0.406 0.406 0.406"	
Catchment 203 Pervious Impervious Total Area "	40 HYDROGRAPH Start - New Tributary"	
Surface Area 7,404 11,106 18.510 hectare"	2 Start - New Tributary"	
line of concentration 40.326 4.714 11.052 minutes"	81 ADD COMMENT	
Rainfall denth 47,240 47,240 mm"	3 Lines of comment"	
Rainfall volume 3497.64 5246.46 8744.10 c.m"	• • • • • • • • • • • • • • • • • • • •	
Rainfall losses 32.105 5.539 16.166 mm"	Catchments South of GEXR, part of Inlet #1"	
Runoff depth 15.135 41.700 31.074 mm"	******	
Runoff volume 1120.59 4631.25 5751.81 c.m"	* 33 CATCHMENT 204*	
Munort coefficient 0.320 0.883 0.888 0.888	3 Sperify values"	
40 HYDRGRAPH Add Runoff "	1 SCS method"	
4 Add Runoff "	204 Riverside Brass"	
3.285 3.285 0.147 0.147"	59.000 % Impervious"	
54 POND DESIGN"	2.020 Total Area"	
3.285 CUPPENT Deak TLOW C.m/sec"	1 200 Overland Slope"	
5751.8 Hydrograph volume c.m"	0.828 Pervious Area [*]	
6. Number of stages"	60.000 Pervious length"	
341.500 Minimum water level metre"	2.000 Pervious slope"	
343.600 Maximum water level metre	1.192 Impervious Area"	
341.500 Starting water level metre"	0.500 Impervious length"	
U keep bestign bata: i = inde; u = raise	0.250 Pervisus Manning 'n'"	
341.500 0.000 0.000"	76.000 Pervious SCS Curve No."	
342.000 0.1541 1746.000"	0.272 Pervious Runoff coefficient"	
342.500 0.2669 3784.000"	0.100 Pervious Ia/S coefficient"	
343.000 0.3446 6114.000	8.021 Pervious Initial abstraction"	
343.300 0.3837 7652.000"	0.015 Impervious Manning "	
343.000 2.941 9235.000 1 WEIRS	0.80 Impervious Bunoff coefficient"	
Crest Weir Crest Left Right"	0.100 Impervious Ia/S coefficient"	
elevation coefficie " breadth sideslope sìdeslope"	0.518 Impervious Initial abstraction	
343.300 0.900 10.000 0.000 0.000"	0.362 0.000 0.406 0.406 c.m/sec"	
1. ORIFICES'	Gatchment 204 Pervious Impervious Total Area "	
UNITICE UNITICE VUIDER OUTOF	Surrace Area 0.020 1.192 2.020 NECTATE Time of concentration 28.151 6.758 10.546 minutes"	
341.500 0.630 0.3750 1.000"	Time to Centroid 132.819 95.789 102.346 minutes"	
Peak outflow 0.272 c.m/sec"	Rainfall depth 47.240 47.240 mm"	
Maximum level 342.533 metre"	Rainfall volume 391.24 563.00 954.25 c.m"	
Maximum storage 3938.080 c.m"	Rainfall Losses 34.371 5.681 17.444 mm"	
Centroldal lag 5.270 hours"	- HUNOTT GEPTN 12.809 41.558 29.796 MM"	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.272 0.880 0.631 "	

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5	Maximum flow 0.029 0.355 0.362 c.m/sec"		Bunoff volume 102.88 24.86 127.74 c.m*	
40	HYDROGRAPH Add Runoff "	×	Runoff coefficient 0.193 0.884 0.227 "	
2	4 Add Runott "	ð	Maximum flow 0.012 0.017 0.018 c.m/sec"	
. 54	0.302 0.302 0.406 0.406 POND DESIGN	40	HYDROGRAPH Add Runoff "	
	0.362 Current peak flow c.m/sec"	*	4 Add Hullott - 0.018 0.018 0.019 0.423*	
	0.070 Target outflow c.m/sec*	# 40	HYDROGRAPH Copy to Outflow"	
*2	601.9 Hydrograph volume c.m		8 Copy to Outflow"	
2	4. Number of stages"	*	0.018 0.018 0.018 0.423"	
	0.000 Minimum water Level metre"	* 40	HYDROGRAPH Combine 2"	
	0.000 Starting water level metre"		b compine "	
*	0 Keep Design Data: 1 = True; 0 = False"		INLET 1"	
	Level Discharge Volume"	*	Maximum flow 0.434 c.m/sec"	
5	0.000 0.000 0.000"	×	Hydrograph volume 7174.169 c.m"	
	0.3100 0.03090 782.000"	1	0.018 0.018 0.018 0.434*	
•	0.9100 0.7759 2511 000"	40	HYDROGRAPH Start - New Inibutary	
•	Peak outflow 0.019 c.m/sec"	*	2 Start - New Hildrary 0.018 0.000 0.018 0.434"	
•	Maximum level 0.186 metre*	* 33	CATCHMENT 206*	
•	Maximum storage 470.022 c.m"		1 Triangular SCS"	
	Centroidal lag 8.648 hours"	÷	1 Equal length"	
• 40	U.352 U.352 U.019 U.406 C.m/sec" HVDROGRAPH Combine 2"	2	1 SCS method"	
40	6 Combine "		200 Moustrial properties at end of Hamilton Hoad" 35.000 M. Teneprings"	
*	2 Node #"			
5	INLET 1.		50.000 Flow length"	
	Maximum flow 0.423 c.m/sec"	•	1.000 Overland Slope"	
2	Hydrograph volume 7046.434 c.m"		1.852 Pervious Area"	
5 40	HYDROGRAH Start - New Tributary"	<u> </u>	50,000 Pervious length"	
	2 Start - New Tributary"	*	0.997 Impervious stope	
	0.362 0.000 0.019 0.423"	×	50.000 Impervious length"	
* 33	CATCHMENT 205"		1.000 Impervious slope"	
	i iriangular SCS"		0.250 Pervious Manning 'n'	
	1 SCS method"		76.000 Pervious SCS Curve No."	
	205 Iron Bridge Manufacturing Property - Woodlot"	÷	0.100 Pervious Tals coefficient"	
	5.000 % Impervious"		8.021 Pervious Initial abstraction*	
	1.190 Total Area		0.015 Impervious Manning 'n'	
÷ .	255.000 Flow length"		98.000 Impervious SCS Curve No.	
*	1 131 Pervicus Area*	- <u>0</u>	0.874 Impervious Runoff coefficient"	
5	255.000 Pervious lenath"	÷	0.100 Impervious IA/S coefficient 0.518 Impervious Initial abstraction	
5	1.800 Pervious slope"	*	0.287 0.000 0.018 0.434 c.m/sec"	
	0.060 Impervious Area"		Catchment 206 Pervious Impervious Total Area *	
	255.000 Impervious length"		Surface Area 1.852 0.997 2.850 hectare*	
	1.000 Impervious slope	÷ .	Time of concentration 31.067 3.313 13.491 minutes"	
	70.000 Pervious SCS Curve No."		Line to centrold 135,445 90,849 107.570 minutes" Rainfail denth 47.240 47.240 47.240 mm	
	0.193 Pervious Runoff coefficient*	8	Rainfall volume 875.12 471.22 1346.34 c.m°	
*	0.100 Pervious Ia/S coefficient"		Rainfall losses 34.371 5.968 24.430 mm"	
	10.886 Pervious Initial abstraction"	•	Runoff depth 12,869 41.271 22,810 mm*	
	98.000 Impervious SCS Curve No."	- Ç	Runoff volume 238.39 411.68 650.07 c.m°	
	0.884 Impervious Runoff coefficient"	÷	Nation foe 0.272 0.874 0.453 -	
	0.100 Impervious Ia/S coefficient"	* 40	HYDROGRAPH Add Runoff "	
	0.518 Impervious Initial abstraction"	* -	4 Add Runoff "	
	0.018 0.000 0.019 0.423 c.m/sec*	š	0.287 0.287 0.018 0.434"	
	Carcinnent 205 Pervious Impervious Total Area "	33	CATCHMENT 207	
	Time of concentration 84.280 7.382 69.314 minutes"		I IFIANGULAF SUS"	
	Time to Centroid 199.685 96.665 179.636 minutes"		1 SCS method"	
(*)	Rainfall depth 47.240 47.240 47.240 mm*		207 Woodlot and Wetland east of Pestells"	
2	Rainfall volume 534.05 28.11 562.15 c.m"	•	5.000 % Impervious"	
22	Maintail 105898 38,140 5,458 36,506 mm"		5.920 Total Area"	
	nunori deptin 9.100 41.782 10.734 mm*	-	65.000 FIOW length	
Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-005yr.out Page 7 Printed at 15:37 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-005yr.out Page 8 Printed at 15:37 on 18 Dec 2018			
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3.000 Overland Slope" 5.624 Pervious Area"	0.888 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"			
65.000 Pervious length"	0.518 Impervious Initial abstraction			
* 3.000 Pervious slope"	1.209 0.000 0.390 0.652 c.m/sec"			
0,296 Impervious Area"	Catchment 208 Pervious Impervious Total Area "			
65,000 Impervious length"	Surface Area 1.383 4.148 5.530 hectare"			
0.250 Pervious Manning 'n'"	Time to contenit 126.613 97.690 9.412 minutes"			
70,200 Pervious SCS Curve No."	Rainfall depth 47.240 47.240 47.240 mm ^m			
 0.195 Pervious Runoff coefficient" 	* Rainfall volume 653.09 1959.27 2612.36 c.m"			
• 0,100 Pervious Ia/S coefficient"	Rainfall losses 35.076 5.299 12.744 mm"			
10,782 Pervious Initial abstraction"	Runoff depth 12.164 41.940 34.496 mm"			
98.000 Impervious SCS Curve No."	* Bunoff coefficient 0.257 0.888 0.730 "			
0.871 Impervious Runoff coefficient"	Maximum flow 0.051 1.193 1.209 c.m/sec"			
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "			
0.518 Impervious Initial abstraction"	4 Add Runoff "			
Catchment 207 Pervious Tunervious Talarea "	* 54 POND RESTAM			
Surface Area 5.624 0.296 5.920 hectare"	1,209 Current peak flow c.m/sec"			
* Time of concentration 31.608 2.789 26.117 minutes"	0.070 Target outflow c.m/sec"			
Time to Centroid 137.527 90.032 128.478 minutes"	1907.6 Hydrograph volume c.m"			
Rainfall depth 47.240 47.240 47.240 mm"	9. Number of stages"			
- HAIMAIL VOLUME 2000.77 139.03 2790.00 C.MF Rainfall Joseps 38.034 6.073 36.436 mm*	1 200 Maximum water level metre			
Runoff depth 9.205 41.167 10.804 mm"	0.000 Starting water level metre"			
* Runoff volume 517.72 121.85 639.57 c.m*	0 Keep Design Data: 1 = True; 0 = False"			
Runoff coefficient 0.195 0.871 0.229	Level Discharge Volume"			
Maximum flow 0.127 0.084 0.142 C.m/sec"				
4 Add Runoff "	• 0.3000 0.01000 635.000"			
0.142 0.390 0.018 0.434"	• 0.4500 0.03600 1004.000"			
40 HYDROGRAPH Copy to Outflow"	0.6000 0.04900 1405.000"			
8 Copy to Outflow				
" 40 HYDROGRAPH Combine 2"	1.050 0.5220 2852.000"			
6 Combine "	1.200 1.100 2900.000"			
* 2 Node #*	Peak outflow 0.052 c.m/sec"			
INLET 1"	Maximum level 0.647 metre"			
MAXIMUM TIOW 0.052 C.M/Sec ⁻ * Hydrograph volume 8463.813 c.m ^e	Centroidallan 12.880 hours"			
• 0.142 0.390 0.652"	1.209 1.209 0.052 0.652 c.m/sec"			
* 40 HYDROGRAPH Start - New Tributary"	*40 HYDROGRAPH Combine 2"			
2 Start - New Tributary"	6 Combine "			
0.142 0.000 0.390 0.652"	Z NOGE #-			
1 Triangular SCS*	Maximum flow 0.699 c.m/sec"			
3 Specify values"	Hydrograph volume 10057.212 c.m"			
1 SCS method"	1.209 1.209 0.052 0.699"			
2009 N.C. Pestell Site" 7 700 % Impervious"	ADD COMMENTERSESSESSESSESSESSESSESSESSESSESSESSESSE			
5.530 Total Area"				
130.000 Flow length"	Catchments South of GEXR, part of Inlet #2"			
2.000 Overland Slope"	•			
* 1.383 Yervious Area" 50.000 Penyious langth"	- 40 MYDHOGHAPH START - New Iributary" 2 Start - New Tributary"			
3,000 Pervious slope"	1.209 0.000 0.052 0.699			
* 4.148 Impervious Area"	* 33 CATCHMENT 209*			
192.000 Impervious length"	1 Triangular SCS"			
 0.750 Impervious slope" 0.250 Reprious Mapping 'h'" 	- 3 Specify values 1 Scs mothed*			
75.000 Pervious scS curve No."	209 Alpine Solutions - west SMWP"			
 0.257 Pervious Runoff coefficient* 	30.000 % Impervious"			
0.100 Pervious Ia/S coefficient"	1.920 Total Area"			
8.467 Pervious Initial abstraction" 0.015 Information Information	150.000 Flow length			
98.000 Impervious SCS Curve No."	1.344 Pervious Area"			

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150.000 Pervious length"	5.000 % Impervious"	
0.576 Impervious Area"	13.230 Iotal Area"	
113.000 Impervious lenath"	2 200 Overland Slope"	
1.500 Impervious slope"	12.568 Pervious Area"	
• 0.250 Pervious Manning 'n'"	170.000 Pervious length*	
80.000 Pervious SCS Curve No."	2.400 Pervious slope"	
0.339 Pervious Runoff coefficient"	0.661 Impervious Area"	
0.100 Pervious lais coefficient	170.000 Impervious length"	
0.015 Impervious Manina 'n'"	2.400 Impervious stope	
98,000 Impervious SCS Curve No."	70.000 Pervious SCS Curve No "	
0.883 Impervious Runoff coefficient"	0.193 Pervious Runoff coefficient"	
0.100 Impervious Ia/S coefficient"	0.100 Pervious Ia/S coefficient"	
0.518 Impervious Initial abstraction	10.886 Pervious Initial abstraction"	
0,175 0.000 0.052 0.699 c.m/sec*	0.015 Impervious Manning 'n'"	
Surface Appa 1 344 0 575 1 000 heters	98.000 Impervious SCS Curve No."	
Time of concentration 47 480 4 785 24 965 minutes"	0.884 Impervious Hunort coefficient"	
Time to Centroid 156.896 92.959 123.174 minutes"	0.100 Impervious Initial abstraction	
* Rainfall depth 47.240 47.240 mm"	0.211 0.000 0.088 0.088 c.m/sec"	
." Rainfall volume 634.90 272.10 907.01 c.m"	Catchment 210 Pervious Impervious Total Area	
Rainfall losses 31.231 5.549 23.527 mm"	Surface Area 12.568 0.661 13.230 hectare"	
Runoff depth 16.009 41.691 23.713 mm*	Time of concentration 60.616 5.309 49.852 minutes"	
Runoff volume 215.16 240.14 455.30 c.m"	Time to Centroid 171.753 93.685 156.558 minutes"	
HUNOTT COETTICIENT 0.339 0.883 0.502 "	Rainfall depth 47.240 47.240 47.240 mm"	
MAXINUM ILUW 0,040 0.106 0.175 C.M/Sec"	Haintail Volume 5937.34 312.49 5249.83 C.m."	
4 Add Bunoff "	Runoff depth 9,099 41,779 10,733 mm"	
0.175 0.175 0.052 0.699"	Runoff volume 1143.60 276.37 1419.97 c.m	
54 POND DESIGN"	Runoff coefficient 0,193 0.884 0.227	
• 0.175 Current peak flow c.m/sec"	Maximum flow 0.174 0.194 0.211 c.m/sec*	
0.070 Target outflow c.m/sec"	40 HYDROGRAPH Add Runoff "	
455.3 Hydrograph volume c.m"	4 Add Runoff "	
0 000 Minimum water lavel metro"	40 HYDROGAPH Court of Outflow"	
1.100 Maximum water level metre	8 Copy to Outflow	
• 0.000 Starting water level metre"	0.211 0.211 0.211 0.088"	
0 Keep Design Data: 1 = True; 0 = False"	* 40 HYDROGRAPH Combine 3*	
Level Discharge Volume"	6 Combine "	
0.000 0.000 0.000"	3 Node #"	
0.2500 0.04200 7.000"	INLET 2"	
	MAXIMUM TIOW 0.284 C.M/SeC"	
0.9000 0.1400 346.000	0.211 0.211 0.211 0.211 0.284"	
1.000 0.3110 445.000"	B1 ADD COMMENT===================================	
1.100 0.6160 557.000"	3 Lines of comment"	
Peak outflow 0.088 c.m/sec"		
Maximum level 0.489 metre"	" South of GEXR along Nafziger Rd, part of Inlet #3"	
MAXIMUM Storage 68.189 C.m"		
2.187 NOUTS 0.175 0.175 0.088 0.500 c.m/sec*	40 HYDHOGHAPH START - New IFIDUTARY"	
40 HYDROGRAPH Combine 3"		
• 6 Combine "	33 CATCHMENT 211"	
* 3 Node #"	 1 Triangular SCS" 	
INLET 2"	I Equallength"	
Maximum flow 0.088 c.m/sec"	1 SCS method"	
Hydrograph volume 454.849 c.m"	211 Culivated lands east of Nafziger Road"	
U.175 U.175 U.088 U.088"	- 1.000 % Impervious"	
2 Start - New Tributary	120 000 Elow length"	
0.175 0.000 0.088 0.088*	3.300 Overland Slope"	
* 33 CATCHMENT 210"	 7.237 Pervious Area" 	
1 Triangular SCS"	* 120.000 Pervious length"	
1 Equal length"	3.300 Pervious slope"	
- 1 SCS method"	0.073 Impervious Area"	
210 woodidt north of Hamburgir/Badenview lands"	- 120.000 Impervious length"	

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	3,300 Impervious slope"	Time of concentration 52,979 5.228 22.671 minutes"				
÷	0,250 Pervious Manning 'n'"	Time to Centroid 163.903 93.568 119.261 minutes"				
5	76.000 Pervious SCS Curve No."	Rainfall depth 47.240 47.240 47.240 mm"				
÷ .	0.2/3 Pervious La Coefficient"	Rainfall volume 725.60 483.74 1209.34 c.m" Boinfall lococo 21 225.60 483.74 1209.34 c.m"				
	8.021 Pervious Initial abstraction	- Halfinali 105865 31.227 5.505 20.936 mm ⁻				
	0.015 Impervious Manning 'n'"	* Bunoff volume 245.96 427.37 673.33 c.m*				
	98.000 Impervious SCS Curve No."	Runoff coefficient 0.339 0.883 0.557				
	0.877 Impervious Runoff coefficient"	* Maximum flow 0.041 0.300 0.306 c.m/sec"				
	0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "				
2	0.518 Impervious Initial abstraction"	4 Add Runoff "				
	Catchend 211 Dervious Intervious Tatal Area	5.4 POND DESTAN*				
*	Surface Area 7.237 0.073 7.310 hectare"	* 0.306 Current peak flow c.m/sec*				
<u>.</u>	Time of concentration 36.717 3.915 35.685 minutes"	* 0.070 Target outflow c.m/sec*				
÷	Time to Centroid 143.480 91.724 141.850 minutes"	673.3 Hydrograph volume c.m"				
3	Rainfall depth 47.240 47.240 47.240 mm"	7. Number of stages"				
2	HainTall Volume 3418.70 34.53 3453.23 C.m [*]	" 0.000 Minimum water level metre"				
	Runoff depth 12.875 41.435 13.161 mm"	0.000 Starting water level metre				
*	Runoff volume 931.78 30.29 962.07 C.m"	0 Keep Design Data: 1 = True; 0 = False"				
	RLnoff coefficient 0.273 0.877 0.279 "	* Level Discharge Volume"				
š.,	Maximum flow 0.209 0.021 0.212 c.m/sec"	" 0.000 0.000 0.000"				
40	HYDROGRAPH Add Runott	0.1000 0.02000 7.000"				
	4 Aud Hullott - 0.212 0.212 0.211 0.284"					
* 40	HYDROGRAPH Cov to Outflow"	" 0.7500 0.1250 877.000"				
	8 Copy to Outflow"	* 0.8000 0.1360 1014.000"				
	0.212 0.212 0.212 0.284*	1.000 0.7880 1667.000"				
40	HYDROGRAPH Combine 4"	Peak outflow 0.071 c.m/sec"				
÷	d Node #"	Maximum level 0.401 metre"				
*	INLET 3"	Gentroidal lag 2.570 bours"				
	Maximum flow 0.212 c.m/sec"	0.306 0.306 0.071 0.212 c.m/sec*				
÷	Hydrograph volume 962.070 c.m"	40 HYDROGRAPH Combine 4*				
÷	0.212 0.212 0.212 0.212"	6 Combine "				
- 40	HYDROGRAPH Start - New Fributary"	4 Node #"				
	2° start - wew intollary 0.212 0.212 0.212"	Maximum flow 0.292 c.m/sec				
• 33	CATCHMENT 212"	Hydrograph volume 1635.548 c.m"				
	1 Triangular SCS"	0.306 0.306 0.071 0.282				
•	3 Specify values"	* 40 HYDROGRAPH Start - New Tributary"				
<u>.</u>	1 SCS method"	2 Start - New Tributary"				
	212 Alpine solutions - East Swwer 40.000 % Twnervinus"	* 33 CATCHMEN 213"				
	2.560 Total Area"	1 Triangular SCS"				
	150.000 Flow length"	1 Equal length				
	1.500 Overland Slope"	1 SCS method"				
2	1.536 Pervious Area"	213 Woodlot East and West of Nafziger Road"				
	1 500 Pervious signa"					
•	1.024 Impervious Area"	140.000 Flow length"				
÷	131.000 Impervious length"	3.600 Overland Slope"				
*	1.500 Impervious slope"	13.056 Pervious Area"				
<u>.</u>	0.250 Pervious Manning 'n'	140.000 Pervious length"				
	80.000 Pervious Sus GUTVE No."	- 3.500 Mervious Slope"				
2	0.100 Pervisus Ta/S coefficient"	140 000 Impervious length"				
•	6.350 Pervious Initial abstraction"	3.600 Imperious slope"				
•	0.015 Impervious Manning 'n'"	• 0.250 Pervious Manning 'n'"				
÷	98.000 Impervious SCS Curve No."	70.100 Pervious SCS Curve No."				
2	0.883 Impervious Runoff coefficient"	0.194 Pervious Runoff coefficient"				
	U.100 Impervious Ia/S COETTICLENT"	 U.100 Mervious Ia/S coefficient" 10.834 Pervious Initial abstraction" 				
	0.306 0.000 0.212 0.212 c.m/sec"	0.015 Impervious Manino 'n'"				
÷.	Catchment 212 Pervious Impervious Total Area "	98.000 Impervious SCS Curve No."				
	Surface Area 1.536 1.024 2.560 hectare"	0.680 Impervious Runoff coefficient"				

Q:\34 Printe	8961104:SWM\MIDUSS\Post\34896-104_Post-005yr.out Page 13 ed at 15:37 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-005yr.out Printed at 15:37 on 18 Dec 2018
	0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Bunoff *
	0.518 Impervious Initial abstraction"	4 Add Runoff "
	0.232 0.000 0.071 0.282 c.m/sec"	1.074 1.074 0.232 0.508"
	Catchment 213 Pervious Impervious Total Area *	54 POND DESIGN"
	Time of concentration 47.595 4.184 42.247 minutes"	1.0/4 CUFFENT peak flow c.m/sec"
	Time to Centroid 156.414 92.097 148.490 minutes"	1758.8 Hydrograph volume c.m"
	Rainfall depth 47.240 47.240 mm*	15. Number of stages"
	Rainfall volume 6167.73 190.75 6358.49 c.m*	0.000 Minimum water level metre
	Runoff denth 9 154 41 588 10 127 mm ²	1.450 Maximum water level metre"
	Runoff volume 1195.13 167.93 1363.06 c.m*	0 Keep Design Data: 1 = True: 0 = False"
	Runoff coefficient 0.194 0.880 0.214 *	Level Discharge Volume*
	Maximum flow 0.219 0.116 0.232 c.m/sec*	" 0.000 0.000 0.000"
40	A Add Runoff "	
	0.232 0.232 0.071 0.282*	0.3500 0.01100 593.000"
* 40	HYDROGRAPH Copy to Outflow"	• 0.4500 0.01300 775.000"
	8 Copy to Outflow"	* 0.5500 0.01500 964,000 [*]
• 40	0.232 0.232 0.232 0.282"	0.6500 0.01600 1161.000"
8.15	4 Node #*	* 0.9500 0.02000 1795.000*
	INLET 3"	1.050 0.05600 2025.000"
	Maximum flow 0.50B c.m/sec"	1.150 0,2080 2263,000"
	Hydrograph volume 2998.610 c.m"	1.250 0.4600 2511.000"
* 40	HVDRORBH Start - New Tributary*	1,350 2,766 2768.000"
	2 Start - New Tributary"	* Peak outflow 0.019 c.m/sec*
	0.232 0.000 0.232 0.508"	Maximum level 0.862 metre"
• 33	CATCHMENT 214*	Maximum storage 1600.533 c.m"
- Q -	1 Triangular SCS"	Centroidal lag 18.149 hours"
	3 SDECTTY VALUES 1	" 1.074 1.074 0.019 0.508 c.m/sec" "40 HYDROGRAPH Combine 4"
	214 Rec Centre - SWMP"	6 Combine *
	73.000 % Impervious"	* 4 Node #*
	4.950 Total Area	INLET 3
- 2	50.000 Flow length"	Maximum flow 0.525 c.m/sec"
<u>1</u> 2	1.336 Pervious Area"	Hydrograph Volume 4267.565 C.m ⁻
	40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary"
	1.500 Pervious slope"	2 Start - New Tributary"
	3.613 Impervious Area"	1.074 0.000 0.019 0.525"
	152.000 Impervious length"	* 33 CATCHMENT 215*
	0.250 Pervious Manning 'n'"	* 1 Foual length*
	83.000 Pervious SCS Curve No."	1 SCS method"
	0.397 Pervious Runoff coefficient	* 215 Vacant Industrial lands west of Nafziger Road*
	0.100 Pervious Ia/S coefficient"	45.000 % Impervious"
	5.602 Fervious Initial abstraction	2.860 JOTAL AFEA"
•2	98.000 Impervious SC Curve No."	2.000 Overland Slope"
- S	0.883 Impervious Runoff coefficient"	1.573 Pervious Area"
	0.100 Impervious Ia/S coefficient"	105.000 Pervious length"
	0.518 Impervious Initial abstraction"	2.000 Pervious slope
	1.074 0.000 0.232 0.000 C.M/SEC Catchment 214 Pervious Integrations Total Area =	1.287 Impervious Area
	Surface Area 1.336 3.613 4.950 hectare"	2,000 Impervious slope"
	Time of concentration 19.839 6.369 8.289 minutes"	0.250 Pervious Manning 'n'"
	Time to Centroid 120.857 95.242 98.894 minutes"	76.000 Pervious SCS Curve No."
	Maintail depth 47.240 47.240 47.240 mm" Bainfall volume 631.36 1707 01 2329 27 c = "	 0.273 Pervious Runoff coefficient* 0.100 Pervious Is (S. coefficient*)
	Rainfall losses 28,477 5,507 11,709 mm*	8.021 Pervious Initial abstraction*
•	Runoff depth 18.763 41.733 35.531 mm"	• 0.015 Impervious Manning 'n'*
	Runoff volume 250.76 1508.02 1758.79 c.m"	98.000 Impervious SCS Curve No."
	HUDOTT COETICIENT 0.397 0.883 0.752	0.881 Impervious Runoff coefficient
	WGALINUM ILOW U.U8/ 1.U3/ 1.U/4 C.M/SEC"	U,100 Impervious Ia/S coefficient"

Q:\348 Printe	96\104\SWM\MIDUSS\Post\3489 d at 15:37 on 18 Dec 2018	5-104_Post-00	5yr.out			Page 15
	0.518 Impervious Initia	1 abstractio	n"			
51	0.378 0.	0.01	9 0.525	c.m/sec"		
*	Catchment 215	Pervious	Impervious	Total Area		
•	Surface Area	1.573	1.287	2.860	hectare*	
	Time of concentratio	n 39.384	4.200	13.857	minutes*	
3	Time to Centroid	146.799	92.104	107.116	minutes"	
2	Rainfall depth	47.240	47.240	47.240	៣៣"	
2	Rainfall volume	743.08	607.98	1351.06	C.M"	
	Report depth	10 976	5.042	21.439	mm - mm -	
	Bunoff volume	202 54	595 97	737 91	с m [*]	
	Runoff coefficient	0.273	0.881	0.546		
×:	Maximum flow	0.042	0.371	0.378	c.m/sec*	
• 40	HYDROGRAPH Add Runof	f "				
•	4 Add Runoff "					
	0.378 0.	378 0.01	9 0.525'			
* 40	HYDROGRAPH Copy to O	utflow"				
* -	8 Copy to Outflow"					
	0.378 0.	378 0.37	8 0.525	1		
40	HYDROGRAPH Combine	4"				
	5 Combine "					
	4 NODE #"					
	INLET 3" Maximum flow	~ ~	S45 0 m/r	00"		
	Hydrograph yolume	5005	177 cm [*]			
	0.378 0.	378 0.378	3 0.645"			
* 40	HYDROGRAPH Start - N	ew Tributary				
	2 Start - New Tribu	tary"				
•	0.378 0.	0.37	8 0.645'			
* 33	CATCHMENT 216"					
5	1 Triangular SCS"					
1	1 Equal length"					
2	1 SCS method"		and Decide			
1	45 000 % Impopuique"	west of Natz:	iger Hoad"			
	2 860 Total Area"					
•	110.000 Flow length"					
5	2.000 Overland Slope"					
	1.573 Pervious Area"					
	110.000 Pervious length"					
•	2.000 Pervious slope"					
	1.287 Impervious Area"					
<u>.</u>	110.000 Impervious length	M				
2	2.000 Impervious slope"	1 - 1 - 2				
	0.250 Pervious Manning	·n··				
	0.272 Pervious Bunoff o	e NU. oofficient"				
	0.100 Pervious Ta/S coe	fficient"				
¥5	8.021 Pervious Initial	abstraction"				
2.1	0.015 Impervious Mannin	g 'n'"				
•	98.000 Impervious SCS Cu	rve No."				
	0.882 Impervious Runoff	coefficient				
	0.100 Impervious Ia/S c	oefficient"	~			
2	0.518 Impervious Initia	1 abstraction				
C	0.379 0.1	0.378	0.645	c.m/sec"		
	Catchment 216	Pervious	impervious	iotal Area	hootore	
	Time of concentration	1.3/3	1.207	14 297	minutoe"	
	Time to Centroid	148 183	92.263	107.593	minutes	
	Bainfall deoth	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	л п "	
	Runoff depth	12.873	41.657	25.826	mm "	
	Runoff volume	202.49	536.13	738.62	с.т"	
	Runoff coefficient	0.272	0.882	0.547		
	Maximum flow	0.042	0.372	0.379	c.m/sec"	
40	HYDROGRAPH Add Runof	t "				

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		4	Add Bunoff "						
Ē		·	0.379 0.3	379	0.378		0.645"		
	40	H	DROGRAPH Copy to O	utflow'	n				
- 2		8	Copy to Outflow	370	0 379		0 645"		
	40	H	/DROGRAPH Combine	4"	0.075		0.040		
•		6	Combine "						
		4	Node #"						
		Ma	aximum flow		1.0	24	c.m/se	ec."	
		Hy	/drograph volume		5744.09	94	c.m"		
			0.379 0.3	379	0.379		1.024"		
	40		DHOGHAPH Start - Ne Start - New Tribu	ew Irit tarv"	outary"				
		-	0.379 0.0	000	0.379		1.024"		
	33	C/	ATCHMENT 217"						
0		1	Triangular SCS"						
		1	SCS method"						
		217	Existing ROW west	of Nat	fziger F	Road"			
٠		75,000	% Impervious"						
1		0.730	Total Area"						
		2,100	Overland Slope"						
		0.183	Pervious Area"						
		90.000	Pervious length"						
2		2.100	Pervious slope" Impervious Area"						
		90.000	Impervious length						
		2.100	Impervious slope"						
1		0.250	Pervious Manning	'n'"					
		0.272	Pervious SUS Curve Pervious Bunoff co	e NO." Deffici	ient"				
٠		0.100	Pervious Ia/S coet	fficier	nt"				
1		8.021	Pervious Initial a	abstrac	ction"				
1		0.015	Impervious Manning	g 'n'"					
		0.874	Impervious Runoff	coeffi	icient"				
7		0.100	Impervious Ia/S co	oeffici	ient"				
1		0.518	Impervious Initia	l abstr	raction				
		C	0.156 0.0	JUU Pers	0.379	Tmpo	1.024 (cvious	C.M/SEC" Total Area	
		SL	irface Area	0.18	33	0.54	8	0.730	hectare"
•		Ti	ime of concentration	n 35.3	383	3.77	3	6.748	minutes"
		Ti	ime to Centroid	141.	.817	91.5	37	96.268	minutes"
		Ba	ainfall volume	47.2	240	258.	40 64	344.85	mm ⁻
		Ra	infall losses	34.3	368	5.93	0	13.039	៣៣ "
		Ru	noff depth	12.8	372	41.3	10	34.200	mm "
0		Ru Pi	noff volume	23.4	19	226.	17	249.66	C.M"
		Ma	aximum flow	0.00	05	0.15	+ 5	0.156	c.m/sec"
•	40	Hì	DROGRAPH Add Runof1	f "					
1		4	Add Runoff "		0 070				
2	40	н	U.155 U.1 DROGRAPH Copy to Ou	155 itflow	0.379		1.024		
4		8	Copy to Outflow"						
*			0,156 0.1	156	0.156		1.024*		
2	40	H۱	Combine Combine	4 "					
		4	Node #"						
×			INLET 3"						
ŝ		Ma	ximum flow		1.16	30	c.m/se	ec*	
2		Hy	0.156 0.1	156	0.156	00	C.M" 1.180"		
×	40	HY	DROGRAPH Confluer	nce	2"				
		7	Confluence "						

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	2 Node #"			0.250	Pervious Manning 'n'"	
	INLET 1"		-	76,000	Pervicus SCS Curve No."	
	Maximum flow 0.699 c.m/sec"			0.273	Pervious Runoff coefficient"	
	Hydrograph volume 10057.213 c.m"		×.	0.100	Pervious Ia/S coefficient	
*	0.156 0.699 0.156 0.000"		×	8.021	Pervious Initial abstraction*	
* 40	HYDROGRAPH Copy to Outflow"			0.015	Impervious Manning 'n'"	
	8 Copy to Outflow*		-	98.000	Impervious SCS Curve No."	
•	0.156 0.699 0.699 0.000"		-	0.883	Impervious Runoff coefficient"	
- 40	HYDROGRAPH Combine 5"		-	0,100	Impervious Ia/S coefficient"	
2	6 Combine "			0.518	Impervious Initial abstraction"	
	5 Node #"				3.124 0.000 1.180 2.066 c.m/sec"	
	u/s of HWY 7&8"		÷	Ca	tchment 223 Pervious Impervious Total Area "	
2	Maximum flow 0.699 c.m/sec"		•	Su	rface Area 1.885 10.684 12.570 hectare"	
2 · · ·	Hydrograph volume 10057.213 c.m"			Ti	me of concentration 44.204 4.714 6.754 minutes"	
. 10	0,156 0.699 0.699 0.699"			Ti	me to Centroid 152.801 92.856 95.953 minutes*	
40	HTDHUGHAPH CONTLUENCE 3.			Ra	infall depth 47.240 47.240 47.240 mm*	
				Ra	infall volume 890.71 5047.34 5938.05 c.m*	
	S NODE #		-	Ra	infall losses 34.366 5,539 9,863 mm"	
			<u>.</u>	Ru	noff depth 12.874 41.700 37.376 mm"	
				Ru	nott volume 242.74 4455.48 4698.21 c.m"	
			- C	Ru	nort coefficient 0.273 0.883 0.791 "	
* 40				Ma	x1mum flow 0.047 3.117 3.124 c.m/sec"	
	8 Copy to Dutflow"		40	нү	DRUGRAPH AGG RUNOTT	
	0 000		<u> </u>	4		
* 40	HYDROGRAPH Combine 5"		* 40	LIV	3.124 3.124 1.180 2.006 ⁻	
*	6 Combine "		40			
	5 Node #"			0		
	u/s of HWY 7&8"		* 40	ну	DROGRAPH Combine 5"	
0.0	Maximum flow 0.944 c.m/sec"			6	Combine "	
. C.	Hydrograph volume 11932.032 c.m*			5	Node #	
*	0.156 0.284 0.284 0.944*			0	U/S of HWY 788	
* 40	HYDROGRAPH Confluence 4"			Ma	xinum flow 5.190 c.m/sec"	
	7 Confluence "			Hv	drograph volume 22624.000 c.m"	
	4 Node #"				3.124 3.124 3.124 5.190"	
	INLET 3"		* 81	AD	D COMMENT===================================	
	Maximum flow 1.180 c.m/sec"			3 Li	nes of comment"	
	Hydrograph volume 5993.756 c.m"			**	***************************************	
	0.156 1.180 0.284 0.000*			Ca	tchments east of Hamilton Road, part of Inlet #4"	
40	HYDROGRAPH Copy to Outflow"				***************************************	
÷ .	8 Copy to Outflow"		* 40	HY	DROGRAPH Start - New Tributary"	
. 40	0.156 1.180 1.180 0.000"			2	Start - New Tributary*	
40	ATDROGRAPH COMDINE 5				3.124 0.000 3.124 5.190"	
÷.			* 33	CA	TCHMENT 218"	
			- 2	1	Triangular SCS	
(m)				1	Equal length"	
	Hydrodranb volume 17925 785 c m ⁴		*	1	SUS method"	
	0.156 1.180 1.180 2.066"			210	Tronorizuge Manufacturing Property"	
* 40	HYDROGRAPH Start - New Tributary"			2 060		
	2 Start - New Tributary"			230,000	Flow length*	
	0.156 0.000 1.180 2.056"		*	1 700		
* 33	CATCHMENT 223°		*	0 309	Parvisis Arag*	
	1 Triangular SCS"			230.000	Pervisus length	
*	1 Equal length"			3.000	Pervious slope*	
(*)	1 SCS method"		*	1.751	Impervious Area"	
	223 New Hamburglr Inc. lands"		*	230.000	Impervious length ^a	
	85.000 % Impervious"			3.000	Impervious slope"	
(m)	12.570 Total Area"			0.250	Pervious Manning 'n'"	
.	90.000 Flow length*		÷	76.000	Pervious SCS Curve No."	
	1.000 Overland Slope"		*	0.311	Pervious Runoff coefficient"	
	1.885 Pervious Area"		.	0.060	Pervious Ia/S coefficient"	
	90.000 Pervious length"			4.813	Pervious Initial abstraction"	
2	1.000 Pervious slope"			0.015	Impervious Manning 'n'"	
	10.684 Impervious Area"		.*	98.000	Impervious SCS Curve No."	
-	90.000 Impervious length"		1	0.886	Impervious Runoff coefficient"	
	1.000 Impervious stope.		<u>.</u>	0.100	Impervious Ia/S coefficient"	

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	0.518 Impervious Initial abstraction	, n			
	0.510 0.000 3 124	5 1 90	c m/sec"		
	Catchment 218 Pervious	Impervious	Total Area		
	Sucface 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	С. П [®]	
	Reinfall losses 32.564	5.396	9.472		
	Runoff depth 14.676	41.843	37.768	mm "	
	Bunoff 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"	
	HYDROGRAPH Add Bunoff "	0.000	0.010	011170000	
	4 Add Bunoff "				
	0.510 0.510 3.124	5 190"			
	POND DESTGN"	01100			
	0.510 Current neak flow c.m/sec"				
	4.094 Target outflow c.m/sec"				
	778.0 Hydrograph volume om"				
	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 0.1	96 c.m/s	ec"		
	Maximum level 344.9	67 metre	u .		
	Maximum storage 239.8	03 c.m"			
	Centroidal lag 1.8	39 hours"			
	0.510 0.510 0.196	5,190 c.m	/sec*		
	HYDROGRAPH Combine 5"				
	6 Combine "				
	5 Node #"				
	u/s of HWY 7&8"				
	Maximum flow 5.3		ec"		
	Hydrograph volume 23400.1	15 c.m"			
	0.510 0.510 0.196	5.332"			
	HYDROGRAPH Start - New Tributary"				
	2 Start - New Tributary"				
	0.510 0.000 0.196	5,332"			
	CATCHMENT 219"				
	1 Triangular SCS"				
	1 Equal length"				
	1 SCS method"				
	219 N.C. Pestells Head Office & ot	her Industr	ial"		
	85.000 % Impervious"				
	1.280 Total Area"				
	75,000 Flow length"				
	1.500 Overland Slope"				
	0.192 Pervious Area"				

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00000	10101				and the second se		
	3.000	Pervious slope"					
	1.088	Impervious Area					
	75.000	Impervious length"					
	3.000	Impervious Slope" Pervious Manning 'n	1 11				
	76 000	Pervious SCS Curve	No. "				
	0.123	Pervious Bunoff coe	fficient"				
	0.281	Pervious Ia/S coeff.	icient"				
	22.539	Pervious Initial ab	straction"				
	0.015	Impervious Manning	'n'"				
	98.000	Impervious SCS Curv	e No."				
	0.874	Impervious Hunott C	Detticient"				
	0.518	Impervious Initial :	abstraction'				
	0.010	0.303 0.00	0.196	5,332 (c.m/sec"		
	С	atchment 219	Pervious	Impervious	Total Area		
	S	urface Area	0.192	1.088	1.280	hectare"	
	Т	ime of concentration	46.665	3.039	4.097	minutes"	
	Т	ime to Centroid	160.338	90.407	92.102	minutes"	
	R	ainfall depth	47.240	47.240	47.240	mm"	
	R	ainfall volume	90.70	513.97	604.67	C.m"	
	R	aintail losses	41.426	5.949	11.270	mm "	
	n B	unoff volume	11 16	41.291	35.909 460 41	шш с. m"	
	B	unoff coefficient	0.123	0.874	0.761		
	M	aximum flow	0.002	0.303	0.303	c.m/sec"	
	H	YDROGRAPH Add Runoff	u la				
	4	Add Runoff "					
		0.303 0.30	3 0.196	5.332"			
	л А	CODY to Outflow"	TOM				
	0	0.303 0.303	9 0.303	5.332"			
	H	YDROGRAPH Combine	5"				
	6	Combine "					
	5	Node #"					
		u/s of HWY 7&8"	5 00				
	M	aximum liow	22960 52	25 C.m/Se	ec-		
		0.303 0.30	3 0.303	5.625*			
	н	YDROGRAPH Start - New	Tributary"	01020			
	2	Start - New Tributa	^y"				
		0.303 0.00	0.303	5,625"			
	C	ATCHMENT 220"					
	1	Friangular SCS"					
	1	SCS method"					
	220	Northwest corner of	Nithview He	eiahts"			
	8.000	% Impervious"		Ū			
	0.500	Total Area"					
	60.000	Flow length"					
	5.000	Overland Slope"					
	60,000	Pervious Area					
	5.000	Pervious slope"					
	0.040	Impervious Area"					
	60.000	Impervious length"					
	5.000	Impervious slope"					
	0.250	Pervious Manning 'n					
	/4.000	Pervious SUS CUrve Pervious Bunoff coo	NU." Eficient"				
	0.100	Pervious la/S coeff	icient"				
	8.924	Pervious Initial ab:	straction"				
	0.015	Impervious Manning	'n'"				
	98.000	Impervious SCS Curv	e No."				
	0.876	Impervious Runoff c	oefficient"				
	0.100	Impervious Ia/S coe	rticient"	1			
	0.518	impervious initial a	anstlaction,				

Page 20

1000 C 200 C 200 C

Q:\3489 Printed	Q:l348961104ISWMIMIDUSSIPostl34896-104_Post-005yr.out Page 21 Printed at 15:37 on 18 Dec 2018			Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-005yr.out Printed at 15:37 on 18 Dec 2018			
· • 2	0.019 0.000 0.303 5.625 c.m/sec*			0.195 0.195 0.019 5.640"			
100	Catchment 220 Pervious Impervious Total Area "		* 40	HYDROGRAPH Copy to Outflow"			
18	Surface Area 0.460 0.040 0.500 hectare"			8 Copy to Outflow"			
	Time of concentration 22.730 2.280 17.854 minutes"			0.195 0.195 0.195 5.640"			
	Time to Centroid 126.407 89.228 117.543 minutes"		* 40	HYDROGRAPH Combine 5*			
÷	Rainfall depth 47.240 47.240 mm*		•	6 Combine "			
	Rainfall volume 217.30 18.90 236.20 c.m"			5 Node #"			
	Rainfall losses 35.746 5.862 33.355 mm"			u/s of HWY 7&8"			
36	Runoff volume 52.87 16.55 69.42 c.m."		- Q	Maximum Tiow 5.808 c.m/sec ⁻			
	Bunoff coefficient 0.243 0.876 0.294			Ayur ograph vortune 24222.250 c.m			
	Maximum flow 0.016 0.012 0.019 c.m/sec"		* 81	ADD COMMENT===================================			
* 40	HYDROGRAPH Add Runoff "		8	3 Lines of comment"			
()#]	4 Add Runoff "		-	***************************************			
22	0.019 0.019 0.303 5.625"		*	Catchment to Inlet #5"			
* 40	HYDROGRAPH Copy to Outflow"			***************************************			
÷ .	B Copy to Outflow		40	HYDROGRAPH Start - New Tributary"			
= 40	UVIDOCEACH Combine 5			2 Start - New Fributary			
40			* 00	0.195 0.000 0.195 5.808			
	5 Node #"		. 33	1 Trianular SCS"			
	u/s of HWY 7&8"		÷	1 Found length			
(S#5	Maximum flow 5.640 c.m/sec"			1 SCS method"			
6 8 1	Hydrograph volume 23929.943 c.m*		*	222 Rear yards from Hamilton Heights Subdivision"			
	0.019 0.019 0.019 5.640"			5.000 % Impervious"			
* 40	HYDROGRAPH Start - New Tributary"			1.080 Total Area"			
	2 Start - New Tributary"			20.000 Flow length"			
	CATCHINE 2019 0.000 0.019 5.540°			3.000 Overland Slope			
* 00	CALCHMENT 221		÷	1.026 Pervious Area*			
				3.000 Pervious singen			
	1 SGS method"			0.054 Impervious Area"			
	221 Proposed ROW from Hamilton Road"			20.000 Impervious length			
	81.500 % Impervious"			3.000 Impervious slope"			
	0.810 Total Area®			0.250 Pervious Manning 'n'"			
	40.000 Flow length"		•	76.000 Pervious SCS Curve No."			
÷	2.000 Overland Slope"		•	0.272 Pervious Runoff coefficient*			
	0.150 Pervious Area		÷	0.100 Pervious Ia/S coefficient"			
	2.000 Pervious length		÷	8.021 Pervious Initial abstraction"			
(*)	2.000 Fervious Stope			0.015 Impervious Maining "			
100	40.000 Impervious length"			0.875 Impervious Supoff coefficient"			
	2.000 Impervious slope"			0.100 Impervious Ia/S coefficient"			
	0.250 Pervious Manning 'n'			0.518 Impervious Initial abstraction"			
	76.000 Pervious SCS Curve No."		×	0,060 0.000 0.195 5.808 c.m/sec*			
- C	0.272 Pervious Runoff coefficient"			Catchment 222 Pervious Impervious Total Area "			
<u>.</u>	0.100 Pervious Ia/S coefficient		- C	Surface Area 1.026 0.054 1.080 hectare"			
	8.021 Pervious Initial Abstraction"		÷ .	Time of concentration 12,894 1.375 11,224 minutes"			
	0.015 Impervious Manning "n "			lime to Centrold 113.857 87.892 110.092 minutes"			
	0.876 Impervious Bunoff coefficient"			$\begin{array}{cccc} \text{Rainfall upper } & 47.240 & 47.240 & 47.440 \\ \text{Rainfall volume} & 484.68 & 25.51 & 510.19 & c.m^{\circ} \end{array}$			
	0.100 Impervious Ia/S coefficient"			Rainfall losses 34,405 5,888 32,979 mm"			
(H)	0.518 Impervious Initial abstraction"			Runoff depth 12.835 41.352 14.261 mm*			
5	0.195 0.000 0.019 5.640 c.m/sec"		•	Runoff volume 131.69 22.33 154.02 c.m*			
	Catchment 221 Pervious Impervious Total Area "			Runoff coefficient 0.272 0.875 0.302 "			
	Surface Area 0.150 0.660 0.810 hectare"		*	Maximum flow 0.056 0.017 0.060 c.m/sec"			
	Time of concentration 22.072 2.354 3.654 minutes"		* 40	HYDROGRAPH Add Runoff "			
	lime to Centrold 125,258 89.353 91.721 minutes"			4 Add Runoff "			
	Rainiall Gepth 47,240 47,240 mm" Painfall volume 70.70 211 85 2020 47		1.40	0.060 0.060 0.195 5.808"			
	nalinali Volume /0.79 5 870 11 151 mm*		- 40	R CODY TO OUTTIOW			
10	Runoff denth 12.862 A1.361 36.088 mm*		*				
	Runoff volume 19.27 273.04 292.32 cm*		* 40	HYDROGRAPH Combine 5"			
	Runoff coefficient 0.272 0.876 0.764			6 Combine *			
•	Maximum flow 0.006 0.194 0.195 c.m/sec"			5 Node #*			
* 40	HYDROGRAPH Add Runoff "			u/s of HWY 7&8"			
5.	4 Add Runoff "		. 	Maximum flow 5.853 c.m/sec"			

Printed	1 at 15:37 on 18 Dec 2018	Printe	ed at 15:37 on 18 Dec 2018
	Hydrograph volume 24376.273 c.m"	* 81	ADD COMMENT===================
1	0.060 0.060 0.060 5.853"	- S	7 Lines of comment"
81	ADD COMMENT ADDRESS ADDRES	÷ .	************************************
	3 Lines of comment"		
	Badenview Developments Inc. lands"		
	badenview bevelopments inc. lands		TROPOSED SYMM FOND (
40	HYDROGRAPH Start - New Tributary"		***********************************
	2 Start - New Tributary"		***************************************
	0.060 0.000 0.060 5.853"	54	POND DESIGN"
33	CATCHMENT 224"		16.590 Current peak flow c.m/sec
	1 Triangular SCS"		4.094 Target outflow c.m/sec"
	1 Equal length"		40522.9 Hydrograph volume c.m"
	1 SCS method"	- 2	36. Number of stages"
	ZZ4 BADENVLEW TANDS"	- 2	334.550 Minimum water level metre
		÷.	337.850 Maximum water level metre
	90.000 Flow leadth"		0 Keen Design Data: 1 = True:
	1.000 Overland Slope"		Level Discharge Volume
	6,480 Pervious Area"		334,550 0.000 0.000'
	90.000 Pervious length"		334.600 0.00400 1187.000'
	1.000 Pervious slope"	7	334.700 0.02830 3607.000'
	36.720 Impervious Area"		334.800 0.06350 6090.000'
	90.000 Impervious length"		334.900 0.08900 8636.000'
	1.000 Impervious slope"	*	335.000 0.1880 11246.00'
	0.250 Pervious Manning 'n'"	*	335.100 0.3430 13920.00'
	76.000 Pervious SCS Curve No."		335.200 0.5360 16658.00'
	0.2/3 Pervious Hunort coefficient"	- 2	335.300 0.7599 19459.00'
	0.100 Pervious 14/5 Coefficient		335,400 1.011 22323.00
	0.015 Impervious Antital abstraction		335.500 1.286 25249.00
	98.000 Impervious SCS Curve No."		335.700 1 901 31294 00'
	0.883 Impervious Runoff coefficient"		335,800 2,238 34414,00'
	0.100 Impervious Ia/S coefficient"		335,900 2,593 37599.00'
	0.518 Impervious Initial abstraction"		336.000 2.966 40851.00'
	10.737 0.000 0.060 5.853 c.m/sec"		336.100 3.427 43465.00'
	Catchment 224 Pervious Impervious Total Area	•	336.200 3.959 46848.00
	Surface Area 6.480 36.720 43.200 hectare"		336.300 4.543 50286.00
	Line of concentration 44.204 4.714 5.754 minutes"		336,400 5,171 53779.00
	Painfall doubth AZ 240 AZ 240 AZ 240 mm		336.500 5.840 57328.00
	Rainfall volume 0.3061 1.7346 2.0408 ha_m "	•	336,000 7,394 64595,00
	Rainfall losses 34.366 5.539 9.863 mm"		336,800 8,055 68313 00'
	Runoff depth 12.874 41.700 37.376 mm"		336,900 8,858 72088.00"
	Runoff volume 0.0834 1.5312 1.6147 ha-m"		337.000 9.690 75920.00"
	Aunoff coefficient 0.273 0.883 0.791 "	×0	337.100 10.550 79809.00"
	Maximum flow 0.162 10.711 10.737 c.m/sec"	- 2	337.200 11.437 83755.00"
40	HYDROGRAPH Add Runoff "		337.300 12.351 87759.00"
	4 Add Runoff "		337.400 13.291 91821.00"
4.0	10.737 10.737 0.060 5.853		337,500 14,255 95940.00"
0	HYJRUGHAPH Copy to OUTTIOW"	- 2	337.550 14.746 98022.00"
		- 2	337.600 16.027 100118.0"
10	HY2ROGRAPH Combine 5		337.700 20.027 104352.0
10	6 Combine "	•	337.850 28.277 110810 0"
	5 Node #"		Peak outflow 1
	u/s of HWY 7&8"		Maximum level 335
	Maximum flow 16.590 c.m/sec"	- C	Maximum storage 25097
	Hydrograph volume 40522.883 c.m"	1 0	Centroidal lag 14
	10.737 10.737 10.737 16.590"	÷	10.737 16.590 1.272
40	HYDROGRAPH Confluence 5"	* 40	HYDROGRAPH Combine 12"
	7 Confluence "		6 Combine "
	5 Node #"		12 Node #"
	u/s of HWY 7&8"		d/s of Proposed SWMF"
	Maximum Tlow 16.590 c.m/sec"		Maximum flow 1
	пузгодтарті VOLUME 40522.879 С.М." 10.727 16.500 10.727 0.000		Hydrograph volume 32891
	10.737 16.590 10.737 0.000"	1	10.737 16.590 1.3

4896-104_Post-005yr.out ... *** SED SWM POND DESIGN ... flow c.m/sec" w c.m/sec" lume c.mª jes" level metre" level metre" level metre" ata: 1 = True; 0 = False" arge Volumé" .000 0.000" 0400 1187.000" 2830 3607.000"

1.272 c.m/sec"

1.272 c.m/sec" 32891.445 c.m"

1.272 1.272"

1.272 0.000 c.m/sec"

metre"

с.п" 14.221 hours"

335,495

25097.650

Q:\348 Printe	2:134896/104/SWMIMIDUSS/Post/34896-104_Post-005yr.out Page 25 Q:134896/104/SWMIMIDUSS/Post/34896-104_Post-005yr.out Printed at 15:37 on 18 Dec 2018 Printed at 15:37 on 18 Dec 2018				
81	ADD COMMENT===================================	8.021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"			
-	Catchments to Inlet #6"	0.886 Impervious Runoff coefficient"			
40	HYDROGRAPH Start - New Tributary"	 0.100 Impervious Ia/S coefficient 0.518 Impervious Initial abstraction 			
1	2 Start - New Tributary"	0.238 1.161 1.272 1.272 c.m/sec"			
- 33	CATCHMENT 260"	Surface Area 1.598 0.752 2.350 hectare"			
•	1 Triangular SCS"	Time of concentration 23.600 5.983 12.947 minutes"			
	3 Specity values" 1 SCS method"	" Time to Centroid 127.153 94,642 107,493 minutes" " Rainfall depth 47,240 47,240 47,240 mm"			
÷	260 Hamilton Heights Subdivision"	Rainfall volume 754.89 355.24 1110.14 c.m"			
2	46,000 % Impervious" 8.160 Total Area"	Rainfall losses 34.371 5.404 25.101 mm"			
•	50.000 Flow length"	Runoff volume 205.65 314,60 520.25 c.m"			
	1.000 Overland Slope" 4.406 Pervice Acae"	Runoff coefficient 0.272 0.886 0.469			
:	50.000 Pervious length"	* 40 HYDROGRAPH Add Runoff *			
1	3.000 Pervious slope"	4 Add Runoff			
	37.54 Impervious length"	40 HYDROGRAPH Copy to Outflow"			
1	1.500 Impervious slope"	8 Copy to Outflow"			
3	0.250 Pervious Manning 'n'* 76.000 Pervious SCS Curve No.*	" 0.238 1.399 1.399 1.272" 40 HYDROGRAPH Combine 12"			
8	0.272 Pervious Runoff coefficient"	6 Combine "			
	0.100 Pervious Ia/S coefficient" 8 021 Pervious Initial abstraction"	12 Node #"			
	0.015 Impervious Manning 'n'*	Maximum flow 1.514 c.m/sec"			
1	98.000 Impervious SCS Curve No."	Hydrograph volume 35546,395 c.m°			
•	0.100 Impervious Ia/S coefficient	40 HYDROGRAPH Start - New Tributary"			
3	0.518 Impervious Initial abstraction	2 Start - New Tributary"			
2	Catchment 260 Pervious Impervious Total Area "	0.238 0.000 1.399 1.514" 33 CATCHMENT 225"			
•	Surface Area 4.406 3.754 8.160 hectare"	1 Triangular SCS"			
8	ilme to Concentration 22.344 7,367 11.342 minutes" Time to Centroid 125.604 96 644 104.330 minutes"	1 Equal length" 1 SCS method"			
	Rainfall depth 47.240 47.240 47.240 mm"	* 225 HWY 7/8 and north ditching*			
-	Rainfall volume 2081.58 1773.20 3854.77 c.m" Rainfall losses 34.383 5.462 21.079 mm"	30.000 % Impervious"			
	Runoff depth 12.057 41.778 26.160 mm*	75.000 Flow length"			
1	Runoff volume 566.52 1568.18 2134.69 c.m"	2.000 Overland Slope"			
	Maximum flow 0.181 1.102 1.161 c.m/sec*	75.000 Pervious length"			
40	HYDROGRAPH Add Runoff *	2.000 Pervious slope"			
	4 Add Hunott - 1.161 1.161 1.272 1.272"	" 0.501 Impervious Area" 75.000 Impervious length"			
33	CATCHMENT 261"	2.000 Impervious slope"			
2	1 IFIANGULAF SUS" 3 Specify values"	0.250 Pervious Manning 'n'" 74.000 Pervious SCS Curve No "			
•	1 SCS method"	0.243 Pervious Runoff coefficient"			
	261 Klassen Bronze Property" 32.000 % Impervious"	0.100 Pervious Ia/S coefficient"			
•	2.350 Total Area"	0.015 Impervious Manning 'n'"			
	100.000 Flow length* 2.500 Overland Slope*	98.000 Impervious SCS Curve No."			
•	1.598 Pervious Area"	0.100 Impervious Ia/S coefficient*			
:	50,000 Pervious length"	0.518 Impervious Initial abstraction"			
*:	0.752 Impervious Area"	0,145 0,000 1,399 1,514 c.m/sec" Catchment 225 Pervious Impervious Total Area			
2	164.000 Impervious length"	Surface Area 1.169 0.501 1.670 hectare*			
2	0.250 Impervious slope" 0.250 Pervious Manning 'n'"	Time of concentration 34.207 3.432 15.568 minutes" Time to Centroid 140.442 91.014 110.505 minutes"			
•	76.000 Pervious SCS Curve No."	Rainfall depth 47.240 47.240 mm"			
	0.272 Pervious Runott coefficient" 0.100 Pervious Ia/S coefficient"	Rainfall volume 552.23 236.67 788.91 c.m" Bainfall losses 35 738 6 017 26 821 mm"			

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	Bunoff depth	11.502	41,223	20.418	am *		
6	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 Runof	f					
	4 Add Runoff •	145 1 20	0 1 514				
40	HYDROGRAPH Copy to 0	145 1.38 utflow"	1,514				
	8 Copy to Outflow"						
	0.145 0.	145 0.14	5 1.514		,		
40	HYDROGRAPH Combine	12"					
	6 Combine "						
	12 Node #" d/s of Proposed S	MALE *					
	Maximum flow	1.	658 c.m/	sec"			
	Hydrograph volume	35887.	975 c.m*				
	0.145 0,	145 0.14	5 1,658				
81	ADD COMMENT=======	*======================================	**********		======"		
	3 Lines of comment"						
	Western catchment al	ong Hamilton	Boad, dive	rted to Inl	et #6"		
		*******	*********	*********			
40	HYDROGRAPH Start - N	ew Tributary	-				
	2 Start - New Tribu	tary"					
00	0.145 0.	000 0.14	5 1.658	11			
33	CAICHMENT 270"						
	3 Specify values"						
	1 SCS method"						
	270 Industrial/Reside	ntial area a	long Hamilt	on 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						
	0.250 Pervious Manning	1017					
	76.000 Pervious SCS Curv	e No."					
	0.272 Pervious Runoff c	oefficient"					
	0.100 Pervious Ia/S coe	fficient"					
	8.021 Pervious Initial	abstraction"					
	0.015 Impervious Mannin	g n					
	0.885 Impervious Bunoff	coefficient					
	0.100 Impervious Ia/S c	oefficient"					
	0.518 Impervious Initia	l abstractio	n"				
	1.439 0.	000 0.14	5 1.658	c.m/sec"			
	Catchment 270	Pervious	Imperviou	s Total Are	a "		
	Surtace Area	3.802	4.648	8.450	nectare"		
	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 "		
	RUDOTT VOLUME	488.65	1942.25	2430.90	c.m"		
	Maximum flow	0.272	1.363	1.439	C.@/sec"		
40	HYDROGRAPH Add Runof	f "	,1000	11409	0.111/020		
<u>}</u>	4 Add Runoff "						
	1.439 1.	439 0.14	5 1.658				
56	DIVERSION						
	6 Node number"						

<pre>1.550 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 1.439 1.658 c.m/sec* 40 HYDROGRAPH Combine 9* 6 Combine* 9 Node #* NOOE B* Maximum flow 1.439 1.439 1.439 1.439* 40 HYDROGRAPH Start - New Tributary* 2 Start - New Tributary* 2 Start - New Tributary* 1.439 0.000 1.439 1.439 1.439* 41 1=read/open; 2=write/save* 2 1=rainfall; 2=hydrograph* 1 1=read/open; 2=write/save* 2 1=rainfall; 2=hydrograph* 1 1=read/open; 2=write/save* 2 1=rainfall; 2=hydrograph* 1 1=read/open; 2=write/save* 40 HYDROGRAPH Add Runoff* 4 Add Runoff* 5 Copy to Outflow* 6 Combine* 5 Combine*</pre>
 1.000 Required diverted fraction* Conduit type; 1=Pipe;2=Channel* Peak of diverted flow 0.000 c.m,/sec* Volume of diverted flow 0.000 c.m,* DIV00006.005Nyd* Major flow at 6*
 0 Conduit type; i=Pipe;2=Channel* Peak of diverted flow 0.000 c.m* OLV00006.005hyd* Major flow at 6* 1.439 1.439 1.439 1.658 c.m/sec* 40 HYOROGRAPH 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 HYOROGRAPH Start - New Tributary* 2 Start - New Tributary* 2 Start - New Tributary* 2 Start - New Tributary* 1.439 0.000 1.439 1.439* 1.439 0.000 1.439 1.439* 1.439 0.000 1.439 1.439* 1.1=read/open; 2=write/save* 2 1=rainfall; 2=hydrograph* 1 1=read/open; 3=outflow; 4=junction* DIV00006.005hyd* Maximum flow 0.0000 c.m* Maximum flow 0.0000 c.m*sec* 0.000 0.000 1.439 1.439* 40 HYOROGRAPH Add Runoff * 0.000 0.000 1.439 1.439* HYOROGRAPH Add Runoff * 0.000 0.000 1.439 1.439* 40 HYOROGRAPH Combine 12* 6 Combine * 12 Node #* 0.000 0.000 1.439 1.439* HYOROGRAPH combine 12* 6 Combine 12* 6 Combine * 12 Node #* 0.000 0.000 1.439* HYOROGRAPH combine 12* 6 Combine * 12 Node #*
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 9 Node #* NODE 8* Maximum flow 1.439 c.m/sec* Hydrograph volume 2430.903 c.m* 1.439 1.439 1.439* 40 HYDROGRAPH Start - New Tributary* 2 I=rainfall; 2=hydrograph* 1 1=read/Open; 2=write/save* 2 1=rainfall; 2=hydrograph* 1 1=read/open; 2=write/save* 2 1=rainfall; 2=hydrograph* 1 1=rounoff; 2=inflow; 3=outflow; 4=junction* DIV00006.005hyd* Major flow at 6* 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* 6 Combine 12* 6 Combine 12* 6 Combine 12* 40 HYDROGRAPH Comfluence 12* 7 Confluence 1 12 Node #* 41 Add entine 12* 5 Combine 5 54 POND DESIGN* Maximum flow 1.658 c.m/sec* Hydrograph volume 3587.379 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* 335.800 Maximum water level metre* 337.000 Maximum water level metre*
<pre>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* 8 Combine 9* 8 Combine 9* 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 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* 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 Combine 12* 6 Combine 12* 6 Combine 12* 6 Combine 12* 7 Confluence 12* 7 Confluen</pre>
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40 HYDROGRAPH Combine 12" 6 Combine 12" 6 12 Node #" 1.658 c.m/sec" d/s of Proposed SWMF" Maximum flow 1.658 c.m/sec" Hydrograph volume 35887.379 c.m" 0.000 0.000 1.658 40 HYDROGRAPH Confluence 12" 7 Confluence 1.658 c.m/sec" 40 HYDROGRAPH Confluence 12" 7 Confluence 1.658 40 HYDROGRAPH Confluence 1.658 c.m/sec" 12 Node #" d/s of Proposed SWMF" Maximum flow 1.658 c.m/sec" 12 Node #" 0.000 1.658 c.m/sec" 0.000" 54 POND DESIGN" 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" 337.000 Maximum water lev
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12 Node #" d/s of Proposed SWMF" Maximum flow 1.658 Hydrograph volume 35887.379 c.m* 0.000 0.000 0.000 1 Node #" 40 HYDROGRAPH Confluence " 1 Node #" d/s of Proposed SWMF" Maximum flow 1.658 c.m/sec" Hydrograph volume 35887.379 c.m/sec" 0.000 1.658 c.m/sec" 0.000 1.658 0.000 1.658 0.000 1.658 0.000 1.658 0.000 1.658 0.000 1.658 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" 0.070 Target outflow c.m"sec" 35887.4 Hydrograph volume c.m" 8. Number of stages" 337.000 <t< td=""></t<>
d/s of Proposed SWMF" Maximum flow 1.658 c.m/sec" Hydrograph volume 35887.379 c.m" 0.000 0.000 1.658 40 HYDROGRAPH Confluence 12" 7 Confluence " 1.658 40 HYDROGRAPH Confluence 12" 7 Confluence " 1.658 40 Maximum flow 1.658 41 Node #" 0.000 42 Node #" 0.658 43 Statron flow 1.658 6 Statron flow 1.658 54 POND DESIGN" 0.000 54 POND DESIGN" 1.658 0.707 Target outflow c.m/sec" 0.707 Target outflow c.m/sec" 35887.4 Hydrograph volume c.m" 8. Number of stages" 337.000 337.000 Maximum water level metre" 337.000 Maximum water lowel metre"
 Maximum flow 1.658 Hydrograph volume 35887.379 0.000 0.000 1.658 40 HYDROGRAPH Confluence 12" 7 Confluence 12" 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 8. Number of stages" 334.290 Minimum water level metre" 337.000 Maximum water level
Hydrograph volume 35887.379 c.m" 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"
40 HYDROGRAPH Confluence 12" 7 Confluence 12" 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" 337.000 Maximum water level metre"
 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" POND DESIGN" 1.658 Current peak flow c.m/sec" 0.707 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" 2400 Faction water level metre"
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" 337.000 Maximum water level metre"
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" 8. Number of stages" 334.290 Minimum water level metre" 337.000 Maximum water level metre" 24.000 Maximum water level metre"
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" 24.000 Maximum water level metre"
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 Mainimum water level metre" 337.000 Maximum water level metre"
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" 24.000 Maximum water level metre"
 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" 24.200 Maximum water level metre"
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* 24.000 Maximum water level metre*
35887.4 Hydrograph volume c.m" 8. Number of stages" 334.290 Minimum water level metre" 337.000 Maximum water level metre"
 8. Number of stages" 334.290 Minimum water level metre" 337.000 Maximum water level metre" 244.200 Statics water level metre"
 334.290 Minimum water level metre" 337.000 Maximum water level metre" 244.200 Storting water level metre"
" 337.000 Maximum water level metre"
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"
335.000 4.539 1910.000" 335.500 5.480 3749.000"
336.550 6.665 3967.000"
337.000 23.484 5559.000"
937.000 23.464 6559.000" Peak outflow 1.491 c.m/sec*

Q:\3489 Printed	361104/SWMIMIDUSS/Post134896-104_Post-005yr.out Page 29 I at 15:37 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-005yr.out Printed at 15:37 on 18 Dec 2018	Page 30
	Maximum storage 182.051 c.m" Centroidal lag 7.102 hours" 0.000 1.659 1.401 0.000 s.m/sect	Maximum flow 0.034 0.052 0.072 c.m/sec* 40 HYDROGRAPH Add Runoff *	
40	HYDROGRAPH Next link " 5 Next link "	4 Add HUNDTT * * 0.072 0.072 1.491 1.491* * 54 POND DESTON*	
	0.000 1.491 1.491 0.000"	0.072 Current peak flow c.m/sec*	
* 50	7 Node number"	0.070 Target outflow c.m/sec" 153.9 Hydrograph volume c.m"	
:	7.170 Overflow threshold" 1.000 Required diverted fraction"	8. Number of stages"	
	0 Conduit type; 1=Pipe;2=Channel*	0.750 Maximum water level metre	
	Peak of diverted flow 0.000 c.m/sec" Volume of diverted flow 0.000 c.m"	0.000 Starting water level metre" 0 Keep Design Data: 1 = True: 0 = False"	
2	DIV0007.005hyd" Maior flow at 7"	Level Discharge Volume	
10 10	0.000 1.491 1.491 0.000 c.m/sec"	0.1500 0.00400 1.000"	
40	AYDRUGHAPH Compine 8" 6 Combine "	" 0.2500 0.00600 8.000" " 0.3500 0.00700 29.000"	
1	8 Node #"	0.4500 0.00800 69.000"	
141	Maximum flow 1.491 c.m/sec"	0.7000 0.1060 208.000"	
÷ .	Hydrograph vo⊥ume 35889.633 c.m" 0.000 1.491 1.491 1.491"	* 0.7500 0.2810 240.000* Peak outflow 0.008 c.m/sec*	
81	ADD COMMENT===================================	Maximum level 0.498 metre"	
		E Maximum storage 95.201 c.m" "Centroidal lag 3.728 hours"	
÷	Catchments South of Hwy 7/8" ************************************	* 0.072 0.072 0.008 1.491 c.m/sec* * 40 HYDROGRAPH Combine 9*	
40	HYDROGRAPH Start - New Tributary"	6 Combine "	
	0.000 0.000 1.491 1.491 "	* NODE B"	
33	CATCHMENT 280" 1 Triangular SCS"	Maximum flow 1.446 c.m/sec"	
•	3 Specify values"	0.072 0.072 0.008 1.446"	
•	280 Northeast portion of Maple Leaf Foods property"	" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"	
	26.000 % Impervious" 0.700 Total Acea"	0.072 0.000 0.008 1.446"	
2	45.000 Flow length"	1 Triangular SCS"	
	0.518 Pervious Area"	3 Specify values" 1 SCS method"	
-	20.000 Pervious length" 2.000 Pervious slope"	281 Western portion of John Bear property"	
6	0.182 Impervious Area"	1.870 Total Area"	
	1.000 Impervious length" 1.000 Impervious slope"	120.000 Flow length" 1.000 Overland Slope"	
*	0.250 Pervious Manning 'n'" 79.000 Pervious SCS Curve No."	0.131 Pervious Area"	
£	0.320 Pervious Runoff coefficient"	2.000 Pervious slope"	
	6.752 Pervious Initial abstraction"	1.739 Impervious Area" 112.000 Impervious length"	
2	0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No "	1.000 Impervious slope"	
2 2	0.878 Impervious Runoff coefficient"	65.000 Pervious SCS Curve No."	
	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	0.140 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient"	
	0.072 0.000 1.491 1.491 c.m/sec" Catchment 280 Pervious Impervious Intel Area "	13.677 Pervious Initial abstraction"	
	Surface Area 0.518 0.182 0.700 hectare"	98.000 Impervious SCS Curve No."	
	Time of concentration 13,366 3,984 8,764 minutes" Time to Centroid 113,606 91,817 102,919 minutes"	0.885 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"	
*	Rainfall depth 47.240 47.240 47.240 mm" Rainfall volume 244 70 85.98 230.68 cm"	0.518 Impervious Initial abstraction"	
1	Rainfall losses 32.102 5.764 25.254 mm"	Catchment 281 Pervious Impervious Total Area °	
	нипотт аөртh 15.138 41,476 21.986 mm" Runoff valume 78.41 75.49 153.90 с.m"	Surface Area 0.131 1.739 1.870 hectare Time of concentration 21.064 5.375 5.559 minutes*	
	Runoff coefficient 0.320 0.878 0.465	Time to Centroid 126.420 93.781 94.165 minutes"	

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	•	Rainfall depth 47.240 47.240 mm"		0.238 0.000 0.143 1.574 c.m/sec"
		Rainfall losses 40.632 5.432 7.896 mm*		Surface Area 0.375 0.835 1.210 hectare"
		Runoff depth 6.608 41.808 39.344 mm*		Time of concentration 23.789 3.829 5.166 minutes"
	*	Runoff volume 8.65 727.09 735.74 c.m"		Time to Centroid 129.513 91.603 94.142 minutes"
	- 2	Runoff coefficient 0.140 0.885 0.833 "		Rainfall depth 47,240 47,240 47,240 mm"
	40	MAXIMUM TLOW 0.003 0.509 0.510 C.M/Sec" HydoGCADH Add Runoff "		Haintall Volume 1//.20 394.41 5/1.60 c.m" Paintall lossoc 40.631 5.873 16.648 mm"
	. 40	4 Add Runoff "		Runoff depth 6.609 41.366 30.592 mm"
	•	0.510 0.510 0.008 1.446"		 Runoff volume 24.79 345.37 370.16 c.m^a
	* 54	PAND DESIGN"		Runoff coefficient 0.140 0.876 0.648
		0.510 Current peak flow c.m/sec"		Maximum flow 0.007 0.237 0.238 c.m/sec"
		735 7 Hydrograph yollume c.m."		
		7. Number of stages"		0.238 0.238 0.143 1,574"
		0.000 Minimum water level metre"		54 POND DESIGN"
		1.800 Maximum water level metre"		0.238 Current peak flow c.m/sec"
		0.000 Starting water level metre"		- U.U/U larget outriow c.m/sec"
		Level Discharge Volume"		5. Number of staces"
	•	0.000 0.000 0.000*		 0.000 Minimum water level metre"
		0.3000 0.09000 8.000*		1.400 Maximum water level metre"
		0.8000 0.1200 97.000"		0.000 Starting water level metre"
		1,200 0,1400 254,000"		Level Discharge Volume"
	. e	1.500 0.1500 358.000"		• 0.000 0.000 °
	- 5	1.800 1.000 400.000"		0.3200 0.04300 276.000"
		Peak OUTIOW U.143 C.M/Sec [*]		
		Maximum storace 281.788 c.m"		* 1.400 0.5000 400.000"
	<u>*</u>	Centroidal lag 1.883 hours"		Peak outflow 0.035 c.m/sec"
		0.510 0.510 0.143 1.446 c.m/sec"		Maximum level 0.263 metre"
	40	HYDRUGHAPH COMDINE 9" 6 Combine "		Maximum storage 227.248 c.m" Controlal lao 3.352 hours"
	ti.	9 Node #"		" 0.238 0.238 0.035 1.574 c.m/sec"
	•	NODE B"		40 HYDROGRAPH Combine 9"
		Maximum flow 1.574 c.m/sec"		6 Combine "
		Nyurograph volume 3525.515 c.m 0.510 0.510 0.143 1.574"		
	* 40	HYDROGRAPH Start - New Tributary"		Maximum flow 1.596 c.m/sec"
	÷.	2 Start - New Tributary"		Hydrograph volume 3693,966 c.m"
	. 33	0.510 0.000 0.143 1.574" CATCHMENT 282"		0.238 0.238 0.035 1.596"
	•	1 Triangular SCS"		2 Start - New Tributary"
2		3 Specify values"		0.238 0.000 0.035 1.596"
		1 SCS method"		33 CATCHMENT 283"
		222 Lastern portun of John Bear property		3 Specify values"
	•	1.210 Total Area"		1 SCS method"
		60.000 Flow length"		283 Area along western tributary, south of Hwy 7/8"
	2	2.500 Overland Slope" 0.375 Recvice Area"		29.000 % Impervious"
		30.000 Pervious length"		160.200 Flow length"
	*	3.000 Pervious slope"		* 2.000 Overland Slope"
	1	0.835 Impervious Area"		16.536 Pervious Area"
		90.000 Impervious length" 2.000 Impervious slope"		150.000 Pervious length" 2 200 Pervious slope"
		0.250 Pervious Maning 'n'"		6.754 Impervisus Area"
	- 5	65,000 Pervious SCS Curve No."		* 394.000 Impervious length"
	2	0.140 Pervious Runoff coefficient"		2.000 Impervious slope"
	2	13.677 Pervious Initial abstraction"		68.300 Pervious SGS Curve No."
	2	0.015 Impervious Manning 'n'"		0.173 Pervious Runoff coefficient"
		98.000 Impervious SCS Curve No."		0.100 Pervious Ia/S coefficient"
		0.876 Impervious Runoff coefficient"		11.789 Pervious Initial abstraction"
2	*	0.518 Impervious Ia/S COEFFICIENT"		98.000 Impervious SC Curve No."
		-Jan		

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0.887 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient"	 8.924 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 	
0.518 Impervious Initial abstraction"	98.000 Impervious SCS Curve No."	
Catchment 283 Pervious Impsod in Jacob - "	0.8/4 Impervious Hunort coefficient"	
Surface Area 16.536 6.754 23.290 hectare"	0.518 Impervious Initial abstraction"	
Time of concentration 61.650 9.286 26.246 minutes"	• 0.085 0.000 1.491 4.610 c.m/sec*	
Time to Centroid 172.132 99.328 122.908 minutes"	Catchment 284 Pervious Impervious Total Area "	
Rainfall depth 47.240 47.240 mm"	Surface Area 2.891 0.059 2.950 hectare	
Bainfall Josses 39.045 5.359 29.276 mm ^a	Time of concentration 31.1// 3.128 29.262 minutes"	
Runoff depth 8.195 41.881 17.964 mm"	Rainfall deoth 47,240 47,240 mm [*]	
* Runoff volume 1355.09 2828.69 4183.78 c.m*	Rainfall volume 1365.70 27.87 1393.58 c.m*	
Runoff coefficient 0.173 0.887 0.380	Rainfall losses 35.737 5.939 35.141 mm*	
Maximum flow 0.205 1.651 1.670 c.m/sec"	Runoff depth 11.503 41.301 12.099 mm*	
4 Add Bunoff *	HUNOTT VOLUME 332.56 24.37 356.92 C.M*	
1.670 1.670 0.035 1.596"	Maximum flow 0.082 0.016 0.085 c.m/sec"	
* 40 HYDROGRAPH Copy to Outflow*	* 40 HYDROGRAPH Add Runoff "	
8 Copy to Outflow	* 4 Add Runoff *	
1.670 1.670 1.570 1.596"	0.085 0.085 1.491 4.610"	
	• 40 HYDHOGRAPH CODY TO OUTTIOW•	
9 Node #"	0.085 0.085 0.085 4.610"	
NODE B	• 40 HYDROGRAPH Combine 9"	
Maximum flow 3.266 c.m/sec"	6 Combine •	
Hydrograph volume 7877.744 c.m"	9 Node #"	
40 HYDROGRAPH Conflience 8"		
7 Confluence "	Maximum row 4,044 C.m/Sec	
* 8 Node #*	• 0.085 0.085 0.085 4.644*	
NODE A	* 40 HYDROGRAPH Confluence 9*	÷
Maximum flow 1.491 c.m/sec"	7 Confluence "	
nyurograph vulume 35889,629 c.m."	• 9 Node #*	
40 HYDROGRAPH Copy to Outflow"	NODE DOW 4.644 c.m/sec"	
8 Copy to Outflow"	Hydrograph volume 44124.313 c.m"	
1.670 1.491 1.491 0.000"	0.085 4.644 0.085 0.000"	
40 HYDROGRAPH COMDINE 9'	40 HYDROGRAPH Copy to Outflow	
9 Node #°		
NODE B"	40 HYDROGRAPH Combine 10"	
Maximum flow 4.610 c.m/sec"	6 Combine "	
Hydrograph volume 43767.371 c.m"	10 Node #"	
- 1.570 1.491 1.491 4.610* * 40 HYDEGRAPH Start - New Tributany"		
2 Start - New Tributary	- Maximum IIOW 4,044 C.m/SeC-	
* 1.670 0.000 1.491 4.610"	0.085 4.644 4.644 4.644	
33 CATCHMENT 284	* 40 HYDROGRAPH Start - New Tributary"	
1 Triangular SCS	2 Start - New Tributary"	
1 Equal Length	- 0.085 0.000 4,544 4,544* * 39 CATCHMENT 285"	
284 Agricultural lands south of Bleams Road	1 Triangular SCS"	
2.000 % Impervious"	3 Specify values"	
2.950 Total Area	1 SCS method"	
- SU, UUU FLOW LENGTH"	285 Morningside Retirement Community lands"	
2.891 Pervious Area"	ball and the second sec	
80.000 Pervious length*	190.000 Flow length"	
3.100 Pervious slope"	* 2.000 Overland Slope*	
0.059 Impervious Area	7.888 Pervious Area"	
- 80.000 Impervious length" 3.100 Impervious slope"	25,000 Pervious length"	
0.250 Pervious Manning 'n'"	2.500 FETVIOUS SIDDE" 10.892 Innervious Area"	
* 74.000 Pervious SCS Curve No.*	• 354.000 Impervious length"	
0.244 Pervious Runoff coefficient"	2.500 Impervious slope"	
0.100 Pervious Ia/S coefficient"	• 0.250 Pervious Manning 'n'	

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Original Characteristics and Dest Dest and	
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* 40 HYDROGRAPH Copy to Dutflow*	47 FILEI_O Read/Open DIVO0007.005hyd"
8 Copy to Outflow"	2 1=rainfall: 2=hydrograph"
0.572 0.572 0.572 0.097	1 1=runoff; 2=inflow; 3=outflow; 4=junction"
40 HYDROGRAPH Combine 11"	DIV00007.005hyd
11 Node #"	" Major tlow at 7" "Total volume 0.000 c.m"
u/s of east culvert of HWY 7&8"	Maximum flow 0.000 c.m/sec"
Maximum flow 0.591 c.m/sec"	" 0.000 0.000 0.078 0.645 c.m/sec"
Hydrograph volume 1746.827 c.m.	40 HYDROGRAPH Add Runoff "
40 HYDROGRAPH Start - New Tributary"	
2 Start - New Tributary"	• 40 HYDROGRAPH Copy to Outflow"
0.572 0.000 0.572 0.591"	8 Copy to Outflow"
33 CATCHMENT 252"	• 0,000 0.000 0.000 0.645*
1 Equal length"	40 mtuRodriavin compine 11" 6 Compine "
1 SCS method"	11 Node #"
252 Southern portion of Hamburglr lands	u/s of east culvert of HWY 7&8"
5.000 % Impervious" 2.870 Tatal Ange	Maximum flow 0.645 c.m/sec"
5.000 Flow length"	Hydrograph Volume 2119.578 C.m."
1.500 Overland Slope'	40 HYDROGRAPH Confluence 11"
2.726 Pervious Area"	* 7 Confluence *
65,000 Pervious length"	11 Node #*
0.144 Impervious Acea"	U/S OT EAST CULVERT OT HWY / &8'
5.000 Impervious length"	Hydrograph volume 2119.578 c.m."
1.500 Impervious slope"	0.000 0.645 0.000 0.000"
0.250 Pervious Manning 'n'"	54 POND DESIGN"
74.000 Pervious Buodificient"	0.645 Current peak flow c.m/sec"
0.100 Pervious Ia/S coefficient	2119.6 Hydrograph volume c.m."
8.924 Pervious Initial abstraction"	9. Number of stages"
0.015 Impervious Manning 'n'"	332.660 Minimum water level metre"
98.000 Impervious SCS Curve No."	336,000 Maximum water level metre"
0.100 Impervious Ia(S coefficient"	532.000 Starting water level metre $0 = False^{\mu}$
0.518 Impervious Initial abstraction"	Level Discharge Volume"
0.078 0.000 0.572 0.591 c.m/sec"	* 332.660 0.000 0.000°
Catchment 252 Pervious Impervious Total Area	333.000 0.3010 198.000"
Time of concentration 34,223 3,434 29,337 minutes"	333,500 1.168 1165,000 334,000 2.325 2895 000"
Time to Centroid 140.461 91.016 132.614 minutes"	334.500 3.132 5301.000°
Rainfall depth 47.240 47.240 mm"	* 335.000 3.780 8376.000°
Raintail volume 1287.99 67.79 1355.78 c.m" Bainfail Jacoba 25 239 6 017 24 550	335.500 4.332 12258.00"
Runoff deth 11.502 41.222 12.988 mm ⁴	335.750 4.583 14551.00"
* Runoff volume 313.61 59.15 372.76 c.m"	Peak outflow 0.393 c.m/sec"
Runoff coefficient 0.243 0.873 0.275 "	Maximum level 333.053 metre"
Maximum flow 0.073 0.040 0.078 c.m/sec"	Maximum storage 300.466 c.m"
4 Add Bunoff "	Centrolai lag 2.2/9 nours"
0.078 0.078 0.572 0.591"	* 40 HYDROGRAPH Next link "
40 HYDROGRAPH Copy to Outflow"	5 Next link "
8 Copy to Outflow"	0.000 0.393 0.393 0.000"
40 HYDROGRAPH Combine 11"	3 Bunoff Totals on EXIT
6 Combine "	Total Catchment area 234.030 hectare"
11 Node #*	* Total Impervious area 110.433 hectare*
U/s of east culvert of HWY 7&8"	Total % impervious 47.187"
маслиции i Luw 0.045 с.m./960~ Нудгорагари volume 2119.578 с.m."	IS EXII
0.078 0.078 0.078 0.645"	
40 HYDROGRAPH Start - New Tributary	
- 2 Start - New Tributary"	

9 10 2 * . 2

Q;\34896\104\SWM\MIDUSS\Post\34896-104_Post-010yr.out Page 1 Printed at 15:37 on 18 Dec 2018	Q:I348961104ISWMIMIDUSSIPostI34896-104_Post-010yr.out Printed at 15:37 on 18 Dec 2018	Page 2
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"	Time to Centroid 141.929 92.233 141.929 minutes" Rainfall depth 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"	
400 CONNECTION 12/17/2018 14 2:304 FW 7 Lines of comment: Wilnot Employment Lands: New Hamburg, Ontario: 10 Year Storm Event - Post development:	 *0 Introducer Add Number 1 *0 0.157 0.167 0.000 0.000" *1 ATTOMENT OF 0.167 0.000 0.000" *1 ATTOMENT OF 0.000 0.000" *1 ATTOMENT OF 0.000 0.000" *1 ATTAIL OF 0.000 0.000" *2 Wooldot - north of GEXR* *2.080 Total Area* *2.080 Pervious length" *3.000 Impervious length" *4.000 Impervious length Coefficient" *4.000 Impervious Runoff coefficient" *5.00 Impervious Runoff coefficient" *5.00 Impervious Runoff coefficient" *5.00 Impervious Runoff coefficient" *5.01 Impervious Runoff coefficient" *5.01 Impervious Runoff coefficient" *5.01 Impervious Runoff coefficient" *5.01 Caccharea 2.080 0.000 2.080 hectare" Time of concentration 31.163 3.069 31.163 minutes" *5.290 Mm" *5.291 0.000 0.000" *5.290 Mm" *5.291	

\34896\104\SWM\MIDUSS\Post\34896-104_Post-010yr.out Page 3 inted at 15:37 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-010yr.out Printed at 15:37 on 18 Dec 2018	Page 4
1 SCS method"	6 Combine *	
203 Pfenning Farm Residential Development"	1 Node #"	
	U/S OT GEXH" Maximum flow 0.527 o m/coo"	
90.000 Flow length"	Maximum Filow 0.527 C.m/Sec	
1.000 Overland Slope"	4.057 4.057 0.310 0.527"	
7.404 Pervious Area"	* 40 HYDROGRAPH Confluence 1*	
90.000 Pervious length"	7 Confluence "	
1.000 Pervious slope"	1 Node #"	
90 000 Impervious legath"	U/S OT GEXH"	
1.000 Impervious slope"	Hydrograph volume 8129.803 c.m*	
0.250 Pervious Manning 'n'"	4.057 0.527 0.310 0.000	
76.000 Pervious SCS Curve No."	40 HYDROGRAPH Copy to Outflow"	
0.366 Pervious Runoff coefficient"	8 Copy to Outflow"	
0.050 Pervious Ia/S coefficient"	4.057 0.527 0.527 0.000"	
0.015 Therefore Manning Interaction	40 HYDRUGHAPH COMDINE 2"	
98.000 Impervious SCS Curve No."		
0.898 Impervious Runoff coefficient"	INLET 1"	
0.100 Impervious Ia/S coefficient"	 Maximum flow 0.527 c.m/sec" 	
0.518 Impervious Initial abstraction"	Hydrograph volume 8129.803 c.m"	
4.057 0.000 0.237 0.237 c.m/sec"	4.057 0.527 0.527 0.527"	
Surface Area 7 404 11 106 18 510 bectare"	40 HYDHOGHAPH START - New Fributary"	
Time of concentration 34,985 4,336 10,886 minutes"	$4.057 cmth{0.00} cmth{0.00} cmth{0.527} cmth{0.527}$	
Time to Centroid 139.289 91.294 101.551 minutes"	* 81 ADD COMMENT	
Rainfall depth 56.290 56.290 mm*	3 Lines of comment"	
Rainfall volume 0.4168 0.6252 1.0419 ha-m"	• • • • • • • • • • • • • • • • • • • •	
Rainfall losses 35.678 5.730 17.709 mm"	Catchments South of GEXR, part of Inlet #1	
HUNDTT GEPTN 20.613 50.560 38.561 mm"		
Runoff coefficient 0.366 0.898 0.685 "	* 1 Triangular SCS*	
Maximum flow 0.373 3.971 4.057 c.m/sec"	3 Specify values"	
40 HYDROGRAPH Add Runoff "	1 SCS method"	
4 Add Runoff "	204 Riverside Brass"	
4.057 4.057 0.237 0.237"	59.000 % Impervious"	
4 PORU DESIGN" 4.057 Cuppert peak flow a m/cee"	2.020 Total Area"	
2.303 Target outflow c.m/sec	1.200 Decilard Slope"	
7141.3 Hydrograph volume c.m"	0.828 Pervious Area"	
6. Number of stages"	60.000 Pervious length"	
341.500 Minimum water level metre	2.000 Pervious slope"	
343.600 Maximum water level metre"	1.192 Impervious Area"	
341.500 Starting water level metre	116.000 Impervious length"	
level Discharace Volume"	0.250 Pervicus Stope	
341,500 0.000 0.000*	76.000 Pervious SCS Curve No."	
342.000 0.1541 1746.000"	* 0.322 Pervious Runoff coefficient"	
342.500 0.2669 3784.000"	0.100 Pervious Ia/S coefficient"	
343.000 0.3446 6114.000"	8.021 Pervious Initial abstraction"	
343,500 2,941,926,000"	0.015 Impervious Manning 'n''	
1. WEIRS"	0.901 Impervious Bunoff coefficient"	
Crest Weir Crest Left Right	0.100 Impervious Ia/S coefficient"	
elevation coefficie breadth sideslope sideslope"	0.518 Impervious Initial abstraction"	
343.300 0.900 10.000 0.000 0.000"	0.441 0.000 0.527 0.527 c.m/sec"	
1. ORIFICES"	Catchment 204 Pervious Impervious Total Area "	
vrifice vrifice vrifice Number of "	Surface Area 0.828 1.192 2.020 hectare"	
THYER'S CONTINUE OF ATAINSTER'S OF THE CONTINUES	Time to Control 23.839 6.216 9.723 milutes"	
Peak outflow 0.310 c.m/sec"	Rainfail denth 56 290 56 290 500.2/9 milliules	
Maximum level 342.778 metre	Rainfall volume 466,19 670.87 1137.06 c.m*	
Maximum storage 5081.307 c.m"	Rainfall losses 38.162 5.581 18.939 mm"	
Centroidal lag 5.490 hours"	Runoff depth 18.128 50.709 37.351 mm"	
4.057 4.057 0.310 0.237 c.m/sec*	Runoff volume 150.14 604.35 754.49 c.m"	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.322 0.901 0.664 "	

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. 40	Maximum flow 0.047 0.426 0.441 c.m/sec"		•	Runoff volume 151.06 30.01 181.07 c.m"	
40			· ·	Runoff coefficient 0.237 0.896 0.270 *	
	0.441 0.441 0.527 0.527*		· 40	Maximum Tiow 0.021 0.022 0.024 c.m/sec*	
* 54	POND DESIGN"		. 40	4 Add Runoff "	
	0.441 Current peak flow c.m/sec"		•	0.024 0.024 0.024 0.548"	
	0.070 Target outflow c.m/sec*		40	HYDROGRAPH Copy to Outflow"	
	A Number of stages"		÷	8 Copy to Outflow	
	•. Number of stages 0.000 Minimum water level metre"		5.40	0.024 0.024 0.024 0.548" HVDPOGPAPH Combine 2"	
	0.910 Maximum water level metre*		- 40	n Dhodharn Collidate 2	
	0.000 Starting water level metre"			2 Node #"	
÷	0 Keep Design Data: 1 = True; 0 = False"			INLET 1"	
	Level Discharge Volume"			Maximum flow 0.567 c.m/sec"	
•	0.3100 0.03090 782.000"		÷	Hydrograph Volume 9038.109 c.m*	
1. S.	0.6100 0.1232 1619.000"		* 40	HYDROGRAPH Start - New Tributary"	
	0.9100 0.2769 2511.000*			2 Start - New Tributary"	
S	Peak outflow 0.024 c.m/sec*		<u>.</u>	0.024 0.000 0.024 0.567*	
	Maximum level 0.236 metre"		* 33	CATCHMENT 206"	
	Maximum storage 595.098 c.m" Centroidal lag 9.614 bours"		- Ç	1 Triangular SCS"	
	0.441 0.441 0.024 0.527 c.m/sec*			1 ECG mothod"	
* 40	HYDROGRAPH Combine 2"			206 Industrial properties at end of Hamilton Road"	
	6 Combine "			35.000 % Impervious"	
	2 Node #"			2.850 Total Area"	
÷	INLET 1"			50.000 Flow length"	
	Maximum Flow (J.548 C.m./sec"		÷.	1.000 Overland Slope"	
	0.441 0.441 0.724 0.548*			1,352 PERVIOUS AFRA*	
* 40	HYDROGRAPH Start - New Tributary"			1.000 Pervious stength	
	2 Start - New Tributary"		×	0.997 Impervious Area"	
	0.441 0.000 0.024 0.548*		2	50.000 Impervious length"	
33	CALCHMENT 205"		÷	1.000 Impervious slope"	
	3 Specify values"			0.250 Pervious Manning 'n'"	
	1 SCS method"		•	0.322 Pervious Rupoff coefficient*	
	205 Iron Bridge Manufacturing Property - Woodlot"		•	0.100 Pervious Ia/S coefficient"	
	5.000 % Impervious			8.021 Pervious Initial abstraction	
- C	1.190 Iotal Area"			0.015 Impervious Manning 'n'"	
	1.800 Overland Slope"			98.000 Impervious SCS Curve No."	
(#)	1.131 Pervious Area"			0.890 Impervious Runott coetilcient" 0.100 Impervious 1/S coefficient"	
1.	255.000 Pervious length			0.518 Impervious Initial abstraction"	
옷	1.800 Pervious slope"		•	0.360 0.000 0.024 0.567 c.m/sec"	
140	0.060 Impervious Area"		·	Catchment 206 Pervious Impervious Total Area "	
	255.000 Impervious length"		1	Surface Area 1.852 0.997 2.850 hectare	
	0.250 Pervious Manning 'n'"			lime or concentration 26.308 3.047 12.398 minutes"	
	70.000 Pervious SCS Curve No."			Rainfall denth 56.200 56.200 56.200 mm"	
0000	0.237 Pervious Runoff coefficient*			Rainfall volume 1042.77 561.49 1604.27 c.m*	
	0.100 Pervious Ia/S coefficient"		2	Rainfall losses 38.166 6.216 26.984 mm"	
- C	10.886 Pervious Initial abstraction"			Runoff depth 18.124 50.074 29.306 mm"	
141	98.000 Impervious Manning "		<u>.</u>	Runoff volume 335.74 499.49 835.23 c.m"	
000	0.896 Impervious Runoff coefficient"		÷.	Multipli Coefficient 0.322 0.890 0.521 -	
	0.100 Impervious Ia/S coefficient"		• 40	HYDROGRAPH Add Runoff " 0.555 0.554 0.556 0.574	
2	0.518 Impervious Initial abstraction		5	4 Add Runoff "	
0.000	0.024 0.000 0.024 0.548 c.m/sec"		2	0.360 0.360 0.024 0.567"	
	Surface Area 1 131 0.060 1 100 bostono"		33	CATCHMENT 207"	
	Time of concentration 68.946 6.790 58.644 minutes"			i intangutar sos" 1 Faus Jonath	
•	Time to Centroid 181.294 94.818 166.961 minutes"			1 SCS method"	
	Rainfall depth 56.290 56.290 mm"			207 Woodlot and Wetland east of Pestells"	
	Rainfall volume 636.36 33.49 669.85 c.m"			5.000 % Impervious"	
	Rainiaii 108868 42.928 5.853 41.074 mm" Bunoff depth 13.362 50.437 15.216 mm"			5.920 Total Area"	
				001000 LTOW TRUBLI	

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 3.000 Overland Slope" 5.624 Pervious Area" 65.000 Pervious lope" 0.296 Impervious Area" 65.000 Impervious alope" 0.296 Impervious slope" 0.200 Impervious slope" 0.250 Pervious Manning 'n'" 70.200 Pervious SCS Curve No." 0.240 Pervious Inoff coefficient" 0.100 Pervious Ia/S coefficient" 10.782 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 	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 mm" Rainfall losses 39.063 5.579 13.950 mm" Runoff depth 17.227 50.711 42.340 mm" Runoff depth 17.227 50.711 42.340 mm"
98.000 Impervious SCS Curve No."	Runoff coefficient 0.306 0.901 0.752 "
0.888 Impervious Runoff coefficient"	Maximum flow 0.084 1.507 1.540 c.m/sec"
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff "
0.518 Impervious Ia/S coefficient"	4 Add Bunoff "
 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 22.068 minutes" Time of concentration 25.895 2.565 22.068 minutes" rainfall depth 56.290 56.290 me" Rainfall volume 3165.76 166.62 332.38 me" Rainfall volume 3165.76 162.62 332.38 me" Rainfall volume 3165.76 162.62 332.38 me" Rainfall volume 3165.76 162.62 332.38 me" Rainfall volume 3165.76 6.281 40.970 me" Runoff depth 13.494 50.009 53.20 mm" Runoff coefficient 0.240 0.888 0.27 meximum flow 0.216 0.106 0.237 0.512 0.567" 4 Add Runoff " 0.237 0.512 0.567" 40	4 Add Runoff " 1.540 1.540 0.512 0.938" 54 POND DESIGN" 1.540 c.m/sec" 0.070 Target outflow c.m/sec" 2341.4 Hydrograph volume c.m" 9. 9. Number of stages" 0.000 Minimum water level metre" 1.200 Maximum water level metre" 0.000 Starting water level metre" 0.000 Starting water level metre" 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.500 0.0400 0.500 0.0400 0.6000 140.000" 0.6000 0.647.000" 0.5000 0.6600 0.5220 2852.000" 1.500 0.5220 1.500 0.5220 1.200 1.100 290.000" Peak outflow 0.061 0.773 metre"
0.237 0.000 0.512 0.938"	2 Node #"
33 CATCHMENT 208"	INLET 1"
1 Triangular SCS"	Maximum flow 0.991 c.m/sec"
3 Specify values"	Hydrograph volume 12777.717 c.m"
 1 SCS method" 208 N.C. Pestell site" 75.000 % Impervious" 5.530 Total Area" 130.000 Flow length" 2.000 Overland Slope" 	1.540 1.540 0.061 0.991" 81 ADD COMMENT===================================
 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" 	 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"
8.467 Pervious Initial abstraction"	150.000 Flow length"
0.015 Impervious Manning 'n'"	1.000 Overland Slope"
98.000 Impervious SCS Curve No."	1.344 Pervious Area"

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150.000 Parvious Japath	Filling at 10.07 OF 10 DOC 2010	
1 500 Pervious slope"	5.000 % Impervious"	
0.576 Impervious Area"	13.230 Iotal Area"	
113.000 Impervious length*		
1,500 Impervious slope"	12.568 Pervious Area"	
* 0.250 Pervious Manning 'n'*	170.000 Pervious length	
80,000 Pervious SCS Curve No."	2.400 Pervious slope"	
0.390 Pervious Runoff coefficient	• 0.661 Impervious Area"	
0.100 Pervious Ia/S coefficient	170.000 Impervious length"	
6.350 Pervious Initial abstraction"	2.400 Impervious slope"	
	0.250 Pervious Manning 'n'	
0.899 Tampervisus Runoff coefficient*	0.007 Pervious SUS CUIVE No."	
0.100 Impervious Ia/S coefficient"	0.237 Pervious Rulott Coefficient	
 0.518 Impervious Initial abstraction" 	10.886 Pervious Initial abstraction"	
0.219 0.000 0.061 0.991 c.m/sec*	0.015 Impervious Manning 'n'"	
Catchment 209 Pervious Impervious Total Area "	98.000 Impervious SCS Curve No."	
Surface Area 1.344 0.576 1.920 hectare	0.899 Impervious Runoff coefficient*	
lime of concentration 40.878 4.401 22.762 minutes	0.100 Impervious Ia/S coefficient"	
Prinfall doth 56.8// 91.383 119.317 minutes	0.518 Impervious Initial abstraction"	
Rainfall depth 50.290 55.290 56.290 mm ⁻	0.328 0.000 0.097 0.097 c.m/sec"	
Rainfall Joses 34 319 5 708 25 755 mm ⁴	Catchment 210 Pervious Impervious Iotal Area	
Bunoff deoth 21,972 50,582 30,555 mm ⁴	Surface Area 12.558 0.661 13.230 Nectare	
* Runoff volume 295,30 291,35 586.65 c.m*	Time to Controld 157 759 92 103 146 848 minutes"	
Runoff coefficient 0.390 0.899 0.543	Rainfall depth 56.290 56.290 mm*	
Maximum flow 0.064 0.206 0.219 c.m/sec*	Rainfall volume 7074.83 372.36 7447.19 c.m"	
40 HYDROGRAPH Add Runoff *	Rainfall losses 42.930 5.698 41.068 mm*	
4 Add Runoff	Runoff depth 13.360 50.593 15.222 mm*	
0.219 0.219 0.061 0.991"	* Runoff volume 1679.20 334.67 2013.87 c.m*	
54 PUND DESIGN"	Runoff coefficient 0.237 0.899 0.270	
0.219 Current peak flow c.m/sec*	Maximum flow 0.307 0.240 0.328 c.m/sec"	
586.6 Hydrograph volume c.m."	40 HYDROGRAPH Add Runott "	
7. Number of stances"	4 Add KUNOTT -	
• 0.000 Minimum water level metre"	* 40 HYDROGRAPH Conv. to Outflow"	
1.100 Maximum water level metre"	8 Copy to Outflow"	
0.000 Starting water level metre	0.328 0.328 0.328 0.097"	
0 Keep Design Data: 1 = True; 0 = False"	* 40 HYDROGRAPH Combine 3°	
Level Discharge Volume"	* 6 Combine "	
0.000 0.000 0.000"	3 Node #°	
	INLET 2"	
	Maximum flow 0.424 c.m/sec"	
0,9000 0,1400 346,000"	0 939 0 939 0 939 0 934	
1.000 0.3110 445,000"	* 81 ADD COMMENT===================================	
1.100 0.6160 557.000"	3 Lines of comment"	
Peak outflow 0,097 c.m/sec"		
Maximum level 0.551 metre*	South of GEXR along Nafziger Rd, part of Inlet #3"	
Maximum storage 101.655 c.m°	*****	
Centroidal Lag 2,180 hours"	40 HYDROGRAPH Start - New Tributary	
4.0 HVD9000404 Combine 21	2 Start - New Tributary	
	0.328 0.000 0.328 0.424 0.424	
3 Node #"	33 CAICHMENI 211	
INLET 2"		
Maximum flow 0.097 c.m/sec"	1 SCS method"	
Hydrograph volume 587.274 c.m"	211 Culivated lands east of Nafziger Road"	
0.219 0.219 0.097 0.097"	1.000 % Impervious"	
40 HYDROGRAPH Start - New Tributary"	7.310 Total Area"	
2 Start - New Tributary"	120.000 Flow length"	
33 CATCHNENT 310"	3,300 Overland Slope"	
1 Triangular SCS"	120 000 Review Longth	
f Equal length"	3 300 Pérvious Jengui	
* 1 SCS method"	0.073 Impervious Area"	
* 210 Woodlot north of Hamburglr/Badenview lands*	120.000 Impervious length"	

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•	3 300 Impervious slope"		Time of concentration 45.604 4.809 20.909 minutes"	
51	0.250 Pervious Manning 'n'"		Time to Centroid 152.977 91.996 116.063 minutes"	
	76.000 Pervious SCS Curve No."		Rainfall depth 56.290 56.290 mm"	
	0.322 Pervious Runoff coefficient"		Rainfall volume 864.62 576.41 1441.03 c.m*	
•	0.100 Pervious Ia/S coefficient"		Rainfall losses 34.307 5.712 22.869 mm"	
	8.021 Pervious Initial abstraction"	-	Runoff depth 21.983 50.578 33.421 mm"	
÷	0.015 Impervious Manning 'n'"		Runoff volume 337.66 517.92 855.58 c.m*	
•	98.000 Impervious SCS Curve No."	•	Runoff coefficient 0.391 0.899 0.594 "	
	0.887 Impervious Runoff coefficient"	÷	Maximum flow 0.066 0.370 0.382 c.m/sec"	
1	0.100 Impervious Ia/S coefficient	40	HYDROGRAPH Add Runott "	
<u>.</u>	0.518 Impervious Initial abstraction"	÷	4 Add KUNOTT "	
2			0.382 0.382 0.346 0.346"	
2	Catchment 211 Pervious impervious intal Area -	54	FUND DESIGN	
2	Time of concentration 21 092 2 602 90 948 minutes"		0.020 Terrot outfillow c m/sec	
	Time to Centroid 134.736 90.293 133.532 minutes"		855 6 Hydrograph volume c.m [*]	
× .	Rainfall denth 56,290, 56,290, 56,290, mm"	*	7. Number of stages"	
•	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.000 Minimum water level metre"	
	Rainfall losses 38.169 6.344 37.851 mm"		1.000 Maximum water level metre"	
	Runoff depth 18.121 49.947 18.439 mm*		0.000 Starting water level metre"	
	Runoff volume 1311.40 36.51 1347.91 c.m"		0 Keep Design Data: 1 = True: 0 = False"	
5	Runoff coefficient 0.322 0.887 0.328 "		Level Discharge Volume"	
	Maximum flow 0.341 0.025 0.346 c.m/sec"	-	0.000 0.000 0.000"	
* 40	HYDROGRAPH Add Runoff "		0.1000 0.02000 7.000"	
•	4 Add Runoff "		0.2500 0.04200 64.000"	
*	0.346 0.346 0.328 0.424"	÷	0.5000 0.09000 343.000"	
* 40	HYDROGRAPH Copy to Outflow"		0.7500 0.1250 877.000"	
÷	8 Copy to Outflow"		0.8000 0.1360 1014.000"	
	0.346 0.346 0.346 0.424"		1.000 0.7880 1667.000"	
40	HYDROGRAPH Combine 4"		Peak outriow 0.088 c.m/sec"	
2	6 Combine "	÷.	Maximum level 0.489 metre	
÷.		÷	Maximum storage 330.576 C.m."	
*			0 382 0 382 0 088 0 346 c m/sec"	
	Mazilluli 10w 0.345 C. II Sec	- 40	HYDROGRAPH Combine 4"	
	1 yor og april vordine 1 of 1 soft stiller	. 40	6 Combine "	
* 40	HYDROGRAPH Start - New Tributary"	×	4 Node #"	
	2 Start - New Tributary"		INLET 3"	
•	0.346 0.000 0.346 0.346"		Maximum flow 0.430 c.m/sec"	
* 33	CATCHMENT 212"		Hydrograph volume 2203.337 c.m°	
*	1 Triangular SCS"	-	0.382 0.382 0.088 0.430"	
*	3 Specify values"	4 0	HYDROGRAPH Start - New Tributary"	
	1 SCS method"		2 Start - New Tributary"	
<u>.</u>	212 Alpine Solutions - East SMWP"	÷	0.382 0.000 0.088 0.430"	
	40.000 % Impervious"	33	CATCHMENT 213"	
2	2.560 lotal Area"	<u> </u>	1 Frangular SCS"	
2	150.000 Flow length	<u> </u>	1 Equal length"	
1	1.500 Overland Slope		I SUS MELTION	
	1.000 Feivious Airda		2.10 woodde cast and west of Natziger nodu 3.000 & Temperyonis"	
	1.500 Pervious length			
	1.024 Impervious Area"		140.000 Flow length"	
	131.000 Impervious length"	× ·	3.600 Overland Slope"	
2	1.500 Impervious slope"	*	13.056 Pervious Area"	
	0.250 Pervious Manning 'n'"		140.000 Pervious length"	
	80.000 Pervious SCS Curve No."		3.600 Pervious slope"	
	0.391 Pervious Runoff coefficient"		0.404 Impervious Area"	
	0.100 Pervious Ia/S coefficient"	5	140.000 Impervious length"	
	6.350 Pervious Initial abstraction"	5	3.600 Impervious slope"	
<u>*</u>	0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"	
*)	98.000 Impervious SCS Curve No."		70.100 Pervious SCS Curve No."	
÷	0.899 Impervious Runoff coefficient"	÷ .	0.239 Pervious Runoff coefficient"	
2	U.TUU Impervious Ia/S coefficient"	<u></u>	U.100 Pervious Ia/S coetticent"	
	U.SIX Impervious Initial ADSTFACTION"		10.034 Fervious Initial abstraction"	
	0.302 0.000 0.340 0.340 0.340C		0.000 Impervious SC Curve No "	
÷.	Surface Area 1.536 1.024 2.560 hectare"		0.892 Impervious Runoff coefficient"	

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×.,	0.100 Impervious Ia/S coefficient"		* 40	HYDROGRAPH Add Runoff "
	0.518 Impervious Initial abstraction"		8	4 Add Runoff "
- C	0.402 0.000 0.088 0.430 c.m/sec"		ö	1.369 1.369 0.402 0.827"
	Catchment 213 Pervious Impervious Iotal Area "		54	POND DESIGN"
122	Time of concentration 38.965 3.849 35.326 minutes"		*	0.070 Target outflow c.m/sec"
	Time to Centroid 144.843 90,632 139,225 minutes"		8 2	173.5 Hydrograph volume c.m ^e
	Rainfall depth 56.290 56.290 56.290 mm*			15. Number of stages"
	Rainfall volume 7349.35 227.30 7576.65 c.m*		•	0.000 Minimum water level metre"
	Rainfall losses 42.859 6.082 41.755 mm*		*	1.450 Maximum water level metre"
<u>.</u>	Runoff depth 13.431 50.208 14.535 mm*			0.000 Starting water level metre"
	Runoff coefficient 0.239 0.892 0.258 "			ievel Discharge Volume"
	Maximum flow 0.383 0.142 0.402 c.m/sec"			0.000 0.000 0.000
* 40	HYDROGRAPH Add Runoff "		*	0.1500 0.00700 248.000"
٠	4 Add Runoff "		•	0.2500 0.00900 418.000"
	0.402 0.402 0.088 0.430"		ň	0.3500 0.01100 593.000"
• 40	HYDROGRAPH Copy to Outflow"		5	0.4500 0.01300 775.000"
÷	8 Copy to DuttIow			0,5500 0.01500 964.000"
* 40	U.402 U.402 U.402 U.430* HVDROGRAPH Combine 4"		<u>.</u>	0.6500 0.01600 1161.000"
	6 Combine 4		2	0.8500 0.01900 1575 000*
	4 Node #*			0.9500 0.02000 1795.000*
	INLET 3"		s	1.050 0.05600 2025.000"
	Maximum flow 0.827 c.m/sec"		•	1.150 0.2080 2263.000"
	Hydrograph volume 4159.701 c.m"		*	1.250 0.4600 2511.000°
	0,402 0.402 0.402 0.827"		*	1.350 2.766 2768.000
40	Albert Now Tributary			1.450 6.856 3033.000"
	2 Start - New Hildudary"		<u>.</u>	Peak outtiow 0.041 c.m/sec"
• 33	CATCHMENT 214"			Maximum storage 1930.151 c.m"
35	1 Triangular SCS"			Centroidal lag 18.348 hours
	3 Specify values"			1.369 1.369 0.041 0.827 c.m/sec"
.*.	1 SCS method"		* 40	HYDROGRAPH Combine 4"
	214 Rec Centre - SWMP"		5	6 Combine "
	73.000 % Impervious"			4 Node #*
	4.950 IOTALAREA"			INLET 3" Maximum flow
	2.800 Overland Slope"			Waximum flow 0.846 C.m/sec-
(*)	1.336 Pervious Area"			1.369 1.369 0.041 0.846"
	40.000 Pervious length"		* 40	HYDROGRAPH Start - New Tributary"
	1.500 Pervious slope"			2 Start - New Tributary
- C	3.613 Impervious Area		*	1.369 0.000 0.041 0.846*
	182.000 Impervious length		33	CATCHMENT 215"
	1.500 Impervious Stope"			1 Triangular SCS" 1 Equal length
	83.000 Pervious SCS Curve No."			1 SCS method"
	0.449 Pervious Runoff coefficient"			215 Vacant Industrial lands west of Nafziger Road*
	0.100 Pervious Ia/S coefficient"		× 4	5.000 % Impervious"
•	5.202 Pervious Initial abstraction"		š –	2.860 Total Area
	0.015 Impervious Manning 'n'		10	05.000 Flow length"
- C	98.000 Impervious SCS Curve No."			2.000 Overland Slope
	0.502 Impervious Runott coetticient"			1.573 Pervious Area"
	0.518 Impervious la/s contraction"		÷ ·	2.000 Pervious slope"
	1.369 0.000 0.402 0.827 c.m/sec*			1.287 Impervious Area"
0. 4 3	Catchment 214 Pervious Impervious Total Area "		• 10	05.000 Impervious length"
320	Surface Area 1.336 3.613 4.950 hectare"		*	2.000 Impervious slope"
5	Time of concentration 17.262 5.858 7.632 minutes"		÷	0.250 Pervious Manning 'n'"
	lime to Centroid 115.692 93.486 96.940 minutes") ⁷	6.000 Pervious SCS Curve No."
2. .	Malintali deptin 55.290 55.290 56.290 mm" Bainfall volume 7.52.32 2024 04 0700 00 mm"		*	0.322 Pervious Runoff coefficient"
	nalintali volume /02.02 2004.04 2/80.30 C.M ⁻ Rainfall Josses 30.997 5.497 12.382 mm			8 021 Pervious Initial abstraction"
141	Runoff depth 25.294 50.793 43.908 mm*			0.015 Impervious Manning 'n'"
000	Runoff volume 338.05 1835.40 2173.45 c.m"		* 9	08.000 Impervious SCS Curve No."
	Runoff coefficient 0.449 0.902 0.780 "		*	0.892 Impervious Runoff coefficient"
	Maximum flow 0.134 1.303 1,369 c.m/sec"		1	0.100 Impervious Ia/S coefficient"

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•)	0.518 Impervious Initial	. abstractio	٦"			
	0.467 0.0	0.04	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		
	Bunoff 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 Bunoff				,	
	4 Add Runoff "					
	0.467 0.4	67 0.04	0.846"			
40	HYDROGRAPH Copy to OL	tflow"	0.040			
40	B Copy to Outflow"	ICT TOW				
	0 0000 00000000000000000000000000000000	67 0 46	7 0 946*			
40	HVDDOCDADH Combine	AN 0.40	0.040			
40	Combine #	4				
	4 Node ##					
	4 NODE # "					
	INLET 3"					
	Maximum Tiow	0.9	9// C.M/S	ec		
	Hydrograph Volume	6628.	185 C.M"			
	0.46/ 0.4	6/ 0.46	. 0.9//"			
40	HYDROGHAPH Start - Ne	w iributary	•			
	2 Start - New Iribut	ary"				
	0.467 0.0	00 0.46	7 0.977"			
33	CATCHMENT 216"					
	1 Triangular SCS"					
	1 Equal length"					
	1 SCS method"					
	216 Industrial lands w	est of Nafz:	iger 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 co	efficient"				
	0.100 Pervious Ta/S coef	ficient"				
	8 021 Pervious Initial a	hstraction"				
	0.015 Impervious Manning	i 'n'"				
	98 000 Impervious SCS Cur	Ve No "				
	0.804 Impervious Busseff	coefficient				
	0.100 Impervious To/P or	officient*				
	0.518 Impervious Taitia	ellitorent.				
			7 0.077	o m/oool		
	0.409 U.U	Dopuiout	U.9//	Total Acces		
	Catchment 216	Pervious	impervious	IOTAL Area	G beeteen 1	
	SUFTACE AFEA	1.5/3	1.287	2.860	nectare"	
	lime of concentration	34.295	3.9/3	13.243	minutes"	
	lime to Centroid	138.777	90.801	105.468	minutes"	
	Rainfall depth	56.290	56.290	56.290	៣៣ "	
	Hainfall 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	с.п"	
	Runoff coefficient	0.322	0.894	0.579		
	Maximum flow	0.069	0.453	0.469	c.m/sec*	
40	HYDROGRAPH Add Runoff					

QP	:\3489 rinted	6\104\SWM\MIDUSS\Post\34896-1 at 15:37 on 18 Dec 2018	104_Post-010	yr.out		귀고한 위험
		4 Add Rupoff "				
5		0.469 0.46	9 0.467	0.977"		
1	40	HYDROGRAPH Copy to Out	flow"			
2		8 Copy to Outflow"	0 0 460	0.077#		
	40	HYDROGRAPH Combine	9 0.469 4"	0.977		
		6 Combine "				
1		4 Node #"				
		INLET 3" Maximum flow	1 2	22 0 7/0		
		Hydrograph volume	7560.7	40 c.m."	20	
		0.469 0.46	9 0.469	1.323"		
2	40	HYDROGRAPH Start - New	Tributary"			
2		2 Start - New Fributa	ry" 0 0.469	1 909		
	33	CATCHMENT 217"	0 0.403	1.020		
		1 Triangular SCS"				
1		1 Equal length*				
2		1 SCS method" 217 Existing POW west o	f Nafzigon	Poad		
		75.000 % Impervious"	i Naiziyei	load		
٠		0.730 Total Area				
1		90.000 Flow length"				
2		0.183 Pervious Area"				
×		90.000 Pervious length"				
3		2.100 Pervious slope"				
2		0.548 Impervious Area" 90.000 Impervious length"				
•		2.100 Impervious slope"				
ŝ,		0.250 Pervious Manning 'n	• #			
2		76.000 Pervious SCS Curve	No."			
		0.322 Pervious Hunott coe 0.100 Pervious Ia/S coeff	TT1C1ent"			
5		8.021 Pervious Initial ab	straction"			
1		0.015 Impervious Manning	*n'*			
		98.000 Impervious SCS Curv	e No." cofficient"			
7		0.100 Impervious Ia/S coe	fficient"			
		0.518 Impervious Initial	abstraction			
1		0.189 0.00	0 0.469	1.323 (c.m/sec"	
		Surface Area	0.183	10pervious 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	55.290	mm"
		Rainfall losses	38.161	6.310	14.273	mm"
		Runoff depth	18.129	49.980	42.018	mm "
2		Runoff volume	33.09	273.64	306.73	c.m"
-		HUNOTT COETTICIENT Maximum flow	0.322	0.688	U.746 0 189	° m/sec"
	40	HYDROGRAPH Add Runoff	"	0.107	0.105	0.117360
*		4 Add Runoff "				
1		0.189 0.18	9 0.469	1.323"		
2	40	B Copy to Outflow"	LTOM.			
		0.189 0.18	9 0.189	1.323"		
•	40	HYDROGRAPH Combine	4"			
2		6 Combine "				
÷		INLET 3"				
5		Maximum flow	1.5	12 c.m/se	ec"	
2		Hydrograph volume	7867.4	66 c.m"		
•	40	U.189 D.18 HYDROGRAPH Confluence	9 U.189 e 2"	1.512"		
5		7 Confluence "	_ 14			

Q:\348 Printer	96/104/SWM/MIDUSS/Post/34896-104_Post-010yr.out Page 17 d at 15:37 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-010yr.out Page 18 Printed at 15:37 on 18 Dec 2018			
1 9 0	2 Node #"	0.250 Pervious Manning 'n'"			
	INLET 1"	76.000 Pervious SCS Curve No."			
	Maximum flow 0.991 c.m/sec"	0.322 Pervious Runoff coefficient"			
	Hydrograph volume 12777.717 c.m*	• 0.100 Pervious Ia/S coefficient*			
•	0.189 0.991 0.189 0.000"	 8.021 Pervious Initial abstraction 			
* 40	HYDROGRAPH Copy to Outflow"	0.015 Impervious Manning 'n'"			
	8 Copy to Outflow"	98.000 Impervious SCS Curve No."			
1.00	0.189 0.991 0.991 0.000"	0.898 Impervious Runoff coefficient*			
40	HYDROGRAPH Combine 5"	0.100 Impervious Ia/S coefficient"			
	6 Combine "	• 0.518 Impervious Initial abstraction"			
	5 Node #"	* 3.836 0.000 1.512 2.668 c.m/sec*			
	u/s of Hwy 7&8"	"Catchment 223 Pervious Impervious Total Area "			
240	Maximum Flow 0.991 c.m/sec"	Surface Area 1.885 10.684 12.570 hectare"			
1.000	Hydrograph volume 12/7/.7/7 c.m-	Time of concentration 37.433 4.336 6.305 minutes"			
. 40	ULIAS	Time to Centroid 142.743 91.294 94.355 minutes"			
. 40	7 Confluence *	RainTall depth 56.290 56.290 mm"			
(4) (A)					
	TNI FT 2"	Burget doubt 10, 106 50, 500 10, 505 mm ⁻			
	Maximum flow 0.424 c m/sec*	Bunoff volume 941 77 5402 07 574 94 or m			
	Hydrograph volume 2601 142 c.m."	Runoff coefficient 0.322 0.808 0.912 *			
	0.189 0.424 0.991 0.000"				
* 40	HYDROGRAPH CODY to Outflow"	40 HYDROGRAPH Add Runoff "			
	8 Copy to Outflow"	4 Add Bunoff "			
	0.189 0.424 0.424 0.000"	3.836 3.836 1.512 2.668"			
* 40	HYDROGRAPH Combine 5"	40 HYDROGRAPH Copy to Outflow"			
•	6 Combine "	8 Copy to Outflow"			
	5 Node #*	* 3.836 3.836 3.836 2.668*			
•	u/s of HWY 7&8"	* 40 HYDROGRAPH Combine 5"			
	Maximum flow 1.391 c.m/sec	6 Combine "			
	Hydrograph volume 15378.855 c.m"	5 Node #"			
	0.189 0.424 0.424 1.391"	" u/s of H₩Y 7&8"			
40	HYDROGRAPH Confluence 4"	Maximum flow 6.504 c.m/sec"			
	7 Contluence "	Hydrograph volume 28990.150 c.m"			
	4 Node #*	3,836 3,836 3,836 6,504"			
	INEE 3"	81 ADD COMMENT===================================			
		3 Lines of comment"			
	11901 0g1 april Volume 7607.400 C.m	Antohonomia and of the line band and of told with			
* 40	HYDROGRAPH CODY to Outflow"	catchinents east of naminton hoad, part of inter #4"			
	B Copy to Outflow	40 HYDEOGRAPH Start - New Tributary			
		2 Start - New Tributary			
* 40	HYDROGRAPH Combine 5"	2 Statt - New Hittottally			
S#0	6 Combine "	* 33 CATCHMENT 218*			
	5 Node #"	1 Triangular SCS"			
	u/s of HWY 7&8"	1 Equal length"			
	Maximum flow 2.668 c.m/sec"	1 SCS method*			
	Hydrograph volume 23246.309 c.m*	218 Ironbridge Manufacturing Property			
	0.189 1.512 1.512 2.668"	85.000 % Impervious"			
* 40	HYDROGRAPH Start - New Tributary	* 2.060 Total Area*			
	2 Start - New Tributary"	5 230.000 Flow length"			
	0.189 0.000 1.512 2.668"	* 1.700 Overland Slope*			
- 33	CALCHMENT 223"	0.309 Pervious Area"			
		230.000 Pervious length"			
	1 CQUAL Length	3.000 Pervious slope"			
	223 New Homburght Tag lands"	1./51 Impervious Area			
	85.000 % Theory at 210. Tallos	30.000 Impervious length			
	12.570 Total Area"	0.250 Reprive Reprint Internet			
	90.000 Flow length"	76 OO PERVIOUS MAINING N			
5.00	1.000 Overland Slope"	0.357 Dervious Duroff coefficient"			
	1.885 Pervious Area"	0.060 Pervious Tal/S coefficient*			
۲	90.000 Pervious length"	4.813 Pervious Initial Astraction"			
	1.000 Pervious slope"	0.015 Impervious Manning 'n'"			
	10.684 Impervious Area"	98.000 Impervious SCS Curve No."			
102	90.000 Impervious length"	* 0.902 Impervious Runoff coefficient			
80	1.000 Impervious slope"	0.100 Impervious Ia/S coefficient*			

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	0.518 Impervious Initial abstraction*		3.000 Pervious slope'
	0.637 0.000 3.836 6.504 c.m/sec"		1.088 Impervious Area"
	Catchment 218 Pervious Impervious Total Area "		* 75.000 Impervious length*
	Surface Area 0.309 1.751 2.060 hectare"		3.000 Impervious slope"
	Time of concentration 44.715 5.476 8.040 minutes"		0.250 Pervious Manning 'n'"
	Time to Centroid 151 964 92 934 96 792 minutes"		76 000 Pervious SCS Curve No "
	Rainfall denth 56.200 56.200 mm"		0 177 Pervious Bunoff coefficient"
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.281 Dervious Ta/S coofficient*
	Bainfall locate 36 175 5 520 10 126 mm ^s		22 S90 Pervious Initial abstractions
	Bundff dorth 200115 50 761 46 164 mm ³		
	Runoff upting 62.16 996.92 00.00 a m ⁴		98 000 Impervious 805 Cupie No *
	Rupolf coefficient $0.357 0.002 0.820 "$		0.997 Impervious Burght conficient"
	$\frac{1}{1000} \frac{1}{1000} \frac{1}{1000} \frac{1}{1000} \frac{1}{1000} \frac{1}{1000} \frac{1}{1000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{100000} \frac{1}{10000000000000000000000000000000000$		0.007 Impervious Ruffi Coefficient
. 40	MAXIMUM 110W 0.012 0.035 0.037 C.M/Sec		0.100 Impervious Ia/s coefficient
40			0.516 Impervious Initial abstraction
	4 Add Hunori *		0.383 0.000 0.233 6.874 c.m/sec*
	0.637 0.637 3.836 6.504"		Catchment 219 Pervious Impervious Iotal Area
54	PCND DESIGN		Surface Area 0.192 1.088 1.280 hectare"
- C	0.637 Current peak flow c.m/sec"		Time of concentration 34.229 2.795 3.868 minutes"
- R	4.094 Target outflow c.m/sec"		Time to Centroid 143,695 89,055 90,919 minutes"
	951.0 Hydrograph volume c.m"		• Rainfall depth 56.290 56.290 56.290 mm•
	15. Number of stages"		Rainfall volume 108.08 612.44 720.51 c.m"
	344.700 Minimum water level metre"		 Rainfall losses 46.299 6.364 12.354 mm"
	345.400 Maximum water level metre"		Runoff depth 9.991 49.926 43.936 mm"
-	0.000 Starting water level metre"		* Runoff volume 19.18 543.20 562.38 c.m"
*	0 Keep Design Data: 1 = True; 0 = False"		* Runoff coefficient 0.177 0.887 0.781 "
元.	Level Discharge Volume"		Maximum flow 0.004 0.383 0.383 c.m/sec"
	344.700 0.1250 0.000*		40 HYDROGRAPH Add Runoff
*	344.750 0.1270 9.000°		* 4 Add Runoff * /
•	344.800 0.1280 35.000"		* 0.383 0.383 0.233 6.674*
*	344.850 0.1300 77.000"		* 40 HYDROGRAPH Copy to Outflow"
	344.900 0.1450 136.000*		8 Copy to Outflow*
-	344.950 0.1820 209.000"		• 0.383 0.383 0.383 6.674°
+	345,000 0,2220 297,000"		40 HYDROGRAPH Combine 5"
	345.050 0.2690 400.000"		6 Combine "
	345.100 0.2710 519.000"		5 Node #"
	345.150 0.2740 653.000*		" U/S of HWY 7&8"
+	345,200 0,2760 804,000"		Maximum flow 7.026 cm/sec"
	345 250 0 2790 971 000*		Hydrograph volume 30502 574 c m*
	345 300 0 2820 1154 000		
	345 350 0 2840 1355 000*		40 HVDPOCRAPH Start - New Tributary"
*	345.400 0.2860 1571.000*		2 Start - New Hibbary
<u>_</u>			
	Maximum storage 321.103 C.m		
	Centroldal lag 1.651 nours		
	0.637 0.537 0.233 0.504 C.m/sec		
40	HYDHUGHAPH COMDINE 5		220 Northwest corner of Nithview Heights"
	6 Compine -		- 8.000 % Impervious
÷	5 Node #"		0.500 Total Area
2	u/s of HWY 7&8"		60.000 Flow length*
	Maximum flow 6.674 c.m/sec"		5.000 Overland Slope"
•	Hydrograph volume 29940.189 c.m"		0.460 Pervious Area"
•	0.637 0.637 0.233 6.674"		60.000 Pervious length"
* 40	HYDROGRAPH Start - New Tributary"		5.000 Pervious slope"
*	2 Start - New Tributary		0.040 Impervious Area"
	0.637 0.000 0.233 6.674"		60.000 Impervious length"
* 33	CATCHMENT 219"		* 5.000 Impervious slope"
•	1 Triangular SCS"		0.250 Pervious Manning 'n'
	1 Equal length		74,000 Pervious SCS Curve No."
	1 SCS method"		0.291 Pervious Bunoff coefficient"
•)	219 N.C. Pestells Head Office & other Industrial"		0.100 Pervious Ia/S coefficient"
	85 000 % Impervious"		* 8 924 Pervious Initial abstraction*
			0.015 Theory is Managing Jone
			9000 Impervious SCS Curve No."
	1.500 Diversion Classes		0.000 Impervious Buseff coefficient"
	1.500 Overland Stope		0.094 Impervious Runott Coetticlent
	U.132 FEIVIOUS AIRE		0.100 Impervious Ta/S coefficient
20	12:000 Relations religiu.		U.STO IMPERVIOUS INITIAL ADSTRACTION"

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Printed at 15:37 on 18 Dec 2018	Printed at 15:37 on 18 Dec 2018
0.030 0.000 0.383 7.026 c.m/sec"	• 0.245 0.245 0.030 7.049"
Catchment 220 Pervious Impervious Total Area "	• 40 HYDROGRAPH Copy to Outflow"
Surface Area 0.460 0.040 0.500 hectare"	• 8 Copy to Outflow"
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 depth 56.290 256.290 26.290 56.290	0.245 0.245 0.245 7.049" 40 HYDROGRAPH Combine 5" 6 Combine "
Rainfall Volume 25,95 22,32 26,145 C.m Rainfall losses 39,896 5,968 37,183 mm" Runoff depth 16.392 50.322 19,107 mm" Runoff volume 75.40 20.13 95.53 c.m	ys of HWY 7&8" Waximum flow 7.256 c.m/sec" Hydrograph volume 30957.117 c.m"
Munort coerticient 0.291 0.894 0.339 " Maximum flow 0.027 0.015 0.030 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff "	0.245 0.245 0.245 7.256" 81 ADD COMMENT===================================
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"	Catchment to Inlet #5" 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"
40 HYDROGRAPH Combine 5"	0.245 0.000 0.245 7.256"
6 Combine "	33 CATCHMENT 222"
5 Node #"	1 Triangular SCS"
Maximum flow 7.049 c.m/sec"	1 SCS method"
Hydrograph volume 30598.107 c.m"	222 Rear yards from Hamilton Heights Subdivision"
0.030 0.030 0.030 7.049"	5.000 % Impervious"
40 HYDROGRAPH Start - New Tributary"	1.080 Total Area"
2 Start - New Tributary"	20.000 Flow length"
0.030 0.000 0.030 7.049"	3.000 Overland Slope"
33 CATCHMENT 221"	1.026 Pervious Area"
1 Triangular SCS" 1 Equal length" 1 SCS method" 221 Proposed ROW from Hamilton Road"	 20.000 Pervious length" 3.000 Pervious slope" 0.054 Impervious Area" 20.000 Impervious length"
81.500 % Impervious"	3.000 Impervious slope"
0.810 Total Area"	0.250 Pervious Manning 'n'"
40.000 Flow length"	76.000 Pervious SOS Curve No."
0.150 Pervisus Area 40.000 Pervisus length" 2.000 Pervisus slope"	 0.322 Pervisus number conflictent 0.100 Pervisus Ia/S coefficient 8.021 Pervisus Initial abstraction 0.015 Impervisus Manning 'n'*
0.660 Impervious Area"	98.000 Impervious SCS Curve No."
40.000 Impervious length"	0.889 Impervious Runoff coefficient"
2.000 Impervious slope"	0.100 Impervious Ia/S coefficient"
0.250 Pervious Manning 'n'"	0.518 Impervious Initial abstraction"
76.000 Pervious SCS Curve No."	0.097 0.000 0.245 7.256 c.m/sec"
0.322 Pervious Runoff coefficient"	Catchment 222 Pervious Impervious Total Area "
0.100 Pervious Ia/S coefficient"	Surface Area 1.026 0.054 1.080 hectare"
8.021 Pervious Initial abstraction"	Time of concentration 10.919 1.265 9.693 minutes"
0.015 Impervious Manning 'n'"	Time to Centroid 109.232 86.789 106.382 minutes"
98.000 Impervious SCS Curve No."	Rainfall depth 56.290 56.290 mm"
0.893 Impervious Runoff coefficient"	Rainfall volume 577.54 30.40 607.93 c.m"
0.100 Impervious Ia/S coefficient"	Bainfall losses 38.101 6.254 36.594 mm"
0.500 Impervious Initial abstraction" 0.245 0.000 0.030 7.049 c.m/sec" Catchment 221 Pervious Impervious Total Area "	National Doses Dot 19 Dot 204 Dot 305 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 "
Surface O.150 O.650 O.810 nectare 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 mm*	*40 HYDROGRAPH Add Runoff * *40 Add Runoff * * 0.097 0.097 0.245 7.256*
Hainfall 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"	 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.097 0.097 0.097 7.256" 40 HYDROGRAPH Combine 5"
Runoff coefficient 0.322 0.893 0.787 "	6 Combine "
Maximum flow 0.010 0.244 0.245 c.m/sec"	5 Node #"
40 HYDROGRAPH Add Runoff "	u/s of HWY 7&8"
4 Add Runoff "	Maximum flow 7.336 c.m/sec"

Q:\348 Printe	96\104\SWM\MIDUSS\Post\34896-104_Post-010yr.out Page d at 15:37 on 18 Dec 2018	23	Q:134896\104\SWMIMIDUSS\Post\34896-104_Post-010yr.out Printed at 15:37 on 18 Dec 2018
	Hydrograph volume 31169.834 c.m"		* 81 ADD COMMENT===================================
	0.097 0.097 0.097 7.336"		7 Lines of comment"
* 81	ADD COMMENT===================================		•
	3 Lines of comment"		
	Badenview Developments Inc. lands*		
			** PROPOSED SWM POND DESIGN ***
* 40	HYDROGRAPH Start - New Tributary"		***************
1	2 Start - New Tributary"		***************************************
* 33	CATCHMENT 224"		54 POND DESIGN"
(*)	1 Triangular SCS"		4.094 Target outflow c.m/sec"
1.0	1 Equal length"		• 50910.0 Hydrograph volume c.m"
120	1 SCS method"		Number of stages"
0.es	224 Bagenview langs" 85 DOD & Temperviews"		334.550 Minimum water level metre"
2.60	43.200 Total Area"		334.550 Maximum water level metre"
٠	90.000 Flow length"		0 Keep Design Data: 1 = True: 0 = False"
÷	1.000 Overland Slope"		" Level Discharge Volume"
	6.480 Pervious Area"		334.550 0.000 0.000"
	1 000 Pervious sione"		334.600 0.00400 1187.000"
	36.720 Impervious Area"		334.800 0.06350 6090.000"
	90.000 Impervious length"		334.900 0.08900 8636.000"
•	1.000 Impervious slope"		335.000 0.1880 11246.00"
÷.	0.250 Pervious Manning 'n'"		335.100 0.3430 13920.00"
	0.322 Pervious Bundf coefficient"		335.200 0.5360 16658.00"
	0.100 Pervious Ia/S coefficient"		335.400 1.011 22323.00"
S.	8.021 Pervious Initial abstraction"		* 335.500 1.286 25249.00"
÷.	0.015 Impervious Manning 'n'"		335.600 1.583 28239.00"
	98.000 Impervious SCS Curve No."		335.700 1.901 31294.00"
	0.300 Impervious fulls coefficient"		335.600 2.238 34414.00"
	0.518 Impervious Initial abstraction"		336.000 2.966 40851.00"
	13.184 0.000 0.097 7.336 c.m/sec"		* 336.100 3.427 43465.00"
	Catchment 224 Pervious Impervious Total Area "		336.200 3.959 46848.00"
	SUFTACE AFEA 6.480 36.720 43.200 Nectare" Time of concentration 37.433 4.336 6.5.5 minutoc"		336.300 4.543 50286.00"
	Time to Control 142.743 91.294 94.355 minutes"		336.400 5.171 53779.00"
() () () () () () () () () () () () () (Rainfall depth 56.290 56.290 mm"		336.600 6.544 60933.00"
	Rainfall volume 0.3648 2.0670 2.4317 ha-m"		* 336.700 7.284 64595.00"
	Rainfall losses 38.164 5.730 10.595 mm"		336.800 8.055 68313.00"
300	Runoff Velume 0.1175 1.8566 1.9740 he_m"		336.900 8.858 72088.00" 337.000 9.600 75020.00"
	Runoff coefficient 0.322 0.898 0.812 "		337.100 10.550 79809.00"
	Maximum flow 0.268 13.130 13.184 c.m/sec"		* 337.200 11.437 83755.00"
40	HYDROGRAPH Add Runoff *		337.300 12.351 87759.00"
	4 AGG HUNOTT " 13 184 13 184 0.007 7 336"		337.400 13.291 91821.00"
* 40	HYDROGRAPH Copy to Outflow"		337.500 14.255 95940.00"
	8 Copy to Outflow"		337.600 16.027 100118.0"
(#)	13.184 13.184 13.184 7.336°		* 337.700 20.027 104352.0*
40	HYDROGRAPH Combine 5"		337.800 25.280 108643.0"
			337.850 28.277 110810.0"
	u/s of HWY 7&8"		Maximum level 335.673 metro"
15	Maximum flow 20.519 c.m/sec"		Maximum storage 30478.438 c.m"
1	Hydrograph volume 50910.012 c.m"		Centroidal lag 12.690 hours"
10	13.184 13.184 13.184 20.519"		13.184 20.519 1.816 0.000 c.m/sec"
3	7 Confluence *		40 HYDHUGHAPH COMDINE 12"
	5 Node #*		12 Node #"
1	u/s of HWY 7&8"		d/s of Proposed SWMF"
	Maximum flow 20.519 c.m/sec"		Maximum flow 1.816 c.m/sec"
	13.184 20.519 13.184 0.000*		Hydrograph volume 42970.973 c.m"
	101101 201010 101104 0.000		13,104 20,513 1,810 1,816"

×.

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* 81	ADD COMMENT===================================		P 021 Paculous Initial abstraction"
	3 Lines of comment"	(*)	0.02, revision Manning 'n'"
2	**************		98.000 Impervious SCS Curve No."
	Catchments to Inlet #6*		0.902 Impervious Runoff coefficient
* 40	HVDDGGBADH Start - New Tributary"		0.100 Impervious Ia/S coefficient" 0.514 Impervious Ia/S coefficient"
. 40	2 Start - New Tributary		
	13.184 0.000 1.816 1.816"	•	Catchment 261 Pervious Impervious Total Area "
* 33	CATCHMENT 260"		Surface Area 1.598 0.752 2.350 hectare"
	1 Triangular SCS		Time of concentration 19,985 5.503 11,746 minutes"
÷.	3 Specify values		lime to centrold 120,599 92,374 104.926 minutes" Bainfall denth 56,200 56,200 mm"
•	260 Hamilton Heights Subdivision"		Rainfall volume 899.52 423.30 1322.82 c.m"
(#2)	46.000 % Impervious"	•	Rainfall losses 38.185 5.520 27.732 mm*
ð	8.160 Total Area		Runoff depth 18.105 50.770 28.558 mm*
<u> </u>	50.000 Flow length"	- 2	Runoff volume 289.32 381.79 671.11 c.m"
	4 406 Pervius Area"	- 2	HUNDIT CONTICLENT 0.322 0.902 0.507 *
181	50.000 Pervious length"	= 40	HYDROGRAPH Add Runoff "
	3.000 Pervious slope"		4 Add Bunoff "
	3.754 Impervious Area"		0.312 1.816 1.816 1.816"
(#) (#)	232.000 Impervious length"	40	HYDROGRAPH Copy to Outflow"
140	1.500 Impervious Stope"	- C	8 Copy to Outflow"
	76.000 Pervisus SCS Curve No."	- 40	UV312 1.810 1.810 1.810 HYDROGRAPH Combine 12
	0.322 Pervious Runoff coefficient"		6 Combine *
340	0.100 Pervious Ia/S coefficient"		12 Node #"
9	8.021 Pervious Initial abstraction"		d/s of Proposed SWMF"
126	0.015 Impervious Manning 'n'"		Maximum flow 2.086 c.m/sec"
	0.896 Impervious Suboff coefficient"		Hydrograph Volume 46332./19 C.m.
1.0	0.100 Impervious Ia/S coefficient"	* 40	HYDROGRAPH Start - New Tributary"
•	0.518 Impervious Initial abstraction"	1	2 Start - New Tributary"
÷.	1.504 0.000 1.816 1.816 c.m/sec	š	0.312 0.000 1.816 2.086"
	Catchment 250 Pervious Impervious lotal Area *	33	CATCHMENT 225"
	Time of concentration 18.901 6.776 10.377 minutes"		
	Time to Centroid 119.354 94.798 102.079 minutes"		1 SCS method"
141	Rainfall depth 56.290 56.290 56.290 mm"		225 HWY 7/8 and north ditching"
	Rainfall volume 2480.37 2112.91 4593.28 c.m"	•	30.000 % Impervious"
2	Rainfall losses 38.185 5.662 23.317 mm"		1.670 Total Area
1.	nunoff ueptni 15.105 50.428 32.9/4 mm" Bunoff volume 797.79 1802.86 2690.65 c.m."	<u> </u>	75.000 F10W length" 2.000 Overland Slope"
3 4 5	Runoff coefficient 0.322 0,896 0,586 "		1.169 Pervious Area
	Maximum flow 0.265 1.384 1.504 c.m/sec"	•	75.000 Pervious length
40	HYDROGRAPH Add Runoff "	÷	2.000 Pervious slope
÷	4 Add Runott *		0.501 Impervious Area"
* 33	CATCHMENT 261"		/5.000 Impervious length" 2.000 Impervious slope"
	1 Triangular SCS"		0.250 Pervious Manning 'n'"
8	3 Specify values"		74.000 Pervious SCS Curve No."
	1 SCS method"		0.291 Pervious Runoff coefficient
	261 Klassen Bronze Property" 32.000 % Emperviews"	÷	0.100 Pervious Ia/S coefficient" 9.024 Pervious Ia/S coefficient
1	2.350 Total Area"		0.015 Impervious Manning (n. 1
	100.000 Flow length"		99.000 Impervious SCS Curve No."
<u></u>	2.500 Overland Slope"	•	0.890 Impervious Runoff coefficient"
1	1.598 Pervious Area"	- <u>-</u>	0.100 Impervious Ia/S coefficient"
	2 500 Pervicus slops	2	U.518 IMPERVIOUS INITIAL ADSTRACTION"
300	0.752 Impervious Area"		Catchment 225 Pervious Impervious Total Area "
	164.000 Impervious length"	±.	Surface Area 1.169 0.501 1.670 hectare"
	1.500 Impervious slope"		Time of concentration 28.688 3.157 14.212 minutes"
	0.250 Pervious Manning 'n'"	÷	Time to Centroid 131.958 89.600 107.941 minutes"
	10,000 Pervious Runoff coefficient"		Maintail depth 56,290 56,290 mm" Bainfall volume 658,03 282,01 040,05 c.m"
•	0.100 Pervious Ia/S coefficient"		Rainfall losses 39,895 6,194 29,784 mm"

Read f setting 8.50.00	Q:\34 Printe	8961104\SWM\MIDUSS\Post\34896-104_Post-010yr.out d at 15:37 on 18 Dec 2018	Page 27	Q:\34896\104\SWMIMIDUSS\Post\34896-104_Post-010yr.out Printed at 15:37 on 18 Dec 2018
- Rendf tolone 10.06 20.08 42.64 C.** - Rendf tolone 0.63 0.11 C.** - - A. Add hort - - - - - A. Add hort - - - - - - - A. Add hort -		Runoff depth 16.395 50.096 26.506 mm"		 1.560 Overflow threshold"
- Rusoff conflictions 0.650 0.471 * - 0 Control type: 1=2:052-Channel 1. -::::::::::::::::::::::::::::::::::::	-	Runoff volume 191.66 250.98 442.64 c.m"		1.000 Required diverted fraction"
Maintain line Loss 0 0.171 0.181 c.n/sec* 0 4. Ad Functif - Desk of functif 0.319 c.n/sec* 0 0.181 0.181 0.181 0.208* Major Line at 0* 0 0.181 0.181 0.181 0.208* Major Line at 0* 0 0.181 0.181 0.181 0.208* Major Line at 0* 0 0.181 0.180 0.181 0.181 <		Runoff coefficient 0.291 0.890 0.471		0 Conduit type; 1=Pipe;2=Channel"
4.0 MCHRONAM Adviout1* C.a* 4.0 0.18 1.810 2.084* 4.0 0.18 0.18 1.810 2.084* 4.0 0.18 0.18 1.810 2.084* 4.0 0.18 0.18 2.084* 0.18 1.879 1.879 1.879 1.879 1.879 2.220 c.m/sec* 4.0 MCHRONAM Results 1.879 1.879 1.879 1.800 2.220 c.m/sec* 4.0 MCHRONAM Results 1.225 c.m/sec* 9 1.800 <td< td=""><td></td><td>Maximum flow 0.053 0.171 0.181 c.m/sec"</td><td></td><td>Peak of diverted flow 0.319 c.m/sec"</td></td<>		Maximum flow 0.053 0.171 0.181 c.m/sec"		Peak of diverted flow 0.319 c.m/sec"
4.0 Add Durban MC option Durban 1.810 2.08* 4.0 MCDROMPH Option Durban 1.873 1.879 1.800 2.220 c.#/sec* 4.0 MCDROMPH Option Durban 1.873 1.879 1.800 2.220 c.#/sec* 4.0 MCDROMPH Option Durban 1.873 1.879 1.800 2.220 c.#/sec* 4.0 MCDROMPH Option Durban 2.220 c.#/sec* 1.873 1.879 1.800 4.0 MCDROMPH Option Durban 2.220 c.#/sec* 1.873 1.879 1.800 4.0 MCDROMPH Option Durban 2.220 c.#/sec* 1.800 1.800 4.1 Maximum Tizer 1.800 1.800 1.800 4.1 MCDROMPH Start - New Tributary* 1.800 1.800 1.800 5 Liste of costenct* 1.800 1.800 1.800 6 MCDROMPH Start - New Tributary* 1.800 1.800 1.800 7 MCDROMPH Start - New Tributary* 1.800 1.800 1.800 7 MCDROMPH Start - New Tributary* 1.800 <td>40</td> <td>HYDROGRAPH Add Runott "</td> <td></td> <td>Volume of diverted flow 100.877 c.m"</td>	40	HYDROGRAPH Add Runott "		Volume of diverted flow 100.877 c.m"
40 HORDBORH Doy to CutTow 40 HORDBORH Could Tow 40 40 0.18 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.5				Divocoo6.010hyd"
1 Construction 40 Phytocolecking on Loss Contract 0 0.18 <	- 40	HVDB0GBAPH Convite Outflows		Major flow at 6"
Control Control Control Control 40 MYDROMARY CONDUCTION 12.800 1.800	. 40	8 Copy to Outflow"		40 HYDROGRAPH Combine 9"
400 MCREGRAPH Contine 12* 0 MCREGRAPH Contine 10* Note 2* 12 Diff of Proposed SME* Maintegraph value 232.230 c.s* Maintegraph value AV78.383 c.s* Note 2* 1.560 c.s* Maintegraph value AV78.383 c.s* Note 2* Note 2* Note 2* Maintegraph value AV78.383 c.s* Note 2* Note 2* Note 2* Maintegraph value AV78.385 c.s* Note 2* Note 2* Note 2* Maintegraph value Note 2*	10.1	0.181 0.181 0.181 2.086"		* 6 Combine *
6 Condumt NOCE B* 12 Noce At Start 1.500 0.1.600 0.1.600 147 Noce At Start 1.870 0.1.600 1.600 147 Noce At Start Noce At Start Noce At Start Noce At Start 147 Noce At Start Noce At Start Noce At Start Noce At Start 147 Noce At Start Noce At Start Noce At Start Noce At Start 147 Noce At Start Noce At Start Noce At Start Noce At Start 147 Noce At Start Noce At Start Noce At Start Noce At Start 147 Noce At Start Noce At Start Noce At Start	* 40	HYDROGRAPH Combine 12*		* 9 Node #"
12 Node *' Maximum flow 1.560 c.m/sec* 4// s of Provoed SME* Maximum flow 1.560 c.m/sec* 9// Status Status Maximum flow 1.560 c.m/sec* 9// Status Status Status Maximum flow 1.560 c.m/sec* 9// Status Status Status Maximum flow 1.560 c.m/sec* 9// Status		6 Combine "		NODE B"
d/s of Proposed SME* 2.230 c.n/set* mydrograph volume 252.258 c.n* mydrograph volume 252.258 c.n* 0.181 0.181 0.181 0.181 0.181 2.22* 0.000 1.5		12 Node #*		Maximum flow 1.560 c.m/sec"
Mailant low U.2.23 C. J. Jaco' Monitorial Science Monitoriscience <thm< td=""><td>•</td><td>d/s of Proposed SWMF"</td><td></td><td>* Hydrograph volume 2932.236 c.m*</td></thm<>	•	d/s of Proposed SWMF"		* Hydrograph volume 2932.236 c.m*
Notice Aprice Aprice Aprice Aprice 81 Aprice	- 2	Maximum flow 2.229 c.m/sec"		1.879 1.879 1.560 1.560"
ADD CONDUCTION D.181 J.2429 Z Start . New Trabutary' LSO' 40 Lines of conservit 1 trend dynamic avertice avec 1 trend dynamic avec 1 trend dynamic avec 40 Lines of conservit 1 trend dynamic avec 2 start . New Trabutary' 1 trend dynamic avec 40 HWB00304MP Start . New Trabutary' 0.181 0.000 0.181 2.282* 33 CATCHENT Start . New Trabutary' 0.181 0.000 0.181 2.282* 34 Society values' 1 trend dynamic avec 1 trend dynamic avec 1 trend dynamic avec 5 CATCHENT STORT MURDOSAMPH Add Runoff * 0.319	1.1	Hydrograph Volume 467/5.363 c.m ⁻		40 HYDROGRAPH Start - New Tributary"
1 Line of comeact: 47 FILE 0 head/open tixbooos oldmy" 1.500' Western catchent along Memilton Road, diverted to Inlet #6' 1 immodify Samawe' 2 immini mini immini imminimmini immini immini immini imminimmi				2 Start - New Iributary"
Western cathement along Hamilton Road, diverted to Inlet Met Image (appli) 40 Image (appli) Image (appli) 31 CACHMENT 270' Image (appli) 33 CACHMENT 270' Image (appli) 34 CACHMENT 270' Image (appli) 35 CACHMENT 270' Image (appli) 36 CACHMENT 270' Image (appli) 36 CACHMENT 270' Image (appli) 37 CACHMENT 270' Image (appli) 38 CACHMENT 270' Image (appli) 38 CACHMENT 270' Image (appli) 38 CACHMENT 270' Image (appli) 39 CACHMENT 270' Image (appli) 40 Image (appli) Image (appli) 30 CACHMENT 2400' Image (appli) 41 Traingular 260' Image (appli) 31 Color 100' Image (appli) <t< td=""><td></td><td>a lines of comment*</td><td></td><td>47 FILET 0 Read/Open DIV/00006 010bvd"</td></t<>		a lines of comment*		47 FILET 0 Read/Open DIV/00006 010bvd"
Western catcheent along Masilton Road, diverted to Inlet #6' 2 1 2 1 2 1 2 1 2 1				1 1=read/open: 2=write/save"
40 HYBROGRAPH Start - New Tributary' 1 0 0.00 0.161 2.229' 1 1 1 1 1 0.00 1.500 0.161 0.000 1.500 0.161 0.000 1.500 0.160 0.011 0.000 1.500 0.160 0.011 0.000 1.500 0.011 0.000 1.500 0.011 0.000 1.500 0.011 0.000 1.500 0.011 0.000 1.500 0.011 0.000 1.500 0.011 0.010 1.500 0.011 0.010 1.500 0.011 0.010 1.500 0.011 0.010 1.500 0.011 0.010 1.500 0.010 1.500 1.500 <		Western catchment along Hamilton Road, diverted to Inlet #6"		2 1=rainfall: 2=hvdrograph"
400 HYDROBARH Start - New Tributary' BUI00006.010/0yd' 83 CATOLARY Tributary' Bajor flow at 6" 83 CATOLARY Tributary' Total value 10.60 at 6" 83 CATOLARY Autos' Bajor flow at 6" 1 SSD setify values' 40 HYDROBARH Add Runoff ' 70 Industrial/Residential area along Hamilton Road* 0.319 0.319 1.560 c.m/sc* 8.480 Total Area* 0.319 0.319 1.560 ' 8.480 Total Area* 0.319 0.319 0.319 1.560 ' 8.480 Total Area* 6 Copy to Outflow* 8 Copy to Outflow* 8 0.319 0.319 1.560 ' 8.480 Total Area* 6 Copy to Outflow* 8 Copy to Outflow* 8<		********		<pre>1 1=runoff: 2=inflow: 3=outflow: 4=junction"</pre>
2 Start - New Triburary" Hajor flow at 6" 53 CATTIN 20.0 Total value 10.0.877 c.m" 53 CATTIN 20.0 1.000 <td>* 40</td> <td>HYDROGRAPH Start - New Tributary"</td> <td></td> <td>* DIV00006.010hyd*</td>	* 40	HYDROGRAPH Start - New Tributary"		* DIV00006.010hyd*
0.161 0.000 0.161 2.229' 33 Child Vilume 100.677 c.s" 34 Child Vilume 100.677 c.s" 35 Child Vilume 100.677 c.s" 35 Child Vilume 100.677 c.s" 35 Child Vilume 1.500 1.500 1.500 1.500 36 Child Vilume 0.319		2 Start - New Tributary"		Major flow at 6"
53 CATCHENT 270* Maximum Tlow 0.319 0.319 0.00 1.560 <td></td> <td>0.181 0.000 0.181 2.229"</td> <td></td> <td> Total volume 100.877 c.m^v </td>		0.181 0.000 0.181 2.229"		 Total volume 100.877 c.m^v
1 1.50° 0.000 1.560 1	33	CATCHMENT 270"		Maximum flow 0.319 c.m/sec"
3 360217 VALUS* 40 HYDRORAPH Add Hundrt '' 20 Add Rundrt '' 4 Add Rundrt '' 20 Add Rundrt '' 4 Add Rundrt '' 300 Fibre Langth 0.319	- C	1 Triangular SCS"		0.319 0.000 1.560 1.560 c.m/sec"
1 1 2.0.5 Method A listication A listication B 4.00 HUNDIT * 0.319 1.500 A 100 HUNDIT * 0.319 0.319 0.319 0.319 0.319 Corp to Outflow 0.719 0.319 0.319 0.319 0.319 0.319 Corp to Outflow 0.719 0.300 Flow length 2.000 Overland Slope' 4.00 HUNDGGAAPH Combine '2 Corp Pervious Area 3.000 Pervious Slope' 4.663 Impervious Area 4.663 Impervious Area 4.663 Impervious Slope' 4.663 Impervious Slope' 6.0 Impervious Slope' 7.0 Confluence 12' 7.0 Conf	1.2	3 Specity Values		40 HYDROGRAPH Add Runott "
55.00 1 basimiliar and about the about mail bout mail to mail		1 SCS method" 270 Teduatrial /Regidential appa clong Hemilton Read!		4 Add HUNOTT "
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	190	6 Node number"		Maximum level 335.257 metre"

nted	at 15:37 o	n 18 Dec 2018			
	N 8 0				
	1.560	Overflow threshold	1"		
	1.000	Required diverted	fraction"		
	0_	Conduit type; 1=P:	ipe;2=Channel"		
	Pe	ak of diverted flow	v 0.319	c.m/sec"	
	Vo	lume of diverted f.	Low 100.877	C.M"	
	DI	V00006.010hyd"			
	Ma	JOP TIOW AT 6"	1 500	0.000 ((
0	ыv	DBOGBADH Combine	01 1.000	2.229 C.M/Sec*	
	6	Combine *	9		
	9	Node #"			
	0	NODE B"			
	Ma	ximum flow	1.560	c.m/sec"	
	Hy	drograph volume	2932.236	C.m"	
	-	1.879 1.8	379 1.560	1,560"	
0	HY	DROGRAPH Start - Ne	ew Tributary"		
	2	Start - New Tribu	tary"		
		1.879 0.0	1.560	1.560"	
7	FI	LEI_O Read/Open DIV	/00006.010hyd"		
	1	1=read/open; 2≠wr:	lte/save"		
	2	1=ratiliall; 2=nyu	ograph a geoutflows dei	upotion	
		V00006 010bvd"	¥; 3=0Uti10₩; 4=]	unction	
	Ma	ior flow at 6"			
	To	tal volume	100.877	C	
	Ma	ximum flow	0.319	c.m/sec"	
		0.319 0.000	1.560 1.	560 c.m/sec"	
0	HY	DROGRAPH Add Runoft	- 8		
	4	Add Runoff "			
		0.319 0.3	319 1.560	1.560"	
0	HY	DROGRAPH Copy to Ou	itflow"		
	8	Copy to Outflow"	0.040	4 6001	
0	LIV		104 0.319	1.560"	
Ū.	6	Combine "	12		
	12	Node #"			
		d/s of Proposed SN	MF"		
	Ma	ximum flow	2.548	c.m/sec"	
	Hy	drograph volume	46876.246	c.m"	
		0.319 0.3	319 0.319	2.548"	
0	HY	DROGRAPH Confluer	12"		
	10	Contluence -			
	12	die of Proposed St	AICS		
	Ma	vinum flow	2 548	c m/sec"	
	Hv	drograph volume	46876.246	c.m"	
	,	0.319 2.8	648 0.319	0.000"	
4	PO	ND DESIGN"			
	2.548	Current peak flow	c.m/sec"		
	0.070	Target outflow	c.m/sec"		
	468/6.2	Hydrograph volume	C.M*		
	334 200	Minimum water low	1 motos"		
	337 000	Maximum water leve	a) metre"		
	334,290	Starting water lev	/el metre"		
	0	Keep Design Data:	1 = True: 0 = Fa	lse"	
		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*		
		330.000 4.639	1910.000*		
		336 550 6 665	3967 000"		
		337.000 23.484	6569.000"		
	Pe	ak outflow	2.050	c.m/sec"	
	Ma	ximum level	335,257	metre"	

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		(JANKS)	R. (74.117.67.11.117.17.117.17.17.17.17.1	
÷	Maximum storage 399.873 c.m"	•	Maximum flow 0.052 0.063 0.101 c.m/sec"	
	Centrolaal lag 6.693 hours" 0.319 2.548 2.050 0.000 c.m/sec"	40	HYDROGRAPH Add Runoff "	
* 40	HYDROGRAPH Next link "	- 2	4 Add Ruffort " 0 101 0 101 2 050 2 050"	
100	5 Next link "	• 54	POND DESIGN"	
	0.319 2.050 2.050 0.000"	<u>.</u>	0.101 Current peak flow c.m/sec"	
56	DIVERSION"		0.070 Target outflow c.m/sec"	
	7 Note Humber 7.170 Overflow threshold"		B Number of states"	
	1.000 Required diverted fraction"	•	0.000 Minimum water level metre"	
(1)	0 Conduit type; 1=Pipe;2=Channel"		0.750 Maximum water level metre"	
	Peak of diverted flow 0.000 c.m/sec"		0.000 Starting water level metre"	
	Volume of diverted flow 0.000 c.m" DIV00007 Olobud		0 Keep Design Data: 1 = True; 0 = False"	
	Maior flow at 7"	÷	Level Discharge Volume"	
14 C	0.319 2.050 2.050 0.000 c.m/sec"	•	0.1500 0.00400 1.000"	
* 40	HYDROGRAPH Combine 8"	1	0.2500 0.00600 8.000"	
2	6 Combine "		0.3500 0.00700 29.000	
			0.4500 0.00800 69.000"	
	Maximum flow 2.050 c.m/sec"		0.7000 0.1060 208.000"	
(0)	Hydrograph volume 46865.305 c.m"	¥	0.7500 0.2810 240.000"	
5	0.319 2.050 2.050 2.050"	•	Peak outflow 0.009 c.m/sec"	
- 81	ADD COMENT====================================	2	Maximum level 0.571 metre"	
300	3 L1/105 07 COMMONT"	- R	Maximum storage 134.704 c.m"	
(2)	Catchments South of Hwv 7/8"	•	0.101 0.101 0.009 2.050 c.m/sec"	
	***************************************	* 40	HYDROGRAPH Combine 9"	
* 40	HYDROGRAPH Start - New Tributary"		6 Combine "	
	2 Start - New Tributary"		9 Node #"	
* 33	CATCHMENT 280" 0.000 2.050 2.050"		NODE B" Navigue flow 1 558 c m/cccc"	
*	1 Triangular SCS"		Hydrograph volume 3131.367 c.m"	
•	3 Specify values"		0.101 0.101 0.009 1.568"	
	1 SCS method"	* 40	HYDROGRAPH Start - New Tributary"	
	280 Northeast portion of Maple Leaf Foods property" 26 000 % Japonious"		2 Start - New Tributary"	
÷.	0.700 Total Area"	• 99	0.101 0.000 0.009 1.568 CATCHMENT 281"	
(#1)	45.000 Flow length"		1 Triangular SCS"	
	1.500 Overland Slope"	•	3 Specify values"	
÷.	0.518 Pervious Area"	- B	1 SCS method"	
340	20.000 Pervious Elegen		281 Western portion of John Bear property" 92.000 % Transvise	
(#)(0.182 Impervious Area"		1.870 Total Area"	
	68.000 Impervious length"	2	120.000 Flow length"	
3	1.000 Impervious slope"		1.000 Overland Slope"	
	0.250 Pervious Manning 'n' "		0.131 Pervious Area"	
150	0.371 Pervious Runoff coefficient"		20.000 Pervious slope"	
	0.100 Pervious Ia/S coefficient"		1.739 Impervious Area"	
140	6.752 Pervious Initial abstraction"	•	112.000 Impervious length"	
1.00	0.015 Impervious Manning 'n'		1.000 Impervious slope*	
	99.000 Impervious SCS Curve No." 0.887 Impervious Buroff coefficient"		0.250 Pervious Manning 'n'"	
	0.100 Impervious Ia/S coefficient"		0.140 Pervious Sta curve No."	
200	0.518 Impervious Initial abstraction [*]	2	0.100 Pervious Ia/S coefficient"	
	0.101 0.000 2.050 2.050 c.m/sec"	*	13.677 Pervious Initial abstraction"	
	Catchment 280 Pervious Impervious Total Area *	5	0.015 Impervious Manning 'n'"	
	Junate Area 0.518 0.182 0.700 Nectare" Time of concentration 11 461 3 665 7 902 minutes"	2	98.000 Impervious SCS Curve No."	
2.43	Time to Centroid 109,158 90,388 100.590 minutes"		0.100 Impervious Ta/S coefficient"	
	Rainfall depth 56.290 55.290 mm	7	0.518 Impervious Initial abstraction"	
	Rainfall volume 291.58 102.45 394.03 c.m°		0.632 0.000 0.009 1.568 c.m/sec"	
	Haintail losses 35,394 6,336 27,839 mm" Bunoff dooth 20,807 40,054 20,450		Catchment 281 Pervious Impervious Total Area "	
	полоті черкії 20,897 49,954 26,452 mm² Runoff volume 108,24 90,92 199,16 с.m."	*	SUFTACE AFEA 0.131 1.739 1.870 NECTAPE" Time of concentration 17.090 4.944 5.124 minutes"	
	Runoff coefficient 0.371 0.887 0.505 "		Time to Centroid 119.153 92,190 92,590 minutes"	

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* Rainfall depth 56.290 56.290 mm"	0.291 0.000 0.255 1.715 c.m/sec"
Rainfall volume 73.68 978.94 1052.63 c.m"	Catchment 282 Pervious Impervious Total Area
Rainfall losses 46.176 5.689 8.523 mm"	Surface Area 0.375 0.835 1.210 hectare"
" Runoff depth 10.114 50.601 47.767 mm"	Time of concentration 19.301 3.522 4.835 minutes"
Bunoff coefficient 0.180 0.899 0.849 "	" Rainfall doubt 56 200 56 200 mm"
Maximum flow 0.005 0.630 0.632 c.m/sec"	Bainfall volume 211 14 469.97 681 11 c m ⁴
40 HYDROGRAPH Add Runoff "	Rainfall losses 46.193 6.320 18.661 mm"
* 4 Add Runoff "	* Runoff depth 10.097 49.970 37.610 mm"
0.632 0.632 0.009 1.568"	Runoff volume 37.87 417.20 455.08 c.m"
54 POND DESIGN"	Runoff coefficient 0.179 0.888 0.668
0.632 CUFFERT DEak TLOW C.M/SEC"	Maximum Tiow 0.013 0.287 0.291 c.m/sec"
893.9 Hydrograph volume c.m."	
7. Number of stages"	0.291 0.291 0.255 1.715"
• 0.000 Minimum water level metre"	54 POND DESIGN"
1 800 Maximum water level metre"	• 0.291 Current peak flow c.m/sec"
0.000 Starting water level metre"	0.070 Target outflow c.m/sec"
0 Keep Design Data: 1 = True; 0 = False"	455.1 Hydrograph volume c.m"
	5. NUMber of stages"
	1 400 Maximum water level metre
0.6000 0.1200 97.000"	0.000 Starting water level metre"
* 0.9000 0.1300 167.000*	Keep Design Data: 1 = True; 0 = False"
* 1.200 0.1400 254.000"	Level Discharge Volume"
1.500 0.1500 358.000"	0.000 0.000 0.000"
- 1.800 1.000 400.000°	0.3200 0.04300 276.000"
Mayimum Level 1.537 matres	
Maximum storage 363.182 c.m"	1.400 0.5000 400.000"
Centroidal lag 1.920 hours"	Peak outflow 0.046 c.m/sec"
0.632 0.632 0.255 1.568 c.m/sec"	Maximum level 0.382 metre"
40 HYDROGRAPH Combine 9"	Maximum storage 284.251 c.m"
G Nodo #"	" Centroidal lag 3.322 hours"
NODE 8"	* 40 HYDROGRAPH Combine 9"
Maximum flow 1.715 c.m/sec"	6 Combine "
Hydrograph volume 4027.972 c.m"	" 9 Node #"
0.632 0.632 0.255 1.715"	NODE B"
40 HYDROGRAPH Start - New Tributary"	Maximum flow 1.751 c.m/sec"
2 Start - New Intudatary	Hydrograph volume 4483.037 c.m.
* 33 CATCHMENT 282"	40 HYDROGRAPH Start - New Tributary"
1 Triangular SCS"	2 Start - New Tributary"
* 3 Specify values"	0.291 0.000 0.046 1.751"
1 SCS method"	* 33 CATCHMENT 283*
282 Eastern portion of John Bear property"	1 Triangular SOS"
1 210 Total Acea"	3 Specity Values"
60.000 Flow length"	283 Area along western tributary, south of Hwy 7/8"
2.500 Overland Slope"	29.000 % Impervious"
0.375 Pervious Area"	23.290 Total Area"
30.000 Pervious length	160.000 Flow length"
3.000 Pervious slope	2.000 Overland Slope"
90.000 Impervious length"	10.000 Fervious length
2.000 Impervious slope"	2.200 Pervisus slope"
* 0.250 Pervious Manning 'n'*	 6.754 Impervious Area"
65.000 Pervious SCS Curve No."	394.000 Impervious length
0.179 Pervious Runoff coefficient	2.000 Impervious slope
U.100 Pervious Ia/S coefficient"	- 0.250 Pervious Manning 'n'"
0.015 Impervious Mantina 'n'"	- og.juu Pervious Sus Gurve No." * 0.217 Pervious Runoff coefficient"
98.000 Impervises SCS Curve No."	0.100 Pervises Tails coefficient
 0.888 Impervious Runoff coefficient" 	11.789 Pervious Initial abstraction"
* 0.100 Impervious Ia/S coefficient"	* 0.015 Impervious Manning 'n'"
O.518 Impervious Initial abstraction"	* 98.000 Impervious SCS Curve No."

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• 0	0.905 Impervious Runoff coefficient"		8 924 Pervious Initial abstraction
• C).100 Impervious Ia/S coefficient"		
* C).518 Impervious Initial abstraction"		98.000 Impervious SCS Curve No."
•	2.204 0.000 0.046 1.751 c.m/sec"		0.888 Impervious Runoff coefficient*
	Catchment 283 Pervious Impervious Total Area •		0.100 Impervious Ia/S coefficient"
	Surface Area 16.536 6.754 23.290 hectare		0.518 Impervious Initial abstraction
•	Time of concentration 49.728 8.541 23.756 minutes*		0.141 0.000 2.050 5.874 c.m/sec"
	Time to Centroid 157.772 97.221 119.589 minutes*		Catchment 284 Pervious Impervious Total Area "
	Rainfall depth 56.290 56.290 mm"	¥5	Surface Area 2.891 0.059 2.950 hectare"
	Rainfall volume 0.9308 0.3802 1.3110 ha-m"		Time of concentration 26.147 2.877 24.784 minutes"
•	Rainfall losses 44.097 5.333 32.855 mm*	1	Time to Centroid 128.777 89.177 126.459 minutes"
	Runoff depth 12.193 50.957 23.435 mm*	- 5	Rainfall depth 56.290 56.290 mm"
-	Runoff volume 2016.24 3441.69 5457.94 c.m*		Rainfall volume 1627.35 33.21 1660.56 c.m"
2	Runoff coefficient 0.217 0.905 0.416 "	•	Rainfall losses 39.887 6.301 39.215 mm"
	Maximum flow 0.368 2.157 2.204 c.m/sec*		Runoff depth 16.404 49.989 17.075 mm"
- 40	HYDROGRAPH Add Runoff "		Runoff volume 474.23 29.49 503.72 c.m"
	4 Add Runoff "		Runoff coefficient 0.291 0.888 0.303
	2.204 2.204 0.046 1.751"		Maximum flow 0.138 0.021 0.141 c.m/sec
40	HYDROGRAPH CODY to OUTLOW"	* 40	40 HYDROGRAPH Add Runoff "
-	B Copy to Outflow"		4 Add Runoff *
. 10	2.204 2.204 2.204 1.751 ⁻	2	0.141 0.141 2.050 5.874*
40		= 40	40 HYDROGRAPH Copy to Outflow"
			8 Copy to Outflow"
			0.141 0.141 5.874"
•)		- 40	40 HYDROGRAPH Combine 9"
-	Hydeography volume 0040.076 cm/sec		6 Compine
*			9 NODE #"
- 40	HVDRORDADH Conflignce A		
* .			
	8 Node #"		nyorograph votume 57309.988 C.m.
	NODE A"	* 40	10 HVDP00PAPH Car5100000 01
•	Maximum flow 2.050 cm/sec"	. 40	
	Hudronanah volume 46865 301 c m [*]		9 Node #*
	2,204 2,050 2,204 0,000"		NODE B*
* 40	HYDROGRAPH Copy to Outflow"		
*	8 Copy to Outflow"		Hydrograph volume 57309 988 c.m ⁴
	2.204 2.050 2.050 0.000"		0.141 5.960 0.141 0.000"
* 40	HYDROGRAPH Combine 9*	• 40	40 HYDROGRAPH Copy to Outflow"
	6 Combine *		8 Copy to Outflow"
	9 Node #"		0.141 5.960 5.960 0.000"
	NODE B"	* 40	40 HYDROGRAPH Combine 10"
•)	Maximum flow 5.874 c.m/sec"		6 Combine "
	Hydrograph volume 56806.270 c.m"		10 Node #*
	2.204 2.050 2.050 5.874"		NODE C"
= 40	HYDROGRAPH Start - New Tributary"		Maximum flow 5.960 c.m/sec*
	2 Start - New Tributary"		Hydrograph volume 57309.988 c.m"
	2.204 0.000 2.050 5.874"		0.141 5.960 5.960 5.960"
33	CATCHMENT 284"	* 40	40 HYDROGRAPH Start - New Tributary"
	1 Triangular SCS		2 Start - New Tributary*
	1 Equal Length"		0.141 0.000 5.960 5.960
	1 SUS method	* 33	33 CATCHMENT 285"
	284 Agricultural lands south of Bleams Road"		1 Triangular SCS"
2	1.000 % Impervious"		3 Specify values"
			1 SCS method"
			285 Morningside Retirement Community Lands"
• 0	- Too over tank otope 9 Rg1 Danvious Anga*		Da UUU & IMPORVIOUS"
80	1000 Pervisus length"		10,000 Flow locath*
) a	1.100 Pervious slope		3.000 LTM TellB(II.
• 0	1.059 Impervious Area"		7 B98 Pervious Ange
80			7,000 FERVIOUS ALEA 25.000 Republic Langth®
. 3	100 Impervious slope		25,000 rervious constant
• 0).250 Pervious Manning 'n'"	1.0	10.892 Impervious Area*
74	+.000 Pervious SCS Curve No."	(H)	354.000 Impervious length"
. 0	J.291 Pervious Runoff coefficient"	171	2.500 Impervious slope"
* 0	J.100 Pervious Ia/S coefficient®		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"		0.160 0.000 4.045 9.699 c.m/sec" Catchment 250 Pervious Impervious Total Area " Surface Area = 2.510 0.000 3.510 bestere"
	14 O4 Pervious Ta/s Coefficient		Time of concentration 22 389 7 105 32 380 minutes"
2	0.015 Impervious Manning 'n'"		Time to Centroid 136.372 95.385 136.371 minutes"
•	98.000 Impervious SCS Curve No."		Rainfall depth 56.290 56.290 mm"
	0.901 Impervious Runoff coefficient"		Rainfall volume 1975.78 0.00 1975.78 c.m"
2	0.100 Impervious Ia/S coefficient"		Rainfall losses 38.166 5.668 38.166 mm"
	4.045 0.000 5.960 5.960 c.m/sec"		Bunoff volume 636.17 0.00 636.17 c.m"
÷ .	Catchment 285 Pervious Impervious Total Area "		Runoff coefficient 0.322 0,000 0,322 "
•	Surface Area 7.888 10.892 18.780 hectare"		Maximum flow 0.160 0.000 0.160 c.m/sec"
	Time of concentration 18.691 7.491 8.860 minutes"		40 HYDROGRAPH Add Runoff "
<u>.</u>	lime to Centrold 121.080 95.806 98.894 minutes" Painfail doubt 56.200 56.200 mm"		4 Add HUNOTT - 4 045 9 699"
	Rainfall volume 0.4440 0.6131 1.0571 ha-m"		40 HYDROGRAPH Copy to Outflow"
*	Rainfall losses 46.540 5.571 22.778 mm"		 8 Copy to Outflow"
<u>*</u>	Runoff depth 9.750 50.719 33.512 mm"		0.160 0.160 9.699"
<u>.</u>	Runoff volume 769.03 5524.52 6293.55 c.m"		40 HYDROGRAPH Combine 11"
	Maximum flow 0.264 3.952 4.045 c.m/sec"		11 Node #"
* 40	HYDROGRAPH Add Runoff "		u/s of east culvert of HWY 7&8"
	4 Add Runoff "		Maximum flow 0.160 c.m/sec"
	4.045 4.045 5.960 5.960"		Hydrograph volume 636.171 c.m"
40	B Conv to Outflow		40 HYDROGRAPH Start - New Tributary"
•	4.045 4.045 5.960"		2 Start - New Tributary"
* 40	HYDROGRAPH Combine 10"		• 0.160 0.000 0.160 0.160 [*]
	6 Combine "		33 CATCHMENT 251"
÷	NODE C"		3 Specify values"
•	Maximum flow 9.699 c.m/sec"		* 1 SCS method"
	Hydrograph volume 63603.551 c.m"		251 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
91	4.045 4.045 4.045 9.699"		33,000 % Impervious"
2 O I	3 Lines of comment"		100,000 Flow length"
*	***********		* 2.000 Overland Slope"
2	Catchments north of Hwy 7/8, towards Eastern Tributary		3.866 Pervious Area"
- 40	HYDROGRAPH Start - New Tributary"		2 000 Pervious slope*
	2 Start - New Tributary"		* 1.904 Impervious Area"
*	4.045 0.000 4.045 9.699"		* 296.000 Impervious length*
33	CATCHMENT 250"		2.000 Impervious slope"
	1 IFIAngular SUS" 3 Specify values"		- 0.250 Pervious SCS Curve No."
2	1 SCS method"		0.322 Pervious Runoff coefficient"
	250 Southern portion of Rec Centre fields"		0.100 Pervious Ia/S coefficient
	0.000 % Impervious" 3.510 Total Apoa"		8.021 Pervious Initial abstraction"
	95.000 Flow length"		98.000 Impervious SCS Curve No."
	1.600 Overland Slope"		0.899 Impervious Runoff coefficient"
	3.510 Pervious Area"		0.100 Impervious Ia/S coefficient
	2 OOD Pervious length"		U.518 Impervious Initial abstraction
	0.000 Impervious Area"		Catchment 251 Pervious Impervious Total Area
¥.	296.000 Impervious length"		Surface Area 3.866 1.904 5.770 hectare"
	2.000 Impervious slope"		 Time of concentration 32,389 7,195 17,800 minutes" Time to Constant 128 372 05 285 110 520 minutes"
1	0.200 Pervious Manning "n"" 76.000 Pervious SCS Curve No."		" Rainfall deoth 56.290 56.290 56.290 mm"
ý.	0.322 Pervious Runoff coefficient"		Rainfall volume 2176.12 1071.82 3247.94 c.m
*	0.100 Pervious Ia/S coefficient"		Rainfall losses 38.166 5.668 27.441 mm"
Ş –	8.021 Pervious Initial abstraction"		Runoff depth 18.124 50.622 28.849 mm"
÷ .	98.000 Impervious SCS Curve No."		Runoff coefficient 0.322 0.899 0.512
	0.000 Impervious Runoff coefficient"		* Maximum flow 0.176 0.696 0.737 c.m/sec*
5	0.100 Impervious Ia/S coefficient"		40 HYDROGRAPH Add Runoff "
2	0.518 Impervious Initial abstraction"		4 Add Runoff "

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S#0	0.737 0.737 0.160 0.160"		* 47 FILEI_0 Read/Open DIV00007.010hyd*
40	HYDROGRAPH Copy to Outflow"		1 1=read/open; 2=write/save"
2 · · ·	8 Copy to Outflow		2 1=rainfall; 2=hydrograph"
* 40	U.737 U.737 U.737 U.737 0.160"		<pre>1 1=runott; 2=intlow; 3=outtlow; 4=junction"</pre>
+0			Brion flow of 7
			Major ilow at /
	uls of east culvert of HWY 788"		Maximum flow 0.000 c.m
	Maximum flow 0.775 c.m/sec"		133 0 855 c m/sec
	Hydrograph volume 2300.740 c.m"		* 40 HYDROGRAPH Add Bunoff "
•	0.737 0.737 0.737		4 Add Bunoff *
• 40	HYDROGRAPH Start - New Tributary"		0,000 0,000 0,133 0,855"
	2 Start - New Tributary"		40 HYDROGRAPH Copy to Outflow"
•	0.737 0.000 0.737 0.775*		8 Copy to Outflow*
* 33	CATCHMENT 252*		• 0.000 0.000 0.000 0.855"
•	1 Triangular SCS ^a		• 40 HYDROGRAPH Combine 11*
*	1 Equallength"		* 6 Combine *
•	1 SCS method"		* 11 Node #*
•	252 Southern portion of Hamburglr lands"		u/s of east culvert of HWY 7&8"
•	5.000 % Impervious"		Maximum flow 0.855 c.m/sec*
•	2.870 Total Area"		* Hydrograph volume 2819.661 c.m*
•	65.000 Flow length"		• 0.000 0.000 0.000 0.855 [*]
•	1,500 Overland Slope"		* 40 HYDROGRAPH Confluence 11"
•	2.726 Pervious Area*		* Confluence "
	65.000 Pervious length"		11 Node #"
	1.500 Pervious slope"		u/s of east culvert of HWY 7&8"
	0.144 Impervious Area"		 Maximum flow 0.855 c.m/sec*
·	65.000 Impervious length"		Hydrograph volume 2819.661 c.m [*]
<u>.</u>	1.500 Impervious slope"		0.000 0.855 0.000 0.000*
	0.250 Pervious Manning 'n'"		54 POND DESIGN"
	74.000 Pervious SCS Curve No."		0.855 Current peak flow c.m/sec"
*	0.291 Pervious Runoff coefficient [®]		 0.070 Target outflow c.m/sec*
21	0.100 Pervious Ia/S coefficient"		2B19.7 Hydrograph volume c.m"
÷	8.924 Pervious Initial abstraction		9. Number of stages"
	0.015 Impervious Manning 'n's		332.660 Minimum water level metre"
	98.000 Impervious SCS Curve No."		336.000 Maximum water level metre"
	0.890 Impervious Runort Coefficient"		332.660 Starting water level metre"
	0.100 Impervious 14/S coefficient		U Keep Design Data: 1 = True; U = Paise"
-	0.516 Impervious finital abstraction $0.737 = 0.775 \circ \pi/coc^3$		
-	Catchment 252 Pervisus Impervisus Tatal Acea "		
	$\frac{1}{100} = \frac{1}{100} = \frac{1}$		* 334.000 2.325 2805.000*
	Time to Control 131 074 80 603 126 105 minutes"		334.500 3.132 5301.000*
	Rainfall denth 56.200 56.200 mm"		335,000 3,780,8376,000*
	Rainfall volume 1534.75 60.78 1615.53 c.m*		* 335.500 4.332 12258.00*
	Rainfall losses 39.894 6.194 38.209 mm"		335.750 4.583 14551.00"
	Runoff depth 16,396 50.096 18.081 mm"		336.000 21.985 17113.00"
•	Runoff volume 447.03 71.89 518.92 c.m*		Peak outflow 0.557 c.m/sec*
a .	Runoff coefficient 0.291 0.890 0.321		Maximum level 333.148 metre"
*	Maximum flow 0.124 0.049 0.133 c.m/sec*		 Maximum storage 483.704 c.m[*]
* 40	HYDROGRAPH Add Runoff "		Centroidal lag 2.222 hours"
	4 Add Runoff "		0.000 0.855 0.557 0.000 c.m/sec"
•	0.133 0.133 0.737 0.775"		# 40 HYDROGRAPH Next link "
* 40	HYDROGRAPH Copy to Outflow"		5 Next link "
	8 Copy to Outflow"		0.000 0.557 0.557 0.000
•	0.133 0.133 0.133 0.775"		38 START/RE-START TOTALS 11"
* 40	HYDROGRAPH Combine 11		3 Runoff Totals on EXIT"
•	6 Combine "		* Total Catchment area 234.030
	11 Node #"		Total Impervious area 110.433
*	u/s of east culvert of HWY 7&8"		 Total % impervious 47.187*
T	Maximum flow 0.855 c.m/sec"		* 19 EXIT*
	Hydrograph volume 2819.661 c.mª		
	0.133 0.133 0.133 0.855"		
* 40	HYDROGRAPH Start - New Tributary"		
	2 Start - New Tributary"		
15	0.133 0.000 0.133 0.855"		

hectare" hectare*
. .

Q:1348 Printe	396/104/SWMIMIDUSS/Post/34896-104_Post-025yr.out Page 1 d at 15:35 on 18 Dec 2018 Page 1	Page 1 Q:(34896)104(SWM\MIDUSS)Post\34896-104_Post-025yr.out Printed at 15:35 on 18 Dec 2018			
	NTDUSS Output				
	MIDUIS version Version 2.25 pay 479*	2	lime to Centrola 135.456 91.254 135.456 minutes"		
•	MIDUSS created Sunday, February 07, 2010*		Rainfall volume 2022 17 0.00 2023 17 0.00		
	10 Units used:		Rainfall losses 35,056 5,784 35,056 mm"		
÷.	Job folder: Q:\34896\104\SWM\MIDUSS\Post"		Burgert denth 33,030 62,303 33,030 mm"		
	Output filename: 34896-104 Post-025yr.out*		Runoff volume 981.00 0.00 981.00 c.m*		
•	Licensee name: admin"		Runoff coefficient 0.485 0.000 0.485 "		
5	Company Microsoft"		Maximum flow 0.252 0.000 0.252 c.m/sec"		
	Date & Time last used: 12/17/2018 at 2:58:43 PM*	* 40	HYDROGRAPH Add Runoff "		
* 81	ADD COMMENT===================================	2	4 Add Runoff "		
	7 Lines of comment"		0.252 0.252 0.000 0.000"		
- P	***************************************	* 33	CATCHMENT 202"		
- 2	Wilmot Employment Lands"		1 Triangular SCS"		
÷.	New Hallburg, Untarto-	- C	1 Equal length"		
	Top No. 34882-104	- C	1 SCS method"		
	Calculated by: NED/NSR*	਼	202 Woodlot - North of GEXK"		
		÷.	2.000 Total Aras		
* 31	TIME PARAMETERS"		2.000 Float Area		
•	5.000 Time Step"		2.500 Overland Slope"		
	240.000 Max. Storm length		2.080 Pervious Area		
	1500.000 Max. Hydrograph"	*	80.000 Pervious length		
32	STORM Chicago storm"		2.500 Pervious slope"		
	1 Chicago storm"		0.000 Impervious Area		
-	3158.000 Coefficient A		80.000 Impervious length		
2	15.000 Constant B"		2.500 Impervious slope*		
- E	0.936 Exponent C"		0.250 Pervious Manning 'n'"		
	U.400 Fraction R ⁻		70.000 Pervious SCS Curve No."		
	1.000 Duration	÷	0.289 Pervious Runoff coefficient"		
	I dou interstep multiplier	÷	0.100 Pervious Ia/S coefficient"		
	Total depth 60 097 mm ^o	2	10.886 Pervious Initial abstraction"		
	6 O25byd Hydrograph extension used in this file"	<u> </u>	0.015 Impervious Manning "A"		
5 81			90.000 Impervious SCS Curve No."		
	3 Lines of comment"	*	0.100 Impervious Ta/S coefficient		
	***************************************		0.518 Impervious Initial abstraction"		
•	Catchments North of GEXR, part of Inlet #1"		0.119 0.252 0.000 0.000 c.m/sec"		
	***************************************		Catchment 202 Pervious Impervious Total Area "		
33	CATCHMENT 201"	*	Surface Area 2.080 0.000 2.080 hectare*		
3	1 Triangular SCS"		Time of concentration 26.728 2.913 26.728 minutes*		
	1 Equal Length"		Time to Centroid 128.563 88.712 128.563 minutes"		
	1 SGS method	8	Rainfall depth 68.087 68.087 68.087 mm"		
			Raintall volume 1416.20 0.00 1416.20 c.m*		
2		÷	RAINTAIL LOSSES 48.398 6.764 48.398 mm"		
	80.000 Flow length"	2	Runoft depth 19,889 61,323 19,889 mm ⁻		
12 - C	0.500 Overland Slope"		Bunoff coefficient 0.280 0.000 0.280 "		
	2.970 Pervious Area"	× .	Maximum flow 0.119 0.000 0.119 c.m/sec"		
	80.000 Pervious length"	* 40	HYDROGRAPH Add Runoff "		
•	0.500 Pervious slope"		4 Add Runoff *		
1	0.000 Impervious Area"		0,119 0,367 0,000 0,000"		
- C	80.000 Impervious length"	* 40	HYDROGRAPH Copy to Outflow"		
	0.500 Impervious slope"		B Copy to Outflow"		
	0.250 Pervious Manning 'n'"	÷	0.119 0.367 0.367 0.000"		
	2.000 Pervidus SoS curve No."	40	HYDROGRAPH Combine 1"		
	0.100 Pervisus Tax's coefficient"		6 Combine "		
(#C	5.576 Pervisus Initial abstraction*	<u> </u>			
1.00	0.015 Impervious Manning 'n'*		U/S UF UEAN" Novimum flow 0.267 c.m/coot		
	98.000 Impervious SCS Curve No."	*	Hydronraph volume 1300 520 cm ⁻¹		
	0.000 Impervious Runoff coefficient"		0.119 0.367 0.367 0.367*		
	0.100 Impervious Ia/S coefficient*	* 40	HYDROGRAPH Start - New Tributary"		
	0.518 Impervious Initial abstraction"		2 Start - New Tributary"		
1	0.252 0.000 0.000 0.000 c.m/sec"	*	0.119 0.000 0.367 0.367		
- C	Catchment 201 Pervious Impervious Total Area	5 33	CATCHMENT 203"		
	Surface Area 2.970 0.000 2.970 hectare*		1 Triangular SCS"		
	lime of concentration 33.434 4.721 33.434 minutes"		1 Equal length"		

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Printed at 15:35 on 18 Dec 2018	Printed at 15:35 on 18 Dec 2018			
1 SCS method"	6 Combine "			
203 Pfenning Farm Residential Development"	1 Node #"			
60.000 % Impervious"	u/sof GEXR"			
90.000 Flow length"	 Maximum flow 0.555 c.m/sec Hydrograph volume 10372.439 c.m/ 			
1.000 Overland Slope"	4.724 4.724 0.357 0.696"			
7.404 Pervious Area"	40 HYDROGRAPH Confluence 1"			
90.000 Pervious length"	7 Confluence "			
1 100 Pervious Stope"	U/S of GEXR"			
90.000 Impervious length"	Maximum flow 0.698 c.m/sec"			
1.000 Impervious slope"	* Hydrograph volume 10379.441 c.m"			
0.250 Pervious Manning 'n'"	4.724 0.698 0.357 0.000"			
0.418 Pervious Bunoff coefficient"	* 8 Copy to Outflow			
0.050 Pervious Ia/S coefficient"	4.724 0.698 0.698 0.000"			
4.011 Pervious Initial abstraction"	40 HYDROGRAPH Combine 2"			
0.015 Impervious Manning 'n'"	6 Combine "			
0.911 Impervious Runoff coefficient"	INLET 1"			
* 0.100 Impervious Ia/S coefficient"	 Maximum flow 0.698 c.m/sec" 			
0.518 Impervious Initial abstraction"	Hydrograph volume 10379.441 c.m"			
4.724 0.000 0.367 0.367 c.m/sec"	4./24 0.698 0.698 0.698 "			
Surface Area 7.404 11.106 18.510 hectare"	2 Start - New Tributary			
Time of concentration 31.371 4.116 10.493 minutes"	4.724 0.000 0.698 0.698 "			
Time to Centroid 133.117 90.424 100.414 minutes"	81 ADD COMMENT===================================			
Aaintall depth 68.087 68.087 mm" Boinfall volume 0.6041 0.7562 1.2603 mm"	3 Lines of comment"			
Rainfall losses 39,650 6.029 19,477 mm"	Catchments South of GEXR, part of Inlet #1"			
Runoff depth 28.436 62.058 48.609 mm"	,			
Runoff volume 2105.40 6892.12 8997.53 c.m"	33 CATCHMENT 204"			
Runoff coefficient 0.418 0.911 0.714	1 Triangular SCS"			
40 HYDROGRAPH Add Runoff "	a SCS method"			
4 Add Runoff "	204 Riverside Brass"			
4.724 4.724 0.367 0.367"	59.000 % Impervious"			
54 PUND DESIGN" 4.704 Current pack flow c m/sec"	35.000 Flow leadth"			
2.303 Target outflow c.m/see"	1.200 Overland Slope"			
8997.5 Hydrograph volume c.m"	* 0.828 Pervious Area"			
6. Number of stages"	60.000 Pervious length"			
341.500 Marining water level metre 343.600 Marining water level metre	* 1.192 Tenerulaus stope			
341.500 Starting water level metre"	116.000 Impervious length			
0 Keep Design Data: 1 = True; 0 = False"	0.500 Impervious slope"			
Level Discharge Volume"	0.250 Pervious Manning 'n'"			
341.000 0.1541 1746.000"	0.376 Pervious Runoff coefficient"			
342.500 0.2669 3784.000"	0.100 Pervious Ia/S coefficient"			
343.000 0.3446 6114.000"	8.021 Pervious Initial abstraction"			
343.300 0.3837 7652.000"	0.015 Impervious Manning 'n''			
343.500 2.341 9295.000	0.917 Impervious Runoff coefficient"			
Crest Weir Crest Left Right"	0.100 Impervious Ia/S coefficient"			
elevation coefficie breadth sideslope sideslope"	0.518 Impervious Initial abstraction"			
* 343.300 0.900 10.000 0.000 "	0.533 0.000 0.598 0.698 c.m/sec"			
Onifice Orifice Number of"	Surface Area 0.828 1.192 2.020 hectare"			
invert coefficie diameter orifices"	Time of concentration 20.985 5.900 9.256 minutes"			
341,500 0.630 0.3750 1.000"	Time to Centroid 120.566 92.933 99.081 minutes"			
 Yeak outriow 0.357 C.M.Sec" Mayimum loval 343.006 matros" 	- Hainfail depth 58.087 58.087 58.087 mm" Bainfail volume 563.89 811.45 1375 5 c m			
Maximum storage 6605.548 c.m"	Rainfall losses 42.380 5.660 20.716 mm*			
Centroidal lag 5.795 hours"	Runoff depth 25.706 62.426 47.371 mm"			
4.724 4.724 0.357 0.367 c.m/sec*	Runoff volume 212.90 743.99 956.89 c.m			
	Willoll costificating of a cost of a			

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40	MAXIMUM TIOW 0.075 0.505 0.533 C.M/Sec" HYDROGRAPH Add Runoff "	- ÷	Runoff volume 222.71 37.06 259.77 c.m"	
	4 Add Runoff "		Maximum flow 0.036 0.025 0.038 c.m/sec*	
	0.533 0.533 0.698 0.698"	• 40	HYDROGRAPH Add Runoff "	
* 54	POND DESIGN"		4 Add Runoff "	
	0.533 Current peak flow c.m/sec"	•	0.038 0.038 0.030 0.724"	
	0.070 larget outflow c.m/sec"	* 40	HYDROGRAPH Copy to Outflow"	
	4 Number of stages"	<u></u>	B Copy to Outflow"	
0.00	G.000 Minimum water level metre"	- 40	U.036 U.038 U.038 U.124"	
	0.910 Maximum water level metre"	*	6 Combine "	
•	0.000 Starting water level metre"	÷	2 Node #"	
	0 Keep Design Data: 1 = True; 0 = False"		INLET 1"	
	Level Discharge Volume"		Maximum flow 0.755 c.m/sec"	
		-	Hydrograph volume 11561.646 c.m"	
	0.6100 0.1232 1619.000"	• 40	U.U36 U.U36 U.U36 U.U36 U.U36 HVDROGRAPH Start - New Tributary	
	0.9100 0.2769 2511.000"		2 Start - New Tributary"	
0.00	Peak outflow 0.030 c.m/sec*	90	0.038 0.000 0.038 0.755"	
÷.	Maximum level 0.302 metre"	* 33	CATCHMENT 206"	
- C	Maximum storage 760.596 c.m"	<u>.</u>	1 Triangular SCS"	
200	Centrologi lag 8.594 nours"	÷.	1 Equal length"	
* 40	HYDROGRAPH Combine 2"	÷	1 SCS method" 206 Industrial properties at and of Hamilton Road"	
	6 Combine "		35.000 % Impervious"	
•	2 Node #"		2.850 Total Area"	
	INLET 1"		50,000 Flow length"	
	Maximum flow 0.724 c.m/sec*		1.000 Overland Slope"	
	Hydrograph volume 11301.876 c.m."		1.852 Pervious Area"	
• 40	HYDROGRAPH Start - New Tributary"		1.000 Pervious senger	
0.00	2 Start - New Tributary"		0.997 Impervious Area"	
19	0.533 0.000 0.030 0.724"	*	50.000 Impervious length"	
33	CATCHMENT 205"		1.000 Impervious slope"	
	1 Irlangular SCS*	- 2	0.250 Pervious Manning 'n'"	
100	S Specify values	-	/6.000 Pervious SCS Curve No." 0.377 Pervious Runoff coefficient"	
	205 Iron Bridge Manufacturing Property - Woodlot"	*	0.100 Pervious Ta/S coefficient"	
	5,000 % Impervious"		8.021 Pervious Initial abstraction"	
	1.190 Total Area"		0.015 Impervious Manning 'n'"	
	255,000 Flow length"	*	98.000 Impervious SCS Curve No."	
	1.131 Pervisus Area"		0.900 Impervious Runoff coefficient"	
	255.000 Pervious length"		0.5100 Impervious 12/S COEFFICIENT	
	1.800 Pervious slope"	÷.	0.431 0.000 0.038 0.755 c.m/sec"	
	0.060 Impervious Area"	*	Catchment 206 Pervious Impervious Total Area "	
12	255.000 Impervious length"	<u>.</u>	Surface Area 1.852 0.997 2.850 hectare"	
	1.800 Impervious slope"	<u> </u>	Time of concentration 23,158 2.892 11.762 minutes"	
(•)	70.000 Pervious SCS Curve No "		lime to centrolo 123.297 88.679 103.830 minutes" Painfail depth 68.087 68.087 68.087 mm"	
	0.289 Pervious Runoff coefficient*		Rainfall volume 1261.30 679.16 1940.47 c.m"	
	0.100 Pervious Ia/S coefficient"		Rainfall losses 42.393 6.782 29.930 mm"	
	10.886 Pervious Initial abstraction"		Runoff depth 25.693 61.304 38.157 mm"	
÷.	0.015 Impervious Manning 'n'"		Runoff volume 475.96 611.51 1087.47 c.m"	
	90.000 impervious SUS curve No."	÷	Hunott coefficient 0.377 0.900 0.560 "	
(0,100 Impervious Ia/S coefficient"	- 40	WAXINGW LLOW 0.150 0.407 0.431 C.W/Sec	
35)	0.518 Impervious Initial abstraction"	*	4 Add Runoff "	
	0.038 0.000 0.030 0.724 c.m/sec"	* · · ·	0.431 0.431 0.038 0.755"	
	Catchment 205 Pervious Impervious Total Area "	33	CATCHMENT 207"	
	Surrace Area 1,131 0.060 1.190 hectare Time of concentration FC 132 6 445 51 CC - invite-	0	1 Triangular SCS"	
	Time to Centroid 167,959,93,681,157,362 minutes*		i Equal tengin" 1 SCS method"	
	Rainfall depth 58.087 68.087 68.087 mm*		207 Woodlot and Wetland east of Pestells"	
(a)	Rainfall volume 769.72 40.51 810.23 c.m."		5.000 % Impervious"	
	Rainfall losses 48.387 5.802 46.257 mm"	*	5.920 Total Area"	
7.52	Runott depth 19.700 62.284 21.829 mm"		65.000 Flow length"	

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t.	3.000 Overland Slope"	 0.913 Impervious Runoff coefficient* 	
*	5.624 Pervious Area"	0.100 Impervious Ia/S coefficient"	
*	65.000 Pervious length"	0.518 Impervious Initial abstraction	
*	3.000 Pervious slope"	1.861 0.000 0.658 1.349 c.m/sec"	
<u>.</u>	0.296 Impervious Area"	" Catchment 208 Pervious Impervious Total Area "	
÷ .	50,000 Impervious length	"Surface Area 1.383 4.148 5.530 hectare"	
	0.250 Pervious Manian 'n'"	Time to contentration 17.019 7.009 8.227 minutes"	
	70.200 Pervious SCS Curve No."	Bainfail denth 68,087,68,087, 68,087, mm"	
	0.292 Pervious Runoff coefficient*	Rainfall volume 941.30 2823.89 3765.18 c.m"	
*	0.100 Pervious Ia/S coefficient"	 Rainfall losses 43.502 5.893 15,295 mm" 	
•	10.782 Pervious Initial abstraction"	Runoff depth 24.584 62.193 52.791 mm"	
	0.015 Impervious Manning 'n'	• Runoff volume 339.88 2579.47 2919.35 c.m°	
÷	98.000 Impervious SCS Curve No."	Runoff coefficient 0.361 0.913 0.775	
<u>.</u>	0.905 Impervious Runoff coefficient"	Maximum flow 0.133 1.799 1.861 c.m/sec"	
*	0.100 Impervious 12/S coefficient	40 HYDRUGHAPH AGG HUNOTT "	
	Catchment 207 Pervious Impervious Total Area "	* 54 POND DESTRIN*	
	Surface Area 5.624 0.296 5.920 hectare"	1.861 Current peak flow c.m/sec"	
	Time of concentration 22.233 2.435 19.452 minutes"	 0.070 Target outflow c.m/sec" 	
č. –	Time to Centroid 123.078 87.981 118.149 minutes"	" 2919.4 Hydrograph volume c.m"	
.	Rainfall depth 68.087 68.087 mm"	9. Number of stages"	
	Rainfall volume 3829.18 201.54 4030.72 c.m"	0.000 Minimum water level metre"	
	Haintail losses 48.230 6.445 46.141 mm"	1.200 Maximum water level metre"	
÷.	Hullott depth 19.855 01.041 21.946 mm ⁻	0.000 Starting water level metre"	
	Bunoff coefficient 0.292 0.905 0.322 °	level Discharce Volume*	
*	Maximum flow 0.373 0.125 0.399 c.m/sec"		
* 40	HYDROGRAPH Add Runoff "	• 0.1500 0.00400 297.000°	
•	4 Add Runoff "	* 0.3000 0.01000 635.000*	
·	0.399 0.658 0.038 0.755"	* 0.4500 0.03600 1004.000*	
40	HYDROGRAPH Copy to Outflow"	* 0.6000 0.04900 1405.000*	
÷	8 Copy to Outflow Copy to Copy	0.7500 0.06000 1847.000°	
40	0.399 0.668 0.658 0.755 NVD9090804 Combine 0		
. 40	6 Combine "		
	2 Node #"	Peak outflow 0.109 c.m/sec"	
*	INLET 1	Maximum level 0.913 metre"	
*	Meximum flow 1.349 c.m/sec"	Maximum storage 2376.069 c.m"	
	Hydrograph volume 13948.298 c.m"	 Centroidal lag 11.644 hours" 	
5	0.399 0.658 0.658 1.349"	" 1.861 1.861 0.109 1.349 c.m/sec"	
- 40	HIDHOGRAPH Start - New Fributary"	40 HYDROGRAPH Combine 2"	
	2 Start - New Inductary" 0 390 0 000 0 658 1 349"	Complee "	
* 33	CATCHMENT 208"		
	1 Triangular SCS*	Maximum flow 1.410 c.m/sec"	
	3 Specify values"	 Hydrograph volume 16491.287 c.m* 	
	1 SCS method"	1.861 1.861 0.109 1.410"	
<u>.</u>	208 N.C. Pestell site"	81 ADD COMMENT===================================	
<u> </u>	75.000 % Impervious"	3 Lines of comment"	
× - +	5.530 IOTAL APRA"	Controlments South of OFVD seet of Inlat #01	
*	2 000 Overland Slope"	Catchments South of GEAR, part of inlet #2-	
	1.383 Pervinus Area"	* 40 HYDROGRAPH Start - New Tributary*	
*	50.000 Pervious length"	2 Start - New Tributary"	
*	3.000 Pervious slope"	* 1.861 0.000 0.109 1.410 ^{**}	
Ħ.,	4.148 Impervious Area"	* 33 CATCHMENT 209"	
1	92.000 Impervious length	1 Triangular SCS"	
÷.	0.750 Impervious slope"	3 Specify values"	
	U.25U PERVIOUS MAINING 'N''	- 1 SCS method"	
	73.000 FEIVIUS 363 GUIVE NO."	- ZOY ALPINE SOLUTIONS - WEST SMMP"	
	0.100 Pervious Ta/S coefficient"		
	8.467 Pervious Initial abstraction"	150.000 Flow length*	
	0.015 Impervious Manning 'n'"	1.000 Overland Slope"	
*	98.000 Impervious SCS Curve No."	1.344 Pervious Area"	

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1.000 Private latty: 1.000 Private latty: 1.000 Private latty: 1.0000 Private l	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-025yr.out Printed at 15:35 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-025yr.out Page 10 Printed at 15:35 on 18 Dec 2018	
1 1.000 Perilas logín 11000 Perilas logín 1.000 11000	* 150.000 Pervious length"		5 000 % Tenenvious"
0.350 Instruction Marks	1.500 Pervious slope"		13.200 Total Area"
11.000 Deprivation integrit 1 1.000 Deprivation integrit 11.000 Deprivation integrit 1.000 Deprivatintegrit 11.000	 0.576 Impervious Area" 		170.000 Flow length
1.1000 Parking Market 10.000 Parking Area 0.100 Parking Contract 10.000 Parking Area 0.100 Parking Contract 0.000 Parking Area 0.100 Parking Contract 0.000 Parking Area 0.100 Parking Contract 0.000 Parking Area 0.100 Parking Area 0.000 Parking Area 1000000000000000000000000000000000000	113.000 Impervious length"		* 2.400 Overland Slope"
0 0	1.500 Impervious slope"		12,568 Pervious Area"
• 1047 Privide Private Hold Staff • 1047 Private Hold Staff • 1047 Private Hold Staff • 1047 Private Hold Staff • 1048 Private Hold Staff • 1048 Private Hold Staff • 1048 Private Hold Staff • 1049 Private Hold Staff • 1049 Private Hold Staff • 1040 Private Hold Sta	3 0.000 Pervious SCS Curve No. "		170.000 Pervious length"
0.100 Persons Initial contraints	0.447 Pervious Ruooff coefficient"		2.400 Pervious slope"
* 1.530 Periods High related interaction* * 2.000 Descriptions Heading ''' * 0.530 Experiods Marting ''' * 0.000 Periods Marting ''' * 0.531 Experiods Marting ''' * 0.000 Periods Marting ''' * 0.532 Experiods Marting ''' * 0.000 1.410 cariser' * 0.533 Experiods Marting ''' * 0.000 Periods Marting ''' * 0.533 Marting Statematics ''' * 0.000 Periods Marting '''' * 0.533 Marting Statematics '''' * 0.000 Periods Marting ''''''''''''''''''''''''''''''''''''	0.100 Pervious Ia/S coefficient"		TOLOO Impervious Area
1.0.15 Deprivation Maning "1" 0.0.15 Deprivation Maning "1" 0.0.16 Deprivation Maning "1" 0.0.17 Deprivation Maning "1" 0.0.18 Deprivation Maning "1" 0.0.10 Deprivation Maning "1" 0.0.11 Depriva	6.350 Pervious Initial abstraction"		2.400 Impervious slope"
PH 2000 Deprusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* PH 2000 Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* Perusion 200 Control Not.* Perusion 200 Control Not.* 70000 Perusion 200 Control Not.* Perusion 200 Control Not.* Perusion 200 Control Not.* Perusion 200 Control Not.* 7000 Contro	0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"
0.101 Impervises Intiliser's entries into a name into a construction inte construction into a construction into a construction	98.000 Impervious SCS Curve No."		70.000 Pervious SCS Curve No."
- 0.38 Depring initial interventions - 0.38 Depring initial interventions - 0.28 C.00 0.19 1.40 printer development - 0.38 - 0.28 C.00 0.19 1.40 printer development - 0.38 - 0.28 C.00 0.10 1.40 printer - 0.38 - 0.28 C.00 Deprinter intervent - 0.38 - 0.28 Deprinter intervent - 0.38 Deprinter intervent - 0.38 Deprinter intervent - 0.38 Deprinter intervent - 0.38 Deprinter intervent - 0.38 Deprintervent - 0.38 - 0.38 Deprintervent - 0.38 Deprintervent - 0.38 Deprintervent - 0.38 Deprintervent - 0.38 Deprintervent - 0.38 Deprintervent - 0.38 Deprintervent - 0.39 D.10 - 0.48 Deprintervent - 0.38 Deprintervent	0.100 Impervious Autort coefficient"		0.289 Pervious Runoff coefficient"
0.200 0.500 0.500 1.410 D.1410 D.1410 C.1410 C.1410 C.1410 C.1410 C.140 C.1000 F.1000 F.1000 F.10000 F.1000 F.10000 F.10	0.518 Impervious In/s contribution"		10.100 Pervious Ia/s coefficient"
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The of consumption 50.47 4.17 21.413 Builder's 0.100 Injection Table of consumption 56.675 66.675 1.14.1 Distance 0.100 Injection 0.14.2 <	Surface Area 1.344 0.576 1.920 hectare"		 0.915 Impervious Runoff coefficient*
Inde to Centrical 192,028 00.810 15.03 20.810 0.510 0.142 - plast ABALTAL Volume 95.04 39.216 150.73 20.142 - plast ABALTAL Volume 95.04 39.216 150.73 20.142 - plast ABALTAL Volume 95.04 39.226 c.a* 3.220 North 2- plast ABALTAL Volume 0.142 - plast 12.568 0.068 17.208 North 2- plast ABALTAL Volume 0.142 - plast 12.568 0.068 17.208 North 2- plast ABALTAL Volume 0.142 - plast 12.568 0.068 17.208 North 2- plast ABALTAL Volume 0.142 - plast 12.568 0.068 0.708 North 2- plast ABALTAL Volume 0.142 - plast 12.568 0.078 8.097 <t< td=""><td>Time of concentration 36.487 4.177 21.412 minutes</td><td></td><td>0.100 Impervious Ia/S coefficient"</td></t<>	Time of concentration 36.487 4.177 21.412 minutes		0.100 Impervious Ia/S coefficient"
main/ill volume 0.532 0.114	Pointell depth 60.003 00.510 116.708 minutes"		0.518 Impervious Initial abstraction"
Application	Rainfall volume 915.08 302.18 1307.26 c.m."		0.552 0.000 0.114 0.114 c.m/sec*
Runoff depti 30.624 62.000 30.624 62.000 80.629 80.740 76.63 0.774 76.740 76.	Rainfall losses 37.663 5.996 28.163 mm*		Surface Arga 12.56 0.661 12 20 betan
Hundf volume 408.09 357.64 765.53 C.n" Time to Cartorizi 147.76 51.29 159.653 mutches 40 Mutchessential 0.470 0.280	* Runoff depth 30.424 62.090 39.924 mm*		Time of concentration 42 530 4 635 37 230 minutes*
Rendrf corf Lieft 0.447 0.447 0.280 0.272 0.280 0.280 0.280 0.280 0.280 0.280 0.280 0.280 0.280 0.280 0.280 0.280	Runoff volume 408.89 357.64 766.53 c.m"		Time to Centroid 147.776 91.129 139.693 minutes
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-0 Hindberg Add Rubort Rainfall Losses 48.366 5.789 46.285 mm 0.285 0.299 0.191 1.40° Rainfall Losses 48.366 5.789 46.281 mm 0.285 0.299 0.191 1.40° Rainfall Losses 48.366 5.789 46.281 mm 0.285 0.289 0.190 1.40°	Maximum flow 0.100 0.238 0.259 c.m/sec*		Rainfall volume 8557.45 450.39 9007.84 c.m"
0.269 0.269 0.109 1.410* HIND'T Getta 19.701 62.279 21.837 mm ⁻ 0.279 Current pask flow c.m/sec* Minort corfision 0.289 0.520 0.522 0.522 c.m' 0.270 Target outflow c.m/sec* Maxium flow 0.520 0.522 0.522 c.m' 7.65 Hydrograph volume c.m' 4 Add Runoft ' 0.520 0.522 0.522 c.m/sec* 0.000 Miniand water level metre* 4 Add Runoft ' 0.114 0.114* 0.000 Miniand water level metre* 40 HYDROGRAPH Add Runoft ' 0.522 0.552 0.114* 0.000 Starting water level metre* 0.552 0.552 0.552 0.114* 0.000 Starting water level metre* 0.552 0.552 0.552 0.552 0.0500 Maximum Too 0.552 0.552 0.552 0.552 0.552 0.552 0.552 0.552 0.552 0.552 <t< td=""><td>40 HYDROGRAPH AGG HUNDTT</td><td></td><td>Rainfall losses 48.386 5.789 46.256 mm"</td></t<>	40 HYDROGRAPH AGG HUNDTT		Rainfall losses 48.386 5.789 46.256 mm"
S4 POND DESIGN* Add Runoff " ceffsiont 2.288 0.581 0.58	* 0.259 0.259 0.109 1.410"		HUNOTT depth 19,701 62,297 21.831 mm ²
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726.5 Mydrograph volume c.a" 4 Add Rundf" 7. Number of stages 0.552 0.114 0.000 Minimum water lawsi metre" 40 HYDROGRAPH Copy to Outflow" 1.000 Starting water lawsi metre" 8 0.552 0.114 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow" 0.552 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow" 0.552 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow" 0.552 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow" 0.552 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow" 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow: 0.114* 0.114* 0 Keep Design Data: I = Trus; 0 = False* 40 HYDROGRAPE Copy to Outflow: 1.14* 0.114* 0 Keep Design Data: I = Trus; 0 = False* 1 Italian IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	0.070 Target outflow c.m/sec"		* 40 HYDROGRAPH Add Runoff *
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0 Keep Design Data: i = True; 0 = False* 40 HVDP000APH Control = 0:000 0:000 1 Level Discharge V Olume* 6 Combine * 0.000 0.000 0.000 3 Node #* 0.2500 0.0200 7:000* 3 Node #* 0.500 0.1250 22:000* 3 Node #* 1:00 0.510 445.000* 0.552 0.552 0.552 0.566* 0.552 1:00 0.610 557.000* 3 Lines of comment* Maxiaum level 0.673 metre* 3 Suth of GEX along Nafziger Rd, part of Inlet #3* 0.255 0.258 0.259 0.114 1.410 c.m/sec* 2 Start - New Tributary* 0.255 0.259 0.259 0.114 c.m/sec* 3 CATOHEMERT 2* Multifier 1 1 Start - New Tributary* 0.552 0.666* </td <td>0.000 Starting water level metre"</td> <td></td> <td>• 0.552 0.552 0.114*</td>	0.000 Starting water level metre"		• 0.552 0.552 0.114*
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Peak outflow 0.114 c.m/sec* Maximum level 0.673 metre" Maximum storage 174.140 c.m' Maximum storage 174.140 c.m' 0.259 0.259 0.114 1.410 c.m/sec" 0.259 0.259 0.114 1.410 c.m/sec" 0 HYDROGRAPH Combine 3 3 3 Node #" 1 Triangular SCS" 1 Numer Tow 0.114 c.m/sec" 0.259 0.259 0.114 c.m/sec" 3 3 Node #" 1 Triangular SCS" 1 Maximum flow 0.114 c.m/sec" 1 SC method" 0.259 0.259 0.114 0.114 0.114 1.000 40 HYDROGRAPH Start - New Tributary" 1 SC method" 0.259 0.259 0.114 0.114 1.000 0.259 0.259 0.114 0.114 1.000 1.000 Ximpervious* 7.310 Total Area* 2 Start - New Tributary 7.237 Pervious A	1.100 0.6160 557.000"		3 Lines of comment"
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Hydrograph volume 76.114 C.m" 1 SGS method" 0.259 0.259 0.114 0.114" 1.000 % Impervious" 40 HYDROGRAPH Start - New Tributary" 7.310 Total Area" 2 Start - New Tributary" 120.000 Flow Length" 0.259 0.000 0.114 0.114" 3.300 33 CATCHMENT 210" 3.300 Overland Slope" 1 Triangular SCS" 120.000 Pervious length" 1 Equal length" 3.300 Pervious length" 1 SGS method" 3.300 Pervious length" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious Area"	Maximum flow 0.114 o.m/soo"		1 Equal length"
0.259 0.259 0.114 0.114" 1.000 % Impervious" 40 HVDROGRAPH Start - New Tributary" 7.310 Total Area" 2 Start - New Tributary" 120.000 Flow lends Slope" 0.259 0.000 0.114 0.114" 3.300 33 CATCHMENT 210" 7.237 Pervious Area" 1 Triangular SCS" 120.000 Pervious length" 1 Equal length" 3.300 Pervious slope" 1 SCS method" 0.073 Impervious Area" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious Length"	Hydrograph volume 766,134 C.m"		i Sus metriour 211 Cultivated lands east of Nafziner Road
40 HYDROGRAPH Start - New Tributary" 7.310 Total Area" 2 Start - New Tributary" 120.000 Flow length" 0.259 0.000 0.114 0.114" 3.300 33 CATCHMENT 210" 7.237 Pervious Area" 1 Triangular SCS" 120.000 Pervious length" 1 Equal length" 3.300 Pervious length" 1 SCS method" 0.073 Impervious Area" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious length"	0.259 0.259 0.114 0.114"		1.00 % Impervious"
2 Start - New Tributary" 120.000 Flow length" 0.259 0.000 0.114 0.114" 3.300 33 CATCHMENT 210" 7.237 Pervious Area" 1 Triangular SCS" 120.000 Pervious length" 1 Equal length" 3.300 Pervious length" 1 SCS method" 0.073 Impervious Area" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious Area"	40 HYDROGRAPH Start - New Tributary"		7.310 Total Area"
0.259 0.000 0.114 0.114" 3.300 Overland Slope" 33 CATCHMENT 210" 7.237 Pervious Area" 1 Triangular SCS" 120.000 Pervious length" 1 Equal length" 3.300 Pervious slope" 1 SCS method" 0.073 Impervious Area" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious length"	2 Start - New Tributary"		* 120.000 Flow length"
1 Triangular SCS" 7.237 Pervious Area" 1 Triangular SCS" 120.000 Pervious length" 1 Equal length" 3.300 Pervious slope" 1 SCS method" 0.073 Impervious Area" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious length"	- U.259 U.000 U.114 U.114" 33 CATCHMENT 210"		3.300 Overland Slope"
1 Equal length" 3.300 Pervious length" 1 SCS method" 0.073 Impervious length" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious length"	1 Triangular SCS"		7.237 Pervious Area"
1 SCS method" 0.073 Impervious Area" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious length"	1 Equal length"		3.300 Pervisus shone"
" 210 Woodlot north of Hamburglr/Badenview lands" 120.000 Impervious length"	1 SCS method"		0.073 Impervious Area"
	210 Woodlot north of Hamburglr/Badenview lands"		120.000 Impervious length"

Q:134896\104\SWM\MIDUSS\Post\34896-104_Post-025yr.out Page 11 Printed at 15:35 on 18 Dec 2018	I Q:134896\104\SWM\MIDUSS\Post134896-104_Post-025yr.out Page 12 Printed at 15:35 on 18 Dec 2018
3,300 Impervious slope"	 Time of concentration 40.705 4.565 19.846 minutes"
0.250 Pervious Manning 'n'"	Time to Centroid 145.013 91.029 113.855 minutes
76.000 Pervious SUS Curve No."	- Haintall depth 68.087 68.087 68.087 mm ⁻
0.100 Pervious Ia/S coefficient"	Rainfall losses 37.663 5.794 24.915 mm"
8,021 Pervious Initial abstraction"	* Runoff depth 30.423 62.293 43.171 mm"
0.015 Impervious Manning 'n'"	Runoff volume 467.30 637.88 1105.18 c.m"
98.000 Impervious SUS Curve No." 0.904 Impervious Runoff coefficient"	"HUNDTI CONTIGIENT 0.447 0.915 0.534 " Maximum flow 0.103 0.429 0.449 c.m/sec"
0.100 Impervious Ia/S coefficient	40 HYDROGRAPH Add Runoff
0.518 Impervious Initial abstraction"	4 Add Runoff "
0.552 0.000 0.552 0.666 c.m/sec*	• 0.449 0.452 0.552 0.552"
Surface Area 7.237 0.073 7.310 hectare"	
Time of concentration 27.370 3.418 26.805 minutes"	0.070 Target outflow c.m/sec"
Time to Centroid 128.573 89.462 127.650 minutes"	1105.2 Hydrograph volume c.m"
Rainfall depth 68.087 68.087 69.087 mm" Bainfall wolump 4927 25 49 77 4977 12 c m"	 Number of stages' ODO Minimum water lavel matre"
Rainfall losses 42.374 6.553 42.015 mm"	1.000 Maximum water level metre"
Runoff depth 25.713 61.534 26.071 mm"	• 0.000 Starting water level metre"
Runoff volume 1860.81 44.98 1905.79 c.m"	0 Keep Design Data: 1 = True: 0 = False"
"HUNOTT COETTLCIENT U.378 U.994 U.383 " Maximum flow 0.546 0.029 0.552 c.m/sec"	- Level Discharge Volume
40 HYDROGRAPH Add Runoff "	• 0.1000 0.02000 7.000"
4 Add Runoff "	0.2500 0.04200 64.000"
• 0.552 0.552 0.666"	0.5000 0.09000 343.000"
* 8 Copy to Outflow"	0.8000 0.1360 1014.000"
0.552 0.552 0.552 0.666"	1.000 0.7880 1667.000"
40 HYDROGRAPH Combine 4"	Peak outflow 0.099 c.m/sec*
- 6 Combine -	Maximum tevel 0.508 metre
INLET 3"	Centroidal lag 2.894 hours"
Maximum flow 0.552 c.m/sec"	0.449 0.449 0.099 0.552 c.m/sec
Hydrograph volume 1905.792 c.m"	40 HYDROGRAPH Combine 4"
4 0 HYDROGRAPH Start - New Tributary"	
2 Start - New Tributary"	INLET 3"
0.552 0.000 0.552 0.552"	Maximum flow 0.646 c.m/sec"
33 CATCHIENT 212"	0.449 0.449 0.468 0.099 0.646*
3 Specify values"	40 HYDROGRAPH Start - New Tributary"
1 SCS method"	2 Start - New Tributary"
212 Alpine Solutions - East SMWP	* 0.449 0.000 0.099 0.646* * 33 CATCHMENT 213*
2.550 Total Area"	1 Triangular SCS"
150.000 Flow length	1 Equal length
1.500 Overland Slope"	 1 SCS method" 213 Woodlot Fast and West of Nafziner Boad"
180.000 Pervious length"	3,000 % Impervious"
1.500 Pervious slope"	13.460 Total Area"
1.024 Impervious Area"	140.000 Flow length
131.000 Impervious slope"	13.056 Pervious Area"
0.250 Pervious Manning 'n'"	140.000 Pervious length"
80.000 Pervious SCS Curve No."	3.600 Pervious slope"
 0.447 Pervious Runott coefficient" 0.100 Pervious Ta/S coefficient" 	 U.444 IMPERVIOUS AF82" 140.000 Impervious length"
6.350 Pervious Initial abstraction	3.600 Impervious slope"
0.015 Impervious Manning 'n'"	0.250 Pervious Manning 'n'"
98.000 Impervious SCS Curve No."	70.100 Pervious SCS Curve No."
0.915 Impervious Tal/S coefficient"	0.100 Pervious Ta/S coefficient"
0.518 Impervious Initial abstraction"	* 10.834 Pervious Initial abstraction"
0.449 0.000 0.552 0.552 c.m/sec*	0.015 Impervious Manning 'n'"
uarchment 212 Pervious Impervious Total Area " Surface Area 1.536 1.024 2.560 hectare"	- 90.000 impervious Sus curve no." 0.901 impervious Runoff coefficient"

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	0.100 Impervious Ia/S coefficient"	• 40 HYDROGRAPH Add Runoff "				
	0.518 Impervious Initial abstraction"	4 Add Runoff "				
	Catchment 213 Pervious Impervious Total Area	54 POND DESTRAN				
	Surface Area 13.056 0.404 13.460 hectare"	1.638 Current peak flow c.m/sec"				
٢	Time of concentration 33.436 3.653 30.830 minutes"	 0.070 Target outflow c.m/sec" 				
2	Time to Centroid 136.715 89.805 132.611 minutes"	2710.8 Hydrograph volume c.m"				
	Rainfall volume 8689.51 274.93 9164.44 c.m*	15. NUMBER OF STAGES" 0.000 Minimum water lavel metre"				
	Rainfall losses 48.294 6.717 47.046 mm"	1.450 Maximum water level metre"				
	Runoff depth 19.793 61.370 21.040 mm"	* 0.000 Starting water level metre"				
100	Runoff volume 2584.19 247.81 2822.00 c.m*	0 Keep Design Data: 1 = True; 0 = False				
	Maximum flow 0.644 0.162 0.667 c m/sec"	C DOOL O DOOL				
* 40	HYDROGRAPH Add Runoff "	0.1500 0.00700 248.000"				
•	4 Add Runoff "	• 0.2500 0.00900 418.000"				
- 40	0.667 0.667 0.099 0.646"	0.3500 0.01100 593.000"				
+0	R Convito Duttiow"	0.4500 0.01500 775.000"				
(*)	0.667 0.667 0.667 0.646"	* 0.6500 0.01600 1161.000"				
* 40	HYDROGRAPH Combine 4"	0.7500 0.01700 1364.000"				
	6 Combine "	0.8500 0.01900 1575.000"				
2.45	4 NOGE #" TNIET 9"	0.9500 0.02000 1795.000"				
	Maximum flow 1.310 c.m/sec"	1.150 0.2880 2263.000*				
	Hydrograph volume 5842.592 c.m"	* 1.250 0.4600 2511.000°				
. 10	0.667 0.667 0.667 1.310"	1.350 2.766 2768.000"				
+ 40	HTUHUGHAPH START - New Inibutary" 2 Start - New Tributary"	1.450 6.856 3033.000"				
	0.667 0.000 0.667 1.310"	Maximum level 1.107 metre"				
* 33	CATCHMENT 214"	 Maximum storage 2159.934 c.m" 				
	1 Triangular SCS"	Centroidal lag 15.631 hours"				
	3 Specify Values" 1 SCS method	1.638 1.638 0.142 1.310 c.m/sec				
	214 Rec Centre - SWMP"	6 Combine 4				
 (*) 	73.000 % Impervious"	4 Node #"				
	4.950 Total Area"	INLET 3"				
÷ 1	50,000 Flow length*	Maximum flow 1.350 c.m/sec"				
	1.336 Pervious Area"	nyorograph volume 7322,712 C.m				
200	40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary"				
12	1.500 Pervious slope"	2 Start - New Tributary"				
	3.013 impervious Area" 182.000 Impervious Leadth	1.638 0.000 0.142 1.350" 39 CATCHERT 215"				
	1.500 Impervious slope"	1 Triangular SCS"				
	0.250 Pervious Manning 'n'"	1 Equal length"				
	83,000 Pervious SCS Curve No."	1 SCS method"				
0.000	0.304 Pervious Ta/S coefficient"	215 Vacant industrial lands west of Natziger Hoad 45.000 % Impervious"				
÷	5.202 Pervious Initial abstraction"	2,860 Total Area"				
1	0.015 Impervious Manning 'n'"	105.000 Flow length"				
	98.000 Impervious SCS Curve No."	2.000 Overland Slope				
1.00	0.100 Impervious Runoit Coefficient"	 1.573 Pervious Area* 105.000 Pervious Legath* 				
	0.518 Impervious Initial abstraction"	2.000 Pervious slope				
	1.638 0.000 0.667 1.310 c.m/sec*	1.287 Impervious Area"				
1.40	Catchment 214 Pervious Impervious Total Area *	105.000 Impervious length				
	Time of concentration 15.557 5.550 7.253 minutes*	- 2,000 impervious siope" 0.250 Pervious Manning 'n'"				
	Time to Centroid 112.209 92.435 95.783 minutes"	76.000 Pervious SCS Curve No."				
(0 4)	Rainfall depth 68.087 68.087 68.087 mm*	0,378 Pervious Runoff coefficient"				
	Hainfall volume 909.98 2460.31 3370.28 c.m"	0.100 Pervious Ia/S coefficient"				
-	Runoff depth 34,341 62,318 54.764 mm"	5 5,021 Pervious Initial abstraction" 0.015 Immervious Maning '0'"				
(c e)	Runoff volume 458.97 2251.87 2710.84 c.m*	98,000 Impervious SC Curve No."				
1.5	Runoff coefficient 0.504 0.915 0.804 *	0.902 Impervious Runoff coefficient"				
0.20	Maximum Tiow 0.196 1.535 1.638 c.m/sec*	0.100 Impervious Ia/S coefficient*				

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		0.518	Impervious Initial a	abstraction			
2		0.1	0.546 0.00	0.142	1.350 (c.m/sec"	
2		Cal	tchment 215	Pervious	Impervious	Total Area	bostano
2		Tin	Tace Area	29.358	3.667	2.000	minutes"
		Tir	me to Centroid	131.072	89.823	103.787	minutes*
		Raj	infall depth	68.087	68.087	68.087	mm *
3		Rat	infall volume	1071.00	876.27	1947.27	C.m"
÷		Rai	infall losses	42.379	6.690	26.319	mm "
		Rur	nott depth	25.708	61.397	41./68	mm
2		Rur	off coefficient	0.378	0.902	0.613	
		Max	kimum flow	0.114	0.517	0.546	c.m/sec*
	40	HYD	OROGRAPH Add Runoff				
		4	Add Runoff "				
1		10/5	0.546 0.54	5 0.142	1.350"		
÷	40	H*L	CODY to Outflow"	LTOM.			
		Ģ	0.546 0.54	6 0.546	1.350*		
	40	HYD	DROGRAPH Combine	4"	11000		
		6	Combine "				
٠		4	Node #"				
1		.,	INLET 3"				
2		Max	decored volume	1.50	57 C.M/Se 74 c.m/Se	ec"	
		Li a C	0.546 0.54	5 0 546	1.567*		
\mathbf{x}	40	н∽с	DROGRAPH Start - New	Tributary"	11007		
٠		2	Start - New Tributa	ry"			
			0.546 0.000	0.546	1.567"		
	33	CAT	TCHMENT 216"				
		1	Foual length"				
÷		1	SCS method"				
		216	Industrial lands we	st of Nafzig	ger Road"		
2		45,000	% Impervious"		-		
5		2.860	Total Area"				
		110.000	Flow length"				
		2.000	Pervious Area"				
		110,000	Pervious length"				
٠		2.000	Pervious slope"				
		1.287	Impervious Area"				
2		110.000	Impervious length"				
2		2.000	Impervious slope"				
		76.000	Pervious Manning 'n	No."			
		0.378	Pervious Runoff coet	fficient"			
٠		0.100	Pervious Ia/S coeff:	icient"			
٠		8.021	Pervious Initial abs	straction"			
2		0.015	Impervious Manning	'n'"			
਼		98.000	Impervious SCS Curve	e NO."			
		0.905	Impervious Kunott Co	fficient"			
		0.518	Impervious Initial a	abstraction			
3			0.549 0.000	0.546	1.567 (c.m/sec"	
*		Cat	tchment 216	Pervious	Impervious	Total Area	8
1		Sur	face Area	1.573	1.287	2.860	hectare"
2		T10	ne of concentration	30.189	3.771	12.694	minutes"
		I LI Rei	infall denth	68.087	68 087	68 087	minutes"
÷		Rai	infall volume	1071.00	876.27	1947.27	C.m"
		Raj	infall losses	42.371	6.468	26.215	mm "
		Rur	noff depth	25.716	61.618	41.872	mm "
Č		Rur	noff volume	404.51	793.03	1197.54	C.m"
2		Rur	hott coefficient	0.378	0.905	0.615	
	40	Ma) Livr	RUNGBARH Add Bunoff '	0.111	0.521	0.549	c.m/sec"
	τv		A A A A A A A A A A A A A A A A A A A				

Q:13489611041SWM\MIDUSS\Post134896-104_Post-025yr.out Printed at 15:35 on 18 Dec 2018 4 Add Runoff " 0.549 0.549 0.546 1.567" HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0.549 0.549 0.549 1.567" HYDROGRAPH Combine 4" 6 Combine " 4 Node #" INLET 3" Maximum flow 1.780 c.m/sec" Hydrograph volume 10284.808 с.п″ 0.549 0.549 0.549 HYDROGRAPH Start - New Tributary" 0.549 1.780" 2 Start - New Tributary" 0.549 0.000 0.549 1.780" CATCHMENT 217" 1 Triangular SCS" 1 Equal length" SCS method" 1 217 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" Pervious length' 90.000 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"

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7 Confluence "

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Catchment 217	Pervious	Impervious	Total Area	0
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	" m m
Rainfall volume	124.26	372.77	497.03	с.п"
Rainfall losses	42.384	6.530	15.494	מח"
Runoff depth	25.702	61.556	52.593	" חמ
Runoff volume	46.91	337.02	383.93	с.п"
Runoff coefficient	0.377	0.904	0.772	
Maximum flow	0.014	0.217	0.220	c.m/sec"
HYDROGRAPH Add Runoff '				
4 Add Runoff "				
0.220 0.220	0.549	1.780"		
HYDROGRAPH Copy to Out1	flow"			
8 Copy to Outflow*				
0.220 0.220	0.220	1.780"		
HYDROGRAPH Combine	4 "			
6 Combine "				
4 Node #"				
INLET 3"				
Maximum flow	1.87	79 c.m/se	ec"	
Hydrograph volume	10668.73	30 c.m"		
0,220 0,220	0.220	1.873"		
HYDROGRAPH Confluence	e 2"			

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2 Node #"	0.250 Pervious Manning 'n'"
INIFT 1"	76.000 Pervious SCS Curve No."
Maximum flow 1.410 c.m/sec"	C.378 Pervious Runoff coefficient"
Hydrograph volume 16491.287 c.m"	O.100 Pervious Ia/S coefficient"
0.220 1.410 0.220 0.000"	8.021 Pervious Initial abstraction"
40 HYDROGRAPH Copy to Outflow"	 0.015 Impervious Manning 'n'
B Copy to Outflow"	98.000 Impervious SCS Curve No."
0.220 1.410 1.410 0.000"	0.911 Impervious Runoff coefficient"
40 HYDROGRAPH Combine 5"	0.100 Impervious Ia/S coefficient"
6 Combine "	0.518 Impervious Initial abstraction"
5 Node #"	4.433 0.000 1.873 3.850 c.m/sec"
u/s of HWY 7&8"	Catchment 223 Pervious Impervious lotal Area
Maximum flow 1.410 c.m/sec"	Surface Area 1.885 10.684 12.570 nectare
Hydrograph volume 16491.287 c.m"	lime of concentration 32.951 4.116 6.080 minutes
0.220 1.410 1.410 1.410"	
40 HYDROGRAPH Confluence 3"	Haintail depth 58.087 58.087 58.087 mm ⁻
	- Hainian Iosses 42.377 5.029 11.461 100
Maximum (10w 0.000 C.m/sec	
Hydrograph Volume 3564.344 C.m.	
4.0 HVDP00P40P4 Coputs Outflow"	* 40 HVDGCBADH Add Bunoff "
A Converted outflow	
	4 433 4 433 1 873 3 850"
40 HVDB0GB08PH Combine 5"	40 HYDROGRAPH Copy to Dutflow"
	8 Conv to Outflow"
5 Node #"	4.433 4.433 4.433 3.650"
u/s of HWY 7&8"	40 HYDROGRAPH Combine 5"
Maximum flow 2.016 c.m/sec"	6 Combine "
Hydrograph volume 20145.652 c.m"	5 Node #"
0.220 0.666 0.666 2.016"	u/s of HWY 7&8"
40 HYDROGRAPH Confluence 4"	Maximum flow 7.791 c.m/sec"
7 Confluence "	Hydrograph volume 37929.688 c.m [*]
4 Node #"	4.433 4.433 4.433 7.791"
INLET 3"	* 81 ADD COMMENT===================================
Maximum flow 1.873 c.m/sec	3 Lines of comment*
Hydrograph volume 10668.730 c.m"	***************************************
0.220 1.873 0.666 0.000"	Catchments east of Hamilton Road, part of Inlet #4"
40 HYDROGRAPH Copy to Outflow"	*****
8 Copy to Outflow"	40 HYDROGRAPH Start - New Tributary
0.220 1.873 1.873 0.000"	2 Start - New Fributary"
40 HYDROGHAPH Combine 5"	4,433 0,000 4,433 7,791
6 COMDING -	33 CATCHMENT 218
5 Node #"	1 Frangular SCS
U/S OT HWY / &B"	1 Equal length*
Maxinum flow 3.850 c m/sec	219 Teophotide Manufacturing Property"
AO HVDROGRAPH Start - New Tributary"	
O nibrodrani stali - New Hitbulary O Start - New Hitbulary	230.000 Flow length"
2 - 3 - 3 - 2 - 3 - 3	1.700 Overland Slope"
33 CATCHMENT 223"	0.309 Pervious Area"
1 Triangular SCS"	230.000 Pervious length"
1 Equal length"	3.000 Pervious slope"
1 SCS method"	1.751 Impervious Area"
* 223 New Hamburglr Inc. lands*	 230.000 Impervious length"
* 85.000 % Impervious"	3.000 Impervious slope"
12.570 Total Area"	0.250 Pervious Manning 'n'"
90.000 Flow length"	76.000 Pervious SCS Curve No."
1.000 Overland Slope"	 0.410 Pervious Runoff coefficient"
1.885 Pervious Area"	0.060 Pervious Ia/S coefficient"
90.000 Pervious length"	4.013 Pervious Initial abstraction"
1.000 Pervious slope"	0.015 Impervious Manning 'n'"
10.684 Impervious Area	98.000 Impervious SCS Curve No."
90.000 Impervious length"	0.914 Impervious Runoff coefficient"
1.000 Impervious slope"	 0.100 Impervious Ia/S coefficient"

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0.518 Impervious Initial abstraction		9 000 Desuisue slavel
0.746 0.000 4.433 7.791 c m/sec*		3.000 Pervious stope"
Catchment 218 Pervious Impervious Total Area "		75.000 Impervious length"
Surface Area 0.309 1.751 2.060 hectare"		* 3.000 Impervious slope"
Time of concentration 39,972 5.197 7.747 minutes"		0.250 Pervious Manning 'n'"
Time to Centroid 144.219 91.946 95.778 minutes"		76.000 Pervious SCS Curve No."
Rainfall depth 68.087 68.087 mm*		0.242 Pervious Runoff coefficient*
Rainfall volume 210.39 1192.19 1402.58 c.m*		0.281 Pervious Ia/S coefficient*
HAINTAIL LOSSES 40.188 5.854 11.004 mm"		22.539 Pervious Initial abstraction*
* Bunoff volume 86.21 1089 68 1175.89 c m*		0.015 Impervious Manning 'n'"
Bunoff coefficient 0.410 0.914 0.838		0.002 Impervious Bunchf coefficient"
Maximum flow 0.019 0.742 0.746 c.m/sec"		0.100 Impervious Ia/S coefficient"
40 HYDROGRAPH Add Runoff "		0.518 Impervious Initial abstraction"
* 4 Add Runoff *		* 0.453 0.000 0.269 7.992 c.m/sec*
0.746 0.746 4.433 7.791"		Catchment 219 Pervious Impervious Total Area
54 POND DESIGN"		Surface Area 0.192 1.088 1.280 hectare"
4.094 Target outfield we envised		Time of concentration 27.653 2.653 3.783 minutes
1175-9 Hydrograph volume c.m"		lime to centrold 132.525 88.320 90.319 minutes"
15. Number of stages"		Bainfall volume 190.79 740.78 871.51 cm ³
* 344.700 Minimum water level metre"		Rainfall losses 51.605 6.654 13.397 mm"
* 345.400 Maximum water level metre"		* Runoff depth 16.481 61.432 54.690 mm"
0.000 Starting water level metre"		Runoff volume 31.64 668.38 700.03 c.m*
0 Keep Design Data: 1 = True; 0 = False"		Runoff coefficient 0.242 0.902 0.803
Level Discharge Volume"		Maximum flow 0.009 0.453 0.453 c.m/sec"
344.700 0.1220 0.000"		40 HYDROGHAPH ADD HUNOTT
344.800 0.1280 35.000"		4 AUG HUNDTT - 0.453 0.269 7.992
344.850 0.1300 77.000"		40 HYDROGRAPH Copy to Outflow"
344.900 0.1450 136.000"		8 Copy to Outflow"
* 344.950 0.1820 209.000*		0.453 0.453 0.453 7.992"
345.000 0.2220 297.000		= 40 HYDROGRAPH Combine 5"
345.050 0.2590 400.000		6 Combine "
345.100 0.2710 519,000-		5 NODE #"
345.200 0.2760 804.000"		U/S OT HWY 760 Maximum flow 8 306 c m/ccc
* 345.250 0.2790 971.000"		Hydrograph volume 39805.105 c.m*
* 345.300 0.2820 1154.000°		0.453 0.453 0.453 8.396"
345.350 0.2840 1355.000"		40 HYDROGRAPH Start - New Tributary"
345.400 0.2860 1571.000"		2 Start - New Tributary"
Peak outstow 0.209 C.MUSec"		0.453 0.000 0.453 8.396"
Maximum storage 406.654 c.m*		1 Triangular SCS"
Centroidal lag 1.876 hours'		1 Equal length
0.746 0.746 0.269 7.791 c.m/sec*		1 SCS method"
40 HYDROGRAPH Combine 5		220 Northwest corner of Nithview Heights*
- 6 Combine "		8.000 % Impervious"
5 NODE #7"		0.500 Total Area"
Maximum flow 7.992 c.m/sec"		5 000 Overland Slope"
Hydroarab volume 39105.105 c.m"		* 0.460 Pervious Area"
0.746 0.746 0.269 7.992"		60.000 Pervious length"
* 40 HYDROGRAPH Start - New Tributary"		5.000 Pervious slope"
2 Start - New Tributary		0.040 Impervious Area"
- 0.746 0.000 0.269 7.992"		60.000 Impervious length"
1 Trianular SCS		5.000 Impervious slope"
1 Equal length"		74.000 Pervious SCS Curve No. *
1 SCS method"		0.346 Pervious Runoff coefficient"
219 N.C. Pestells Head Office & other Industrial"		0.100 Pervious Ia/S coefficient*
85.000 % Impervious"		8.924 Pervious Initial abstraction"
1.280 Total Area"		* 0.015 Impervious Manning 'n'*
75.000 Flow length"		98.000 Impervious SCS Curve No."
0 192 Recruit Stope"		0.908 Impervious Runoff coefficient"
75.000 Pervious length		0.100 Impervious Ia/S COETTICIENT" 0.518 Impervious Initial abstraction"
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Page 20

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		0.048 0.00	0 0 453	8 306	c m/sec"		
		Catchment 220	Pervious	Impervious	Total Area	в	
		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"	
1		Rainfall volume	313.20	27.23	340.43	c.m"	
5		Rainfall losses	44.551	6.253	41,487	mm"	
		RUNOTT depth	23.535	61.833	26.599	៣៣ ⁻	
		Runoff coefficient	0.346	24.73	0.301	C.M-	
		Maximum flow	0.043	0.017	0.048	c.m/sec*	
	40	HYDROGRAPH Add Runoff				01111/000	
		4 Add Runoff "					
٠		0.048 0.04	48 0.453	8.396"			
•	40	HYDROGRAPH Copy to Ou	tflow"				
		8 Copy to Outflow"					
- 2	40	0.048 0.04	48 0.048	8.396"			
	40	6 Combino "	5				
		5 Node #"					
		u/s of HWY 7&8"					
		Maximum flow	8.4	28 c.m/s	ec"		
		Hydrograph volume	39938.1	09 c.m"			
		0.048 0.04	48 0.048	8.428*			
	40	HYDROGRAPH Start - New	w Tributary"				
		2 Start - New Tribut;	ary"				
1	ŝ., .	0.048 0.0	0.048	8.428"			
-0	33	CATCHMENT 221"					
		1 Irlangular SCS" 1 Equal locath"					
		1 SCS method"					
		221 Proposed ROW from	Hamilton Boa	d.			
		81,500 % Impervious"					
		0.810 Total Area"					
		40,000 Flow length"					
		2.000 Overland Slope"					
1		0,150 Pervious Area"					
12		40.000 Pervious length"					
		2.000 Pervious stope"					
		40.000 Impervious length"					
1		2 000 Impervious slope"					
0.96		0.250 Pervious Manning '	n'"				
13		76.000 Pervious SCS Curve	No."				
		0.377 Pervious Runoff co	efficient"				
		0.100 Pervious Ia/S coef	ficient				
		8.021 Pervious Initial a	bstraction"				
12		0.015 Impervious Manning	'П'"				
1		98.000 Impervious SCS Cur	ve No."				
		0.100 Impervious Ia/S co	officient*				
0.0		0.518 Impervious Initial	abstraction				
1.5		0.286 0.0	00 0.048	8,428	c.m/sec*		
		Catchment 221	Pervious	Impervious	Total Area		
		Surface Area	0.150	0.660	0.810	hectare"	
1		Time of concentration	16.453	2.055	3,294	minutes"	
1		Time to Centroid	114.904	87.397	89.763	minutes"	
1		Rainfall depth	68.087	68.087	68.087	mm "	
1		Rainfall Volume	102.03	449.47	551,50	C.M."	
		Runoff death	25 646	61 855	55 156	uuu mm ^a	
		Runoff volume	38,43	408.33	446.76	с. 	
		Runoff coefficient	0.377	0.908	0.810		
		Maximum flow	0.015	0.284	0.286	c.m/sec*	
1	40	HYDROGRAPH Add Runoff	.e.				
		4 Add Runoff *					

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•	0.286	0.286	0,048	8.428"
* 40	HYDROGRAPH Copy	to Outflo	N "	

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•	40	HYDROGRAPH Copy to Outflow*				
•		8 Copy to Outflow"				
•		0.286 0.286	0.286	8.428"		
×.	40	HYDROGRAPH Combine 5*				
•		6 Combine "				
٠		5 Node #"				
٠		u/s of HWY 7&8"				
•		Maximum flow	8.67	4 c.m/se	c "	
•		Hydrograph volume 4	0384.86	7 c.m"		
•		0.286 0.286	0.286	8.674"		
٠	81	ADD COMMENT===================================				
	•	3 lines of comment"				
•		*************		*********	******	
•		Catchment to Inlet #5"				
		Catchment to inter wo				
	40	HYDROGRAPH Stort . New Trib	itary"			
	40	2 Start New Tributary	lary			
*			0 296	8 674 -		
2	22	CATCHNENT 2021	0.200	0.0/4		
	33	1 Taiangulan COS				
ŝ						
2		1 Equal length"				
2		1 SUS method"			-	
3		222 Hear yards from Hamilton	Height	s Subdivisi	.on "	
ੈ		5.000 % Impervious"				
3		1.080 Total Area"				
•		20.000 Flow length"				
•		3.000 Overland Slope"				
*		1.026 Pervious Area"				
*		20.000 Pervious length"				
٠		3.000 Pervious slope"				
٠		0.054 Impervious Area"				
5		20.000 Impervious length"				
		3.000 Impervious slope"				
٠		0.250 Pervious Manning 'n'"				
٠		76.000 Pervious SCS Curve No."				
		0.376 Pervious Runoff coeffici	ent"			
		0.100 Pervious Ia/S coefficien	t"			
		8.021 Pervious Initial abstrac	tion"			
٠		0.015 Impervious Manning 'n'"				
•		98.000 Impervious SCS Curve No.	6			
		0 902 Impervious Bunoff coeffi	cient"			
		0.100 Impervious Ia/S coeffici	ent"			
		0.518 Impervious Initial abstr	action"			
\mathbf{x}		0 147 0 000	0 286	8 674 0	m/sec"	
		Catchment 222 Perv	ious	Impervious	Total Area	4
		Surface Area 1 02	6	0.054	1 080	hectare"
		Time of concentration 9 61	2	1 200	8 668	minutes"
*		Time to Centroid 106	340	86 234	104.084	minutes"
		Painfall dooth 69.0	97	69 087	68 087	mm"
		Dainfall volume 600	57	36 77	795 99	с. п ⁴
4		Rainfall Jacob 40 5	15	6 660	40 700	C.III
		Haimail losses 42.5	15	0,009	40.722	NIAI
		Runoff velume 25.5	12	01.417	21,304	0.00
਼		HUNOTT VOLUME 202.	37	33.17	295.53	C.M-
2		HUNDTT COETTICIENT 0.3/	0	0.902	0.402	/
÷	40	MAXIMUM TIOW 0.13	o	0.024	0.147	c.m/sec"
2	40	HYDROGRAPH Add Hunott "				
0		4 Add Hunott "				
5		0,147 0,147	0.286	8.674"		
đ	40	HYDROGRAPH Copy to Outflow"				
2		8 Copy to Outflow"				
3		0.147 0.147	0.147	8.674"		
0	40	HYDROGRAPH Combine 5"				
1		6 Combine "				
1		5 Node #"				
1		u/s of HWY 7&8"				
-		Maximum flow	8.80)2 c.m/se	9C "	

rinted	at 15:35 on 18 Dec 2018	Page 23	Q:\34896 Printed	at 15:35 or
	Hydrograph volume 40680.406 c.m*		81	ADI
	0.147 0.147 0.147 8.802*			7 Li:
81	ADD COMMENT===================================			**
	3 Lines of comment"			**
			1	**
	Badenview Developments Inc. lands"		- C	**
40	NADOCEARA Start Now Tashutaous		- 5	
-40	2 Start - New Tributary			
	0.147 0.000 0.147 8.802"		- 54	PO
33	CATCHMENT 224"			24.036
	1 Triangular SCS"			4.094
	1 Equal length"		а - е	55134.0
	1 SCS method*			36.
	224 Badenview lands"		3	334.550
	85.000 % Impervious"			337.850
	43.200 Iotal Area			334.550
	1.000 Provided Store			U
	6.480 Parvinus Areas			
	90.000 Pervious length			
	1.000 Pervious slope"		2	
	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 Runott coefficient"		- 11 - 11 - 11 - 11 - 11 - 11 - 11 - 1	
	0.100 Pervious Ia/S coefficient			
	0.015 Impervious Initial abstraction			
	98.000 Impervious SCS Curve No."			
	0.911 Impervious Runoff coefficient"		3 4	
	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"		- C	
	Time of concentration 32.351 4.116 6.080 minutes"		- C	
	Bainfail dent 010 135.571 90.424 93.499 MILLINES			
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$			
	Reinfall 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 "		1. C	
	Maximum flow 0.426 15.136 15.234 c.m/sec"			
40	HYDROGRAPH Add Runoff *		÷	
	4 Add Hunott "			
40	15.234 15.234 0.147 8.802" HVDDCCDADH Conv.to.0utflow		<u>.</u>	
40	B Copy to Out Town			
	15,234 15,234 15,234 8,802"		<u>.</u>	
40	HYDROGRAPH Combine 5"			
	6 Combine "			
	5 Node #"			Pea
	u/s of HWY 7&8"			Max
	Maximum flow 24.036 c.m/sec"		÷	Max
	Hydrograph volume 65134.020 c.m"		÷ .	Cer
40	15.234 15.234 15.234 24.036"		10	
40	rionvanarn colltulence 5° 7 Canfillence "		40	HYL 6
	5 Node #*			12
	u/s of HWY 7&8"			14
	Maximum flow 24.036 c.m/sec"			Max
	Hydrograph volume 65134.020 c.m"			Hyd
	15.234 24.036 15.234 0.000°			

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11LEY	u at 10.00 0	11 10 080 2	010	and party of the party of	1000		21.2		a second s	
11	ΔΓ	D COMMENT						*		
	7 Li	nes of co	mment"							
	**	*******	********	***********						
	**	********	*******	*********	****	********	****			
	**						***			
	**		PROPOSED	SWM POND DES	IGN		***			
	**						***			
	**			*********	*****	********	****			
	**				****	*********	****			
54	PC	ND DESIGN								
	24.036	Current	peak flow	c.m/sec"						
	4.094	Target o	utflow	c.m/sec"						
	65134.0	Hydrogra	ph volume	c.m"						
	36.	Number o	f stages"							
	334.550	Minimum	water leve	l metre"						
	337.850	Maximum	water leve	l metre"						
	334.550	Starting	water lev	el metre"						
	0	Keep Des	ign Data:	1 = True; 0	= Fa2	Lse"				
		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	1 011	19459.00"						
		335.400	1 296	22323.00						
		335 600	1 583	29239.00*						
		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	11 497	79809.00						
		337.200	12 951	87759.00						
		337 400	13 201	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"						
	Pe	ak outflo	W	2.6	41	c.m/sec"				
	Ma	ximum lev	el	335.9	13	metre"				
	Ma	ximum sto	rage	38018.9	45	с.п"				
	Ce	ntroidal	lag	11.2	81	hours"				
		15.234	24.036	2.641	0.0	000 c.m/sec	с"			
10	HY	UHUGRAPH	Combine	12"						
	6	Compine								
	12	d/e of P	ronored en	ME						
	Ма	ximum flo	w	a C	41	c.m/sec*				
	Hv	droaraph	volume	56903.8	36	с.л"				
	,	15.2	34 24.0	36 2.641		2.641"				

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* 81	ADD COMMENT===================================	* 8.021 Pervious Initial abstraction"	
	3 Lines of comment"	0.015 Impervious Manning 'n'"	
	***************************************	98.000 Impervious SCS Curve No."	
	Catchments to Inlet #6"	0.914 Impervious Hunott coefficient"	
* 40	HYDROGRAPH Start - New Iributary"	0.518 Impervious Initial abstraction"	
	2 Start - New Tributary"	0.390 1.768 2.641 2.641 c.m/sec*	
1401	15.234 0.000 2.641 2.641"	Catchment 261 Pervious Impervious Total Area "	
- 33	CATCHMENT 260"	Surface Area 1.598 0.752 2.350 hectare"	
	1 IFLANGULAR SCS"	Time of concentration 17.592 5.223 11.005 minutes"	
	1 SCS method"	Bainfall denth 68.087 68.087 68.087 mm"	
141	260 Hamilton Heights Subdivision"	Rainfall volume 1088.02 512.01 1600.03 c.m"	
(#C)	46.000 % Impervious [®]	 Rainfall losses 42,388 5.859 30.699 mm[#] 	
	8.160 Total Area"	Runoff depth 25.698 62.228 37.388 mm*	
	50.000 Flow length"	Runoff volume 410.66 467.95 878.61 c.m"	
ж. С	1.000 Overland Slope"	HUNDTT COETTICIENT 0.3// 0.914 0.549 "	
	50.000 Pervious length"	* 40 HYDROGRAPH Add Runoff	
	3.000 Pervious slope"	4 Add Runoff "	
*	3.754 Impervious Area"	0.390 2.158 2.641 2.641"	
	232.000 Impervious length"	40 HYDROGRAPH Copy to Outflow"	
<u> </u>	1.500 Impervious slope"	8 Copy to Outflow"	
	0.250 Pervious Anning "n"	* 0.390 2.158 2.158 2.641"	
	0.377 Pervious Runoff coefficient"	6 Combine *	
	0.100 Pervious Ia/S coefficient"	12 Node #"	
•	8.021 Pervious Initial abstraction"	d/s of Proposed SWMF"	
<u> </u>	0.015 Impervious Manning 'n'	Maximum flow 2.905 c.m/sec"	
	98.000 Impervious SCS Curve No."	Hydrograph volume 61250.793 c.m"	
	U.915 Impervious Hunott Coetticient" 0.100 Impervious IA/S coefficient"	" 0.390 2.158 2.158 2.905"	
	0.518 Impervious Initial abstraction	2 Start - New Tributary	
	1.768 0.000 2.641 2.641 c.m/sec"	0.390 0.000 2.158 2.905"	
	Catchment 260 Pervious Impervious Total Area *	* 33 CATCHMENT 225"	
	Surface Area 4.406 3.754 8.160 hectare"	1 Triangular SCS"	
÷	Time of concentration 16.656 6.432 9.764 minutes"	1 Equal length"	
÷	lime to centrold 115.158 93.553 100,558 minutes"	1 SUS method"	
	Rainfall volume 3000.16 2555.69 5555.66 c.m."	30,000 % Impervious"	
	Rainfall losses 42.435 5.798 25.582 mm"	1.670 Total Area"	
	Runoff depth 25.651 62.288 42.504 mm"	75.000 Flow length"	
181 181	Runoff volume 1130.29 2338.05 3468.34 c.m"	2.000 Overland Slope"	
	Hunort coefficient 0.377 0.915 0.624 "	1,169 Pervious Area"	
* 40	Maximum ilow 0.450 I.574 I.766 C.m/Sec" Hydrograph and Runoff "	2 000 Pervious slope"	
*	4 Add Runoff "	0.501 Impervious Area"	
()#C	1.768 1.768 2.641 2.641"	75.000 Impervious length"	
* 33	CATCHMENT 261"	* 2.000 Impervious slope"	
1	1 Triangular SCS"	0.250 Pervious Manning 'n'"	
	3 Specity values"	74.000 Pervious SCS Curve No."	
(#)	261 Klassen Bronze Property"	" 0 100 Pervious Ta/S coefficient"	
	32.000 % Impervious"	8.924 Pervious Initial abstraction"	
	2.350 Total Area"	0.015 Impervious Manning 'n'"	
	100.000 Flow length	98.000 Impervious SCS Curve No."	
2	2.500 Overland Slope	• 0.902 Impervious Runoff coefficient"	
	1.030 Fervious langth"	0.100 IMPERVIOUS 12/S COETTICIENT" 0.518 Impervious Initial abstraction"	
	2.500 Pervisus slope'	0.218 0.000 2.158 2.905 c.m/sec"	
(e)	0.752 Impervious Area"	* Catchment 225 Pervious Impervious Total Area "	
	164.000 Impervious length"	Surface Area 1.169 0.501 1.670 hectare"	
	1.500 Impervious slope"	Time of concentration 25.059 2.996 13.417 minutes"	
	U-250 PERVIOUS MANNING 'n' "	Time to Centroid 125.959 88.829 106.366 minutes"	
	10,000 PERVIOUS DUD LUTVE NO."	- HAINTAIL GEPTN 58.08/ 58.08/ MM" Paintall volume 795.93 341.11 1137.04 c.m"	
	0.100 Pervious Ia/S coefficient"	Rainfall losses 44.524 6.659 33.164 mm"	

CP):\348 Printee	96\104\SWM\MI d at 15:36 on 18	DUSS\Post\34896-1 Dec 2018	104_Post-025	iyr.out	12 3	the at	Page 27
		Pupofi	f denth	23 563	61 427	94 000	mm *	
		Runof1	f volume	275.45	307.75	583.20	C.M.	
14		Runof1	f coefficient	0.346	0.902	0.513		
13	40	Maximu	Im flow	0.084	0.203	0.218	c.m/sec*	
- 2	40	A Add	HAPH ADD RUNOTT					
		4 700	0.218 0.21	8 2.158	2,905"			
	40	HYDROG	GRAPH Copy to Out	flow"				
10		8 Cop	by to Outflow"					
- 5	40	HYDROG	0.218 0.21 RAPH Combine	8 0.218 12"	2,905"			
25	40	6 Con	nbine "	12				
		12 Noc	ie #"					
- 3		d/s	s of Proposed SWM	F"				
- 6		Maximu	IM TLOW	0.6 61833 0	5/ C.M/S	ec.		
		nyarog	0.218 0.21	8 0.218	3.057"			
1	81	ADD CO	MMENT========			*********	ⁿ	
1		3 Lines	of comment"					
12		Weeter	n astabmant alas	a Hagilton	Dood divor	tod to Tol	*****	
		wester	in catchinent afon		Hoad, diver	ted to mit	*****	
	40	HYDROG	RAPH Start - New	Tributary"				
10		2 Sta	art - New Tributa	ry"				
- 2	33	CATCH	0.218 0.00	0 0.218	3.057"			
	55	1 Tri	angular SCS"					
2		3 Spe	cify values"					
1		1 SCS	method"					
਼		270 Inc	lustrial/Resident	ial area al	ong Hamilto	n Road"		
		8.450 Tot	al Area"					
1		45.000 Flo	w length"					
1		2.000 Ove	erland Slope"					
-3		3.802 Per	vious Area"					
		3.000 Per	vious slope"					27
		4.648 Imp	ervious Area"					
		235.000 Imp	ervious length"					
- 2		1.500 Imp	ervious slope"					
		76.000 Per	vious SCS Curve	No."				
-		0.377 Per	vious Runoff coe	fficient				
*		0.100 Per	vious Ia/S coeff	icient"				
		8.021 Per	vious Initial ab	straction"				
		98.000 Imr	ervious SCS Curv	e No."				
		0.915 Imp	ervious Runoff c	oefficient"				
		0.100 Imp	ervious Ia/S coe	fficient"				
÷.		0.518 Imp	ervious Initial	abstraction	" <u> </u>	o		
		Catchr	2.247 0.00	Pervious	Impervious	Total Area		
		Surfac	e Area	3.802	4.648	8.450	hectare"	
		Time c	of concentration	12.259	6.482	7.938	minutes"	
		Time t	o Centroid	109.638	93.737	97.744	minutes"	
		Hainta	ull depth	68.087 2588 00	68.087 3164 33	68.087 5753 31	mm*	
		Rainfa	11 losses	42,444	5.817	22.299	0.m	
		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		
	40	Maximu	RAPH Add Bunoff	0.439	1.940	2.24/	c.m/sec"	
	10	4 Add	Runoff "					
			2.247 2.24	7 0.218	3.057"			
1	56	DIVERS	ION"					
		6 N00	e number"					

Q:\34896\104\SWM\MIDUSS\Post\34896-104 Post-025yr.out Printed at 15:35 on 18 Dec 2018 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" HYDROGRAPH Combine 9" 6 Combine " 9 Node #" NODE B" Maximum flow 1.560 c.m/sec" Hydrograph volume 3521.877 с.п" 2.247 2.247 1.560 HYDROGRAPH Start - New Tributary" 1.560" 2 Start - New Tributary" 2.247 0.000 1,560 1.560" FILEI 0 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" HYDROGRAPH Add Runoff " 4 Add Runoff " 0.687 0.687 1.560 1.560" HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 0,687 0.687 0.687 1.560* HYDROGRAPH Combine 12" 6 Combine "

3.527

3.527

c.m/sec*

c.m/sec*

C. m"

0.000*

2.930 c.m/sec*

metre"

335.537

ć.m"

3.527"

Page 28

12 Node #" d/s of Proposed SWMF" Maximum flow Hydrograph volume 62181.180 0.687 0.687 0.687 * 40 HYDROGRAPH Confluence 12" 7 Confluence " 12 Node #" d/s of Proposed SWMF" Maximum flow Hydrograph volume 62181.180 0.687 3.527 0.687 POND DESIGN" * 54 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

335.500

336.000

336,500

336.550

Peak outflow

Maximum level

1.303 110.000"

2.800 674.000"

4.639 1910.000"

6.480 3748.000"

6.665 3967.000" 337.000 23.484 6569.000"

• 40

* 40

• 47

* 40

* 40

* 40

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Q:\34896 Printed	104\SWM\MIDUSS\Posti34896-104_Post-025yr.o t 15:35 on 18 Dec 2018	ut	Page 29	Q:\34896 Printed a	104\SWM\MIDUSS\Post\34896-104_Post-025yr.out Page t 15:35 on 18 Dec 2018	e 30
40	Maximum storage 766.216 Centroidal lag 6.312 0.687 3.527 2.930 0. HYDRGRAPH Next link "	c.m" hours" .000 c.m/sec"		40	Maximum flow 0.077 0.073 0.134 c.m/sec" HYDROGRAPH Add Runoff " 4 Add Runoff " 0.134 0.134 2.930 2.930"	
56	5 Next link " 0.687 2.930 2.930 DIVERSION" 7 Node number"	0,000"		54	POND DESIGN" 0.134 Current peak flow c.m/sec" 0.070 Target outflow c.m/sec" 262.5 Hydrograph volume c.m"	
	<pre>1.00 Overtiow threshold 1.000 Required diverted fraction" 0 Conduit type; 1=Pipe;2=Channel" Peak of diverted flow 0.000 Volume of diverted flow 0.000</pre>	C.m/sec" C.m≝		į	 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" 	
40	DIV0007.025hyd" Major flow at 7" 0.687 2.930 2.930 HYDROGRAPH Combine 8"	0.000 c.m/sec"		÷	Level Discharge Volume" 0.000 0.000 0.000" 0.1500 0.00400 1.000" 0.2500 0.00600 8.000" 0.0000 0.0000 0.000	
	8 Node #" NODE A" Maximum flow 2.930 Hydrograph volume 62194.930	c.m/sec" c.m"		•	0.3500 0.00800 69.000* 0.4500 0.01000 178.000* 0.5500 0.1060 208.000* 0.7500 0.2810 240.000*	
81	0.687 2.930 2.930 ADD COMMENT===================================	2.930"	*	÷	Peak outflow 0.019 c.m/sec" Maximum level 0.655 metre" Maximum storage 180.740 c.m" Centroidal lag 4.706 hours"	
40	HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.687 0.000 2.930	2.930"		40	HYDROGRAPH Combine 9" 6 Combine " 9 Node #" NODE B'	
33	CATCHMENT 280" 1 Triangular SCS" 3 Specify values" 1 SCS method" 280 Northeast portion of Maple Leaf Fr	oods property"		40	Maximum flow 1.568 c.m/sec" Hydrograph volume 3784.229 c.m" 0.134 0.134 0.019 1.568" HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"	
	26.000 % Impervious" 0.700 Total Area" 45.000 Flow length" 1.500 Overland Slope"			33	0.134 0.000 0.019 1.568" CATCHMENT 281" 1 Triangular SCS" 3 Specify values"	
-	0.515 rervious Area 2.000 Pervious slope* 0.182 Impervious Area" 68.000 Impervious length*				1 SCS method" 281 Western portion of John Bear property" 33.000 % Impervious" 1.870 Total Area" 20.000 Flow length"	
-	1.000 Impervious slope" 0.250 Pervious Manning 'n'" 79.000 Pervious SCS Curve No." 0.427 Pervious Runoff coefficient" 0.400 Reviews I.0.6 coefficient"			-	1.000 Overland Slope" 0.131 Pervious Area" 20.000 Pervious slope" 2.000 Pervious slope"	
	0.015 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.903 Impervious Runoff coefficient"			* 1 *	1.739 Impervious Aleat 12.000 Impervious length" 1.000 Impervious slope" 0.250 Pervious Manning 'n'" 65.000 Pervious SCS Curve No."	
	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 0.134 0.000 2.930 Catchment 280 Pervious Imp Surface Area 0.518 0.1	2.930 c.m/sec" pervious Total Area 182 0.700	". hectare"	-	0.227 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 13.677 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 8.000 Impervious SGS Curve No."	
	Time of concentration 10.196 3. Time to Centroid 106.319 89 Rainfall depth 68.087 68 Rainfall volume 352.69 122 Rainfall volume 352.69 122	478 7.332 .555 99.171 .087 68.087 3.92 476.61	minutes" minutes" mm" c.m"	÷	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"	
	Rainfail 105885 39,020 6.1 Runoff depth 29.067 61 Runoff volume 150.57 11 Runoff coefficient 0.427 0.5	30.587 .498 37.499 1.93 262.49 903 0.551	mm" C.m"		Catchment 281 Pervious Impervious Total Area " Surface Area 0.131 1.739 1.870 minutes" Time of concentration 14.185 4.693 4.867 minutes" Time to Centroid 114.335 91.211 91.635 minutes"	

Printe	d at 15:35 on 18 Dec 2018		and the article	1 B	Stratter of	1000
	Dainfall death	68 097	69 097	68 087	mm ⁿ	
	Rainfall volume	89.13	1184.09	1273-22		
	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 coefficien	t 0.227	0.915	0.867		
	Maximum flow	0.008	0.731	0.735	c.m/sec"	
40	HYDROGRAPH Add Ru	noff "				
	4 Add Runott "	0 705 0 04	0 4 500			
54	U.735	0.735 0.01	9 1.568	,		
54	0 735 Current peak f					
	0.070 Target outflow	C m/sec"				
	1103.7 Hydrograph vol	ume c.m"				
	Number of stag	es"				
	0.000 Minimum water	level metre"				
	1.800 Maximum water	level metre"				
	0.000 Starting water	level metre				
	0 Keep Design Da	ta: 1 = True; 0	≐ False"			
	Level Discha	rge volume"				
	0.000 0.0	0.000				
	D 5000 0.09	200 97 000*				
	0,9000 0,1	300 167.000"				
	1.200 0.1	400 254.000"				
	1.500 0.1	500 358.000"				
	1.800 1.	000 400.000"				
	Peak outflow	0.	481 c.m/	'sec"		
	Maximum level	1.	626 metr	'e "		
	Maximum storage	375.	668 C.M"			
	Centroidal lag	725 0.404	B/6 nours	- 		
40	U.735 U.	135 U.481	1.568 C.	m/sec~		
40	6 Combine "	THE P				
	9 Node #"					
	NODE B"					
	Maximum flow	2.	049 c.m/	'sec"		
	Hydrograph volume	4893.	313 c.m.			
	0.735	0.735 0.48	1 2.049)=		
40	HYDROGRAPH Start	 New Tributary 				
	2 Start - New Tr	ibutary"				
-	0.735	0.000 0.48	1 2.049	J		
33	1 Thinguing SCS	14				
	3 Specify values					
	1 SCS method"					
	282 Eastern portio	n 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 lengt	n"				
	0.835 Imporvious Apo					
	90.000 Impervious len	ath"				
	2.000 Impervious slo	be"				
	0.250 Pervious Manni	ng 'n'				
	65.000 Pervious SCS C	urve No."				
	0.227 Pervious Runof	f coefficient"				
•	0.100 Pervious Ia/S	coefficient"				
	13.677 Pervious Initi	al abstraction"				
	0.015 Impervious Man	ning 'n'				
	98.000 Impervious SCS	Curve No."				
	0.904 Impervious Run	S coofficient	-			
	0.100 Impervious Ia/	s coefficient"	o."			
	0.010 TubeLATORS TUT.	LIAI ADSURACTIO				

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P	rinted	d at 15:35 o	n 18 Dec 2018					Siller States
			0 990	0 00	0 494	0.040		
		C	atchment 282	0.000	Pervious	Z.049 Impervious	Total Area	
*		Si	urface Area		0.375	0.835	1.210	hectare"
٠		T:	ime of concentrat	ion	16.020	3.343	4.626	minutes"
٠		T:	ime to Centroid		116.535	89.341	92.093	minutes"
2		Ra	ainfall depth		68.087	68.087	68.087	mm "
2		Ha Dr	ainfall lossos		255.39	508.45	823.85	C.M-
		Ri	unoff denth		15 428	61 556	20.850	mm =
×		Ru	unoff volume		57.87	513.93	571.80	C. m "
		Ri	unoff coefficient		0.227	0.904	0.694	
		Ма	aximum flow		0.023	0.330	0.339	c.m/sec*
*	40	, H	DROGRAPH Add Run	off				
3		4	Add Runott •	A 99	0 404	0.0401		
	54	P	ND DESTON	0.33	9 0.401	2.049		
*		0.339	Current peak fl	ow	c.m/sec"			
5		0.070	Target outflow	с	.m/sec"			
*		571.8	Hydrograph volu	me	с."п			
		5.	Number of stage	s" _				
2		0.000	Minimum water 1	evel	metre"			
×,		0.000	Starting water	Jeve	metre"			
		0	Keep Design Dat	a: 1	= True; 0 :	= False"		
*			Level Dischar	ge	Volume"			
*			0.00 0.0	00	0.000"			
2			0.3200 0.043	00	276.000"			
			1 300 0.065	00	333.000"			
			1.400 0.50	00	400.000"			
		Pe	ak outflow		0.0	72 c.m/s	ec"	
*		Ma	aximum level		0.9	15 metre	*	
*		Ma	aximum storage		344.4	20 c.m"		
2		Ce	entroidal lag	20	3.1	89 hours"	(200	
	40	н	/DROGRAPH Combi	09 ne	9"	2.049 0.1	/sec	
*		6	Combine "		·			
*		9	Node #"					
•			NODE B*					
2		Ma	aximum flow		2.0	97 c.m/s	ec"	
		ну	o aso	0 330	5405.1	50 C.M." 2 097=		
	40	H	(DROGRAPH Start -	New	Tributary"	2.057		
*		2	Start - New Tri	buta	ry"			
*			0.339	0.00	0.072	2.097*		
2	33	_C/	ATCHMENT 283"					
2		1	Specify values"					
		1	SCS method*					
•		283	Area along west	ern [.]	tributary.	south of Hw	y 7/8ª	
٠		29.000	% Impervious"				-	
1		23.290	Total Area®					
1		160.000	Flow length"					
		2,000	ervious Apoc"					
*		150,000	Pervious length					
•		2.200	Pervious slope"					
*		6.754	Impervious Area					
1		394.000	Impervious leng	th"				
		2.000	Impervious slop	e"				
		68,300	Pervious SCS Cu	y n rve l	No. "			
*		0,267	Pervious Runoff	coe.	fficient"			
		0.100	Pervious Ia/S c	oeff:	icient"			
*		11.789	Pervious Initia	l ab	straction"			
į.		0.015	Impervious Mann	ing	'n'"			
100		98.000	Impervious SCS	ourve	s NO			

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Q:\348 Printed	396/104/SWM/MIDUSSIPost/34896-104_Post-025yr.out Page 33 d at 15:35 on 18 Dec 2018	Q: Pri	134896\104\SWM\MIDUSS\Post\34896-104_Post-025yr.out Page 3 rinted at 15:35 on 18 Dec 2018
•	0.919 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	1	8.924 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No."
	2.962 0.000 0.072 2.097 c.m/sec"		0.901 Impervious Runoff coefficient"
	Catchillent 263 PERVIOUS IMPERVIOUS IOTAL AREA "	- 2	0.100 Impervious Ia/S coefficient"
	Time of concentration 42.247 8.107 22.307 minutes"		0.516 impervious initial asstraction 0.230 0.000 2 930 7 503 c m/sec"
	Time to Centroid 147.414 95.971 117.368 minutes"	•	Catchment 284 Pervious Impervious Total Area "
	Rainfall depth 68.087 68.087 68.087 mm"		Surface Area 2.891 0.059 2.950 hectare"
÷.	Rainfall volume 1.1259 0.4599 1.5857 ha-m"	•	Time of concentration 22.839 2.731 21.824 minutes"
141	Haintail losses 49,895 5,548 37,035 mm" Bunoff denth 18,191 62,539 31,055 mm"	- 2	Time to Centroid 123.209 88.446 121.454 minutes"
(#))	Runoff volume 3008.07 4223.92 7231.98 c.m"		Rainfall volume 1968.38 40.17 2008.55 c.m"
9	Runoff coefficient 0.267 0.919 0.456 "	•	Rainfall losses 44.536 6.713 43.780 mm"
	Maximum flow 0.632 2.863 2.962 c.m/sec"		Runoff depth 23.550 61.373 24.307 mm"
- 40	HYDROGHAPH Add Runoft " 4 Add Runoff "	- 2	Runoff volume 680.84 36.21 717.05 c.m*
		- 2	Hunort coefficient 0.346 0.901 0.357 "
* 40	HYDROGRAPH Copy to Outflow"	•	40 HYDRGRAPH Add Runoff "
	8 Copy to Outflow"		4 Add Runoff "
	2.962 2.962 2.962 2.097"		0.230 0.230 2.930 7.503"
40	HYDROGRAPH COMDINE 9" 6 Compine "	- 94	40 HYDROGRAPH Copy to Outflow"
	9 Node #"	•	
	NODE B"		40 HYDROGRAPH Combine 9"
	Maximum flow 4.707 c.m/sec*		6 Combine "
	Hydrograph volume 12697.146 c.m ⁺	-	9 Node #"
* 40	2.902 2.952 2.952 4.707" HVDPAGEPH Confluence 8"		
	7 Confluence "	-	Maximum 110W 7.555 C.m/Sec
(*))	8 Node #"		0.230 0.230 7.656"
S.	NODE A"	- 4	40 HYDROGRAPH Confluence 9"
20 - E	Maximum Tiow 2.930 c.m/sec"	- 2	7 Confluence "
0.00	2,962 2,930 2,962 0,000*		9 NODE 8"
* 40	HYDROGRAPH Copy to Outflow"	•	Maximum flow 7.656 c.m/sec"
	8 Copy to Outflow"		Hydrograph volume 75609.117 c.m"
* 40	2.952 2.930 2.930 0.000" HVDP064PH Combine 8"	- 2	0.230 7.656 0.230 0.000"
	6 Combine "		40 HYDROGRAPH CODY to DITTION"
	9 Node #"	90 B	0.230 7.656 7.656 0.000"
	NODE B"	- 3 -	40 HYDROGRAPH Combine 10"
141	Maximum flow 7.503 c.m/sec"		6 Combine "
15/1	Hydrograph votume 74652.070 C.m."		
* 40	HYDROGRAPH Start - New Tributary"		Maximum flow 7.656 c.m/sec"
(#). (1)	2 Start - New Tributary"		Hydrograph volume 75609.117 c.m"
	2.962 0.000 2.930 7.503"	- 5	0.230 7.656 7.656 7.656 "
. 33	CALCHMENT 264		40 HYDROGRAPH Start - New Tributary"
3 8 0	1 Equal length"		0.230 0.000 7.656 7.656"
(#))	1 SCS method"		33 CATCHMENT 285"
	284 Agricultural lands south of Bleams Road"	•	1 Triangular SCS"
	2.000 % Impervious"	- 2	3 Specify values"
30	80.000 Flow length"		1 SCS method 285 Morningside Retirement Community lands"
5	3.100 Overland Slope"	•	58.000 % Impervious"
	2.891 Pervious Area"	5	18.780 Total Area"
	outour reinitaus length" 3 100 Perviaus stopa"		190.000 Flow length"
	0.059 Impervious Area"		7.888 Pervious Area*
	80.000 Impervious length"		25.000 Pervious length"
540 540	3.100 Impervious slope"		2.500 Pervious slope*
100	U.25U PERVIOUS MANNING "N'" 74 DOD Repuise SCS Curves No "	1	10.892 Impervious Area"
	0.346 Pervious Runoff coefficient"		334.000 IMPERVIOUS LENGTA 2.500 Impervious slope"
	0.100 Pervious Ia/S coefficient*		0.250 Pervious Manning 'n'"

Q:134 Printe	396/104/SWM/MIDUSS/Post/34896-104_Post-025yr.out d at 15:36 on 18 Dec 2018	Page 35	Q:\348 Printee	96\104\SWM\MIDUSS\Post\34896-104_Post-025yr.out d at 15:35 on 18 Dec 2018	Page 36
	64.400 Pervious SCS Curve No."			0.260 0.000 4.916 11.785 c.m/sec"	
÷	0.220 Pervious Runoff coefficient"			Catchment 250 Pervious Impervious Total Area "	
*	0.100 Pervious Ia/S coefficient"		÷	Surface Area 3.510 0.000 3.510 hectare"	
	14.041 Pervious Initial abstraction"		÷.	Time of concentration 28.511 6.829 28.511 minutes"	
	98.000 Impervious SCS Curve No "			Rainfail denth 68 087 68 087 68 087 mm*	
	0.914 Impervious Bunoff coefficient"		÷	Rainfall volume 2389.83 0.00 2389.84 c.m"	
	0.100 Impervious Ia/S coefficient"			Rainfall losses 42.407 5.986 42.407 mm"	
	0.518 Impervious Initial abstraction"			Runoff depth 25,680 62,100 25,680 mm"	
	4.916 0.000 7.656 7.656 c.m/sec"			Runoff volume 901.36 0.00 901.36 c.m"	
2	Catchment 285 Pervious Impervious Total Area "		÷	Runoff coefficient 0.377 0.000 0.377 "	
÷ –	Surrace Area 7,386 10.892 18.760 nectare ⁻		• 40	MAXIMUM TIOW 0.200 0.000 0.200 c.m/sec" HYDROGRAPH Add Runoff "	
	Time to Centroid 115.949 94.598 97.768 minutes"			4 Add Bunoff "	
	Rainfall depth 68.087 68.087 68.087 mm*		3	0.260 0.260 4.916 11.785"	
	Rainfall volume 0.5370 0.7416 1.2787 ha-m"		* 40	HYDROGRAPH Copy to Outflow"	
	Rainfall losses 53.104 5.869 25.707 mm*			8 Copy to Outflow"	
÷ .	Hunoff depth 14.983 62.218 42.379 mm*		10	0.260 0.260 0.260 11.785"	
•	Renoff coefficient 0.220 0.014 0.622 "		- 40		
*	Maximum flow 0.476 4.722 4.916 c.m/sec"			11 Node #"	
* 40	HYDROGRAPH Add Runoff "			u/s of east culvert of HWY 7&8"	
	4 Add Runoff "			Maximum flow 0.260 c.m/sec"	
ð	4.916 4.916 7.656 7.656"			Hydrograph volume 901.360 c.m"	
40	HYDROGRAPH Copy to Outflow"		. 40	0.250 0.260 0.260 0.260"	
	8 COPY to OUTTION"		- 40	HUHUGHAPH STAFT - NEW IFIDUTARY" 2 Start - New Tributary"	
• 40	HYDROGRAPH Combine 10"			0.260 0.000 0.260 0.260"	
	6 Combine "		* 33	CATCHMENT 251°	
	10 Node #"			1 Triangular SCS"	
ð –	NODE C"		÷	3 Specify values"	
÷	Maximum flow 11.785 c.m/sec"		- C	1 SCS method"	
	Hydrograph volume 83567.875 c.m."		÷	251 Wilmot Maintenance property, Hwy 7/8 and Natziger Road"	
· 81	4.910 4.910 4.910 11.005			5.7.0 Total Area [®]	
	3 Lines of comment"		- S	100.000 Flow length"	
	***************************************			2.000 Overland Slope"	
	Catchments north of Hwy 7/8, towards Eastern Tributary*			3.866 Pervious Area"	
÷			÷ .	100.000 Pervious length"	
40	HYDRUGHAPH Start - New Inibutary"		÷.	2.000 Fervious stope"	
	2 Start - New Hibblary 4 916 - 0.000 - 4 916 - 11 785"			1.504 Impervious Alea 296.000 Impervious length"	
* 33	CATCHMENT 250"			2.000 Impervious slope"	
	1 Triangular SCS"			0.250 Pervious Manning 'n'"	
	3 Specify values"			76.000 Pervious SCS Curve No."	
	1 SCS method"			0.377 Pervious Runoff coefficient"	
Q	250 Southern portion of Hec Centre fleids"		- Ç	0.100 Pervious Ia/S coefficient"	
÷.	3.510 Total Area"		÷.	0.015 Impervious Manning 'n'"	
*	95.000 Flow length"		*	98.000 Impervious SCS Curve No."	
	1.600 Overland Slope"		- t	0.912 Impervious Runoff coefficient"	
	3.510 Pervious Area"			0.100 Impervious Ia/S coefficient"	
	100.000 Pervious length"			0.518 Impervious Initial abstraction	
	2.000 Pervious slope"		÷.	0,905 0.000 0.260 U.260 C.M/Sec*	
÷	296-000 Impervious Alea			Surface Area 3.866 1.904 5.770 hectare	
2	2.000 Impervious slope"			Time of concentration 28.511 6.829 16.725 minutes	
*	0.250 Pervious Manning 'n'"			Time to Centroid 130.003 94.200 110.540 minutes*	
8	76,000 Pervious SCS Curve No."		š –	Rainfall depth 68.087 68.087 68.087 mm"	
÷	0.377 Pervious Runoff coefficient"		਼	Rainfall volume 2632.16 1296.44 3928.59 c.m"	
÷ .	0.100 Pervious Ia/S coefficient"			Haintail losses 42.407 5.986 30.388 mm"	
	0.015 Impervious initial abstraction"			MUNOFI GEPLA 25.080 62.100 37.099 mm" Bunoff volume 992.75 1192.45 2175.20 A.m."	
ŝ	98.000 Impervious SCS Curve No. "		- ÷	Runoff coefficient 0.377 0.912 0.554	
	0.000 Impervious Runoff coefficient"		2	Maximum flow 0.286 0.829 0.905 c.m/sec*	
*	0.100 Impervious Ia/S coefficient"		* 40	HYDROGRAPH Add Runoff "	
*	0.518 Impervious Initial abstraction"			4 Add Runoff "	

rinted	at 15:35 on 18 Dec 2018	Page 37	U:1348961104(SWMIMIDUSS)Post134896-104_Post-025yr.out Printed at 15:35 on 18 Dec 2018
	0.905 0.905 0.260 0.260"		* 47 FILEI 0 Read/Open DIV00007.025hvd*
40	HYDROGRAPH Copy to Outflow"		1 1=read/open; 2=write/save*
	8 Copy to Outflow"		2 1=rainfall; 2=hydrograph*
	0.905 0.905 0.905 0.260"		1 1=runoff; 2=inflow; 3=outflow; 4=jur
10	HYDROGRAPH Combine 11"		* DIV00007.025hyd*
	6 Combine "		Major flow at 7"
	11 Node #"		 Total volume 0.000
	u/s of east culvert of HWY 7&8"		 Maximum flow 0.000
	Maximum flow 0.973 c.m/sec"		• 0.000 0.000 0.210 1.08
	Hydrograph volume 3076.563 c.m"		* 40 HYDROGRAPH Add Runoff *
	0.905 0.905 0.973		* 4 Add Runoff *
40	HYDROGRAPH Start - New Tributary"		• 0,000 0.000 0.210
	2 Start - New Tributary"		40 HYDROGRAPH Copy to Outflow
	0.905 0.000 0.905 0.973"		8 Copy to Outflow"
3	CATCHMENT 252		0.000 0.000 0.000
	1 Irlangular SCS"		40 HYDROGRAPH Combine 11"
	1 Equal length"		6 Combine "
	1 SUS method"		- 11 Node #"
	252 Southern portion of Hamburglr lands"		u/s of east culvert of HWY 7&8*
	5.000 % Impervious"		Maximum flow 1.088
	2.870 Total Area"		Hydrograph volume 3807.146
	FTOM TEUGLU.		0.000 0.000 0.000
	1.500 Overland Slope"		40 HYDROGRAPH Confluence 11"
	2.726 Pervious Area"		7 Contluence "
	65.000 Pervious Length		11 NODE #"
	1.500 Pervious slope"		u/s of east culvert of HWY 788"
	0.144 Impervious Area		Maximum flow 1.088
	65.000 Impervious length"		Hydrograph Volume 3807.146
	1.500 Impervious slope"		0,000 1.088 0.000
	0.250 Pervious Manning 'n'		54 POND DESIGN"
	74.000 Pervious SCS Curve No		1.088 Current peak Tiow C.m/sec*
	0.346 Pervious Runott coetticient"		0.070 larget outflow c.m/sec
	0.100 Pervious Ia/s coefficient"		3807.1 Hydrograph Volume c.m ⁻
	B.924 Pervious Initial abstraction"		9. NUMBER OF Stages"
	0.015 Impervious Manning n		332.660 Minimum water level metre
	98.000 Impervious Scs Curve No."		336,000 Maximum water level metre
	0.902 Impervious Kunott coetticient"		332.000 Starting water level metre
	0.100 Impervious Ia/S coefficient		lovol Disobango Volumo"
	0.518 Impervious Initial abstraction		
	Surface Appa 2,725 0,144 2,870 bostope"		
	Junace Alea 2.720 0.144 2.070 HEGLAITE Time of concentration 25.070 9.099 22.407 misutos"		
	Time to Contentialion 20.070 2.390 22.407 milliges		
	Rainfoll danth 68,087,69,007,60,007, mm"		S39,000 S.102 3001,000
	Rainfall volume 1956 32 07 70 105.007 00 .00 mill		■ <u>335 500</u> <u>4 332 12258 00"</u>
	Rainfall loces 44 504 6 658 42 631 mm*		335 750 4.583 14551 00"
	Bunoff denth 23 563 61 428 25 456 mm ^e		* 336.000 21.985 17113.00*
	Bunoff volume 642 43 88 15 730 58 c m ^a		Peak outflow 0 795
	Bunoff coefficient 0.346 0.902 0.374 "		Maximum level 333 287
	Maximum flow 0.195 0.058 0.210 c.m/sec"		Maximum storage 752 387
40	HVDRORBAPH Add Runoff "		Centroidal lan 2 126
+ U			
			40 HYDROGRAPH Next link "
40	HYDROGRAPH Conv to Outflow"		5 Next link *
	8 Copy to Outflow"		0,000 0 795 0 795
			38 START/RE-START TOTALS 11"
40	HYDROGRAPH Combine 11		3 Bunoff Totals on EXIT
	6 Combine "		Total Catchment area
	11 Node #"		Total Impervious area
	I/s of east culvert of HWY 788"		Total & impervious
	ale of edge officient of the track		10001 V Impervious
	Maximum flow 1088 cm/sec"		" 1G FILL
	Maximum flow 1.088 c.m/sec" Hydrograph yolyme 3807 146 c.m"		- 19 EXII-
	Maximum flow 1.088 c.m/sec" Hydrograph volume 3807.146 c.m" 0.210 0.210 0.210 1.088"		- 19 EXII-
40	Maximum flow 1.088 c.m/sec" Hydrograph volume 3807.146 c.m" 0.210 0.210 1.088" HYDROGRAPH Start - New Tributary"		- 19 EXII-
40	Maximum flow 1.088 c.m/sec" Hydrograph volume 3807.146 c.m" 0.210 0.210 1.088" HYDROGRAPH Start - New Tributary" 2 Start - New Tributary"		- 19 EXII-

	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°	
	Maior 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*	
	HVDROGRAPH Add Bunoff "	
	HYDHOGHAPH CODY TO OUTTIOW	
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	0.000 0.000 0.000 1.088	
	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"	
	HYDROGRAPH Confluence 11"	
	7 Confluence "	
	11 Node #"	
	u/s of east culvert of HWY 788"	
	Maximum flow 1.088 c.m/sec"	
	Hydrograph volume 3807 146 c.m*	
	POND DESTGN"	
	1 OBB Current neak flow c m/sec"	
	0.070 Target outflow c m/sec*	
	2807 1 Hudpograph volume o m ²	
	O Number of stores	
	9. Number of Stages	
	SS2.000 Minimum water level metre	
	336.000 Maximum water level metre	
	332,000 Starting water level metre	
	0 Keep Design Data: 1 = True; 0 = Faise-	
	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"	
	HYDROGRAPH Next link "	
	5 Next link "	
	0.000 0.795 0.795 0.000"	
;	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"	



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MTDUSS Output	
MIDUS Version Version 2.25 rev 473"	" Fine to centrold 131.220 90.546 131.220 minutes"
MIDUSS created Sunday, February 07, 2010"	Bainfall volume 2300.05 0.00 2300.05 c.m"
10 Units used: ie METRIC*	" Rainfall losses 36.991 5.932 36.991 mm"
Job folder: 0:\34896\104\SWM\MIDUSS\Post"	Runoff depth 40.452 71.510 40.452 mm"
Output filename: 34896-104_Post-050yr.out"	Runoff volume 1201.42 0.00 1201.43 c.m"
Licensee name: admin"	Runoff coefficient 0.522 0.000 0.522 "
Company Microsoft"	Maximum flow 0.334 0.000 0.334 c.m/sec"
21 ADD COMMENT	40 HYDROGRAPH Add Runoff "
7 Lines of comment*	4 Add Hunort "
	* 33 CATCHIERT 202"
Wilmot Employment Lands"	
New Hamburg, Ontario"	1 Equal length"
50 Year Storm Event - Post development"	1 SCS method"
Job No.: 34896-104"	202 Woodlot - north of GEXR"
Calculated by: NED/MSB"	0.000 % Impervious"
	2.080 Total Area
	3.500 Providend Store"
240.000 Max. Storm length"	2.000 Overland Stope
1500.000 Max. Hydrograph	80.000 Pervious length"
32 STORM Chicago storm"	2.500 Pervious slope"
1 Chicago storm"	0.000 Impervious Area"
3886.000 Coefficient A"	80.000 Impervious length"
16,000 Constant B"	2.500 Impervious slope"
0.400 Exponent C"	0.250 Pervious Manning 'n'"
	0.000 Pervious Scs Curve No."
1.000 Time step multiplier"	0.000 Pervious Runoi coerictent"
Maximum intensity 215.474 mm/hr"	10.886 Pervious Initial abstraction"
Total depth 77.443 mm"	0.015 Impervious Manning 'n'"
6 050hyd Hydrograph extension used in this file"	98.000 Impervious SCS Curve No."
81 ADD COMMENT===================================	0.000 Impervious Runoff coefficient"
3 Lines of comment"	0.100 Impervious Ia/S coefficient
Catchments North of GEVE, part of Talot #1"	0.518 Impervious Initial abstraction"
a commence work is a commence with a commence and a	Catchment 202 Reprive Important Apport
* 33 CATCHMENT 201 "	Surface Area 2 080 0 000 2 080 bectara"
1 Triangular SCS"	Time of concentration 23.957 2.772 23.957 minutes"
1 Equal length*	Time to Centroid 124.301 88.103 124.301 minutes"
1 SCS method"	Rainfall depth 77.443 77.443 mm"
201 Area Northeast of GEXR"	Rainfall volume 1610.81 0.00 1610.81 c.m"
	Rainfall losses 52.205 6.990 52.205 mm"
80 000 Flow length"	Hunort depth 25,238 70.453 25.238 mm ⁻
0.500 Overland Slope"	Bunoff coefficient 0.326 0.000 0.326 "
2.970 Pervious Area"	Maximum flow 0.167 0.000 0.167 c.m/sec"
80.000 Pervious length*	40 HYDROGRAPH Add Runoff "
0.500 Pervious slope"	4 Add Runoff
0.000 Impervious Area"	0.167 0.497 0.000 0.000
80,000 Impervious length"	40 HYDROGRAPH Copy to Outflow"
0.250 Pervious Manning 'n'"	8 Copy to Outriow"
82.000 Pervious SCS Clarve No."	* 40 HYDROGRAPH Combine 1"
0.522 Pervious Runoff coefficient"	6 Combine "
0.100 Pervious Ia/S coefficient"	Node #"
5.576 Pervious Initial abstraction"	u/s of GEXR"
0.015 Impervious Manning 'n'"	Maximum flow 0.497 c.m/sec"
ME. UVUO IMPERVIDUS SCS CIPVE NO."	Hydrograph volume 1726.374 c.m"
0.000 Impervious to (coefficient"	
0.518 Impervious Initial abstraction"	 AU HYDRUGRAPH STAFT - New IPLDUTARY" Start - New IPLDUTARY"
0.334 0.000 0.000 0.000 c.m/sec*	
Catchment 201 Pervious Impervious Total Area "	* 33 CATCHMENT 203"
Surface Area 2.970 0.000 2.970 hectare"	1 Triangular SCS"
Time of concentration 30,768 4,492 30,768 minutes"	1 Equal length"

Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-050yr.out Printed at 15:35 on 18 Dec 2018	Page 3	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-050yr.out Printed at 15:35 on 18 Dec 2018	Page 4	
Di348961(04)SVWIMHOUSSIPost34896-104_Post-050yr.out Printed at 15:35 on 18 Dec 2018 SCS method' 203 Pfenning Farm Residential Development* 0.000 % Impervious 16.810 Total Area* 90.000 Flow length' 1.000 Overland Slope* 7.404 Pervious length' 1.000 Impervious length' 1.000 Impervious length' 1.000 Impervious length' 1.000 Impervious length' 1.000 Impervious SCS Curve No.* 0.450 Pervious Wanning 'n'* 78.000 Pervious SCS Curve No.* 0.455 Pervious SCS Curve No.* 0.550 Pervious SCS Curve No.* 0.515 Impervious SCS Curve No.* 0.515 Impervious SCS Curve No.* 0.516 Impervious SCS Curve No.* 0.517 Impervious SCS Curve No.* 0.518 Impervious SCS Curve No.* 0.519 Impervious SCS Curve No.* 0.519 Impervious SCS Curve No.* 0.519 Impervious SCS Curve No.* 0.519 Impervious SCS Curve No.* 0.530 0.0000 0.497 0.497 c.m/sec* Suffacs Area* Suffacs Area* Suffacs Area* Suffacs Area* Suffacs Area* Numoff volues SCS Curve No.* Numoff volues SCS Curve No.* Numoff volues 0.2556 0.7.433 10.441 Area* Rainfall volues 0.2556 0.7.433 10.445 ha.=* Runoff depth 35.069 71.032 56.647 mm* Runoff depth 440 Runoff * 5.389 S.386 0.497 0.497* 794D DESIGN* S.389 S.3868 0.497 0.497* 794D DESIGN* S.389 S.3868 0.497 0.497* S.389 S.3869 0.497 0.497* S.389 S.389 S.3868 0.497 0.497* S.380 S.3887 file.000* S.345.000 S.345 file.000	Page 3	<pre>Distable(104)SVMMMIDUSSIPost134896-104_Post-050yr.out Printed at 15:35 on 18 Dec 2018 6 Combine * 1 Node #* U/S of GEXR* Hydrograph volume 12197.528 c.m* 5.869 5.869 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* 5.869 0.849 0.532 0.000* 40 HYDROGRAPH Copy to Utflow* 8 Copy to Outflow* 8 Copy to Outflow* 9 Confluence 2* 6 Combine * 1 NUET 1* Maximum flow 0.849 0.000* 40 HYDROGRAPH Combine 2* 6 Combine * 2 Node #* 1 NUET 1* Maximum flow 0.849 0.000* 40 HYDROGRAPH Combine 2* 6 Combine * 2 Node #* 1 Nutflow 0.849 0.049 0.000* 40 HYDROGRAPH Combine 2* 6 Combine * 2 Node #* 1 Till 1* 2 Node #* 1 Till 1* 2 Start - New Tributary* 2 Start - New Tributary* 2 Start - New Tributary* 2 Start - New Tributary* 3 Lines of comment* Catchments South of GEXR, part of Inlet #1* ***********************************</pre>	Page 4	
342.000 0.1541 1743.000 342.000 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" 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"		0.100 Pervious Ia/S coefficient" 8.021 Pervious Inital 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 Inital abstraction" 0.519 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"		
Maximum level 343.318 metre" Maximum storage 7747.867 c.m" Centroidal lag 5.939 hours" 5.369 5.369 0.532 0.497 40 HYDROGRAPH Combine 1"		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 "		

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141	Maximum flow 0.098 0.577 0.619 c.m/sec"		Runoff volume 285.43 42.63 328.06 c.m"	
* 40	HYDROGRAPH Add Runoff "	*)	Runoff coefficient 0.326 0.925 0.356 "	
÷	4 Add Runoff *		Maximum flow 0.051 0.029 0.054 c.m/sec"	
• 54	0.619 0.619 0.849 0.849" POND DESIGN"	40	HYDRUGHAPH Add Runoff "	
(a)	0.619 Current peak flow c.m/sec"		0.054 0.054 0.042 0.878"	
	0.070 Target outflow c.m/sec"	* 40	HYDROGRAPH Copy to Outflow"	
÷.	1119.0 Hydrograph volume c.m"		8 Copy to Outflow"	
- 1 C	4. Number of stages" 0.000 Ninimum water lavel metro"	40	0.054 0.054 0.054 0.878" HYDDOGRADH Combine 2"	
340	0.910 Maximum water level metre"	. 40	6 Combine *	
101	0.000 Starting water level metre"	5	2 Node #"	
	O Keep Design Data: 1 = True; O = False"		INLET 1"	
(#1)	0.000 0.000 0.000 "	<u>.</u>	MAXIMUM TLOW 0.920 C.M/Sec" Hydrograph yolume 13605 821 c.m"	
100	0.3100 0.03090 782.000*	*	0.054 0.054 0.054 0.920"	
	0.6100 0.1232 1619.000"	• 40	HYDROGRAPH Start - New Tributary"	
÷	0.9100 0.2769 2511.000"		2 Start - New Tributary	
	Maximum Level 0.345 metre"	. 99	0.054 0.000 0.054 0.920" CATCHMENT 206"	
	Maximum storage 880.598 c.m"	*	1 Triangular SCS"	
۲	Centroidal lag 8,363 hours"		1 Equal length"	
	0.619 0.619 0.042 0.849 c.m/sec*	- 5	1 SCS method"	
40	HVDHUGHAPH COMDINE 2"		206 Industrial properties at end of Hamilton Hoad"	
	2 Node #"		2.850 Total Area*	
	INLET 1"		50.000 Flow length"	
-	Maximum flow 0.878 c.m/sec"		1.000 Overland Slope	
	Hydrograph volume 132/7.759 c.m* 0.619 0.619 0.619 0.619 0.012 0.878*	÷.	1.852 Pervious Area" 50.000 Pervious length"	
- 40	HYDROGRAPH Start - New Tributary	•	1.000 Pervious slope"	
	2 Start - New Tributary"	•	0.997 Impervious Area"	
	0.619 0.000 0.042 0.678"	÷.	50.000 Impervious length	
- 33	CAICHMENT 205"		1.000 Impervious siope" D.250 Pervious Manning 'o'"	
	3 Specify values	÷ .	76.000 Pervious SCS Curve No."	
	1 SCS method"		0.416 Pervious Runoff coefficient"	
	205 Iron Bridge Manufacturing Property - Woodlot"	- 2	0.100 Pervious Ia/S coefficient"	
	5.000 % IMPERVIOUS"	÷.	0.015 Impervious Manning 'n'"	
2.81	255.000 Flow length"		98.000 Impervious SCS Curve No."	
(m)	1.800 Overland Slope"	*	0.910 Impervious Runoff coefficient"	
2	1.131 Pervious Area*		0.100 Impervious Ia/S coefficient"	
	1.800 Pervious slope"		0.502 0.000 0.054 0.920 c.m/sec"	
5 % 2	0.060 Impervious Area"	*	Catchment 206 Pervious Impervious Total Area "	
35	255.000 Impervious length ^e	<u>8</u>	Surface Area 1.852 0.997 2.850 hectare	
- E	1.800 Impervious slope"	2	Time of concentration 21.055 2.752 11.154 minutes"	
	70.000 Pervious SCS Curve No."		Rainfall depth 77.443 77.443 77.443 mm"	
	0.326 Pervious Runoff coefficient*		Rainfall volume 1434.63 772.49 2207.12 c.m*	
	0.100 Pervious Ia/S coefficient"	÷	Rainfall losses 45.253 6.990 31.861 mm"	
	10.886 Pervious Initial abstraction"	÷	Runoff depth 32,190 70,452 45,582 mm" Runoff volume 596,31 702,76 1299,08 c.m"	
	98.000 Impervious SC Curve No."		Runoff coefficient 0.416 0.910 0.589	
•	0.925 Impervious Runoff coefficient"		Maximum flow 0.212 0.470 0.502 c.m/sec*	
	0.100 Impervious Ia/S coefficient*	40	HYDROGRAPH Add Runoff "	
	U.518 Impervious initial abstraction"	÷	4 Add Runott " 0.502 0.502 0.054 0.920"	
	Catchment 205 Pervious Impervious Total Area "	* 33	CATCHMENT 207"	
	Surface Area 1.131 0.060 1.190 hectare"		1 Triangular SCS"	
	Time of concentration 53.003 6.132 46.913 minutes"	:	1 Equal length"	
	ilme to ventrola 159.848 92.834 151.140 milnutes" Bainfall denth 77.443 77.443 77.443 mm"		ו סוס metnod 207 Woodlot and Wetland east of Pestells"	
	Rainfall volume 875.49 46.08 921.57 c.m"		5.000 % Impervious"	
H.	Rainfall losses 52.195 5.798 49.875 mm*		5.920 Total Area*	
M	Runoff depth 25.248 71.645 27.568 mm*		65.000 Flow length	

Q:\348 Printe	26/104/SWM/MIDUSS/Post/34896-104_Post-050yr.out 1 at 15:35 on 18 Dec 2018	Page 7	Q:134896\104\SWM\MIDUSS\Post\34896-104_Post-050yr.out Page 8 Printed at 15:35 on 18 Dec 2018
:	3.000 Overland Slope" 5.624 Pervious Area" 65.000 Pervious length"		0.922 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"
.	3.000 Pervious slope"		2.155 0.000 0.869 1.741 c.m/sec
.	0.296 Impervious Area"		Catchment 208 Pervious Impervious Total Area
÷	65.000 Impervious length"		Surface Area 1.383 4.148 5.530 hectare"
ŵ.	3.000 Impervious Stope" 0.250 Pervious Maning 'n'"		Time of concentration 15.440 6.728 7.826 minutes"
#	70.200 Pervious SCS Curve No."		Bainfall depth 77 443 77 443 mm ⁻⁴
*	0.328 Pervious Runoff coefficient"		Rainfall volume 1070.65 3211.94 4282.58 c.m*
÷	0.100 Pervious Ia/S coefficient"		Rainfall losses 46.511 6.075 16.184 mm"
	10.782 PERVIOUS INITIAL ADSTRACTION" 0.015 Immervious Manning Int"		Runoff depth 30.931 71.368 61.259 mm"
	98.000 Impervious SCS Curve No."		Runoff coefficient 0.399 0.922 0.701 "
	0.915 Impervious Runoff coefficient"		Maximum flow 0.180 2.066 2.155 c.m/sec"
÷ –	0.100 Impervious Ia/S coefficient"		40 HYDROGRAPH Add Runoff "
	0.516 Impervious Initial abstraction" 0.539 0.562 0.054 0.920 c.m/sec"		4 Add Hunott "
	Catchment 207 Pervious Impervious Total Area		54 POND DESIGN"
•	Surface Area 5.624 0.296 5.920 hectare"		2.155 Current peak flow c.m/sec"
÷ .	Time of concentration 19.939 2.317 17.685 minutes"		0.070 Target outflow c.m/sec"
÷	lime to centrold 119.350 87.394 115.263 minutes" Bainfall denth 77.443 77.443 77.443 mm*		3387.6 Hydrograph volume c.m"
	Rainfall volume 4355.38 229.23 4584.61 c.m"		0.000 Minimum water level metre"
*	Rainfall losses 52.010 6.583 49.738 mm"		1.200 Maximum water level metre"
<u>.</u>	Runoff depth 25,433 70,860 27,704 mm"		0.000 Starting water level metre"
÷ .	HUNDIT VOLUME 1430.35 209.74 1640.10 C.m" Bunoff coefficient 0.328 0.915 0.358 "		0 Keep Design Data: 1 = True; 0 = False"
	Maximum flow 0.510 0.143 0.539 c.m/sec"		
40	HYDROGRAPH Add Runoff "		* 0.1500 0.00400 297.000"
ŝ –	4 Add Runoff "		0.3000 0.01000 635.000"
* 40	0.539 0.869 0.054 0.920" HYDP0CRAPH Coox to Outflow!		0.4550 0.03600 1004.000"
. 40	8 Copy to Outflow		- 0.6000 0.04900 1405.000"
•	0.539 0.869 0.869 0.920"		0.9000 0.06900 2329.000"
• 40	HYDROGRAPH Combine 2"		1.050 0.5220 2852.000"
	6 Combine " 2 Node #"		1.200 1.100 2900.000"
÷	INCET 1"		reak outriow 0.246 c.m/sec* Maximum level 0.960 metre*
-	Maximum flow 1.741 c.m/sec"		Maximum storage 2536.727 c.m"
	Hydrograph volume 16544,998 c.m"		Centroidal lag 10.367 hours"
• 40	0.539 0.869 0.869 1.741" HYDROGRAPH Start , New Tributary"		2.155 2.155 0.248 1.741 c.m/sec"
1	2 Start - New Tributary"		
•	0.539 0.000 0.869 1.741°		* 2 Node #"
33	CATCHMENT 208"		INLET 1"
2	i irlangular SGS 3. Specify values"		Maximum flow 1.807 c.m/sec"
¥:	1 SCS method*		" 1907" 1907" 1903.422 Child
1	208 N.C. Pestell site"		* 81 ADD COMMENT===================================
	75.000 % Impervious"		3 Lines of comment"
	5.530 Iotal Area" 130.000 Flow length"		Catchmonte South of GEVD, next of Tollat #0"
20	2.000 Overland Slope"		vatoriniento souti o tarn, par toi inize #2 ************************************
	1.383 Pervious Area"		40HYDROGRAPH Start - New Tributary"
÷	50.000 Pervious length"		2 Start - New Tributary"
	4.148 Impervious Area"		- 2.155 0.000 0.248 1.807" "33 CATCHIENT 200"
•	192.000 Impervious length"		1 Triangular SGS°
÷	0.750 Impervious slope"		* 3 Specify values"
	0.250 Pervious Manning 'n'" 75.000 - Pervious SSS Curve No. "		1 SCS method"
÷	0.399 Pervious Runoff coefficient"		- ∠uy Alpine Solutions - west SMWP" * 30.000 € Impervious"
	0.100 Pervious Ia/S coefficient"		1.920 Total Area"
	8.467 Pervious Initial abstraction"		150.000 Flow length"
•	0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No."		1.344 Pervious Area"

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 150.000 Pervious length" 1.500 Pervious slope" 0.576 Impervious Area" 113.000 Impervious length" 	5.000 % Impervious" 13.230 Total Area" 170.000 Flow length" 2.400 Overland Slope"	
 1.500 Impervious slope" 0.250 Pervious Manning 'n'" 80.000 Pervious SCS Curve No." 0.485 Pervious Runoff coefficient" 0.100 Pervious Runoff coefficient" 	 12.568 Pervious Area" 170.000 Pervious length" 2.400 Pervious slope" 0.661 Impervious Area" 170.000 Impervious Length" 	
6.350 Pervious Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious RCS Curve No." 0.918 Impervious Runoff coefficient"	 2.400 Impervious slope" 0.250 Pervious Manning 'n" 70.000 Pervious SCS Curve No." 0.326 Pervious 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 boctare"	 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 Exection for antificient" 	
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 1466.90 c.m"	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	
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 9.300 c.m/sec"	Surface Area 12.568 0.661 13.230 hectare" Time of concentration 38.121 4.411 33.749 minutes" Time to Centroid 141.640 90.426 134.996 minutes" Rainfall depth 77.443 77.443 77.443 mm" Bainfall volume 0.973 0.612 1.0265 be.m"	
40 HYDROGRAPH Add Runoff " 4 Add Runoff " 0.300 0.300 0.248 1.807" 54 POND DESIGN"	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	
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"	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 Conv to Outflow"	
1.100 Maximum water level metre" 0.000 Starting water level metre" 0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume"	8 Copy to Outflow" 0.787 0.787 0.787 0.129" 40 HYDROGRAPH Combine 3" 6 Combine "	
0.000 0.000 0.000" 0.2500 0.04200 7.000" 0.5000 0.09000 71.000" 0.7500 0.1250 220.000"	3 Node #" INLET 2" Maximum flow 0.913 c.m/sec" Hydrograph volume 4557,905 c.m"	
1.000 0.3110 445.000" 1.100 0.6160 557.000" Peak outflow 0.129 c.m/sec" Maximum level 0.787 metre"	81 ADD COMMENT===================================	
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"	40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.787 0.000 0.787 0.913"	
3 Node #" INLET 2" Maximum flow 0.129 c.m/sec" Hydrograph volume 913.591	 33 CATCHMENT 211" 1 Triangular SCS" 1 Equal length" 1 SCS method" 211 Culivated lands east of Nafziger Road" 	
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"	1.000 % Impervious" 7.310 Total Area" 120.000 Flow length" 3.300 Overland Slope"	
1 Triangular SCS* 1 Equal length" 1 SCS method" 210 Woodlot north of Hamburglr/Badenview lands"	<pre>//.23/ Pervious Area" //.23/ Pervious length" //.23/ Pervious slope" //.23/ Impervious Area" //.23/ Impervious length" //.23/ Impervious length" //.23/ Pervious length" //.23/ Pervious length" //.23/ Pervious length</pre>	

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inted at 15:35 on 18 Dec 2018	the status	Printed at 15:35 on 18 Dec 2018
3.300 Impervious slope"		* Time of concentration 37.313 4.343 18.881 minutes*
0.250 Pervious Manning 'n'"		Time to Centroid 139.862 90.328 112.170 minutes"
0.416 Pervious Sus Curve No."		Hainfail depth 77.443 77.443 77.443 mm"
0.100 Pervious Ta/S coefficient"		" Rainfall Joseps 39,904 6,055 26,364 mm"
8.021 Pervious Initial abstraction"		Runoff depth 37.539 71.387 51.078 mm"
0.015 Impervious Manning 'n'"		Runoff volume 576.60 731.00 1307.61 c.m"
98.000 Impervious SCS Curve No."		Runoff coefficient 0.485 0.922 0.660 "
0.912 Impervious Runott coefficient"		Maximum flow 0.138 0.484 0.514 c.m/sec"
0.518 Impervious Initial abstraction"		
0.742 0.000 0.787 0.913 c.m/sec"		• 0.514 0.514 0.742 0.742"
Catchment 211 Pervious Impervious Total Area "		• 54 POND DESIGN*
Surface Area 7.237 0.073 7.310 hectare"		0.514 Current peak flow c.m/sec"
Time of concentration 24,885 3,253 24,416 minutes"		0.070 Target outflow c.m/sec"
lime to centrold 124.607 88.790 123.830 minutes"		1307.6 Hydrograph volume c.m"
Rainfall ueptin //.443 //.443 //.443 mm Rainfall volume 5604.45 56.61 566.107 c m [*]		7. Number of stages
Rainfall losses 45.260 6.780 44.876 mm"		1.000 Maximum water level metre"
Runoff depth 32.182 70.663 32.567 mm."		 0.000 Starting water level metre"
Runoff volume 2329.00 51.65 2380.66 c.m"		6 Keep Design Data: 1 = True; 0 = False"
Runoff coefficient 0.416 0.912 0.421 "		Level Discharge Volume"
Maximum Tiow U.734 U.033 U.742 C.m/Sec" 10 HVDRCRAPH Add Bupoff "		
4 Add Runoff "		
0.742 0.742 0.787 0.913"		0.5500 0.09000 343.000"
40 HYDROGRAPH Copy to Outflow"		0.7500 0.1250 877.000"
8 Copy to Outflow"		0.8000 0.1360 1014.000"
0.742 0.742 0.742 0.913"		1.000 0.7880 1667.000"
40 NIDHUGHAFH COMDINE 4- 6 Combine "		Peak outriow 0.109 c.m/sec"
4 Node #"		Maximum storape 631.350 c m"
INLET 3"		Centroidal lag 3.031 hours"
Maximum flow 0.742 c.m/sec*		* 0.514 0.514 0.109 0.742 c.m/sec"
Hydrograph volume 2380.657 c.m"		* 40 HYDROGRAPH Combine 4*
0.742 0.742 0.742 0.742"		6 Combine "
2 Start - New Tributary"		- 4 NOGE #"
0.742 0.000 0.742 0.742"		Maximum flow 0.840 c.m/sec"
33 CATCHMENT 212"		Hydrograph volume 3608.499 c.m"
1 Triangular SCS"		0.514 0.514 0.109 0.840"
3 Specify values"		* 40 HYDROGRAPH Start - New Tributary"
I SUS METROG" 212 Alaine Solutione - Fest SMMP"		2 Start - New Tributary"
40.000 % Impervious"		3.3 CATCHMENT 213"
2.560 Total Area"		* 1 Triangular SCS"
150.000 Flow length"		1 Equallength
1.500 Overland Slope"		1 SCS method"
1.536 Pervious Area"		213 Woodlot East and West of Nafziger Road"
1 500 Pervious slope"		- 3.000 % Impervalues"
1.024 Inpervious Area"		140.000 Flow length"
131.000 Impervious length"		* 3.600 Overland Slope"
1.500 Impervious slope		* 13.056 Pervious Area"
0.250 Pervious Manning 'n'"		140.000 Pervious length"
80.000 Pervious SCS Curve No."		3,600 Pervious slope"
0.400 Pervious Hunori Coefficient"		U.404 Impervious length
6.350 Pervious Initial abstraction"		3.600 Impervious slope"
0.015 Impervious Manning 'n'"		0.250 Pervious Manning 'n'"
98.000 Impervious SCS Curve No."		70.100 Pervious SCS Curve No."
0.922 Impervious Runoff coefficient"		0.327 Pervious Runoff coefficient"
0.100 Impervious Ia/S coefficient" 0.519 Impervious Initial elastanceira		0.100 Pervious Ia/S coefficient"
		0.015 INDEXISTANCE AND A CONTRACTION"
Catchment 212 Pervious Impervious Total Area *		98.000 Impervious SCS Curve No."

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0,100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	* 40 HYDROGRAPH Add Runoff " * 4 Add Runoff "
0.956 0.000 0.109 0.840 c.m/sec*	" 1.900 1.900 0.956 1.784"
Catchment 213 Pervious Impervious Total Area	54 POND DESIGN"
Surface Area 13.056 0.404 13.460 hectare	 1,900 Current peak flow c.m/sec" 0,070 Torpert putfiller c.m/sec"
Time to control 131.659 89.142 128.286 minutes	3142.2 Hydrograph volume c.m*
Rainfall depth 77.443 77.443 mm"	• 15. Number of stages"
Rainfall volume 1.0111 0.0313 1.0424 ha-m"	0.000 Minimum water level metre
"Hainfall losses 52.093 6.805 50.734 mm" Buroff doubh 25 350 70 637 26 700 mm"	1.450 Maximum water level metre"
Runoff volume 3309.74 265.23 354.97 c.m"	* 0 Keep Design Data: 1 = True: 0 = False"
Runoff coefficient 0.327 0.912 0.345	* Level Discharge Volume"
Maximum flow 0.921 0.183 0.956 c.m/sec"	• 0.000 0.000 0.000
40 HYDHUGHAPH AQQ HUNDTT " 4 Add Bunoff "	• 0.1500 0.00/00 248.000*
• 0.956 0.956 0.109 0.840"	* 0.3500 0.01100 593.000*
* 40 HYDROGRAPH Copy to Outflow"	* 0.4500 0.01300 775.000"
8 Copy to Outflow"	* 0.5500 0.01500 964.000"
* 40 HYDROGRAPH Combine 4*	
6 Combine "	* 0.8500 0.01900 1575.000*
* 4 Node #*	* 0.9500 0.02000 1795.000*
INLET 3"	* 1.050 0.05600 2025.000*
MAXIMUM TLOW 1.784 C.M/SeC" Hudrograph volume 7283.461 c.m"	* 1.150 0.2080 2253.000*
• 0.956 0.956 0.956 1.784"	1.350 2.766 2769.000*
* 40 HYDROGRAPH Start - New Tributary"	* 1.450 6.856 3033.000*
2 Start - New Tributary"	Peak outflow 0.263 c.m/sec"
- 0.955 0.000 0.955 1.784	Maximum tevel 1.1/2 metre
1 Triangular SCS"	Centroidal lag 13.769 hours'
3 Specify values"	* 1.900 1.900 0.263 1.784 c.m/sec"
1 SCS method"	40 HYDROGRAPH Combine 4"
73.000 % Impervious	
4.950 Total Area"	INLET 3"
50.000 Flow length	Maximum flow 1.964 c.m/sec"
2.800 Overland Slope"	Hydrograph volume 9765.568 C.m ⁻
40.000 Pervious length"	40 HYDROGRAPH Start - New Tributary
1.500 Pervious slope"	2 Start - New Tributary"
3.613 Impervious Area"	1.900 0.000 0.263 1.964"
152.000 Impervious slope	- 33 CALCHIMENI 215"
0.250 Pervious Manning 'n'	1 Equal length
83.000 Pervious SCS Curve No."	1 SCS method"
0.541 Pervious Runoff coefficient"	215 Vacant Industrial lands west of Nafziger Road
5.202 Pervious Initial abstraction"	
0.015 Impervious Manning 'n'"	* 105.000 Flow length*
98.000 Impervious SCS Curve No."	2.000 Overland Slope
0.923 Impervious Runoff coefficient"	1.573 Pervious Area
0.518 Impervious Initial abstraction"	2.000 Pervious slope"
1.900 0.000 0.956 1.784 c.m/sec*	1.287 Impervious Area
Catchment 214 Pervious Impervious Total Area "	105.000 Impervious length
Time of concentration 14.345 5.201 6.906 minutes	- 2.000 impervious Siope" 0.250 Pervious Mannina 'n'"
Time to Centroid 109.846 91.657 94.901 minutes	• 76.000 Pervious SCS Curve No."
Rainfall depth 77.443 77.443 77.443 mm*	0.416 Pervious Runoff coefficient
Hainfall volume 1035.02 2798.39 3833.42 c.m* Bainfall losses 35 508 5 005 13.063 mm*	 0.100 Pervious Ia/S coefficient* 8.021 Pervious Initial abstraction*
Runoff depth 41,935 71,448 63,480 mm*	0.015 Impervious Maning 'n'
Runoff volume 560.46 2581.78 3142.24 c.m*	• 98.000 Impervious SCS Curve No.•
Runoff coefficient 0.541 0.923 0.820	0.912 Impervious Runoff coefficient
тахитит тион 0.259 1.746 1.900 с.m/sec*	U.IUU IMPERVIOUS IA/S COETTICIENT.

	0.518 Impervious In:	tial abstractio	n"			
	0.629	0.000 0.26	3 1.964 Tananyiaya	C.M/Sec"		
	Supface Area	1 573	1 297	2 PEO	bootano."	
	Time of concentra	tion 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	с.п"	
	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"	
	Runott coetticier	nt 0.416	0.912	0,639		
10	MAXIMUM TIOW	0.152	0.584	0.629	c.m/sec ⁻	
10	Add Bunoff "	litori				
	0.629	0.629 0.26	3 1 964*			
0	HYDROGRAPH CODV 1	o Outflow"				
	8 Copy to Outflo	W"				
	0.629	0.629 0.62	9 1.964"			
0	HYDROGRAPH Comb	oine 4"				
	6 Combine "					
	4 Node #"					
	INLE! 3" Maximum flow		000	00		
	Hydrograph volum	2.	∠∠o C,M/S 990 ∩ m"	ec		
	0.629	0.629 0.62	9 2.228"			
0	HYDROGRAPH Start	- New Tributary	"			
	2 Start - New Tr	ibutary"				
	0.629	0.000 0.62	9 2.228"			
3	CATCHMENT 216°					
	1 Triangular SCS	, n				
	f Equal length"					
	1 SCS method"					
	216 Industrial lar	ids west of Natz	iger Koad.			
	2 860 Total Area					
	110.000 Flow length"					
	2.000 Overland Slope					
	1.573 Pervious Area					
	110.000 Pervious lengt	:h "				
	2.000 Pervious slope	•				
	1.287 Impervious Are	a				
	110.000 Impervious ler	igtn"				
	2.000 Impervious sig	pe 'n '				
	76.000 Pervious SCS (urve No."				
	0.416 Pervious Runot	f coefficient"				
	0.100 Pervious Ia/S	coefficient"				
	8.021 Pervious Initi	al abstraction*				
	0.015 Impervious Mar	ning 'n'"				
	98.000 Impervious SCS	Curve No."				
	0.911 Impervious Rur	off coefficient	•			
	0.100 Impervious Ia	S coefficient"	- 1			
	0.518 Impervious Ini	TIAL ADSTRACTIO	n" 0 0000			
	U.D29 Catchment 216	0.000 0.62	2.228	Total Acco		
	Surface Area	1 573	1 287	2 860	hectore	
	Time of concentra	tion 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	"""	
	Runoff depth	32.200	70.544	49.455	៣៣"	
	Pupotf volumo	506 50	907.90	1414.40	c.m"	
			0.011	0 000		
	Runoff coefficier	t 0.416	0.911	0.639	» #/000#	

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		4	Add Bupoff *					
		-	0,629	0.629	0.629	2.228		
	40	HY	DROGRAPH Copy t	o Outf	low"			
		8	Copy to Outflo	w"				
			0.629	0.629	0.629	2,228	•	
	40	HY	DROGRAPH Comb	ine	4"			
2		6	Combine "					
0		4	NODE #"					
		Ho.	INLE! 3"		2.4	07 0 7/		
		Ma Hy	drooranh volume		12505 9	97 C.III/	sec	
			0.629	0.629	0.629	2.497		
٠	40	HY	DROGRAPH Start	- New	Tributary"			
		2	Start - New Tr	ibutar	Y"			
2			0.629	0.000	0.629	2.497		
C	33	CA	TCHMENT 217"					
2		1	Triangular SCS	8				
0		1	Equal length"					
2		1	SUS method"		Nofelees	Deedl		
2		75 000	& Impervious"	est of	Natzigen	HOAD		
÷.		0.730	Total Area"					
٠		90.000	Flow length"					
٠		2,100	Overland Slope					
*		0.183	Pervious Area"					
1		90.000	Pervious lengt	h"				
3		2.100	Pervious slope					
		0.548	Impervious Area	a*•• "				
		2 100	Impervious reng	gun "				
		0.250	Pervious Manni	na 'n'				
×		76.000	Pervious SCS Cr	urve N	o."			
		0.416	Pervious Runof	f coef	ficient"			
		0.100	Pervious Ia/S	coeffi	cient"			
1		8.021	Pervious Initia	al abs	traction"			
÷		0.015	Impervious Man	ning '	n'"			
0		98.000	Impervious SCS	Curve	NO."			
		0.912	Impervious Ta/	S coaf	ficient"			
		0.518	Impervious Ini	tial a	hstraction			
		0.010	0.253	0.000	0.629	2,497	c.m/sec"	
		Ca	tchment 217		Pervious	Imperviou	s Total Area	
*		Su	rface Area		0.183	0.548	0.730	hectare"
8		Ti	me of concentrat	tion	23.981	3.134	5.885	minutes"
2		Ti	me to Centroid		123.466	88,626	93.222	minutes"
្ហ		Ha	infall volumo		1/1.443	//.443	77.443	mm."
		Ra	infall losses		45 245	6 821	16 427	C.III mm*
		Ru	noff depth		32.198	70.622	61.016	mm =
t,		Ru	noff volume		58.76	386,65	445.41	c.m"
		Ru	noff coefficient	t	0.416	0.912	0.788	
		Ma	ximum flow		0.019	0.251	0.253	c.m/sec"
	40	HY	DROGRAPH Add Rur	noff "				
5		4	Add Runoff					
਼	40	104	0.253	0,253	0.629	2.497		
7	40	MY P	DRUGHAPH CODY TO	ο Ουττ	TOM.			
		0	0 253	0 263	0.253	2 407		
٠	40	нү	DROGRAPH Comb	ine	4"	2.401		
٠		6	Combine "					
		4	Node #"					
٠			INLET 3"		0			
2		Ma	ximum flow		2.5	63 c.m/:	sec"	
2		Hy	drograph volume	0.070	13040.8	13 c.m"		
	40	цv	U.253 DROGRAPH Cooff	0.253	0.253	2,563		
		7	Confluence "		-			

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	2 Nodo #*			0.050 Ponvious Manzing Lott
				0,250 relyious Maining ()
	Maximum flow 1 807	c m/sec*		0.46 Pervious Bunoff coefficient"
÷	Hydrograph volume 1955.424	c.m"		0.100 Pervious Ta/S coefficient*
98 - C	0.253 1.807 0.253	0.000"		8.021 Pervious Initial abstraction"
* 40	HYDROGRAPH Copy to Outflow"	01000	(•)	0.015 Impervious Maning 'n'"
	8 Copy to Outflow"			98.000 Impervious SCS Curve No."
	0,253 1.807 1,807	0.000"		0.917 Impervious Runoff coefficient"
* 40	HYDROGRAPH Combine 5"			0.100 Impervious Ia/S coefficient"
	6 Combine "		H)	0.518 Impervious Initial abstraction"
	5 Node #"			5.002 0.000 2.563 5.209 c.m/sec*
	u/s of HWY 7&8"		•	Catchment 223 Pervious Impervious Total Area *
	Maximum flow 1.807	c.m/sec"		Surface Area 1.885 10,684 12.570 hectare"
3800	Hydrograph volume 19555.424	C.m"	*	Time of concentration 29.959 3.916 5.845 minutes"
	0.253 1.807 1.807	1.807"		Time to Centroid 130.975 89.753 92.806 minutes"
* 40	HYDROGRAPH Confluence 3"		•	Rainfall depth 77.443 77.443 77.443 mm"
	7 Confluence "			Rainfall volume 1460.18 8274.37 9734.55 c.m"
	3 Node #"		•	Rainfall losses 45.241 6.410 12.235 mm"
	INLET 2"		•	Runoff depth 32.202 71.032 65.208 mm*
	Maximum flow 0.913	c.m/sec"		Runoff volume 607.16 7589.46 8196.62 c.m"
÷	Hydrograph volume 4557.905	с. "п"		Runoff coefficient 0.416 0.917 0.842 "
	0.253 0.913 1.807	0,000"		Maximum flow 0.170 4.959 5.002 c.m/sec"
* 40	HYDROGRAPH Copy to Outflow*		- 40	HYDROGRAPH Add Runoff *
- C	8 Copy to Outflow"			4 Add Runoff "
10 in	0.253 0.913 0.913	0.000"		5.002 5.002 2.563 5.209
40	HYDROGRAPH Combine 5"		- 40	HYDROGRAPH Copy to Outflow
	6 Compine -			8 Copy to Outflow - Copy - Copy
	5 NODE #"			UND201012 5.002 5.002 5.209
	U/S UL HWT /20"		40	HTDHOGRAPH COMDINE 5
and the second s	Waximum Tiow 2.007	c.m/sec		
(w))	0 253 0 013 0 013	0.667"		
* 40	HYDROGRAPH Confluence 4"	2.007		Novim flow 9101 c m/sec"
	7 Confluence "			Hydrograph volume 45350 754 c.m.
· · · · ·	4 Node #"		2 C	5.002 5.002 9.101"
	INLET 3"		* 81	ADD COMMENT=================================
2.83	Maximum flow 2.563	c.m/sec"		3 Lines of comment"
	Hydrograph volume 13040.811	c.m"	*	***************************************
18 C	0.253 2.563 0.913	0.000"		Catchments east of Hamilton Road, part of Inlet #4"
* 40	HYDROGRAPH Copy to Outflow"		*	*******
3 4 5	8 Copy to Outflow ^a		* 40	HYDROGRAPH Start - New Tributary"
	0.253 2.563 2.563	0.000"	5	2 Start - New Tributary"
* 40	HYDROGRAPH Combine 5"			5.002 0.000 5.002 9.101"
	6 Combine "		* 33	CATCHMENT 218
	5 Node #"		•	1 Triangular SCS"
15	u/s of HWY 7&8"			1 Equal length"
1.5	Maximum flow 5.209	c.m/sec		A SCS method
÷.	Hydrograph volume 37154.141	C.m"		218 Ironbridge Manufacturing Property
. 40	U.253 2.563 2.563	5.209"		85.000 % Impervious"
40	A Stort New Tributery		<u>_</u>	22.060 Fotal Area
	2 Start - New Tributary	5 000	<u> </u>	230,000 FIOW length
(#) sa	CATCHMENT 2225	5.209		
. 33	1 Triangulan SCS"			0.309 Fervious Area
	1 Fougl length		ŝ.	3.000 Pervious slope"
3 4 1	1. SCS method"			1.751 Impervious Area"
000	223 New Hamburgin Inc. lends"			230.000 Impervious length"
* 85	5.000 % Impervious"		31	3.000 Impervious slope"
12	2.570 Total Area"			0.250 Pervious Manning 'n'"
90	.000 Flow length"			76,000 Pervious SCS Curve No."
0.00	.000 Overland Slope'		Ψ.	0.446 Pervious Runoff coefficient"
27) I	.885 Pervious Area"			0.060 Pervious Ia/S coefficient"
* 90	.000 Pervious length"			4.813 Pervious Initial abstraction"
	.000 Pervious slope			0.015 Impervious Manning 'n'"
··· 10	.684 Impervious Area"			98.000 Impervious SCS Curve No."
* 90	.000 Impervious length"			0.924 Impervious Runoff coefficient
0.50	.000 Impervious slope"			0.100 Impervious Ia/S coefficient"

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D:145601104:SWAMMIDUSSPost14696-104_Post-050yr.out Printed at 15:36 on 18 Dec 2018 0.617 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' minutes' Rainfall depth 77.443 77.443 mm' Rainfall volume 299.30 1356.02 1585.32 c.m' Rainfall losses 42.337 5.915 11.468 mm' Runoff depth 34.506 71.528 65.975 mm' Runoff volume 106.62 1282.46 1389.08 c.m' Munoff depth 0.924 0.842 0.847 c.m/sec' 4 Add Runoff ' 0.847 0.026 0.842 0.847 c.m/sec' 4.094 Target outflow c.m/sec' 4.094 Target outflow c.m/sec' 345.700 Winimum water level metre' 344.700 0.1280 0.000 344.800 0.1280 9.000 344.800 0.1280 9.000 344.900 0.1280 9.000 344.500 0.1280 9.000 344.500 0.1280 9.000 344.500 0.1280 9.000 345.100 0.2270 9.000 345.500 0.2280 9.000 345.500 0.2280 9.000 345.500 0.2280 971.000 345.500 0.2280 1155.000 345.500 0.2280 1155.000 345.500 0.2280 1155.000 345.500 0.2840 1355.000 345.500 0.2840 1355.000 345.600 0.2860 1571.000 345.600 0.2860 1355.000 345.600 0.2860 1355.	Page 19	C1343661104/SVMMIMIOUSSiPoet34696-104_Post-050yr.out Printed at 15.35 on 18 Dec 2018 3.000 Pervious slope" 1.088 Impervious length" 3.000 Impervious length" 3.000 Impervious length" 3.000 Impervious Scorve No." 0.281 Pervious Tail abstraction" 0.281 Pervious ScS Curve No." 0.281 Pervious ScS Curve No." 0.101 Impervious Tail abstraction" 0.101 Impervious Tail 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 to Centroid 128.540 87.719 99.764 minutes" Time to Centroid 128.540 87.719 89.764 minutes" 101 Time to Centroid 128.540 87.719 89.764 minutes" 101 Time to Centroid 128.540 87.719 89.764 minutes" 101 Time to Centroid 12.322 2.525 13.673 minutes" 102 Comment 190 0.191 0.521 0.521 0.521 0.521 0.521 0.771 63.455 mm' Runoff depth 22.282 70.721 63.455 mm' Runoff volume 42.78 759.45 812.23 c.m" Runoff volume 42.78 759.45 812.23 c.m" Runoff volume 42.71 9.329' 40 HYDROGRAPH Ad Runoff " 4 Add Runoff " 4 Add Runoff " 5 Node " 1 U/SROGRAPH Copy to Outflow" 6 Copy to Outflow" 5 Sole Thoid 0.521 0.5	Page 20
5 Node #" u/s of HWY 7&8" Maximum flow 9.329 c.m/sec" Hydrograph volume 46701.293 c.m" 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"		 0.500 Total Area" 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 length" 60.000 Impervious Slope" 0.250 Pervious Manning 'n'" 74.000 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8.924 Pervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.918 Impervious SCS Curve No." 0.918 Impervious SCS coefficient" 0.100 Impervious SCS Curve No." 0.918 Impervious Initial abstraction" 0.518 Impervious Initial abstraction" 	

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	0.064 0.00	0 0 521	0 700			
÷	Catchment 220	Pervious	J./JU	Total Area		
	Surface Area	0.460	0.040	0.500	hectare"	
34 - C	Time of concentration	15.072	1.894	12.802	minutes"	
	Time to Centroid	112.666	86.772	108.204	minutes"	
6	Rainfall depth	77.443	77.443	77.443	" " "	
S	Rainfall volume	356.24	30.98	387.21	C.m."	
	Raintall Losses	47.736	6.331	44.424	៣៣ "	
÷	Runott depth	29.707	71.112	33.019	mm"	
	Runoff coefficient	0 384	20.44	0 426	C.0."	
	Maximum flow	0.058	0.020	0 064	c m/sec"	
* 40	HYDROGRAPH Add Runoff	"	01020	0.001	01117,000	
(*)	4 Add Runoff "					
	0.064 0.06	4 0.521	9.790"			
* 40	HYDROGRAPH Copy to Out	flow"				
	B Copy to Outflow"					
1011	0,064 0.06	4 0.064	9.790"			
- 40	HYDHUGRAPH Combine	5"				
	5 Vondine "					
(0)	U/S of HWV 7&P"					
	Maximum flow	9.8	35 c.m/s	ec"		
	Hydrograph volume	47678.6	13 c.m"			
	0.064 0.06	4 0.064	9,835"			
* 40	HYDROGRAPH Start - New	Tributary"				
(#C)	2 Start - New Tributa	ry*				
S	0.064 0.00	0.064	9,835"			
33	CATCHMENT 221"					
	1 Inlangular SCS" 1 Equal logath"					
	1 SCS method"					
	221 Proposed BOW from H	amilton Boa	d"			
141	81.500 % Impervious"		-			
3 # 10	0.810 Total Area"					
	40.000 Flow length*					
<u>.</u>	2.000 Overland Slope"					
÷.	0.150 Pervious Area"					
	40.000 Pervious length"					
	2.000 Pervious slope"					
	40.000 Impervious length"					
A	2 000 Impervious slore"					
00	0.250 Pervious Manning 'r	1.4				
	76.000 Pervious SCS Curve	No."				
	0.415 Pervious Runoff coe	fficient"				
	0.100 Pervious Ia/S coeff	'icient"				
	8.021 Pervious Initial at	straction"				
- C	0.015 Impervious Manning	'n'"				
<u>_</u>	98.000 Impervious SCS Curv	e No."				
Sec.	0.100 Impervious To/S coo	oerricient"				
	0.518 Impervious Initial	abstraction				
	0.328 0.00	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*	
1	Raintail losses	45,278	6.397	13.590	៣៣ " ៣៣ "	
1	Runoff volume	32.105	/1.045	03.852	HIM "	
	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 "					

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		0.326 0.328 0.064 9.835"	
•	40	HYDROGRAPH Copy to Outflow®	
2		8 Copy to Outflow"	
	40	U.328 U.328 U.328 9.835" HYDROGRAPH Combine 5"	
•		6 Combine "	
1		5 Node #"	
		U/S OT HWY 748" Maximum flow 10.117 c.m/sec"	
٠		Hydrograph volume 48195.820 c.m"	
1	0.4	0.328 0.328 0.328 10.117"	V
	01	3 Lines of comment"	
۲		*******	* "
1		Catchment to Inlet #5°	
ì	40	HYDROGRAPH Start - New Tributary"	
•		2 Start - New Tributary"	
Ì	~~	0.328 0.000 0.328 10.117"	
	33	1 Triangular SCS"	
•		1 Equal length"	
2		1 SCS method" 2020 - Deep words from Hemilton Heights Subdivision"	
•		5.000 % Impervious"	
•		1.080 Total Area"	
2		20.000 Flow length"	
ĕ		1.026 Pervious Area"	
•		20.000 Pervious length"	
2		3.000 Pervious slope"	
		20.000 Impervious length"	
•		3.000 Impervious slope"	
2		0.250 Pervious Manning 'n'" 76.000 Barvious SCS Curve No."	
•		0.414 Pervious Runoff coefficient"	
•		0.100 Pervious Ia/S coefficient"	
:		8.021 Pervious Initial abstraction" 0.015 Imporvious Manning 'p'"	
•		98.000 Impervious SCS Curve No."	
•		0.908 Impervious Runoff coefficient"	
:		0.100 Impervious Ia/S coefficient"	
•		0.192 0.000 0.328 10.117 c.m/s	ec"
1		Catchment 222 Pervious Impervious Tota	l Area "
2		Surface Area 1.026 0.054 1.08 Time of concentration 8 739 1 142 7 95	0 hectare"
٠		Time to Centroid 104.291 85.784 102.	375 minutes"
2		Rainfall depth 77.443 77.443 77.4	43 mm"
ĩ		Haintall volume 794.56 41.62 836. Rainfall losses 45.378 7.102 43.4	38 C.M" .64 mm"
٠		Runoff depth 32.065 70.341 33.9	78 mm*
ŝ		Runoff volume 328.98 37.98 366.	97 c.m"
•		Maximum flow 0.180 0.028 0.19	la c.m/sec"
•	40	HYDROGRAPH Add Runoff "	,
:		4 Add Runoff "	
	40	U.192 U.192 U.328 10.117" HYDROGRAPH Copy to Outflow"	
٠		8 Copy to Outflow"	
Č,	40	0.192 0.192 0.192 10.117"	
2	40	HIDRUGHAPH COMDINE 5" 6 Combine "	
•		5 Node #"	
•		u/s of HWY 7&8"	

10.292 c.m/sec"

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Maximum flow

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	Hydrograph volume	48562	.785 c.m				* 81
	0.192 0.1	92 0.19	92 10.29	2"			
61	ADD COMMENT======				*******		
	3 Lines of comment"						
	Bedanview Development	e Too loo	ie I				
	Dedellatem Devetobilell	S Inc. Land					
40	HYDROGRAPH Start - Ne	w Tributary	/"				2 4
	2 Start - New Tribut	ary"	·				
	0.192 0.0	0.19	92 10.29	2 "			54
33	CATCHMENT 224"						
	Triangular SCS						
	1 Equal length-						7
	224 Badenview lands"						a
	85.000 % Impervious"						. 3
	43.200 Total Area"						* 3
	90.000 Flow length*						<u>.</u>
	1.000 Overland Slope"						÷
	6.480 Pervious Area"						
	1.000 Pervious slope"						
	36.720 Impervious Area"						
	90.000 Impervious length'	i i i i i i i i i i i i i i i i i i i					
	1.000 Impervious slope"						
	0.250 Pervious Manning	'n'"					
	76.000 Pervious SCS Curve	No."					÷
	0.416 Pervious Runoff co	efficient"					÷ .
	8 021 Pervious Taitial	Ticlent -	•				
	0.015 Impervious Manning	1 'n'"					
	98.000 Impervious SCS Cur	ve No."					
	0.917 Impervious Runoff	coefficient					
	0.100 Impervious Ia/S co	efficient"					÷
	0.518 Impervious Initial	abstractio					- C
	17.192 U.U	Porvious	10.29	2 C.M/Sec ⁻			<u>.</u>
	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		ē.
	Haintall losses	45,241	5,410	12.235	mm		- 2
	Bunoff volume	0 2087	2 6083	2 8170	mm be-m		÷
	Runoff coefficient	0.416	0.917	0.842			. #
	Maximum flow	0.585	17.042	17.192	c.m/sec"		
40	HYDROGRAPH Add Runof1						
	4 Add Runoff "						
	17.192 17.1	92 0.19	92 10.292	2			
40	HYDROGHAPH Copy to OL B Copy to Outflow"	ITTIOW"					<u> </u>
	17.192 17 1	92 17.10	10 200				
40	HYDROGRAPH Combine	5"	- 101201	-			
	6 Combine "						
	5 Node #*						
	u/s of HWY 7&8"						
	Maximum flow	27.	465 C.m	sec"			
	пучгоугарп votume 17 102 17 1	/b/32. 02 17 10	003 C.M	E #			
40	HYDROGRAPH Confluer	ce 5"	∠ ∠/,403				- 40
	7 Confluence "	··· ·					*
	5 Node #"						
	u/s of HWY 7&8"						
	Maximum flow	27.	485 C.m,	sec"			•
	Hydrograph voiume	76732.	.563 C.M				

\348 inte	96\104\SW d at 15:35	/M\MIDUSS on 18 Dec 2	Posti34896 2018	-104_Post-050y	r.out	in the set		
81	7 L	ADD COMMEN	T======== omment"	*****	****	****	:="	
			*******			****		
	3					***		
			PROPOSED	SWM POND DESIG	âN			
	6							
54	F	POND DESIG	۳.					
	27.485	Current	peak flow	c.m/sec"				
	76732.6	Hydrogra	aph volume	c.m/sec				
	36.	Number (of stages"					
	334.550	Minimum	water leve	1 metre"				
	337.850	Maximum	water leve	l metre"				
	004.550	Keep Des	sion Data:	1 = True: 0 =	False"			
		Level	Discharge	Volume"				
		334.550	0.000	0.000"				
		334.600	0.00400	3607 000"				
		334.800	0.06350	6090.000"				
		334.900	0.08900	8636.000"				
		335.000	0.1880	11246.00"				
		335.200	0.3430	16658.00"				
		335.300	0.7599	19459.00"				
		335.400	1.011	22323.00"				
		335,500	1.286	25249.00"				
		335.000	1,901	31294.00"				
		335,800	2.238	34414.00"				
		335.900	2.593	37599.00"				
		336.000	2.966	40851.00"				
		336.200	3.959	46848.00"				
		336.300	4.543	50286.00"				
		336.400	5.171	53779.00"				
		336.600	6.544	60933.00"				
		336.700	7.284	64595,00"				
		336.800	8.055	68313.00"				
		336.900	8.858	72088.00*				
		337.100	10.550	79809.00"				
		337.200	11.437	83755.00"				
		337.300	12.351	87759.00"				
		337.400	13.291	91821.00"				
		337.550	14.746	98022.00"				
		337.600	16.027	100118.0"				
		337.700	20.027	104352.0"				
		337.800	25.280	110810.0"				
	F	eak outflo	w	3,555	c.m/sec"			
	N	laximum lev	/el	336.124	metre"			
	N	lax1mum sto	lag	44286.559	C.M"			
		17.192	27,485	3,555	0.000 c.m/se	c*		
40	н	YDROGRAPH	Combine	12"	,			
	6	Combine						
	12	d/s of F	roposed SW	MF"				
	M	laximum flo)W	3,555	c.m/sec*	8		
	н	lydrograph	volume	68359.266	c.m*			
		17.1	92 27.4	85 3.555	3.555			

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* 81 ADD COMMENT===================================	8.021 Pervious Initial abstraction*
* 3 Lines of comment*	 0.015 Impervious Manning 'n'"
* ************************************	98.000 Impervious SCS Curve No."
Cutcomments to inlet #b"	0.123 Impervious Hunort Coerticient"
40 HYDROGRAPH Start - New Tributary"	0.516 Impervious fait destruction
 Start - New Tributary" 	0.463 2.122 3.555 3.555 c.m/sec"
17.192 0.000 3.555 3.555	Catchment 261 Pervious Impervious Total Area
33 CATCHMENT 260°	Surface Area 1,598 0,752 2,350 hectare"
3 Specify values*	Time to Centroid 113.448 91.205 102.069 minutes"
1 SCS method"	 Rainfall depth 77.443 77.443 77.443 mm"
260 Hamilton Heights Subdivision"	Rainfall volume 1237.54 582.37 1819.90 c.m"
46.000 % Impervious"	Rainfall losses 45.309 5.928 32.707 mm*
5,000 Flow Pagth	"Runoff volume 513.49 537.79 1051.28 c.m"
1.000 Overland Slope"	Runoff coefficient 0.415 0.923 0.578
4.406 Pervious Area"	* Maximum flow 0.213 0.362 0.463 c.m/sec"
50.000 Pervious length"	40 HYDROGRAPH Add Runoff "
3.000 Pervious slope"	A Add Runott *
2 32.000 Impervious Jenath*	40 HYDROGRAPH Copy to Outflow"
1.500 Impervious slope"	8 Copy to Outflow"
 0.250 Pervious Manning 'n'" 	• 0.463 2.585 2.585 3.555"
76.000 Pervious SCS Curve No."	* 40 HYDROGRAPH Combine 12"
0.415 Pervious Runott coefficient"	6 Combine "
 0.100 Pervious Tais coefficient 8.021 Pervious Initial abstraction* 	d/s of Proposed SWMF*
0.015 Impervious Manning 'a'"	Maximum flow 3.764 c.m/sec"
98.000 Impervious SCS Curve No."	Hydrograph volume 73517.547 c.m"
0.925 Impervious Runoff coefficient"	0.463 2.585 2.585 3.764"
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Start - New Tributary"
- 0.516 impervious initial abstraction-	2 Start - New Fraducary
Catchment 260 Pervious Impervious Total Area "	• 33 CATCHMENT 225*
Surface Area 4.406 3.754 8.160 hectare"	1 Triangular SCS"
Time of concentration 15.144 6.120 9.235 minutes	1 Equal length
Time to Centroid 112:357 92.817 99.561 minutes"	SCS method"
Bainfall volume 3412.44 2906.89 6319.33 c.m."	* 30.000 % Therevious*
Rainfall losses 45.272 5.794 27.112 mm"	1.670 Total Area*
"Runoff depth 32.171 71.649 50.331 mm"	* 75.000 Flow length*
Runoff volume 1417.58 2689.42 4107.00 c.m"	2.000 Overland Slope"
HUNDIT COETICIENT 0.415 0.925 0.650 "	- 1.159 Pervious Area"
* 40 HYDROGRAPH Add Runoff *	2.000 Pervious Slope"
4 Add Runoff "	0.501 Impervious Area"
2.122 2.122 3.555 3.555"	75.000 Impervious length"
33 CATCHMENT 261"	2.000 Impervious slope
	TA OO Pervious SCS Curve No *
1 SCS method"	0.384 Pervious Runoff coefficient"
261 Klassen Bronze Property"	0.100 Pervious Ia/S coefficient"
32.000 % Impervious"	8.924 Pervious Initial abstraction
2,350 Total Area"	0.015 Impervious Manning 'n'
2 500 Overland Slope"	90.000 Impervious Sec Curve No.
1.598 Pervious Area"	0.100 Impervious Ia/S coefficient"
* 50.000 Pervious length*	 0.518 Impervious Initial abstraction"
2.500 Pervious slope"	0.255 0.000 2.585 3.764 c.m/sec*
U./52 IMPERVIOUS Area"	 Catcomment 225 Supfong Appa 1 150 1 511 1 512 1 513
1.500 Impervious sloce"	Time of concentration 22,683 2,851 12,689 minutes"
• 0.250 Pervious Manning 'n'"	 Time to Centroid 122.160 88.218 105.055 minutes"
76.000 Pervious SCS Curve No."	Rainfall depth 77.443 77.443 77.443 mm*
0.415 Pervious Runoff coefficient"	Rainfall volume 905.31 387.99 1293.29 c.m [*]
U.100 Pervious Ia/S coetticient"	HAINTALL LOSSES 47.733 7.020 35.519 MM [*]

Printed	d at 15:35 on 18 Dec 2018	이 제외 옷기를		12112		24 X 10 시 나프로 한
	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		
40	HYDROGRAPH Add Runo	U.117 ff "	0.234	0.255	c.m/sec"	
40	4 Add Runoff *					
	0.255 0	.255 2.58	3.764			
40	HYDROGRAPH Copy to	Outflow"				
	8 Copy to Outriow"	255 0.25	5 3 764			
40	HYDROGRAPH Combin	e 12"				
	6 Combine "					
	12 Node #"	0.0151				
	d/s of Proposed Maximum flow	SWMF"	901 o m/s			
	Hydrograph volume	74217.	680 c.m*	560		
	0.255 0	.255 0.25	5 3.801	n		
61	ADD COMMENT=======				*****	
	3 Lines of comment"					
	Western catchment a	long Hamilton	Road, dive	rted to Inle	et #6"	
	****************		*********			
40	HYDROGRAPH Start -	New Tributary				
	2 Start - New Trib	utary"	a 901			
33	CATCHMENT 270"	.000 0.25	5 3.601			
	1 Triangular SCS"					
	3 Specify values"					
	1 SCS method" 270 Industrial/Posid	ontial area a	loog Hamilt	D. Road		
	55.000 % Impervious"	ential alea a	LIUNG HANIIIG	JII NUAU		
	8.450 Total Area					
	45.000 Flow length"					
	2.000 Overland Slope"					
	30.000 Pervious length"					
	3.000 Pervious slope"					
	4.648 Impervious Area"					
	235.000 Impervious lengt	h"				
	0.250 Pervious Manning	1014				
	76.000 Pervious SCS Cur	ve No."				
	0.415 Pervious Runoff	coefficient"				
	0.100 Pervious Ia/S co	efficient"				
	0.015 Tepervious Mappi	abstraction"				
	98.000 Impervious SCS C	urve No."				
	0.925 Impervious Runof	f coefficient				
	0.100 Impervious Ia/S	coefficient*	- 1			
	0.518 Impervious Initi	al abstractio	n" 5 3 901	0		
	Catchment 270	Pervious	Impervious	s Total Area		
	Surface Area	3.802	4.648	8.450	hectare"	
	Time of concentrati	on 11.146	6.167	7.504	minutes"	
	Time to Centroid	107.313	92.882	96.757	minutes"	
	Rainfall volume	2944 76	3599 15	6543 01	000- 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	-	
40	MEXIMUM TIOW	0.59/ ff "	2.238	2.084	c.m/sec-	
-10	4 Add Runoff *					
	2.684 2	.684 0.25	5 3.801			
	DTUCOOTOUR					

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2

O P	:\348 rintec	96\104\SW/ 1 at 15:35 o	NMIDUSS\Post\348 n 18 Dec 2018	96-104_Post-050y	r.out	
(#)		1.560	Overflow thresh	old"		
		1.000	Required divert	ed fraction"		
*		0	Conduit type; 1	=Pipe;2=Channel"		
		Pe	eak of diverted f	low 1.124	c.m/sec"	
		Vo	olume of diverted	flow 630.529) c.m"	
2		DI	V00006.050hyd"			
ੁ		Ma	ijor flow at 6"			
14	40	LIN.	Z.004 /	2.084 1.500	3.801 C.M/Sec*	
	40	6	Combine "	le 9		
		9	Node #"			
		0	NODE B"			
		Ma	ximum flow	1.560) c.m/sec"	
		Hy	/drograph volume	3920.710) C.m"	
		-	2.684	2.684 1.560	1.560"	
	40	H)	DROGRAPH Start -	New Tributary"		
		2	Start - New Tri	outary"		
0			2.684 (0.000 1.560	1.560"	
0	47	FJ	LEI_U Head/Open I	01V00006.050hyd"		
		1	1=read/open; 2=	write/save" /docepoob"		
		1	1=runoff: 2=inf	low: 3=outflow: /	=iunction"	
		נס	V00006.050hvd"	104, 0+04(1104, -	Junetion	
		Ma	ior flow at 6"			
		Тс	tal volume	630.529) c.m"	
		Ma	lximum flow	1.124	c.m/sec"	
			1,124 0.00	1.560	1.560 c.m/sec"	
3	40	H	DROGRAPH Add Rund	off "		
		4	Add Runoff "			
9	40	10	1.124	1.124 1.560	1.560"	
	40		CODY to Outflow	OUTTIOW"		
		0	1 124	1 104 1 104	1 560*	
18	40	HY	DROGRAPH Combin	ne 12"	1.000	
		6	Combine "			
		12	Node #"			
÷.			d/s of Proposed	SWMF"		
1		Ma	ximum flow	4.607	C.m/sec"	
5		Hy	drograph volume	74848.211	C.M"	
3	40	10	1.124	1.124 1.124	4.607	
	40	7	Confluence "	lence 12"		
		12	Node #"			
			d/s of Proposed	SWMF*		
		Ма	ximum flow	4.607	c.m/sec"	
2		Ну	drograph volume	74848.211	C.M"	
1			1.124 4	1.607 1.124	0,000"	
÷.	54	PC	ND DESIGN*			
З.		4.607	Current peak flo	ow c.m/sec"		
2		0.070	larget outtiow	c.m/sec"		
		/4040.2	Number of stores			
		334.290	Minimum water le	vel metre"		
		337,000	Maximum water le	vel metre"		
٠		334.290	Starting water]	level metre"		
		0	Keep Design Data	a: 1 = True; 0 =	False"	
			Level Discharg	je Volume"		5
			334.290 0.00	0.000 °		
1			334.500 0.254	5.000		
1			335.000 1.30	110.000"		
			335.500 2.80			
			336 500 6 40	30 3748 000*		
٠			336,550 6.66	5 3967.000"		
			337.000 23.48	4 6569.000"		
•		Pe	ak outflow	3.764	c.m/sec"	
•		Ma	ximum level	335.762	metre"	

Q:\3489 Printed	96/104/SWM/MIDUSSIPost/34596-104_Post-050yr.out Page 29 I at 15:35 on 18 Dec 2018 Page 29	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-050yr.out Printed at 15:35 on 18 Dec 2018											
•	Maximum storage 1321.965 c.m" Centroidal lag 6.043 hours"	- 40	Maximum flow 0.101 0.082 0.169 c.m/sec* HYDROGRAPH Add Bunoff "										
*	1.124 4.607 3.764 0.000 c.m/sec"		4 Add Runoff "										
40	HYDROGRAPH Next link "	•	0.169 0.169 3.764 3.764"										
	5 Next Link "	54	POND DESIGN'										
* 56	DIVERSION"		0.109 GUPTENT peak TLOW C.M/Sec [*]										
•	7 Node number"		315.1 Hydroaraph volume c.m"										
	7.170 Overflow threshold"		8. Number of stages"										
	1.000 Required diverted fraction"	*	0.000 Minimum water level metre"										
	0 Conduit type; 1=Pipe;2=Channel" Pook of diverted flow	-	0.750 Maximum water level metre"										
	Volume of diverted flow 0.000 c.m"		0.000 Starting water level metre: 0. Keen Design Data: 1 = True: 0 = False"										
	DIV00007.050hyd*		Level Discharge Volume"										
•):	Major flow at 7"	*	0.000 0.000 0.000"										
	1.124 3.764 3.764 0.000 c.m/sec"		0.1500 0.00400 1.000"										
- 40	HYDHOGHAPH COMDINE 8"		0.2500 0.00600 8.000"										
٠	8 Node #"		0.4500 0.00000 69.000*										
.	NODE A"		0.6500 0.01000 178.000"										
:	Maximum flow 3.764 c.m/sec"		0.7000 0.1060 208.000*										
	Hydrograph volume 74845.594 c.m"		0.7500 0.2810 240.000°										
. 81	ADD COMPT	*	Maximum level 0.670 metre"										
	3 Lines of comment"	*	Maximum storage 189,902 c.m"										
ð -	***************************************	÷	Centroidal lag 4.278 hours"										
	Catchments South of Hwy 7/8"		0.169 0.169 0.048 3.764 c.m/sec*										
* 40	HVDROGRAPH Start - New Tributary"	- 40	HYDRUGHAPH COMDINE 9" 6 Combine "										
	2 Start - New Tributary"		9 Node #"										
	1,124 0.000 3.764 3.764"		NODE B"										
* 33	CATCHMENT 280"		Maximum flow 1.569 c.m/sec*										
÷ .	1 Triangular SCS" 3 Specify values"		Hydrograph volume 4234.678 c.m"										
	1 SCS method"	* 40	HYDROGRAPH Start - New Tributary"										
	280 Northeast portion of Maple Leaf Foods property"		2 Start - New Tributary"										
	26.000 % Impervious"	•	0.169 0.000 0.048 1.569"										
÷	U.700 Flow Leasth"	- 33	CATCHMENT 281*										
	1.500 Overland Slope"		3 Specify values"										
•	0.518 Pervious Area"		1 SCS method"										
÷ .	20.000 Pervious length"		281 Western portion of John Bear property"										
	2.000 Pervious slope" 0.182 Impositious Acces		93.000 % Impervious"										
•	68.000 Impervious lencth"		120.000 Flow length"										
÷.	1.000 Impervious slope"	5 E	1.000 Overland Slope"										
÷ –	0.250 Pervious Manning 'n'"	÷	0.131 Pervious Area										
	/9,000 PERVIOUS SUG CUTVE NO." 0.455 Pervious Runoff coefficient"	- C	20.000 Pervious length"										
	0.100 Pervious Ia/S coefficient"		1.739 Impervious Area"										
•	6.752 Pervious Initial abstraction"		112.000 Impervious length"										
	0.015 Impervious Manning 'n'"		1.000 Impervious slope"										
÷ .	98.000 Impervious SCS Curve No."	:	0.250 Pervious Manning 'n'"										
	0.100 Impervious Ia/S coefficient"		0.261 Pervious Sus Curve No										
*	0.518 Impervious Initial abstraction		0.100 Pervious Ia/S coefficient"										
	0.169 0.000 3.764 3.764 c.m/sec"		13.677 Pervious Initial abstraction"										
	Catonment 280 Pervious Impervious Total Area Surface Area 0.518 0.192 0.700 bestere"		0.015 Impervious Manning 'n'"										
	Time of concentration 9.328 3.310 6.671 minutes"		90.000 Impervious SCS CUIVE NO." 0.923 Impervious Bunoff coefficient"										
	Time to Centroid 104.332 88.880 98.024 minutes"		0.100 Impervious Ia/S coefficient [®]										
	Rainfall depth 77.443 77.443 mm*		0.518 Impervious Initial abstraction"										
2	Rainfall volume 401.15 140.95 542.10 c.m" Bainfall Jappon 41 454 6 755 20.425		0.832 0.000 0.048 1.569 c.m/sec"										
	naineail 19595 41.494 5.755 32.435 MM ⁻ Runoff depth 35.989 70.678 45.008 mm ⁺	2	valonment 201 - Pervious Impérvious Iotal Area - Surface Area										
*	Runoff volume 186.42 128.63 315.06 c.m"	×	Time of concentration 12.513 4.465 4.632 minutes"										
•	Runoff coefficient 0.465 0.913 0.581 *		Time to Centroid 111.346 90.506 90.940 minutes"										
THE REAL PROPERTY AND INCOME.	15:35 on 18 Dec 2018			1.5 P.S			Printed a	t 15:35 o	n 18 Dec 2018			Jucat	1-1
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	Rainfall depth	77.443	77.443	77.443	mm*		æ		0.387	0.00	0 0.548	2.11	16 c.m/s
	Rainfall volume	101.37	1346.81	1448.18	C.m"			Cr	atchment 282		Pervious	Impervio	ous Tota
	Rainfall losses	57.250	5.949	9.540	mm."			St	urface Area		0.375	0.835	1.21
	Runoff depth	20.193	71.493	67.902	mm *			T.	ime of concentr	ation	14.132	3.181	4.43
	Runoff volume	26.43	1243.34	1269.78	C.m"		2.4.0	T.	ime to Centroid		113.260	88.692	91.4
	Runoff coefficient	0.261	0.923	0.877				Ra	ainfall depth		77.443	77.443	77.4
	Maximum flow	0.012	0.826	0.832	c.m/sec"			Ra	ainfall volume		290.49	646.57	937
40	HYDROGRAPH Add Runoff							Ra	ainfall losses		57.190	6.798	22.
	4 Add Runoff "							Ri	unoff depth		20.253	70.645	55.
	0.832 0.8	32 0.04	8 1.569				30	Ri	unoff volume		75.97	589.81	665
54	POND DESIGN"							Ru	unoff coefficie	nt	0.262	0.912	0.7
C	1.832 Current peak flow	c.m/sec"					•	Ma	aximum flow		0.032	0.382	0.3
0	.070 Target outflow	c.m/sec"					* 40	۲H	/DROGRAPH Add R	unoff			
12	69.8 Hydrograph volume	c.m°						4	Add Runoff "				
	Number of stages"								0.387	0,38	7 0.548	2.11	6"
0	.000 Minimum water leve	l metre"					* 54	PC	OND DESIGN"				
1	.800 Maximum water level	l metre"						0.387	Current peak	flow	c.m/sec"		
(.000 Starting water lev	el metre					2.00	0.070	Target outflo	w c	.m/sec"		
	0 Keep Design Data:	1 = True; 0	= False"					665.8	Hydrograph vo	lume	c.m"		
	Level Discharge	Volume"						5.	Number of sta	aes"			
	0.000 0.000	0.000"						0.000	Minimum water	level	metre"		
	0.3000 0.09000	8,000"					200	1.400	Maximum water	level	metre"		
	0.6000 0.1200	97,000"						0.000	Starting wate	r leve	1 metre*		
	0.9000 0.1300	167.000"						0	Keen Design D	ata 1	= True: 0	= False"	
	1,200 0,1400	254.000"					29 C	v	Level Disch	arne	Volume"	- 14100	
	1.500 0.1500	358 000"					36		0 000 0		0.000"		
	1 800 1 000	400.000"							0.000 0 0	1300	276.000"		
	Peak outflow	400.000	548 cm/	sec"					0.3200 0.0	4300	270.000		
	Maximum level	1	694 motr	360 n#					1 300 0.0	9700	271 000		
	Maximum stoppag	205	161 0 m ⁴	-			1941		1,300 0.0	5700	371.000		
	Controidal lag	305.	970 bound				1	D.	1.400 U.	5000	400.000	00 0 -	
		0 540	1 560 0					Fe	ak outitow		0.1	33 C.M	//sec
	0.832 0.832	0.540	1.909 0.1	n/sec			124	Ma	aximum level		1.3	13 met	,re"
	HIDROGRAPH COMDINE	9					140	Ma	iximum storage		374.6	97 c.m	e
	6 Combine "						1.00	Ce	entroidal lag	007	3.0	55 hour	'S"
	9 NODE #"						- St		0.387 0	.387	0.133	2.116 c	:.m/sec
	NODE B"						40	HY	DROGRAPH Com	bine	9"		
	Maximum flow	2.	116 c.m/	sec"			5 H 7.	6	Combine "				
	Hydrograph volume	5436.3	227 c.m"					9	Node #"				
	0.832 0.8	32 0.54	8 2.116						NODE B"				
	HYDROGRAPH Start - New	v Tributary					22	Ma	aximum flow		2.1	83 c.m.	i/sec"
	2 Start - New Tributa	ary"						Hy	/drograph volum	e	6098.4	61 c.m.	1 ⁿ
	0.832 0.00	0.54	8 2.116				(#)		0.387	0.38	7 0.133	2.18	3"
	CATCHMENT 282"						* 40	HY	DROGRAPH Start	- New	Tributary"		
	1 Triangular SCS"							2	Start - New T	ributa	ry"		
	3 Specify values"						141		0.387	0.00	0 0.133	2.18	3"
	1 SCS method*						* 33	C/	ATCHMENT 283"				
	282 Eastern portion of	John Bear	property"				1.00	1	Triangular SC	S"			
69	.000 % Impervious"							з	Specify value	s"			
1	.210 Total Area"						(m)	1	SCS method"				
60	.000 Flow length"						000	283	Area along we	stern ·	tributary.	south of H	Hwy 7/
2	.500 Overland Slope"						(8)	29.000	% Impervious"		,,,		
c	.375 Pervious Area"							23.290	Total Area"				
30	.000 Pervious length"		24				. 1	60 000	Flow length"				
	000 Pervious slope"							2 000	Overland Slee	o "			
	835 Impervious Area"					¥.:		16 536	Popuiana Anon	n			
0	000 Impervious length"							50.000	Pervious Area	+ b #			
	000 Impervious fength							0.000	Pervious teny	LII 0.1			
	250 Parvious Magaing 1						1.01	6 754	Teneruious stop	-			
	000 Populate 808 Current	No."						0.754	Impervious AP	dd Dat⊢"			
05	262 Populaus Busseff to	nu.					. 3	34.000	Impervious le	ng tri "			
0	100 Pervious Runott Co	FICLENT"					- C	2.000	impervious sl	ope"			
0	. TOU PERVIOUS IA/S COET	icient"						0.250	Pervious Mann.	ing 'n			
13	.b// Pervious initial al	straction"						68.300	Pervious SCS	Surve I	No."		
C	.015 Impervious Manning	'n'"						0.303	Pervious Runo	ff coe	fficient"		
0.0	.000 Impervious SCS Cur	/e No."					(Č)	0.100	Pervious Ia/S	coeff	icient"		
96			н					11 789	Penvioue Init	iol ob	otocotion#		
96	.912 Impervious Runoff (coefficient						111100	Leivions IUIC	Tat an	SUBCLION		
96	.912 Impervious Runoff (.100 Impervious Ia/S co	coefficient efficient"					2000	0.015	Impervious Ma	nning	'n'"		

348 nter	st4896\104\SWMIMIDUSS\Post\34896-104_Post-050yr.out Page 32 nted at 15:35 on 18 Dec 2018					
	0.387 0.00	0 0 649	0 116	- m/soc"		
	Catchmont 282	0 0.546	2.110	Totol Apon		
	Suctana Area	0 275	TillbeLATORS	1 Otal Area	bostopol	
	Time of concentration	0.375	0.035	1.210	nectare"	
	Time to Controld	112 260	0.101	4.430	minutes	
	Bainfall denth	77 //9	77 449	77 4490	millioles	
	Rainfall volume	200 /0	646 57	097 06	0 m ⁴	
	Rainfall losses	57 190	6 709	22 /10	o.m	
	Bunoff depth	20 253	70 645	55 023	mm "	
	Bunoff volume	75 97	589 81	665 78	с m ⁿ	
	Bunoff coefficient	0 262	0 912	0 711		
	Maximum flow	0.032	0.382	0.387	c.m/sec*	
0	HYDROGRAPH Add Runoff		0.004	01007	01117,000	
	4 Add Runoff "					
	0.387 0.38	7 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"				
	Number of stages"					
	0.000 Minimum water level	metre"				
	1.400 Maximum water level	metre"				
	0.000 Starting water leve:	l 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	0.13	33 c.m/se	ec"		
	Maximum level	1.3	13 metre			
	Maximum storage	374.69	97 c.m			
	Centroldal lag	3.0	5 hours	/ 0		
~	0.387 0.387	0.133	2.116 C.M.	/sec"		
10	HYDHOGHAPH COMDINE	9.				
	9 Nodo #"					
	NODE R"					
	Maximum flow	0.10				
	Hydrograph yolume	6009.46	50 C.m/30	-0		
	0.987 0.98	7 0 133	2 183"			
0	HYDROGRAPH Start - New	Tributary"	2.100			
	2 Start - New Tributar	rv"				
	0.387 0.000	0,133	2,183"			
13	CATCHMENT 283"					
	1 Triangular SCS"					
	3 Specify values"					
	1 SCS method"					
	283 Area along western 1	tributary, s	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 M	No."				
	0.303 Pervious Runoff coet	fficient"				
	0.100 Pervious Ia/S coeffi	icient"				
	11.789 Pervious Initial abs	straction"				
	U UIN Imposyloue Mapping	'n'"				

Q:\348 Printed	96\104\SWM\MIDUSS\Post\34896-104_Post-050yr.out Page 33 d at 15:35 on 18 Dec 2018	Q:134 Print	4896\104\SWM\MIDUSS\Post\34896-104_Post-050yr.out Page 3- ted at 15:35 on 18 Dec 2018
5	0.926 Impervious Runoff coefficient"		8.924 Pervious Initial abstraction"
	0.100 Impervious Ia/S coefficient*		0.015 Impervious Manning 'n'
	0.518 Impervious Initial abstraction*	3	98.000 Impervious SCS Curve No."
3	3.473 0.000 0.133 2.183 c.m/sec"		0.912 Impervious Runoff coefficient"
2	Catchment 283 Pervious Impervious Total Area		0.100 Impervious Ia/S coefficient"
2	Surface Area 16,536 6.754 23.290 hectare	•	0.518 Impervious Initial abstraction [*]
	Time of concentration 37.685 7.714 21.048 minutes"	<u>.</u>	0.312 0.000 3.764 8.591 c.m/sec°
	Painfold doubt 77,440, 77,440, 77,440		Catchment 284 Pervious Impervious Total Area •
	Rainfall volume 1 2006 0 2231 1 2026 be	- ÷	Surface Area 2.891 0.059 2.950 hectare
	Rainfall Lossos 53 071 5 740 90 007		Time of concentration 20.674 2.599 19.838 minutes"
•	Runoff denth 23 471 71 694 97 456 mm*		lime to centrold 119.645 87.828 118.173 minutes"
e -	Runoff volume 3881.20 4842.30 8723.50 cm*	÷.	Haintail depth //.443 //.443 //.443 mm*
	Runoff coefficient 0.303 0.926 0.484 "		Rainall Volume 2230.07 45.09 2284.50 C.m ⁻
	Maximum flow 0.908 3.308 3.473 c.m/sec*		Runoff depth 29 735 70 637 90 559 mm*
* 40	HYDROGRAPH Add Runoff "		Bunoff volume 859.64 41.68 901.31 c.m.
•	4 Add Runoff "		Runoff coefficient 0.384 0.912 0.395 "
5	3.473 3.473 0.133 2.183°		Maximum flow 0.306 0.028 0.312 c.m/sec*
* 40	HYDROGRAPH Copy to Outflow"	* 40	HYDROGRAPH Add Runoff "
	8 Copy to Outflow"	- 15	4 Add Runoff "
	3.473 3.473 3.473 2.183"		0.312 0.312 3.764 8.591"
40	HYDHOGHAPH COMD_NG 9"	* 40	HYDROGRAPH Copy to Outflow"
		•	8 Copy to Outflow"
		- ÷	0.312 0.312 0.312 8.591"
NI C	Mode B Maximum flow 5.291 o m/cool	40	HYDROGRAPH Combine 9"
	Hudrongraph volume 14891 966 cm	- ÷	6 Combine
	3,473 3,473 5,473 5,231"	÷	9 NOGE #"
• 40	HYDROGRAPH Confluence 8"		
•	7 Confluence "	÷ .	
	8 Node #*		
*	NODE A"	- 40	HYDROGRAPH Confluence 9"
	Maximum flow 3.764 c.m/sec"		7 Confluence "
	Hydrograph volume 74845.594 c.m"	*	9 Node #"
2	3.473 3.764 3.473 0.000"	*	NODE B"
40	HYDROGRAPH Copy to Outflow"		Maximum flow 8.824 c.m/sec*
	8 Copy to Outflow.		Hydrograph volume 90568.883 c.m"
* 40	3.4/3 3.764 3.764 0.000"	- ÷	0.312 8.824 0.312 0.000*
*		40	HYDROGRAPH Copy to Outflow"
	9 Note #"		8 Copy to Outriow"
	NODE B"	. 40	UVDB002ADU Carbias 100
	Maximum flow 8.591 c.m/sec*	. 40	
	Hydrograph volume 89667.555 c.m"		
•	3.473 3.764 3.764 8.591*	× .	NODE C"
* 40	HYDROGRAPH Start - New Tributary"		Maximum flow 8.824 c.m/sec"
*	2 Start - New Tributary"		Hydrograph volume 90568,883 c.m*
·	3.473 0.000 3.764 8.591"		0.312 8.824 8.824 8.824
33	CATCHMENT 284	* 40	HYDROGRAPH Start - New Tributary"
	1 Irlangular SCS'	1	2 Start - New Tributary"
	1 Edual Tengtu.	÷	0.312 0.000 8.824 8.824
	1 SUS MELING	- 33	CATCHMENT 285"
	200 % Therewines"	÷.	1 Triangular SCS"
	2.950 Total Area"	÷	3 Specify Values"
•	80.000 Flow length"	÷.	1 SUS Metrodo 295 - Mappingeride Retigement Community lands
•	3,100 Overland Slope"	¥.	58.00 % Theory ions"
*	2.891 Pervious Area"		18.760 Total Area*
*	80.000 Pervious length"		190.000 Flow length
	3.100 Pervious slope"		2.000 Overland Slope"
51	0.059 Impervious Area*		7.888 Pervious Area"
ē –	80,000 Impervious length"	÷	25.000 Pervious length*
*	3.100 Impervious slope"		2.500 Pervious slope"
*	0,200 Pervious Sec Cuerce No. #	<u>.</u>	10.892 Impervious Area"
	1 384 Pervious Bungef coefficients		354.000 Impervious length
	0.100 Pervious Talks coefficient"	÷	2.500 Impervious stope"
		75	0.200 Fervious Manurag .U

Printed at 15:35 on 18 Dec 2018	Printed at 15:35 on 18 Dec 2018
64.400 Pervious SCS Curve No." 0.254 Pervious Runoff coefficient" 14.041 Pervious Ia/S coefficient" 14.041 Pervious Manning "n'" 98.000 Impervious SCS Curve No." 0.015 Impervious SCS Curve No." 0.921 Impervious Gefficient" 0.100 Impervious Ia/S coefficient" 0.1015 Impervious SCS Curve No." 0.921 Impervious SCS Curve No." 0.921 Impervious Ia/S 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 Catchment 285 Pervious Impervious Total Area " Surface Area 7.888 10.892 18.780 Time of concentration 13.582 6.766 7.900 minutes" Time of concentration 13.582 6.766 7.900 minutes" Rainfall depth 77.443 77.443 mm" Rainfall losses 57.769 6.109 27.806 mm" Runoff depth 19.674	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" Rainfall depth 77.443 77.443 mm" Rainfall opth 77.443 77.443 mm" Rainfall losses 45.275 5.933 45.275 mm" Runoff depth 32.168 71.509 32.168 mm" Runoff coefficient 0.415 0.000 0.415 Maximum flow 0.344 0.000 0.344 c.m/sec" 40 HYDROGRAPH Add Runoff " 0.344 0.344 0.344 0.344 0.344 0.344 0.344 13.797" 40 HYDROGRAPH Compite 11" 6 6 Combine 11"
Maximum flow 0.870 5.768 0.921 0.041 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"	11 Node #" 11 Node #" 12.083 c.m" 0.344 0.344 0.344 0.344 0.344 0.344 129.083 c.m" 0.344 0.344 0.344 129.083 c.m" 0.344 0.344 0.344 129.083 c.m" 0.344 0.344 0.344 129.083 c.m" 0.344 0.344 129.083 c.m" 0.344 0.344 129.083 c.m" 1 Triangular SCS" 3 Specify values" 1 SCS method" 251 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road" 33.000 % Impervious"
81 ADD COMMENT===================================	<pre>5.770 Total Area" 100.000 Flow length" 2.000 Overland Slope" 3.866 #ervious Area" 100.000 Pervious length" 2.000 Pervious slope" 1.904 Impervious length" 2.000 Impervious length" 2.000 Impervious length" 2.000 Pervious slope" 0.250 Pervious Manning 'n'" 7.6000 Pervious SCS Curve No." 0.415 Pervious Initial abstraction" 0.015 Impervious Indif coefficient" 0.015 Impervious GCS Curve No." 0.923 Impervious Runoff coefficient" 0.923 Impervious Runoff coefficient" 0.934 Lower No." 1.027 0.000 0.344 0.344 c.m/sec"</pre>
 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 Initial abstraction" 0.015 Impervious Manning 'n'" 98.000 Impervious CC Curve No." 0.000 Impervious Runoff coefficient" 0.000 Impervious Runoff coefficient" 0.000 Impervious Runoff coefficient" 0.000 Impervious Runoff coefficient" 0.101 Impervious Runoff coefficient" 0.000 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction" 	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 of concentration 25.922 6.498 15.770 minutes" Rainfall depth 77.443 77.443 77.443 minutes" Rainfall logth 77.443 77.443 77.443 mm" Rainfall losses 45.275 5.933 32.292 mm" Runoff depth 32.168 71.509 45.150 mm" Runoff coefficient 0.415 0.923 0.563 * Maximum flow 0.379 0.911 1.027 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff " 4 Add Runoff "

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Q:\348 Printec	96/104/SWM/MIDUSS/Post/34896-104_Post-050yr.out Page 37 J at 15:35 on 18 Dec 2018	Q:\34896\104\SWMIMIDUSS\Post\34896-104_Post-050yr.out Printed at 15:35 on 18 Dec 2018
40	1.027 1.027 0.344 0.344" HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	<pre>47 FILEI_0 Read/Open DIVD0007.050hyd* 1 1=read/open; 2=write/save* 2 1=rainfall; 2=hydrograph*</pre>
40	1.027 1.027 1.027 0.344* HYDROGRAPH Combine 11" 6 Combine "	1 1=runoff; 2=inflow; 3=outflow; 4=junction* DIV00007.050hyd* Maion flow at 7
	11 Node #"	Total volume 0.000 c.m"
	u/s of east culvert of HWY 7&8" Navimum flow 1152 com/coc"	Maximum flow 0.000 c.m/sec"
•	Hydrograph volume 3734.259 c.m [*]	* 0.000 0.000 0.288 1.370 C.m/sec*
* 40	1.027 1.027 1.027 1.162"	4 Add Runoff "
*	ATUMUGHAPA START - New IFIDUTARY" 2 Start - New Tributary"	0.000 0.000 0.288 1.370" 40 HYDROGRAPH Copy to Dutflow"
÷	1.027 0.000 1.027 1.162"	 B Copy to Outflow"
* 33	CATCHMENT 252"	0.000 0.000 1.370"
000	1 Equal length"	• 6 Combine •
	1 SCS method"	11 Node #*
	252 Southern portion of Hamburgir lands" 5.000 % Impervious"	u/s of east culvert of HWY 7&8" Maximum flow 1.370 c.m/sec"
183 C	2.870 Total Area"	Hydrograph volume 4645.363 c.m"
	65.000 Flow length"	0.000 0.000 1.370"
	2.726 Pervious Area	7 Confluence "
	65.000 Pervious length	11 Node #*
	1.500 Pervious slope"	u/s of east culvert of HWY 7&6" Maximum flow
	65.000 Impervious length*	Hydrograph volume 4645.363 c.m"
÷.	1.500 Impervious slope"	0.000 1.370 0.000 0.000"
	74.000 Pervious SCS Curve No."	1,370 Current peak flow c.m/sec"
3	0.384 Pervious Runoff coefficient"	0.070 Target outflow c.m/sec"
<u>.</u>	0.100 Pervious Ia/S coefficient" 8.924 Pervious Initial abstraction"	4645.4 Hydrograph volume c.m" 9. Number of stages"
	0.015 Impervious Manning 'n'"	* 332.660 Minimum water level metre*
	98.000 Impervious SCS Curve No."	336.000 Maximum water level metre"
	0.100 Impervious Ia/S coefficient*	0 Keep Design Data: 1 = True; 0 = False"
	0.518 Impervious Initial abstraction"	Level Discharge Volume"
	0.288 0.000 1.027 1.162 c.m/sec" Catchment 252 Pervious Impervious Total Area "	" 332.660 0.000 0.000" 333.000 0.3010 198.000"
	Surface Area 2.726 0.144 2.870 hectare"	333.500 1.168 1165.000"
	Time of concentration 22.694 2.852 20.493 minutes" Time to Centroid 122.172 88.220 118.406 minutes"	334.000 2.325 2895.000"
	Rainfall depth 77.443 77.443 77.443 mm"	* 335.000 3.780 8376.000"
÷.	Rainfall volume 2111.48 111.13 2222.61 c.m*	335.500 4.332 12258.00"
	Rainfail Iosses 47.733 7.020 45.697 mm" Runoff depth 29.710 70.422 31.746 mm"	335.750 4.583 14551.00° 336.000 21.985 17113.00°
1	Runoff volume 810.05 101.06 911.10 c.m*	Peak outflow 1.023 c.m/sec"
	RUNDIT COETILCIENT 0,384 0,909 0,410 " Maximum flow 0,272 0,067 0,288 cm/sec"	Maximum level 333.417 metre"
* 40	HYDROGRAPH Add Ruroff *	Centroidal lag 2.156 hours"
	4 Add Runoff "	0.000 1.370 1.023 0.000 c.m/sec"
* 40	HYDROGRAPH Copy to Outflow"	5 Next link "
- C	8 Copy to Outflow"	0.000 1.023 1.023 0.000"
• 40	HYDROGRAPH Combine 11"	30 SIAHI/HE-SIAHI IUIALS 11" 3 Runoff Totals on EXIT"
	6 Combine "	Total Catchment area 234.030 hectare"
	11 Node #" u/s of east culvert of HWY 7&8"	Total Impervious area 110.433 hectare
	Maximum flow 1.370 c.m/sec"	" 19 EXIT"
	Hydrograph volume 4645.363 c.m"	
* 40	HYDROGRAPH Start - New Tributary"	
	2 Start - New Tributary"	
	0.288 0.000 0.288 1.370*	

1	1-read/open, 2-write/s	ave				
2 1≖raintall; 2=nydrograph						
1 1=runoff; 2=inflow; 3=outflow; 4=junction"						
D.	V00007,050hyd"					
퉲a	ijor flow at 7"					
Τc	otal volume	0.000	C.m"			
Ma	aximum flow	0.000	c.m/sec"			
	0,000 0.000	0.288 1.	.370 c.m/sec"			
H	/DROGRAPH Add Runoff "					
4	Add Runoff "					
	0.000 0.000	0.288	1.370"			
สา	(DROGRAPH Copy to Outflo	W "				
в	Copy to Outflow"					
	0.000 0.000	0.000	1.370"			
H	(DROGRAPH Combine 1	1*				
6	Combine "					
14	Node #"					
	NOUL #	LBIA 7808				
	u/s of east curvent of	HWY /48"				
Ma	AXIMUM TLOW	1.370	c.m/sec"			
H	/drograph volume	4645.363	с.""			
	0.000 0.000	0.000	1,370"			
н	/DROGRAPH Confluence	11"				
7	Confluence "					
11	Node #"					
	u/s of east culvert of	HWY 7&8"				
Ma	aximum flow	1.370	c.m/sec"			
H	/drograph volume	4645.363	C.m"			
	0.000 1.370	0.000	0.000"			
P	OND DESTGN*					
1.370	Current neak flow o	.m/sec"				
0 070	Target outflow c m/	sec"				
4645 4	Hydrograph volume	. m"				
4040.4	Number of stages	• • •				
222 660	Number of stages	motool				
332.000	Minimum water level	metre				
336.000	Maximum water level	metre				
332.000	Starting water level	metre-				
0	Keep Design Data: 1 =	Inde; $0 = Fa$	alse"			
	Level Discharge V	otume.				
	332,660 0.000	0.000"				
	333.000 0.3010 19	8,000"				
	333.500 1.168 116	5.000"				
	334.000 2.325 289	5.000"				
	334.500 3.132 530	1.000"				
	335.000 3.780 837	6.000"				
	335,500 4,332 122	58.00"				
	335.750 4.583 145	51.00°				
	336.000 21.985 171	13.00"				
P	eak outflow	1.023	c.m/sec"			
M	aximum level	333.417	metre"			
M	aximum storage	1003.699	C			
0	ntroidal lag	2 156	hours"			
	0.000 1.370	1.023 0	.000 c.m/sec*			
LI.	DROGRAPH Nevt link "					
	Next link #					
5	0 000 1 009	1 023	0.000			
0		1,023	0.000			
2	Pupeff Tetale an EVIT					
3	MUNOTT TOTALS ON EXII.		004 000	hashes. *		
10	DIAL VATCHMENT Area		234.030	nectare		
T	otal impervious area		110.433	nectare"		
T	otal % impervious		47.187"			

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Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Page 1 Printed at 15:33 on 18 Dec 2018	Q:\34896\104\SWMIMIDUSS\Post\34896-104_Post-100yr.out Printed at 15:33 on 18 Dec 2018
MIDUSS Output>*	Time to Centroid 127,786 89,937 127,786 minutes"
MIDUSS version Version 2.25 rev. 473"	 Rainfall depth 87.263 87.263 87.263 mm⁻¹
MIDUSS created Sunday, February 07, 2010"	Rainfall volume 2591.72 0.00 2591.72 c.m"
10 Units used: ie METRIC"	 Rainfall losses 38.763 6.170 38.763 mm
Job folder: Q:\34896\104\SWM\MIDUSS\Post"	"Runoff depth 48.500 81.093 48.500 mm"
Output filename: 34896-104_Post-100yr.out"	Runoff volume 1440.46 0.00 1440.46 c.m"
Licensee name: admin"	Runoff coefficient 0.556 0.000 0.556
Company Microsoft Microsoft 12/17/2019 at 1:20:25 PM	MAXIMUM TLOW 0.431 0.000 0.431 C.m/sec ²
7 Lines of comment"	0.431 0.431 0.000 0.000"
	* 33 CATCHMENT 202*
 Wilmot Employment Lands 	* 1 Triangular SCS*
New Hamburg, Ontario"	1 Equal length*
100 Year Storm Event - Post development"	1 SCS method"
	202 Woodlot - north of GEXR"
Calculated by. NEC/MSD	
31 TIME PARAMETERS"	80.000 Flow length"
5.000 Time Step*	2.500 Overland Slope"
240.000 Max. Storm length	* 2.080 Pervious Area*
1500.000 Max. Hydrograph"	80.000 Pervious length"
32 STORM Chicago storm"	2.500 Pervious slope"
1 Chicago storm"	0.000 Impervious Area"
4588.000 COETTIGENT A"	80.000 Impervious length"
	2.500 Impervious stope
	70.00 Pervious ScS Curve No "
180.000 Duration"	0.361 Pervious Bunoff coefficient"
1.000 Time step multiplier"	 0.100 Pervious Ia/S coefficient*
Maximum intensity 239.650 mm/hr"	10.886 Pervious Initial abstraction
Total depth 87.263 mm"	0.015 Impervious Manning 'n'"
6 100hyd Hydrograph extension used in this file"	98.000 Impervious SCS Curve No."
81 ADD COMMENT===================================	0.000 Impervious Runoff coefficient
3 Lifes of comment-	0.100 Impervious lais coerficient
Catchments North of GEXE, part of Inlet #1"	0.228 0.431 0.000 0.000 c.m/sec*
	Catchment 202 Pervious Impervious Total Area *
* 33 CATCHMENT 201*	 Surface Area 2.080 0.000 2.080 hectare
1 Triangular SCS"	Time of concentration 21.812 2.652 21.812 minutes*
1 Equal length	Time to Centroid 120.953 87.600 120.953 minutes
1 SCS method"	Rainfall depth 87.263 87.263 mm"
201 AFea Northeast of GEAR"	"HAINTAIL VOLUME 1815.08 0.00 1815.08 C.M"
	" Runoff denth 31 462 80 154 31 462 mm"
80.000 Flow length*	Runoff volume 654.40 0.00 654.40 c.m
0.500 Overland Slope*	 Runoff coefficient 0.361 0.000 0.361
2.970 Pervious Area*	* Maximum flow 0.228 0.000 0.228 c.m/sec*
80.000 Pervious length"	40 HYDROGRAPH Add Runoff "
0.500 Pervious slope	4 Add Runoff
0.000 Impervious Area"	
80,000 Impervious length	40 HYDHOGHAPH COPY to OUTTION
0.250 Pervious Manino 'n'	
82,000 Pervious SCS Curve No."	40 HYDROGRAPH Combine 1"
0.556 Pervious Runoff coefficient*	6 Combine "
0.100 Pervious Ia/S coefficient"	1 Node #"
5.576 Pervious Initial abstraction"	u/s of GEXR
0.015 Impervious Manning 'n'	Maximum flow 0.644 c.m/sec*
- SH. OUD Impervious SUS Curve No."	- Hydrograph Volume 2094.868 C.m ⁻
0.100 Impervious Ta/S constitutent	0.225 0.044 0.044 0.044 4.0 HVDROGRAPH Start - Now Tributary"
0.518 Impervious Initial abstraction"	2 Start - New Tributary
0.431 0.000 0.000 0.000 c.m/sec"	0.228 0.000 0.644 0.644"
Catchment 201 Pervious Impervious Total Area "	* 33 CATCHMENT 203*
Surface Area 2.970 0.000 2.970 hectare"	1 Triangular SCS"
Time of concentration 28.626 4.298 28.626 minutes"	1 Equal length"

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1 SCS method"	* 6 Combine "	
203 Pfenning Farm Residential Development*	1 Node #"	
60.000 % Impervious"	u/s of GEXR"	
18.510 Total Area"	Maximum flow 1.614 c.m/sec"	
90.000 Flow length"	Hydrograph volume 14145.346 c.m"	
7. 404 Deprivad Stope"	6.017 6.017 1.172 1.614"	
7.404 PERVIOUS APER"	40 HYDROGRAPH Confluence 1"	
1.000 Pervious slops"	/ Confluence "	
11.106 Tempervious Area"		
90.000 Impervious length"	Maximu flow 1.614 m/sec	
1.000 Impervious slope"	Hydrograph volume 14145.346 c.m	
0.250 Pervious Manning 'n'"	* 6.017 1.614 1.172 0.000*	
76.000 Pervious SCS Curve No."	# 40 HYDROGRAPH Copy to Outflow"	
0.486 Pervious Runoff coefficient"	8 Copy to Outflow"	
0.050 Pervious Ia/S coefficient"	6.017 1.614 1.614 0.000"	
4.011 Pervious initial abstraction"	40 HYDROGRAPH Combine 2"	
98.000 Impervises SCS Curve No."	6 Combine "	
0.920 Impervisus Bundf coefficient"	Z NODE #" TNIET 4"	
0.100 Impervious Ia/S coefficient"		
0.518 Impervious Initial abstraction"	Hydrograph volume 1415.346 c.m"	
6.017 0.000 0.644 0.644 c.m/sec*	6.017 1.614 1.614 1.614"	
Catchment 203 Pervious Impervious Total Area *	40 HYDROGRAPH Start - New Tributary"	
Surface Area 7.404 11.106 18.510 hectare"	2 Start - New Tributary"	
Time of concentration 26.713 3.747 9.726 minutes"	6.017 0.000 1.614 1.614"	
lime to Centrold 125.718 89,195 98.705 minutes"	B1 ADD COMMENT===================================	
Rainiali deptin 87.253 87.253 87.253 mm ⁻	3 Lines of comment"	
Rainfall losses 44 876 6 089 2014 mm*	Cotobacts and the of CEVE cost of Telet #4	
Runoff death 42.387 80.275 65.120 mm"	**************************************	
Runoff volume 0.3138 0.8915 1.2054 ha-m*	33 CATCHMENT 204"	
Runoff coefficient 0.486 0.920 0.746	1 Triangular SCS"	
Maximum flow 0.957 5.715 6.017 c.m/sec°	3 Specify values"	
40 HYDROGRAPH Add Runoff "	1 SCS method"	
4 Add Runoff "	204 Riverside Brass"	
6.017 6.017 0.644 0.644"	59.000 % Impervious"	
54 POND DESIGN"	2.020 Total Area"	
2.303 Tarret outflow c m/sec	1 200 Overland Sland	
1253.6 Hudrograph volume c.m"	A 8. Parviaus Area	
6. Number of stages"	60.000 Pervious Length"	
341.500 Minimum water level metre"	2.000 Pervious slope"	
343.600 Maximum water level metre"	1.192 Impervious Area"	
341.500 Starting water level metre"	116.000 Impervious length"	
0 Keep Design Data: 1 = True; 0 = False"	0.500 Impervious slope"	
Level Discharge Volume"	0.250 Pervious Manning 'n'"	
341.500 0.000 0.000° 342.000 0.1541 1746 000°	76.000 Pervious SCS Curve No."	
342,500 0,2669,3784,000"	0.451 Pervious Runott coetticient"	
343.000 0.3446 6114.000"	8 021 Pervious Ta/s Coefficient	
343,300 0.3837 7652.000"	0.021 Tervious Initial abstraction	
343.600 2.941 9295.000"	98.000 Impervious SCS Curve No."	
1. WEIRS"	0.930 Impervious Runoff coefficient"	
Crest Weir Crest Left Right"	0.100 Impervious Ia/S coefficient"	
elevation coefficie breadth sideslope sideslope"	0.518 Impervious Initial abstraction"	
343.300 0.900 10.000 0.000 0.000"	0.707 0.000 1.614 1.614 c.m/sec"	
1. UNIFICES"	Catchment 204 Pervious Impervious Total Area "	
UNITICE UNITICE UNITICE NUMBER OF	Surface Area 0.828 1.192 2.020 hectare"	
INVELL COENTICLE GLAMMETER OPTILOES"	lime or concentration 17.571 5.372 8.447 minutes"	
Peak outflow	ILINE LO CENTROLO 114.679 91.434 97.293 minutes" Bainfail doubt 97.269 87.269	
Maximum level 343.993 metre"	Bainfall volume 722 72 1040 01 1760 70 0 mm"	
Maximum storage 8161.791 c.m"	Rainfall losses 47,922 6 142 29 272 mm"	
Centroidal lag 5.475 hours"	Runoff depth 39.341 81.122 63.992 mm"	
6.017 6.017 1.172 0.644 c.m/sec [#]	Runoff volume 325.82 966.81 1292.64 c.m"	
40 HYDROGRAPH Combine 1"	Runoff coefficient 0.451 0.930 0.733	

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Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Page 5 Printed at 15:33 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Page 6 Printed at 15:33 on 18 Dec 2018
Maximum flow 0.129 0.647 0.707 c.m/sec* 40 HYDROGRAPH Add Runoff "	* Runoff volume 355.94 48.41 404.35 c.m" * Runoff coefficient 0.361 0.932 0.389 *
4 Add Runoff " 0.707 0.707 1.614 1.614"	Maximum flow 0.069 0.032 0.073 c.m/sec" 40 HYDROGRAPH Add Runoff "
54 POND DESIGN"	4 Add Runoff "
0.707 Current peak flow c.m/sec"	0.073 0.073 0.055 1,666*
1292.6 Hydrograph volume c.m"	8 Copy to Outflow
4. Number of stages"	• 0.073 0.073 1.666"
0.000 Minimum water level metre"	40 HYDROGRAPH Combine 2*
• 0.910 Maximum water level metre"	6 Combine -
O Keep Design Data: 1 = True: 0 = False"	
Level Discharge Volume"	Maximum flow 1.738 c.m/sec"
0.000 0.000 0.000"	Hydrograph volume 15800.200 c.m"
0.3100 0.03090 782.000"	0.073 0.073 0.073 1.738"
0.9100 0.2769 2511.000"	2 Start - New Tributary
Peak outflow 0.055 c.m/sec"	• 0.073 0.000 0.073 1.738"
Maximum level 0.389 metre"	33 CATCHMENT 206"
Maximum storage 1002.650 c.m"	1 Triangular SCS
0,707 0,707 0,055 1,614 c m/sec*	* 1 SCS method"
40 HYDROGRAPH Combine 2"	206 Industrial properties at end of Hamilton Road
6 Combine "	35.000 % Impervious"
2 Node #"	2.850 Total Area"
INLE I" Novimum Flow 1665 cm/sec"	- SULOUD FIGWIENGTH"
Hydrograph volume 15395.846 c.m ⁻¹	1.852 Pervious Area"
0.707 0.707 0.055 1.666"	50.000 Pervious length"
40 HYDROGRAPH Start - New Tributary"	1.000 Pervious slope"
2 Start - New Tributary"	0.997 Impervious Area"
- 0,707 0,000 0,055 1,666	1 0.00 Impervious sengin
1 Triangular SCS"	O.250 Pervious Manning 'n'
3 Specify values"	76.000 Pervious SCS Curve No."
1 SCS method"	• 0.450 Pervious Runott coetticient"
5.000 % Impervious"	8.021 Pervious Initial abstraction"
1.190 Total Area"	 0.015 Impervious Manning 'n'
255.000 Flow length	98.000 Impervious SCS Curve No."
1.800 Overland Slope"	0.919 Impervious Hunott coefficient"
255,000 Pervious length"	0.518 Impervious Initial abstraction"
1.800 Pervious slope"	* 0.588 0.000 0.073 1.738 c.m/sec"
0.060 Impervious Area"	Catchment 206 Pervious Impervious Total Area
255.000 Impervious length"	Surface Area 1,652 0,997 2,650 neotare
0.250 Pervious Mannica 'n'"	Time to Centroid 116,983 87.574 101.585 minutes"
70.000 Pervious SCS Curve No."	* Rainfall depth 87.263 87.263 mm*
0.361 Pervious Runoff coefficient"	Rainfall volume 1616.56 870.45 2487.01 c.m"
0.100 Pervious Ia/S coefficient"	Haintail losses 4/.9/3 /.0/9 33.060 mm [*]
0.005 Impervious Manino 'n'"	* Runoff volume 727.85 799.84 1527.69 C.m."
98.000 Impervious SCS Curve No."	Runoff coefficient 0.450 0.919 0.614 "
0.932 Impervious Runoff coefficient"	Maximum flow 0.270 0.533 0.588 c.m/sec*
 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial chatmatical 	* 40 HYDROGRAPH Add Runott " 40 Add Runoff "
0.073 0.000 0.055 1.666 c.m/sec*	* 0.588 0.588 0.073 1.738*
Catchment 205 Pervious Impervious Total Area *	33 CATCHMENT 207"
Surface Area 1.131 0.060 1.190 hectare"	1 Triangular SCS"
Time of concentration 48,258 5,668 43,162 minutes"	1 Equal length"
Rainfall deoth 87,263 87,263 87,263 87,263 87	207 Woodlot and Wetland east of Pestells
Rainfall volume 986.51 51.92 1038.43 c.m"	5.000 % Impervious"
Rainfall losses 55.779 5.901 53.285 mm"	5.920 Total Area"
Runoff depth 31.485 81.362 33.979 mm"	65.000 Flow length"

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3.000 Overland Slope" 5.624 Pervious Area" 65.000 Pervious length"	0.931 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"
3.000 Pervious slope	• 2.370 0.000 1.151 2.292 c.m/sec*
0.295 Impervious Area* 65.000 Impervious length*	Catchment 208 Pervious Impervious Total Area *
* 3.000 Impervious slope"	Time of concentration 14.194 6.436 7.480 minutes"
" 0.250 Pervious Manning 'n'"	Time to Centroid 110.640 92.886 95.275 minutes
0.363 Pervious Sus Curve No."	Rainfall depth 87.263 87.263 87.263 mm*
* 0.100 Pervious Ia/S coefficient*	Rainfall losses 49.377 6.039 16.874 mm"
10.782 Pervious Initial abstraction"	Runoff depth 37.887 81.224 70.390 mm*
98.000 Impervious SCS Curve No."	"Runoff volume 523.78 3366.77 3892.55 c.m" Bunoff coefficient 0.434 0.834 0.807
0.924 Impervious Runoff coefficient"	Maximum flow 0.238 2.237 2.370 c.m/sec"
0.100 Impervious Ia/S coefficient"	40 HYDROGRAPH Add Runoff
0.721 0.588 0.073 1.738 c.m/sec*	* 4 Add HUNDTT * * 2 370 2 370 1 151 2 292*
Catchment 207 Pervious Impervious Total Area	* 54 POND DESIGN"
Surface Area 5,624 0.296 5,920 hectare"	2.370 Current peak flow c.m/sec*
Time to Constructed 116.426 86.942 112.948 minutes"	- 0.070 larget outriow c.m/sec^ 3892.5 Hydrograph volume c.m."
Rainfall depth 87.263 87.263 87.263 mm"	9. Number of stages"
" Haintall volume 4907.70 258.30 5166.00 c.m" Bainfall losses 55.550 6.662 53.106 mm"	 0.000 Minimum water level metre" 1.200 Maximum water level metre"
Runoff depth 31.713 80.602 34.158 mm*	0.000 Starting water level metre"
Runoff volume 1783.55 239.58 2022.13 c.m*	0 Keep Design Data: 1 = True; 0 = False
Munorr coerricient 0.363 0.924 0.391 " Maximum flow 0.671 0.161 0.721 c.m/sec"	Level Discharge Volume"
* 40 HYDROGRAPH Add Runoff •	0.1500 0.00400 297.000"
4 Add Runoff "	0.3000 0.01000 635.000"
40 Hydrograph Copy to Outflow	0.4500 0.03600 1004.000" 0.6000 0.04900 1405.000"
8 Copy to Outflow"	0.7500 0.06000 1847.000"
	0.9000 0.06900 2329,000° (1.900 0.06900 2329,000°
6 Combine *	1,050 0,5220 2852,000"
2 Node #*	Peak outflow 0.403 c.m/sec"
Maximum flow 2.292 cm/sec"	Maximum level 1.011 metre" Navimum storgeo 2115 237 o.m."
* Hydrograph volume 19350.027 c.m*	Centroidal lag 9.340 hours'
0.721 1.151 1.151 2.292"	2.370 2.370 0.403 2.292 c.m/sec*
2 Start - New Tributary	40 HYDHOGHAPH Combine 2* 6 Combine "
0.721 0.000 1.151 2.292"	2 Node #*
" 33 CAICHMENT 208" " 1 Triangular SCS"	
3 Specify values"	Maximuli Izow 22.095 C.m/98C Hydrograph volume 22861,723 c.m°
1 SCS method"	2.370 2.370 0.403 2.695
75.000 % Incervious"	* 81 ADD COMMENT===================================
5.530 Total Area"	
130.000 Flow length"	Catchments South of GEXR, part of Inlet #2"
1.383 Pervious Area"	40 HYDROGRAPH Start - New Tributary"
50.000 Pervious length	2 Start - New Tributary"
5.000 Pervious slope" 4.148 Impervious Area"	* 2.370 0.000 0.403 2.695* * 33 CATCHMENT 202*
192.000 Impervious length	1 Triangular SCS*
0.750 Impervious slope"	3 Specify values"
75.000 Pervious SCS Curve No."	- 1 SUS method" 209 Albine Solutions - west SMMP"
0.434 Pervious Runoff coefficient"	30.000 % Impervious"
 0.100 Pervious Ia/S coefficient' 8.467 Pervious Toitial abstraction' 	1.920 Total Area"
0.015 Impervious Manning 'n'"	1.000 Overland Slope"
98.000 Impervious SCS Curve No."	1.344 Pervious Area"

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<pre>150.000 Pervious length" 1.500 Pervious slope" 0.576 Impervious Area" 113.000 Impervious slope" 0.250 Pervious Manning 'n'" 80.000 Pervious SCS Curve No." 0.519 Pervious Sunoff coefficient" 0.100 Pervious Initial abstraction" 0.615 Impervious Manning 'n'" 98.000 Impervious & CS Curve No." 0.921 Impervious Runoff coefficient" 0.921 Impervious Runoff coefficient"</pre>	<pre>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 length" 2.400 Impervious length" 0.250 Pervious Manning 'n'" 70.000 Pervious SCS Curve No." 0.361 Pervious Rufo coefficient" 0.400 Pervious Rufo coefficient"</pre>	
0.518 Impervious 1a/s toernitient 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"	 0.886 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" 	
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 " * * *	Catchment 210PerviousImpervious Total AreaSurface Area0.66113.230hectare"Time of concentration34.7084.22031.068minutes"Time to Centroid136.80089.831131.192minutes"Rainfall depth87.26387.26387.263minutes"Rainfall osume1.09680.05771.1545ha-m"Rainfall losses55.8006.20853.320mm"	
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" 0.342 0.342	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 " 1.047 1.047 1.047	
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"	 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow" 1.047 1.047 0.141" 40 HYDROGRAPH Combine 3" 6 Combine " 3 Node #" INLET 2" 	
0.5000 0.09000 71.000" 0.7500 0.1250 220.000" 1.000 0.3110 445.000" 1.000 0.6160 557.000" Peak outflow 0.141 c.m/sec" Maximum level 0.901 metre"	Maximum Tlow 1.183 c.m./sec* Hydrograph volume 5563.123 c.m.* 1.047 1.047 1.047 1.183" ADD COMMENT===================================	
Maximum storage 345.549 C.m.* Centroidal lag 2.338 hours" 0.342 0.342 0.141 2.695 40 HYDROGRAPH Combine 3" 6 Combine 3" 3 Node #" INLET 2" 0.141 0.141	 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* 	
WMX_MUGH 120W 0.141 C.II/SEC Hydrograph volume 1072.464 c.m* 0.342 0.342 0.141 40 HYDROGRAPH Start - New Tributary" 2 Start - New Tributary" 0.342 0.000 0.141 33 CATCHMENT 210" 1 Triangular SCS"	211 Culivated lands east of Nafziger Road" 1.000 % Impervious" 7.310 Total Area" 2.0.000 Flow length" 3.300 Overland Slope" 7.237 Pervious Area" 2.0.000 Pervious length"	
1 Equal length" 1 SCS method" 210 Woodlot north of Hamburglr/Badenview lands"	3.300 Pervious slope" 0.073 Impervious Area" 120.000 Impervious length"	

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	3.300 Impervious slope"	Time of concentration 34,599 4,156 18,044 minutes*
÷	0.250 Pervious Manning 'n'"	Time to Centroid 135.716 89.748 110.719 minutes"
:	76.000 Pervious SCS Curve No."	Rainfall depth 87.263 87.263 87.263 mm*
	0.451 PERVIOUS HUNOTT COETICIENT"	Rainfall volume 1340.37 893.58 2233.94 C.m"
	8.021 Pervious Initial abstraction"	Runoff depth 45.306 81.008 59.587 mm*
	0.015 Impervious Manning 'n'"	Runoff volume 695.90 829.53 1525.43 C.m"
÷ –	98.000 Impervious SCS Curve No."	Runoff coefficient 0.519 0.928 0.683
	0.100 Impervious Ia/S coefficient"	Maximum Tiow 0.179 0.539 0.581 C.m/sec" 40 HVDROGRAPH Add Runoff
	0.518 Impervious Initial abstraction"	4 Add Runoff
1	0.974 0.000 1.047 1.183 c.m/sec"	• 0.581 0.581 0.974 0.974*
2	CETCOMMENT 211 PERVIOUS IMPERVIOUS IOTAL Area * Surface Area 7, 237 0,073 7,310 bectare*	54 POND DESIGN"
÷	Time of concentration 22.917 3.112 22.518 minutes"	0.070 Target outflow c.m/sec
	Time to Centroid 121.427 88.279 120.759 minutes"	* 1525.4 Hydrograph volume c.m*
÷ –	Reinfall depth 87.263 87.263 mm*	7. Number of stages"
2	Reinfall Volume 6015.17 60.79 6378.96 C.m." Reinfall Josses 47.932 7.115 47.524 mm."	0.000 Minimum water level metre"
*	Runoff depth 39.331 80.148 39.739 mm*	• 0.000 Starting water level metre"
÷	Runoff volume 2846.35 58.59 2904.94 c.m*	• 0 Keep Design Data: 1 = True; 0 = False"
÷ .	Runoff coefficient 0.451 0.918 0.455 "	Level Discharge Volume
• 40	HYDROGRAPH Add Runoff "	
3	4 Add Runoff "	0.2500 0.04200 64.000"
÷	0.974 0.974 1.047 1.183"	0.5000 0.09000 343.000"
40	HYDHOGHAPH CODY to OUTTIOW" B _ Conv to Outfiow"	0.7500 0.1250 877.000"
8	0.974 0.974 1.183"	$1.000 - 0.7380 - 1014.000^{\circ}$
* 40	HYDROGRAPH Combine 4"	Peak outflow 0.119 c.m/sec"
	6 Combine "	Maximum level 0.709 metre"
		 Maximum storage 768.718 c.m" Centonidal lag 2 155 bause"
	Maximum flow 0.974 c.m/sec"	0.581 0.581 0.119 0.974 c.m/sec"
÷	Hydrograph volume 2904.939 c.m"	40 HYDROGRAPH Combine 4°
* 40	0.974 0.974 0.974 0.974 0.974 "	6 Combine "
- 40	2 Start - New Tributary"	4 NODE #
	0.974 0.000 0.974 0.974°	Maximum flow 1.078 c.m/sec"
33	CATCHMENT 212*	Hydrograph volume 4430.444 c.m"
÷	3 Specify values"	* 40 HYDROGRADD Start . New Toilutary*
	1 SCS method*	2 Start - New Tributary
	212 Alpine Solutions - East SMWP*	0.581 0.000 0.119 1.078*
÷.	40.000 % Impervious"	33 CATCHMENT 213"
	150.000 Flow length"	1 Equal length"
	1.500 Overland Slope"	1 SCS method*
÷	1.536 Pervious Area"	213 Woodlot East and West of Nafziger Road"
2	1.500 Pervious alone*	3.000 % Impervious"
*	1.024 Impervious Area"	140.000 Flow Hendth"
2	131.000 Impervious length"	3.600 Overland Slope"
2	1.500 Impervious slope" 0.250 Repuis Mapping 'n'"	13.056 Pervious Area"
	80.000 Pervious SCS Curve No."	3.600 Pervious slone"
5	0.519 Pervious Runoff coefficient™	• 0.404 Impervious Area
2	0.100 Pervious Ia/S coefficient" 6.250 Renvious Indial chatestica.	140.000 Impervious length"
	0.015 Impervious Maning 'n'*	- 3.500 Impervious Slope" 0.250 Pervious Mangin 'n'"
5	98.000 Impervious SCS Curve No."	70.100 Pervious SCS Curve No."
5	0.928 Impervious Runoff coefficient	0.362 Pervious Runoff coefficient"
*	U.10U Impervious Ta/S coefficient" 0.518 Impervious Tolicial abstraction"	0.100 Pervious Ia/S coefficient"
• (0.581 0.000 0.974 0.974 c.m/sec*	0.015 Impervious Manning 'n'
•	Catchment 212 Pervious Impervious Total Area *	98.000 Impervious SCS Curve No."
	Surface Area 1.536 1.024 2.560 hectare*	0.920 Impervious Runoff coefficient"

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	0.100 Impervious Ja/S coefficient"		- 40	
e	0.518 Impervious Initial abstraction"		•	4
	1.266 0.000 0.119 1.078 c.m/sec"		2	
	Catchment 213 Pervious Impervious Total Area "		54	0.100
	SUPPACE Area 13.055 0.404 13.460 Nectare Time of concentration 27 300 3.326 25 554 minutes			2,166
	Time to Controld 127.677 88.586 124.830 minutes"			3602.9
	Rainfall depth 87.263 87.263 87.263 mm"		•	15.
	Rainfall volume 1,1393 0.0352 1.1746 ha-m"		•	0.000
	Rainfall losses 55.661 7.005 54.201 mm*			1.450
	Runoff depth 31.603 80.258 33.062 mm"			0.000
	RUNOTI VULUME 4120.11 324.08 4450.19 C.M.			0
	Maximum flow 1.226 0.206 1.266 c.m/sec"			
40	HYDROGRAPH Add Ruroff "		+	
	4 Add Runoff "			
	1.266 1.266 0.119 1.078"			
40	HYDROGRAPH Copy to Outflow"			
	8 Copy to UUTTIOW"		÷.	
10	1.200 1.200 1.200 1.0/8" HYDROGRAPH Combine 4"			
40	6 Combine "			
	4 Node #*			
	INLET 3"			
	Maximum flow 2.305 c.m/sec"			
	Hydrograph volume 8880.620 c.m"		÷	
40	1.266 1.266 1.266 2.305" HVDPOCEARL Stort - Now Tributary"			
-0	2 Start - New Tributary"			
	1.266 0.000 1.266 2.305"			
33	CATCHMENT 214"			1
	1 Triangular SCS"		*	
	3 Specify values"		÷	
	1 SCS method"		40	
	214 NGC LEILTE - SWAP" 73 DOD & Tanchvigues			0
	4.950 Total Area"			
	50.000 Flow length"			1
	2.800 Overland Slope"		*	
	1.336 Pervious Area"		*	
	40.000 Pervious length"		* 40	
	1.500 Pervious slope"		<u>.</u>	2
	3.513 Impervious Arec ²			
	1.500 Impervious lone"		*	1
	0.250 Pervious Manning 'n'"		3	1
	83.000 Pervious SCS Curve No."			1
	0.574 Pervious Runoff coefficient"			215
	0.100 Pervious Ia/S coefficient"			45.000
	5.202 Pervious Initial abstraction"			2.860
	0.015 Impervious Manning m ⁻¹		÷.	2 000
	0.930 Impervious Bunoff coefficient"			1.573
	0.100 Impervious Ia/S coefficient"			105.000
	0.518 Impervious Initial abstraction*			2.000
	2.166 0.000 1.266 2.305 c.m/sec"			1.287
	Catchment 214 Pervious Impervious Total Area "			105.000
	Surrace Area 1.335 3.513 4.950 hectare"		ੂ	2,000
	Time to Control 10.309 0.002 0.005 MINUTES"		11	76 000
	Rainfall denth 87,263,87,263,87,263,87,263			0.451
	Rainfall volume 1166.26 3153.26 4319.54 c.m"			0.100
	Rainfall losses 37.213 6.070 14.478 mm"		÷	6.021
	Runoff depth 50.051 81.193 72.785 mm"			0.015
	Runoff volume 668.93 2933.93 3602.85 c.m"		*	98.000
	Runoff coefficient 0.574 0.930 0.834 "			0,920
9	Maximum flow 0.315 1.953 2.166 c.m/sec"		.	0.100

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40	HY	DROGRAPH Ad	ld Runof1				
	4	Add Runoff		66	1 966	0.205	
54	PO	ND DESIGN"	2.1	00	1.200	2.303	
	2,166	Current pe	ak flow	с.	m/sec"		
	0.070	Target out	flow	c.m/s	ec"		
	3602.9	Hydrograph	volume	с.	m "		
	15.	Number of	stages"	. 1	matral		
	1.450	Maximum wa	ter leve	s⊥ ≽]	metre"		
	0.000	Starting w	ater lev	/el	metre"		
	0	Keep Desig	n Data:	1 = T	rue; 0 =	False"	
		Level Di	scharge	Vo	lume"		
		0.000	0.000	0	.000"		
		0.1500	0.00700	248	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	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"		
	Pe	ak outflow	0.000	3033	0.427	c.m/sec"	
	Ma	ximum level			1.237	metre"	
	Ma	ximum stora	ige		2478.470	C.M"	
	Ce	ntroidal la	ıg	_	12.276	hours"	
40		2.166	2.166	0	.427	2.305 c.m/sec"	
40	6	Combine "	COUDTUR	4			
	4	Node #"					
		INLET 3"					
	Ma	ximum flow			2,699	c.m/sec"	
	ну	drograph vo	olume	SEE	11821.912	C.M"	
40	ну	DROGRAPH St	art - Ne	w Tri	butary"	2.099	
10	2	Start - Ne	w Tribut	tary"			
		2.166	s 0.0	000	0.427	2.699"	
33	CA	TCHMENT 215	5"				
	1	Triangular	SCS"				
	1	SCS method	1"				
	215	Vacant Ind	ustrial	lands	west of	Nafziger Road*	
	45.000	% Impervio	ous"				
	2.860	Total Area	1				
	2 000	Flow lengt	in- Slone"				
	1.573	Pervious A	Area"				
	105.000	Pervious 1	Length"				
	2.000	Pervious s	slope"				
	1.287	Impervious	s Area"				
	2 000	Impervious	s lone"	-			
	0.250	Pervious M	Manning	'n'"			
	76.000	Pervious S	SCS Curv	e No."			
	0.451	Pervious F	aunoff c	peffic	cient"		
	0.100	Pervious 1	la/S coe	fficie	ent"		
	8.021	Pervious 1	Initial :	abstra	iction"		
	98-000	Impervious	S Mannin S SCS Cu	y II'' rve No	, III		
	0.000	Imponyiou	Bupoff	ocoff	iniont		

- Impervious Runoff coefficient' Impervious Ia/S coefficient"

3		and the second sec	11 10 Dec 2010	and the second se				and the second s	
		0 518	Impervious Initial	abstraction	8				
		01010	0.714 0.00	0 0.427	2,699	c m/sec"			
٠		Ca	tchment 215	Pervious	Impervious	Total Area			
#		Su	rface Area	1.573	1.287	2.860	hectare"		
۰.		Τi	ime of concentration	24.582	3.338	11.300	minutes"		
•		Ťi	ime to Centroid	123.534	88.605	101.695	minutes"		
*		Ra	ainfall depth	87.263	87.263	87.263	mm "		
		Ra	ainfall volume	1372.65	1123.08	2495.73	C.M"		
÷.		Ra	infall losses	47.902	7.002	29.497	mm "		
С.		Ru	noff depth	39.362	80.261	57.767	mm"		
		HU Di	nott volume	619.16	1032.97	1652.13	C.M"		
*		Ma	avimum flow	0.451	0.920	0.002	c m/sec"		
	40	НУ	DROGBAPH Add Bunoff	и и	0.000	0.714	0.117 300		
	, .	4	Add Runoff "						
*			0.714 0.71	4 0.427	2.699"				
з.	40	HY	DROGRAPH Copy to Out	flow"					
*		8	Copy to Outflow"						
•			0.714 0.71	4 0.714	2,699"				
×.	40	HY	DROGRAPH Combine	4"					
÷.		6	Combine "						
2		4	NUDE #" TNLET 3"						
		Ma	INLE! J	2 0	20 0 0 / 0	00			
		H	drograph volume	13474 0	40 c.m."	50			
•			0.714 0.71	4 0.714	3.020"				
۰.	40	HY	DROGRAPH Start - New	Tributary"					
•		2	Start - New Tributa	ry"					
۰.			0.714 0.00	0 0.714	3.020"				
•	33	CA	TCHMENT 216"						
2		1	Triangular SCS"						
		1	Equal length"						
		216	Industrial lands wo	et of Nafzi	non Road"				
4		45.000	* Impervious"	SC OF Marza	ger noad				
		2.860	Total Area"						
7 1		110.000	Flow length"						
		2.000	Overland Slope"						
۰.		1.573	Pervious Area"						
*		110.000	Pervious length"						
2		2.000	Pervious slope"						
2		1.287	Impervious Area"						
		2 000	Impervious length-						
•		0.250	Pervious Manning 'n	1 n					
		76,000	Pervious SCS Curve	No."					
•		0.451	Pervious Runoff coe	fficient"					
•		0.100	Pervious Ia/S coeff	icient"					
2		8.021	Pervious Initial ab	straction"					
•		0.015	Impervious Manning	'n'"					
		98.000	Impervious SCS Curv	e No."					
2		0.920	Impervious Runoff c	oefficient"					
3		0.100	Impervious Ia/S coe	fficient"					
		0.518	Impervious initial	abstraction'	- 				
		0.0	tchment 216	Pervious	3.020 (Impervious	Total Acco			
•		Su	irface Area	1.573	1.287	2.860	hectare"		
•		Ti	me of concentration	25.278	3,433	11.615	minutes"		
		Ti	me to Centroid	124.396	88.754	102.103	minutes"		
		Ra	infall depth	87.263	87.263	87.263	mm"		
		Ra	infall volume	1372.65	1123.08	2495.73	с.п"		
1		Ra	infall losses	47.943	7.007	29.522	.mm "		
2		Ru	noff depth	39.321	80.256	57.742	mm" _		
		Au	nott volume	618.52	1032.89	1651.41	c.m"		
÷		HU	non coerricient	0.451	0.920	0.002	0		
12	40	HV	DROGRAPH Add Bunoff	"	0.000	0.710	0.11/000		

Q:1348961104\SWM\MIDUSS\Post134896-104_Post-100yr.out Printed at 15:33 on 18 Dec 2018 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* Equal length" 1 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" Pervious Manning 'n'" 0.250 Pervious SCS Curve No." 76,000 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 ៣៣ " Runoff depth 39.324 80.019 69.845 mm " Runoff volume 71.77 438.10 509.87 с, п* 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 с.п" 0.288 0.288 0.288 3.457" * 40 HYDROGRAPH Confluence 2"

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7 Confluence "

0.124205140415	10000000000000000000000000000000000000		0.10.400	01404101404	HID ICC Devil 24000 404 Devil 400 and
Printed at 15:3	3 on 18 Dec 2018	rage 1/	Printed	at 15:33 on	18 Dec 2018
	2 Nodo #"			0.050	Populaus Manning Tott
	Z NODE # TNLET 1"			76 000	Pervious SCS Curve No "
	Maximum flow 2.695	C.m/sec"		0.451	Pervious Runoff coefficient"
	Hydrograph volume 22861.723	C.m"		0,100	Pervious Ia/S coefficient"
	0,288 2,695 0,288	0.000"		8.021	Pervious Initial abstraction"
* 40	HYDROGRAPH Copy to Outflow"			0.015	Impervious Manning 'n'"
	8 Copy to Outflow"		(#)	98.000	Impervious SCS Curve No."
•	0.288 2.695 2.695	0.000"		0.920	Impervious Runoff coefficient"
* 40	HYDROGRAPH Combine 5"			0.100	Impervious Ia/S coefficient"
•	6 Combine "		SW3	0.518	Impervious Initial abstraction"
	5 Node #"				5.562 0.000 3.457 7.011 c.m/sec"
	u/s of HWY 7&8"			Cat	chment 223 Pervious Impervious Total Area "
	Maximum flow 2.695	c.m/sec"		Sur	face Area 1.885 10.684 12.570 hectare"
	Hydrograph volume 22861.723	C.m"		Tín	ne of concentration 27.590 3.747 5.646 minutes"
*	0.288 2.695 2.695	2,695"	(1 2)	Tin	ne to Centroid 127.310 89.195 92.231 minutes"
40	HYDROGRAPH Confluence 3"			Rai	Infall depth 87.263 87.263 mm"
2	7 Confluence "		-2	наз	Intall Volume 0.1645 0.9324 1.0969 na-m ⁻
	3 NODE #"		1.0	Hai	LITAIL 105565 47.902 6.989 13.120 mm
•	INLET 2"	/ 4		Hur	1011 ueptin 39.302 60.275 74.136 iiiiii
	Maximum Tiow 1.183	c.m/sec-		Hur	10TT VOLUME /42.10 85/0.95 9319.11 C.M
				Hui	1011 CONTINUENT 0.451 0.520 0.850
. 40	U.288 1.183 2.095	0.000-	. 40	Maj	(Imitini 110W 0.222 5.496 5.502 C.m/set
40	R Copy to Outflow		40	4	
		0.000		4	5 562 5 562 3 457 7 011 ⁸
* 40	U.200 1.103 1.103	0.000	. 40	ЦVГ	S.502 S.502 S.407 F.MT
40	6 Combino "		. 40	8	
	5 Node #"		H)	ŭ	5 562 5 562 5 562 7.011"
(m)	U/s of HWY 729"		· 40	нуг	DROGRAPH Combine 5"
*	Maximum flow 3.842	C m/sec"		6	
*	Hydrograph volume 28424.844	с. "п"		5	Node #"
	0.288 1.183 1.183	3.842"	85 - C	-	u/s of HWY 7&8"
* 40	HYDROGRAPH Confluence 4"			Max	ximum flow 10.529 c.m/sec"
	7 Confluence "			Hyd	drograph volume 53379.254 c.m"
*	4 Node #"				5.562 5.562 5.562 10.529"
	INLET 3"		• 81	ADI	D COMMENT===================================
	Maximum flow 3.457	c.m/sec"	*:	3 Lir	nes of comment"
	Hydrograph volume 15635.311	c.m"			
	0.288 3.457 1.183	0.000"	2	Cat	tchments east of Hamilton Road, part of Inlet #4"
* 40	HYDROGRAPH Copy to Outflow"				
	8 Copy to Outflow"		40	HYC	DROGRAPH Start - New Tributary
2.10	0.288 3.457 3.457	0.000**	- C	2	Start - New Indutary"
40	HYDHOGHAPH COMDINE 5"			0.0	5.562 0.000 5.562 10.529"
	6 Compine "		33	LA	
	b Node #				
	Maximum flow 7 011	c m/soc*		1	Lydar Tength
	Hydrograph volume 44060 141	c.m/ 300		218	Tronbridge Manufacturing Property"
	0 268 3 457 3 457	7.011"		85 000	* Impervious"
* 40	HYDROGRAPH Start - New Tributary"	1.011	*1	2,060	Total Area"
	2 Start - New Tributary"		71	230.000	Flow length"
•	0.288 0.000 3.457	7.011	×	1.700	Overland Slope"
* 33	CATCHMENT 223"			0.309	Pervious Area"
•	1 Triangular SCS"		2	230.000	Pervious length"
*	1 Equal length"			3.000	Pervious slope"
	1 SCS method"			1.751	Impervious Area"
22	23 New Hamburglr Inc. lands"			230,000	Impervious length"
85.00	00 % Impervious"		<u>.</u>	3.000	Impervious slope"
12.5	70 Total Area"		÷	0.250	Pervious Manning 'n'"
90.00	DO Flow length"		S	76.000	Pervious SCS Curve No."
1.00	00 Overland Slope"			0.479	Pervious Hunott coefficient"
1.8	15 Pervious Area"		÷	0.060	Pervious 1a/S coetticlent"
90.00	JU Pervious length"		2	4.813	rervious initial abstraction"
1.00	JU MERVIOUS SLOPE"		÷	0.015	Impervious Manning "N"
10.6	D4 Impervious Area D0 Impervious length			98.000	Impervious aud ourve No." Impervious Buroff coofficient"
90.00	DO Impervious clore"			0.932	Impervious Ta/S coefficient"
1.00	20 Twhei ATORS STORE			0.100	Importatodo rajo cocritotene

Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Printed at 15:33 on 18 Dec 2018	Page 19	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Printed at 15:33 on 18 Dec 2018	Page 20
0.518 Impervious Initial abstraction"		3.000 Pervious slope"	and a second second second second
Catchment 218 Pervious Impervious Total Area "		75.000 Impervious Area	
Surface Area 0.309 1.751 2.060 hectare"		3.000 Impervious slope"	
Time of concentration 33.937 4.732 7.160 minutes"		0.250 Pervious Manning 'n'"	
"Inne to Centroid 135.070 90.522 94.226 minutes" Paiofall dopth 97.263 97.263 97.263 mm"		76.000 Pervious SCS Curve No."	
Rainfall volume 269.64 1527.98 1797.63 c.m"		0.331 PERVIOUS HUNOTT COETTICIENT" 0.281 Pervious Ta/S coefficient"	
Rainfall losses 45.484 5.972 11.899 mm"		22.539 Pervious Initial abstraction"	
Runoff depth 41.780 81.291 75.364 mm"		0.015 Impervious Manning 'n'"	
Runoff volume 129.10 1423.41 1552.51 c.m" Runoff coofficient 0.470 0.032 0.864 "		98.000 Impervious SCS Curve No."	
Maximum flow 0.033 0.940 0.948 c.m/sec"		U.921 Impervious Runott coetticient"	
40 HYDROGRAPH Add Runoff "		0.518 Impervious Initial abstraction"	
4 Add Runoff "		0.589 0.000 0.273 10.785 c.m/sec"	
0.948 0.948 5.562 10.529" 54 POND DESIGN"		Catchment 219 Pervious Impervious Total Area	
0.948 Current peak flow c.m/sec"		Time of concentration 21.830 2.416 3.572 minutes"	
4.094 Target outflow c.m/sec"		Time to Centroid 122.174 87.233 89.314 minutes"	
1552.5 Hydrograph volume c.m"		Rainfall depth 87.263 87.263 87.263 mm"	
344.700 Minimum water level metre"		Rainfall volume 167.55 949.43 1116.97 c.m	
345.400 Maximum water level metre"		Runoff depth 28.855 80.390 72.660 mm*	
0.000 Starting water level metre		Runoff volume 55.40 874.65 930.05 c.m	
0 Keep Design Data: 1 = True; 0 = False"		Runoff coefficient 0.331 0.921 0.833	
344,700 0.1250 0.000"		Maximum flow 0.019 0.588 0.589 c.m/sec*	
344.750 0.1270 9.000"		4 Add Runoff "	
344.800 0.1280 35.000"		0.589 0.589 0.273 10.785"	
344.850 0.1300 77.000"		40 HYDROGRAPH Copy to Outflow"	
344.950 0.1820 209.000"		8 Copy to Outflow"	
345.000 0.2220 297.000"		40 HYDROGRAPH Combine 5"	
345.050 0.2690 400.000"		6 Combine "	
' 345.100 0.2710 519.000" 245.150 0.2740 653.000"		5 Node #"	
345.200 0.2760 804.000"		U/S OT HWY 7&8" Maximum flow 11.304 o.m/coo."	
345.250 0.2790 971.000°		Hydrograph volume 55856.563 c.m"	
345.300 0.2820 1154.000"		0.589 0.589 0.589 11.304"	
345.350 0.2840 1355.000"		40 HYDROGRAPH Start - New Tributary"	
Peak outflow 0.273 c.m/sec"		2 Start - New Tributary" 0.589 0.000 0.589 11.304"	
Maximum level 345.134 metre"		33 CATCHMENT 220"	
Maximum storage 609.738 c.m"		" 1 Triangular SCS"	
0.948 0.948 0.273 10.529 c.m/sec"		" 1 Equal length" " 1 SCS method"	
40 HYDROGRAPH Combine 5"		220 Northwest corner of Nithview Heights"	
6 Combine "		* 8.000 % Impervious"	
5 NODE #"		0.500 Total Area"	
Maximum flow 10.785 c.m/sec"		5 000 Cverland Slope"	
Hydrograph volume 54926.520 c.m"		0.460 Pervious Area"	
0.948 0.948 0.273 10.785"		60.000 Pervious length"	
40 HYDHOGHAPH Start - New Tributary" 2 Start - New Tributary"		5.000 Pervious slope"	
0.948 0.000 0.273 10.785"		60.000 Impervious length"	
33 CATCHMENT 219"		5.000 Impervious slope"	
1 Triangular SCS"		0.250 Pervious Manning 'n'"	
1 SCS method"		74.000 Pervious SCS Curve No." 0.419 Pervious Rupoff coefficient"	
219 N.C. Pestells Head Office & other Industrial"		* 0.100 Pervious Ia/S coefficient*	
85.000 % Impervious"		8.924 Pervious Initial abstraction"	
1,280 IOTAL Area" 75,000 Flow length"		0.015 Impervious Manning 'n'"	
1.500 Overland Slope"		So.000 Impervious SGS Curve No." 0.926 Impervious Runoff coefficient"	
0.192 Pervious Area*		0.100 Impervious Ia/S coefficient"	
75.000 Pervious length"		0.518 Impervious Initial abstraction"	

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	0.089.0		11 204	c m/sco#			
	Catchment 220	Pervious	Tmpervious	C.M/Sec-			
	Surface Area	0.460	0.040	0.500	hectare"		
	Time of concentratio	n 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 Runof	f "					
	4 Add Runoff "						
	0.083 0.	083 0.589	11.304"				
40	HYDROGRAPH Copy to 0	utflow"					
S	8 Copy to Outflow"						
. 40		ບຮວ 0.083	11.304"				
40	HIDRUGHAPH COMDINE	5					
÷	5 Node #"						
	5 NODE #"						
	Maximum flow	44 0	866 c m/s				
	Hydrograph volume	56057 0	135 c.m."				
	0.083 0	083 0.083	11 366"				
. 40	HYDROGRAPH Start - N	ew Tributary"	11.000				
. 40	2 Start - New Tribu	tarv"					
	0.083 0.	000 0.085	11 366"				
* 33	CATCHMENT 221"	000 01000					
	1 Triangular SCS"						
	1 Equal length"						
	1 SCS method"						
(e))	221 Proposed ROW from	Hamilton Roa	ad"				
	81.500 % Impervious"						
	0.810 Total Area"						
	40,000 Flow length"						
	2.000 Overland Slope"						
	0.150 Pervious Area"						
1. A	40.000 Pervious length"						
	2.000 Pervious slope"						
	0.660 Impervious Area						
- 1 C	40.000 Impervious length	8					
2	2.000 Impervious slope"						
2	0.250 Pervious Manning	'n'"					
	0.450 Pervious SCS Curv	e NO."					
÷.	0.450 Pervious Hunott C	oerficient"					
	0.100 Pervious IA/S COE	hitclent"					
	0.021 Fervious Initial	austraction"					
100	0.010 Impervious Mannin	y II rve No "					
	0.926 Impervious 505 Cu	coefficients	4				
	0.100 Impervious To/9 o	oefficient"					
	0.518 Impervious Initia	1 abstraction	. "				
(#C)	0.372 0	7 20911 401101	11 366	c m/sec"			
100	Catchment 221	Pervious	Impervious	s Total Area			
	Surface Area	0.150	0.660	0.810	hectare"		
1.	Time of concentratio	n 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 Rurof	f"					
	4 Add Runoff "						

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	0.372 0.3	72 0.083	11 366	, u	
40	HYDROGRAPH Copy to Ou	tflow"	11.000	, ,	
	8 Copy to Outflow [®]				
	0.372 0.3	72 0.372	11.366	5"	
40	HYDROGRAPH Combine	5"			
	5 Node #"				
	u/s of HWY 7&8"				
	Maximum flow	11.6	85 c.m/	sec"	
	Hydrograph volume	56649.2	85 c.m'		
	0.372 0.3	72 0.372	11.685	5 "	
81	ADD COMMENT===================================				
	5 Effes of comment			*******	
	Catchment to Inlet #5	9			
	••••••			*******	
40	HYDROGRAPH Start - Ne	w Tributary"			
	2 Start - New Iribut	ary" 00 0.272	11 696		
33	CATCHMENT 222"	0,012	11.000	,	
	1 Triangular SCS"				
	1 Equal length®				
	1 SCS method"				
	222 Hear yards from Ha	milton Heigh	ts Subdivi	LSION"	
	1 080 Total Area"				
	20.000 Flow length"				
	3.000 Overland Slope"				
	1.026 Pervious Area"				
	20.000 Pervious length"				
	0.054 Impervious Areas				
	20.000 Impervious length"				
	3.000 Impervious slope"				
	0.250 Pervious Manning '	n'"			
	76.000 Pervious SCS Curve	No."			
	0.450 Pervious Runott co	etticient"			
	8.021 Pervious Initial a	bstraction"			
	0.015 Impervious Manning	'n'"			
	98.000 Impervious SCS Cur	ve No."			
	0.913 Impervious Runoff	coefficient"			
	0.100 Impervious Ia/S co	efficient"			
		abstraction	11 68	5 c m/sec*	
	Catchment 222	Pervious	Impervio	us Total Are	a "
	Surface Area	1.026	0.054	1.080	hectare*
	Time of concentration	0.048	1.093	7.376	minutes"
	Time to Centroid	102.747	85.426	101.074	minutes"
	Rainfall volume	07.203 895 32	07.203	942 45	um."
	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	
40	MAXIMUM TIOW HYDROGRAPH Add Rupoff	0.227	0.031	0.248	c.m/sec"
40	4 Add Runoff "				
	0.248 0.2	48 0.372	11.68	5"	
40	HYDROGRAPH Copy to Ou	tflow"			
	8 Copy to Outflow"				
40		48 0.248 E	11.68	o "	
40	6 Combine "	5			
	5 Node #"				
	u/s of HWY 7&8"				
	Newimum flow	11 0	99 o m	1000"	

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	Hydrograph volume 57094.953 c.m"	* 81 ADD COMMENT===================================
	0.248 0.248 0.248 11.933"	T Lines of comment"
* 81	ADD COMMENT===================================	• • • • • • • • • • • • • • • • • • • •
- C	3 Lines of comment"	• • • • • • • • • • • • • • • • • • • •
	Badenview Developments Toc. lands"	DRODOGED SHAL DOND DEGTON
	ABAUNTEN DEAETANIUUS TUR' TURID ABAUNTEN DEAETANIUUS TUR' TURID	** PROPOSED SWM POND DESIGN
* 40	HYDROGRAPH Start - New Tributary"	
	2 Start - New Tributary"	• • • • • • • • • • • • • • • • • • • •
	0.248 0.000 0.248 11.933"	* 54 POND DESIGN"
* 33	CATCHMENT 224"	31.049 Current peak flow c.m/sec"
	1 Triangular SCS"	* 4.094 Target outflow c.m/sec"
- Q	1 Equal length"	89122.5 Hydrograph volume c.m"
2	i sus metnog" 224 Badenview lande"	36. Number of stages"
*	85.000 % Impervious"	334.550 Minimum water level metre"
	43.200 Total Area"	334 550 Starting water level metre
	90.000 Flow length"	0 Keep Design Data: 1 = True: 0 = False*
	1.000 Overland Slope"	Level Discharge Volume"
	6.480 Pervious Area"	334.550 0.000 0.000"
÷	90.000 Pervious length"	334.600 0.00400 1187.000"
÷	1.000 Pervious slope"	334.700 0.02830 3607.000"
	30.000 Impervious Area	334.800 0.06350 6090.000"
.*	1.000 Impervious since"	334.900 0.08900 8535.000"
	0.250 Pervious Manning 'n'"	335.000 0.1680 11248.00
	76.000 Pervious SCS Curve No."	335.200 0.5360 16658.00"
	0.451 Pervious Runoff coefficient"	335.300 0.7599 19459.00"
<u>.</u>	0.100 Pervious Ia/S coefficient"	* 335.400 1.011 22323.00*
<u>.</u>	8.021 Pervious Initial abstraction"	335.500 1.286 25249.00"
÷	0.015 Impervious Manning 'n'"	335.600 1.583 28239.00"
	90.000 Impervious SCS Curve Mo."	335.700 1.901 31294.00"
	0.100 Impervious Tals coefficient"	
	0.518 Impervious Initial abstraction	336.000 2.595 37599.00
	19.116 0.000 0.248 11.933 c.m/sec"	336.100 3.427 43465.00"
•	Catchment 224 Pervious Impervious Total Area "	* 336.200 3.959 46848.00"
	Surface Area 6.480 36.720 43.200 hectare"	336.300 4.543 50286.00"
	Time of concentration 27.590 3.747 5.646 minutes"	336.400 5.171 53779.00"
÷.	lime to Centrold 127.310 89.195 92.231 minutes"	336.500 5.840 57328.00"
÷.	Reinfall volume 0.555 37.263 87.263 mm ⁻	336.600 6.544 60933.00"
	Reinfall Josepe 47 002 6 080 13 126 mm ⁻¹	
	Runoff depth 39.362 80.275 74.138 mm"	336,900 8,858 72088,00"
	Runoff volume 0.2551 2.9477 3.2027 ha-m"	* 337.000 9.690 75920.00"
	Runoff coefficient 0.451 0.920 0.850 "	337.100 10.550 79809.00"
÷	Maximum flow 0.764 18.897 19.116 c.m/sec"	337.200 11.437 83755.00"
40	HYDROGRAPH Add Runoff "	337.300 12.351 87759.00"
÷	4 Add HUNDTT "	337.400 13.291 91821.00"
* 40	HVDPAGEPH Copy to Quitflow"	337,500 14,255 95940.00"
. 40	8 Copy to Outflow"	337,550 14.746 98022.00"
*	19.116 19.116 19.116 11.933"	337,700 20,027,104352,0"
40	HYDROGRAPH Combine 5*	337,800 25,280 108643.0"
*	6 Combine "	337.850 28.277 110810.0"
•	5 Node #"	Peak outflow 4.763 c.m/sec"
	u/s of HWY 7&8"	Maximum level 336.335 metre"
- C	Maximum flow 31.049 c.m/sec"	Maximum storage 51517.750 c.m"
÷.	Hydrograph Volume 89122.4// c.m."	Centroidal lag 9.516 hours"
* 40	19.110 19.110 31.049" HVDPOCEAPH Confluence 5"	19.116 31.049 4.763 0.000 c.m/sec
	7 Confluence "	
	5 Node #"	12 Node #"
	u/s of HWY 7&8"	d/s of Proposed SWMF"
	Maximum flow 31.049 c.m/sec"	Maximum flow 4.763 c.m/sec"
<u>.</u>	Hydrograph volume 89122.477 c.m*	Hydrograph volume 80698.648 c.m"
2	19.116 31.049 19.116 0.000"	19.116 31.049 4.763 4.763"

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*** ec" ге" ге" tre" 0 = False* ×٩ 1.11 4.763 c.m/sec" 336.335 metre" 517.750 c.m" 9.516 hours"

Q:\348 Printer	96\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Page 25 I at 15:33 on 18 Dec 2018	Q:\\ Prin	134896\104\SWM\MIDUSS\Post\34896-104_Post-100yr.out Page 2/ rinted at 15:33 on 18 Dec 2018
81	ADD COMMENT===================================	•	8.021 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"
:	Catchments to Tolat #6	1.00	98.000 Impervious SCS Curve No." 0.932 Impervious Runoff coefficient"
	Gateriments to inter #0		0.302 impervious Ia/S coefficient"
40	HYDROGRAPH Start - New Tributary"	1.41	0.518 Impervious Initial abstraction"
	2 start - New Fributary" 19.116 0.000 4.763 4.763"		0.554 2.502 4.765 4.765 Com/Sec Catchment 261 Pervious Indervious Total Area "
• 33	CATCHMENT 260*	٠	Surface Area 1.598 0.752 2.350 hectare"
	1 Triangular SCS"		Time of concentration 14.730 4.756 9.811 minutes"
	1 SCS method"		Rainfall depth 87.263 87.263 87.263 mm"
	260 Hamilton Heights Subdivision"		Rainfall volume 1394.47 656.22 2050.69 c.m"
	46.000 % Impervious"		Rainfall Losses 47.948 5.974 34.517 mm" Runoff denth 39.315 81 280 52 747 mm"
	50.000 Flow length"		Runoff volume 628.25 611.30 1239.55 c.m."
	1.000 Overland Slope"		Runoff coefficient 0.451 0.932 0.604 "
÷ .	4,406 Pervious Area" 50,000 Pervious Length"		Maximum Tiow 0.284 0.404 0.554 C.M/SeC*
	3.000 Pervious slope"	*	4 Add Runoff "
	3.754 Impervious Area		0.554 3.056 4.763 4.763*
÷ .	232.000 Impervious length"	: 4	40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"
	0.250 Pervious Manning 'n'"		0.554 3.056 3.056 4.763"
•	76.000 Pervious SCS Curve No."	• 4	40 HYDROGRAPH Combine 12*
2	0.450 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient"		6 Combine "
	8.021 Pervious Initial abstraction"		d/s of Proposed SWMF*
	0.015 Impervious Manning 'n'"	•	Maximum flow 5.032 c.m/sec"
÷.	98.000 Impervious SCS Curve No."	- 2	Hydrograph volume 86/23.109 c.m."
*	0.100 Impervious IA/S coefficient"	• 4	40 HYDROGRAPH Start - New Tributary"
(#)	0.518 Impervious Initial abstraction"		2 Start - New Tributary"
÷.	2.502 0.000 4.763 c.m/sec" Catchment 260 Pervious Impervious Total Area "		0.554 0.000 3.056 5.032" 33 CATCHMENT 225"
	Surface Area 4.406 3.754 B.160 hectare"		1 Triangular SCS"
90. 140	Time of concentration 13.946 5.856 8.783 minutes"		1 Equal length"
	lime to Centrold 110.138 92.108 98.631 minutes" Bainfall denth 87.263 87.263 87.263 mm"		1 SUS method" 225 HWY 7/8 and north ditching"
•	Rainfall volume 3845.18 3275.52 7120.70 c.m"		30.000 % Impervious"
1	Rainfall losses 47.979 5.905 28.625 mm*		1.670 Total Area"
	Runoff volume 1731.05 81.358 88.639 mm* Bunoff volume 1731.05 3053.86 4784.90 c.m*	-	2.000 Verland Slope"
÷	Runoff coefficient 0.450 0.932 0.672 "	•	1.169 Pervious Area"
. 40	Maximum flow 0.791 2.041 2.502 c.m/sec"		75.000 Pervious length"
* 40	Add Bunoff "		0.501 Impervious Area"
	2,502 2,502 4,763 4,763 4		75.000 Impervious length"
33	CATCHMENT 261"	- 2	2.000 Impervious slope" 0.250 Resvious Manning 'n'"
	3 Specify values"		74.000 Pervious SCS Curve No."
•	1 SCS method"		0.419 Pervious Runoff coefficient
-	261 Klassen Bronze Property" 32 000 & Impervious"	÷.	0.100 Pervious 14/S coefficient" 8 924 Pervious Initial abstraction"
	2.350 Total Area"		0.015 Impervious Manning 'n''
	100.000 Flow length"		98.000 Impervious SCS Curve No."
÷	2.500 Overland Slope" 1 509 Pervious Area"	÷.	0.917 Impervious Hunott coefficient" 0.100 Impervious Ta/S coefficient"
	50.000 Pervious length"		0.518 Impervious Initial abstraction"
	2.500 Pervious slope	1	0.296 0.000 3.056 5.032 c.m/sec"
2	0,752 Impervious Area" 164.000 Impervious length"	÷.	Gatchment 225 Pervious Impervious Total Area " Surface Area 1.169 0.501 1.670 bectare"
(w).	1.500 Impervious slope"	*	Time of concentration 20.815 2.728 12.065 minutes"
-	0.250 Pervious Manning 'n'"		Time to Centroid 119,089 87.729 103.918 minutes"
2	/b.uuu rervious SUS Curve No." 0.451 Pervious Runoff coefficient"	1	Hainfall ceptn 87.253 87.253 87.253 mm ⁻ Rainfall volume 1020.11 437.19 1457.30 c.m"
	0.100 Pervious Ia/S coefficient"	*	Rainfall losses 50.664 7.232 37.634 mm"

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	Runoff depth	36.600	80.032	49 629	mm."	
	Runoff volume	427.85	400,96	828.81	с. т "	
•	Runoff coefficient	0.419	0.917	0.569	0	
	Maximum flow	0.154	0.266	0.296	c.m/sec*	•
40	HYDROGRAPH Add Runoff					
2	4 AGO HUNDTT " 0 296 0 2	96 3.05	6 5 0 9 9	н		
* 40	HYDROGRAPH Copy to Ou	tflow"	0 3.032			
	8 Copy to Outflow"					
	0.296 0.2	96 0.29	6 5.032			
- 40	HYDROGRAPH Combine	12"				
	6 COMDINE "					÷
	d/s of Proposed SW	ME"				
	Maximum flow	5.	082 c.m/	sec"		
	Hydrograph volume	87551.	914 c.m"	000		
•	0.296 0.2	96 0.29	6 5.082	•		14
81	ADD COMMENT======					06
÷	3 Lines of comment"					<u>1</u> 2
	Western catchment alo	ng Hamilton	Road dive	sted to Inl	ot #6"	
		ing maning con	noad, drve	*********	*****	
• 40	HYDROGRAPH Start - Ne	w Tributary				
	2 Start - New Tribut	ary"				
*	0.296 0.0	00 0.29	6 5.082	81		
33	CATCHMENT 270"					
÷	1 Triangular SCS"					2
*	1 SCS method"					
*	270 Industrial/Residen	tial area a	long Hamilt	on Boad*		
	55.000 % Impervious"					
•	8.450 Total Area"					
	45.000 Flow length"					
្	2.000 Overland Slope"					
	30.000 Pervious length"					
Η.	3.000 Pervious slope"					í.
÷	4.64B Impervious Area"					
÷	235.000 Impervious length"					
:	1.500 Impervious slope"					
÷ .	0.250 Pervious Manning '	n'"				
	0 449 Pervious Sus Curve	NO."				
¥	0.100 Pervious Ia/S coef	ficient"				
	8.021 Pervious Initial a	bstraction"				
.	0.015 Impervious Manning	'n'"				
÷	98.000 Impervious SCS Cur	ve No."				5 I
	0.932 Impervious Runott	coefficient"				
	0.518 Impervious Initial	abstractio	1 ⁿ			2
	3.151 0.0	00 0.29	5 5.082	c.m/sec"		
	Catchment 270	Pervious	Imperviou	s Total Area	a (*	<u> </u>
*	Surface Area	3.802	4.648	8.450	hectare"	
2	Time of concentration	10.265	5.901	7.135	minutes"	*
2	lime to Centroid	105.500	92.173	95.941	minutes"	
	Rainfall volume	3318 10	07.203 4055 57	87.263	#)M *	<u></u>
	Rainfall losses	48,050	5.893	24,863		÷
	Runoff depth	39.214	81.371	62.400	 ៣៣ "	
•	Runoff volume	1491.10	3781.70	5272.79	с.п"	
*	Runoff coefficient	0.449	0.932	0.715	•	
10	Maximum flow	0.773	2.526	3.151	c.m/sec*	-
40	HYDROGRAPH Add Runoff	-				5
•	4 AUU MUNOTT - 3 151 3 10	51 0 204	5 000			
56	DIVERSION"	. 0.230	0.002			÷
	6 Node number"					

1348961104\SWMIMIDUSS\Post134896-104_Post-100yr.out inted at 15:33 on 18 Dec 2018 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 8" Maximum flow 1.560 c.m/sec* Hydrograph volume 4270.784 C.m* 3.151 3.151 1.560 HYDROGRAPH Start - New Tributary" 1.560* 40 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" HYDROGRAPH Add Runoff " 40 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 HYDROGRAPH Combine 12" 1.560" 40 6 Combine " 12 Node #" d/s of Proposed SWMF" Maximum flow 5.831 c.m/sec" Hydrograph volume 88553.938 с.п" 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 с.п" 1.591 5.831 1.591 0.000" POND DESIGN" 54 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" Keep Design Data: 1 = True; 0 = False" 0 Level Discharge Volume" 334.290 0.000 0.000" 334.500 0.2540 5.000" 1.303 110.000" 335.000 335,500 2.800 674.000" 4.639 1910.000" 336.000 6.480 3748.000" 336.500 336.550 6.665 3967.000" 337.000 23.484 6569.000"

4,970

336.090

c.m/sec"

metre"

Peak outflow

Maximum level

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	Maximum storage 2240.868 c.m"		Maximum flow 0.127 0.094 0.205 c.m/sec"	
	Centroidal lag 5.715 hours"	* 40	HYDROGRAPH Add Runoff "	
10	1.591 5.831 4.970 0.000 c.m/sec"		4 Add Runoff "	
40	TIDROGRAFH NEXT TIR "	- 54	0,205 0.205 4.970 4.970" POND DESTGN"	
	1.591 4.970 4.970 0.000"	040	0.205 Current peak flow c.m/sec"	
56	DIVERSION "	100	0.070 Target outflow c.m/sec"	
	7 Node number"		371.7 Hydrograph volume c.m."	
7.1	70 Overflow threshold"		8. Number of stages"	
1.0	O Conduit type: 1=Pine:2=Channel"	(*)	0.000 Minimum water level metre"	
	Peak of diverted flow 0.000 c.m/sec"		0.000 Starting water level metre"	
	Volume of diverted flow 0.000 c.m"	٠	0 Keep Design Data: 1 = True; 0 = False"	
	DIV00007.100hyd"		Level Discharge Volume"	
	Major flow at 7"		0.000 0.000 0.000"	
40	HYDROGRAPH Combine 8"		$0.1500 0.00400 1.000^{\circ}$	
40	G Combine "		0.3500 0.00700 29.000"	
	8 Node #"	(#)	0.4500 0.00800 69.000"	
	NODE A"		0.6500 0.01000 178.000"	
	Maximum flow 4.970 c.m/sec"	(*)	0.7000 0.1060 208.000"	
	Hydrograph volume 88525.750 c.m"		0.7500 0.2810 240.000" Book outflow	
81	ADD COMMENT===================================		Maximum lavel 0.687 metre"	
	Lines of comment"		Maximum storage 200.227 c.m"	
			Centroidal lag 3.907 hours"	
	Catchments South of Hwy 7/8"		0.205 0.205 0.080 4.970 c.m/sec"	
10		40	HYDROGRAPH Combine 9"	
40	2 Start - New Tributary			
	1.591 0.000 4.970 4.970"		NODE B"	
33	CATCHMENT 280"		Maximum flow 1.595 c.m/sec*	
	1 Triangular SCS"		Hydrograph volume 4642.585 c.m"	
	3 Specify values"	. 40	0.205 0.205 0.080 1.595"	
) - Sos metinos 20. Northeast portion of Manle Leaf Foods property"	40	HYDROGRAPH Start - New Tributary"	
26.0	00 % Impervious"		0.205 0.000 0.080 1.595"	
0.7	700 Total Area"	* 33	CATCHMENT 201"	
45.0	00 Flow length"		1 Triangular SCS"	
1.5	JUD OVERLAND SLOPE"		3 Specify values"	
20.0	DO PERVIQUE APEA		281 Western portion of John Bear property"	
2.0	100 Pervious slope"		93.000 % Impervious"	
0.1	182 Impervious Area"		1.870 Total Area"	
68.0	100 Impervious length		120.000 Flow length"	
1.0	JUD Impervious slope	- R	1.000 UVERLAND STOPE" 0.131 Bervious Area"	
79.0	00 Pervious SCS Curve No."		20.000 Pervious leadh"	
0.4	199 Pervious Runoff coefficient"	•	2.000 Pervious slope"	
0,1	00 Pervious Ia/S coefficient"	2	1.739 Impervious Area"	
6.7	52 Pervious Initial abstraction"		112,000 Impervious length"	
0.0	JIS Impervious Manning 'n''	- 2	1.000 Impervious slope" 0.250 - Repuisus Mapping 'n'"	
0.9	19 Impervious Sus Curve NO. 19 Impervious Runoff coefficient"	•	65.000 Pervious SCS Curve No."	
0.1	00 Impervious Ia/S coefficient"		0.294 Pervious Runoff coefficient"	
0.8	518 Impervious Initial abstraction		0.100 Pervious Ia/S coefficient"	
	0.205 0.000 4.970 4.970 c.m/sec*		13.677 Pervious Initial abstraction"	
	valoriment 200 - Pervious Impervious Iotal Area "		0.005 Impervious Manning 'n'" 99.000 Impervious SCS Curve No."	
	Time of concentration 8.635 3.167 6.487 minutes		0.929 Impervious Runoff coefficient*	
	Time to Centroid 102.727 88.360 97.085 minutes*		0.100 Impervious Ia/S coefficient"	
	Rainfall depth B7.263 87.263 B7.263 mm"	•	0.518 Impervious Initial abstraction"	
	Rainfall volume 452.02 158.82 610.84 c.m"	÷	0.930 0.000 0.080 1.595 c.m/sec"	
	natinati tusses 40.091 /.009 34.109 mm" Runoff denth 43.572 80.194 53.094 mm"		valumment 201 - Mervious Impervious lotal Area " Surface Area	
		<i></i>		
ų.	Runoff volume 225.71 145.95 371.66 c.m"		Time of concentration 11.258 4.272 4.435 minutes"	

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Rainfall depth 87.263 87.263 87.263 mm*		• 0.440 0.000 0.827 2.396 c.m/sec"
Rainfall volume 114.23 1517.60 1631.83 c.m		Catchment 282 Pervious Impervious Total Area "
Rainfall losses 61.569 6.185 10.062 mm"		Surface Area 0.375 0.835 1.210 hectare
Hunoff depth 25.695 81.079 77.202 mm"		Time of concentration 12.714 3.043 4.260 minutes"
Runoff coefficient 0.294 0.929 0.885		" Bainfall donth 87,263 87,269 87,269 minutes"
Maximum flow 0.015 0.920 0.930 c.m/sec*		" Bainfall volume 327.33 728.56 1055.89 c.m"
* 40 HYDROGRAPH Add Runoff "		Rainfall losses 61.626 7.190 24.065 mm"
4 Add Runoff "		Runoff depth 25.638 80.073 63.198 mm"
0.930 0.930 0.080 1.595		Runoff volume 96.17 668.53 764.70 c.m"
Outright Design of the contract of the co		HUNDIT COETICIENT 0.294 0.318 0.724 "
0.070 Target outflow c.m/sec"		40 HYDROGRAPH Add Runoff " 0.443 0.440 C.W/Sec
1443.7 Hydrograph volume c.m"		4 Add Runoff *
7. Number of stages"		0.440 0.440 0.827 2.396°
0.000 Minimum water level metre"		54 POND DESIGN"
		0.0240 CUPPENT peak TLOW C.m/sec"
0 Keep Design Data: 1 = True: 0 = False"		764.7 Hydronaph volume c.m."
Level Discharge Volume"		5. Number of stages"
0.000 0.000 0.000"		 0.000 Minimum water level metre"
0.3000 0.09000 8.000		1.400 Maximum water level metre"
		0.000 Starting water level metre"
1.200 0.1400 254.000"		I Level Discharge Volume"
1.500 0.1500 358.000"		* 0.000 0.000 0.000*
1.800 1.000 400.000"		0.3200 0.04300 276.000°
Peak outflow 0.827 c.m/sec"		0.7500 0.06600 333.000"
Maximum storada 309 788 c m"		1,300 0.08700 371.000"
Centroidal lag 1.798 hours"		" Peak nithfow 0.5000 400,000 0.200 c.m/sec"
* 0.930 0.930 0.827 1.595 c.m/sec"		Maximum level 1.337 metre"
40 HYDROGRAPH Combine 9"		Maximum storage 381.694 c.m"
6 Combine "		Centroidal lag 2.883 hours"
9 NODE #		0.440 0.440 0.200 2.396 c.m/sec"
Maximum flow 2.396 c.m/sec"		6 Combine "
Hydrograph volume 6143.625 c.m"		* 9 Node #*
0.930 0.930 0.827 2.396"		NODE B"
40 HYDROGRAPH Start - New Tributary"		Maximum flow 2.448 c.m/sec"
2 Start - New Inductary		- Hydrograph Volume 6910.332 c.m"
33 CATCHMENT 282"		* 40 HYDROGRAPH Start - New Tributary"
1 Triangular SCS"		2 Start - New Tributary"
3 Specify values"		0.440 0.000 0.200 2.448"
1 SUS method"		33 CATCHMENT 283*
69.000 % Impervious"		a specify values"
1.210 Total Area"		* 1 SCS method*
60.000 Flow length		* 283 Area along western tributary, south of Hwy 7/8"
2.500 Overland Slope"		29.000 % Impervious"
3.0 00 Pervious length"		23.290 Total Area"
3.000 Pervious slope"		2 000 Overland Slope"
0.835 Impervious Area"		16.536 Pervious Area"
90.000 Impervious length"		150.000 Pervious length"
- 2.000 Impervious slope"		2.200 Pervious slope"
65.000 Pervicus SCS Curve No "	1.00	- o./54 Impervious Area" 94.000 Impervious Lastb"
0.294 Pervious Runoff coefficient"		2.000 Impervious slope
* 0.100 Pervious Ia/S coefficient*		0.250 Pervious Manning 'n'"
13.677 Pervious Initial abstraction"		68.300 Pervious SCS Curve No."
• 0.015 Impervious Manning 'n'"		0.337 Pervious Runoff coefficient"
90.000 Impervious SUS CUIVE NO."		U.100 Pervious Ia/S coefficient"
0.100 Impervious IA/S coefficient"		0.015 Impervious Maning 'n''
0.518 Impervious Initial abstraction"		98.000 Impervious SCS Curve No."

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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"	 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"
Time to Centroid 136.252 94.189 113.960 minutes" Rainfall depth 87.263 87.263 87.263 mm"	 Catchment 284 Pervious Impervious Total Area Surface Area 2.891 0.059 2.950 hectare
"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"	"Time of concentration 18.971 2.486 18.263 minutes" Time to Centroid 116.786 07.343 115.522 minutes" Rainfall depth 87.263 87.263 87.263 mm"
Runoff volume 0.4869 0.5489 1.0358 ha-m" Runoff coefficient 0.337 0.931 0.510 " Maximum flow 1.231 2.757 4.012 o.m/coce"	 Rainfall volume 2522.79 51.49 2574.27 c.m" Rainfall losses 50.707 6.917 49.832 mm" Purofé death
40 HYDROBRAPH Add Runoff " 4 Add Runoff "	Number 1056.84 47.40 1104.24 c.m* * Runoff coefficient 0.419 0.921 0.429 *
4.012 0.200 2.448" 40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	Maximum flow 0.392 0.032 0.400 c.m/sec" 40 HYDROGRAPH Add Runoff " 4 Add Runoff "
4.012 4.012 4.012 2.448" 40 HYDROGRAPH Combine 9" 6 Combine "	* 0,400 0,400 4,970 9.912" *40 HYDROGRAPH Copy to Outflow" * 8 Copy to Outflow"
" 9 Node #" " NODE 8" " Maximum flow 6.460 c.m/sec"	* 0.400 0.400 0.400 9.912* *40 HYDROGRAPH Combine 9* * 6 Combine *
Hydrograph volume 17267.979 c.m" 4.012 4.012 4.012 6.460" 4.0 HYDROGRAPH Confluence 8"	9 Node #* NODE B*
7 Confluence * 8 Node #*	Hydrograph volume 106898.930 c.m [*] 0.400 0.400 10.241 "
Maximum flow 4.970 c.m/sec" Hydrograph volume 88526.750 c.m"	T Confluence 9 Node #"
40 HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"	NODE B" Maximum flow 10.241 c.m/sec" Hydrograph volume 106898.938 c.m"
4.012 4.970 4.970 0.000" 40 HYDROGRAPH Combine 9" 6 Combine "	* 0.400 10.221 0.400 0.000* *40 HYDROGRAPH Copy to Outflow* * 8 Copy to Outflow*
9 Node #" NODE 8" Maximum flow 9.912 c.m/sec"	* 0.400 10.241 10.241 0.000* *40 HYDROGRAPH Combine 10* * 6 Combine *
Hydrograph volume 105794.695 c.m" 4.012 4.970 9.912" 40 HYDROGRAPH Start - New Tributarv"	10 Node #" NODE C" Maximum flow 10.241 c.m/sec"
 2 Start - New Tributary" 4.012 0.000 4.970 9.912" 33 CATCHMENT 284" 	* Hydrograph volume 106898.938 c.m* 0,400 10.241 10.241 10.241 40 HYDROGRAPH Start - New Tributary*
 1 Triangular SCS" 1 Equal length" 1 SCS method" 	* 2 Start - New Tributary" * 0.400 0.000 10.241 10.241* * 33 CATCHWENT 285*
284 Agricultural lands south of Bleams Road" 2.000 % Impervious" 2.050 Total Area"	1 Tringular SCS 3 Specify values
80.000 Flow length* 3.100 Overland Slope*	285 Morningside Retirement Community lands* 58.000 % Impervious*
80.000 Pervious length" 3.100 Pervious slope" 0.059 Important Aper"	190.000 Flow length* 2.000 Overland Slope*
80.000 Impervious length* 3.100 Impervious slope*	25.00 Pervious length 2.500 Pervious slope
74.000 Pervious SCS Curve No." 0.419 Pervious Inoff coefficient" 0.100 Pervious Ia/S coefficient"	" 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." 0.287 Pervious Runoff coefficient"		 0.454 0.454 0.000 6.412 16.195 c.m/sec* Catchment 250 Pervious Impervious Total Area *
0.100 Pervious Ia/S coefficient		Surface Area 3.510 0.000 3.510 hectare"
 14.041 Pervious Initial abstraction" 0.015 Impervious Magning 'n'" 		Time of concentration 23.873 6.217 23.873 minutes"
98.000 Impervious SCS Curve No."		 Rainfall depth 87.263 97.263 87.263 mm[*]
0.931 Impervious Runoff coefficient		* Rainfall volume 3062.94 0.00 3062.95 c.m*
0.100 Impervious Ia/S coefficient		Rainfall losses 47.899 5.932 47.899 mm*
6.412 0.000 10.241 10.241 c.m/sec"		"Runoff depth 39.365 81.331 39.365 mm" "Runoff volume 1381.70 0.00 1381.70 c.m"
Catchment 285 Pervious Impervious Total Area '		 Runoff coefficient 0.451 0.000 0.451 *
Surface Area 7.888 10.892 18.780 hectare		* Maximum flow 0.454 0.000 0.454 c.m/sec*
Time to Concentration 12.199 6.4/4 /.51/ minutes" Time to Controld 110.243 92.945 96.098 minutes"		40 HYDHOGHAPH Add Hunott "
Rainfall depth 87.263 87.263 87.263 mm"		* 0.454 0.454 6.412 16.195"
Rainfall volume 0.6883 0.9505 1.6388 ha-m		* 40 HYDROGRAPH Copy to Outflow"
Rainfall losses 62.261 6.045 29.656 mm"		B Copy to Outflow
" Bunoff volume 0.1972 0.8847 1.0819 ha-m"		4.0 HYDROGRAPH Combine 11"
* Runoff coefficient 0.287 0.931 0.660 *		• 6 Combine •
Maximum flow 0.876 5.869 6.412 c.m/sec*		* 11 Node #*
40 HYDROGHAPH AGG HUNGTT *		U/S OF east culvert of HWY 788" Navimum flow
6.412 6.412 10.241 10.241"		* Hydrograph volume 1381.705 c.m*
40 HYDROGRAPH Copy to Outflow*		• 0.454 0.454 0.454 0.454 °
B Copy to Outflow"		* 40 HYDROGRAPH Start - New Tributary"
4 0 HYDROGRAPH Combine 10"		* 0.454 0.000 0.454 0.454*
• 6 Combine "		* 33 CATCHMENT 251"
10 Node #"		1 Triangular SCS"
NUDE C' Maximum flow 16.195 c.m/sec"		3 Specity values" 1 SCS method
Hydrograph volume 117717.727 c.m"		251 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road*
6.412 6.412 6.412 16.195"		33.000 % Impervious"
81 ADD COMMENT===================================		S.770 TOTAL Area"
		* 2.000 Overland Slope"
Catchments north of Hwy 7/8, towards Eastern Tributary"		3.866 Pervious Area
40 HYDDOCDARH Start - New Tributary"		100.000 Pervious length
2 Start - New Tributary		* 1.904 Impervious Area"
6.412 0.000 6.412 16.195"		296.000 Impervious length
33 CATCHMENT 250"		2.000 Impervious slope
3 Specify values"		76.00 Pervious SCS Curve No."
1 SCS method*		0.451 Pervious Runoff coefficient"
250 Southern portion of Rec Centre fields		0.100 Pervious Ia/S coefficient"
3.510 Total Area"		• 0.015 Impervious Annina 'n'*
95.000 Flow length"		98.000 Impervious SCS Curve No."
1.600 Overland Slope"		0.932 Impervious Runoff coefficient
3.510 Pervious Jenath"		 0.510 Impervious 1a/S coerticient" 0.513 Impervious faitial abstraction
2.000 Pervious slope"		1.199 0.000 0.454 0.454 c.m/sec*
0.000 Impervious Area"		Catchment 251 Pervious Impervious Total Area "
- 296,000 Impervious length"		Surface Area 3.866 1.904 5.770 hectare"
0.250 Pervious Manning 'n'"		" Time to Controid 122.053 92.616 107.493 minutes"
76.000 Pervious SCS Curve No."		Rainfall depth 87.263 87.263 mm*
0.451 Pervious Runoff coefficient"		Rainfall volume 3373.52 1661.58 5035.10 c.m* Bainfall Jacana 47.800 5.022 cd.800 c.m*
8.021 Pervious Initial abstraction"		nalinali lusses 47.599 5.932 34.050 mm ⁻ Runoff deuth 39.365 61.331 53.214 mm ⁺
0.015 Impervious Manning 'n'"		Runoff volume 1521.80 1548.62 3070.42 c.m°
98.000 Impervious SCS Curve No."		Runoff coefficient 0.451 0.932 0.610 "
0.000 Impervious Hunott coefficient" 0.100 Impervious Ia/S coefficient"		- maximum tiow 0.501 1.031 1.199 C.M/Sec" 4 40 HYDROGRAPH Add Runoff "
0.518 Impervious Initial abstraction*		4 Add Runoff

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* 1.199 1.199 0.454 0.454 * 40 HYDROGRAPH Copy to Outflow"	47 FILEI_0 Read/Open DIV00007.100hyd" 1 1=read/open; 2=write/save"
8 Copy to Outflow"	2 1=rainfall; 2=hydrograph"
1.199 1.199 1.199 0.454"	1 1=runoff; 2=inflow; 3=outflow; 4=junction*
40 HYDROGRAPH Combine 11"	DIV00007.100hyd"
5 COMDINE -	Major flow at 7"
u/s of east culvert of HWY 788"	Maximum flow 0.000 c.m/sec*
 Maximum flow 1.390 c.m/sec" 	0.000 0.000 0.376 1.685 c.m/sec*
Hydrograph volume 4452.130 c.m"	* 40 HYDROGRAPH Add Runoff *
1.199 1.199 1.390"	4 Add Runoff
40 HYDROGRAPH Start - New Tributary"	
2 Start - New Hitbutary"	40 HYDROGRAPH CODY TO DUTTION"
33 CATCHMENT 252*	* 0.000 0.000 1.685"
1 Triangular SCS [*]	40 HYDROGRAPH Combine 11
1 Equal length	6 Combine "
1 SCS method"	11 Node #"
5 000 k Theory jours	U/S OT EAST CUIVERT OT HWY /X8"
2.870 Total Area"	Maximum 100 1.005 C.m/sec
• 65.000 Flow length*	0,000 0,000 1,685°
1.500 Overland Slope"	* 40 HYDROGRAPH Confluence 11"
2.726 Pervious Area"	* 7 Confluence *
65.000 Pervious length	11 Node #*
0.144 Impervious Acea	U/S OT EAST CULVENT OF HWY /AB"
65.000 Impervious length"	* Hydrograph volume 5564.872 c.m*
1.500 Impervious slope"	0.000 1.685 0.000 0.000"
0.250 Pervious Manning 'n'	* 54 POND DESIGN*
74.000 Pervious SCS Clive No."	1.685 Current peak flow c.m/sec"
0.419 Pervious Hunott coefficient"	• 0.070 Target outflow c.m/sec*
8.924 Pervious Initial abstraction"	Soo4.9 Ayurograph voldme C.m." 9 Number of states"
• 0.015 Impervious Manning 'n'*	* 332.660 Minimum water level metre*
98,000 Impervious SCS Curve No."	* 336.000 Maximum water level metre*
0.917 Impervious Runoff coefficient"	332.660 Starting water level metre
0.5100 Impervious la/s coefficient	0 Keep Design Data: 1 = True; 0 = False
0.516 Impervious Initial abstraction	- 335 660 0 000 0 000.
Catchment 252 Pervious Impervious Total Area	* 333,000 0,3010 198,000*
Surface Area 2.726 0.144 2.870 hectare"	333.500 1.168 1165.000*
Time of concentration 20.824 2.729 18.957 minutes"	334.000 2.325 2895.000"
lime to Centrola 119.101 87.731 115.863 minutes" Painfail donth 97.262 97.263 7.063	334.500 3.132 5301.000
Rainfall volume 2379.24 125.22 2504 46 c.m*	* 335.500 4.332 12258.00*
Rainfall losses 50.663 7.234 48.492 mm"	335.750 4.583 14551.00"
Runoff depth 36.600 80.029 38.771 mm*	336.000 21.985 17113.00"
Runoff volume 997.90 114.84 1112.74 c.m*	Peak outflow 1.257 c.m/sec"
Mavimum Flaw 0.419 0.917 0.444 *	- Maximum 1001 333.538 metre"
* 40 HYDROGRAPH Add Runoff *	Malinum storage 1297.749 C.M." Centroidal lag 2.134 hours"
4 Add Runoff "	0.000 1.685 1.257 0.000 c.m/sec"
2. 0.376 0.376 1.199 1.390"	* 40 HYDROGRAPH Next link *
40 HYDROGRAPH Copy to Outflow	5 Next link *
- 6 COPY TO OUTTION"	- 0.000 1.257 1.257 0.000*
* 40 HYDROGRAPH Combine 11"	SO OFARTI/RE-START FURALS IT
6 Combine •	Total Catchment area 234.030 hectare"
* 11 Node #*	Total Impervious area 110.433 hectare"
u/s of east culvert of HWY 7&8"	Total % impervious 47.187
Maximum flow 1.685 c.m/sec*	- 19 EXIT*
0.376 0.376 1.645"	
* 40 HYDROGRAPH Start - New Tributary"	
2 Start - New Tributary"	
. 0.376 0.000 0.376 1.685*	

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Hilds string Max, Falar, fry, 473 Hilds in section List is a set: Control Hilds in the set: Control Contro Contro Control		MIDUSS Output>"			Time of concentration	42.907	7.809	42,907	minutes"
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0 0.001 # disc 0.134800 tot Number Sector Paintel Lisse 22.001 0.44 disc 22.011 0.001	÷.	MIDUSS created Sunday, February 07, 2010"			Rainfall volume	205.000	265.000	205.000	
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31 The Product Provide The Step " 4.04 Add Report" Add Report * 31 The Step * 4.44 Add Report * 5.00 0.000* 31 Character Step * 1 Step * 1 Step * 31 Character Step * 1 Step * 1 Step * 32 Character Step * 1 Step * 1 Step * 33 Character Step * 1 Step * 1 Step * 34 Character Step * 1 Step * 1 Step * 35 Character Step * 1 Step * 1 Step * 34 Character Step * 1 Step * 1 Step * 35 Step * 1 Step * 1 Step * 1 Step * 36 Step * 2 Step * 1 Step * 1 Step * 37 The Parket Step * 2 Step * 1 Step * 1 Step * 36 Step * 2 Step * 1 Step * 1 Step * 1 Step * 37 Step * 2 Step * 2 Step * 1 Step * 1 Step * 1 Step * 1 Step * 37 Step * 2 Step * 1 Step * 2 Step * 1 Step * 1 Step * 1 Step *	<u>.</u>	Data & Time last used: 12/17/2018 at 2:00:30 PM			Maximum flow	0 442	0.000	0.442	c.m/sec"
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7 Lines of Comment' 1 Egail Singht' 8 Elemination of DERN' 600 station of DERN' 600 station of DERN' 8 Elemination of DERN' 200 Total Area' 200 Total Area' 8 Elemination of DERN' 200 Total Area' 200 Total Area' 8 Elemination of DERN' 200 Total Area' 200 Total Area' 8 Elemination of DERN' 200 Total Area' 200 Total Area' 8 Elemination of DERN' 200 Total Area' 200 Total Area' 9 Time PAARETERS' 200 Dervices algogin' 200 Total Area' 9 Time PAARETERS' 200 Dervices algogin' 200 Total Area' 9 Station of DERN' 200 Dervices algogin' 200 Total Area' 9 Station of DERN' 200 Dervices algogin' 200 Dervices algogin' 1 Tital Agenth' 200 Dervices algogin' 200 Dervices algogin' 1 Dervices algogin' 200 Dervices algogin' 200 Dervices algogin' 1 Dervices algogin' 200 Dervices algogin' 200 Dervices algogin' 1	81				1 Triangular SCS"				
 Nilos Epsiloynet Lands' <l< td=""><td></td><td>7 Lipes of comment"</td><td></td><td></td><td>1 Equal length*</td><td></td><td></td><td></td><td></td></l<>		7 Lipes of comment"			1 Equal length*				
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New Hashing, "Grando" 0.000 % Impervious" Build Storn Petri - Post development" 0.000 % Impervious" Do Not. 100 Not.		Wilmot Employment Lands"			202 Woodlot - north of	GEXR *			
Begional Storm Event - Post development" 2.080 Total Ares" Ubb No. 3 Mage - Total Storm Event - Post development" 2.000 Total Ares" Status Particular Storm Event - Post development" 2.000 Total Ares" Status Particular Storm Event - Post development" 2.000 Total Ares" Status Particular Storm Event - Post development" 2.000 Particular Storm Event - Post development" Status Particular Storm Event - Post development" 2.000 Particular Storm Event - Post development Status Particular Storm Event - Post development" 2.000 Particular Storm Event - Post development Status Particular Storm Event - Post development" 2.000 Particular Storm Event - Post development" Status Particular Storm Event - Post development" 2.000 Particular Storm Event - Post development" Status Particular Storm Event - Post development" 2.000 Particular Storm Event - Post development - Pos		New Hamburg, Ontario"		•	0.000 % Impervious"				
Juš No.: Sassei-loš' 60.000 Flow langth' Cislanted by: Mode@ 2.000 Vertical Slow 31 The PAAMETERS' 80.000 Farvices langth' 35 C.2000 Farvices langth' 36 C.2000 Farvices langth' 37 Justice PAAMETERS' 38 Boode Farvices langth' 38 Construction 37 Justice PAAMETERS' 38 Construction 37 Sasse Construction 38 Construction 3 Name Construction 3 Sasse Construction 4 Sasse Construction 5 Sasse Construction 5 Sasse Construction 5 <td< td=""><td></td><td>Regional Storm Event - Post development*</td><td></td><td>•</td><td>2.080 Total Area"</td><td></td><td></td><td></td><td></td></td<>		Regional Storm Event - Post development*		•	2.080 Total Area"				
Calculated by: NED/MSP 2.000 Overland Slope* 91 Time Answerts 2.000 Pervisus Area* 93 Time Answerts 2.000 Pervisus Area* 94 Time Answerts 2.000 Pervisus Area* 95 Time Answerts 2.000 Pervisus Area* 97 Time Answerts 2.000 Pervisus Area* 980.000 Max. Stora length* 0.000 Tapervisus Area* 980.000 Duration* 0.000 Tapervisus Store* 0.000 Tapervisus Area* 980.000 Duration* 0.000 Fervisus Store* 0.000 Fervisus Store* 980.000 Curreto* 0.000 Fervisus Store* 0.000 Fervisus Store* 980.000 Comparison* 0.000 Fervisus Store* 0.000 Fervisus Store* 981 Arb Comment* 0.000 Fervisus Mail arbot* 0.000 Comparison* 981 Arb Comment* 0.000 Comparison* 0.000 Comparison* 981 Arb Comment* 0.000 Comparison* 0.000 Comparison* 981 Arb Comment* 0.000 Fervisus Mail arbot* 0.000 Comparison* 981 Arb Comment* 0.000 Comparison* 0.000 Comparison* 981 Arb Comment* 0.000 Comparison* 0.000 Comparison*		Job No.: 34896-104"			80.000 Flow length"				
31 Title PANALETBO' 80:000 Pervisus Area" 53 Title PANALETBO' 80:000 Pervisus Area" 54 Title PANALETBO' 80:000 Ispervisus Area" 560:000 Max. hydrograph" 0:000 Ispervisus Area" 0:000 Ispervisus Area" 580:000 Max. hydrograph" 0:000 Ispervisus Area" 0:000 Ispervisus Area" 32 STOMM Mass Curve" 0:000 Pervisus Bioght" 33 STOMM Mass Curve" 0:000 Pervisus Bioght" 34 Bass Curve" 0:000 Pervisus Bioght" 35 STOMM Mass Lentine Hazel (entire 48 h)" 0:088 Pervisus Bioght Coefficient" 36 Bass Curve" 0:000 Ispervisus Rindig "n". 36 Comparison Bioght Coefficient" 0:000 Ispervisus Rindig cefficient" 36 Comparison Bioght Coefficient" 0:000 Ispervisus Rindig cefficient" 36 Comparison Bioght Coefficient" 0:000 Comparison Bioght Coefficient" 37 Catherent Storth of GCO, part of Filet #! 0:000 Comparison Bioght Coefficient" 38 Cortherent Storth of GCO, part of Filet #! 0:000 Comparison Bioght Coefficient" 39 Corthetmort Storth of GCO, part of Filet #! <t< td=""><td>*</td><td>Calculated by: NED/MSB"</td><td></td><td></td><td>2.500 Overland Slope"</td><td></td><td></td><td></td><td></td></t<>	*	Calculated by: NED/MSB"			2.500 Overland Slope"				
- si Title PANAMETERS* 60.000 Pervisus langth* - si - sistem langth* 2.000 Num. Storm langth* - sistem langth* - sistem langth* 2.000 Impervisus langth* - sistem langth* - sistem langth* 2.000 Impervisus langth* - sistem langth* - sistem langth* 2.000 Impervisus langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem langth* - sistem		***************************************			2.080 Pervious Area"				
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60.000 Pervious length* 40 HYDROGRAPH Add Runoff * 0.500 Pervious Slope* 0.285 0.716 0.000 0.000 Impervious slope* 0.285 0.716 0.000* 0.500 Pervious slope* 0.285 0.716 0.000* 0.500 Impervious slope* 0.285 0.716 0.00* 0.500 Pervious Slope* 0.285 0.716 0.00* 0.500 Pervious Slope* 0.285 0.716 0.00* 0.500 Pervious Supe* 0.285 0.716 0.70* 0.617 Pervious Runoff coefficient* 0.285 0.716 0.716 0.00* 5.576 Pervious SCS Curve No.* 1 Node #* 1////////////////////////////////////	S#1	2.970 Pervious Area"		- C - C - C	Maximum flow	0.285	0.000	0,285	c.m/sec"
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0.688 Pervious Runoff coefficient" Rainfall volume 5279.63 2842.87 8122.50 c.m" 0.100 Pervious IA/S coefficient" Rainfall losses 70.314 6.701 48.049 mm" 10.886 Pervious Manning 'n' Runoff depth 214.666 278.292 28.651 mm" 0.015 Impervious SCS Curve No." Runoff depth 214.666 278.292 28.651 mm" 0.978 Impervious Runoff coefficient" Maximum flow 0.753 0.976 0.831 .m" 0.978 Impervious Runoff coefficient" Maximum flow 0.266 0.150 0.413 c.m/sec" 0.151 Impervious Initial abstraction" 40 HYDROGRAPH Add Runoff " 0.413 0.151 3.568" 0.151 0.000 Impervious Total Area " 33 CATCHMENT 207"	×:	70.000 Pervious SCS Curve No."	*	Bainfall depth 285.000 285.000 mm"
0.100 Pervious Ia/S coefficient" Rainfall losses 70.314 6.701 46.049 mm" 10.886 Pervious Initial abstraction" Runoff depth 214.686 276.299 236.951 mm" 0.015 Impervious SCS Curve No." Runoff coefficient 0.753 0.976 0.831 " 0.978 Impervious Runoff coefficient" Maximum flow 0.266 0.150 0.413 c.m/sec" 0.978 Impervious Ia/S coefficient" Maximum flow 0.266 0.150 0.413 c.m/sec" 0.100 Impervious Ia/S coefficient" 40 HYDROGRAPH Add Runoff " " " " 0.151 0.000 0.178 3.425 c.m/sec" 33 CATCHMENT 207" " -	5	0.688 Pervious Runoff coefficient"	2	Rainfall volume 5279.63 2842.87 8122.50 c.m"
10.886 Pervious Initial abstraction" Runoff depth 214.686 278.299 236.951 mm" 0.015 Impervious SCS Curve No." Runoff depth 997.06 2776.04 6753.09 c.m" 0.978 Impervious Runoff coefficient" Norff coefficient 0.753 0.976 0.831 " 0.100 Impervious Initial abstraction" Maximum flow 0.266 0.150 0.413 c.m/sec" 0.151 0.000 0.178 3.425 c.m/sec" 4 Add Runoff " - - 0.151 0.000 0.178 3.425 c.m/sec" - 0.413 0.413 0.151 3.568" Catchment 205 Pervious Improvious Total Area " 33 CATCHMENT 207" - <td>÷.</td> <td>0.100 Pervious Ia/S coefficient"</td> <td></td> <td>Rainfall losses 70.314 6.701 48.049 mm"</td>	÷.	0.100 Pervious Ia/S coefficient"		Rainfall losses 70.314 6.701 48.049 mm"
0.015 Impervious Manning 'n'" Runoff volume 3977.06 2776.04 6753.09 c.m" 98.000 Impervious Runoff coefficient" Runoff volume 0.977.04 6753.09 c.m" 0.978 Impervious Runoff coefficient" Maximum flow 0.266 0.150 0.413 c.m/sec" 0.100 Impervious Initial abstraction" 40 HYDROGRAPH Add Runoff " 0.413 </td <td>•</td> <td>10.886 Pervious Initial abstraction"</td> <td></td> <td>Runoff depth 214.686 278.299 236.951 mm"</td>	•	10.886 Pervious Initial abstraction"		Runoff depth 214.686 278.299 236.951 mm"
98 000 Impervious SCS Curve No." Runoff coefficient 0.753 0.976 0.831 0.978 Impervious Runoff coefficient" Maximum flow 0.266 0.150 0.413 c.m/sec" 0.100 Impervious Ia/S coefficient" 40 HVDROGRAPH Add Runoff " 0.518 Impervious Initial abstraction" 4 Add Runoff " 0.151 0.000 0.178 3.425 c.m/sec" 0.413 0.413 0.151 3.568" Catchment 205 Pervious Impervious Total Area " 33 CATCHMENT 207" 0.413 0.413 0.151 3.568" Time of concentration 60.370 10.660 5.6912 minutes" 1 Triangular SCS" Time to Centroid 2592.960 280.079 2571.254 minutes" 1 SCS method" Rainfall depth 282.000 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 321.93 169.57 391.50 c.m" 5.000 % Impervious"	*	0.015 Impervious Manning 'n'"		Runoff volume 3977.06 2776.04 6753.09 c.m"
0.978 Impervious Hunort Coerticient* Maximum Tow 0.206 0.150 0.413 C.m/sec* 0.100 Impervious Ia/S coefficient* 40 HYDROGRAPH Add Runoff * 0.518 Impervious Initial abstraction* 4 Add Runoff * 0.151 0.000 0.178 3.425 c.m/sec* 0.413 0.151 3.568* Catchment 205 Pervious Total Area * 33 CATCHMENT 207* 0.413 0.151 3.568* Surface Area 1.131 0.060 1.190 hectare* 33 CATCHMENT 207* Time of concentration 60.370 10.660 5.912 minutes* 1 Equal to the constration Time of sconcentration 6252.960 280.979 251.254 minutes* 1 SCS method* Rainfall depth 285.000 285.000 285.000 m* 207 Woodlot and Wetland east of Pestells* Rainfall volume 321.93 169.57 391.50 c.m* 5.000 % Rainfall losses 88.828 6.293 84.701 mm* 5.000 % 5.000 %	3	98.000 Impervious SCS Curve No."	÷	Runott coefficient 0.753 0.976 0.831
0.100 Impervious lais coefficient 40 HTURUGHAPH AGG HUNOTT 0.511 D.000 0.178 3.425 c.m/sec" 4 Add Runoff " 0.151 D.000 0.178 3.425 c.m/sec" 0.413 0.413 0.151 3.568" Catchment 205 Pervious Impervious Total Area " 33 CATCHMENT 207" 1 Triangular SCS" Surface Area 1.131 D.060 56.912 minutes" 1 Triangular SCS" Time of concentration 60.370 10.660 56.912 minutes" 1 SCS method" Rainfall depth 285.000 285.000 mm" 207 Woodloar and Wetland east of Pestells" Rainfall loses 88.828 6.293 84.701 mm" 5.920 Total Area"		U 9/8 Impervious Hunott coetticient"	40	MAXIMUM TIOW U.200 U.150 U.413 C.M/SEC" HVDROCRARH Add Rupoff "
0.101 1000 0.178 3.425 c.m/sec" 0.413 0.413 0.151 3.568" 0.151 0.000 0.178 3.425 c.m/sec" 0.413 0.413 0.151 3.568" 0.151 0.000 0.178 3.425 c.m/sec" 0.413 0.413 0.151 3.568" 0.151 0.000 1.190 hectare" 33 CATCHMENT 207" Surface Area 1.131 0.060 56.912 minutes" 1 Triangular SCS" Time of concentration 60.370 10.660 56.912 minutes" 1 Equal length" Time to Centroid 2592.960 2280.979 2571.254 minutes" 1 SCS method" Rainfall depth 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 3221.93 169.57 391.50 c.m" 5.000 % Impervious" Rainfall losses 88.828 6.293 84.701 mm" 5.920 Total Area"		0.5100 Impervious 14/5 Coefficient	40	A Add Bunoff *
Catchment 205 Pervious Impervious Total Area " 33 CATCHMENT 207" Surface Area 1.131 0.060 1.190 hectare" 1 Triangular SCS" Time of concentrazion 60.370 10.660 56.912 minutes" 1 Equal Length" Time to Centroid 2592.960 2280.979 2571.254 minutes" 1 SCS method" Rainfall depth 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 321.93 169.57 391.50 c.m" 5.000 % Impervious" Rainfall losses 88.828 6.293 84.701 mm" 5.920 Total Area"	2	0.151 0.000 0.178 3.425 c.m/sec"		0.413 0.413 0.151 3.568*
Surface Area 1.131 0.060 1.190 hectare" 1 Triangular SCS" Time of concentration 60.370 10.660 56.912 minutes" 1 Equal Length" Time of concentration 2592.960 280.979 2571.254 minutes" 1 Sc method" Rainfall depth 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 3221.93 169.57 3391.50 c.m" 5.000 % Impervious" Rainfall losses 88.828 6.293 84.701 mm" 5.920 Total Area"	× .	Catchment 205 Pervious Impervious Total Area "	* 33	CATCHMENT 207"
Time of concentration 60.370 10.660 56.912 minutes" 1 Equal length" Time to Centroid 2592.960 280.979 2571.254 minutes" 1 SCS method" Rainfall depth 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 3221.93 169.57 391.50 c.m" 5.000 % Impervious" Rainfall losses 88.828 6.293 84.701 mm" 5.920 Total Area"	•	Surface Area 1.131 0.060 1.190 hectare"		1 Triangular SCS"
Time to Centroid 2592.960 2280.979 2571.254 minutes" 1 SCS method" Rainfall depth 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 3221.93 169.57 3391.50 c.m" 5.000 % Impervious" Rainfall losses 88.828 6.293 84.701 mm" 5.920 Total Area"		Time of concentration 60.370 10.660 56.912 minutes"		1 Equal length"
Rainfall depth 285.000 285.000 mm" 207 Woodlot and Wetland east of Pestells" Rainfall volume 3221.93 169.57 3391.50 c.m" 5.000 % Impervious" Rainfall losses 88.828 6.293 84.701 mm" 5.920 Total Area"	÷	Time to Centroid 2592.960 2280.979 2571.254 minutes*	1 C	1 SCS method"
natinati volume 3221.93 109.57 331.50 C.m ⁻ 5.000 % Impervious ⁻ Rainfall losses 88.828 6.293 84.701 mm ⁻ 5.920 Total Area"	÷	Rainfail depth 285,000 285,000 285,000 mm"	<u> </u>	207 Woodjot and Wetland east of Pestells"
		Rainfall Volume 3221.93 109.37 3391.30 C.m Rainfall Joses 88.828 6.293 84.701 mm ^a		5.920 Total Area"

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65.000 Flow length" 3.000 Overland Slope" 5.624 Pervious Area" 65.000 Pervious length" 3.000 Pervious slope"	98.000 Impervious SCS Curve No." 0.978 Impervious Runoff coefficient" 0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	
0.296 Impervious Area" 65.000 Impervious length" 3.000 Impervious slope" 0.250 Pervious Manning 'n'"	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"	
0.690 Pervious Sus Curve No." 0.100 Pervious Runoff coefficient" 10.782 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"	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"	
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"	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"	
Catchment 207PerviousImpervious Total AreaSurface Area5.6240.2965.920Time of concentration22.7934.02721.505Time to Centroid2539.2902267.0862520.600Rainfall depth285.000285.000mm"	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"	
Reinfall volume 1.6028 0.0844 1.6672 ha.m" Reinfall losses 80.411 9.617 84.471 mm" Runoff depth 196.589 275.363 200.529 mm" Runoff volume 1.1056 0.0815 1.1871 ha.m" Runoff coefficient 0.690 0.966 0.704 "	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"	
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"	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"	
8 Copy to Outflow" 0.810 1.218 1.218 3.568" 40 HYDROGRAPH Combine 2" 6 Combine " 2 Node #"	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 putflow	
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"	Maximum level 1.125 metre" Maximum storage 2076.116 c.m" Centroidal lag 44.039 hours" 0.817 0.017 0.811 4.729 c.m/sec"	
2 Start - New Tributary" 0.810 0.000 1.218 4.729" 33 CATCHMENT 208" 1 Triangular SCS" 2 Scorify walker"	6 Combine " 2 Node #" INLET 1" Maximum flow 5.525 c.m/sec"	
1 SCS method 208 N.C. Pestell site" 75.000 % Impervious" 5.530 Total Area	Hydrograph volume 98742.914 c.m" 0.817 0.817 0.811 5.525" 81 ADD COMMENT===================================	
130.000 Flow length" 2.000 Overland Slope" 1.383 Pervious Area" 50.000 Pervious length" 3.000 Pervious slope"	Catchments South of GEXR, part of Inlet #2" ************************************	
 4.148 Impervious Area" 192.000 Impervious length" 0.750 Impervious slope" 0.250 Pervious Manning 'n'" 75.000 Pervious SCS Curve No." 	33 CATCHMENT 209" 1 Triangular SCS" 3 Specify values" 1 SCS method" 209 Alpine Solutions - west SMWP"	
0.741 Pervious Runoff coefficient" 0.100 Pervious Ia/S coefficient" 8.467 Pervious Initial abstraction" 0.015 Impervious Manning 'n'"	85.000 % Impervious" 1.920 Total Area" 150.000 Flow length" 1.000 Overland Slope"	

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2134569:10415WMM.MDUSS.Doot134896-104_Post-Regional.out Page 9 Printed at 15:33 on 18 Dec 2018	Olid#396(104:SWM.MIDUSSIPosti34896-104_Post-Regional.out Printed at 15:33 on 18 Dec 2018 210 Woodlot north of Hamburglr/Badenview lands" 13.280 Total Area' 13.280 Total Area' 170.000 Flow length' 2.400 Overland Slope' 12.588 Pervious length' 2.400 Opervious length' 2.400 Impervious length' 2.400 Impervious length' 2.400 Impervious length' 2.400 Impervious length' 3.661 Impervious length' 3.661 Impervious length' 3.668 Pervious langton'' 3.668 Pervious SCS Curve No.' 3.668 Pervious SCS Curve No.' 3.675 Deprvious SCS Curve No.' 3.690 ODP Pervious SCS Curve No.' 3.690 ODP Pervious SCS Curve No.' 3.690 0.000 0.255 3.600 Impervious SCS Curve No.' 3.600 Impervious SCS Curve No.' 3.600 Impervious SCS Curve No.' 3.600 0.255	Page 10
1.000 0.3110 445.000° 1.000 0.6160 557.000° Peak outflow 0.255 c.m/sec" 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" 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"	<pre>81 ADD COMMENT===================================</pre>	

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÷ .	120.000 Impervious length"		Surface Area 0.384 2.176 2.560 hectare"	
¥	0.250 Pervious Manning 'n'"		Time of concentration 50.393 7.550 12.941 minutes"	
	76.000 Pervious SCS Curve No."		Rainfall depth 285.000 285.000 285.000 mm"	
	0.753 Pervious Runoff coefficient"		Rainfall volume 1094.40 6201.60 7296.00 c.m	
ā.	0.100 Pervious Ia/S coefficient	2	Rainfall losses 58.154 6.895 14.584 mm"	
÷	8.021 Pervious Initial abstraction"	- C	Runoff depth 226.846 278.105 270.416 mm"	
*	0.015 Impervious Science No "	6	Runoff coefficient 0.706 0.975 0.940 "	
*	0.972 Impervious Runoff coefficient"		Maximu flow 0.055 0.327 0.370 c.m/sec*	
	0.100 Impervious Ia/S coefficient"	· 40	HYDROGRAPH Add Runoff "	
	0.518 Impervious Initial abstraction®		4 Add Runoff "	
:	1.070 0.000 1.809 2.063 c.m/sec"		0.370 0.370 1.070 1.070"	
÷ .	Surface Acea 1 096 6 214 7 310 bectare"	54	POND DESIGN" 1. 370 Curpent pagk flow o m/sec"	
	Time of concentration 31.472 5.654 8.760 minutes"		0.070 Tarret outflow c.m/sec"	
*	Time to Centroid 2518.149 2271.151 2300.868 minutes"		6922.7 Hydrograph volume c.m"	
÷	Reinfall depth 285.000 285.000 mm"		7. Number of stages"	
÷ .	Reinfall volume 0.3125 1.7708 2.0833 ha-m"		0.000 Minimum water level metre"	
*	Rinoff depth 214.614 276.909 267.564 mm"	÷	1.000 Maximum Water level metre"	
3	Runoff volume 0.2353 1.7206 1.9559 ha-m"		0 Keep Design Data: 1 = True: 0 = False"	
÷	Runoff coefficient 0.753 0.972 0.939 "	*	Level Discharge Volume"	
*	Maximum flow 0.159 0.947 1.070 c.m/sec"		0.000 0.000 0.000"	
* 40	HYDROGRAPH Add Runoff "		0.1000 0.02000 7.000"	
	4 Add Hunott "		0.2500 0.04200 84.000*	
• 40	HYDROGRAPH Copy to Outflow"		0.7500 0.1250 877.000"	
*	B Copy to Outflow"		0.8000 0.1360 1014.000"	
*	1.070 1.070 1.070 2.063"		1.000 0.7880 1667.000"	
* 40	HYDROGRAPH Combine 4"	- t	Peak outflow 0.301 c.m/sec"	
÷	6 Compine "	- Ç	Maximum level 0.851 metre"	
*	INLET 3"		maximum scorage 1173.514 C.m Centroidal Jan 39.431 hours"	
	Maximum flow 1.070 c.m/sec"		0.370 0.370 0.301 1.070 c.m/sec"	
	Hydrograph volume 19558.957 c.m"	* 40	HYDROGRAPH Combine 4"	
- 40	1.070 1.070 1.070 1.070"	÷.	6 Combine "	
. 40	2 Start - New Fributary		TNIET 3"	
	1.070 0.000 1.070 1.070"		Maximum flow 1.333 c.m/sec"	
• 33	CATCHMENT 212"		Hydrograph volume 26482.074 c.m ["]	
	1 Triangular SCS		0.370 0.370 0.301 1.333"	
÷	3 Specity values"	40	HYDROGRAPH Start - New Tributary"	
•	212 Aloine Solutions - East SMWP"		2 Start - New Inspirary 0.370 0.000 0.301 1.333"	
	85.000 % Impervious"	* 33	CATCHMENT 213"	
	2.560 Total Area"	2	1 Triangular SCS"	
<u>.</u>	150.000 Flow length"		1 Equal length"	
	1.500 Overland Slope"	÷	1 SCS method" 213 Woodlat Foot and Woot of Nefrigen Boad"	
	180.000 Pervious lenath"	*	3.000 % Tropervisus"	
	1.500 Pervious slope"		13.460 Total Area"	
•	2.176 Impervious Area"		140.000 Flow length"	
	131.000 Impervious length"	.*	3.600 Overland Slope"	
÷ .	1.500 Impervious slope"	<u> </u>	13.056 Pervious Area"	
	80.000 Pervices SCS Curve No."	14 C	3.600 Pervious slope"	
*	0.796 Pervious Runoff coefficient"		0,404 Impervious Area"	
5	0.100 Pervious Ia/S coefficient"	1	140.000 Impervious length"	
5	6.350 Pervious Initial abstraction"		3.600 Impervious slope"	
	U.UIS Impervious Manning 'n'" 98 000 Impervious SCS Curve No "	*	0.250 Pervious Manning 'n'" 70.100 - Repuise SCS Curve No."	
	0.976 Impervious Runoff coefficient"		0.689 Pervious aus Curve NO." 0.689 Pervious Runoff coefficient"	
•	0.100 Impervious Ia/S coefficient*		0.100 Pervious Ia/S coefficient"	
•	0.518 Impervious Initial abstraction"		10.834 Pervious Initial abstraction"	
1	0.370 0.000 1.070 c.m/sec*	:	0.015 Impervious Manning 'n'"	
<i>.</i>	Carcinnent 212 Pervious Impervious lotal Area "		ar.non impervious SCS Curve No."	

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AddSebildeSWMMMDUSSiPostida986-104_Post-Regional.out Proge 1 Philed at 15:33 on 18 Dec 2018 0.972 Impervious Find Societticient* 0.100 Impervious Initial abstraction* 1.838 0.000 0.901 1.333 c.#/sec* 0.518 Impervious Initial abstraction* 1.335 0.901 1.333 c.#/sec* 1.868 0.000 0.901 1.333 c.#/sec* 1.335 The of concentration 34.208 0.602 255.000	Disdebel104/SWMMMDUSS/Post14499-104_Post-Regional.out Page 14 Printed at 15:33 on 18 Dec 2018 0.185 0.573 0.727 c.m/sec* 40 HVDROBQAPH Add Runoff * 0.727 c.m/sec* 40.727 0.727 0.727 1.868 3.201* 54 POND DESIGN* c.m/sec* 0.727 0.727 13231.9 hydrograph volume c.m/sec* 0.727 0.727 0.727 0.727 0.727 0.727 0.727 0.700 Target outflow c.m/sec* 0.000 13231.9 hydrograph volume c.m* 0.000 Starting water level metre* 0.0000 0.0000 0.000* 0.1500 0.0000 160.00* 0.2500 0.0100 593.000* 0.4500 0.01000 155.000* 0.5600 0.02500 0.276 0.5600 0.02500 0.276 1.600 0.2600 0.757 0.727 0.727 0.727 <
 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 Manning 'n'" 98.000 Impervious SCS Curve No." 0.975 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 20.322 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" 	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 Pervious Slope" 1.287 Inpervious Slope" 0.2500 Pervious Sundent" 0.2500 Pervious SC Curve No." 0.753 Pervious Runoff coefficient" 8.021 Pervious Initial abstraction" 0.151 Impervious SCS Curve No." 98.000 Impervious SCS Curve No."

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	0.100 Impervious Ia/S	coefficient"					
	0.518 Impervious Init:	ial abstractio	n"				
	0.415 (0.000 0.72	7 3.920	c.m/sec"			
	Catchment 215	Pervious	Impervious	S Total Area			
	Surface Area	1.573	1.287	2.860	hectare*		
c .	Time of concentrat:	ion 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	" "		
	Runoff volume	3377.06	3565.11	6942.16	c.m"		
	Runott coetticient	0.753	0.972	0.852			
	WOLD ADD ADD ADD ADD ADD ADD ADD ADD ADD A	0.228	0.197	0.415	c.m/sec*		
40	Add Bussef "	JTT "					
£	4 Add Runoll	0 70	7 2 0 2 0	E.			
40	HYDROGRAPH Copy to	0.12 Outflow"	1 3.920				
	8 Copy to Dutflow	0000000					
	0.415	0.415 0.41	5 3,920				
40	HYDROGBAPH Combin	ne 4"	0.020				
	6 Combine "						
	4 Node #"						
	INLET 3"						
	Maximum flow	4.3	335 c.m/s	sec*			
6	Hydrograph volume	73362.	750 c.m*				
• • • •	0.415 (0.415 0.41	5 4.335				
40	HYDROGRAPH Start -	New Tributary	1				
	2 Start - New Tril	outary"					
	0.415 (0.41	5 4.335'	1			
33	CATCHMENT 216"						
· · ·	1 Triangular SCS [®]						
	1 Equal length"						
	1 SCS method"						
	216 Industrial lands	s west of Nafz	iger Road"				
	85.000 % Impervious"						
	2.860 lotal Area"						
	110.000 Flow length"						
	2.000 Overland Slope"						
2	110 000 Pervious Area						
	Pervious rengen						
	2 431 Impervious Area	n					
	110 000 Impervious leng	-b ⁿ					
	2 000 Impervious slope	5 ⁿ					
÷	0.250 Pervious Manning	- 'n'"					
<	76.000 Pervious SCS Cu	rve No."					
-	0.753 Pervious Runoff	coefficient"					
	0.100 Pervious Ia/S co	pefficient"					
	8.021 Pervious Initia	l abstraction"					
	0.015 Impervious Mann:	ing 'n'"					
	98,000 Impervious SCS (Curve No."					
	0.973 Impervious Runo	ff coefficient					
	0.100 Impervious Ia/S	coefficient"					
	0.510 Impervious Init:	ial abstractio	n"				
	0.414	0.000 0.41	5 4.335	c.m/sec"			
	Catchment 216	Pervious	Impervious	s Total Area			
	Surface Area	0.429	2.431	2.860	hectare*		
	Time of concentrat:	ion 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 "	14 A	
	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 "		
5	Runoff volume	920.81	6741.37	7662.19	C.M"		
£.	Runoff coefficient	0.753	0.973	0.940			
	ALC 1	0.000	0 979	0 414	c m/soc*		

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ō	13489	6\104\SWM\MIDUSS\Post\34896-	104 Post-R	eniona	Lout	ALC: NOT THE	1.000	
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÷	40	HYDROGRAPH Add Runoff	н					
1		4 Add Runoff "						
1	40	0.414 0.4	14 0.4	15	4.335"			
	40	HYDHOGRAPH Copy to OU	TTTOM.					
×		0.414 0.4	14 0.4	14	4.335"			
•	40	HYDROGRAPH Combine	4 "					
1		6 Combine "						
		INIET 3"						
		Maximum flow	4	.749	c.m/s	ec"		
*		Hydrograph volume	81024	,961	c.m"			
÷.	40	0.414 0.4	14 0.4 "Thibuton	14	4.749°			
	40	2 Start - New Tribut:	w Tribular; arv"	y "				
•		0.414 0.04	0.4	14	4.749"			
•	33	CATCHMENT 217"						
1		1 Triangular SCS"						
,		1 SCS method"						
		217 Existing ROW west	of Nafzice	r Road	14			
٠		75.000 % Impervious"	0					
ŝ.		0.730 Total Area"						
2		90.000 Flow length"						
		0.183 Pervious Area"						
•		90.000 Pervious length"						
•		2.100 Pervious slope"						
1		0.548 Impervious Area"						
÷		2.100 Impervious slope"						
e.		0.250 Pervious Manning '	רי"					
*		76.000 Pervious SCS Curve	No."					
		0.753 Pervious Runott co	efficient"					
		8.021 Pervious Initial al	ostraction					
		0.015 Impervious Manning	'n'"					
*		98.000 Impervious SCS Cur	ve No."					
2		0.974 Impervious Runoff (coefficien	t"				
		0.518 Impervious Initial	abstracti	on"				
		0.107 0.00	0.4	14	4.749	c.m/sec"		
*		Catchment 217	Pervious	Imp	ervious	Total Area		
2		Surface Area	0.183	0.5	48	0.730	hectare"	
		Time to Centroid	2516 602	227	+9 2.013	2322 148	minutes"	
×		Rainfall depth	285.000	285	.000	285.000	mm"	
		Rainfall volume	520.13	156	0.38	2080.50	C.m"	
1		Rainfall losses	70.330	7.4	50	23.177	mm"	
*		Runoff volume	214.670	151	.540	201.823	mm"	
t		Runoff coefficient	0.753	0.9	74	0.919		
1		Maximum flow	0.026	0.0	33	0.107	c.m/sec"	
	40	HYDROGRAPH Add Runoff	n					
÷.			77 04	14	1 710"			
	40	HYDROGRAPH Copy to Ou	tflow"	1-1				
		8 Copy to Outflow"						
*		0.107 0.10	0.1	07	4.749"			
	40	HYDHOGHAPH Combine	4"					
2		4 Node #"						
*		INLET 3"						
1		Maximum flow	4	.856	c.m/s	ec"		
1		Hydrograph volume	82936	.266	C.M" ⊿ 856"			
٠	40	HYDROGRAPH Confluence	ce 2"	~ /	-1.000			

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	7 Confluence "			1,000	Impervious slope"	
•	2 Node #"			0.250	Pervious Mannino 'n'"	
*)	INLET 1"			76.000	Pervious SCS Curve No."	
•	Maximum flow 5.525	c.m/sec"		0.753	Pervious Runoff coefficient"	
	Hydrograph volume 98742.898	C.m"		0.100	Pervious Ia/S coefficient*	
•	0.107 5.525 0.107	0.000"	•	8.021	Pervious Initial abstraction"	
• 40	HYDROGRAPH Copy to Outflow"			0.015	Impervious Manning 'n'"	
	8 Copy to Outflow"			98.000	Impervious SCS Curve No."	
	0.107 5.525 5.525	0.000"		0.972	Impervious Runoff coefficient"	
40	HYDROGRAPH Combine 5"			0.100	Impervious Ia/S coefficient*	
÷	6 Combine "		•	0.518	Impervious Initial abstraction"	
<u>.</u>	5 NODE #"				1.797 0.000 4.856 12.403 c.m/sec"	
	U/S OT HWY 768"	/		C	atchment 223 Pervious Impervious Total Area	
	Waxiiiuw 110w 5,525	c.m/sec-		5	Surface Area 1.885 10.684 12.570 hectare	
	nyuroyraph votulie 96742.696	C.M." E. 505"		1	ime of concentration 37.890 6.807 10.548 minutes"	
* 40	HYDROGRAPH Confluence 3"	5,525	÷	1	ime to Centrold 2527.254 2273.436 2303.983 minutes"	
. 40	7 Confluence "			H	aintail depth 285.000 285.000 mm"	
	3 Node #"		÷		latinati votume 0.5374 3.0451 3.5824 na-m"	
	INIFT 2"				latinati jusses (0.343 6.121 17.434 mm"	
	Maximum flow 2 063	c m/sec"		n	Unoff depth 214.057 270.079 207.540 IIII	
	Hydronraph volume 31666 143	сти/300. Сти			Unoff Volume 0.4047 2.5565 5.5651 Marm	
	0.107 2.063 5.525	0.000"	-	M	$(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$ $(0,0)^{-1}$	
* 40	HYDROGRAPH Copy to Outflow"	0.000	- 40	10 H	WNROGRAPH Add Bunoff "	
	8 Copy to Outflow"			4		
*	0.107 2.063 2.063	0.000"		-	1.797 1.797 4.856 12.403"	
• 40	HYDROGRAPH Combine 5"		• 40	н	YDBOGBAPH Copy to Outflow"	
•	6 Combine "			8	Copy to Outflow"	
	5 Node #"				1.797 1.797 1.797 12.403"	
*	u/s of HWY 7&8"		* 40	н	HYDROGRAPH Combine 5"	
*	Maximum flow 7.549	c.m/sec*		6	Combine "	
.e:	Hydrograph volume 130409.000	c.m*		5	Node #"	
	0.107 2.063 2.063	7.549°			u/s of HWY 7&8"	
* 40	HYDROGRAPH Confluence 4"			M	Maximum flow 14.200 c.m/sec"	
•	7 Confluence "			н	Hydrograph volume 246975.828 c.m™	
*	4 Node #"				1.797 1.797 1.797 14.200"	
*	INLET 3"		* 81	A	\DD COMMENT===================================	
	Maximum flow 4.856	c.m/sec"		3 L	lines of comment"	
ŝ.	Hydrograph volume 82936.266	C.M"		*	***************************************	
	0.107 4.856 2.063	0.000"		C	atchments east of Hamilton Road, part of Inlet #4"	
40	HYDROGRAPH Copy to Outflow					
	8 Copy to Outriow"	0.000	* 40	н	YDROGRAPH Start - New Tributary"	
. 40	U.107 4.850 4.850	0.000"	<u> </u>	2	Start - New Tributary"	
* 40	6 Combine "				1.797 0.000 1.797 14.200°	
	5 Nodo #"		- 33		Talement 218"	
	U/s of HWY 788"			1		
<u>.</u>	Maximum flow 12 403	c m/sec"		1	Equal Tength	
¥2	Hydronraph volume 213345 281	c.m."	1	218	Jood Method Tronbridge Manufacturing Property"	
•	0.107 4.856 4.856	12,403"	(H)	85.000	* Impervious"	
* 40	HYDROGRAPH Start - New Tributary"			2.060		
*	2 Start - New Tributary"			230.000	Flow length"	
	0.107 0.000 4.856	12,403"		1 - 700	Overland Slope"	
* 33	CATCHMENT 223"		*	0.309	Pervious Area"	
*	1 Triangular SCS"		-	230.000	Pervious length"	
	1 Equal length"		*	3.000	Pervious slope"	
*	1 SCS method"			1.751	Impervious Area"	
•	223 New Hamburglr Inc. lands*		*	230.000	Impervious length"	
•	85.000 % Impervious"		.#	3,000	Impervious slope"	
÷	12.570 Total Area"		1	0.250	Pervious Manning 'n'"	
	90.000 Flow length"			76.000	Pervious SCS Curve No."	
	1.000 Overland Slope"			0,764	Pervious Runoff coefficient"	
2	1.885 Pervious Area"		*	0.060	Pervious Ia/S coefficient"	
	90.000 Pervious length"		2	4.813	Pervious Initial abstraction"	
	10.584 Transviews Apace		S	0.015	Impervious Manning 'n'"	
	10.004 Impervious Area			98.000	Impervious SCS Curve No."	
	norono timberatoria teuñrit.		.71	0.977	Impervious Adnott Coetticient	

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0.100 Impervious Ia/S coefficient"	75.000 Pervious length"	
0.518 Impervious initial abstraction 0.299 0.000 1.797 14.200 c.m/sec"	3.000 Pervious sigpe" 1.088 Impervious Area"	
Catchment 218 Pervious Impervious Total Area	75.000 Impervious length"	
Surface Area 0.309 1.751 2.060 hectare"	3.000 Impervious slope"	
Time of concentration 47.320 8.595 13.355 minutes" Time to centroid 2525 765 2277 665 2307 767 minutes"	76 OOD Pervious SC Curve No "	
Rainfall depth 285.000 285.000 265.000 mm*	0.705 Pervious Runoff coefficient"	
* Rainfall volume 880.65 4990.35 5871.00 c.m"	0.281 Pervious Ia/S coefficient"	
Reinfall losses 67.222 6.681 15.763 mm"	22.539 Pervious Initial abstraction"	
Runoff volume 672.93 4873.36 5546.29 c.m"	98.000 Impervious SCS Curve No."	
* RLnoff coefficient 0.764 0.977 0.945 *	 0.972 Impervious Runoff coefficient" 	
Maximum flow 0.044 0.270 0.299 c.m/sec*	0.100 Impervious Ia/S coefficient"	
40 HYDRUGHAPH AGG KUNOTT *	• 0.518 Impervious initial abstraction* • 0.185 0.000 0.247 14.437 c.m/sec"	
0.299 0.299 1.797 14.200*	Catchment 219 Pervious Impervious Total Area *	
54 POND DESIGN"	Surface Area 0.192 1.088 1.280 hectare"	
0.299 Current peak flow c.m/sec"	Time of concentration 24,503 4.388 6.670 minutes"	
* 5546.3 Hydrograph volume c.m"	Rainfall depth 285.000 285.000 mm"	
* 15. Number of stages"	Rainfall volume 547.20 3100.80 3648.00 c.m"	
344.700 Minimum water level metre"	Rainfall losses 84.132 7.998 19.418 mm"	
345.400 Maximum water level metre"	Hunoff depth 200.868 277.002 265.582 mm"	
* O Keep Design Data: 1 = True: 0 = False*	Runoff coefficient 0.705 0.972 0.932 "	
tevel Discharge Volume"	Maximum flow 0.027 0.160 0.185 c.m/sec*	
344.700 0.1250 0.000"	40 HYDROGRAPH Add Runoff "	
* 344.750 0.1270 9.000° * 344.800 0.1280 35.000*	- 4 Add Hunott - 0.185 0.185 0.247 14.437"	
344.850 0.1300 77.000"	• 40 HYDROGRAPH Copy to Outflow"	
344.900 0.1450 136.000"	8 Copy to Outflow"	
* 344.950 0.1820 209.000*	0.185 0.185 14.437"	
345.050 0.2220 291.000"	6 Combine "	
345.100 0.2710 519.000°	* 5 Node #"	
345.150 0.2740 653.000"	u/s of HWY 7&8"	
345.250 0.2760 804.000° 345.250 0.2790 971.000°	MAXIMUM TLOW 14.521 C.M/SeC" Hydrograph volume 255914.297 c.m"	
345.300 0.2820 1154.000"	• 0.185 0.185 0.185 14.621"	
345.350 0.2840 1355.000"	* 40 HYDROGRAPH Start - New Tributary"	
345,400 0.2860 1571.000" Book outflow	2 Start - New Tributary"	
Maximum level 345.026 metre"	* 33 CATCHMENT 220"	
Maximum storage 351.306 c.m"	• 1 Triangular SCS"	
Centroidal lag 38.585 hours"	1 Equallength"	
* 0.299 0.299 0.299 0.297 14.200 c.m/sec* * 40 HVDROGRAPH Combine 5"	 SCS method" 220 Northwest corner of Nithview Heights" 	
6 Combine "	8.000 % Impervious"	
5 Node #"	0.500 Total Area	
U/S of HWY 788" Movimum Flow 14.497 or m(coc"	60.000 Flow length" 5.000 Overland Stope"	
Hydrograph volume 252514.875 c.m"	* 0.460 Pervious Area"	
0.299 0.299 0.247 14.437"	* 60.000 Pervious length"	
40 HYDROGRAPH Start - New Tributary"	5.000 Pervious slope"	
2 Start - New Fributary 0.299 0.000 0.247 14.437	60.000 Impervious Area" 60.000 Impervious length"	
* 33 CATCHMENT 219"	5.000 Impervious slope"	
1 Triangular SCS"	0,250 Pervious Manning 'n'"	
- 1 Equal Length" 1 SCS method"	74.000 Pervious SCS Curve No." 0.731 Pervious Bunoff coefficient"	
219 N.C. Pestells Head Office & other Industrial"	0,100 Pervious Ia/S coefficient"	
85.000 % Impervious"	8.924 Pervious Initial abstraction"	
1.280 Total Area"	0.015 Impervious Manning 'n'"	
1.500 Verland Slope"	90,000 Impervious Sus curve No. 0.962 Impervious Runoff coefficient"	
0.192 Pervious Area"	• 0.100 Impervious Ia/S coefficient"	
24. (A)		

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0.793 Toperiods fullid setstation 4 As Amount 0.793 0.000 0.103 0.104 0.104 0.104 0.105 Task of construction 251.00 0.104 0.104 0.104 0.104 0.104 Task of construction 251.00 0.005 0.005 0.005 0.005 0.104 0.104 0.104 0.104 0.104 0.104 0.104 0.104 0.104 0.104 0.104 0.105 0.105 0.105 0.105 0.105 0.105 0.105 0.105 0.105 0.114 0.104 0.104 0.104 0.104 0.104 0.104 0.105 0.114 0.104 0.105 0.114 0.105 0.114 0.104 0.105 0.114 0.105 0.114 0.1	Q:\3489 Printed	I6/104/SWM\MIDUSS\Post\34896-104_Post-Regional.out Page 21 at 15:33 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out Printed at 15:33 on 18 Dec 2018	
	5	0.518 Impervious Initial abstraction"	4 Add Runoff "	
Obstitute: Description Translate State Additional Action Title of communications 14.48 14.48 14.48 14.48 Title of communications 25.48 14.48 14.48 14.48 Title of communications 25.48 14.48 14.48 14.48 Title of communications 25.48 14.48 14.48 14.48 Restrictions 25.48 10.72 14.48 14.48 14.48 Restrictions 25.48 14.48 14.48 14.48 14.48 Restrictions 25.48 14.48 14.48 14.48 14.48 Restrictions 26.28 10.20 14.48 14.48 1		0.070 0.000 0.185 14.621 c.m/sec"	0.114 0.114 0.070 14.688"	
By Field Area D. 460 D. 200 D. 200 <thd. 200<="" th=""> <thd. 200<="" th=""> <thd.< td=""><td></td><td>Catchment 220 Pervious Impervious Total Area</td><td>40 HYDROGRAPH Copy to Outflow"</td></thd.<></thd.></thd.>		Catchment 220 Pervious Impervious Total Area	40 HYDROGRAPH Copy to Outflow"	
114 0 f contentrizion 94.47 3.28 00 0 85.00 25.00 0 85.0		Surface Area 0.460 0.040 0.500 hectare"	8 Copy to Outflow"	
128 to left visue 201 modeling 20 modeling 2 modeling 128 to left visue 211.00 12.00 22.00 128 to left visue 71.00 20.00 20.00 128 to left visue 0.000 20.00 20.00 20.00 128 to left visue 0.0000 20.00 20.00 20.00 128 to left visue 0.000000 20.00 20.00 20.00 128 to left visue 0.0000000 20.00 2.000 2.000 128 to left visue 0.0000000 2.000 1.000 2.000 128 to left visue <		Time of concentration 18.427 3.293 16.673 minutes"	* 0.114 0.114 0.114 14.688*	
Maintellingship 28.000 <t< td=""><td></td><td>Time to Centroid 2511.791 2263.920 2486.343 minutes"</td><td>* 40 HYDROGRAPH Combine 5"</td></t<>		Time to Centroid 2511.791 2263.920 2486.343 minutes"	* 40 HYDROGRAPH Combine 5"	
Relificition 10.00 10.00 C.* 5 USE # Nor Xet Rundff deyth 288.458 20.77 10.780 0 Automation 10.00 0.4/4et Rundff deyth 288.458 10.71 10.68.60 C.* 91 ACC 0000014 10.01 0.4/4et Rundff deyth 0.005 0.005 0.007 1.4.621 10.01 11.11 10.01 11.11		Rainfall depth 285,000 285,000 285,000 mm"	6 Combine "	
Nameric Lepison Code Striker 114.207 114.200 Numeric contribution Distance 0 14.00 c.v/macri Numeric contribution Distance Distance 0 14.00 c.v/macri Numeric contribution Distance Distance Distance Distance Distance Distance Numeric contribution Distance Distance </td <td></td> <td>Rainfail Volume 1311.00 114.00 1425.00 c.m"</td> <td>5 Node #"</td>		Rainfail Volume 1311.00 114.00 1425.00 c.m"	5 Node #"	
Description Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>		Rainfail losses 76.545 10.723 71.280 mm	u/s of HWY 7&8"	
Descrit class Code Code Product class Code Code 40 Missing Tios 0.065 C.006 C.070 C.4/sec ⁺ 41 A DO COMENTION: 41 A DO COMENTION: 41 42 Missing Tios C.070 C.4/sec ⁺ 41 43 Missing Tios C.070 C.4/sec ⁺ 41 44 A DO COMENTION: C.070 C.4/sec ⁺ 41 45 C.070 C.070 C.4/sec ⁺ 42 46 Mission Tios C.070 C.070 C.4/sec ⁺ 47 Mission Tios C.070 C.4/sec ⁺ 42 48 C.070 C.070 C.4/sec ⁺ 43 49 Mission Tios C.114 C.000 C.114 40 Mission Tios C.170 C.1/sec ⁺ 43 41 Mission Tios C.170 C.1/sec ⁺ 43 42 State Tios C.114 C.100 C.114 43 C.170 C.1/sec		Runoff deptrin 206.455 274.277 213.720 mm	Maximum flow 14.801 c.m/sec"	
Maximum Tick Edw 0.068 0.070 0.070 0.011 0.114		Runoff volume 950.89 109.71 1068.60 C.m ⁻	Hydrograph volume 259112.422 c.m	
10 PHOREARCHAP AS RUNOT . 0.000 C.100 C.10, MD 0.000 C.100 C.10, MD 4 Ad Stunct . Catoment to Exter #5* Catoment to Exter #5* 0 0.070 0.070 1.4.521* Catoment to Exter #5* Catoment to Exter #5* 0 0.070 0.070 1.4.521* Catoment to Exter #5* Catoment to Exter #5* 0 0.070 0.070 1.4.521* Catoment to Exter #5* Catoment to Exter #5* 0 0.070 0.070 1.4.521* Catoment to Exter #5* Catoment to Exter #5* 0 0.070 0.070 1.4.521* Satur #5* Satur #5* 0 0.070 0.070 1.4.68* Catoment #5* Satur #5* 0 0.070 0.070 1.4.68* Catoment #5* Satur #5* 0 0.070 0.070 1.4.68* Satur #5* Satur #5* 0 0.070 0.070 1.4.68* Satur #5* Satur #5* 1 Satur #5* Satur #5*				
************************************	* 40	HYDROGRAPH Add Bunoff "	ADD COMMENT===================================	
0 Carbon 0.070 0.181 14.82' 0 MDROBARH Cost Outling ************************************				
************************************		0.070 0.070 0.185 14 621"	Catchment to Inlet #5"	
B GoPY to Qu'TLOW* 40 HYMEDGRAPH Start - New Tributary' 40 HYMEDGRAPH Start - New Tributary' 33 Current New Tributary' 40 HYMEDGRAPH Start - New Tributary' 33 Current New Tributary' 40 HYMEDGRAPH Start - New Tributary' 33 Current New Tributary' 40 HYMEDGRAPH Start - New Tributary' 1 Trianglar Start 40 HYMEDGRAPH Start - New Tributary' 1 Start - New Tributary' 41 HYMEDGRAPH Start - New Tributary' 1 Start - New Tributary' 40 HYMEDGRAPH Start - New Tributary' 1 Start - New Tributary' 41 HYMEDGRAPH Start - New Tributary' 1 Start - New Tributary' 40 HYMEDGRAPH Start - New Tributary' 1 Start - New Tributary' 53 Current New Tributary' 2 Start - New Tributary' 54 Start - New Tributary' 2 New Tributary' 55 Start - New Tributary' 2 Start - New Tributary' 53 Current New Tributary' 2 Start - New Tributary' <td< td=""><td>* 40</td><td>HYDROGRAPH Copy to Outflow"</td><td>***************************************</td></td<>	* 40	HYDROGRAPH Copy to Outflow"	***************************************	
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 i Equal Length* i Scase thod* scose /li>	*	1 Triangular SCS*	2000 Repring Longth"	
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8.021 Pervious Initial abstraction" Time of concentration 11.052 1.986 10.480 minutes" 0.015 Impervious SCS Curve No." Time of concentration 11.052 1.986 10.480 minutes" 98.000 Impervious SCS Curve No." Time to Centroid 2488.623 2266.183 2474.766 minutes" 0.961 Impervious Suscerficient" Rainfall depth 285.000 285.000 cm" 0.100 Impervious Initial abstraction" Rainfall volume 2924.10 153.90 3078.00 c.m" 0.518 Impervious Initial abstraction" 0.114 0.000 0.070 14.688 c.m/sec" Runoff volume 2196.85 148.05 234.4.91 c.m" 0.114 0.000 0.070 14.688 c.m/sec" Runoff volume 2196.85 148.05 234.4.91 c.m" Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time to Controid 2800.282 2264.844 2300.357 minutes" 40 HYDROGRAPH Add Runoff " 0.152 0.152 0.144 0.808 <td>*</td> <td>0.100 Pervious Ia/S coefficient"</td> <td>Surface Area 1.026 0.054 1.080 hectar</td>	*	0.100 Pervious Ia/S coefficient"	Surface Area 1.026 0.054 1.080 hectar	
0.015 Impervious Manning 'n'" Time to Centroid 2488.823 2266.183 2474.766 minutes" 98.000 Impervious Runoff coefficient" Rainfall depth 286.000 285.000 285.000 mm" 0.961 Impervious Runoff coefficient" Rainfall depth 286.00 285.000 285.000 mm" 0.100 Impervious Initial abstraction" Rainfall losses 70.882 10.824 67.879 mm" 0.114 0.000 0.070 14.688 c.m/sec" Runoff depth 214.818 274.766 minutes" 0.114 0.000 0.070 14.688 c.m/sec" Runoff depth 2196.85 10.824 67.879 mm" 0.114 0.000 0.070 14.688 c.m/sec" Runoff depth 2196.85 204.405 234.41 mm" Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time to Centroid 250.0228 264.844 230.550 c.m" Maximum flow 0.152 0.114 14.801" Rainfall volume 221.29	5)	8.021 Pervious Initial abstraction"	Time of concentration 11.052 1.986 10.480 minute	
98.000 Impervious SCS Curve No." Rainfall depth 285.000 285.000 285.000 mm" 0.961 Impervious Runoff coefficient" Rainfall depth 285.000 285.000 285.000 cm" 0.100 Impervious Ia/S coefficient" Rainfall depth 285.000 285.000 cm" 0.101 Impervious Ia/S coefficient" Rainfall losses 70.82 10.824 67.879 mm" 0.518 Impervious Ia/S coefficient 0.000 0.070 14.688 c.m/sec" Runoff depth 214.118 274.176 217.121 mm" 0.114 0.000 0.070 14.688 c.m/sec" Munoff coefficient 0.751 0.952 0.762 " Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time of concentration 18.919 3.399 5.741 minutes" 4 Add Runoff 4 <td< td=""><td></td><td>0.015 Impervious Manning 'n'"</td><td>Time to Centroid 2488.823 2266.183 2474.766 minute</td></td<>		0.015 Impervious Manning 'n'"	Time to Centroid 2488.823 2266.183 2474.766 minute	
0.961 Impervious Runoff coefficient" Rainfall volume 2924.10 153.90 3078.00 c.m" 0.100 Impervious Ia/s coefficient" Rainfall volume 2924.10 153.90 3078.00 c.m" 0.518 Impervious Initial abstraction" Rainfall volume 2924.10 153.90 3078.00 c.m" 0.518 Impervious Initial abstraction" Runoff depth 214.118 274.176 217.121 mm" 0.114 0.000 0.070 14.688 c.m/sec" Runoff depth 214.118 274.176 217.121 mm" Catchment 221 Pervious Impervious Total Area Runoff coefficient 0.751 0.962 0.762 " Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time of concentration 18.919 3.399 5.741 minutes" 40 HYDROGRAPH Add Runoff 414.801" 6.52 0.152 0.114 14.801" Rainfall volume 427.07 1881.43 2308.50 c.m" 40 HYDROGRAPH Copy to Outflow" 0.152 <td></td> <td>98.000 Impervious SCS Curve No."</td> <td>Rainfall depth 285.000 285.000 285.000 mm"</td>		98.000 Impervious SCS Curve No."	Rainfall depth 285.000 285.000 285.000 mm"	
0.100 Impervious Ia/S ccefficient" Rainfall losses 70.882 10.824 67.879 mm" 0.518 Impervious Initial abstraction" Runoff depth 214.118 274.176 217.121 mm" 0.114 0.000 0.070 14.688 c.m/sec" Runoff volume 2196.85 148.05 2344.91 c.m" Catchment 221 Pervious Impervious Total Area Runoff volume 0.962 0.762 " Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time of concentration 18.919 3.399 5.741 minutes" 40 HYDROGRAPH Add Runoff 0.152 0.114 0.008 0.152 c.m/sec" Rainfall depth 285.000 285.000 mm" 0.152 0.114 14.801" Rainfall losses 70.591 1.0.82 2.0.52 14.801" Rainfall volume 427.07 1881.43 2306.50 c.m" 0.152 0.114 14.801" Rainfall losses 70.590 11.064 22.093 mm"	-	0.961 Impervious Runoff coefficient"	Rainfall volume 2924.10 153.90 3078.00 c.m"	
0.518 Impervious Initial abstraction" Runoff depth 214,118 274,176 217,121 mm" 0.114 0.000 0.070 14.688 c.m/sec" Runoff depth 2196.85 148.05 2344.91 c.m" Catchment 221 Pervious Impervious Total Area Runoff coefficient 0.751 0.962 0.762 " Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time of concentration 18.919 3.399 Trinutes" 40 HYDROGRAPH Add Runoff 4dd Runoff 4dd Runoff 4dd Runoff 4dd Runoff 4dd Runoff 14.801" 1		0.100 Impervious Ia/S coefficient"	Rainfall losses 70.882 10.824 67.879 mm"	
0.114 0.000 0.070 14.686 c.m/sec" Runoff volume 2196.85 148.05 2344.91 c.m" Catchment 221 Pervious Impervious Total Area Runoff volume 2196.85 148.05 2344.91 c.m" Surface Area 0.150 0.660 0.810 hectare" Maximum flow 0.144 0.008 0.152 c.m/sec" Time of concentration 18.919 3.399 5.741 minutes" 40 HYDROGRAPH Add Runoff " 0.152 0.152 c.m/sec" Rainfall depth 2500.228 2264.844 2300.357 minutes" 40 HYDROGRAPH Add Runoff " 0.152 0.114 14.801" Rainfall depth 285.000 285.000 mm" 0.152 0.114 14.801" Rainfall losses 70.590 11.084 22.093 mm" 8 Copy to Outflow" Runoff volume 321.29 1808.26 212.9.55 c.m" 40 HYDROGRAPH Combine 5" Runoff coefficient 0.752 0.961 0.922 6 Combine " 5 Maximum flow 0.021 <		0.518 Impervious Initial abstraction"	Runoff depth 214.118 274.176 217.121 mm"	
Catchment 221 Pervious Impervious Indextare* Runoff coefficient 0.751 0.962 0.762 " Surface Area 0.150 0.660 0.810 hectare* Maximum flow 0.144 0.008 0.152 c.m/sec* Time of concentration 18.919 3.399 5.741 minutes" 40 HYDROGRAPH Add Runoff 4 Add Runoff 4 4 Add Runoff * * 6 0.152 c.m/sec* * * 6 0.152 0.144 0.008 0.152 c.m/sec* * * 4 <td></td> <td>0.114 0.000 0.070 14.688 c.m/sec"</td> <td>Runoff volume 2196.85 148.05 2344.91 c.m"</td>		0.114 0.000 0.070 14.688 c.m/sec"	Runoff volume 2196.85 148.05 2344.91 c.m"	
Sufface Area 0.180 0.180 nectare Maximum flow 0.144 0.008 0.152 c.m/sec* Time of concentration 18.919 3.399 5.741 minutes* 40 HYDROGRAPH Add Runoff * Time of concentration 250.228 2264.844 2300.357 minutes* 40 HYDROGRAPH Add Runoff * Rainfall depth 285.000 285.000 285.000 c.m* 40 HYDROGRAPH Copy to Outflow* Rainfall losses 70.590 11.084 220.93 mm* 8 Copy to Outflow* Runoff depth 214.410 273.316 220.93 mm* 0.152 0.152 0.152 14.801* Runoff volume 321.29 1808.26 212.9.55 c.m* 0.152 0.152 0.152 14.801* Runoff coefficient 0.752 0.961 0.922 6 Combine * 5 Node #* 40 HYDROGRAPH Add Runoff * U/s of HWY 7&8* 1/s of HWY 7&8* 1/s of HWY 7&8*		Catchment 221 Pervious Impervious Iotal Area	Runoff coefficient 0.751 0.962 0.762 "	
Time to Concentration 2500.282 264.484 2300.357 minutes" 4 Add Runoff " Rainfall depth 285.000 285.000 285.000 mm" 0.152 0.152 0.114 14.801" Rainfall losses 70.590 11.084 22.093 mm" 8 Copy to Outflow" Runoff depth 214.410 273.916 262.907 mm" 0.152 0.152 0.152 14.801" Runoff volume 321.29 1808.26 2129.55 c.m" 40 HYDROGRAPH Combine 5 Node #" Maximum flow 0.021 0.996 0.114 c.m/sec" 5 Node #" 40 HYDROGRAPH Add Runoff	÷.	Junade Area U.150 U.500 U.810 Nectare"	- Maximum flow 0.144 0.008 0.152 c.m/se	
Rainfall depth 285,002 285,002 285,000 main 0.152 0.152 0.114 14.801" Rainfall volume 427,07 1881,43 2308,50 c.m" 40 HYDROGRAPH Copy to Outflow" Rainfall losses 70.590 11.084 22.093 mm" 6 Copy to Outflow" Runoff depth 214,410 273,916 262.007 mm" 0.152 0.152 0.152 14.801" Runoff depth 214,410 273,916 262.007 mm" 0.152 0.152 0.152 14.801" Runoff coefficient 0.752 0.961 0.922 0.152 0.152 14.801" Maximum flow 0.021 0.986 0.114 c.m/sec" 40 HYDROGRAPH Combine 5 Node #" 40 HYDROGRAPH Add Runoff u/s of HWY 7&8" 14.801" 14.801"		Time to Controld 2500 298 2564 844 2300 357 minutos"	40 RIDRUGKAPH AGO HUNOTT	
Rainfall volume 200.000 200.000 200.000 200.000 200.000 14.011 Rainfall volume 427.07 1881.43 208.50 c.m" 40 HYDROGRAPH Copy to Outflow" Rainfall losses 70.590 11.044 220.93 mm" 8 Copy to Outflow" Runoff depth 214.410 273.916 262.097 mm" 0.152 0.152 0.152 14.801" Runoff volume 321.29 1808.26 2129.55 c.m" 40 HYDROGRAPH Combine 5" Runoff coefficient 0.752 0.961 0.922 6 Combine 6 Maximum flow 0.021 0.098 0.114 c.m/sec" 5 Node #" 40 HYDROGRAPH Add Runoff " " U/s of HWY 7&8" 5		Rainfall denth 285.000 285.000 285.000	4 A00 MUNOTT " 0 152 0 152 0 114 14 801"	
Rainfall losses 70.500 11.064 22.093 mm" 8 Copy to Outflow" Runoff depth 214.410 273.916 262.907 mm" 0.152 0.152 0.152 14.801" Runoff volume 321.29 1808.26 2129.55 c.m" 40 HYDROGRAPH Combine 5 Maximum flow 0.021 0.098 0.114 c.m/sec" 5 Node #" 40 HYDROGRAPH Add Runoff u/s of HWY 7&8" 14.801"		Rainfall volume 427.07 1881.43 2308.50 c m"	40 HYDROGRAPH Conv to Outflow"	
Runoff depth 214.410 273.916 262.907 mm" 0.152 0.152 0.152 0.152 14.801" Runoff volume 321.29 1808.26 2129.55 c.m" 40 HYDROGRAPH Combine 5" Runoff coefficient 0.752 0.961 0.922 6 Combine 5" Maximum flow 0.021 0.098 0.114 c.m/sec" 5 Node #" 40 HYDROGRAPH Add Runoff " u/s of HWY 7&8" 14.801 14.801		Rainfall losses 70.590 11.084 22.093 mm"	8 Copy to Outflow	
Runoff volume 321.29 1808.26 2129.55 c.m" 40 HYDROGRAPH Combine 5" Runoff coefficient 0.752 0.961 0.922 6 Combine 5" Maximum flow 0.021 0.098 0.114 c.m/sec" 5 Node #" 40 HYDROGRAPH Add Runoff " u/s of HWY 7&8" 1000000000000000000000000000000000000		Runoff depth 214.410 273.916 262.907 mm"	0.152 0.152 0.152 14.801"	
Runoff coefficient 0.752 0.961 0.922 6 Combine Maximum flow 0.021 0.098 0.114 c.m/sec 5 Node #" 40 HYDROGRAPH Add Runoff u/s of HWY 7&8" 1	*	Runoff volume 321.29 1808.26 2129.55 c.m"	40 HYDROGRAPH Combine 5"	
Maximum flow 0.021 0.098 0.114 c.m/sec 5 Node #" 40 HYDROGRAPH Add Runoff " u/s of HWY 7&8"	5	Runoff coefficient 0.752 0.961 0.922	* 6 Combine "	
" 40 HYDROGRAPH Add Runoff " u/s of HWY 7&8"	÷	Maximum flow 0.021 0.098 0.114 c.m/sec*	5 Node #"	
	- 40	HYDHUGHAPH Add Runoff "	u/s of HWY 7&8"	
Q:\3489 Printed	6\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out at 15:33 on 18 Dec 2018	Page 23	Q:l34896\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out Printed at 15:33 on 18 Dec 2018	Page 24
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81	Maximum flow 14.949 c.m/sec" Hydrograph volume 261457.281 c.m" 0.152 0.152 0.152 14.949" ADD COMMENT===================================		6.175 21.124 6.175 0.000" 81 ADD COMMENT=======""""""""""""""""""""""""""""""	
2	Badenview Developments Inc. lands"		** PROPOSED SWM POND DESIGN	
• 40	HYDROGRAPH Start - New Tributary"		* ** ***	
1	2 Start - New Tributary"			
• 33	0.152 0.000 0.152 14.949° CATCHMENT 224"		54 FOND DESIGN" 21.124 Current peak flow c.m/sec"	
1	1 Triangular SCS" 1 Found Jonath"		4.094 Target outflow c.m/sec"	
	1 SCS method"		36. Number of stages"	
	224 Badenview lands" 85.000 % Impervious"		334,550 Minimum water level metre" 337,850 Maximum water level metre"	
•	43.200 Total Area"		334.550 Starting water level metre"	
	90.000 Flow length" 1.000 Overland Slope"		0 Keep Design Data: 1 = True; 0 = False" Level Discharge Volume"	
1	6.480 Pervious Area"		334.550 0.000 0.000"	
÷ .	90.000 Pervious length" 1.000 Pervious slope"		334.600 0.00400 1187.000" 334.700 0.02830 3607.000"	
	36.720 Impervious Area"		334.800 0.06350 6090.000"	
÷	1.000 Impervious slope"		335.000 0.1880 11246.00"	
2	0.250 Pervious Manning 'n'" 76.000 Pervious SCS Curve No "		335.100 0.3430 13920.00" 335.200 0.5360 16668.00"	
	0.753 Pervious Runoff coefficient"		335.300 0.7599 19459.00"	
2	0.100 Pervious Ia/S coefficient" 8.021 Pervious Initial abstraction"		335,400 1.011 22323,00" 335,500 1.286 25249,00"	
1	0.015 Impervious Manning 'n'"		335.600 1.583 28239.00"	
	98.000 Impervious SCS Curve No." 0.972 Impervious Runoff coefficient"		335.700 1.901 31294.00" 335.800 2.238 34414.00"	
5	0.100 Impervious Ia/S coefficient"		335.900 2.593 37599.00"	
•)	6.175 0.000 0.152 14.949 c.m/sec"		" 336.100 2.966 40651.00" " 336.100 3.427 43465.00"	
1	Catchment 224 Pervious Impervious Total Area " Surface Area 6 480 36 720 43 200 bectare"		336.200 3.959 46848.00" 336.300 4.643 50286.00"	
	Time of concentration 37.890 6.807 10.548 minutes		336.400 5.171 53779.00"	
	Time to Centroid 2527.255 2273.436 2303.983 minutes" Bainfall denth 285.000 285.000 285.000 mm"		" 336.500 5.840 57328.00" 336.600 6.544 60933.00"	
÷	Rainfall volume 1.8468 10.4652 12.3120 ha-m"		336.700 7.284 64595.00"	
•	Rainfall losses 70.343 8.121 17.454 mm" Runoff depth 214.657 276.879 267.546 mm"		" 336.800 8.055 68313.00" " 336.900 8.858 72088.00"	
2	Runoff volume 1.3910 10.1670 11.5580 ha-m ⁴		337.000 9.690 75920.00"	
•	Maximum flow 0.937 5.508 6.175 c.m/sec"		337.100 10.550 79609.00"	
* 40	HYDROGRAPH Add Runoff "		337.300 12.351 87759.00" 337.400 13.291 91891.00"	
•	6.175 6.175 0.152 14.949"		337,500 14.255 95940,00"	
40	HYDROGRAPH Copy to Outflow" 8 Copy to Outflow"		" 337.550 14.746 98022.00" 337.600 16.027 100118.0"	
	6.175 6.175 6.175 14.949"		337.700 20.027 104352.0"	
40	HYDHOGHAPH COMDINE 5" 6 Combine "		337.800 25.280 108643.0" 337.850 28.277 110810.0"	
	5 Node #"		Peak outflow 14.496 c.m/sec"	
	Maximum flow 21.124 c.m/sec"		Maximum storage 96960.078 c.m ⁴	
	Hydrograph volume 377037.063 c.m" 6 175 6 175 6 175 21 124"		Centroidal lag 44.943 hours"	
40	HYDROGRAPH Confluence 5"		40 HYDROGRAPH Combine 12"	
	7 Confluence " 5 Node #"		6 Combine " 12 Node #"	
•	u/s of HWY 7&8"		d/s of Proposed SWMF"	
•	Maximum riow 21.124 c.m/sec" Hydrograph volume 377037.094 c.m"		Maximum Tiow 14.496 c.m/sec" Hydrograph volume 373059.344 c.m"	

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6,175 21,124 14,496 14,496	0.100 Pervious Ia/S coefficient"			
81 ADD COMMENT===================================	 8.021 Pervious Initial abstraction* 			
3 Lines of comment"	* 0.015 Impervious Manning 'n'"			
	98.000 Impervious SCS Curve No."			
Uatchments to inlet #6"	0.976 Impervious Runoff coefficient"			
40 HYDROGRAPH Start - New Tributary"	0.100 Impervious Ia/S coefficient			
2 Start - New Tributary"	3 0.376 1mpc/v1003 111111 abstraction			
6.175 0.000 14.496 14.496"	Catchment 261 Pervious Impervious Total Area *			
* 33 CATCHMENT 260"	* Surface Area 1.598 0.752 2.350 hectare*			
1 Triangular SCS"	Time of concentration 20.229 8.640 15.837 minutes"			
3 Specity Values	Time to Centroid 2502.276 2277.514 2417.098 minutes"			
* 260 Hamilton Heinhts Subdivision"	Hainfail depin 285.000 255.000 285.000 mm ⁻			
46.000 % Impervious"	Rainfall Josses 70.406 6.727 50.029 mm*			
8.160 Total Area"	Runoff depth 214.594 278.273 234.971 mm*			
50.000 Flow length"	Runoff volume 3429.21 2092.61 5521.83 c.m"			
1.000 Overland Slope	Runoff coefficient 0.753 0.976 0.824			
50 000 Repuise least	Maximum flow 0.228 0.116 0.338 c.m/sec*			
3.754 Impervious Area"	• 0.338 1.518 14.496 14.496*			
232.000 Impervious length	* 40 HYDROGRAPH Copy to Outflow"			
1.500 Impervious slope"	8 Copy to Outflow"			
0.250 Pervious Manning 'n'	0.338 1.518 1.518 14.496"			
76.000 Pervious SCS Curve No."	40 HYDROGRAPH Combine 12"			
0.100 Pervious Hunor: coefficient"				
8 021 Pervious Tais coertification*	12 Note #* d/s of Proposed SWAF*			
0.015 Impervious Manning 'n'"	Maximum flow 15.539 c.m/sec"			
98.000 Impervious SCS Curve No.*	Hydrograph volume 398485,438 c.m"			
 0.978 Impervious Runoff coefficient" 	* 0.338 1.518 1.518 15.533*			
0.100 Impervious Ia/S coefficient	40 HYDROGRAPH Start - New Tributary"			
0.518 Impervious initial abstraction"	2 Start - New Tributary"			
Catchmant 260 Pervious Impervious Total Area *	33 CATCHIER 225"			
Surface Area 4,406 3,754 8,160 hectare"	Triangular SCS"			
Time of concentration 19.152 10.638 14.677 minutes"	Equal Length			
Time to Centroid 2500.402 2280.953 2385.057 minutes"	1 SCS method"			
Rainfall depth 285.000 285.000 mm"	225 HWY 7/8 and north ditching"			
- Hainfail Volume 1.2558 1.0098 2.3256 ha-m" Boinfail loopoo 7.0.711 6.084 41.075 mm"	30.000 * Impervious"			
* Bunoff depth 214.289 278.716 243.925 mm*	" 75.000 Flow length"			
* Runoff volume 0.9442 1.0462 1.9904 ha-m"	2.000 Overland Slope"			
* Runoff coefficient 0.752 0.978 0.856 *	1.169 Pervious Area"			
Maximum flow 0.630 0.575 1.180 c.m/sec*	75.000 Pervious length"			
40 HYDROGRAPH Add Runoff "	2.000 Pervious slope			
	75 000 Impervious Length			
* 33 CATCHMENT 261*	2.000 Impervious slope			
1 Triangular SCS*	0.250 Pervious Manning 'n'"			
 3 Specify values' 	* 74.000 Pervious SCS Curve No."			
1 SCS method*	0.731 Pervious Runoff coefficient			
261 Klassen Bronze Property"	0.100 Pervious Ia/S coefficient			
2,350 Total Area"	8.924 Pervious Initial abstraction"			
100.000 Flow length*	98.000 Impervious SCS Curve No *			
2,500 Overland Slope"	0.977 Impervious Runoff coefficient"			
1.598 Pervious Area [®]	0.100 Impervious Ia/S coefficient"			
50.000 Pervious length"	0.518 Impervious Initial abstraction*			
2.500 Pervious slope	0.240 0.000 1.518 15.533 c.m/sec			
U, 122 Impervious Area"	- Catchment 225 Pervious Impervious Total Area "			
1.500 Impervious slope*	Surrace Area 1.109 0.501 1.570 Hettale" Time of concentration 27.732 4.956 19.443 minutes"			
0.250 Pervious Manning 'n'"	Time to Centroid 2524.840 2272.954 2433.168 minutes"			
76.000 Pervious SCS Curve No."	Rainfall depth 285,000 285.000 285.000 mm*			
• 0.753 Pervious Runoff coefficient"	" Rainfall volume 3331.65 1427.85 4759.50 c.m"			

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5	Rainfall losses 76.535 6.681 55.579 mm*		* 6 Node number"			
	Runoff depth 208.465 278.319 229.421 mm"		1.560 Overflow threshold"			
	Runoff volume 2436.96 1394.38 3831.34 c.m"		1.000 Required diverted fraction"			
	Runott coefficient 0.731 0.977 0.805 "		0 Conduit type; 1=Pipe;2=Channel"			
• 40	HYDROGRAPH Add Bunoff "		Volume of diverted flow 0.000			
	4 Add Runoff "		DIV00006.250hvd*			
*	0.240 0.240 1.518 15.533"		Major flow at 6"			
• 40	HYDROGRAPH Copy to Outflow"		1.241 1.241 1.241			
	8 Copy to Outflow"		40 HYDROGRAPH Combine 9"			
• 40	0.240 0.240 0.240 15.533" HYDROGRAPH Combine 12"		6 COMDINE "			
	6 Combine "		NODE B"			
	12 Node #"		Maximum flow 1.241			
	d/s of Proposed SWMF"		 Hydrograph volume 21100.598 			
	Maximum flow 15.701 c.m/sec"		1.241 1.241 1.241			
	Hydrograph volume 402316.844 c.m"		40 HYDROGRAPH Start - New Tributary"			
· 81	ADD COMMENT		2 Start - New Fridutary"			
	3 Lines of comment"		47 FILEL 0 Read/Open DIV00006 250bvd"			
*	***************************************		1 1=read/open; 2=write/save"			
- T.	Western catchment along Hamilton Road, diverted to Inlet #6"		2 1=rainfall; 2=hydrograph"			
÷	•••••••••••••••••••••••••••••••••••••••		1 1=runoff; 2=inflow; 3=outflow; 4=			
40	HYDROGRAPH Start - New Tributary"		DIV00006.250hyd"			
	2 START - New Fridutary"		Major flow at 6"			
. 33	CATCHMENT 270"		Maximum flow 0.000			
	1 Triangular SCS"		0.000 0.000 1.241 1			
•	3 Specify values"		* 40 HYDROGRAPH Add Runoff "			
	1 SCS method*		* 4 Add Runoff "			
	270 Industrial/Residential area along Hamilton Road		0.000 0.000 1.241			
	55.000 % Impervious" R 450 Total Apac"		40 HYDROGRAPH Copy to Outflow"			
	45 000 Flow length"					
	2.000 Overland Slope"		40 HYDROGRAPH Combine 12"			
	3.802 Pervious Area"		6 Combine "			
	30.000 Pervious length"		* 12 Node #"			
- 2	3.000 Pervious slope"		d/s of Proposed SWMF*			
12	4.648 Impervious Area" 235.000 Impervious longth"		Maximum flow 15./01			
0.00	1.500 Impervious slope"					
	0.250 Pervious Manning 'n'"		# 40 HYDROGRAPH Confluence 12"			
1. C	76.000 Pervious SCS Curve No."		7 Confluence "			
	0.752 Pervious Runoff coefficient"		12 Node #"			
	0.100 Pervious la/S coetficient" 8.021 Repuisus Initial electrostica"		d/s of Proposed SWMF"			
	0.015 Impervious Manning 'n'"		Hydrograph volume 402316 875			
	98.000 Impervious SCS Curve No."		0.000 15.701 0.000			
	0.978 Impervious Runoff coefficient"		* 54 POND DESIGN"			
10	0.100 Impervious Ia/S coefficient"		15.701 Current peak flow c.m/sec"			
	0.518 Impervious Initial abstraction"		0.070 Target outflow c.m/sec"			
	1.241 0.000 0.240 15./01 C.m/sec" Catabaant 270 Baawieup Impanyieus Tatal Apon M		402316.9 Hydrograph volume c.m"			
100	Surface Area 3.802 4.648 8.450 bectare"		 NUMber of stages 334 290 Minimum water level metre 			
	Time of concentration 14.097 10.721 12.024 minutes"		337.000 Maximum water level metre"			
	Time to Centroid 2493.258 2281.054 2363.002 minutes"		334.290 Starting water level metre"			
	Rainfall depth 285.000 285.000 285.000 mm"		0 Keep Design Data: 1 = True; 0 = F			
15	Rainfall volume 1.0837 1.3245 2.4082 ha-m"		Level Discharge Volume"			
	Maintall Losses 70.705 6.312 35.289 mm [*]		334.290 0.000 0.000"			
	Runoff volume 0.8149 1.2052 2.1101 ha-m"					
3.5	Runoff coefficient 0.752 0.978 0.876		335.500 2.800 674.000"			
	Maximum flow 0.536 0.711 1.241 c.m/sec"		336.000 4.639 1910.000"			
* 40	HYOROGRAPH Add Runoff "		336.500 6.480 3748.000"			
0.000 1.000	4 Add Runoff "		336.550 6.665 3967.000"			
	1.241 1.241 0.240 15.701		337.000 23.484 6569.000"			
50	DIATUDIOM		reak outilow 15.6/4			

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al.out c.m/sec≚ c.m≝ 15.701 c.m/sec" c.m/sec" c.m" 1.241" 1.241" unction" с.т" c.m/sec" .241 c.m/sec" 1.241" 1.241" c.m/sec" c.m" 15.701" c.m/sec" c.m" 0.000" alse"

c.m/sec≝

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Q:134896\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out Page 29 Printed at 15:33 on 18 Dec 2018	Q:\34896\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out Page 30 Printed at 15:33 on 18 Dec 2018
Maximum level 336.791 metre"	Runoff coefficient 0.784 0.972 0.833
Maximum storage 5361.965 c.m"	Maximum flow 0.075 0.028 0.102 c.m/sec"
Centroidal lag 43.954 hours"	40 HYDROGRAPH Add Runoff
4.0 HYDROBAPH Next line "	4 Add Runoff "
5 Next link "	54 DOND DESTAN
* 0.000 15.674 15.674 0.000°	O.102 Current peak flow c.m/sec"
56 DIVERSION"	 0.070 Target outflow c.m/sec"
7 Node number"	1661.1 Hydrograph volume c.m"
1.000 Required diversion"	8. Number of stages"
0 Conduit type: 1=Pine:2=Channel"	0.000 Minimum water level metre"
Peak of diverted flow 8.504 c.m/sec*	0.000 Starting water level metre"
Volume of diverted flow 65386.973 c.m"	• 0 Keep Design Data: 1 = True; 0 = False"
	Level Discharge Volume"
Major Low at 7" 0.000 15.674 7.170 0.000 c.m/sec"	0.000 0.000 0.000"
* 40 HYDROGRAPH Combine 8 "	
6 Combine "	* 0.3500 0.00700 29.000"
8 Node #"	• 0.4500 0.00800 69.000"
NODE A"	0.6500 0.01000 178.000"
- Maximum Tiow 7.170 c.m/sec"	0.7000 0.1060 208.000"
0.000 15.674 7.170 7.170"	0.7500 0.2810 240.000"
81 ADD COMMENT===================================	Maximum level 0.696 metro*
3 Lines of comment"	Maximum storage 205,634 c.m"
***************************************	 Centroidal lag 41.432 hours"
Catchments South of Hwy 7/8"	0.102 0.102 0.098 7.170 c.m/sec"
40 HYDROGRAPH Start - New Tributary"	40 HYDHOGHAPH Combine 9"
2 Start - New Tributary"	* 9 Node #"
0.000 0.000 7.170 7.170"	NODE B"
33 CATCHMENT 280"	Maximum flow 1.335 c.m/sec"
a Specify values*	Hydrograph volume 22761,688 c.m*
1 SCS method"	40 HYDROGRAPH Start - New Tributary"
280 Northeast portion of Maple Leaf Foods property	Start - New Tributary
26.000 % Impervious"	0.102 0.000 0.098 1.335"
0.700 Total Area"	33 CATCHMENT 281"
1.500 Overland Slope"	1 Triangular SCS
0.518 Pervious Area"	* 1 SCS method*
* 20.000 Pervious length*	281 Western portion of John Bear property"
2.000 Pervious slope	93.000 % Impervious"
68 000 Impervious legath"	1.870 Total Area"
1.000 Impervious slope"	1 2000 Providence and a second s
0.250 Pervious Manning 'n'"	0.131 Pervious Area"
79.000 Pervious SCS Curve No."	* 20.000 Pervious length*
0.784 Pervious Runoff coefficient"	2.000 Pervious slope"
0.100 Pervious la/S coefficient" 6.752 Pervious Initial Detraction"	1.739 Impervious Area"
0.015 Impervious Manning 'o'"	112.000 Impervious length"
98.000 Impervious SCS Curve No."	0.250 Pervious Mannina "n"
0.972 Impervious Runoff coefficient"	65.000 Pervious SCS Curve No."
0.100 Impervious Ia/S coefficient	0.630 Pervious Runoff coefficient"
0.518 Impervious infilal abstraction" 0.002 0.000 Z 170 Z 170 c m(cool	0.100 Pervious Ia/S coefficient"
Catchment 280 Pervious Impervious Total Area	0.015 Impervious Antital abstraction"
Surface Area 0.518 0.182 0.700 hectare"	98.000 Impervious SCS Curve No."
Time of concentration 12.395 5.753 10.380 minutes"	0.977 Impervious Runoff coefficient"
- Time to Centroid 2471.649 2271.438 2410.898 minutes"	0.100 Impervious Ia/S coefficient
Rainfall volume 1476 30 518 70 1905 00 mm*	0.518 Impervious Initial abstraction"
Rainfall losses 61,623 8,047 47,694 mm*	Catchment 281 Pervious Transvious Total Accord
Runoff depth 223.377 276.953 237.306 mm*	Surface Area 0.131 1.739 1.870 hectare"
Runoff volume 1157.09 504.05 1661.14 c.m"	Time of concentration 12.932 7.761 8.001 minutes"

Q:134896\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out Printed at 15:33 on 18 Dec 2018	Page 31 Q:X Prir	34896\104\SWM\MIDUSS\Post\34896-104_Post-Regional.out nted at 15:33 on 18 Dec 2018
Q:1348961104\SWMMIDUSS\Post34896-104_Post-Regional.out Printed at 15:33 on 18 Dec 2018 Time to Centroid 2552.368 2277.105 2289.851 minutes* Rainfall depth 285.000 285.000 285.000 mm* Rainfall losses 105.367 6.536 13.454 mm* Runoff depth 179.633 278.464 271.546 mm* Runoff coefficient 0.630 0.977 0.953 * Maximum flow 0.017 0.264 0.279 c.m/sec* 40 HYDRGRAPH Add Runoff * 4 Add Runoff * 0.279 0.279 0.098 1.335* 54 POND DESIGN* 0.279 Current peak flow 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* 0.000 Starting water level metre* 0.000 0.000 0.000° 0.000 0.0000 8.000° 0.000 0.1200 97.000° 1.200 0.1400 254.000°	Page 31 QiX Prin 4	348961104/SWMMIDUSS/Post34896-104_Post-Regional.out nted at 15:33 on 18 Dec 2018 0.518 Impervious Initial abstraction" 0.170 0.000 0.271 1.570 c.m/sec" Catchment 282 Pervious Time of concentration 14.605 5.529 7.579 Time of concentration 14.605 Rainfall depth 285.000 Rainfall volume 1069.04 Rainfall losses 104.915 Runoff depth 180.085 Runoff coefficient 0.632 Runoff coefficient 0.632 Runoff coefficient 0.632 Runoff coefficient 0.632 Maximum flow 0.048 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 0.170 Current peak flow <t< td=""></t<>
1.200 0.1400 254.000" 1.500 0.1500 358.000" 1.600 1.000 400.000" Peak outflow 0.271 c.m/sec" 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" 2 Start - New Tributary" 3 CATCHWENT 282"	4	Level Discharge Volume" 0.000 0.000 0.000" 0.3200 0.04300 276.000" 0.7500 0.06600 333.000" 1.300 0.05700 371.000" 1.400 0.5000 400.000" Peak outflow 0.170 c.m/sec" Maximum storage 376.845 c.m" Centroidal lag 40.352 hours" 0.170 0.170 0.170 1.570 c.m/sec" 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 1.739"
<pre>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 length" 2.000 Impervious Slope" 0.250 Pervious Runoff coefficient" 0.100 Pervious Runoff coefficient" 0.101 Impervious Koefficient" 98.000 Impervious SCS Curve No." 98.000 Impervious SCS Curve No." 0.315 Impervious Manning 'n'" 98.000 Impervious SCS Curve No." 0.315 Impervious SCS Curve No."</pre>	3	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" 16.536 Pervious Area" 150.000 Pervious length" 2.00 Pervious length" 2.00 Impervious length" 2.00 Impervious slope" 6.754 Impervious length" 2.00 Impervious slope" 0.250 Pervious Slope" 0.250 Pervious Slope" 0.260 Pervious Slope" 0.269 Pervious Ranning "n" 68.300 Pervious TalS coefficient" 0.100 Pervious Initial abstraction" 0.015 Impervious Manning "n"

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98.000 Impervious SCS Curve No." 0.978 Impervious Runoff coefficient"	0.100 Pervious Ia/S coefficient" 8.924 Pervious Initial abstraction"				
0.100 Impervious Ta/s coefficient	0.015 Impervious Manning 'n'				
3.188 0.000 0.170 1.739 c.m/sec"	0.975 Impervious Bunoff coefficient"				
Catchment 283 Pervious Impervious Total Area	0.100 Impervious Ia/S coefficient"				
Surface Area 16.536 6.754 23.290 hectare"	• 0.518 Impervious Initial abstraction"				
Time of concentration 41,583 13,409 31,052 minutes"	0.419 0.000 7.170 12.094 c.m/sec"				
Bainfall depth 285.072 2255.137 2457.080 minutes"	Catchment 284 Pervious Impervious Total Area "				
Rainfall volume 4.7127 1.9249 6.6377 ha-m"	Time of concentration 25.276 4.517 24.726 minutes"				
" Rainfall losses 94.226 6.233 68.708 mm"	Time to Centroid 2521.159 2271.813 2514.554 minutes"				
Runoff depth 190.774 278.767 216.292 mm"	 Rainfall depth 285.000 285.000 mm* 				
- HUNOTT VOLUME 3.1546 1.8828 5.0374 ha-m"	Rainfall volume 8239.35 168.15 8407.50 c.m"				
Manum Coefficient 0.009 0.975 0.759 Maximum flow 2.236 1.048 3.188 c.m/sec"	Haintail losses /6.690 /.247 75.301 mm*				
* 40 HYDROGRAPH Add Runoff "	* Runoff volume 6022.25 163.87 6186.13 c.m*				
4 Add Runoff "	Runoff coefficient 0.731 0.975 0.736				
3.188 3.188 0.170 1.739"	Maximum flow 0.410 0.009 0.419 c.m/sec"				
40 HYDROGRAPH CODY to Outflow"	40 HYDROGRAPH Add Runoff				
3.188 3.188 3.188 1.739"	4 Add Hunott "				
* 40 HYDROGRAPH Combine 9"	40 HYDROGRAPH Copy to Cutflow [®]				
• 6 Combine "	8 Copy to Outflow"				
9 Node #"	0.419 0.419 0.419 12.094"				
NODE B" Novimum flow 4 004 o p(occ)	40 HYDROGRAPH Combine 9"				
Hudrograph volume 81191.539 c.m."	B Node #"				
3.188 3.188 4.924"	NODE B"				
* 40 HYDROGRAPH Confluence 8"	 Maximum flow 12.498 c.m/sec" 				
7 Confluence "	Hydrograph volume 424276.125 c.m"				
	0.419 0.419 0.419 12.498"				
Maximum flow 7.170 c.m/sec"	7 Confluence "				
Hydrograph volume 336897.875 c.m"	9 Node #"				
3.188 7.170 3.188 0.000"	NODE B"				
40 HYDROGRAPH Copy to Outflow"	Maximum flow 12.498 c.m/sec"				
3.188 7.170 7.170 0.000*	Hydrograph volume 424275.094 c.m"				
40 HYDROGRAPH Combine 9"	* 40 HYDROGRAPH Copy to Ultflow*				
* 6 Combine "	8 Copy to Outflow"				
9 Node #*	0.419 12.498 12.498 0.000"				
NUDE B"	40 HYDROGRAPH Combine 10"				
Hydrograph volume 418090.063 c.m"	b Compine "				
3.188 7.170 7.170 12.094"	NODE C"				
40 HYDROGRAPH Start - New Tributary"	Maximum flow 12.498 c.m/sec"				
2 Start - New Tributary"	Hydrograph volume 424276.094 c.m"				
- 3.188 0.000 7.170 12.094" - 33 CATCHMENT 284"	• 0.419 12.498 12.498 12.498"				
Triangular SCS"	2 Start - New Tributary				
• Equal length*	0.419 0.000 12.498 12.498"				
1 SCS method"	* 33 CATCHMENT 285"				
2000 & Impervious"	1 Triangular SCS"				
2.950 Total Area	1 SCS method"				
80.000 Flow length*	285 Morningside Retirement Community lands"				
3.100 Overland Slope"	58.000 % Impervious"				
2.031 PERVIOUS APER" BO DOD Pervious Lengta"	18.780 Total Area"				
3.100 Pervices slope"	- ISU.UUU FLOWIENGTN 2.000 Overland Slope				
0.059 Impervious Area"	7.888 Pervious Area"				
80.000 Impervious length	* 25.000 Pervious length*				
 3.100 Impervious slope" 0.250 Depuiser laboration (all) 	2.500 Pervious slope"				
74.000 Pervious Maining 'n'	10.892 Impervious Area"				
• 0.731 Pervious Runoff coefficient"	2.500 Impervious slope"				

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5. # 2	0.250 Pervious Manning 'n'"		0.518 Impervious Initial abstraction"
1.00	64,400 Pervious SCS Curve No."		0.508 0.000 2.671 15.075 c.m/sec"
	0.625 Pervious Runoff coefficient"		Catchment 250 Pervious Impervious Total Area
÷1	0.100 Pervious Ia/S coefficient"		 Surface Area 3.510 0.000 3.510 hectare*
3 ₩5	14.041 Pervious Initial abstraction"		Time of concentration 32.784 11.295 32.784 minutes"
	0.015 Impervious Manning 'n'		Time to Centroid 2520.114 2281.667 2520.113 minutes"
120	98.000 Impervious SCS Curve No."		Hainfall depth 285.000 285.000 285.000 mm"
100	0.978 Impervious Autori Coefficient"		Reinfall Josepe 70 209 6 416 70 209 mm"
0.00	0.518 Impervious Initial abstraction"		Runoff depth 214.702 278.584 214.702 mm"
0.77	2.671 0.000 12.498 12.498 c.m/sec"		Runoff volume 7536.03 0.01 7536.04 c.m
	Catchment 285 Pervious Impervious Total Area *		Runoff coefficient 0.753 0.000 0.753
	Surface Area 7.888 10.892 18.780 hectare"		* Maximum flow 0.508 0.000 0.508 c.m/sec*
0.90	Time of concentration 13.861 11.761 12.425 minutes"		40 HYDROGRAPH Add Runoff "
2	Time to Centroid 2556.982 2282.928 2369.608 minutes"		4 Add Runott -
	Rainfail udplin 205.000 205.000 205.000 mm		* 40 HVDP0CPAPH Copy to Outflow"
040	Rainfall losses 106.859 6.146 48.445 mm"		B Copy to Outflow
	Runoff depth 178.141 278.854 236.655 mm"		* 0.508 0.508 0.508 15.075*
	Runoff volume 1.4051 3.0374 4.4425 ha-m"		* 40 HYDROGRAPH Combine 11"
5 8 2	Runoff coefficient 0.625 0.978 0.830 "		6 Combine *
	Maximum flow 0.991 1.688 2.671 c.m/sec"		11 Node #"
40	HYJROGRAPH ADD RUNOTT		U/S OT EAST CULVERT OT HWY /AS"
	4 Aug nuitoit 2 671 2 671 12 409 12 408		Maximum ilow 0.500 C.m/Sec
* 40	HYDROGRAPH CODY to Outflow		0.508 0.508 0.508 0.508 0.508
1.0	8 Copy to Outflow"		40 HYDROGRAPH Start - New Tributary"
	2.671 2.671 2.671 12.498"		2 Start - New Tributary"
* 40	HYDROGRAPH Combine 10"		* 0.508 0.000 0.508 0.508 [°]
0.00	6 Combine "		33 CATCHMENT 251
- C	10 Node #"		
	NUDE C Navimum flow 15.075 cm/sec"		 3 opecity values 1 SCS method[®]
S#C	Hydrograph volume 468701.063 c.m"		251 Wilmot Maintenance property, Hwy 7/8 and Nafziger Road"
	2.671 2.671 2.671 15.075"		33.000 % Impervious
* 81	ADD COMMENT===================================		5.770 Total Area"
	3 Lines of comment"		100.000 Flow length
			2.000 Overland Slope
	Catchments north of Hwy 7/8, towards Eastern Fributary-		3.500 PERVIOUS AFEA"
- 40	HYDROGRAPH Start - New Tributary"		2.000 Pervious slope"
0.00	2 Start - New Tributary"		1.904 Impervious Area"
	2.671 0.000 2.671 15.075"		296.000 Impervious length
* 33	CATCHMENT 250"		2.000 Impervious slope*
	1 Triangular SCS"		" 0.250 Pervious Manning 'n'"
	3 Specify values"		76.000 Pervious SCS Curve No."
	1 SCS Method 250 Southern portion of Par Centre fielde"		0.753 Pervious Hunort Coerticient"
			8.021 Pervious Initial abstraction"
	3.510 Total Area"		0.015 Impervious Manning 'n'"
1.0	95.000 Flow length"		98.000 Impervious SCS Curve No."
	1.600 Overland Slope"		0.977 Impervious Runoff coefficient"
	3.510 Pervious Area"		0.100 Impervious Ia/S coefficient"
	100.000 Pervious length"		0.518 Impervious initial abstraction"
			Catchment 251 Reprings Innerving Tatal Area "
	296.000 Impervious length"		Surface Area 3.866 1.904 5.770 hectare
9 8 5	2.000 Impervious slope"		Time of concentration 32.784 11.295 24.405 minutes*
	0.250 Pervious Manning 'n'"		Time to Centroid 2520.114 2281.666 2427.143 minutes
1	76.000 Pervious SCS Curve No."		Rainfall depth 285.000 285.000 mm"
	0.753 Pervious Runoff coefficient"		Rainfall volume 1,1018 0.5427 1.6445 ha-m"
	U.100 Pervious Ia/S coefficient" 8 021 Pervious Ia/S coefficient"		Maintail losses //L298 6.416 49.21/ mm*
	G. OZI FEIVIOUS IIIIIII AUSTRALIUN O OIS Tempevious Manning 'n'"		numuru ueptii ≥19.702 270.504 235.703 mili" Buinoff volume 0.8300 0.5305 1.3605 ba-mi*
	98.000 Impervious SCS Curve No."		Runoff coefficient 0.753 0.977 0.827
*	0.000 Impervious Runoff coefficient*		* Maximum flow 0.560 0.293 0.840 c.m/sec*
(*)	0.100 Impervious Ia/S coefficient"		* 40 HYDROGRAPH Add Runoff "

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:	4 Add Runoff " 0.840 0.840 0.508 0.508"	• 47	0.409 0.000 0.409 1.752" FILEI_0 Read/Open DIV00007.250hyd"	
40	HYDROGRAPH Copy to Outflow"	:	1 1≂read/open; 2=write/save"	
21 21	0.840 0.840 0.508"		1 1=runoff; 2=inflow; 3=outflow; 4=junction*	
40	HYDROGRAPH Combine 11" 6 Combine "		DIVOOOO7.250hyd" Major flow at 7"	
	11 Node #"	5	Total volume 65386.973 c.m"	
	u/s of east cuivert of HWY 7&8" Maximum flow 1.349 c.m/sec"	1	Maximum flow 8.504 c.m/sec" 8.504 0.000 0.409 1.752 c.m/sec"	
•	Hydrograph volume 21140.723 c.m"	* 40	HYDROGRAPH Add Runoff "	
40	0.840 0.840 0.840 1.349" HYDROGRAPH Start - New Tributary"		4 Add Runoff " 8.504 8.504 0.409 1.752"	
90 I I I I I I I I I I I I I I I I I I I	2 Start - New Tributary"	• 40	HYDROGRAPH Copy to Outflow"	
* 33	0.840 0.000 0.840 1.349" CATCHMENT 252"		8 Copy to Outflow" 8 504 8 504 8 504 1.752"	
	1 Triangular SCS*	* 40	HYDROGRAPH Combine 11"	
ŝ	1 Equal length" 1 SCS method"	- 2	6 Combine " 11 Node #"	
*	252 Southern portion of Hamburglr lands"	*	u/s of east culvert of HWY 7&8"	
2	5.000 % Impervious" 2.870 Total Area"	2	Maximum flow 9.698 c.m/sec" Hydrograph yolume 92610 773 c.m"	
	65.000 Flow length"	•	8.504 8.504 9.698"	
•	1.500 Overland Slope" 2.726 Pervious Area"	40	HYDROGRAPH Confluence 11" Z Confluence "	
•	65.000 Pervious length"		11 Node #"	
	1,500 Pervious slope" 0.144 Junervious Area"		u/s of east culvert of HWY 7&8* Maximum flow 9.698 c.m/sec*	
5	65.000 Impervious length"	ŧ.	Hydrograph volume 92610.773 c.m"	
2	1.500 Impervious slope" 0.250 Pervious Manning 'n'"	- 54	8.504 9.698 8.504 0.000" POND DESIGN"	
•	74.000 Pervious SCS Curve No."	-	9.698 Current peak flow c.m/sec"	
	0.731 Pervious Runoff coefficient" 0.100 Pervious Ta/S coefficient"		0.070 Target outflow c.m/sec" 92610 8 Hydrograph volume c.m"	
•	8.924 Pervious Initial abstraction"		9. Number of stages"	
	0.015 Impervious Manning 'n'" 98.000 Impervious SCS Curve No."		332.660 Minimum water level metre" 336.000 Maximum water level metre"	
	0.977 Impervious Runoff coefficient"	2	332.660 Starting water level metre"	
<u>.</u>	0.100 Impervious Ia/S coefficient" 0.518 Impervious Initial abstraction"	÷.	0 Keep Design Data: 1 = True; 0 = False"	
	0.409 0.000 0.840 1.349 c.m/sec"		332.660 0.000 0.000"	
	Catchment 252 Pervious Impervious Total Area *	:	333,000 0,3010 198,000" 333,500 1,168 1165,000"	
•	Time of concentration 27.744 4.958 26.248 minutes"	•	334.000 2.325 2895.000"	
	Time to Centroid 2524.852 2272.966 2508.315 minutes" Bainfall depth 285.000 285.000 285.000 mm"		334,500 3,132 5301,000" 335,000 3,780 8376,000"	
	Rainfall volume 7770.52 408.98 8179.50 c.m"	5	335,500 4,332 12258,00"	
	Rainfall losses 76.539 6.681 73.046 mm" Runoff depth 208.461 278.319 211.954 mm"	ŝ.	335.750 4.583 14551.00" 336.000 21.985 17113.00"	
	Runoff volume 5683.69 399.39 6083.08 c.m"		Peak outflow 9.687 c.m/sec	
2	Runoff coefficient 0.731 0.977 0.744 * Maximum flow 0.388 0.022 0.409 c.m/sec*	Q	Maximum level 335.823 metre" Maximum storage 15302.474 c.m"	
- 40	HYDROGRAPH Add Runoff "		Centroidal lag 45.753 hours"	
÷	4 Add Runott " 0.409 0.409 0.840 1.349"	÷ 40	8.504 9.698 9.687 0.000 c.m/sec" HYDROGRAPH Next link *	
• 40	HYDROGRAPH Copy to Outflow"		5 Next link "	
	8 Copy to Outflow" 0.409 0.409 0.409 1.349"	* 38	8.504 9.687 9.687 0.000" START/RE-START TOTALS 11"	
40	HYDROGRAPH Combine 11"		3 Runoff Totals on EXIT"	
÷	6 COMDINE " 11 Node #"	2	Total Catchment area 234.030 nectare" Total Impervious area 120.549 hectare"	
	u/s of east culvert of HWY 7&8"	¥ * 1*	Total % impervious 51.510"	
*	Maximum Tiow 1,752 c.m/sec" Hydrograph volume 27223.801 c.m"	* 19	EXTL.	
	0.409 0.409 0.409 1.752"		(a)	
40	HYDHUGHAFH START - New Tributary" 2 Start - New Tributary"			

3

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APPENDIX D

PROPOSED SWM FACILITY DESIGN CALCULATIONS

Drawing on experience...Building on

gth.

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			Storage Volur	ne (m ³ /ha) fo	r Impervious	Level
	Protection Level	SWMP Type	35	55	70	8
	Enhanced 80% land	Wetlands	80	105	120	14
	term S S removal	Hybrid Wet Pond/Wetland	110	150	175	19
	terin 6.8. Teriloval	Wet Pond	140	190	225	250
	Normal 70% long torm	Wetlands	60	70	80	91
	S Removal	Hybrid Wet Pond/Wetland	75	90	105	12
	0.0. Keniovar	Wet Pond	90	110	130	15
ss (%)		Wetlands	60	60	60	61
	Basic 60% long-term	Hybrid Wet Pond/Wetland	60	70	75	8(
	S.S. Removal	Wet Pond	60	75	85	9!
		Dry Pond (Continuous Flow)	90	150	200	24(

Step 3: Define Catchment area and Imperviousness

153.71

Step 1: Choose Level of Water Quality Control

Enhanced 80% long-term S.S. removal

Step 2: Choose Type of Facility

Catchment Area (ha)

Wet Pond

Imperviousness (%

Interpolated Storage Volume Requirement (m³/ha) 196.85

Permanent Pool Required (m³) 24109

Extended Detention Volume Required (m³) 6148



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STAGE-STORAGE RELATIONSHIP

	Activo		Foreba	IY.	Main Pond		Total Active						
Stage	Depth	Агеа	Volume	Cumulative	Area	Volume	Cumulative	Pond	Storage	Volume	Ponding	Comments	Stage
m	m	m²	m ³	m³	m²	m³	m³	m³	m ³	m³	m		m
													000.55
332,55		6918	0	0				0					332,55
332,60		6990	348	348				348					332 60
332,70		7133	707	1055				1000					332.70
332,80		7278	721	1776				2512					332.00
332,90		7560	750	2012				2012					333.00
333.00		7509	/ 50	3673	8677	235	235	3908					333.05
333.00		7715	384	4057	8796	235	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				Description of Desci	334.50
334.55		10499	522	17008	13077	650	16201	33209		33209		Permanent Pool	334.00
334,55	0,00	10499	0	0	13077	0	0	33209	1107				334,55
334.60	0.05	10617	528	528	13266	659	659	34396	1187				334.00
334.70	0,15	11007	10/4	1602	13040	1340	2005	30010	6000	6148	33/ 91	MOE Extended Detention	334.00
334.60	0.25	11330	1400	2700	14030	1424	3390	39299	8636	6500	334 83	12 5mm Event	334.00
335.00	0.35	11583	11/7	4969	1/823	1424	6277	41045	11246	0000	335.05	25mm Event	335.00
335.10	0.45	11820	1171	6140	15224	1503	7780	47129	13920		000.00	20mm Event	335 10
335.20	0.65	12077	1196	7336	15610	1542	9322	49867	16658		335.24	2 vear event	335.20
335.30	0.75	12326	1221	8557	15982	1580	10902	52668	19459		000.21	- your oronn	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 Evenl	336,30
336.40	1.85				35206	3493	35966	86988	53779				336.40
336.50	1.95				35766	3549	39515	90537	5/328				336.50
336,60	2.05				36329	3605	43120	94142	60933				330.00
336_70	2.15				36893	3662	46782	97804	64595	1			330 /0
336.80	2.25				3/400	3718	50500	101522	72089				336.00
336.90	2.30				28500	3//5	54275	100297	72000				337.00
337-10	2.40				39172	3880	61996	113018	79809				337 10
337.20	2.00				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

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Orifice Calculation	ons		Cd	Descri
Qo=Cd*Ao*(2*g*Ho)^0.	5		0.63	Orifice
	Orifice 1	Orifice 2	0.80	Orifice
Cd	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		

$Q_w = 2/3*C_d*(2g)^{1/2*}$	L*H _w ^{3/2} + 8/15*0	C _d *(2g) ^{1/2} *tan0*H _w	5/2	
1	Weir 1	Weir 2	Weir 3	Weir 4
C _d	0.50	0.50	0.50	0.50
Invert (m)	334.90 1.600	336.00 1.468	337.55	337.55
Side Slope (H:V)	0	0	0	0
Side Slope (rad)	0.000	0.000	0.000	0.000

Notch 2

Top of Box

Emergency

STAGE-DISCHARGE RELATIONSHIP

	Activo		Orifice 1			Orifice 2		Weir 1	Weir 2	Weir 3	1	Weir 4		
Stage	Volume	Area	Ho	Flow	Area	Ho	Flow	Flow	Flow	Flow	Sub Total Flow	Flow	Total Flow	Comments
m	m ³	m²	m	m³/s	m²	m	m³/s	m³/s	m³/s	m³/s		m³/s	m³/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			- I	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	
22 ·														

Notch 1





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WEST FOREBAY DESIGN CALCULATIONS MOE SWM Planning and Design Manual, 2003

Forebay Design Flows

v_e = r = L =] L =

Flow into forebay d	uring the 1:5-year re	alum period event	12.002 m ³ /s
Flow into forebay d	uring the 25 mm - 4	hour design storm event	5.734 m ³ /s
Peak flow from mai	n pond outlet for the	25mm design storm (from MIDUSS)	0.226 m ³ /s
Foreboy Characte	-infine		27
Forebay Characte	ristics	ballan dib	
D =	35 U m	Dottom Widin	
y =	2 m	depin	
z =	4 :1	side slope	
w =	43.0 m	average width	
R =	1.67 m	hydraulic radius	
A =	86.0 m²	cross-sectional area	
1. Length Calcula	tion Based on Sett	ling Velocity	
L = fo	rebay flow length (n	n)	
r=le	ngth-to-width ratio		
$Q_p = pr$	eak flow rate throug	h forebay (m³/s)	
V _s = Se	ettling velocity (m/s)		
a) Required Settil	ng Length (assum	ing Q_p = forebay through-flow & $v_a = 0.0$	055 m/s) Table
Q _p =	5.73 m³/s	peak flow rate through forebay	
V. =	0.0055 m/s	settling velocity	
r=	0.56	length-to-width ratio	
, = [24.2 m	required settling length	1
	24.2 m		
L =	24.2 M	mariengm	

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

0.226 m³/s	peak flow rate through forebay
0.0003 m/s	settling velocity
0.41	length-to-width ratio
17.6 m	required settling length
17.6 m	trial length

Eduation 4.5. Forebay Settlind Lendtr	ŝ

e 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
ledium 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 m³/s inlet flow rate d = 2 m depth of permanent pool in forebay Equation 4.6: Dispersion Length V₁ = 0.50 m/s desired velocity in forebay (typical value $\leq 0.50 \text{ m/s}$) L=[96.0 m required length of dispersion Denvined French - 1

L	= 96	.0 <i>m</i>	design length	
1	= 2.2	23	design length-to-width ratio (typical minimu	m of 2,0)
4. Scour Velo	city			
Vs	= 0,1	5 m/s	scour velocity (typical value = 0.15 m/s)	
v	= 0.14	0 <i>m/s</i>	actual velocity	\ensuremath{OK} The actual velocity through the forebay is less than the scour veloci
5. Weir Flow F	rom Forebay	/		
L	= 3	0 m	length of crest of weir	Equation 4.4: Weir Flow
α	= 1.6	5	coefficient	. (57)
н	= 0	5 m	head	
Q	= 17.5	$0 m^3/s$	discharge	OK. The weir flow from the forebay exceeds the flow entering the forebay

a) Forebay Forebay volume 17008 m³ Estimated TSS removal efficiency 80% 57.9% Impervious level 2.0 m³/ha Estimated annual sediment loading 153.71 ha 246 m³/yr **22.8 years** Contributing area Annual sediment volume Cleanout frequency for 33% volume reduction b) Stormwater Management Pond Wetpond volume (excluding forebay) 16201 m³ Estimated TSS removal efficiency 30% 57.9% Impervious level 2.0 m³/ha Estimated annual sediment loading Contributing area 153.71 ha Annual sediment volume 92 m³/yr Cleanout frequency for 33% volume reduction 58.0 years

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



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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 m³/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 $Q_p = \text{peak flow rate through forebay } (m^3/s)$
- vs = settling velocity (m/s)

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

a) Requ	ired Settlin	ng Length (assumin	ng Q _p = forebay through-flow & v _s = 0.0055 m/s)	Table 1: Avera	Table 1: Average settling velocities				
	Q _p = v _s = r =	2,16 <i>m³/s</i> 0,0055 <i>m/s</i> 0,31	peak flow rate through forebay settling velocity length-to-width ratio		Mass Removed	Particle Size Range	Average Settling Velocity		
	L =	11.0 m	required settling length		%	μm	m/s		
	L =	110 m	trial length						
					80 - 100	x ≤ 20	0.00000254		
b) Requi	ired Settlin	ig Length (assumir	ng Q _p = pond discharge & v _s = 0.0003 m/s)	Enhanced:	70 - 80	20 < x ≤ 40	0.00001300		
	Q _p =	0.226 m°/s	peak flow rate through forebay	Normal:	60 - 70	40 < x ≤ 60	0.00002540		
	V ₈ =	0,0003 m/s	settling velocity	Basic:	40 - 60	60 < x ≤ 130	0.00012700		
	r =	0.58	length-to-width ratio	Medium Sand:	20 - 40	130 < x ≤ 400	0.00059267		
	L =	20.9 m	required settling length	Gross Grit:	0 - 20	400 < x ≤ 4000	0.00550333		
	L =	209 m	trial length						

PMTE

Equation 4.5: Forebay Settling Length

70% 85%

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	Equation 4.6: Dispersion Length
V _f =	0.50 m/s	desired velocity in forebay (typical value ≤ 0.50 m/s)	
L =	36.7 m	required length of dispersion	

3. Required Forebay Length

Impervious level

Contributing area

Annual sediment volume

b) Stormwater Management Pond Wetpond volume (excluding forebay)

Eslimated TSS removal efficiency

Estimated annual sediment loading

Cleanout frequency for 33% volume reduction

L	= 220.0	m	provided length					
ſ	= 6.11		design length-to-width ra	atio (typical minimu	um of 2_0)			
4. Scour Velo	city							
Va	= 0.15	m/s	scour velocity (typical va	ilue = 0.15 <i>m/</i> s)				
v	0 ,064	m/s	actual velocity		OK The actual velocity th	rough the forebay	is less than the sco	ur velocity.
5. Weir Flow F	rom Forebay							
L	= 30	m	length of crest of weir			Equation 4.4: V	Veir Flow	
α	= 1.65		coefficient					
Н	= 0.5	m	head					
Q	= 17.50	m³/s	discharge		OK. The weir flow from the	e forebay exceeds	the flow entering the	e forebay
								ciorepay
6. Estimated	Cleanout Freq	uencies						ellolebay
6. Estimated	Cleanout Freq	uencies				_Table 2: Annu	al sediment loading	
 6. Estimated a) Forebay Forebay volum 	Cleanout Freq	uencies	1700	8 m ³		Table 2: Annu	al sediment loading	
6. Estimated a) Forebay Forebay volum Estimated TSS	Cleanout Freq e removal efficie	uencies ncy	- 1700/ 80%	8 m³ %		Table 2: Annu Impervious Level	al sediment loading Annual Loading	
6. Estimated (a) Forebay Forebay volum Estimated TSS Impervious level	Cleanout Freq e removal efficie el	uencies ncy	1700 809 57 99	8 m ³ 6		Table 2: Annu Impervious Level %	al sediment loading Annual Loading m ² /ha)
6. Estimated (a) Forebay Forebay volum Estimated TSS Impervious leve Estimated annu	Cleanout Freq e removal efficie al ual sediment loa	uencies ncy ading	1700 809 57.99 2.0	8 m ³ 6 6 0 m ³ /ha		Table 2: Annu Impervious Level %	al sediment loading Annual Loading m ³ /ha]
6. Estimated a) Forebay Forebay volum Estimated TSS Impervious leve Estimated annu Contributing an	Cleanout Freq e removal efficie al ual sediment loa aa	uencies ncy ading	1700 809 57 99 2.0 153 7	8 m ³ % 6 0 m ³ /ha 1 ha		Table 2: Annu Impervious Level % 35%	al sediment loading Annual Loading m ³ /ha 0.6	J
6. Estimated (a) Forebay Forebay volum Estimated TSS Impervious leve Estimated annu Contributing an Annual sedime	Cleanout Freq e removal efficie al sediment los ea nl volume	uencies ncy ading	1700 809 57.99 2 (153.7 24(8 m ³ % 6 0 m ³ /ha 1 ha 5 m ³ /yr		Table 2: Annu Impervious Level % 35% 55%	al sediment loading Annual Loading m [*] /ha 0.6 1.9	J

16201 m³

153.71 ha

2.0 m³/ha

92 m³/yr

58.0 years

30% 57.9%



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FALLING HEAD DRAWDOWN CALCULATION MOF SWM Planning and Design Manual 2003

$0.66C_2h^{1.5} + 2C_3h^{0.5}$	signi wianuai,	2003	
$t = \frac{1}{2.75A_o}$	-	Equation	4.11
where $t =$ $A_p =$ C = d = $A_0 =$ g = $h_1 =$ $h_2 =$ $h_2 =$ $C_2 =$ $C_3 =$	126476.188 35.1 25192.7738 0.63 300 0.07068583 9.81 334.810 334.550 0.26 6228.449 23573.3771	s hr m ² mm ² m/s ² m m m	drawdown time surface area of the pond discharge coefficient diameter of the orifice cross-sectional area of the orifice gravitational acceleration constant starting water elevation above the orifice ending water elevation above the orifice maximum water elevation above the orifice slope coefficient from the area-depth linear regression intercept from the area-depth linear regression

	ELEVATION	STAGE	AREA	COMMENTS	
	т	т	m²		
1	334 55	0	23576	Permanent nool	
2	334.60	0.05	23884		
3	334.70	0.15	24504		
4	334.81	0.256	25170	Extended detention	
				DRAWDOWN TIME: 126476 s	

Regression Output:

on Output:		35.1 hr	
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	



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

FALLING HEAD DRAWDOWN CALCULATION

MOE SWM Planning and Design Manual, 2003

 $t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_0}$

where

se_b =

 $R^2 =$

F =

df =

157625.65

Equation 4.11

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/s²	gravitational acceleration constant
h ₁ =	334.830	т	starting water elevation above the orifice
h ₂ =	334.550	m	ending water elevation above the orifice
h =	0.28	т	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	STAGE	AREA	COMMENTS	
	т	m	m²		
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	
LI				DRAWDOWN TIME: 131474 s	
Regression Outp	ut:			36.5 hr	
m ₁ =	6224.77		slope coeffic	cient from the area-depth linear regression	
b =	23573.57		intercept from the area-depth linear regression		
se ₁ =	15.68		standard err	ror for coefficient m ₁	

2.32 standard error for constant b

1.0000 coefficient of determination

 $se_y = 3.01$ standard error of the y estimate

F statistic

2 degrees of freedom 1428824 regression sum of squares





GEOTECHNICAL REPORTS (BY PETO MacCALLUM LIMITED)

Drawing on experience...Building on

gth.



GEOTECHNICAL INVESTIGATION PROPOSED DEVELOPMENT WILMOT EMPLOYMENT LANDS **NEW HAMBURG, ONTARIO**

for

MR. PAT GEORGE c/o MTE CONSULTANTS INC.

PETO MacCALLUM LTD. **16 FRANKLIN STREET SOUTH** NEW HAMBURG, ONTARIO N2C 1R4 PHONE: (519) 893-7500 FAX: (519) 893-0654 EMAIL: kitchener@petomaccallum.com

Distribution: 23 cc: MTE Consultants Inc. (+email - dhicks@mte85.com) PML Ref.: 18KF009 (+email - pgeorge@gamasonry.com) 1 cc: PML Kitchener December 18, 2018

Report: 1



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 <u>New Hamburg, Ontario</u>

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.

16 Franklin Street South, Kitchener, Ontario N2C 1R4 Tel: (519) 893-7500 Fax: (519) 893-0654 E-mail: kitchener@petomaccallum.com BARRIE, COLLINGWOOD, HAMILTON, KITCHENER, 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 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.

Geotechnical Investigation, Proposed Development – Wilmot Employment Lands PML Ref.: 18KF009, Report: 1 December 18, 2018, Page 14



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.

<u>CONSULTING ENGINEERS</u>

PML REF. 18KF009 FIGURE NO. 1

PARTICLE SIZE DISTRIBUTION CHART



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



REMARKS Borehole 102, Sample SS8, Depth 6.0 to 6.5 m

CLAYEY SILT

Peto MacCallum Ltd.

<u>CONSULTING ENGINEERS</u>

PML REF. 18KF009 FIGURE NO. 3

PARTICLE SIZE DISTRIBUTION CHART



REMARKS Borehole 103, Sample 3, Depth 1.5 to 2.0 m

CLAYEY SILT
<u>CONSULTING ENGINEERS</u>

PML REF. 18KF009 FIGURE NO. 4

PARTICLE SIZE DISTRIBUTION CHART



REMARKS Borehole 103, Sample SS8, Depth 6.1 to 6.6 m

CONSULTING ENGINEERS

PML REF. 18KF009 FIGURE NO. 5

PARTICLE SIZE DISTRIBUTION CHART



REMARKS Borehole 104, Sample SS3, Depth 1.5 to 2.0 m

SILT

CONSULTING ENGINEERS

PML REF. 18KF009 FIGURE NO. 6

PARTICLE SIZE DISTRIBUTION CHART



REMARKS Borehole 104, Sampler SS9, Depth 9.1 to 9.6 m

<u>CONSULTING ENGINEERS</u>

PML REF. 18KF009 FIGURE NO. 7

PARTICLE SIZE DISTRIBUTION CHART



REMARKS Borehole 107, Sample SS3, Depth 1.5 to 2.0 m

<u>CONSULTING ENGINEERS</u>

PML REF. 18KF009 FIGURE NO. 8

PARTICLE SIZE DISTRIBUTION CHART



REMARKS Borehole 107, Sample SS7, Depth 6.1 to 6.6 m



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:

<u>CONSISTE</u>	<u>NCY N (blows/0.3 m)</u>	<u>c (kPa)</u>	<u>DENSENESS</u>	<u>N (blows/0.3 m)</u>
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	С	Consolidation
Qd	Drained Triaxial		

PRO. LOCA BORI	IECT Proposed Development - Wilmot Er NTION New Hamburg, Ontario	nplo tem /	yme Aua	ent La Iers	nds		_		BORI	NG DA	TE Ma	arch 13,	2018			PML ENG TECH	REF. NEER	R \ AN [18KF W. Lo D. Bri	009 oghrin ice
Dona	SOIL PROFILE		-		SAM	PLES	SCALE	SHEA		ENGTH E ∆TO	(kPa) RVANE	O Qu	PLAS ⁻ LIMIT					GHT	J. DI	GROUND WATER
DEPTH ELEV metres	DESCRIPTION			NUMBER	ТҮРЕ	"N" VALUE	ELEVATION (MIC CO		50 20 NETRAT	10N × TEST •	WP WA			NT (%	w _∟ ⊣			OBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION
338.54	TOPSOIL: Dark brown clayey silt, frozen CLAYEY SILT: Very stiff brown clayey silt,	Ť	\square	1	SS	8		•						0			ĸ		38	Stickup Well Prote
	trace sand, DTPL			2	SS	19	-338							0						50 mm Plastic Rise
				3	SS	25	337	,	ł					0						
3.0		Í		4	SS	28	336							0						
335.6	becoming stiff, grey, APL			5	SS	9	335	;	•					ο						
			ſ				-334													Bentonite Seal
				6	SS	10	_			•				0						
<u>6.</u> 1	becoming very stiff, occasional silt layers,	\downarrow		7	SS	21	333	3						0						
	wet			-			-332	2												
				8	SS	18	_331							0						
		Í					330)							_					Filter Sand
				9	SS	18	-329				•			c				-		
							_328	3										· · ·		
<u>11.1</u> 327.5	BOREHOLE TERMINATED AT 11.1 m			10	SS	23			• .	^				0					Upor free \	completion of drilling water in cased boreho
																			Wate Initial Eleva	er Level Readings: I Depth: 10.6 m ation: 327.99
																			Dept Eleva	h: 1.03 m ation: 337.56

DURI	SOIL PROFILE	II A	lugi	ers	SAM	PLES	ш	SHE	EAR	STRE	NGTH	(kPa)						nivic		. D	lice
EPTH ELEV netres)		STRAT PLOT		NUMBER	ТҮРЕ	"N" VALUES	ELEVATION SCA	+F ▲P DYN STA	IELI OC 5(IAN ND	D VANI KET PE D 1(IIC COI ARD PI	E ATOF ENETRO 00 1 NE PEN ENETR	RVANE DMETE 50 20 IETRAT ATION	○ Qu R O Q 00 1 10N × TEST ● 80	PLAS ⁻ LIMIT W _P W <i>P</i>				QUID LIMIT WL (%)			GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZ DISTRIBUTIO
<u>0.33</u> 35 73	SURFACE ELEVATION 336.06 TOPSOIL: Dark brown clayey silt topsoil, frozen	<u>,</u> 		1	SS	6	336	•	20		0 0				0		, 4	0	KN/m		Stickup Well Prote
	CLAYEY SILT: Firm brown clayey silt, some sand, APL			2	SS	4	335	┥▲								0					50 mm Plastic Ris
<u>1.5</u>	becoming stiff, layered with brown silt, some fine sand, wet		+-	3	SS	14	334		•						o						
		$\left \right $		4	SS	25				>					Q	>					
<u>3.0</u>	becoming grey clayey silt, trace sand, DTPL, occasional sand partings			5	SS	13	-333				A				0						Bentonite Seal
		$\left \right $		6	AS		332														
				7	SS	13	331		•		A				0						
							_330														Filter Sand
				8	SS	11	329						^		(>					Slotted Screen
8 1		1		9	SS	22	220			6					0				-		
328.0	BOREHOLE TERMINATED AT 8.1 m						-520													Upo free Wat	n completion of drillin water in cased boreh er Level Readings:
																				Initia 2018 Dep	al: Dry <u>3-04-08:</u> th: 0.93 m ation: 335 13
																				2101	

LOCA	ATION New Hamburg, Ontario NG METHOD Continuous Flight Hollow Ste	m Ai	uge	ers					BOF	RING DA	TE Ma	arch 14,	2018			ENG	GINEE	R IAN	W. Lo D. Br	oghrin ice
	SOIL PROFILE	υT			SAM	PLES	SCALE	SHE +FIE	AR STF ELD VA DCKET	RENGTH NE ∆TO PENETR	l (kPa) RVANE OMETE	O Qu R O Q	PLAST LIMIT	FIC N/ MC	ATURA DISTUF	NL L RE L	iquid Limit	IGHT		GROUND WATER
<u>DEPTH</u> ELEV (metres	DESCRIPTION	STRAT PLC		NUMBER	түре	"N" VALUE	ELEVATION	DYN/ STAP	50 MIC C IDARD	100 1 ONE PEI PENETR	NETRAT	ION ×	W _P WA	ATER		ENT (w _∟ 			GRAIN SIZE
<u>0.25</u> 333.47	SURFACE ELEVATION 333.72 TOPSOIL: Dark brown clayey silt, frozen CLAYEY SILT: Firm brown clayey silt, trace	Ĩ	Â	1	SS	6		•	20	40				0 2		J 4		kN/m°		GR SA SI Stickup Well Protect Set in Concrete
0.76 332.96	Sand, moist SILT: Loose brown sandy silt, trace clay, moist			2	SS	8	333	•							>					50 mm Plastic Rise
<u>1.</u> 5 332.2	becoming compact, occasional clayey lenses			3	SS	11	332								,					
3.0				4	SS	16	-331							0						
330.7	CLAYEY SILT: Stiff grey clayey silt, trace sand, APL			5	SS	14	330	•			4			c						Bentonite Seal
				6	GS		330													
				7	SS	12	329	•		•				0						
				8	SS	13	328								0					Filter Sand
							327													Slotted Screen
<u>8.1</u> 325.6	BOREHOLE TERMINATED AT 8.1 m			9	SS	12	326	•		•					0				Upor	n completion of drilling
																			<u>Wate</u> Initia	water in cased boreno er Level Readings: I: Dry /04/08·
																			Dept Eleva	h: 6.73 m ation: 326.99
NOTI																				

PROJ LOCA BORI	IECT Proposed Development - Wilmot Er TION New Hamburg, Ontario NG METHOD Continuous Flight Hollow St	nploy em A	/me	ent Lar ers	nds			T	BORI	NG DA	TE Ma	arch 13,	2018			PML ENG TEC	. REF GINEE CHNIC	R IAN	18KF W. Li D. Br	⁻ 009 oghrin rice
	SOIL PROFILE	DT	5	٣	SAM	PLES	I SCALE	SHEA +FIE ▲PO	R STRE LD VAN CKET P	ENGTH E ∆TO ENETR	(kPa) RVANE OMETEI	ି Qu २ O Q	PLAS LIMIT	TIC N MC C	ATURA DISTUF	IL L RE L IT	iquid Limit	EIGHT		GROUND WATER
<u>DEPTH</u> ELEV netres)		STRAT PL		NUMBEI	ТҮРЕ	"N" VALUI	ELEVATION	DYNA STAN	50 1 MIC CO DARD F 20 4		50 20 LETRAT ATION 1	DO ION × TEST●	₩ _P 	ATER	w CONT 03(ENT (w∟ —– (%)			AND REMARKS GRAIN SIZ DISTRIBUTIO
<u>0.25</u> 338.78	TOPSOIL: Dark brown clayey silt, frozen CLAYEY SILT: Firm to very stiff brown davey silt trace sand moist		~ _	1	SS	8		٩						0				KIN/III		Stickup Well Prof Set in Concrete
				2	SS	13	338							0						50 mm Plastic Ri
. <u>1.5</u>	numerous wet silt layers	Ť		3	SS	12									D					
				4	SS	15	337								0					
<u>3.0</u> 336.0	SILT: Compact grey silt, some sand, occasional clayey lenses, saturated			5	SS	18	_336	;	•						o					
							335	;												
				6	SS	25									0					Bentonite Seal
							-334													
				7	SS	24	_333		•					(>					
							332	2	\square											
<u>7.6</u> 331.4	becoming dense			8	SS	31									0					
<u>9.1</u> 329.9	CLAYEY SILT: Very stiff grey clayey silt, APL, numerous saturated silt layers			9	SS	21	330		+					0						Filter Sand
							329	,	\											Slotted Screen
				10	SS	26	_							0						· ·
<u>11.1</u> 327.9	BOREHOLE TERMINATED AT 11.1 m						328												Durin from Wate	ng drilling sampler w SS4 to completion er Level Readings:
																			Initia Eleve	I Depth: 10.4 m ation: 328.63 m
																			Dept	th: 0.76 m ation: 338.27

PRO LOC BOR	JECT Proposed Development - Wilmot Emp ATION New Hamburg, Ontario ING METHOD Continuous Flight Hollow Ste	oloym m Aug	ient La gers	ands				BORII	NG DAT	Έ Ma	rch 14,	2018		PM EN TE	L REF GINEE CHNIC	: R IAN	18KF W. Lo D. Bri	009 oghrin ice
	SOIL PROFILE			SAM	PLES	LE	SHEA			(kPa)	0.0		NATUF	RAL I		F		
DEPTH ELEV netres	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	N" VALUES	EVATION SCA		VAN KET PI 0 10 MIC CO DARD P		ETRATI	NON ×		MOISTI CONTE W 			UNIT WEIGH		GROUND WATER OBSERVATIONS AND REMARKS
	SURFACE ELEVATION 340.48 TOPSOIL: Dark brown clayey silt, trace	<u> </u>	_		-	Ξ	2	20 4	0 6	08	0	10	20	30 4	40	kN/m ³		GR SA SI
<u>0.36</u> 340.12	Lsand, frozen CLAYEY SILT: Firm brown clayey silt, some sand API	Ĩ		SS	5	340							c					Set in Concrete 50 mm Plastic Ris
			2	SS	7					•			0					
		111	3	SS	6	_339							0					
<u>2.3</u>																		
338.2	becoming stiff, grey, no zones		4	SS	12	338				•			0					
		\parallel	5	SS	12								0					Bentonite Seal
<u>4.5</u> 336.0	SANDY SILT: Compact grey sandy silt,		6	SS	16	_336												
		•				225												
6.1		· ·				330												Filter Sand
334.4	CLAYEY SILT: Very stiff grey clayey silt, trace sand, DTPL, occasional silt lenses, wet		7	SS	17	_334							0			-		•
		H	1															Slotted Screen
			8	SS	19	333							•				<u>::日</u> :	
<u>8.1</u> 332.4	BOREHOLE TERMINATED AT 8.1 m																Upon free v	completion of drillin water in cased boreh
																	<u>Wate</u> Initial	er Level Readings: Depth: 5.7 m
																	2018 Dept	<u>-04-08:</u> h: 0.85 m
																	Eleva	ation: 339.63
NOT	ES		1	1	1		1	1	1					1	1	1	1	

LOCA BORI	ICT Proposed Development - Wilmot El NTION New Hamburg, Ontario NG METHOD Continuous Flight Solid Ste	mpioym m Auge	rs	nas				BORI	NG DA	TE Ma	arch 14,	2018		E T	NGINE	F. ER CIAN	18KF W. Lo D. Bri	oog oghrin ce
DEPTH FLEV	SOIL PROFILE DESCRIPTION	т ргот	ABER	SAMF	ALES	TION SCALE	SHEA +FIEI ▲PO0	R STRI _D VAN CKET P 50 1	ENGTH	(kPa) RVANE OMETE 50 2	○ Qu R O Q 00	PLASTI LIMIT W _P	C NAT MOIS CON	URAL TURE TENT W	LIQUI LIM w _L			GROUND WATER OBSERVATIONS AND REMARKS
metres)	SURFACE ELEVATION 339.91	STRA	Ň	F	>N.	ELEVA	DYNA STANI 2	MIC CC DARD F 20	NE PEN PENETR 40 6	IETRAT ATION 60 8	TION × TEST ● 30	WA1 10	TER CO		NT (%) 40	RN/m	n ³	GRAIN SIZ DISTRIBUTIO GR SA S
<u>0.25</u> 339.66	sand, frozen CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL	-fii	1	SS	9								0					Stickup Well Prof Set in Concrete 50 mm Plastic Ri
			2	SS	17	339							0					
			3	SS	18	338	3	•					0			_		
			4	SS	18	337	,							0				Bentonite Seal
			5	SS	12									o				
4.5						336										_		
<u>4.5</u> 335.4	becoming firm, grey, occasional silt layers, wet		6	SS	7	335	5 •							о —		_		Filter Sand
																		Slotted Screen
6.1 333.8 6.5	SILT: Compact grey silt, some sand, trace clay, wet, occasional clayey layers		7	SS	13		·					o						
555.4	BOREHOLE TERMINATED AT 6.5 M																Upon free v <u>Wate</u>	completion of drillin vater in cased borel rr Level Readings:
																	Eleva	Depth: 4.5 m ition: 335.41 -04-08:
																	Depth Eleva	n: 2.76 m tion: 337.15

PROJ LOCA BORI	ECT Proposed Development - Wilmot Em TION New Hamburg, Ontario NG METHOD Continuous Flight Hollow Ste	ploym m Au	nent L gers	ands		-1		BORI	NG DAT	TE March 13,	2018			PML ENG TEC	REF. INEE HNIC	R	18KF W. Li D. Br	-009 oghrin rice
DEPTH ELEV	SOIL PROFILE DESCRIPTION	AT PLOT	MBER	SAN	IPLES	ATION SCALE	SHE +FIE ▲PC	AR STRE ELD VAN OCKET P 50 1	ENGTH E △TOP ENETRO	(kPa) RVANE ○Qu DMETEROQ 50 200	PLAST LIMIT W _P		ATURA DISTUF DNTEN W 0	NE LI RE LI IT	QUID LIMIT w_	IT WEIGHT		GROUND WATER OBSERVATIONS AND REMARKS
netres)	SURFACE ELEVATION 338.38 TOPSOL: Dark brown clavev silt, trace	STR/	NN		, "N"	ELEVA	DYN/ STAN	AMIC CO IDARD F 20 4	NE PEN ENETR 40 6	ATION TEST •	WA 10	(TER) 2	CONT 0 30	ENT (* 0 4(%) D	S kN/m ³		GRAIN SIZI DISTRIBUTION GR SA SI
<u>0.27</u> 38.11	sand, frozen CLAYEY SILT: Firm brown clayey silt, some sand, APL	Ĩ		SS	8	338							0					50 mm Plastic Rise
<u>1.5</u> 336.9	becoming stiff, layered with brown silt, some		2	SS	9	337							0					
<u>2.3</u> 2.5_ 335.9	becoming very stiff/compact		4	SS	28	336							0					
	.		5	SS	25	335	;	ļ.				0						Bentonite Seal
						334		/										
			6	SS	14							0						
<u>6.</u> 0	becoming very stiff, occasional silt layers					333												Filter Sand
			7	SS	16	332							>					Slotted Screen
<u>7.6</u> 330.8	becoming stiff		8	SS	9	331						C	,					· ·
<u>o.1</u> 330.3	BOREHOLE TERMINATED AT 8.1 m																Durii SS4 Wate	ng drilling sampler we and SS5 er Level Readings:
																	Initia Eleve	I Depth: 7.4 m ation: 330.98
																	Elev	ation: 337.84

BORI	NG METHOD Continuous Flight Hollow S	tem A	Aug	ers				1	20/4				1			TECHN	ICIAN	D. Brice
DEPTH	SOIL PROFILE	PI OT	2	BER	SAMF	PLES	ION SCALE	SHEAI +FIEL ▲POC	R STRI D VAN KET P	ENGTH E ∆TC ENETF 00	I (kPa) RVANE ROMETE 150 2	0 Qu R O Q 00	PLAS ⁻ LIMIT W _P	FIC N/ MC CC	ATURAL DISTURI DISTURI DISTURI W	LIQU LIN W		GROUND WATER OBSERVATIONS AND REMARKS
ELEV (metres)		STRAT		NUME	ТҮР	"N" VAI	ELEVATI	DYNAI STANI	MIC CC DARD F	NE PE PENETF 40	NETRAT RATION 60 8	ION × TEST●	WA 1	ATER	CONTE	NT (%) 40		GRAIN SIZ DISTRIBUTIO m ³ GR SA S
0.20 339.85	TOPSOIL: Dark brown clayey silt, trace sand, frozen CLAYEY SILT: Stiff brown clayey silt, trace	Ĵ		1	SS	10		•						0				
				2	SS	11	339	ł							<u>.</u>			
<u>1.5</u> 338.6	becoming very stiff, occasional silty sand layers			3	SS	16	338					•			0			
<u>2.3</u> 337.8	SILT: Compact grey silt, some sand, trace clay, wet			4	SS	14								c	,			
<u>3.5</u> 336.6	CLAYEY SILT: Stiff grey clayey silt, trace			5	SS	10	-337	•							0			
	sand, APL						336								_	_	_	
				6	SS	10		•						0			_	
							334											
				7	SS	15				•				0				
<u>7.6</u>			4				333											0
552.5	becoming Art, numerous sin layers, wet			8	SS	13	-332								о 		_	completion
							331											
				9	SS	17	330							0				
				10	SS	14									,			
<u>11.1</u> 329.0	BOREHOLE TERMINATED AT 11.1 m						329											Upon completion of auge Open No free water

	SOIL PROFILE			SAM	PLES	ш	SHEA	RSTRE	NGTH	(kPa)			N/					2. 2.100
EPTH ELEV	DESCRIPTION	RAT PLOT	IUMBER	түре	' VALUES	ATION SCA	+FIEL	D VAN KET P 0 1	E ∆TOF ENETR(00 1: 1	RVANE DMETER 50 20 LETRAT	○Qu ROQ 20 ION ×					JID /IIT /L		GROUND WATER OBSERVATIONS AND REMARKS
	SURFACE ELEVATION 337.86	STI	Z		Z.	ELE	STANE 2	0 4	ENETR 0 6	ATION 1 0 8	TÊST● i0	1	0 2	0 30	40	k٨	_ ↓/m³	DISTRIBUTION GR SA SI
<u>0.21</u> 37.65	Sand, frozen	ĨĨĨ	1	SS	9		•							o				
	sand, APL		2	SS	5	337	•	•					0			_		
		r	3	SS	4	226								ο				
<u>2.3</u> 335.6	becoming stiff. DTPL. occasional sand						$\left[\right]$											Sampler wet at 2.3 m
	seams, wet		4	SS	14	335					A			0				
			5	SS	14		•						0					
						334												
<u>4.5</u> 333.4	SILTY SAND: Compact grey silty sand, trace clay, saturated		. 6	SS	26	222							0					Sampler wet at 4.5 m
					-	- 333												
6.0						332										_		
331.9	CLAYEY SILT: Very stiff grey clayey silt, trace sand, APL		7	SS	20		'			A			0					
						331										_		
				00	22													
8.1_ 329.8	occasional sand seams, wet			33		-							,					Sampler wet at 8.1 m
						329												
			9	SS	17				•				o					
						328										_		
			- 10			207												
<u>11.1</u> 326.8	BOREHOLE TERMINATED AT 11.1 m		1 10	55	14	521	•							0				Upon completion of auge
																		Free water at 6.0 m

	PROJI LOCA BORII	 Froposed Development - Wilmot En TION New Hamburg, Ontario NG METHOD Continuous Flight Solid Ster 	nployr n Aug	nent L Jers	ands.					BORII	IG DAT	E Ma	arch 26,	2018			PML ENGI TECH	REF. INEEI HNICI	R IAN	18KF009 W. Loghrin W. Loghrin
		SOIL PROFILE	10		SA	MPL	ES ഗ	SCALE	SHEAF +FIEL	R STRE D VAN		(kPa) RVANE DMETEI	O Qu R O Q	PLAST LIMIT		TURA ISTUR	L LIC E LIC	QUID LIMIT	IGHT	
<u>Dł</u> E (m	EPTH ELEV ietres)	DESCRIPTION	TRAT PLO	NUMBER	TYPF		N" VALUE	EVATION	5 DYNAN STANE	0 1 /IC CO	00 15 NE PEN ENETRA	ETRAT	00 ION × TEST●	W _P 	TER (ENT (%	w∟ ⊣ %)	UNIT WE	AND REMARKS
	0.45	SURFACE ELEVATION 347.31 FILL: 150 mm dark brown silt, over dark brown clayey silt, DTPL-APL	\otimes	1	S	S	10	교 347	2	0 4	06	0 8	0	10) 20) 30	40)	kN/m ³	GR SA SI
34	46.86	CLAYEY SILT: Very stiff brown clayey silt, trace sand, trace gravel, DTPL			s	s	15	-												
								346												
				3	5	5	21	345		ľ										
3	<u>2.9</u> 344.4	becoming grey/brown, APL					14	344												
3	<u>3.6</u> 343.7	BOREHOLE TERMINATED AT 3.6 m		4		5	14		•											Upon completion of augeri Open
																				No nee water
1	NOTE	ŝ	1					1	I				1							1

	PROJ LOCA BORII	ECT Proposed Development - Wilmot En TION New Hamburg, Ontario NG METHOD Continuous Flight Solid Ster	nploym n Auge	ent La ers	nds				BORI	NG DAT	TE Ma	arch 26,	2018		I I T	PML RE Engine Techni	F. ER CIAN	18KF009 W. Loghrin D. Brice
		SOIL PROFILE	1.		SAM	PLES	CALE	SHEAF +FIEL	r stre .D van	ENGTH E ∆TOF	(kPa) RVANE	O Qu	PLAST		TURAL STURE		무 누	GROUND WATER
	<u>DEPTH</u> ELEV metres)	DESCRIPTION	IRAT PLOT	NUMBER	ТҮРЕ	I" VALUES	VATION S	▲ POC 5 DYNAM		ENETRO	OMETEI	ROQ 00 10N ×			NTENT W -0	NT (%)		OBSERVATIONS AND REMARKS GRAIN SIZE
0.0		SURFACE ELEVATION 344.26	S S			£	E	2	0 4	40 6	80 8	80	1() 20	30	40	kN/r	n ³ DISTRIBUTION (%) GR SA SI CL
-	344.16	sand, moist CLAYEY SILT: Very stiff brown clayey silt,		1	SS	12	344							0			_	
1.0		trace sand, DTPL		2	SS	18	343							0				
2.0																		
-				3	SS	17	_342	+						•				
3.0	<u>3.0</u> 341.3	becoming stiff, APL, occasional silt seams, wet	++				341											
	3.7 340.6	BOREHOLE TERMINATED AT 3.7 m		4	55	13		•										Upon completion of augering
4.0																		Open No free water
5.0																		
6.0																		
7.0																		
8.0																		
- - - - -																		
0.0 - - - -																		
10.0																		
11.0																		
12.0																		
13.0																		
14.0																		
- - - -																		
15.0	NOTE	is in the second																

BORI	NG METHOD Continuous Flight Solid Sterr SOIL PROFILE	n Auge	ers	SAM	PLES	щ	SHEA	R STRE	NGTH	(kPa)					TEC	HNIC	IAN	D. Brice
EPTH LEV	DESCRIPTION	AT PLOT	JMBER	гуре	VALUES	ATION SCAL	+FIEI ▲POC	D VAN	E △TOF ENETRO 00 1	RVANE DMETEF		PLAST LIMIT W _P		NTEN W	NE LI NT	IQUID LIMIT WL	VIT WEIGHT	GROUND WATE OBSERVATION AND REMARKS
etres)	SURFACE ELEVATION 342.07	STR	Z		Z	ELEV	STANE	DARD P	NE PEN ENETR	ATION T	EST •	WA 1(TER (CON1 0 3	ENT (0 4	(%) 0	≦ kN/m	GRAIN S DISTRIBUTI 3 GR SA
0.33 41.74	TOPSOIL: Dark brown clayey silt, trace sand, moist	$\tilde{\gamma}$	1	SS	7	342	•						c	>				
	CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, DTPL to APL, occasional silt zones		2	SS	9	341							0					
						340)											
3.0			3	SS	10								0					
339.1 3.7	SIL I: Dense grey silt, some sand, saturated		4	SS	32	339		•					0	,				
338.4	BOREHOLE TERMINATED AT 3.7 m																	Upon completion of au Wet Cave at 3.0 m
			1															

LOC BOR	JECT Proposed Development - Wilmot En ATION New Hamburg, Ontario ING METHOD Continuous Flight Solid Ster	nploym m Auge	ent La rs	nds				BORI		TE Ma	arch 26,	2018			PML ENG TEC	L REF GINEE CHNIC	ER CIAN	18KF009 W. Loghrin D. Brice
DEPTH	SOIL PROFILE	PLOT	ER	SAM	SES	DN SCALE	SHEA +FIE ▲PO	R STRE LD VAN CKET P 50 1	ENGTH E △TOI ENETRI 00 1	(kPa) RVANE OMETEI 50 20	ି Qu ୧୦ Q 20	PLAS LIMIT W _P	TIC MC MC CC	ATUR/ DISTU DNTEI W	AL L RE ^L NT	.iquid Limit W _L	VEIGHT	GROUND WAT
ELEV netres	SURFACE ELEVATION 340.11	STRAT	NUMB	ΤΥΡ	"N" VAL	ELEVATIO	DYNA STAN	MIC CO DARD F 20 4	NE PEN PENETR 40 6	NETRAT	ION × TEST●	W. 1	ATER 0 2		TENT ((%) 40	LIN kN/m	GRAIN DISTRIBUT GR SA
<u>0.20</u> 339.91	TOPSOIL: Dark brown clayey silt, moist CLAYEY SILT: Stiff brown clayey silt, trace sand, DTPL to APL		1	SS	7	340	•							0				
			2	SS	9	339							0					
<u>2.0</u> 338.1	SILT: Compact brown silt, some sand, wet,					338												
	occasional clayey zones		3	SS	14								o					
3.7			4	SS	17	337		•					0					
336.4	BOREHOLE TERMINATED AT 3.7 m																	Upon completion of au Open No free water

BOR	ING METHOD Continuous Flight Solid Ster	n Aug	ers	SVVI		T	SHFA	R STR	NGTH	(kPa)					TEC	HNIC	IAN	D. Brice
)EPTH		PLOT	BER	SAINI	SES	ON SCALE	+FIEI ▲PO0	LD VAN CKET P 50 1	E ∆TOF ENETRO	RVANE OMETER	ି Qu ୧୦ Q)0	PLAS ⁻ LIMIT W _P	TIC N/ MC CC	ATUR/ DISTUI DNTEI W	AL LI RE LI NT	IQUID LIMIT W _L	WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS
ELEV netres	SURFACE ELEVATION 336.82	STRAT	NUME	TYF	"N" VAI	ELEVATI	DYNA STANI	MIC CO DARD F 20 4	NE PEN ENETRA	IETRAT ATION 1	ION × TEST● 0	WA 1	ATER 0 2	CON1 0 3	ENT (0 4	(%) 0	LIN kN/m	GRAIN SI DISTRIBUTIC 3 GR SA \$
<u>0.15</u> 336.67	TOPSOIL: Dark brown clayey silt, trace sand, frozen SILT: Loose brown silt, some sand, trace	Ĩ	1	SS	9		Ţ						0					
	clay, moist		2	SS	6	336	•						0					
			3	SS	11	335							0					
<u>2.3</u> 334.5	CLAYEY SILT: Stiff brown clayey silt, trace sand, APL, occasional sand layers		4	SS	10	334	•							0				
<u>3.0</u> 333.8	becoming grey		5	SS	11		•						o					
						333												
_ <u>4.</u> 5 332.3	becoming layered with grey silt, some sand, wet		6	SS	12	332							c					
			7	ss	10	331												
<u>6.5</u> 330.3	BOREHOLE TERMINATED AT 6.5 m				-													Upon completion of aug Open No free water

LOCA BORII	TION New Hamburg, Ontario	n Auge	encea	103				BORI	NG DAT	r e Ma	ırch 26,	2018			ENGI TECI	INEE	R IAN	W. Loghrin D. Brice
EPTH	SOIL PROFILE	PLOT	BER	SAMI	PLES	ON SCALE	SHEAI +FIEL ▲POC	R STRE D VAN KET PI	ENGTH E △TOF ENETRO 00 1	(kPa) RVANE DMETEI 50 20	0 Qu R O Q 20	PLAST LIMIT W _P	FIC NA MO CC	ATURA DISTUF DNTEN W	L LIC RE I IT I	QUID LIMIT WL	WEIGHT	GROUND WATEF OBSERVATIONS AND REMARKS
ELEV netres)	DESCRIPTION	STRAT	NUMB	ТҮР	"N" VAL	EVATIO	DYNAI STANI	MIC CO	NE PEN ENETR		ION ×	WA	TER (ENT (%	— %)	UNIT	GRAIN SI
0.20 38.76	SURFACE ELEVATION 338.96 TOPSOIL: Dark brown clayey silt, APL CLAYEY SILT: Firm brown clayey silt, trace	l- fiñ	1	SS	5		•	20 4	0 6		0		5 20	0	40)	kN/m	GR SA S
<u>0.6</u> 0 38.36	sand, trace gravel, APL					338												
				55	15								0					
						337												
2.0			3	SS	23							c)					
336.0	becoming hard, grey		4	SS	47	_336			•				S					
3.7 335.3	BOREHOLE TERMINATED AT 3.7 m		1															Upon completion of aug Open
																		No free water
NOTE	l IS	L	I															<u> </u>

DON	NG METHOD Continuous Flight Solid Stem	Auge	rs			-			NOTU	(L/D-a)					TEC	HNIC	IAN	D. Brice
EPTH	SOIL PROFILE DESCRIPTION	т РLОТ	ABER	SAMI	ALES	TION SCALE	SHEA +FIEI ▲PO0	LD VAN CKET PI	ENGTH E △TOP ENETRO	(KPA) RVANE OMETEI 50 20	0 Qu R O Q 00	PLAS LIMIT W _P	TIC N/ MC CC	ATUR/ DISTUI DNTEI W —0—	AL LI RE ^{LI} NT	IQUID LIMIT WL	T WEIGHT	GROUND WAT OBSERVATION AND REMARK
netres)	SURFACE ELEVATION 339.58	STRA	NUN	F	~ "N"	ELEVA.	DYNA STANI	MIC CO DARD P 20 4	NE PEN ENETR	IETRAT ATION	TEST●	W/ 1	ATER 0 2	CONT 0 3	TENT ((%) 0	kN/m	GRAIN DISTRIBU 3 GR SA
0.20 39.38	TOPSOIL: Dark brown clayey silt, APL CLAYEY SILT: Firm brown clayey silt, some sand, APL	ĨĨ	1	SS	5	339	•							0				
			2	SS	6								0					
. <u>1.5</u>	occasional sand seams, wet	+++				338												
			3	SS	4	337												Sampler wet at 3.0 m
. <u>3.</u> 0	becoming hard, DTPL, occasional sand	+++												0				
3.7	PARTINGS		4	SS	54	336			•				0					
																		Open Free water at 2.4 m

LOCA BORI	ATION New Hamburg, Ontario NG METHOD Continuous Flight Solid Sten	n Auge	ers					BORI	NG DA	TE Ma	arch 26,	2018			ENC TEC	GINEE CHNIC	R NAN	W. Loghrin D. Brice
	SOIL PROFILE	-OT	۲	SAM	PLES	N SCALE	SHEA +FIE ▲PO	R STRE	ENGTH E △TO ENETR	I (kPa) RVANE OMETE	0 Qu R O Q	PLAS LIMIT	TIC N/ MC CC	ATUR/ DISTUI	AL L RE ^L NT	.iquid Limit	EIGHT	GROUND WAT
ELEV netres)	DESCRIPTION	STRAT PI	NUMBE	ТҮРЕ	"N" VALU	LEVATIO	DYNA STANI	MIC CO		NETRAT RATION	ION × TEST ●	W)	ATER		ENT	(%)	UNIT W	AND REMARK GRAIN DISTRIBU
0.20	SURFACE ELEVATION 341.51 TOPSOIL: Dark brown clayey silt, trace	ĥñ	1	SS	10			20 4	0	60 8	30	1		0 3		10	kN/m	GR SA
	CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, APL		_			341							-					
15			2	SS	10		•							0				
<u>1.9_</u>	becoming very stiff, DTPL					340												
						330												
<u>3.0</u>		Í	3	SS	22	- 558							0					
338.5	becoming hard, grey, occasional sand layers, wet		4	SS	38	338							0					
3.7 337.8	BOREHOLE TERMINATED AT 3.7 m		1															Upon completion of a Wet cave at 3.0 m
	-																	

LOCA BORI	TION New Hamburg, Ontario NG METHOD Continuous Flight Solid Sten	n Auge	rs					BORII	NG DA1	r e Ma	rch 26,	2018		ENG TEC	GINEE CHNIC	R IAN	W. Loghrin D. Brice
DEPTH	SOIL PROFILE	LOT	ER	SAM	PLES	IN SCALE	SHEAI +FIEL ▲POC	R STRE D VAN KET PE	ENGTH E △TOF ENETRO	(kPa) RVANE DMETEF 50 20	0 Qu 2 O Q 10	PLASTIC LIMIT W _P	NATUR/ MOISTUI CONTEI W	AL L RE L NT	.IQUID LIMIT WL	VEIGHT	GROUND WATER OBSERVATIONS
ELEV metres)	DESCRIPTION	STRAT F	NUMBI	ΙdΥΤ	"N" VAL	ELEVATIC	DYNAI STANE			IETRATION T	ON × EST●	WAT	ER CONT	ENT	(%)	UNITV	GRAIN SIZ
345.22	SURFACE ELEVATION 345.30 FILL: Dark brown clayey silt topsoil, trace sand, damp becoming brown silt some sand some	Ŕ	1	SS	19	345										KN/M	GR SA S
0.75 344.55	CLAYEY SILT: Stiff brown clayey silt, trace sand, trace gravel, DTPL	\prod	2	SS	15								o				
<u>1.</u> 5 343.8	becoming APL, occasional silt layers, moist to wet					_344											
			3	SS	10	-343											
					40	342											
3.7 341.6	BOREHOLE TERMINATED AT 3.7 m		4	55	10		•										Upon completion of auge
																	No free water





APPENDIX A

MTE BOREHOLES AND SITE PLAN

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	Headspace (ppm)	Borehole
0.0 <u>ft m</u> 0.0	0.00	Ground Elevation TOPSOIL	{ [}] }					~	
2.0	-0.61 0.61	SILT CLAY Light brown sandy silt and clay, fine grained, loose, moist, no staining or odour	$\frac{2}{1}$	1	SS	21	λ		
6.0 2.0	1.52	Silty SAND Light brown silty sand, some clay @ 6', fine grained, stiff,		2	SS	40	\mathbf{A}		
8.0		below 7', no staining or odour		3	SS	55			
12.0				4	SS	75			
14.0									
16.0	-4.88 4.88	Sandy SILT		5	SS	63			
18.0 20.0 - 6.0	-6.10 6.10	grained, stiff, saturated SILT TILL Grey sandy silt till, small stones, no staining or odour							
22.0		Sandy SILT Light grey sandy silt, some silty clay @ 22', fine grained, stiff, no staining or odur, wet,		6	SS	51	1		
24.0	-8.08	dry @ 22'		7	SS	31			
28.0	8.08	CLAY Grey clay, trace silt, dry, no staining or odour	AL.	8	ss	39			
30.0	-8.99 8.99	SILT Grey silt, fine grained, dry							
32.0 10.0		-							
34.0									
Reviewe	ed By: I	RBM	N 520	ITE Co Bingen	nsultar nans Ce	nts Inc entre D	rive	Lo	gged By: YXM
Notes:		Stent Auguring/Split Sp00f		NICHE N (519	iner, Of 12B 3X9) 743-6	10) 500		Sh	eet: 1 of 1

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 <u>ft m</u> 0.0	0.00	Ground Elevation TOPSOIL							
2.0	-0.61 0.61	SILT Light brown clayey silt, fine grained, stiff, dry, no staining	$\overline{\mathcal{H}}$	1	SS	30	1		
6.0 - 2.0		or odour. Light brown sandy silt @ 7'	T	2	SS	51	$\langle \rangle$		
8.0	-2.29 2.29	Silty CLAY Grey-brown silty clay, fine grained stiff day no staining	Æ	3	SS	42			
10.0	-3.05 3.05	or odour CLAY Grey clay, fine, stiff, dry, trace	T	4	SS	23			
14.0		sand @ 17', no staining or odour							
16.0				5	ss	33			
22.0				6	ss	27			
24.0									
26.0 - 8.0	-8.23			7	SS	31			
28.0-	0.25								
30.0									
32.0									
34.0									
Reviewe	ed By: I	RBM	N 520	ITE Co Bingen	nsultar nans Ce	nts Inc entre D	rive	Lo	gged By: YXM
Method Notes:	: Hollow	v Stem Auguring/Split Spoon		Kitche N	ener, Or 12B 3X9	ntario		Sh	eet: 1 of 1
				(018	7 7 03	500			

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	Headspace (ppm)	Borehole
0.0 ft m 0.0	0.00	Ground Elevation TOPSOIL	{ [}] {						
4.0	0.61	SILT Light brown clayey silt, trace sand, dry, no staining or odour	1	1	SS	31	N		
6.0 - 2.0	1.52	Sandy SILT Light brown sandy silt with clay, fine grained, stiff, dry,		2	SS	49			
8.0	-3.05	Slightly moist @ 8		3	SS	38			
12.0	3.05 -3.66 3.66	Silty CLAY Grey silty clay with sand, fine grained, stiff, dy, no staining or	1	4	SS	32			
14.0		Silty SAND Grey silty sand, trace clay seams, fine grained, stiff, no							
		staining or odour, dry to wet		5	SS	45)		
18.0 20.0 - 6.0									
22.0				6	SS	20			
24.0							$\left \right\rangle$		
26.0 - 8.0	-8.23 8.23			7	SS	54			
28.0									
30.0									
32.0 - 10.0									
34.0									
Reviewo Method Notes:	ed By: f	RBM v Stem Auguring/Split Spoon	N 520	ITE Co Bingen Kitche N (519	n sultar nans Ce ener, Or I2B 3X9) 743-6:	n ts Inc entre D ntario 500	- rive	Lo Sh	gged By: YXM eet: 1 of 1

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 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	, }							
2.0	-0.61 0.61	SILT	2 2							
4.0	-4.50	Dark brown sandy silt with clay, light brown silty clay @ 4'dry, no staining or odour		1	ss	28	1			
6.0	1.52	SILT TILL Light brown clayey silt till,		2	SS	36				
8.0	2.13	some small stones, dry, no staining or odour								
10.0	-3.05	Light brown silty sand, loose, fine, moist to wet @8', light	ļ	3	55	23				
12.0-1	0.00	\brown dry clay @ 9, CLAY		4	ss	21				
14.0		Grey clay, trace silt, fine grained, stiff, no staining or odour, slightly moist								
16.0				5	SS	23				
18.0 18.0										
20.0 - 6.0	-6.10 6.10	Sandy SILT Grey sandy silt, fine grained,		6	SS	49				
22.0-1		Saturated, no staming or odobr								
26.0 - 8.0	-7.62 7.62 -8.23	CLAY Grey clay, fine grained, stiff, no staining or odour, dry		7	SS	47				
28.0	8,23									
30.0										
32.0										
34.0										
 Reviewe	ed By: F	M	ITE Co	nsultar	its Inc	rive	Lo	gged By: YXM		
Method:	: Hollow	/ Stem Auguring/Split Spoon	520	Kitche	ner, On 2B 3X9	itario				
NOLES:				(519) 743-6	500		Sh		

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH5

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole
0.0 ft m 0.0	0.00	Ground Elevation TOPSOIL	1						
4.0	0.61	Clayey SILT Grey to light brown silt and clay, fine grained, soft, moist, no staining or odour	1	1	SS	27	N		
6.0 2.0	1.52	Silty CLAY Light grey to grey silty clay, trace sand, fine grained, stiff,	H	2	SS	35			
8.0		silty wet sand seam @ 21', damp to moist, no staining or odour		3	SS	74	\geq		
12.0			H	4	SS	32	Í		
14.0									
16.0			H	5	SS	24			
20.0 6.0				6	<u> </u>	- 24			
22.0			H	0	55	24			
26.0 8.0	-7.62 7.62	CLAY TILL Grey silty clay till, trace sand,		7	SS	93	\backslash		
28.0-	8.23	trace stone, stiff, moist to slight moist							
30.0-1									
34.0									
⊣_ Review Method Notes:	ed By: I I: Hollow	N 520	ITE Co Bingen Kitche N (519	nsultar nans Ce ener, On 2B 3X9) 743-65	nts Inc entre D ntario 500	rive	Logged By: YXM Sheet: 1 of 1		

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH6

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 <u>ft</u> m 0.0	0.00	Ground Elevation	~ (
		TOPSOIL	\sim							
2.0			\sim							
The second secon	1 22		~~	1	SS	16				
4.0-	1.22	Silty CLAY	T.							
, t		Light brown silty clay, little	4							
2.0		staining or odour	H.	2	SS	14	1			
8.0	-2.44		1				X			
	2.44	Silty SAND	22	3	SS	29				
10.0	-3.05 3.05	clay, wet								
1		Silty CLAY		4	SS	70	\mathbf{Y}			
12.0-										
4.0		Light brown silty sand, little								
14.0-	-4.57	clay, trace stone, slight wet								
16.0	4.57	Grevish brown silty clay, some	H.	-						
		sand, fine grained, stiff slightly	H	5	SS	50	1			
18.0-	-5.49	Silty SAND	TE							
	5.49	Lihgt grey clayey silty sand,								
20.0 - 6.0		fine grained, slightly wet to								
		Silty CLAY		6	SS	65	4			
22.0		Grey silty clay, some sand,	• •	1						
ŧ		CLAY TILL	• * •							
24.0-		Grey sandy silty clay till, some								
26.0		damp to moist		_						
20.0 8.0				(SS	65				
28.0			•							
			•							
30.0										
				8	SS	75	•			
32.0	<u>-9.75</u> 9.75									
J = 10.0										
34.0										
=					neulta-	te Inc				
Reviewe	ed By: I		520	Bingen	nans Ce	entre D	rive	Lo	gged By: YXM	
Method	: Hollow	v Stem Auguring/Split Spoon		Kitche	ener, Or I2B 3X9	itario		-		
Notes:				(519) 743-6	500		Sh	eet: 1 of 1	

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH7

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 <u>ft</u> m 0.0	0.00 0.00	Ground Elevation TOPSOIL	{ [}] }							
2.0	-0.76 0.76	Silty CLAY	2	1	SS	52				
		sand, stiff, damp to moist, no staining or odour	H			E7				
8.0			Ŧ	2		57				
10.0			H	3	SS	52	1			
12.0	-3.66 3.66		H:	4	SS	46				
4.0 14.0		SIL I TILL Light brown to grey clayey silt till, some sand, some small stones, fine grained, some pebbles @ 16', dry					\setminus			
16.0				5	SS	71	Y			
18.0							\setminus			
20.0 6.0				6	SS	92)			
22.0-										
24.0										
26.0 - 8.0	-8.23 8.23			7	SS	50				
28.0										
30.0										
32.0										
34.0										
Reviewe Method Notes:	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		

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH8

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 ft m 0.0	0.00	Ground Elevation TOPSOIL	<i>{</i> } <i>{}</i>							
4.0	-0.76 0.76	Silty CLAY Light brown silty clay, trace sand, stiff, dry,gravelly sand	Ŧ	1	SS	30	\mathbf{X}			
6.0 + 2.0		with stones @ 16' no staining or odour		2	SS	55	\rangle			
8.0			H	3	SS	35				
12.0 th			H							
14.0 14.0			H							
	-4.88 4.88	SILT TILL Grey silt till, very stiff, dry, no		4	SS	125				
18.0-1 20.0-1 6.0		staining or odour, light brown moist to wet silty sand @ 22'.	1							
22.0				5	SS	50				
24.0	-7.62 7.62	SAND								
^{26.0} 8.0	-8.23 8.23	Light brown sand, fine grained, stiff, saturated, moist silty clay @ 27', no staining or odour		6	SS	99				
30.0 th										
32.0 10.0										
34.0										
Reviewe Method: Notes:	e d By : I : Hollow	RBM v Stem Auguring/Split Spoon	N 520	ITE Co Bingen Kitche N (519	nsultar nans Ce ner, Or 2B 3X9) 743-6	nts Inc entre D Itario 500	rive	Logged By: YXM Sheet: 1 of 1		

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH9

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	1							
2.0	1.07		111							
4.0	1.07	Sandy SILT Light brown sandy silt with		1	SS	25	j			
6.0	2.20	clay, some stones, moist, no staining or odour		2	SS	18				
8.0	2.29	Silty CLAY Grey silty clay, trace sand,	Ŧ	3	SS	27				
10.0		soft, slightly moist, no staining or odour, water coming out @ 13'	Ŧ	4	ss	25				
12.0			Ŧ.							
14.0	-4.57		H							
16.0	4.57	CLAY Grey clay, soft, fine grained, slightly moist, no staining or		5	SS	30				
18.0		odour		1						
20.0 - 6.0				6		30				
22.0-1				0		39				
24.0-1										
26.0	-8.23			7	SS	42	I			
28.0	8.23									
30.0										
32.0 + 10.0										
34.0										
 Reviewe	ed By: I	RBM	N 520	ITE Co Bingen	nsultar	nts Inc	rive	Lo	gged By: YXM	
Method	: Hollow	v Stem Auguring/Split Spoon		Kitche	ener, Or	itario				
Notes:				(519) 743-6	, 500		Sh	eet: 1 of 1	

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH10

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph	Headspace (ppm)	Borehole
0.0 ft m 0.0	0.00 0.00	Ground Elevation	\sim						
			$\sim \sim$						
2.0	-0.76 0.76	Clayey SILT							
4.0-		Light brown clayey silt, trace sand, fine grained, stiff, dry, no	20	1	SS	34	\mathbf{i}		
60-		staining or odour	#	-		~			
2.0			H.	2	33	04			
8.0	-2.74		1	3	ss	54			
10.0	2.74	Silty SAND							
	I.	Grey silty sand, fine grained, moist to wet, no staining or		4	SS	67			
12.0		odour					/		
4.0 14.0							/		
	-4.57 4.57	CLAV							
16.0		Grey clay, trace sand, soft,	1	5	SS	33	{		
18.0-		ary, no staining or odour	1						
Ť.									
20.0 - 6.0									
22.0				6	SS	53	1		
			1						
24.0-			1						
26.0			1	7	SS	41	I		
1	-8.23 8.23		1						
28.0									
30.0									
32.0 - 10.0									
34.0									
Reviewe	ed By: I	N 520	ITE Co Bingen	nsultar nans Ce	n <mark>ts Inc</mark> entre D	rive	Lo	gged By: YXM	
Method:	: Hollow	v Stem Auguring/Split Spoon		Kitche N	ener, Or I2B 3X9	itario		0L	anti 1 of 1
Notes:				(519) 743-6	500		51	eet: 1011
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 m} 0.0	0.00 0.00	Ground Elevation TOPSOIL	{ ¹						
2.0	-0.76 0.76		\sim						
4.0		Light brown silty clay till with sand, stiff, dense, fine grained,		1	SS	64	1		
6.0 - 2.0		dry, no staining or odour		2	SS	50			
8.0				3	SS	41			
10.0			Į:						
12.0				4	SS	41	1		
14.0 14.0	-4.57								
16.0	4.57	Silty CLAY Grey silt with some silt and	H.	5	SS	20	(
18.0		slightly moist to moist, no slightly moist to moist, no staining or odour	Ŧ						
20.0 - 6.0			H						
22.0			H	0	55	38	$ \lambda $		
24.0-1	-7.62		#				\setminus		
26.0 - 8.0	7.62	Clayey SILT Grey clayey silt with sand, stiff, fine grained, dry, no staining	1	7	SS	85			
28.0	8.23	or odour							
30.0									
32.0									
10.0									
34.0									
Reviewe Method: Notes:	e d By : I : Hollow	RBM v Stem Auguring/Split Spoon	N 520	ITE Co Bingen Kitche N (519	nsultar nans Ce ener, On 12B 3X9) 743-65	nts Inc entre D itario 500	rive	Lo Sh	gged By: YXM eet: 1 of 1

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 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	2						
2.0	-0.76		, } }						
4.0	0.76	CLAY TILL Light brown silty clay till with sand stiff fine grained dry		1	SS	38	T		
6.0	-1.98	no staining or odour		2	SS	37			
8.0-	1.98	Sandy SILT Light brown sandy silt, trace					\backslash		
10.0	-2.74 2.74	staining or odour	H.	3	SS	53	/		
12 0		Light brown silty clay, moist to wet, no staining or odour		4	SS	35	{		
4.0		Silty SAND Grey silty sand with clay, fine grained loose moist wet to							
14.0-1		saturated @ 16', no staining or odour							
16.0-1				5	SS	52	Ì		
18.0									
20.0 6.0	-6.40			6	22	45			
22.0-	6.40	Silty CLAY Grey silty clay, stiff, dense, fine grained, slightly moist, no	Ŧ						
24.0-		staining or odour	Ŧ						
26.0 - 8.0	-8.23		Ŧ	7	SS	56	Ι		
28.0	8.23								
30.0									
32.0									
10.0									
34.0									
Reviewed By: RBM			N 520	ITE Co Bingen	nsultar nans Ce	n ts Inc entre D	rive	Lo	gged By: YXM
Notes:		a stern Auguring/Split Spoon		Nitche N (519	ner, Or 12B 3X9) 743-6	500		Sh	eet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT1

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0	0.00	Ground Elevation	\sim				
0.0 0.0 	<u>-0.76</u> 0.76	Cround Elevation TOPSOIL Dark brown topsoil, rootlets, wood pieces, soft, damp Silty CLAY Brown silty clay, sand seam @ 3-3.5 feet, soft, sticky, moist to very moist					No seepage observed during excavation Caving @ 3 feet
-	-3.20		TT:				
	3.20						
Reviewed By: RBM 520			nsultant	s Inc. tre Drive	 >		Logged By: YXM
52 Method: Backhoe		oe Kitche N	ner, Onta 2B 3X9	ario			0
NOTES:		(519)) 743-650	00			Sneet: 1 OF 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT2

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 - - - - - - -	0.00	Ground Elevation TOPSOIL Dark brown topsoil, rootlets of corn, soft, damp					
2.0	0.46	Clayey SILT Brown silt and clay, some sand, damp to very moist,soft, no staining or odour					No seepage observed during excavation
6.0 - 2.0	1.37	Silty CLAY Brown silty clay, little sand, sticky, moist, no staining or odour	#(#(#(#)#)				
8.0 10.0 	-3.35	Sandy SILT Grey sandy silt, clayey, fine grained, moist to slight wet					
-	3.35						3 % .
12.0-							
Reviewed By: RBMMTE Consultants IncMethod: Backhoe520 Bingemans Centre DNotes:Kitchener, OntarioNotes:(519) 743-6500							Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT3

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 	-0.46 0.46 0.46 -1.07 1.07	Ground Elevation TOPSOIL Dark brown topsoil, rootlets of corn, soft, damp SILT Brown ssandy clayey silt, loose, damp, no staining or odour Silty CLAY Brown to dark brown silty clay, little sand, hard, moist to damp, no staining or odour					No seepage observed during excavation
Reviewe Method Notes:	e d By : I : Backh	RBM 520 Bingen oe Kitche N (519	nsultant nans Cen ner, Onta 2B 3X9) 743-650	s Inc. tre Drive ario	9		Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT4

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 0.0 	<u>-0.46</u> 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
Reviewo Method Notes:	ed By: f	RBM MTE Co 520 Bingem De Kitche N. (519)	nsultant: nans Cen ner, Onta 2B 3X9) 743-650	s Inc. tre Drive ario	9		Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT5

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 <u>ft m</u> 0.0	0.00		~				
¹ ¹ -	-0.46	Dark brown topsoil, rootlets, soft, damp	lilil				-
2.0	-0.91	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
4.0 - 1	0.91	Silty CLAY Brown to dark brown silty clay, trace sand, hard, sticky, damp, no staining or odour	HHH				
1 1 1 1 1			H/H/H				
6.0 2.0 			H/H/H				
- - 8.0 - - - -			HH				
- - - - - 10.0-			H H				
	-3.20 3.20					·	
- - - - - - -							
Review	ad By:	RBM MTE Co	nsultant	s Inc.			
Method	: Backh	0e 520 Bingen Kitche	nans Cen ener, Onta	itre Drive ario	е		Logged by. IAM
Notes:		N (519	I2B 3X9) 743-65(00			Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT6

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 <u>ft m</u> 0.0 	0.00 0.00 -0.46 0.46	Ground Elevation TOPSOIL Dark brown topsoil, rootlets, soft, damp Silty CLAY					
2.0		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	H/H/H/H/				No seepage observed during excavation
- - - - - - - - - - - - - - - - - - -			#/#/#/#				
2.0 8.0 			+++++				
10.0	<u>-3.05</u> 3.05		H/H/H				
 - - - - 12.0							
Reviewo Method Notes:	RBM MTE Co 520 Bingerr oe Kitche N (519	nsultant nans Cen ner, Onta 2B 3X9) 743-650	s Inc. tre Drive ario 00	9		Logged By: YXM Sheet: 1 of 1	

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT7

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 <u>ft m</u> 0.0 - - - - - - - - - - - - - -	0.00	Ground Elevation TOPSOIL Dark brown topsoil, rootlets, soft, damp					
	-1.22	Sandy SILT Brown sandy clayey silt, gravelly, loose, dry to moist, no staining or odour					
4.0	-1.68	Silty CLAY Brown to dark brown silty clay, hard, sticky, damp to moist, no staining or odour	HHH)				
6.0 2.0	-2.13	SAND AND GRAVEL Brown sand and gravel, some clay, saturated, no staining or odour					Seepage observed during excavation @6'
	2.13	Silty CLAY Brown silty clay, gravelly, moist, no staining or odour	井井井井				
	-3.20 3.20		40	-			
12.0 -							
Reviewo Method	ed By: I : Backh	RBM MTE Co 520 Bingen oe Kitche	nsultant nans Cen ener, Onta	s Inc. Itre Drive ario	Ð		Logged By: YXM
Notes:		N (519	2B 3X9) 743-650	00			Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT8

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 2.0 	0.00 0.00 -0.46 0.46	Ground Elevation TOPSOIL Dark brown topsoil, rootlets, soft, damp 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					No seepage observed during excavation
4.0-1-		and hard below 4', more stones @ 7', more clayey and sticky below 7', no staining or odour	+ + + + +				
6.0			# # # #				
8.0 -	-2.59	Grow to dark arow oith alow hard damp	H				
- - - - - - - - - - - - - - - - - - -	-3.20	Grey to dark grey silly day, naid, damp	# # #				
	3.20						
Review Method	ed By: F : Backh	RBM MTE Co 520 Binger oe Kitche	nsultant	s Inc. tre Drive ario	9		Logged By: YXM
Notes: N2B 3X9 Sheet: 1 of 1						Sheet: 1 of 1	

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT9

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
$0.0 \frac{ft}{1} = 0.0$	0.00 0.00	Ground Elevation	~				
		Dark brown topsoil, rootlets, soft, damp	$\{\gamma_{i}, \gamma_{j}\}$				
- - 2.0- - - - - - -	0.46	Sandy SILT Brown sandy silt, clayey, fine grained, loose, damp, no staining or odour					No seepage observed during excavation
4.0	0.91	Silty CLAY Brown silty clay, little sand, soft, damp to slight moist	HH/H/				
			HHH				
6.0 - 2.0			H/H/H				
8.0			HH H				
- - - - - - - - - - - - - - - - - - -			HH H				
1 1 1 1	0.05						
	-3.35 3.35						
Review	ed Bv: F	RBM MTE Co	nsultant	s Inc.			Logged By: YXM
Method	: Backh	oe 520 Bingerr Kitche	nans Cen ner, Onta	tre Drive ario	Э		
Notes: (519) 743-6500 Sheet: 1 of 1							Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT10

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0	0.00	Ground Elevation	~				
-	0.00	TOPSOIL Dark brown topsoil rootlets soft damp	\sim				
1			~~ ,	-			
-			\sim				
1	-0.46		\sim				
2.0		Clayey SIL I Brown clayey silt, some sand, loose, fine grained,moist to wet, no staining or odour	1				
			1				
-							
-	1.00		1				Seepage observed during excavation @ 3.5
4.0	1.22	Silty CLAY	11				
1		Brown silty clay, little sand, soft, moist, no staining or odour	4				
-			TF.				
-			1				
-			H:				
6.0			TC:				
- 2.0			1				
-			TT:				
-			1				
			H.				
8.0-			TF:				
1			1				
-			H:				
1			4C				
-			4				
10.0-			TT:				
	-3.20		12				
-	3.20						
-							
-							
12.0							
Review	ed Bv:	RBM MTE Co	nsultant	ts Inc.			Logged By: YXM
Method	I: Backh	ioe 520 Bingen Kitche	nans Cer ener, Ont	ntre Driv ario	e		
Notes:		N (519	12B 3X9	00			Sheet: 1 of 1
		(••••	,	-			

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT11

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0	0.00 0.00	Ground Elevation	~				
- 1 - 1 - 1	-0.46	Dark brown topsoil, rootlets, soft, damp	222222				
2.0	-1.22	Sandy SILT Brown sandy silt, clayey, fine grained, loose, moist, no staining or odour					No seepage observed during excavation
4.0	-2.13	SILT AND CLAY Brown silt and clay, some sand, very moist, no staining or odour	# # # # #				
8.0 - - - - - - - - - - - - - - - - - - -	2.13	Clayey SILT Grey clayey sandy silt, fine grained, loose, slight wet, no staining or odour					
	-3.35 3.35						
- - 12.0							
Review	ed By: I	RBM MTE Co 520 Bingen	nsultant	s Inc. tre Driv	e		Logged By: YXM
Method	: Backh	oe Kitche N	ener, Onta 12B 3X9	ario			Sheet: 1 of 1
110163.		(519) 743-650	00			Sheet. 1 OF 1

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
-4.0 - tt m -4.0 - t - 1.0	0.00 0.00 -0.15 0.15 -0.30 0.30	Ground Elevation TOPSOIL Silty SAND Brownish grey silty sand, some organics, some clay, wet Silty CLAY Grey silty clay, some sand, wet to moist						Sand Pack Bentonite
4.0 - - - - - - - - - - - - - - - - -	ed By: I : Hand .	RBM 520 Augering	ITE Cons Bingema Kitchend N2 (519) T	sultant ns Cen er, Onta B 3X9 743-650	s Inc. tre Drive ario			Logged By: YXM Sheet: 1 of 1

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
n m -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						Sand Pack Bentonite
Reviewed By: RBM 5 Method: Hand Augering Notes:			ITE Cons Bingema Kitchend N2I (519) 7	sultanta ns Cen er, Onta B 3X9 743-650	s Inc. tre Drive ario 10	•		Logged By: YXM Sheet: 1 of 1

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									
	-	0.00 0.00 -0.15 0.15	Ground Elevation TOPSOIL Clayey SILT Dark grey clayey silt, some sand, wet Sandy SILT						Bentonite
2.0	1.0	<u>-1.07</u> 1.07	Brown sandy silt, some clay, moist to wet Silty CLAY Brown silty cly, some sand, trace stone, moist Silty SAND Brown silty sand clayey wet	41年1年1年1年					Slot Screen
4.0	ewe	-1.22 1.22 ed By: F Hand J	RBM 520	MTE Cons Bingema Kitchend	sultant: ns Cen er, Onta	s Inc. tre Drive ario			Logged By: YXM
Method: Hand Augering Notes:				N2 (519) 7	B 3X9 743-650	00			Sheet: 1 of 1

MOE WELL RECORDS

	ROCK	57.91	38.41				
	BOULDERS	38.41	35.05				
	SILT	35.05	21.34				
	STONES	21.34	7.32				
	CLAY	7.32	3.66				
8.23	STONES	3.66	0.00	345.95	4803821.3	525562.47	6507275
	CLAY	16.76	15.85				
	SAND	15.85	10.67				
	CLAY	10.67	0.00	345.04	4803828.31	525404.47	6506378
	SAND	13.72	11.58				
	MEDIUM SAND	11.58	11.28				
	SAND	11.28	10.36				
6.10	CLAY	10.36	0.00	345.04	4803837.31	525433.47	6506377
	CLAY	24.38	13.72				a general a
	SAND	13.72	9.75				
	CLAY	9.75	0.00	345.04	4803926.31	525526.47	6505440
	GRAVEL	15.24	9.14				
	CLAY	9.14	0.00	347.48	4804070.29	525412.46	6503940
	GRAVEL	19.20	16.76				
	CLAY	16.76	0.00	347.48	4803750.31	525662.46	6503075
	LIMESTONE	70.10	64.00				
	HARDPAN	64.00	23.16				
	GRAVEL	23.16	19.81				
4.57	CLAY	19.81	0.00	342.3	4803928	525474	6507783
WATER LEVEL (m)	MATERIAL	TO (m)	FROM (m)	ELEVATION (m)	NORTHING	EASTING	MOE_ID







APPENDIX B

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. <u>Minimum Extent</u>

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. <u>Construction Delay Time Considerations</u>

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



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.



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.



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.

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PML Ref.: 18KF025 Report: 1 December 18, 2018



December 18, 2018

PML Ref.: 18KF025 Report: 1

New HamburgIrs 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.



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.

Geotechnical Investigation, Proposed Development – Highway 7/8 New Hamburg Property PML Ref.: 18KF025, Report: 1 December 18, 2018, Page 13



<u>Closure</u>

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



PROJECT NO.18KF025 FIGURE NO. 1



CLAYEY SILT

PMP Peto MacCallum Ltd.

PROJECT NO.18KF025 FIGURE NO. 3



CLAYEY SILT



PROJECT NO.18KF025 FIGURE NO. 4



CLAYEY SILT

PMP Peto MacCallum Ltd.

PROJECT NO.18KF025 FIGURE NO. 2



SILTY SAND



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:

<u>CONSISTE</u>	<u>NCY N (blows/0.3 m)</u>	<u>c (kPa)</u>	<u>DENSENESS</u>	<u>N (blows/0.3 m)</u>
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	С	Consolidation
Qd	Drained Triaxial		

	ATION New Hamburg, Ontario	em	Δικ	ners					BORI	NG DA	TE Jun	ie 6, 20	018		E	NGINE	ER	W. Lo	ghrin
BOR	SOIL PROFILE		<u></u>	Jers	SAM	PLES	щ	SHE	R STR	ENGTH	(kPa)			- NAT			υ σ		311111
EPTH ELEV netres)		STRAT PLOT		NUMBER	ТҮРЕ	"N" VALUES	ELEVATION SCA	+FIE ▲PO DYNA STAN	CKET PE 50 1 MIC CON DARD PI 20 4		VANE VIETER 0 20 TRATIO TION TE			TER C	STURE NTENT W -O ONTEN 30	LIQUIL LIMI ⁻ w _L T (%)	GAS READING		ROUND WATER DBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION
0.40	TOPSOIL: Dark brown silt, moist	~~~	, , , ,	1	SS	7		•							0		ppm	¥ ¥	Stickup Well Prote Set in Concrete
	CLAYEY SILT: Firm to stiff brown clayey silt, some sand, trace gravel, APL						-												
				2	SS	12								0					Bentonite Seal
				3	SS	9	-								0				
4.0	becoming firm grey occasional silt layers																		Filter Sand
				4	SS	8								C					Slotted Screen
6.7				5	SS	8								0				<u>:日</u> :]	
	BOREHOLE TERMINATED AT 6.7 m																	<u>Water</u> Initial: 2018-0	<u>Level Readings:</u> Dry)6-15: 2.91 m

PRO LOC BOI	DJECT Proposed Development - Wilmot E CATION New Hamburg, Ontario RING METHOD Continuous Flight Hollow S	implo	yme Aug	ent ers	Lands	s Eastside			BORI	NG DA	TE June 6, 2	2018		P E T	ML RE NGINE ECHNI	F. ER CIAN	18KF025 W. Loghrin W. Loghrin
	SOIL PROFILE	DT .		r	SAM	PLES	N SCALE	SHEA +FIEL	R STR .D VANE KET PE	ENGTH	I(kPa) RVANE ○Qu METER OQ	PLAS LIMIT	TIC N MC	ATURAL DISTURE ONTENT	Liquii Limi	DINGS	GROUND WATER OBSERVATIONS
DEPT ELEV (metre	H DESCRIPTION s) SURFACE ELEVATION TOPOOL Det Internation	STRAT PL		NUMBEI	ТҮРЕ	"N" VALUI	ELEVATION		0 10 /IIC CON 0ARD PE 20 4	0 1 IE PENI ENETRA 0 6	50 200 ETRATION × ITION TEST • 10 80	WP WP 1	ATER	CONTEN	w _L T (%) 40	dd GAS REA	AND REMARKS GRAIN SIZI DISTRIBUTION GR SA SI
0.30	CLAYEY SILT: Brown silt, moist to wet CLAYEY SILT: Brown mottled clayey silt, some sand trace gravel, occasional wet sand layers API			1	SS	5	_							o			Set in Concrete
				2	SS	7	-						0				
_ 2.1	becoming hard, DTPL	_		3	SS	6							0				Bentonite Seal
				4	SS	40	_			•		0					
				5	SS	30	-		$\left \right $				o				
4.0	SILTY SAND: Dense brown silty fine sand, saturated																Filter Sand
				6	SS	54							0				
6.7	BOREHOLE TERMINATED AT 6.7 m		·	7	SS	44				•			0				5
																	Water Level Readings: Initial: 3.5 m
																	2010-00-13. 2.2011

LOC. BOR	ATION New Hamburg, Ontario	Stem A	ugers	3				BORING DA	TE June 6, 2	2018			ENGIN TECHN	EER IICIAN	W. Log W. Log	hrin hrin
	SOIL PROFILE	от	2	SAM	PLES	I SCALE	SHE +FIE ▲PC	R STRENGTH LD VANE △TOP CKET PENETRO	H(kPa) RVANE ○Qu METER OQ	PLAS ⁻ LIMIT	TIC N/ MC C	ATURA DISTUR DNTEN	E LIQU T LIM		GI	ROUND WATER BSERVATIONS
EPTH LEV etres		STRAT PL	NUMBEF	ТҮРЕ	"N" VALUE	ELEVATION	DYNA STAN	50 100 19 MIC CONE PENI DARD PENETRA 20 40 6	50 200 ETRATION × ITION TEST ● 10 80	W _P − −− − W/ 1	ATER 0 2		WI ENT (%) 40	dd GAS REA		ND REMARKS GRAIN SIZ DISTRIBUTION GR SA SI
0.35	CLAYEY SILT: Firm brown clayey silt, some sand, trace gravel, APL, occasional wet silt layers		1	SS	9	-					0					Set in Concrete
			2	SS	8							c			Ι	Bentonite Seal
<u>2.5</u> _	becoming grey														Ι	
			3	SS	6							0				
			4	SS	9							0				Filter Sand
																Slotted Screen
<u>6.7</u>	BOREHOLE TERMINATED AT 6.7 m		5	SS	10		•				c	,			Water I	evel Readings:
															2018-0	6-15: 6.12 m

PRO. LOC/ BOR	JECT Proposed Development - Wilmot E ATION New Hamburg, Ontario ING METHOD Continuous Flight Hollow S	implo	oyme Aug	ent La ers	ands	Eastside		1	BORI	NG DA	TE Ju	ine 9, 2	018			PML RI ENGINI TECHN	EF. EER IICIAN	18KF W. Lo W. Lo	025 oghrin oghrin
	SOIL PROFILE	OT		s r	AMF	PLES ຜ	N SCALE	SHEA +FIE ▲PO	R STR _D VANE CKET PE	ENGTH	ł (kPa) RVANE METER	ି Qu ୧ ୦ Q	PLAS ⁻ LIMIT	FIC N/ MC C(ATURAL DISTURE DNTENT				GROUND WATER OBSERVATIONS
DEPTH ELEV netres)	DESCRIPTION SURFACE ELEVATION	STRAT PL		NUMBEI	ТҮРЕ	"N" VALUI	ELEVATION	DYNA STAN	50 1 MIC CON DARD PI 20 4	00 1 NE PENI ENETRA I0 6	50 2 ETRATI ATION T	00 ON × EST ● 30	W _P W/ 1	ATER 0 2		WI NT (%) 40	dd GAS REA		AND REMARKS GRAIN SIZE DISTRIBUTION GR SA SI
0.40	TOPSOIL: Dark brown silt, moist CLAYEY SILT: Firm to very stiff brown clavey silt some sand trace gravel API			1 5	ss	9		Ī						0					Stickup vveil Prote Set in Concrete
	to DTPL, occasional silt layers			2 \$	ss	7	-								0				
				3 :	SS	11	_								0				Bentonite Seal
				4 5	SS	13	-								0				
<u>4.0</u>	becoming grey, occasional saturated silt layers			5 5	55	6									5				Filter Sand
5.9	SILT TILL: Very dense grey silt, some						-												Slotted Screen
6.7	BOREHOLE TERMINATED AT 6.7 m																	Wate Initial 2018-	r Level Readings: Dry 06-15: 1.56 m

PROJ LOCA BORI	IECT Proposed Development - Wilmot E ATION New Hamburg, Ontario ING METHOD Continuous Flight Hollow S	Empl Stem		ment ugers	Land	s Eastside		1	BORI	NG DA	TE Ju	ne 9, 2	018			PML ENGI TECH	REF INEE INIC	ER SIAN	18KF025 W. Loghrin W. Loghrin
	SOIL PROFILE	-			SAM	PLES	ALE	SHEA +FIE	R STR D VAN	ENGT⊦ ∃ ∆TOI	ł (kPa) RVANE	⊖ Qu	PLAST				סוטב	IGS	
<u>EPTH</u> LEV etres)	DESCRIPTION	STRAT PLOT		NUMBER	ТҮРЕ	"N" VALUES	LEVATION SC	▲PO DYNA STAN	CKET PE	NETRO	METER 50 20 ETRATION TE	OQ 00 ON × EST ●				E L	.IMIT ₩L →	GAS READIN	OBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION
	SURFACE ELEVATION TOPSOIL: Dark brown clayey silt, APL CLAYEY SILT: Very stiff brown clayey silt some sand trace gravel DTPI	ŕŤ	T	1	SS	5		•		ю е	0 8	0	10	0	0 30	40		ppm	GR SA SI
	Sin, Some Sand, trace gravel, DTL			2	SS	27								0					
				3	SS	18								0					
				4	SS	14									0				
				5	SS	12									0				
<u>4.0</u>	becoming grey, APL, occasional wet silt lavers																		
			$\left \right $	6	SS	12									o				
0.7				7	SS	16								0					
0.7	BOREHOLE TERMINATED AT 6.7 m																		Upon completion of auger Open No free water

PROJ LOCA BORI	IECT Proposed Development - Wilmot ITION New Hamburg, Ontario NG METHOD Continuous Flight Hollow	Emplo Stem /	ymer Auger	it Land:	s Eastside			BORII	VG DATE June 9, 2	018		PML I ENGII TECH	REF. NEER INICIAN	18KF025 W. Loghrin ✔ W. Loghrin
	SOIL PROFILE			SAM	PLES	ΓĽ	SHEA +FIE	R STRI	ENGTH (kPa)	PI ASTIC	NATUR	AL LIQ	un s	
EPTH ELEV ietres)	DESCRIPTION	STRAT PLOT	NUMBER	ТҮРЕ	"N" VALUES	ELEVATION SCA	▲ PO	MIC CON ARD PE	NETROMETER O Q 00 150 200 IE PENETRATION × INETRATION TEST • 0 60 80	WATI	MOISTU CONTE W ER CON 20 3	RE LIQ NT LI ENT (%)		GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZ DISTRIBUTION GR SA S
	TOPSOIL: Dark brown silt, moist CLAYEY SILT: Firm brown clayey silt,	ŤП	1	SS	4		•				0			
14	some sand, trace gravel, APL to DTPL		2	SS	9	-					þ			
1.4_	becoming hard, DTPL		3	SS	34			•			>			
<u>2.9</u>			4	SS	40					(>			
	necouting Brea		5	SS	31						0			
			6	SS	34						0			
			7		30									
6.7	BOREHOLE TERMINATED AT 6.7 m													Upon completion of auger Open No free water



	NEW H	AMBUR	GLRS IN	IC.	
	PROPOS	SED DEVI	ELOPMEN	Т	
	HIGHWAY 7/8	NEW HAME	BURG PROP	PERTY	
	NEW H	HAMBURG,	ONTARIO		
	BOREHC		TION PL	AN	
РМ	Peto		CCA N G E I	N G I N	Ltd.
RAWN	D. BRICE	DATE	SCALE	PML REF.	DWG. NO.
HECKED	W. LOGHRIN	DECEMBER	AS SHOWN	18KE025	1
PPROVED	G. MITCHELL	2018	AS SHOWN	1011-023	1



APPENDIX A

PREVIOUS PML AND MTE BOREHOLES

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	Headspace (ppm)	Borehole	
0.0 <u>ft m</u> 0.0	0.00	Ground Elevation TOPSOIL	{ [}] }					~		
2.0	-0.61 0.61	SILT CLAY Light brown sandy silt and clay, fine grained, loose, moist, no staining or odour	$\overline{\left\{ \right. \right\}}$	1	SS	21	λ			
6.0 - 2.0	1.52	Silty SAND Light brown silty sand, some clay @ 6', fine grained, stiff,		2	SS	40	\mathbf{i}			
8.0		below 7', no staining or odour		3	SS	55				
12.0				4	SS	75				
4.0 14.0										
16.0	-4.88 4.88	Sandy SILT		5	SS	63				
18.0 20.0 - 6.0	-6.10 6.10	grained, stiff, saturated SILT TILL Grey sandy silt till, small stones, no staining or odour								
22.0		Sandy SILT Light grey sandy silt, some silty clay @ 22', fine grained, stiff, no staining or odur, wet,		6	SS	51	1			
24.0	-8.08	dry @ 22'		7	SS	31				
28.0	8.08	CLAY Grey clay, trace silt, dry, no staining or odour	AL.	8	ss	39				
30.0	-8.99 8.99	SILT Grey silt, fine grained, dry								
32.0 10.0		-								
34.0										
Reviewe	ed By: I	RBM	N 520	ITE Co Bingen	nsultar nans Ce	nts Inc entre D	rive	e Logged By: YXM		
Notes:	Nicchener, Ontario N2B 3X9 (519) 743-6500					Sheet: 1 of 1				

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 <u>ft m</u> 0.0	0.00	Ground Elevation TOPSOIL								
2.0	-0.61 0.61	SILT Light brown clayey silt, fine grained, stiff, dry, no staining	$\overline{\mathcal{H}}$	1	SS	30	1			
6.0 - 2.0		or odour. Light brown sandy silt @ 7'	T	2	SS	51	$\langle \rangle$			
8.0	-2.29 2.29	Silty CLAY Grey-brown silty clay, fine grained stiff day no staining	Æ	3	SS	42				
10.0	-3.05 3.05	or odour CLAY Grey clay, fine, stiff, dry, trace	T	4	SS	23				
14.0		sand @ 17', no staining or odour								
16.0				5	ss	33				
22.0				6	ss	27				
24.0										
26.0 - 8.0	-8.23			7	SS	31				
28.0-	0.25									
30.0										
32.0										
34.0										
Reviewe	ed By: I	RBM	MTE Consultants Inc. 520 Bingemans Centre Drive					Logged By: YXM		
Method Notes:	: Hollow	v Stem Auguring/Split Spoon	NITCRENER, UNTARIO N2B 3X9 (519) 743-6500					Sh	eet: 1 of 1	
				(018	7 7 03	500				

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 ft m 0.0	0.00	Ground Elevation TOPSOIL	{ [}] {							
4.0	0.61	SILT Light brown clayey silt, trace sand, dry, no staining or odour	1	1	SS	31	N			
6.0 - 2.0	1.52	Sandy SILT Light brown sandy silt with clay, fine grained, stiff, dry,		2	SS	49				
8.0	-3.05	Slightly moist @ 8		3	SS	38				
12.0	3.05 -3.66 3.66	Silty CLAY Grey silty clay with sand, fine grained, stiff, dy, no staining or	1	4	SS	32				
14.0		Silty SAND Grey silty sand, trace clay seams, fine grained, stiff, no								
		staining or odour, dry to wet		5	SS	45)			
18.0 20.0 - 6.0										
22.0				6	SS	20				
24.0							$\left \right\rangle$			
26.0 - 8.0	-8.23 8.23			7	SS	54				
28.0										
30.0										
32.0 - 10.0										
34.0										
Reviewe Method Notes:	ed By: f	RBM v Stem Auguring/Split Spoon	N 520	ITE Co Bingen Kitche N (519	n sultar nans Ce ener, Or I2B 3X9) 743-6:	n ts Inc entre D ntario 500	- rive	Lo Sh	gged By: YXM eet: 1 of 1	

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 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	~~							
2.0	-0.61 0.61	SILT	\sim							
4.0	-4.50	Dark brown sandy silt with clay, light brown silty clay @ 4'dry, no staining or odour		1	ss	28	I			
6.0	1.52	SILT TILL Light brown clayey silt till,		2	SS	36	}			
8.0	2.13	some small stones, dry, no staining or odour								
10.0	-3.05	Light brown silty sand, loose, fine, moist to wet @8', light	11	3	55	23				
12.0-1	0.00	brown dry clay @ 9,/		4	SS	21				
14.0		Grey clay, trace silt, fine grained, stiff, no staining or odour, slightly moist								
16.0				5	SS	23				
18.0 18.0							\mathbf{N}			
20.0 - 6.0	-6.10 6.10	Sandy SILT Grey sandy silt, fine grained,		6	SS	49	N N			
22.0-1		Saturateu, no staining of ouour								
26.0 - 8.0	-7.62 7.62 -8.23	CLAY Grey clay, fine grained, stiff, no staining or odour, dry		7	SS	47				
28.0	8,23									
30.0										
32.0										
34.0										
 Reviewe	ed By: F	RBM	N 520	MTE Consultants Inc.			rive	Logged By: YXM		
Method:	: Hollow	/ Stem Auguring/Split Spoon	520	Kitche	ner, On 2B 3X9	tario				
NOLES:		(519) 743-6	500		Sh				

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH5

Job Number: 34896-100

Heads Heads	
0.0 ft m 0.0 Ground Elevation 0.0 TOPSOIL 0.0 -0.61	
4.0 - 0.61 Clayey SILT Grey to light brown silt and clay, fine grained, soft, moist, t so no staining or odour	
6.0 2.0 Silty CLAY Light grey to grey silty clay, trace sand, fine grained, stiff,	
8.0 - silty wet sand seam @ 21', damp to moist, no staining or odour 3 SS 74	
4 SS 32	
16.0 5 SS 24 18.0 -	
6.0	
24.0 -7.62 26.0 8.0 8.0 Grey silty clay till, trace sand,	
28.0	
30.0	
Herical Consultants MTE Consultants Inc. Logged By: YXN Method: Hollow Stem Auguring/Split Spoon Kitchener, Ontario N2B 3X9 Sheet: 1 of 1	И

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH6

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 <u>ft m</u> 0.0	0.00	Ground Elevation	~ (
		TOPSOIL	\sim							
2.0			\sim							
1	1 22		~~	1	SS	16				
4.0	1.22	Silty CLAY	J.							
<u> </u>		Light brown silty clay, little	4							
2.0		staining or odour	TF:	2	SS	14	1			
8.0	-2.44		1				X III			
	2.44	Silty SAND	22	3	SS	29				
10.0	-3.05 3.05	clay, wet								
₽		Silty CLAY		4	SS	70	\mathbf{Y}			
12.0										
4.0		Light brown silty sand, little								
14.0-	-4.57	clay, trace stone, slight wet								
160	4.57	Grevish brown silty clay, some	GTC:	_						
10.0		sand, fine grained, stiff slightly	1	5	SS	50	1			
18.0	-5.49	Silty SAND	TE							
1	5.49	Lihgt grey clayey silty sand,								
20.0 - 6.0		fine grained, slightly wet to								
1		Silty CLAY		6	SS	65				
22.0		Grey silty clay, some sand,	•	1						
ŧ		CLAY TILL	9							
24.0		Grey sandy silty clay till, some								
26 J		damp to moist		_						
20.0 - 8.0			g •	(SS	65				
28.0			۰ م							
1										
30.0			調調							
			2.0	8	SS	75	•			
32.0	<u>-9.75</u> 9.75									
34.0										
=					neulta-	te Inc				
Reviewe	ed By: I		520 Bingemans Centre Drive					Logged By: YXM		
Method	: Hollow	v Stem Auguring/Split Spoon	I Kitchener, Ontario N2B 3X9							
Notës:			(519) 743-6500					Sh	eet: 1 of 1	

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH7

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole
0.0 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	{ [}] }						
2.0	-0.76 0.76	Silty CLAY	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1	SS	52			
		sand, stiff, damp to moist, no staining or odour	H			E7			
8.0			Ŧ	2		57			
10.0			H	3	SS	52	1		
12.0	-3.66 3.66		H	4	SS	46			
4.0 14.0		Light brown to grey clayey silt till, some sand, some small stones, fine grained, some					\setminus		
16.0		pebbles @ 16', dry		5	SS	71	Y		
18.0							\setminus		
20.0 6.0			-	6	SS	92			
22.0-			100						
24.0									
26.0 - 8.0	-8.23 8.23			7	SS	50			
28.0									
30.0									
32.0									
34.0									
Reviewe Method Notes:	Reviewed By: RBM Method: Hollow Stem Auguring/Split Spoon Notes:			MTE Consultants Inc. 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9 (519) 743-6500				Lo Sh	gged By: YXM eet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH8

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole
0.0 ft m 0.0	0.00	Ground Elevation TOPSOIL	<i>{</i> } <i>{</i> }						
4.0	-0.76 0.76	Silty CLAY Light brown silty clay, trace sand, stiff, dry,gravelly sand	Ŧ	1	SS	30	\mathbf{X}		
6.0 + 2.0		with stones @ 16' no staining or odour		2	SS	55	\rangle		
8.0			H	3	SS	35			
12.0 th			H						
14.0 14.0			H						
	-4.88 4.88	SILT TILL Grey silt till, very stiff, dry, no		4	SS	125			
18.0-1 20.0-1 6.0		staining or odour, light brown moist to wet silty sand @ 22'.	5 . 5 5						
22.0				5	SS	50			
24.0	-7.62 7.62	SAND							
26.0 - 8.0	-8.23 8.23	Light brown sand, fine grained, stiff, saturated, moist silty clay @ 27', no staining or odour		6	SS	99			
30.0 th									
32.0 + 10.0									
34.0									
Reviewe Method: Notes:	e d By: I : Hollow	RBM v Stem Auguring/Split Spoon	N 520	ITE Co Bingen Kitche N (519	nsultar nans Ce ner, Or l2B 3X9) 743-6	nts Inc entre D Itario 500	rive	Lo Sh	gged By: YXM eet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH9

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	{							
2.0	4.07		$\left\{ \left\{ 1,1\right\} \right\}$							
4.0	1.07	Sandy SILT Light brown sandy silt with		1	SS	25	j			
6.0 2.0	2.20	clay, some stones, moist, no staining or odour		2	SS	18				
8.0	2.29	Silty CLAY Grey silty clay, trace sand,	Æ	3	ss	27				
10.0		soft, slightly moist, no staining or odour, water coming out @ 13'	Ŧ	4	SS	25				
12.0-4.0			ŦF:			20				
14.0	-4.57		H							
16.0	4.57	CLAY Grey clay, soft, fine grained, slightly moist, no staining or		5	SS	30				
18.0-		odour								
20.0 - 6.0				6		20				
22.0-1				0	33	39				
24.0-										
26.0	-8.23		Ű	7	SS	42	l			
28.0	8.23									
30.0										
32.0										
34.0										
 Reviewe	ed By: I	RBM	N 520	ITE Co Bingen	nsultar	nts Inc	rive	Lo	gged By: YXM	
Method	: Hollow	010	ener, Or 2B 3X	itario						
Notes:	(519) 743-6500					Sh	eet: 1 of 1			

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH10

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph	Headspace (ppm)	Borehole	
0.0 ft m 0.0	0.00 0.00	Ground Elevation	\sim							
			$\sim \sim$							
2.0	-0.76 0.76	Clayey SILT								
4.0-		Light brown clayey silt, trace sand, fine grained, stiff, dry, no	20	1	SS	34	\backslash			
60-		staining or odour	#	-		~				
2.0			H.	2	33	04				
8.0	-2.74		1	3	ss	54				
10.0	2.74	Silty SAND								
	I.	Grey silty sand, fine grained, moist to wet, no staining or		4	SS	67				
12.0		odour					/			
14.0 14.0							/			
	-4.57 4.57									
16.0		Grey clay, trace sand, soft,	1	5	SS	33	{			
18.0-		ary, no staining or odour	1							
Ť.										
20.0 - 6.0										
22.0				6	SS	53	1			
			1							
24.0			1							
26.0-1 8.0				7	SS	41				
	-8.23 8.23		1							
28.0										
30.0										
32.0 - 10.0										
34.0										
1										
Reviewe	ed By: I	RBM	MTE Consultants Inc. 520 Bingemans Centre Drive					Logged By: YXM		
Method	: Hollow	v Stem Auguring/Split Spoon		Kitche	ener, Or I2B 3X9	itario				
Notes:			(519) 743-6	500		Sh	eet: 1 of 1		

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH11

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 ^{ft m} 0.0	0.00 0.00	Ground Elevation TOPSOIL	{ ¹							
2.0	-0.76 0.76		\sim							
4.0		Light brown silty clay till with sand, stiff, dense, fine grained,		1	SS	64	1			
6.0 - 2.0		dry, no staining or odour		2	SS	50				
8.0				3	SS	41				
10.0			Į:							
12.0				4	SS	41	1			
14.0 14.0	-4.57									
16.0	4.57	Silty CLAY Grey silt with some silt and	H.	5	SS	20	(
18.0		slightly moist to moist, no slightly moist to moist, no staining or odour	Ŧ							
20.0 - 6.0			H							
22.0			H	0	55	38	$ \lambda $			
24.0-1	-7.62		#				\setminus			
26.0 - 8.0	7.62	Clayey SILT Grey clayey silt with sand, stiff, fine grained, dry, no staining	1	7	SS	85				
28.0	8.23	or odour								
30.0										
32.0										
10.0										
34.0										
Reviewe Method: Notes:	e d By : I : Hollow	RBM v Stem Auguring/Split Spoon	MTE Consultants Inc. 520 Bingemans Centre Drive Kitchener, Ontario N2B 3X9 (519) 743-6500				rive	E Logged By: YXM Sheet: 1 of 1		

Project: Hydrogeological Investigations

Location: Wilmot lands

Borehole Number: BH12

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	N-Value	Standard Penetration Graph 25 50 75	Headspace (ppm)	Borehole	
0.0 <u>ft m</u> 0.0	0.00 0.00	Ground Elevation TOPSOIL	2							
2.0	-0.76		, } }							
4.0	0.76	CLAY TILL Light brown silty clay till with sand stiff fine grained dry		1	SS	38	T			
6.0	-1.98	no staining or odour		2	SS	37				
8.0-1	1.98	Sandy SILT Light brown sandy silt, trace					\backslash			
10.0	-2.74 2.74	staining or odour	H.	3	SS	53	/			
12 0		Light brown silty clay, moist to wet, no staining or odour		4	SS	35	{			
4.0		Silty SAND Grey silty sand with clay, fine grained loose moist wet to								
14.0-1		saturated @ 16', no staining or odour								
16.0				5	SS	52	Ì			
18.0										
20.0 6.0	-6.40			6	22	45				
22.0-	6.40	Silty CLAY Grey silty clay, stiff, dense, fine grained, slightly moist, no	Ŧ							
24.0-		staining or odour	Ŧ							
26.0 - 8.0	-8.23		Ŧ	7	SS	56	Ι			
28.0	8.23									
30.0										
32.0										
10.0										
34.0										
Reviewe	Reviewed By: RBM					n ts Inc entre D	rive	Logged By: YXM		
Notes:	Notes:			N2B 3X9 (519) 743-6500					eet: 1 of 1	

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT1

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0	0.00	Ground Elevation	\sim				
0.0	<u>-0.76</u> 0.76	Cround Elevation TOPSOIL Dark brown topsoil, rootlets, wood pieces, soft, damp Silty CLAY Brown silty clay, sand seam @ 3-3.5 feet, soft, sticky, moist to very moist					No seepage observed during excavation Caving @ 3 feet
-	-3.20		TT:				
	3.20						
Review	ed By: Í	RBM MTE Co 520 Binger	nsultant	s Inc. tre Drive			Logged By: YXM
Method	: Backh	oe Kitche N	Kitchener, Ontario N2B 3X9				0
NOTES:		(519)) 743-650	00			Sneet: 1 OF 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT2

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 - - - - - - -	0.00	Ground Elevation TOPSOIL Dark brown topsoil, rootlets of corn, soft, damp					
2.0	0.46	Clayey SILT Brown silt and clay, some sand, damp to very moist,soft, no staining or odour					No seepage observed during excavation
6.0 - 2.0	1.37	Silty CLAY Brown silty clay, little sand, sticky, moist, no staining or odour	#(#(#)#(#)				
8.0 10.0 	-3.35	Sandy SILT Grey sandy silt, clayey, fine grained, moist to slight wet					
-	3.35						3 % .
12.0-							
Reviewed By: RBM MTE Consultants Inc. Logged By: YXM Method: Backhoe Kitchener, Ontario N2B 3X9 Notes: (519) 743-6500 Sheet: 1 of 1							Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT3

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 	-0.46 0.46 0.46 -1.07 1.07	Ground Elevation TOPSOIL Dark brown topsoil, rootlets of corn, soft, damp SILT Brown ssandy clayey silt, loose, damp, no staining or odour Silty CLAY Brown to dark brown silty clay, little sand, hard, moist to damp, no staining or odour					No seepage observed during excavation
Reviewed By: RBM Method: Backhoe Notes:			nsultant nans Cen ner, Onta 2B 3X9) 743-650	s Inc. tre Drive ario	9		Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT4

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 0.0 	<u>-0.46</u> 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
Reviewed By: RBM Method: Backhoe Notes:		RBM MTE Co 520 Bingem De Kitche N. (519)	nsultant: nans Cen ner, Onta 2B 3X9) 743-650	s Inc. tre Drive ario	9		Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT5

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments		
0.0 <u>ft m</u> 0.0	0.00		~						
¹ ¹ -	-0.46	Dark brown topsoil, rootlets, soft, damp	lilil				-		
2.0	-0.91	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		
4.0 - 1	0.91	Silty CLAY Brown to dark brown silty clay, trace sand, hard, sticky, damp, no staining or odour	HHH						
1 1 1 1 1			H/H/H						
6.0 2.0 			H/H/H						
- - 8.0 - - - -			HH						
- - - - - 10.0-			H H						
	-3.20 3.20					·			
Review	ad By:	RBM MTE Co	nsultant	s Inc.					
Method	: Backh	0e 520 Bingen Kitche	nans Cen ener, Onta	itre Drive ario	е		Logged by. I AIM		
Notes:		N (519	I2B 3X9) 743-65(00			Sheet: 1 of 1		

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT6

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 <u>ft m</u> 0.0 	0.00 0.00 -0.46 0.46	Ground Elevation TOPSOIL Dark brown topsoil, rootlets, soft, damp Silty CLAY					
2.0		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 8.0 			+++++				
10.0	<u>-3.05</u> 3.05		H/H/H				
Reviewo Method Notes:	e d By : f : Backh	RBM MTE Co 520 Bingen oe Kitche N (519	nsultant nans Cen ener, Onta 2B 3X9) 743-650	s Inc. tre Drive ario 00	9		Logged By: YXM Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT7

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 	0.00	Ground Elevation TOPSOIL Dark brown topsoil, rootlets, soft, damp	2222222				
2.0	-1.22	Sandy SILT Brown sandy clayey silt, gravelly, loose, dry to moist, no staining or odour					
4.0	1.22 -1.68 1.68	Silty CLAY Brown to dark brown silty clay, hard, sticky, damp to moist, no staining or odour	HHH H				
6.0 - 2.0	-2.13	SAND AND GRAVEL Brown sand and gravel, some clay, saturated, no staining or odour					Seepage observed during excavation @6'
8.0 - - - - - - - - - - - - - - - - - -		Sitty CLAY Brown silty clay, gravelly, moist, no staining or odour	# # # # #				
	-3.20 3.20		45				
- - - 12.0-							
Review	ed By: I	RBM MTE Co 520 Bingen	nsultant nans Cen	s Inc. Itre Drive	9		Logged By: YXM
Notes:	; раскп	Nitche N (519	iner, Onta 12B 3X9) 743-650	ano 00			Sheet: 1 of 1
Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT8

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0 2.0 	0.00 0.00 -0.46 0.46	Ground Elevation TOPSOIL Dark brown topsoil, rootlets, soft, damp 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					No seepage observed during excavation
4.0-1-		and hard below 4', more stones @ 7', more clayey and sticky below 7', no staining or odour	+ + + + +				
6.0			# # # #				
8.0 - - - -	-2.59	Grow to dark arow oith alow hard damp	H				
- - - - - - - - - - - - - - - - - - -	-3.20	Grey to dark grey silly day, naid, damp	# # #				
	3.20						
Review Method	ed By: F : Backh	RBM MTE Co 520 Binger oe Kitche	nsultant	s Inc. tre Drive ario	9		Logged By: YXM
Notes:		N (519)	2B 3X9) 743-65(00			Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT9

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
$0.0 \frac{ft}{1} = 0.0$	0.00 0.00	Ground Elevation	~				
		Dark brown topsoil, rootlets, soft, damp	$\{\gamma_{i}\}_{i=1}^{i}$				
- - 2.0- - - - - - -	0.46	Sandy SILT Brown sandy silt, clayey, fine grained, loose, damp, no staining or odour					No seepage observed during excavation
4.0	0.91	Silty CLAY Brown silty clay, little sand, soft, damp to slight moist	HH/H/				
			HHH				
6.0 - 2.0			H/H/H				
8.0			HH H				
- - - - - - - - - - - - - - - - - - -			HH H				
1 1 1 1	0.05						
	-3.35 3.35						
Review	ed Bv: F	RBM MTE Co	nsultant	s Inc.			Logged By: YXM
Method	: Backh	oe 520 Bingerr Kitche	nans Cen ner, Onta	tre Drive ario	Э		
Notes:		N (519)) 743-650	00			Sheet: 1 of 1

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT10

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0	0.00	Ground Elevation	~				
-	0.00	TOPSOIL Dark brown topsoil rootlets soft damp	\sim				
1			~~ ,	-			
-			\sim				
1	-0.46		\sim				
2.0		Clayey SIL I Brown clayey silt, some sand, loose, fine grained,moist to wet, no staining or odour	1				
			1				
-							
-	1.00		1				Seepage observed during excavation @ 3.5
4.0	1.22	Silty CLAY	11				
1		Brown silty clay, little sand, soft, moist, no staining or odour	4				
-			TF.				
			1				
-			H:				
6.0			TC:				
- 2.0			1				
-			TT:				
-			1				
			H.				
8.0-			TF:				
1			1				
-			H:				
1			4C				
1			4				
10.0-			TT:				
	-3.20		12				
-	3.20						
-							
-							
12.0							
Review	ed Bv:	RBM MTE Co	nsultant	ts Inc.			Logged By: YXM
Method	I: Backh	ioe 520 Bingen Kitche	nans Cer ener, Ont	ntre Driv ario	e		
Notes:		N (519	12B 3X9	00			Sheet: 1 of 1
		(••••	,	-			

Project: Hydrogeological Investigations

Location: Wilmot Lands

Test Trench Number: TT11

Job Number: 34896-100

Depth (m)	Elevation (m)	Soil Description	Symbol	Number	Type	Headspace (ppm)	Comments
0.0 ft m 0.0	0.00 0.00	Ground Elevation	\sim				
- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	-0.46	Dark brown topsoil, rootlets, soft, damp	lilili				
	-1.22	Sandy SILT Brown sandy silt, clayey, fine grained, loose, moist, no staining or odour					No seepage observed during excavation
4.0	-2.13	SILT AND CLAY Brown silt and clay, some sand, very moist, no staining or odour	# # # # #				
8.0 - - - - - - - - - - - - - - - - - - -	2.13	Clayey SILT Grey clayey sandy silt, fine grained, loose, slight wet, no staining or odour					
	-3.35 3.35					-	
- - - 12.0							
Review Method	ed By: I : Backh	RBM MTE Co 520 Bingen oe Kitche	nsultant nans Cen ener, Onta I2B 3X9	s Inc. Itre Drive ario	e		Logged By: YXM
NOTES:		(519) 743-650	00			Sneet: 1 01 1

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
-4.0 - tt m -4.0 - t - 1.0	0.00 0.00 -0.15 0.15 -0.30 0.30	Ground Elevation TOPSOIL Silty SAND Brownish grey silty sand, some organics, some clay, wet Silty CLAY Grey silty clay, some sand, wet to moist						Sand Pack Bentonite
4.0 - - - - - - - - - - - - - - - - -	ed By: I : Hand .	RBM 520 Augering	ITE Cons Bingema Kitchend N2 (519) T	sultant ns Cen er, Onta B 3X9 743-650	s Inc. tre Drive ario			Logged By: YXM Sheet: 1 of 1

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
n m -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						Sand Pack Bentonite
Reviewe Method: Notes:	ed By: f	RBM 520 Augering	ITE Cons Bingema Kitchend N2I (519) 7	sultanta ns Cen er, Onta B 3X9 743-650	s Inc. tre Drive ario 10	•		Logged By: YXM Sheet: 1 of 1

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 									
- - - - - - - - - - - - - - - - - - -	-	0.00 0.00 -0.15 0.15	Ground Elevation TOPSOIL Clayey SILT Dark grey clayey silt, some sand, wet Sandy SILT						Bentonite
2.0	1.0	<u>-1.07</u> 1.07	Brown sandy silt, some clay, moist to wet Silty CLAY Brown silty cly, some sand, trace stone, moist Silty SAND Brown silty sand clayey wet	41年1年1年1年					Slot Screen
4.0 - - - - - - - - - - - - - - - - - - -	ewe	1.22 1.22 ed By: F	RBM 520	MTE Cons Bingema Kitchend	sultant: ns Cen er, Onta	s Inc. tre Drive ario			Logged By: YXM
Note	S:			N2I (519) 7	B 3X9 743-650	00			Sheet: 1 of 1

MOE WELL RECORDS

	ROCK	57.91	38.41				
	BOULDERS	38.41	35.05				
	SILT	35.05	21.34				
	STONES	21.34	7.32				
	CLAY	7.32	3.66				
8.23	STONES	3.66	0.00	345.95	4803821.3	525562.47	6507275
	CLAY	16.76	15.85				
	SAND	15.85	10.67				
	CLAY	10.67	0.00	345.04	4803828.31	525404.47	6506378
	SAND	13.72	11.58				
	MEDIUM SAND	11.58	11.28				
	SAND	11.28	10.36				
6.10	CLAY	10.36	0.00	345.04	4803837.31	525433.47	6506377
	CLAY	24.38	13.72				. Provide a second
	SAND	13.72	9.75				
	CLAY	9.75	0.00	345.04	4803926.31	525526.47	6505440
	GRAVEL	15.24	9.14				
	CLAY	9.14	0.00	347.48	4804070.29	525412.46	6503940
	GRAVEL	19.20	16.76				
	CLAY	16.76	0.00	347.48	4803750.31	525662.46	6503075
	LIMESTONE	70.10	64.00				
	HARDPAN	64.00	23.16				
	GRAVEL	23.16	19.81				
4.57	CLAY	19.81	0.00	342.3	4803928	525474	6507783
WATER LEVEL (m)	MATERIAL	TO (m)	FROM (m)	ELEVATION (m)	NORTHING	EASTING	MOE_ID





PROJ LOCA BORI	ECT Proposed Development - Wilmot Er TION New Hamburg, Ontario	nplo	yme Aua	ent La	nds		_		BORI	NG DA	TE Ma	arch 13,	2018			PML ENGI TECH	REF. INEEI HNICI	R	18KF W. Lo D. Br	009 oghrin ice
BOR	SOIL PROFILE		-ug		SAM	PLES	SCALE	SHEAL	R STRE	ENGTH E ∆TO	(kPa) RVANE		PLAS [.] LIMIT					CHT	<u>D. Di</u>	GROUND WATER
DEPTH ELEV metres)	DESCRIPTION			NUMBER	ТҮРЕ	"N" VALUES	ELEVATION S		AIC CO		SINE TEL 50 20 NETRAT ATION	00 TON × TEST •	W _P			ENT (%	w∟ ⊣ %)			OBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION
338.54	TOPSOIL: Dark brown clayey silt, frozen CLAYEY SILT: Very stiff brown clayey silt,	Ť	\square	1	SS	8		•						0			,	KIN/III		Stickup Well Protect
	trace sand, DTPL			2	SS	19	_338 					•		0						50 mm Plastic Rise
				3	SS	25	337		ł			•		0						
				4	SS	28	336	j						0						
<u>3.0</u> 335.6	becoming stiff, grey, APL	Ť	4.	5	SS	9	335		•					o						
				6	SS	10	-334	•		•				0						Bentonite Seal
6.1							333													
332.5	becoming very stiff, occasional silt layers, wet	T		7	SS	21	332							0						
				8	SS	18								o						
							330)												Filter Sand
				9	SS	18	-329				▲			c	,					· Slotted Screen
							_328													•
<u>11.1</u> 327.5	BOREHOLE TERMINATED AT 11.1 m			10	55	23			• ·	^				0					Upor free	n completion of drilling water in cased boreho
																			<u>Wate</u> Initia Eleva	er Level Readings: I Depth: 10.6 m ation: 327.99
																			2018 Dept Eleva	<u>-04-08:</u> h: 1.03 m ation: 337.56

	SOIL PROFILE		ug		SAM	PLES	ш	SHE	EAF	R STRE	NGTH	(kPa)			N		AL			0.0	
DEPTH ELEV netres)	DESCRIPTION	STRAT PLOT		NUMBER	ТҮРЕ	"N" VALUES	LEVATION SCAI	+F ▲P DYN STA	IEL OC 5 JAN	D VANI KET PE 0 10 ARD PI	E ATOF ENETRO 00 15 NE PEN ENETRA	RVANE DMETE 50 20 ETRAT	OQU ROQ 00 10N × TEST●					IQUID LIMIT W _L 	UNIT WEIGHT		GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZ DISTRIBUTIO
0.33	SURFACE ELEVATION 336.06 TOPSOIL: Dark brown clayey silt topsoil, frozen	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~ _	1	SS	6	ш 336	•	2	0 4	06	8 0	0	1	0 2	0 3	0 4	.0	kN/m ³	Š	GR SA S Stickup Well Prot Set in Concrete
35.73	CLAYEY SILT: Firm brown clayey silt, some sand, APL			2	ss	4										0					50 mm Plastic Ris
. <u>1.</u> 5	becoming stiff, layered with brown silt, some fine sand, wet		1	3	SS	14			ł		▲				c						
				4	SS	25	334									р р					
<u>3.0</u>	becoming grey clayey silt, trace sand, DTPL, occasional sand partings	-	+-	5	SS	13	-333	-							0						Bentonite Seal
				6	AS		332												-		
				7	SS	13	331		•		A				0						
							_330														Filter Sand
				8	SS	11		•								2 2					Slotted Screen
				9	ss	22									0						•
<u>8.1</u> 328.0	BOREHOLE TERMINATED AT 8.1 m		X				328													Upor free v	n completion of drillir water in cased boreh
																				Wate Initial 2018 Dept	<u>er Level Readings:</u> I: Dry <u>-04-08:</u> h: 0.93 m
																				Eleva	ation: 335.13

LOCA BORI	TION New Hamburg, Ontario NG METHOD Continuous Flight Hollow Ste	m A	Aug	ers				-		BORIN	IG DA1	T E Ma	arch 14,	2018			ENG TEC	INEE HNIC	R IAN	W. Lo D. Bri	ghrin ce
	SOIL PROFILE	F	-		SAM	PLES	SCALE	SH +F		R STRE		(kPa) RVANE		PLAS ⁻ LIMIT	FIC N		L L	iquid Limit	GHT		GROUND WATER
DEPTH ELEV (metres	DESCRIPTION			NUMBER	ТҮРЕ	"N" VALUES	EVATION 8	DYI ST/		0 10 AIC CON	00 1	50 20 IETRAT	10N × TEST •	W _P I WA			ENT (w _L	UNIT WEI		OBSERVATIONS AND REMARKS GRAIN SIZE
	SURFACE ELEVATION 333.72	-	, 			-	Ξ		2	0 4	06	0 8	0	1	0 2	0 30) 4	0	kN/m ³		GR SA SI
0.25 333.47 0.76	CLAYEY SILT: Firm brown clayey silt, trace sand, moist	Ť	T	1	SS	6	333	•			•				c						Stickup Well Protect Set in Concrete
332.96	SILT: Loose brown sandy silt, trace clay, moist			2	SS	8									C						
<u>1.</u> 5 332.2	becoming compact, occasional clayey			3	SS	11	332									,					
				4	SS	16	-331								0						
<u>3.0</u> 330.7	CLAYEY SILT: Stiff grey clayey silt, trace sand, APL			5	SS	14	-					4	•		C						Bentonite Seal
				6	GS		330														
				7	SS	12	329		•		•				0						
							328														Filter Sand
				8	SS	13			•		A					0					
							321														Slotted Screen
<u>8.1</u> 325.6	BOREHOLE TERMINATED AT 8.1 m			9	SS	12	326		•	-	•					0				Upon	completion of drilling
																				free w Wate Initial	vater in cased boreho r <u>Level Readings:</u> : Dry <u>/04/08:</u>
																				Depth Eleva	n: 6.73 m tion: 326.99
NOT																					

PROJ LOCA BORI	IECT Proposed Development - Wilmot Er ATION New Hamburg, Ontario NG METHOD Continuous Flight Hollow St	nploy tem A	yme Aug	ent Lai	nds			1	BORI	NG DA	TE Ma	arch 13,	2018			PML ENG TEC	. REF GINEE CHNIC	R IAN	18KF W. Li D. Br	-009 oghrin rice
	SOIL PROFILE	L L	-	R	SAM	PLES	N SCALE	SHEA +FIE ▲PO	R STRE LD VAN CKET P	ENGTH E ∆TO ENETR	(kPa) RVANE OMETEI	O Qu R O Q	PLAS LIMIT	TIC N MC C	ATURA DISTUF	NL L RE L NT	IQUID LIMIT	EIGHT		GROUND WATER OBSERVATIONS
<u>EPTH</u> ELEV netres)		STRAT PI		NUMBE	ТҮРЕ	"N" VALU	ELEVATION	DYNA STAN	MIC CO DARD F		NETRAT	ION × TEST●	₩ _P 	ATER		ENT	w∟ —– (%)			AND REMARKS GRAIN SIZ DISTRIBUTIO
<u>0.25</u> 38.78	TOPSOIL: Dark brown clayey silt, frozen CLAYEY SILT: Firm to very stiff brown davey silt trace sand moist	Ĩ		1	SS	8		٩						0						Stickup Well Prof Set in Concrete
				2	SS	13	338							0						50 mm Plastic Ri
<u>1.5</u> 337.5	numerous wet silt layers	+		3	SS	12	_								p					
			/	4	SS	15	337								0					
<u>3.0</u> 336.0	SILT: Compact grey silt, some sand, occasional clayey lenses, saturated			5	SS	18	_336	;	+						ο					
							335	;												
				6	SS	25	_								0					Bentonite Seal
							-334													
				7	SS	24	_333		•						>					
							332		\square											
<u>7.6</u> 331.4	becoming dense			8	SS	31									0					
<u>9.1</u> 329.9	CLAYEY SILT: Very stiff grey clayey silt, APL, numerous saturated silt layers			9	SS	21	330)	+					0						Filter Sand
							329		$\left \right $											Slotted Screen
11 1				10	SS	26	326							0					÷∃.	•.
327.9	BOREHOLE TERMINATED AT 11.1 m																		Durin from <u>Wate</u>	ng drilling sampler w SS4 to completion er Level Readings:
																			Elev	ation: 328.63 m
																			Elev	ation: 338.27

	PROJ LOCA BORII	ECT Proposed Development - Wilmot Emp TION New Hamburg, Ontario NG METHOD Continuous Flight Hollow Stel	oloym m Au	ient La gers	Inds				BORI	NG DAT	TE Ma	arch 14,	2018		PN EN TE	IL REF IGINEE CHNIC	=. ER CIAN	18KF W. Lo D. Br	009 oghrin ice
		SOIL PROFILE			SAM	PLES	Щ	SHEA	RSTR	NGTH	(kPa)	0.0		NATU	RAL				
[] [(n	D <u>EPTH</u> ELEV netres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCA	+FIE ▲PO DYNA STAN	CKET P 50 1 MIC CO DARD P	E A TOP ENETRO 00 15 NE PEN ENETRA	OMETER 50 20 ETRAT	ION ×		MOIST CONT W O ER COI					GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZE DISTRIBUTION
╞		SURFACE ELEVATION 340.48 TOPSOIL: Dark brown clayey silt, trace	~~~	-			-		20 2		0 0			20		40	kN/m		GR SA SI
0.0	0.36	sand, frozen	Ĩ	1	SS	5	340	•						c					Set in Concrete
		sand, APL		2	SS	7					•			0					50 mm Plastic Rise
			11	3	SS	6	_339							0					
	<u>2.3</u>																		
	330.2	becoming sun, grey, no zones		4	SS	12	338				L			0					Bentonite Seal
			1	5	SS	12	-337	•			A			0			-		
	4.5	SANDY SILT: Compact grou condu sitt		1			336										_		
	550.0	saturated, occasional clayey lenses		6	SS	16	-							0					
	6.1						335												Filter Sand
	334.4	CLAYEY SIL1: Very stiff grey clayey silt, trace sand, DTPL, occasional silt lenses, wet		7	SS	17	_334		•	4				0					
							333												Slotted Screen
	<u>8.1</u> 332.4	BOREHOLE TERMINATED AT 8.1 m		8	SS	19								0				Upor	- completion of drilling
																		free Wate Initia	water in cased boreho er Level Readings: I Depth: 5.7 m
																		Eleva 2018 Dept Eleva	ation: 334.78 3 <u>-04-08:</u> h: 0.85 m ation: 339.63
•	NOTE	is in the second				•	•						•				•		

Peto MacCallum Ltd.

PRO. LOCA BORI	IECT Proposed Development - Wilmot Er ATION New Hamburg, Ontario NG METHOD Continuous Flight Solid Ste	nploym m Auge	ent La	nds			1	BORI	NG DAT	TE Ma	arch 14,	2018			PML ENGI TECI	REF. INEEI HNICI	R IAN	18KF(W. Lo D. Bri	009 ghrin ce
DEPTH ELEV	SOIL PROFILE DESCRIPTION	т РГОТ	ABER	SAMF	ALUES	TION SCALE	SHEA +FIEI ▲PO0	R STRI D VAN KET P	ENGTH	(kPa) RVANE OMETE 50 2	○ Qu R O Q 00	PLASTI LIMIT W _P	C MA MOI COI	TURAL STUR NTEN W	E LIC F I	QUID LIMIT WL	T WEIGHT		GROUND WATER OBSERVATIONS AND REMARKS
netres	SURFACE ELEVATION 339.91	STRA	Ň	F	> 	ELEVA	DYNAI STANI 2	MIC CC DARD F 10 4	NE PEN PENETR 40 6	IETRAT ATION 60 8	TION × TEST ● 30	WA1	TER C	ONTE	ENT (%	%))	KN/m ³		GRAIN SIZ DISTRIBUTIO GR SA S
<u>0.25</u> 339.66	sand, frozen CLAYEY SILT: Very stiff brown clayey silt, trace sand, DTPL	-	1	SS	9								0						Stickup Well Prot Set in Concrete 50 mm Plastic Ri
			2	SS	17	339							0						
			3	SS	18	338								о —					
			4	SS	18	337									o				Bentonite Seal
			5	SS	12									o					
4.5						336													Filter Sand
335.4	becoming firm, grey, occasional silt layers, wet		6	SS	7	335	, -							0					
						334													Slotted Screen
6.1 333.8 6.5 333.4	SILT: Compact grey silt, some sand, trace clay, wet, occasional clayey layers BOREHOLE TERMINATED AT 6.5 m		7	SS	13							o							completion of drilli
																		free w	vater in cased borel
																		Eleva	04-08:
																		Eleva	tion: 337.15

PROJ LOCA BORI	ECT Proposed Development - Wilmot Emp TION New Hamburg, Ontario NG METHOD Continuous Flight Hollow Ste	oloyn m Au	nen	nt Lar rs	nds			1		BORIN	IG DAT	TE Ma	rch 13,	2018			PML ENG TEC	. REF JINEE HNIC	R IAN	18KF W. Lo D. Bri	009 oghrin ice
DEPTH ELEV metres)	SOIL PROFILE DESCRIPTION	TRAT PLOT		NUMBER	SAM	PLES	EVATION SCALE	SHE +F ▲P		STRE		(kPa) RVANE OMETEF 50 20 LETRATI		PLAST LIMIT WP WA		ATURA DISTUF DNTEN W 	L LI RE LI IT	IQUID LIMIT w _L 	UNIT WEIGHT		GROUND WATER OBSERVATIONS AND REMARKS GRAIN SIZI
0.27	SURFACE ELEVATION 338.38 TOPSOIL: Dark brown clayey silt, trace	°.	, ,	1	66	<u>ج</u>	E	517	20	4	0 6	80 8	0	10) 2	0 3) 4	0	kN/m ³		DISTRIBUTION GR SA SI Stickup Well Prote
338.11	CLAYEY SILT: Firm brown clayey silt, some sand, APL		F	0			338	T													50 mm Plastic Ris
_ <u>1.</u> 5 336.9	becoming stiff, layered with brown silt, some sand, trace clay, moist			3	ss	9	337				•					0					
_ <u>2.</u> 3 _ <u>2.</u> 5 335.9	becoming very stiff/compact	- 4		4	SS	28	336	;		-						0					
				5	SS	25	335		/	<u> </u>					0						Bentonite Seal
				6	SS	14	334		•		•				0						
6.0							333														. Eilter Sand
332.4	becoming very stiff, occasional silt layers			7	SS	16	332	2	+							>					Slotted Screen
_ <u>7.6</u>							331														
<u>8.1</u> 330.3	BOREHOLE TERMINATED AT 8.1 m			8	55	9		•		<u> </u>						,				Durir SS4	ng drilling sampler we and SS5
																				Wate Initial Eleva 2018	er Level Readings: I Depth: 7.4 m ation: 330.98 <u>-04-08:</u>
																				Depti Eleva	h: 0.46 m ation: 337.84

BORI	NG METHOD Continuous Flight Hollow S	tem A	۹ug	ers				1								TECHN	VC	D. Brice
DEPTH	SOIL PROFILE	TO	2	ER	SAMF	PLES	ON SCALE	SHEAL +FIEL ▲POC	R STRE D VAN KET P 0 1	ENGTH E ∆TC ENETF 00	I (kPa) RVANE ROMETE 150 2	O Qu R O Q 00	PLAS [:] LIMIT W _P	FIC NA MC CC	ATURAL DISTURI DNTENT W	LIQU LIN	MEIGHI	GROUND WATER OBSERVATIONS
ELEV (metres)		STPAT		NUMB	ТҮР	"N" VAL	ELEVATIO	DYNAI STANI	/IC CO ARD F	NE PE PENETI	NETRAT RATION	ION × TEST●	WA 1	ATER	CONTE	NT (%) 40		GRAIN SIZ
0.20 339.85	SOLVACE ELEVATION Solves TOPSOL: Dark brown clayey silt, trace sand, frozen CLAYEY SILT: Stiff brown clayey silt, trace	Ĵ	<u> </u>	1	SS	10		•						o			 	
	Isand, DTPL			2	SS	11	339	┥							<u> </u>	_		
<u>1.</u> 5 338.6	becoming very stiff, occasional silty sand layers			3	SS	16	338								0			
2.3 337.8	SILT: Compact grey silt, some sand, trace clay, wet			4	SS	14								c				
<u>3.5</u>	CLAYEY SILT: Stiff grev clavey silt_trace		-	5	SS	10	-337	•							0			
	sand, APL						336											
				6	SS	10	335	•	•					0				
							334											
				7	SS	15				•				0				
7.6		/					333											
332.5	becoming APL, numerous silt layers, wet			8	SS	13	_332	+	A						о —	-	c	Sampler wet from 7.6 m completion
			-				331											
				9	SS	17								0				
							330											
11.1 329.0	BOREHOLE TERMINATED AT 11.1 m			10	SS	14	329	•							>		L	Jpon completion of auge Open
																		TO ITCO WALCI

BOR	SOIL PROFILE	em Aug	gers	SAMF	PLES	щ	SHEA	R STRI	ENGTH	(kPa)					TECI	HNIC	AN	D. Brice
EPTH	DESCRIPTION	- PLOT	BER	ЬE	YLUES	ION SCAL	+FIEL ▲POC 5	D VAN CKET P	E ∆TO ENETR 00 1	RVANE OMETE 50 20	0 Qu R O Q 00	PLAS ⁻ LIMIT W _P		ATURA DISTUF DNTEN W	IL LI RE LI IT	QUID LIMIT WL	WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS
=LEV netres	SURFACE FLEVATION 337.86	STRAT	MUN	Σ	"N" VA	ELEVAT	DYNAI STANI		NE PEN ENETR		TION × TEST ●	W# 1	ATER	CONT	ENT (⁶) 4(%) D	LIN kN/m ³	GRAIN SIZI DISTRIBUTION GR SA SI
<u>0.21</u> 37.65	TOPSOL: Dark brown clayey silt, some sand, frozen CLAYEY SILT: Firm brown clayev silt, trace	ĨĨ	1	SS	9		•							o				
	sand, APL		2	SS	5	337	•	•					0					
			3	SS	4	336			•					o				
<u>2.</u> 3_ 335.6	becoming stiff, DTPL, occasional sand seams, wet		4	SS	14									0				Sampler wet at 2.3 m
			5	SS	14	335			•				0					
						334												
<u>4.5</u> 333.4	SILTY SAND: Compact grey silty sand, trace							$\left(\right)$										Sampler wet at 4.5 m
	clay, saturated		6	SS	26	333							0					
6.0						332												
551.9	trace sand, APL		7	SS	20					•			o					
						331												
<u>8.</u> 1_			8	SS	22	330		-						,				
329.8	occasional sand seams, wet					200												Sampler wet at 8.1 m
			9	SS	17	328							o					
						328												
			10	00	14	327												
<u>11.1</u> 326.8	BOREHOLE TERMINATED AT 11.1 m	ПК	10	00	14				-					Ĵ.				Upon completion of auger Open
																		Free water at 6.0 m

	LOCA BORII	 EC1 Proposed Development - Wilmot En TION New Hamburg, Ontario NG METHOD Continuous Flight Solid Ster 	nployr n Aug	ment gers	Lan	as				BORII	NG DA1	TE Ma	arch 26,	2018			PINL ENG TECI	REF. INEEI HNICI	R IAN	W. Loghrin W. Loghrin
Ī		SOIL PROFILE				SAMF	PLES	LΕ	SHEA			(kPa)	0		NA	TURA	Lu		F	
!	DEPTH ELEV	DESCRIPTION	AT PLOT		JMBEK	гүре	VALUES	ATION SCA				DMETEI			CO CO		RE LI		IT WEIGH	GROUND WATER OBSERVATIONS AND REMARKS
<u> </u>	metres)	SURFACE ELEVATION 347.31	STR	2	z		Z	ELEV	STANE	ARD P	NE PEN ENETR/ 0 6	ATION 1 0 8	ION × TEST•	WA 10	TER (CONTI) 30	ENT (⁴	%))	≤ kN/m ³	GRAIN SIZE DISTRIBUTION (GR SA SI
	0.45 346.86	FILL: 150 mm dark brown silt, over dark brown clayey silt, DTPL-APL CLAYEY SILT: Very stiff brown clayey silt,	K		1	SS	10	347									_			
		trace sand, trace gravel, DTPL			2	SS	15	246												
-					3	SS	21													
-				\mid				345												
	<u>2.9</u> 344.4	becoming grey/brown, APL	- -																	
-	3.6	BOREHOLE TERMINATED AT 3.6 m			4	SS	14	344	•											
	040.7																			Upon completion of augerin Open No free water
-																				

	PROJ LOCA BORII	IECT Proposed Development - Wilmot En ITION New Hamburg, Ontario NG METHOD Continuous Flight Solid Ster	nploym m Auge	ent La ers	nds				BORI	NG DAT	TE Ma	arch 26,	2018			PML RE ENGINE TECHN	EF. EER ICIAN	18KF009 W. Loghrin D. Brice
		SOIL PROFILE			SAM	PLES	CALE	SHEAI +FIEL	R STRE _D VAN	ENGTH E ∆TOF	(kPa) RVANE	⊖ Qu	PLAST		TURAL	LIQU	면 부	GROUND WATER
	<u>DEPTH</u> ELEV metres)	DESCRIPTION	IRAT PLOT	NUMBER	ТҮРЕ	I" VALUES	VATION SC	▲POC 5 DYNAI	CKET PI	ENETRO	OMETEI	R O Q 00 10N ×				- LIIV W 		OBSERVATIONS AND REMARKS GRAIN SIZE
0.0		SURFACE ELEVATION 344.26	LS I			£	E	STANL 2	20 4	ENETR. 10 6	80 8	1EST • 10	10	20	30	40	kN/	m ³ DISTRIBUTION (% GR SA SI CI
-	344.16	IOPSOIL: Dark brown clayey silt, some sand, moist CLAYEY SILT: Very stiff brown clayey silt,		1	SS	12	344	•						0			_	
1.0		trace sand, DTPL		2	ss	18	343							0				
-																		
2.0				3	SS	17	_342										_	
3.0	<u>3.0</u> 341.3	becoming stiff, APL, occasional silt seams,	+++															
-	3.7	wet		4	SS	13	341	•						•				
4.0	340.6	BOREHOLE TERMINATED AT 3.7 m																Upon completion of augering Open No free water
-																		
5.0																		
- - 6.0 -																		
7.0																		
8.0																		
9.0																		
-																		
10.0																		
11.0																		
12.0																		
13.0																		
14.0																		
15.0																		
15.0-	NOTE	is																

Borta	SOIL PROFILE	n Auge	ers	SAM	PLES	щ	SHEA	R STRE	INGTH	(kPa)			N			HNIC		D. Brice
EPTH LEV	DESCRIPTION	AT PLOT	JMBER	TYPE	VALUES	ATION SCAL	+FIEI ▲POC	LD VAN CKET PI	E △TOF ENETRO 00 1	RVANE DMETEF 50 20		PLAS LIMIT W _P		NTEN W	NE LI NT	IQUID LIMIT WL	VIT WEIGHT	GROUND WATE OBSERVATION AND REMARKS
ietres)	SURFACE ELEVATION 342.07	STR	٦ ۲		Z	ELEV	STAN	DARD P 20 4	NE PEN ENETR 10 6		EST •	W A 1	ATER	CON1 0 3	ENT (0 4	(%) 0	≦ kN/m	GRAIN DISTRIBUT 3 GR SA
0.33	TOPSOIL: Dark brown clayey silt, trace sand, moist	$\tilde{\boldsymbol{\lambda}}$	1	ss	7	342	•							>				
+1.74	CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, DTPL to APL, occasional silt zones		F															
		H	2	SS	9	341												
						340)										-	
		M	3	SS	10								0					
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		-			+												Upon completion of au
																		Wet Cave at 3.0 m

LOC/ BOR	JECT Proposed Development - Wilmot En ATION New Hamburg, Ontario ING METHOD Continuous Flight Solid Ster	nploym m Auge	ent La rs	nds				BORI		TE Ma	ırch 26,	2018			PML ENC TEC	. REF GINEE CHNIC	ER CIAN	18KF009 W. Loghrin D. Brice
DEPTH	SOIL PROFILE	. PLOT	BER	SAM	PLES	ION SCALE	SHEA +FIE ▲PO	R STRE _D VAN CKET P 50 1	ENGTH E∆TOI ENETR 00 1	(kPa) RVANE OMETEF 50 20	ି Qu ୧୦ Q 20	PLAS LIMIT WP	TIC MC MC CC	ATUR/ DISTU DNTEI W	AL L RE ^L NT	IQUIE LIMIT WL	WEIGHT	GROUND WAT OBSERVATION AND REMARK
netres	SURFACE ELEVATION 340.11	STRAI	NUN	Ł	77 "N"	ELEVAT	DYNA STAN		NE PEN ENETR	NETRATI ATION 1 50 8	ION × TEST● 0	W. 1	ATER	CONT 0 3	TENT 60 4	(%) Ю	kN/m	GRAIN DISTRIBUT GR SA
<u>0.20</u> 339.91	TOPSOIL: Dark brown clayey silt, moist CLAYEY SILT: Stiff brown clayey silt, trace sand, DTPL to APL		1	SS	7	340	1							0				
			2	ss	9	339							0				-	
2.0																		
338.1	SILT: Compact brown silt, some sand, wet, occasional clayey zones		3	SS	14	338							0					
						337												
<u>3.7</u> 336.4	BOREHOLE TERMINATED AT 3.7 m		4	SS	17	_							0					Upon completion of a
																		Open No free water

BORI	NG METHOD Continuous Flight Solid Ster	n Aug	ers	SAM		<u> </u>	SHEA	RSTRE	NGTH	(kPa)					TEC	HNIC	AN	D. Brice
)EPTH	SOIL PROFILE	PLOT	ER		SES	ON SCALE	+FIEI ▲PO0	LD VAN CKET P 50 1		(KPA) RVANE DMETEF 50 20	0 Qu R O Q 00	PLAS ⁻ LIMIT W _P	TIC MC MC CC	ATUR/ DISTUI DNTEI W	AL LI RE ^{LI} NT	IQUID LIMIT WL	VEIGHT	GROUND WATER OBSERVATIONS
ELEV	DESCRIPTION	STRAT F	NUMB	ТҮРІ	"N" VAL	ELEVATIO	DYNA STANI	MIC CO DARD P 20 4	NE PEN ENETR	IETRAT ATION 1 60 8	ION × TEST● 0	W <i>A</i>	ATER 0 2		TENT ((%) 0		AND REMARKS GRAIN SIZ DISTRIBUTIO GR SA S
<u>0.15</u> 336.67	SILT: Loose brown silt, some sand, trace	Î	1	ss	9		1						o					
	clay, moist		2	SS	6	336	•						0					
			3	SS	11	335							0					
<u>2.3</u> 334.5	CLAYEY SILT: Stiff brown clayey silt, trace sand, APL, occasional sand layers		4	SS	10									0				
<u>3.0</u> 333.8	becoming grey		5	SS	11	334	•						0					
						333												
_ <u>4.</u> 5 332.3	becoming layered with grey silt, some sand, wet		6	SS	12	332							c					
			7	85	10	331												
<u>6.5</u> 330.3	BOREHOLE TERMINATED AT 6.5 m																	Upon completion of aug Open

LOCA BORII	TION New Hamburg, Ontario NG METHOD Continuous Flight Solid Stem	n Auge	rs				1	BORI	NG DAT	r e Ma	rch 26,	2018			ENG TECI	INEEI HNICI	R IAN	W. Loghrin D. Brice
EPTH	SOIL PROFILE	PLOT	BER	SAMI	PLES	ON SCALE	SHEAI +FIEL ▲POO	R STRE D VAN CKET PI	ENGTH E △TOF ENETRO 00 1	(kPa) RVANE DMETEF 50 20	ି Qu ୧୦ Q)0	PLAST LIMIT W _P	FIC NA MO CC	ATURA ISTUF NTEN W	NL LI RE I IT	QUID LIMIT W _L	WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS
ELEV netres)	DESCRIPTION	STRAT	NUME	TYF	"N" VAI	ELEVATI		MIC CO	NE PEN ENETR	IETRAT	ION ×	WA			ENT (%)	UNIT	GRAIN SI DISTRIBUTIC
0.20 38.76	SURFACE ELEVATION 338.96 TOPSOIL: Dark brown clayey silt, APL CLAYEY SILT: Firm brown clayey silt, trace		1	SS	5	ш	•	20 4	0 6	0 8	0	10	5 20	0 30	9 40)	kN/m	GR SA S
0 <u>.6</u> 0 38.36	sand, trace gravel, APL becoming very stiff, DTPL	++				338												
			2	SS	15								0					
						337	\							_	_			
			3	SS	23							¢	0					
336.0	becoming hard, grey		4	SS	47	_336			•			c	S					
3.7 335.3	BOREHOLE TERMINATED AT 3.7 m																	Upon completion of aug Open
																		No free water
NOTE																		<u> </u>

BURI	NG METHOD Continuous Flight Solid Stem	Auge	rs			-				(kDa)					TEC	HNIC	IAN	D. Brice
EPTH	SOIL PROFILE DESCRIPTION	т РLОТ	ABER	SAMI	ALES	TION SCALE	SHEA +FIEI ▲PO0	LD VAN CKET P	ENGTH E △TOP ENETRO	(KPA) RVANE OMETEI 50 20	0 Qu R O Q 00	PLAS LIMIT W _P	TIC N/ MC CC	ATUR/ DISTU DNTEI W —0—	AL LI RE ^{LI} NT	IQUID LIMIT WL	T WEIGHT	GROUND WAT OBSERVATION AND REMARK
netres)	SURFACE ELEVATION 339.58	STRA	NUN	F	~ "N"	ELEVA.	DYNA STANI	MIC CO DARD P 20 4	NE PEN ENETR	IETRAT ATION 60 8	1ON × TEST● 80	W/ 1	ATER 0 2	CON1 0 3	TENT ((%) 0	kN/m	GRAIN DISTRIBU 3 GR SA
0.20 39.38	TOPSOIL: Dark brown clayey silt, APL CLAYEY SILT: Firm brown clayey silt, some sand, APL	ĨĨ	1	SS	5	_339	•							ο				
			2	SS	6								0					
. <u>1.5</u>	occasional sand seams, wet					338												
			3	SS	4	337												Sampler wet at 3.0 m
. <u>3.</u> 0 336.6	becoming hard, DTPL, occasional sand	+++												0				
3.7	partings		4	SS	54	336			•				0					
																		Open Free water at 2.4 m

LOCATION New Hamburg, Ontario BORING METHOD Continuous Flight Solid Stem Aug							BORING DATE March 26, 2018								ENGINEER TECHNICIAN			W. Loghrin D. Brice
	SOIL PROFILE	-OT	<u>د</u>	SAMPLE	PLES	N SCALE	SHEA +FIE ▲PO	R STRE	ENGTH E ∆TO ENETR	(kPa) RVANE OMETE	Pa) ANE ○Qu 1ETEROQ		PLASTIC NATURAL MOISTURE LIC LIMIT CONTENT			.iquid Limit	EIGHT	GROUND WATE OBSERVATION
ELEV netres)	DESCRIPTION		NUMBE	TYPE	"N" VALUI	LEVATION	5U 1UU 150 200 DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST ●					WATER CONTENT (%)			(%)	UNIT W	AND REMARKS	
0.20	SURFACE ELEVATION 341.51 TOPSOIL: Dark brown clayey silt, trace	ļ- Ā ñ			10	ш		20 4		60 E	30	1	0 2	0 3		10	kN/m	³ GR SA
041.31	CLAYEY SILT: Stiff brown clayey silt, some sand, trace gravel, APL			33	10	341												
		\mathbb{X}	2	SS	10									0				
_ <u>1.5</u> 340.0	becoming very stiff, DTPL	H				340	$\left -\right\rangle$											
			3	SS	22	339							0					
_ <u>3.0</u> _ 338.5	becoming hard, grey, occasional sand	++											_					
3.7	BOREHOLE TERMINATED AT 3.7 m		4	SS	38	338		•					0					
007.0																		Wet cave at 3.0 m
NOTE	I ES	1	I	1				1				I				1	1	1

LOCATION New Hamburg, Ontario BORING METHOD Continuous Flight Solid Stem		n Auge	lugers					BORI	NG DAT	TE Ma	rch 26,		ENGINEER TECHNICIAN			W. Loghrin D. Brice GROUND WATER	
SOIL PROFILE				SAM	PLES	SCALE	J SHEAR STRENGTH (kPa) ↓ +FIELD VANE △TORVANE ○ Qu PLASTIC N ↓ APOCKET PENETROMETER O QU LIMIT							AL L RE L	.iquid Limit		IGHT
<u>DEPTH</u> ELEV netres)	DESCRIPTION		NUMBER	ТҮРЕ	N" VALUE	EVATION	50 100 150 200 DYNAMIC CONE PENETRATION × STANDARD PENETRATION TEST •						ENT	W _L	UNIT WE	OBSERVATIONS AND REMARKS	
	SURFACE ELEVATION 345.30				-		:	20 4	40 6	0 8	0	10	20 3	0 4	10 	kN/m	GR SA S
45.22 0.75	sand, damp		1	SS	19	345	; 										
44.55	CLAYEY SILT: Stiff brown clayey silt, trace sand, trace gravel, DTPL		2	SS	15	344							o				
<u>1.</u> 5	becoming APL, occasional silt layers, moist to wet																
			3	ss	10	-343	s										
3.7			4	SS	10	342	•						0				
541.0	BOREHOLE TERIVIINATED AT 3.7 III																Upon completion of auge Open No free water
NOTE	 =\$																<u> </u>



APPENDIX B

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. <u>Minimum Extent</u>

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. <u>Construction Delay Time Considerations</u>

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



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.



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.


