Stantec Consulting Ltd.
400-1305 Riverbend Road
London ON N6K 0J5

July 15, 2024

Project/File: 1614-14253

Jacob Katz
Carroll St East Developments Inc.
140 Ann Street
Suite 202
London ON N6A 1R2

Dear Mr. Katz,

Reference: 360 Carroll Street, Strathroy, Ontario, Stormwater Management Strategy

1 Introduction

Stantec Consulting Ltd. (Stantec) has been retained by Carroll Street East Developments Inc. (Client) to assist with the engineering services, including the stormwater management (SWM) strategy, for the proposed development at 360 Carroll Street. The site is described as a 7.68 ha agricultural lot bounded by Carroll Street to the north, existing residential lots to the south, and agricultural fields to the east and west. The proposed development will significantly increase impervious surfaces on-site, and as a result, a SWM strategy must be implemented. The goal of this design brief is to outline the proposed SWM Plan for this development and recommend erosion and sediment control measures immediately after and during construction.

The subject site is proposed to be developed in two phases with the interim conditions representing the completion of the Phase 1 development and ultimate conditions representing completion of all development phases (i.e., Phases 1 & 2). This study focuses on the ultimate conditions referred to as the proposed conditions in this design brief.

The following tasks are summarized in this report:

• A complete review of relevant, existing documents (listed in Section 2.0 Background)

• A drainage strategy to manage the post-development runoff

• A confirmation of the stormwater management criteria and downstream receivers

• An erosion and sediment control plan

2 Background

In preparation of this report, the following documents and reports have been referenced:

- *RE: 430 Carroll Street East - water levels,* EXP, October 13, 2023.
- *Subsurface Assessment Proposed Low Impact Development (LID) 360 Carroll Street East, Strathroy, Ontario*. EXP, May 10, 2024. (attached)
- *The LID SWM Planning and Design Guide*, Sustainable Technologies Evaluation Program, 2022.
- *Servicing Standards,* the Municipality of Strathroy-Caradoc, October 2021.
- *Geotechnical Investigation - 430 Carroll Street East, Strathroy, Ontario,* EXP, June 2021.
- *Stormwater Management Planning and Design Manual (SWMPD Manual),* Ontario Ministry of the Environment and Climate Change, March 2003.

3 Stormwater Management Criteria

The SWM criteria for the proposed development are established as per the Municipality of Strathroy-Caradoc comments in conjunction with the relevant environmental targets. These criteria are:

- **Water Quality** – Provide sufficient treatment measures to meet the Ministry of the Environment, Conservation and Parks, (MECP) *Enhanced* (80% TSS Removal) criteria and promote the at-source removal of potential contaminants.
- **Water Quantity** – **Interim Conditions:** Provide sufficient water quantity control measures to allow for on-site infiltration of the proposed flows, up to and including the Regional storm event (i.e., the 250-year storm event).
- **Water Quantity** – **Ultimate Conditions:** Provide sufficient water quantity control measures to reduce post-development peak flow rates up to the Regional storm event to the target discharge rate allowed for the site in the design of the receiving storm sewer.
- **Erosion and Sediment Control** – Provide appropriate erosion and sediment control during construction/area grading to protect adjacent properties from potential siltation.

4 Hydrologic Modelling

A hydrologic model was prepared to simulate drainage conditions for the site. The SWMHYMO Modelling software and design storm parameters were used to design SWM systems to ensure the previously mentioned criteria are achieved.

To address the criteria, proposed conditions were modeled for the 5-year to 250-year design storms, using the Strathroy-Caradoc Intensity-Duration-Frequency (IDF) Rainfall Curves. The IDF parameters are shown in **Table 1** below.

Table 1: IDF Rainfall Parameters – 3-hour Chicago Storm

Storm Event	A	B	C
5-year	1137.257	7.184	0.830
10-year	1425.011	7.382	0.843
25-year	1835.352	7.844	0.858
50-year	2225.884	8.620	0.871
100-year	2561.151	9.093	0.880
250-year	3048.22	10.03	0.888

5 Existing Drainage Conditions

The property, approximately 7.68 ha in area, is located on the south side of Carroll Street and is predominantly worked agricultural land. Under the existing conditions, rainfall infiltrates the ground across the site due to the pervious soil conditions, which are described in *Geotechnical Investigation - 430 Carroll Street East* (EXP, 2021). The minimal runoff from the site that is produced is tributary to roadside depressions and neighboring properties, which have the capacity to account for the existing conditions.

The existing site drainage conditions is illustrated in the attached Existing Conditions Plan and summarized below:

- **Catchment A101 –** 6.86 ha consisting of agricultural areas. Rainfall within this area mainly infiltrates the ground. The minimal runoff from this area drains northwest towards Carroll Street Right-of-Way (ROW).

- **Catchment A102 –** 0.17 ha of agricultural areas located in the northwestern portion of the site. Rainfall within this area mainly infiltrates the ground. The minimal runoff from this area drains northwest towards the existing neighboring residential lots.

- **Catchment A103 –** 0.64 ha of agricultural areas located in the eastern portion of the site. Rainfall within this area mainly infiltrates the ground. The minimal runoff from this area drains east/northeast towards the existing neighboring agricultural lands.

- **Catchment EX101 –** 0.58 ha of external areas located south of the site. Flows from this catchment drain to Catchment A101.

- **Catchment EX102 –** 0.63 ha of external areas located southeast of the site. Flows from this catchment drain north/northwest to Catchment A103.

- **Catchment EX103 –** 0.14 ha of external agricultural areas located northeast of the site. Flows from this catchment drain to Catchment A101.

5.1 Soil Characteristics

EXP conducted a geotechnical investigation to identify the soil characteristics of the site. Underlying the topsoil at each test pit location sand conditions were identified. The sand was described as compact, brown to gray, and fine to medium grained with trace silt. A small clay layer was identified in Test Pit 4, extending from a depth of 0.5m to 1.8m.

Based on the attached Subsurface Assessment by EXP, the soils have an estimated hydraulic conductivity (K) ranging between 1.2×10^{-2} and 2.5×10^{-2} cm/s. Based on the testing in the Assessment, the infiltration rates within the site at the locale of the proposed dry facility are 135 mm/hr, resulting in a safety factored

(2.5) infiltration rate of 54 mm/hr. The seasonal high groundwater depth within the site was found to be 1.42 to 4.76 m below ground surface.

6 Proposed Drainage Conditions

The proposed drainage (i.e., ultimate) conditions are described in the Storm Routing Figure (Stantec, 2024), attached. Under the proposed conditions, a dry infiltration facility will be located within the proposed SWM block, located northwest of the park block along the western boundary of the site, to provide water quality and quantity control for the proposed development. The proposed storage will be located within Phase 1 areas and is a part of the interim development. The storage will provide water quantity control under both interim and ultimate conditions.

In ultimate conditions, the dry SWMF connects to a 525 mm diameter overflow pipe on Willis Avenue within the Fieldcrest Subdivision north of Carroll Street (see attached preliminary plan and profile by MTE). This sewer outlets to an existing SWM Pond approximately 300 m north from the avenue's entrance on Carroll Street. The allowable maximum release rate to this sewer is 170 l/s. It is understood the Fieldcrest Subdivision to the north of Carroll Street and its stormwater system will be available as the ultimate outlet for the subject lands at the flow rate indicated as per discussions with MTE, the Municipality, and their consultant Spriet Associates. However, due to the difference in the timing of the Fieldcrest Subdivision and Site developments, site runoff is required to be contained and infiltrated until such time as the connection is available.

Under the proposed conditions, the 7.68 ha site is divided into residential catchment areas, a park block, and a SWM block (including the proposed SWM1). Additionally, three external areas, totalling 0.82 ha, drain onto the site (EX201-EX203). The proposed catchments are described below:

- **Catchment A200 –** 0.13 ha area, including the proposed access road as well as a small undeveloped area located along the northwestern boundary of the site. Minor flows from this area contribute to the existing storm sewer at Carroll Street and major flows drain overland towards Carroll Street ROW.

- **Catchment A201 –** A 3.14 ha area, including the majority of the proposed Phase 1 residential housing, parking, and landscaped areas. Drainage over this area flows west towards the proposed dry infiltration facility within the SWM block on the western side of the site, denoted as SWM1.

- **Catchment A202 –** A 1.00 ha area, consisting of a future medium density development and parking area (within Phase 1 development). Minor and major flows from this area drain southwest towards the proposed dry infiltration facility within the SWM block on the western side of the site, denoted as SWM1.

- **Catchment A203A –** 0.10 ha strip of the proposed Phase 1 residential areas, mainly consisting of rear yards. Drainage over this area flows uncontrolled towards east.

- **Catchment A203B –** 0.17 ha strip of the proposed Phase 2 areas, mainly consisting of rear yards. Drainage over this area flows uncontrolled towards east.

- **Catchment A204 –** 0.39 ha park block. Drainage over this area flows north/northwest towards the proposed dry infiltration facility (i.e., SWM 1).
- **Catchment A206 –** A 2.38 ha area, including the majority of the proposed Phase 2 residential housing, parking, and landscaped areas. Drainage over this area flows towards Catchment A201 and contributes to the proposed dry infiltration facility within the SWM block on the western side of the site, denoted as SWM1.
- **Catchment SWM1:** A 0.36 ha SWM block with a dry infiltration facility to capture, infiltrate, and control contributing flows.
- **EX201-EX203:** Three external catchments, totaling in 0.82 ha of area, which route rainfall onto the site and contribute to the proposed onsite dry infiltration facility.

The Storm Routing Figure depicts these conditions and is appended to this letter report.

7 Stormwater Management Strategy

Stormwater runoff from the site will be provided with on-site water quality and water quantity controls. Water quantity control will be mainly provided via the proposed dry infiltration facility in the SWM block at the western side of the site. The *LID SWM Planning and Design Guide* (Sustainable Technologies Evaluation Program, 2022) was used to consider additional quality controls aside from Oil/Grit Separators (OGS). These controls are discussed in section 7.1 and 7.2 below.

7.1 Water Quantity Controls

Under the proposed conditions, 8.09 ha area, including 6.52 ha of the proposed residential development and the 0.39 ha parkland as well as 0.82 ha of external lands, is assumed to drain towards the proposed SWM block located on the western side of the site. Here, pervious catchbasins and pervious pipe systems direct runoff to the proposed dry infiltration facility within the SWM block.

The dry infiltration facility provides a storage volume of 3949 m^3, while the street-level LIDs (i.e., the proposed third-pipe system) provide additional storage and promote exfiltration of the collected stormwater. For additional information regarding the SWM storage, see the attached calculations.

The proposed storages are summarized in **Table 2** below:

Table 2: Summary of Water Quantity Control Measures

LID Storage Capacity *	
Ultimate Conditions - Storage Volume in Roadway LID (m^3)	65
Dry Infiltration Facility (m^3)	
SWMF Volume – SWM1 (m^3)	3949

** Storage volume in Roadway LIDs under the interim conditions (located within A201) is 37 m^3.*

A small area within the northwestern portion of the site (i.e., A200) cannot be captured in the proposed onsite SWM measures due to grading constraints. Flows from this area will drain, uncontrolled, towards Carroll Street.

The remaining catchments, which flow off the site to the surrounding farmlands (i.e., A203A and A203B), are directed using site grading via overland flow to a proposed rear yard swale prior to flowing offsite. This swale provides a storage volume of 72 m^3. Flows from the contributing areas will be captured in the proposed rear yard swale and infiltrated. Overflows from this swale will drain overland to the agricultural lands located east of the site. For additional information regarding the proposed rear yard swale, see the attached calculations.

7.2 Water Quality Controls

Due to the size of the site and the type of development proposed, *Enhanced* water quality control (a minimum of 80% TSS removal) is required. Quality treatment for the Site will be provided using pervious third pipe with catchbasin pre-treatment system.

Pre-treatment of flows entering the third-pipe system will be done using catchbasin hoods such as ADS Envirohood™ or equivalent, which are shown to capture floatables and remove upwards of 50% TSS. The remaining treatment for the site will be provided in the 3rd pipe system proposed in the sewershed. This system is a reductive approach to TSS removal and shall provide a total reduction of TSS of greater than 80%. Any remaining fines in the system will be removed at the dry facility during the infiltration process.

8 Hydrologic Modelling Results

The system described above was modelled in SWMHYMO to determine the effectiveness of the strategy using the events described in Section 4.0.

8.1 Dry Infiltration Facility – Within SWM Block

As shown on the attached SWM calculations, the proposed dry infiltration facility provides 3949 m^3 of storage with an approximate infiltration area of 1844 m^2 resulting in an estimated infiltration rate of 0.028 m^3/s within the proposed facility. The results of the modelling, showing proposed (ultimate) flows to and from the proposed facility, are presented in **Table 3** while detailed modelling files are provided attached.

Table 3: Modelling Results - Dry Infiltration Facility – Ultimate Conditions

Storm Event	Flows to the Proposed Dry SWMF (m^3/s)	Infiltration within the Proposed Dry SWMF (m^3/s)	Orifice Outflows from the Proposed Dry SWMF Towards Carroll St. (m^3/s)	Overflows from the Proposed Dry SWMF Towards Carroll St. (m^3/s)	Max Storage Used (m^3)
5YR	1.254	0.028	0.024	0.000	1405
10YR	1.551	0.028	0.030	0.000	1782
25YR	1.948	0.028	0.037	0.000	2307
50YR	2.236	0.028	0.041	0.000	2758
100YR	2.488	0.028	0.044	0.000	3147
250YR	2.855	0.028	0.049	0.000	3777

As mentioned in Section 6, under the ultimate conditions, the dry SWMF connects to a 525 mm diameter overflow pipe on Willis Avenue within the Fieldcrest Subdivision north of Carroll Street. Therefore, overflows via a proposed 150 mm orifice plate are allowed from the proposed dry SWMF, provided the total contributing flows to this overflow pipe from the proposed site do not exceed the allowable release rate of 170 l/s. Total proposed flows contributing to the overflow pipe on Willis Avenue within the Fieldcrest Subdivision are provided and discussed in Section 8.2.1. Orifice flow calculations are provided attached.

No surface overflows are expected to be directed from the proposed dry infiltration facility and the contributing areas towards Carroll Street.

Under the interim conditions, connection to the 525 mm diameter overflow pipe on Willis Avenue does not exist. Therefore, the entirety of the 250-year event is required to be controlled and infiltrated within the proposed dry SWMF and no overflows are allowed from the proposed facility. As shown in **Table 4** below, under the interim conditions (i.e., Phase 1 development), there is a surplus capacity of 1511 m^3 within the proposed SWMF. This means that in the interim condition, the facility is only 62% utilized in the regional event. This surplus capacity is resulted from smaller areas contributing to the SWMF under the interim conditions since the flows from the undeveloped Phase 2 lands mainly infiltrates the ground similar to the existing conditions.

Table 4: Modelling Results - Dry Infiltration Facility – Interim Conditions

Storm Event	Flows to the Proposed Dry SWMF (m^3/s)	Infiltration within the Proposed Dry SWMF (m^3/s)	Overflows from the Proposed Dry SWMF Towards Carroll St. (m^3/s)	Max Storage Used (m^3)
5YR	0.795	0.028	0.000	880
10YR	0.975	0.028	0.000	1135
25YR	1.213	0.028	0.000	1485
50YR	1.386	0.028	0.000	1780
100YR	1.534	0.028	0.000	2032
250YR	1.742	0.028	0.000	2438

8.2 Offsite Flows

Three areas, one in the northwestern portion of the site (i.e., A200) and two along the eastern boundary of the site (i.e., A203A and A203B), are unable to be drained by the internal sewers due to grading constraints.

8.2.1 Uncontrolled Flows Towards Northwest – Catchment A200

As mentioned above, flows from A200, consisting of a portion of the access road as well as a small undeveloped area, cannot be controlled onsite and drained by the internal sewers due to grading

constraints. Proposed flows from this catchment as well as the total flows towards Carroll Street East under the ultimate conditions are presented in **Table 5** below.

Table 5: Proposed Flows Towards Carroll Street

Storm Event	A200 Outflow (m^3/s)	Total Flows towards Carroll St. (Northwest) (m^3/s)
5YR	0.028	0.028
10YR	0.034	0.034
25YR	0.041	0.043
50YR	0.046	0.052
100YR	0.051	0.061
250YR	0.057	0.073

As shown in **Table 5**, the uncontrolled flows towards Carroll Street are negligible and are not expected to have significant impact downstream. As mentioned above, the minor system within this catchment connects to the 525 mm diameter pipe on Willis Avenue within the Fieldcrest Subdivision north of Carroll Street which outlets to the existing downstream SWM Pond. Therefore, minor flows from Catchment A200 will be conveyed to the downstream SWMF once the connection is available. In the interim, the ditches on Carroll Street will have sufficient capacity for the runoff from A200.

Additionally, as shown in **Table 5,** Total proposed (ultimate) flows towards Carroll Street are below the target 170 l/s discussed above.

8.2.2 Flows Towards East/Northeast

Under the proposed conditions, catchments A203A and A203B, mainly consisting of rear yards, are directed east and northeast towards the surrounding agricultural lands.

Expected flows from these areas are roughly double the existing flow rates towards east/northeast. Therefore, a rear yard swale is proposed to reduce these flows to existing rates.

As shown on the attached SWM calculations, the proposed rear yard swale provides approximately 72 m^3 of storage. Contributing runoff is proposed to be captured and infiltrated with overflows draining overland towards surrounding farmlands. The results of the modelling, showing flows to and from the proposed rear yard swale, are presented in **Table 6** while detailed modelling files are provided attached.

Table 6: Proposed Flows Towards East/Northeast

Storm Event	Existing Conditions	Proposed Conditions		
	A103 Outflow (m^3/s)	A203A and A203B Outflow into the Rear yard Swale (m^3/s)	Overflow from the Swale Towards East/Northeast (m^3/s)	Max Storage Used (m^3)
5YR	0.011	0.019	0.000	12.2
10YR	0.016	0.028	0.000	20.8
25YR	0.023	0.040	0.000	33.8
50YR	0.030	0.052	0.000	45.7
100YR	0.036	0.062	0.000	56.5
250YR	0.046	0.076	0.004	72.0

As shown in **Table 6**, no flows are expected until the 250-year event and the proposed overflows from the rear yard swale towards east/northeast are below the existing flow rates.

8.3 Infiltration Measures

Infiltration measures are being proposed in several areas with a third pipe system, dry infiltration storage, and rear yard swale being accounted for within the model. The third pipe system provides 65 m^3 of storage for infiltration, the entirety of the 3949 m^3 SWMF drains by infiltration under the interim conditions and is partially infiltrated under the ultimate conditions, and the rear yard swale provides 72 m^3 of detention storage for infiltration before it overflows. Detailed infiltration calculations are attached.

9 Erosion and Sediment Control Measures

This section describes the Erosion and Sediment Control Measures that will be implemented during and immediately after construction to reduce the possibility of sediment being deposited downstream.

9.1 Types of Selected Erosion/Sediment Control Methods

The details and locations of the proposed erosion and sediment control measures are shown in the submitted civil drawing package. The proposed erosion and sediment control measures include the following:

- Heavy-duty silt fencing to be erected on all Site boundaries where there is potential for runoff to be discharged offsite, to protect adjacent downstream lands from migration of sediment in overland flow. The location of this fencing will be adjacent to the limit of grading.
- Stabilization of all disturbed areas where work will not take place for a period of 30 days or more according to OPSS 572.
- Performing street sweeping as necessary to remove soil accumulation caused by construction traffic.
- Installing and maintaining catchbasin inserts at all catchbasins to prevent sediment from entering the proposed storm sewer.
- Installation of a mud mat at the main entrance to site.
- Dewatering effluent discharge areas complete with sediment traps and energy diffusers, constructed as necessary, within the proposed construction limits. Filter socks will be used where necessary to further filter the discharge.
- Installing and maintaining strawbale filters and silt sacks at all catchbasins to prevent sediment from entering the proposed storm sewer.

The proposed temporary erosion & sediment control measures have been selected based on the site's susceptibility to erosion, sensitivity of the downstream environment, site slopes, and total drainage area. The proposed measures should provide adequate erosion and sediment control for the proposed project without the need for additional measures; however, the site should be monitored during construction, and additional measures may be added, if required. Such measures may include, but are not limited to, additional rows of silt fence or rock check dams in areas that are susceptible to erosion.

10 Conclusions and Recommendations

Based on the preceding documentation, the following conclusions can be drawn:

- **Water Quantity** – A dry infiltration facility shall be used to infiltrate and control the contributing flows. Under the interim conditions, no overflows from the proposed facility are expected under the 250-year storm event and all flows will be infiltrated. Under the ultimate conditions, contributing flows will be controlled within the proposed dry SWMF, via infiltration and an orifice plate, such that flows towards Carroll Street do not exceed the allowable release rates.
- **Water Quality** – On-site quality treatment will be provided using a third-pipe system and catchbasin hoods along the treatment train to meet the required 'Enhanced' level of quality control.
- **Erosion and Sediment Control Measures** – standard measures are proposed for the site including silt-fence, a mud-mat at the construction entrance, and silt sacks in the catchbasins.

In the interim condition, the SWMF is only 62% utilized in the regional event, providing a more than adequate buffer for the proposed first phase of development.

Reference: **360 Carroll Street, Strathroy, Ontario, Stormwater Management Strategy**

As the site conforms to the assumptions in the proposed SWM strategy, we trust that this report is sufficient and meets your needs. However, should you have any questions, please do not hesitate to contact the undersigned at your convenience.

Regards,

STANTEC CONSULTING LTD.

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Attachment: Subsurface Assessment by EXP
Existing Conditions Plan, Storm Routing Figure, Preliminary Plan and Profile (MTE)
SWM Calculations, SWMHYMO Modelling Input and Output

May 10, 2024 LON-23015833-A0

Mr. Jacob Katz
Carroll Street East Developments Inc.
202-140 Ann Street
London, Ontario
N6A 1R2

Attention: Mr. Katz

Subsurface Assessment
Proposed Low Impact Development (LID)
360 Carroll Street East, Strathroy, Ontario

Introduction

Further to your request, EXP Services Inc. attended the above mentioned site to assess the subsurface soil and groundwater conditions for possible LID stormwater management design for the proposed development at the above cited location.

The subject area is currently agricultural lands with occasional trees. The site is bounded by Carroll Street East to the north, residential development to the south, and agricultural lands to the east and west with residential and commercial properties fronting Carroll Street East.

Based on information provided by Stantec Consulting Ltd., it is understood that the stormwater management (SWM) strategy for the proposed development includes underground storage and infiltration in a park block in the west part of the site identified in **Drawing 1,** appended.

EXP previously completed a Geotechnical Investigation at the site that included the advancement of five (5) test pits. Monitoring wells were installed in four (4) of the test pits. This letter should be read in conjunction with the Geotechnical Report (Geotechnical Investigation. Proposed Development, 430 Carroll Street East, Strathroy, Ontario dated June 8th, 2021).

Methodology

The current fieldwork was carried out on February 21st, 2024. In general, the supplemental subsurface assessment consisted of the advancement of one (1) borehole and monitoring well installation at the location denoted on **Drawing 1** as MW101.

The previously advanced test pits are labelled as TP1 to TP5 on **Drawing 1**, with MW suffixed to the test pit symbol (TP) where monitoring wells were installed. TP2/MW, TP3/MW and TP5/MW were found to be damaged in December of 2022 and TP3/MW and TP5/MW were reinstalled on February 3, 2023. The reinstalled monitoring wells are labelled MW3b and MW5b on **Drawing 1**.

The borehole and the monitoring well installation was completed by a specialist drilling subcontractor under the full-time supervision of EXP geotechnical staff. During the drilling, the stratigraphy in the borehole was examined and logged in the field by EXP geotechnical personnel.

Representative samples of the various soil strata encountered at the test locations were taken to our laboratory in London for further examination by a Geotechnical Engineer and laboratory classification testing.

Single well response tests (SWRTs) were carried out on the monitoring well installed in the park block.

Ground surface elevations and UTM coordinates of the monitoring wells were surveyed by EXP personnel with a Trimble R12i receiver.

Generalized Soil Stratigraphy

It must be noted that Test Pits TP1 to TP5 were advanced in 2021. Grading changes may have taken place since and thus, the depths and thicknesses of the surficial soils may vary from the findings of the previous investigation.

At the surface of each test hole with the exception of Test Pit TP2, a 300 mm to 500 mm thick layer of topsoil was encountered.

A layer of clayey silt extending from a depth of 0.5 m to 1.8 m below ground surface (bgs) was encountered in Test Pit TP4. Fine to medium grained sand fill was observed at the surface of TP2 and extended to 1.5 m bgs.

Below the topsoil, fill, and clayey silt in each test hole and extending to the depth of termination was a stratum of natural sand. The sand was generally described as brown in colour, fine to medium grained, with trace to some silt, loose to compact (based on observed excavation resistance and Standard Penetration Test (SPT) N Values of 2 to 14 blows per 300 mm split spoon sampler penetration) and moist to wet (tactile examination and *in situ* moisture contents of 8 to 21 percent).

Groundwater Conditions

Four (4) monitoring wells were installed as part of the geotechnical investigation in 2021. Three (3) of the wells were damaged and 2 were replaced in 2023. One (1) monitoring well was installed in 2024. The wells were installed to approximate depths of 3.3 m to 6.1 m below ground surface (bgs). The summary of the monitoring well construction details are presented in the tables below.

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Table 1 – Summary of EXP Monitoring Well Construction Details

Well ID	Ground Surface Elevation (m)	Well Completion Depth (m bgs)	Screen Length (m)
TP1/MW	231.28	3.30	1.52
TP2/MW	232.90	4.10	1.52
TP3/MW	232.26	3.30	1.52
MW3b	232.61	6.10	3.05
TP5/MW	233.95	4.20	1.52
MW5b	234.76	6.10	3.05
MW101	233.98	6.10	1.52

The monitoring wells have been registered with the Ministry of Environment, Conservation and Parks (MECP), in accordance with Ontario Regulation 903, and remain intact for the purposes of ongoing monitoring of stabilized groundwater conditions, as needed. A summary of the water levels taken to date are provided in **Appendix B**. **Drawing 2**, appended, depicts the shallow groundwater contours and flow direction over the study area based on the March 2024 data. The direction of groundwater flow is to the west to northwest with groundwater levels fluctuating between 228.98 m to 230.74 m over the monitored period.

Test Pit TP4 was dry at completion of excavation. It is noted that insufficient time was available for the measurement of the depth to the stabilized groundwater table prior to backfilling Test Pit TP4.

It is also noted that the depth to the groundwater table may vary in response to climatic or seasonal conditions, and, as such, may differ at the time of construction, with higher levels in wet seasons. Capillary rise effects should also be anticipated in fine-grained soil deposits.

Low Impact Development (LID)

It is understood that LID stormwater management design requires the practical availability of unsaturated, sufficiently pervious soil with depth and aerial extent to accommodate the infiltration of stormwater run-off created by land development.

Based on the information collected at the test pit locations, and the above cited criteria, the natural sand soils encountered at the test hole locations have good potential for use in LID stormwater management design.

Two (2) grain size distribution analyses were carried out on recovered samples of the sand soils from Test Pits TP3 and TP5. The gradations are generally representative of the LID soils available at the site,

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as a consistent sand deposit was encountered in the test pits and boreholes. Based on the grain size distributions, the estimated hydraulic conductivity (K) of the sand was approximately 1.2 x 10^{-2} cm/s to 2.5 x 10^{-2} cm/s. The results are appended to this letter.

Single well response tests were completed on monitoring well MW101 to determine the *in situ* characteristics of the soils. The resulting hydraulic conductivity of the screened soil strata in the monitoring well was found to be approximately 8.1 x 10^{-3} cm/s.

Based on the *in situ* testing and derived hydraulic conductivity values, the sand unit has an estimated unfactored infiltration rate of 135 mm/hour. It is understood that recommended factors of safety will be applied to the estimated parameters cited above for use in design.

To minimize risk of groundwater contamination the following management approaches are recommended (Pitt et al., 1999; TRCA, 2009b):

- Prioritize infiltration of runoff from source areas that are comparatively less contaminated such as roofs, low traffic roads and parking areas; and,

- Apply sedimentation pretreatment practices (e.g., oil and grit separators) before infiltration of road or parking area runoff.

General Comments

We trust the above is satisfactory for your present requirement. Should you have any questions regarding this matter, please don't hesitate to contact our office.

Yours very truly,

EXP Services Inc.

Eric Buchanan, P. Eng.
Geotechnical Services

Botel Chiu, M. Eng., P. Eng.
Vice President, Earth and Environment
Southwestern Ontario

Appendices: Drawings
Test Hole Logs
Stabilized Groundwater Level Measurements
Figures
Limitations and Use of Report

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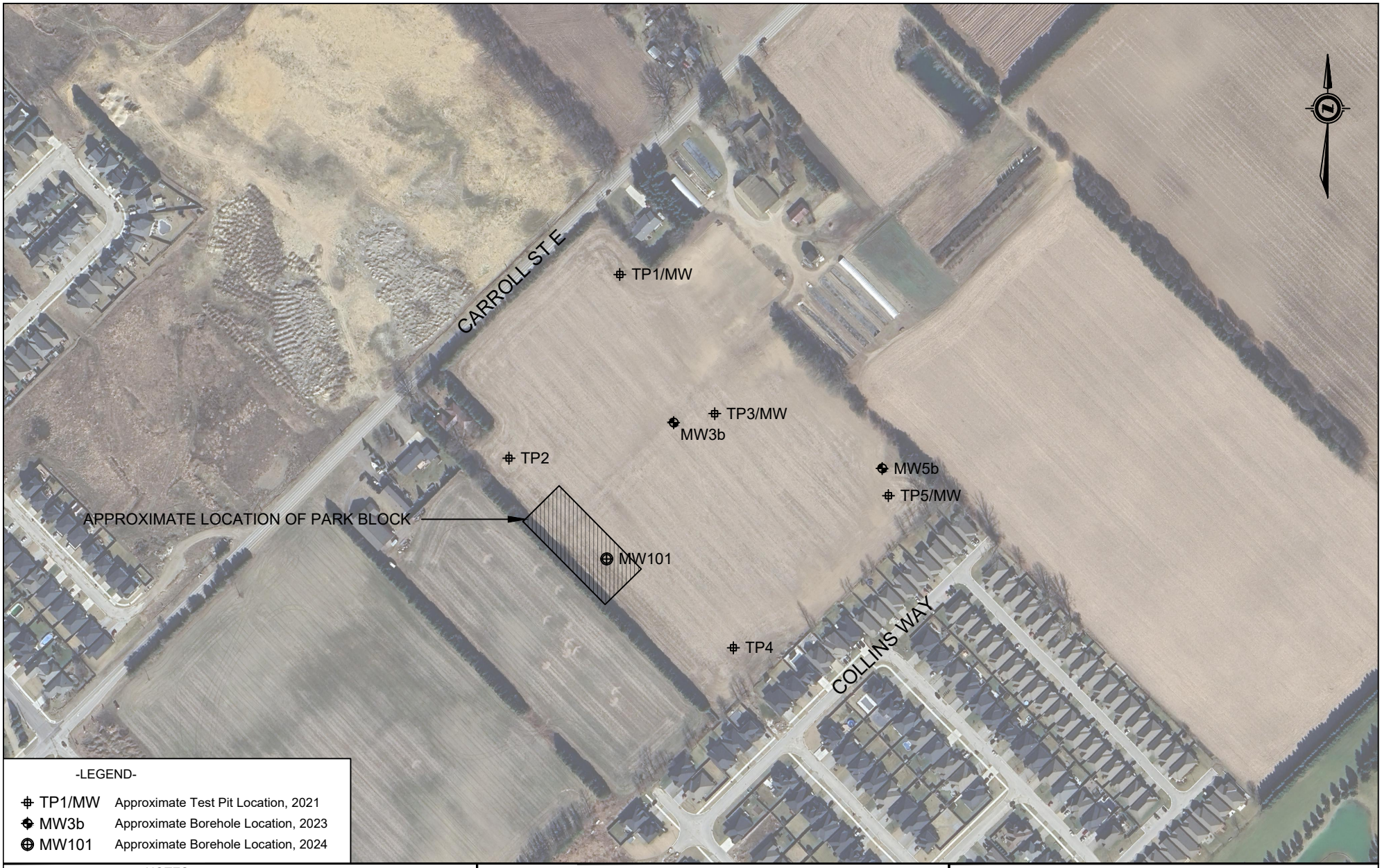


-LEGEND-

TP1/MW	Approximate Test Pit Location, 2021
MW3b	Approximate Borehole Location, 2023
MW101	Approximate Borehole Location, 2024

-NOTES-

1. The boundaries and soil types have been established only at test hole locations. Between test holes they are assumed and may be subject to considerable error.
2. Soil samples will be retained in storage for 3 months and then destroyed unless client advises that an extended time period is required.
3. Topsoil quantities should not be established from the information provided at the test hole locations.
4. The site plan was reproduced from Google Earth Pro and should be read in conjunction with EXP Geotechnical Report LON-23015833-A0.

Subsurface Assessment

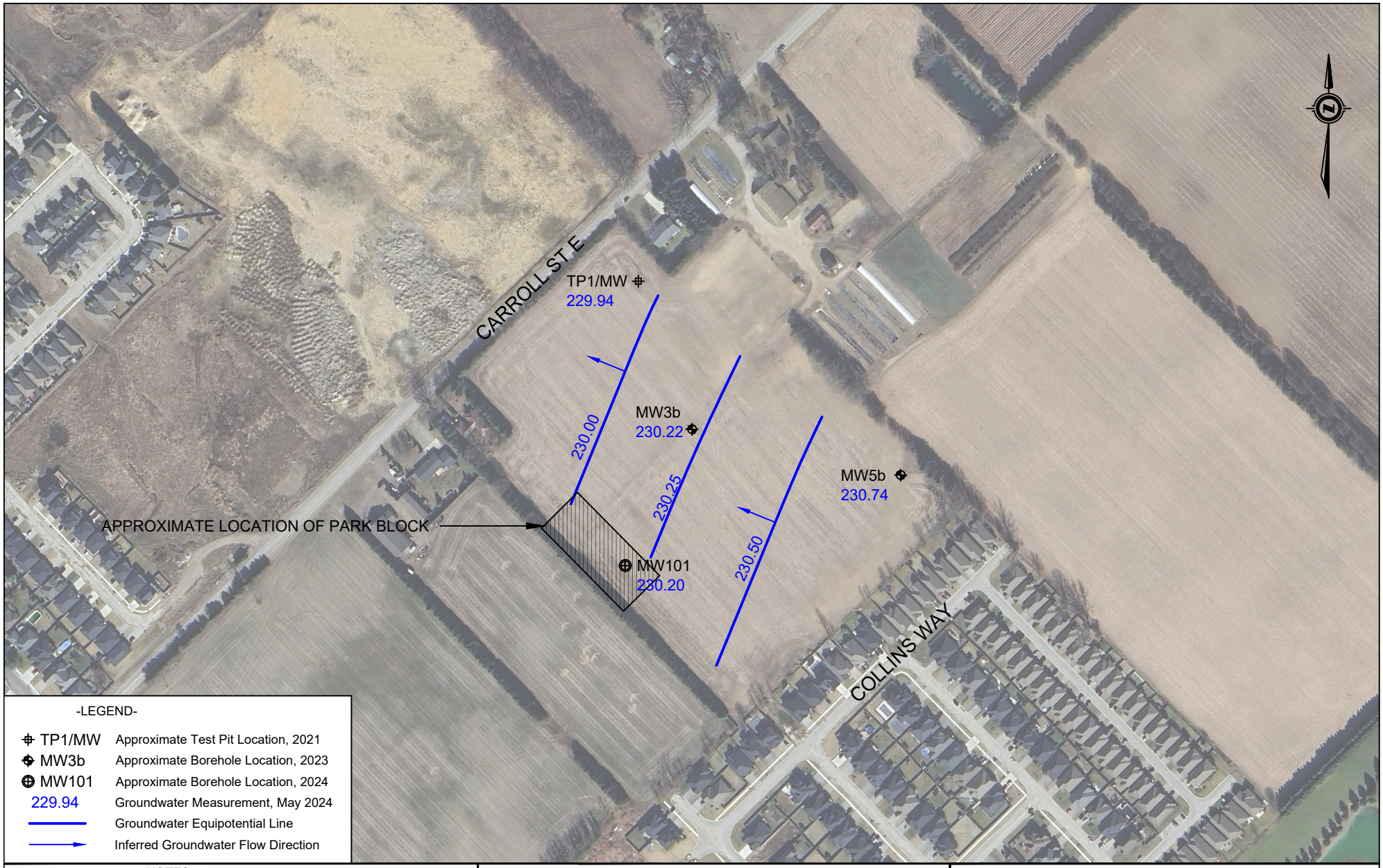
Proposed Development

360 Carroll Street East, Strathroy, Ontario

CLIENT	Carroll Street East Developments Inc.
TITLE	Test Hole Location Plan
Prepared By: E.B.	Reviewed By: B.C.

EXP Services Inc.
15701 Robin's Hill Road, London, ON, N5V 0A5

DATE	APPROXIMATE SCALE	PROJECT NO.	DWG.
MAY 2024	1:4,000	LON-23015833-A0	1



-LEGEND-

TP1/MW	Approximate Test Pit Location, 2021
MW3b	Approximate Borehole Location, 2023
MW101	Approximate Borehole Location, 2024
229.94	Groundwater Measurement, May 2024
	Groundwater Equipotential Line
	Inferred Groundwater Flow Direction

-NOTES-

1. The site plan was reproduced from Google Earth Pro and should be read in conjunction with EXP Geotechnical Report LON-23015833-A0.

Subsurface Assessment

Proposed Development

360 Carroll Street East, Strathroy, Ontario

CLIENT	Carroll Street East Developments Inc.
TITLE	Groundwater Contour Plan
Prepared By: E.B.	Reviewed By: B.C.

EXP Services Inc.
15701 Robin's Hill Road, London, ON, N5V 0A5

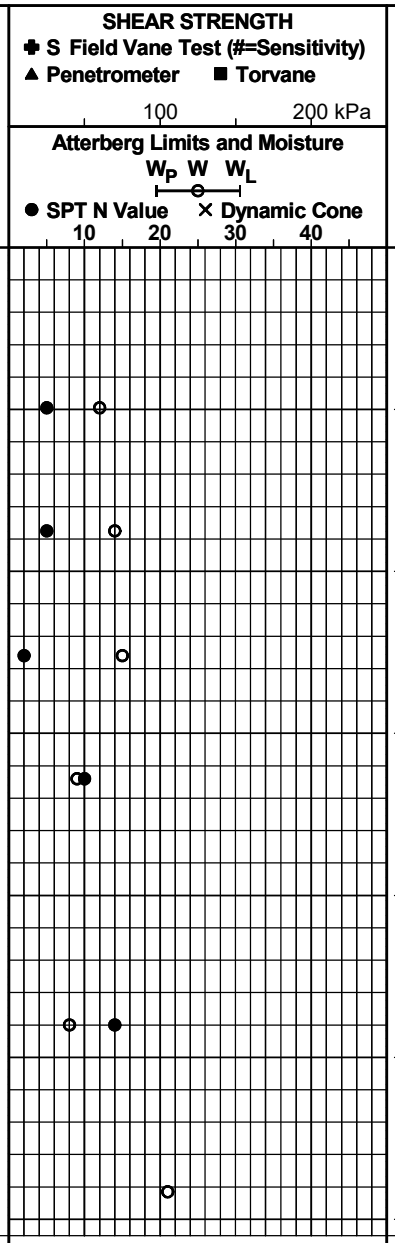
DATE	APPROXIMATE SCALE	PROJECT NO.	DWG.
MAY 2024	1:4,000	LON-23015833-A0	1

BOREHOLE LOG

MW101
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **February 21, 2024** Water Level **May 9/24**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)
0	234.0						
	233.7	**TOPSOIL**: ~300 mm					
1		**SAND**: brown, fine-grained, weathered, some silt, loose, moist	SS	S1	350	5	12
	232.3		SS	S2	300	5	14
2		**SAND**: brown, fine to medium-grained, trace silt, loose to very loose, moist	SS	S3	300	2	15
3		- becoming compact near 2.9 m bgs	SS	S4	300	10	9
4		- becoming wet near 4.0 m bgs					
5			SS	S5	450	14	8
6	227.9		AS	S6			21
		End of Borehole at 6.1 m bgs.					
7							



NOTES

1) Borehole interpretation requires assistance by EXP before use by others. Borehole Logs must be read in conjunction with EXP report LON-23015833-A0. For definition of terms used on logs, see sheets prior to logs.
2) bgs denotes below ground surface.
3) No significant methane gas concentration was detected upon completion.

SAMPLE LEGEND
AS Auger Sample | SS Split Spoon | ST Shelby Tube
Rock Core (eg. BQ, NQ, etc.) | VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
Apparent | Measured | Artesian (see Notes)

BOREHOLE LOG

MW3b
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **February 3, 2023** Water Level **May 9/24**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	232.6	**TOPSOIL**: ~300 mm								
	232.3	**SAND**: brown, fine to medium-grained, trace silt, moist								
1										
2										
		- becoming wet near 2.5 m bgs								
3										
4										
5										
6	226.5									
		End of Borehole at 6.1 m bgs.								
7										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Borehole interpretation requires assistance by EXP before use by others. Borehole Logs must be read in conjunction with EXP report LON-23015833-A0. For definition of terms used on logs, see sheets prior to logs.
2) bgs denotes below ground surface.
3) No significant methane gas concentration was detected upon completion.

SAMPLE LEGEND
☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▯ Rock Core (eg. BQ, NQ, etc.) ▯ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

MW5b
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **February 3, 2023** Water Level **May 9/24**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	234.8	**TOPSOIL**: ~300 mm								
	234.5	**SAND**: brown, fine to medium-grained, trace silt, moist								
1										
2										
3										
4		- becoming wet near 4.0 m bgs								
5										
6	228.7									
7		**End of Borehole at 6.1 m bgs.**								

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Borehole interpretation requires assistance by EXP before use by others. Borehole Logs must be read in conjunction with EXP report LON-23015833-A0. For definition of terms used on logs, see sheets prior to logs.
2) bgs denotes below ground surface.
3) No significant methane gas concentration was detected upon completion.

SAMPLE LEGEND
AS Auger Sample SS Split Spoon ST Shelby Tube
Rock Core (eg. BQ, NQ, etc.) VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
Apparent Measured Artesian (see Notes)

TEST PIT LOG

TP1/MW
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **May 11, 2021** Water Level **May 9/24**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	231.3	**TOPSOIL** - 300 mm								
	231.0	**SAND** - brown, fine to medium grained, trace silt, moist								
1										
2						S1				
		- water encountered near 2.3 m bgs								
3	228.0									
		End of Test Pit at 3.3 m bgs.								
4										
5										
6										
7										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit logs interpretation requires assistance by EXP before the use by others and must be read in conjunction with EXP Report LON-23015833-A0.
2) bgs denotes below ground surface.

SAMPLE LEGEND
AS Auger Sample SS Split Spoon ST Shelby Tube
Rock Core (eg. BQ, NQ, etc.) VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
Apparent Measured Artesian (see Notes)

TEST PIT LOG

TP2/MW
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **May 11, 2021** Water Level **May 11/21**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	232.9	**FILL** - sand, fine to medium grained								
1	231.4	**SAND** - brown, fine to medium grained, trace silt, moist								
2		- water encountered near 3.8 m bgs				S1				
3										
4	228.8	**End of Test Pit at 4.1 m bgs.**								
5										
6										
7										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit logs interpretation requires assistance by EXP before the use by others and must be read in conjunction with EXP Report LON-23015833-A0.
2) bgs denotes below ground surface.

SAMPLE LEGEND
☒ AS Auger Sample ▨ SS Split Spoon ■ ST Shelby Tube
▯ Rock Core (eg. BQ, NQ, etc.) ▯ VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
▽ Apparent ▼ Measured ▲ Artesian (see Notes)

TEST PIT LOG

TP3/MW
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **May 11, 2021** Water Level **May 11/21**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	232.3	**TOPSOIL** - 400 mm								
	231.9	**SAND** - brown, fine to medium grained, trace silt, moist								
1										
2										
		- water encountered near 2.6 m bgs				S1				
3	229.0									
		End of Test Pit at 3.3 m bgs.								
4										
5										
6										
7										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit logs interpretation requires assistance by EXP before the use by others and must be read in conjunction with EXP Report LON-23015833-A0.
2) bgs denotes below ground surface.

SAMPLE LEGEND
AS Auger Sample SS Split Spoon ST Shelby Tube
Rock Core (eg. BQ, NQ, etc.) VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
Apparent Measured Artesian (see Notes)

TEST PIT LOG

TP4
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **May 11, 2021** Water Level

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	233.8	**TOPSOIL** - 500 mm								
	233.3	**CLAYEY SILT** - brown, moist				S1				
1										
	232.0	**SAND** - brown, fine to medium grained, trace silt, moist				S2				
2										
3										
4	229.7	**End of Test Pit at 4.1 m bgs.**								
5										
6										
7										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit logs interpretation requires assistance by EXP before the use by others and must be read in conjunction with EXP Report LON-23015833-A0.
2) bgs denotes below ground surface.
3) Test pit dry upon completion of excavation

SAMPLE LEGEND
AS Auger Sample SS Split Spoon ST Shelby Tube
Rock Core (eg. BQ, NQ, etc.) VN Vane Sample

OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
Apparent Measured Artesian (see Notes)

TEST PIT LOG

TP5/MW
Sheet 1 of 1

CLIENT **Carroll Street East Developments Inc.** PROJECT NO. **LON-23015833-A0**
PROJECT **Proposed Development** DATUM **Geodetic**
LOCATION **360 to 430 Carroll St E, Strathroy, ON** DATES: Boring **May 11, 2021** Water Level **May 11/21**

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm)	SAMPLES N VALUE (blows)	MOISTURE CONTENT (%)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	234.0									
	233.7	**TOPSOIL** - 300 mm								
		SAND - brown, fine to medium grained, trace silt, moist								
1										
2										
3										
4	229.8	- water encountered near 4.0 m bgs				S1				
		End of Test Pit at 4.2 m bgs.								
5										
6										
7										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
100 200 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit logs interpretation requires assistance by EXP before the use by others and must be read in conjunction with EXP Report LON-23015833-A0.
2) bgs denotes below ground surface.

SAMPLE LEGEND
AS Auger Sample SS Split Spoon ST Shelby Tube
Rock Core (eg. BQ, NQ, etc.) VN Vane Sample

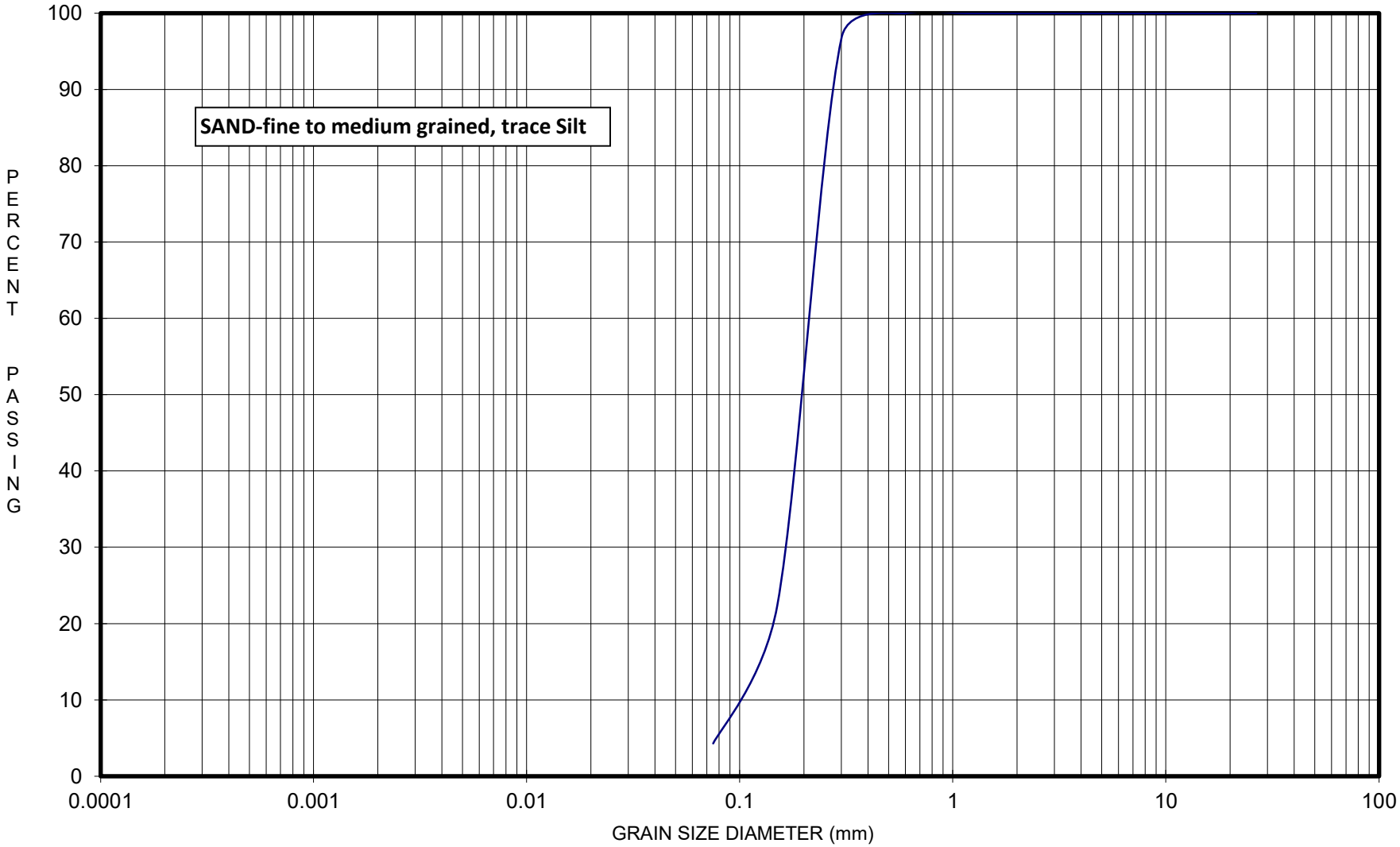
OTHER TESTS

G Specific Gravity	C Consolidation
H Hydrometer	CD Consolidated Drained Triaxial
S Sieve Analysis	CU Consolidated Undrained Triaxial
γ Unit Weight	UU Unconsolidated Undrained Triaxial
P Field Permeability	UC Unconfined Compression
K Lab Permeability	DS Direct Shear

WATER LEVELS
Apparent Measured Artesian (see Notes)

Well ID		Stabilized Groundwater Level Readings															
		11-May-21		12-Dec-22		24-Feb-23		28-Mar-23		20-Apr-23		25-Mar-24		12-Apr-24		9-May-24	
No.	Appr. Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
TP1/MW	231.28	2.3	228.98	2.2	229.08	1.87	229.41	1.69	229.59	1.22	230.06	1.41	229.87	1.42	229.86	1.34	229.94
TP2/MW	232.90	3.8	229.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3/MW	232.26	2.6	229.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3b	232.61	-	-	-	-	3.01	229.60	2.88	229.73	2.33	230.28	2.45	230.16	2.50	230.11	2.39	230.22
TP5/MW	233.95	4.0	229.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5b	234.76	-	-	-	-	4.76	230.00	4.61	230.15	4.12	230.64	4.10	230.66	4.12	230.64	4.02	230.74
MW101	233.98	-	-	-	-	-	-	-	-	-	-	3.86	230.12	3.89	230.09	3.78	230.20

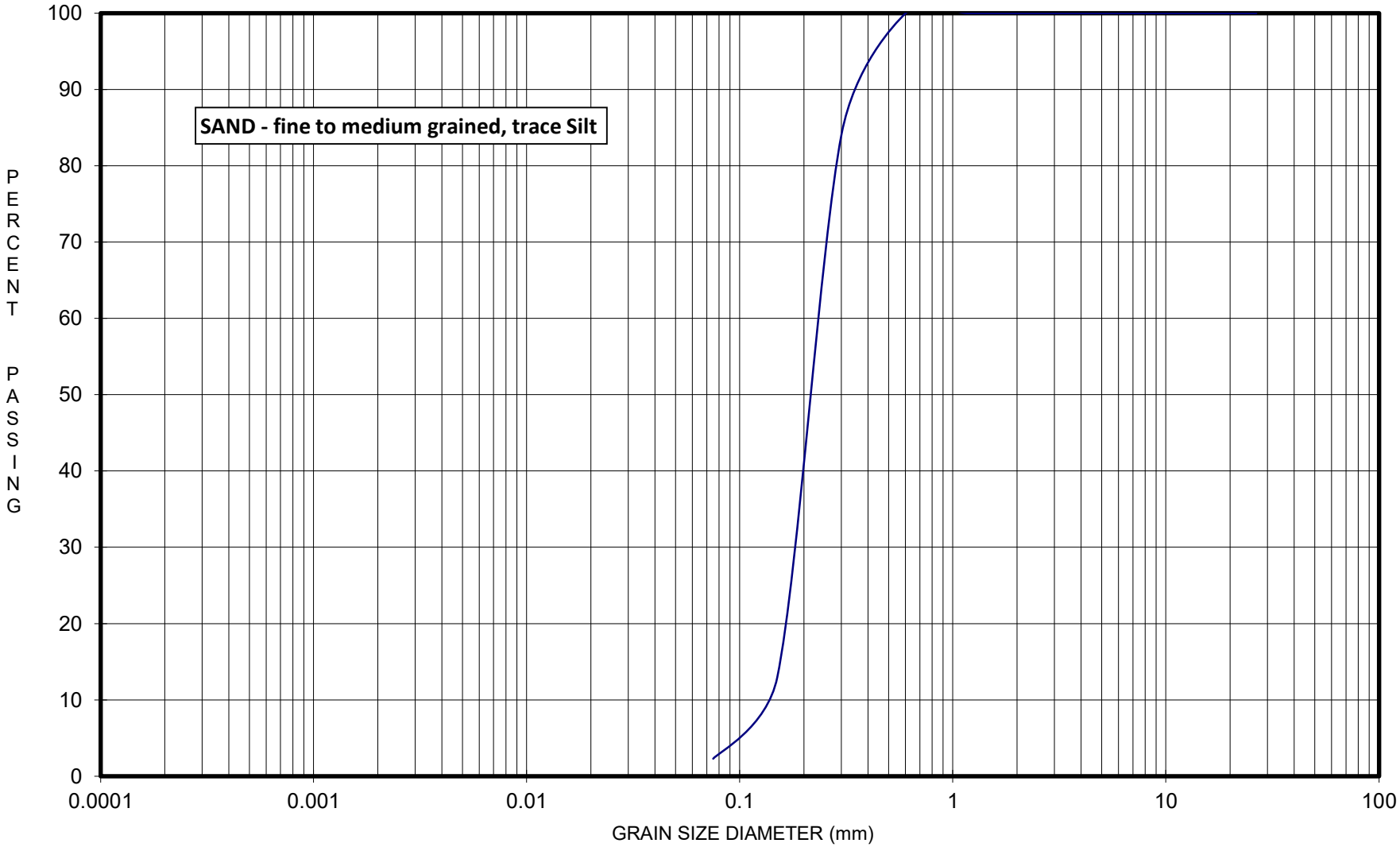
MECHANICAL GRAIN SIZE ANALYSIS



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE
	SILT			SAND			GRAVEL		

MODIFIED M.I.T. CLASSIFICATION	**Sample Description: TP3 - S1 - 2.5m bgs**	**Project: LON-23015833-A0**	**Figure 1**

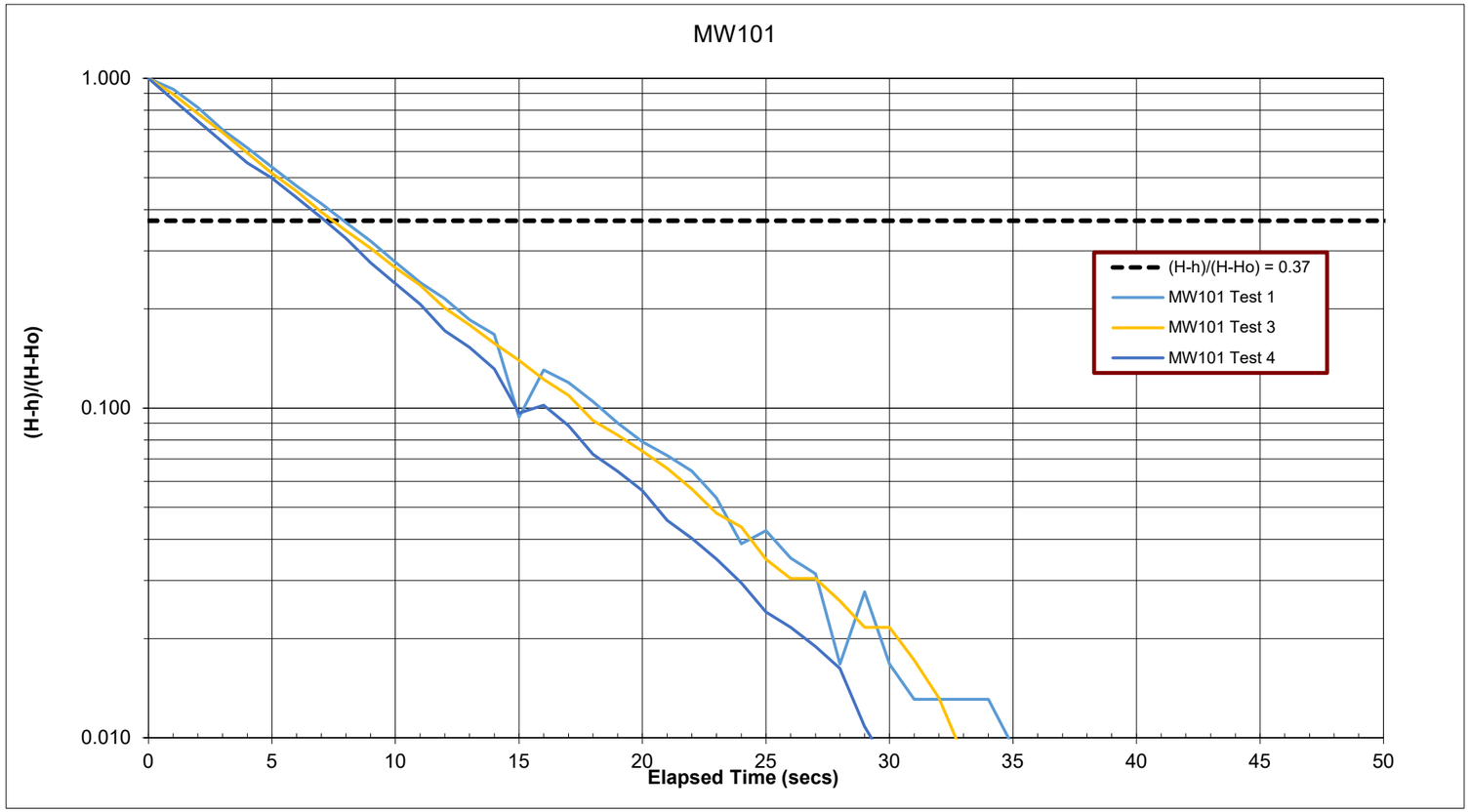
MECHANICAL GRAIN SIZE ANALYSIS

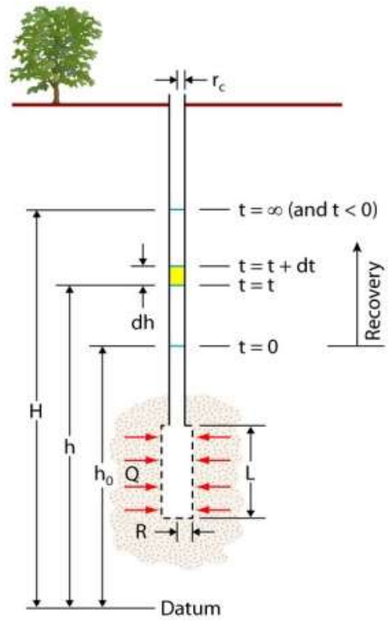


CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	
	SILT			SAND			GRAVEL			
MODIFIED M.I.T. CLASSIFICATION	**Sample Description: TP5 - S1 - 4.0m bgs**						**Project: LON-23015833-A0**			**Figure 2**

Recovery Testing - Hvorslev Method (1951)

Project Number	LON-23015833-A0
Date ot Test	25-Mar-24
Completed by	M. Bondi





Initial Water Level	3.86 m bgs
r (m) =	0.0254
L (m) =	1.52
R (m) =	0.1048
T_o (sec) =	7
K (m/s) =	8.1E-05

Note:
1 - T_o is determined from plots where (H-h)/(H-Ho) = 0.37

K = Hydraulic Conductivity
r = radius of well casing
R = Radius of well screen or filter pack
L = Length of the well screen (in Slug Test) or the length of submerged portion of the well screen (in Rising Head)
T_0 = time for water level to rise or fall to 37% of the initial change

LIMITATIONS AND USE OF REPORT

BASIS OF REPORT

This report ("Report") is based on site conditions known or inferred by the geotechnical investigation undertaken as of the date of the Report. Should changes occur which potentially impact the geotechnical condition of the site, or if construction is implemented more than one year following the date of the Report, the recommendations of exp may require re-evaluation.

The Report is provided solely for the guidance of design engineers and on the assumption that the design will be in accordance with applicable codes and standards. Any changes in the design features which potentially impact the geotechnical analyses or issues concerning the geotechnical aspects of applicable codes and standards will necessitate a review of the design by exp. Additional field work and reporting may also be required.

Where applicable, recommended field services are the minimum necessary to ascertain that construction is being carried out in general conformity with building code guidelines, generally accepted practices and exp's recommendations. Any reduction in the level of services recommended will result in exp providing qualified opinions regarding the adequacy of the work. exp can assist design professionals or contractors retained by the Client to review applicable plans, drawings, and specifications as they relate to the Report or to conduct field reviews during construction.

Contractors contemplating work on the site are responsible for conducting an independent investigation and interpretation of the borehole results contained in the Report. The number of boreholes necessary to determine the localized underground conditions as they impact construction costs, techniques, sequencing, equipment and scheduling may be greater than those carried out for the purpose of the Report.

Classification and identification of soils, rocks, geological units, contaminant materials, building envelopment assessments, and engineering estimates are based on investigations performed in accordance with the standard of care set out below and require the exercise of judgment. As a result, even comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations or building envelope descriptions involve an inherent risk that some conditions will not be detected. All documents or records summarizing investigations are based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated. Some conditions are subject to change over time. The Report presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or the Client has special considerations or requirements, these should be disclosed to exp to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

RELIANCE ON INFORMATION PROVIDED

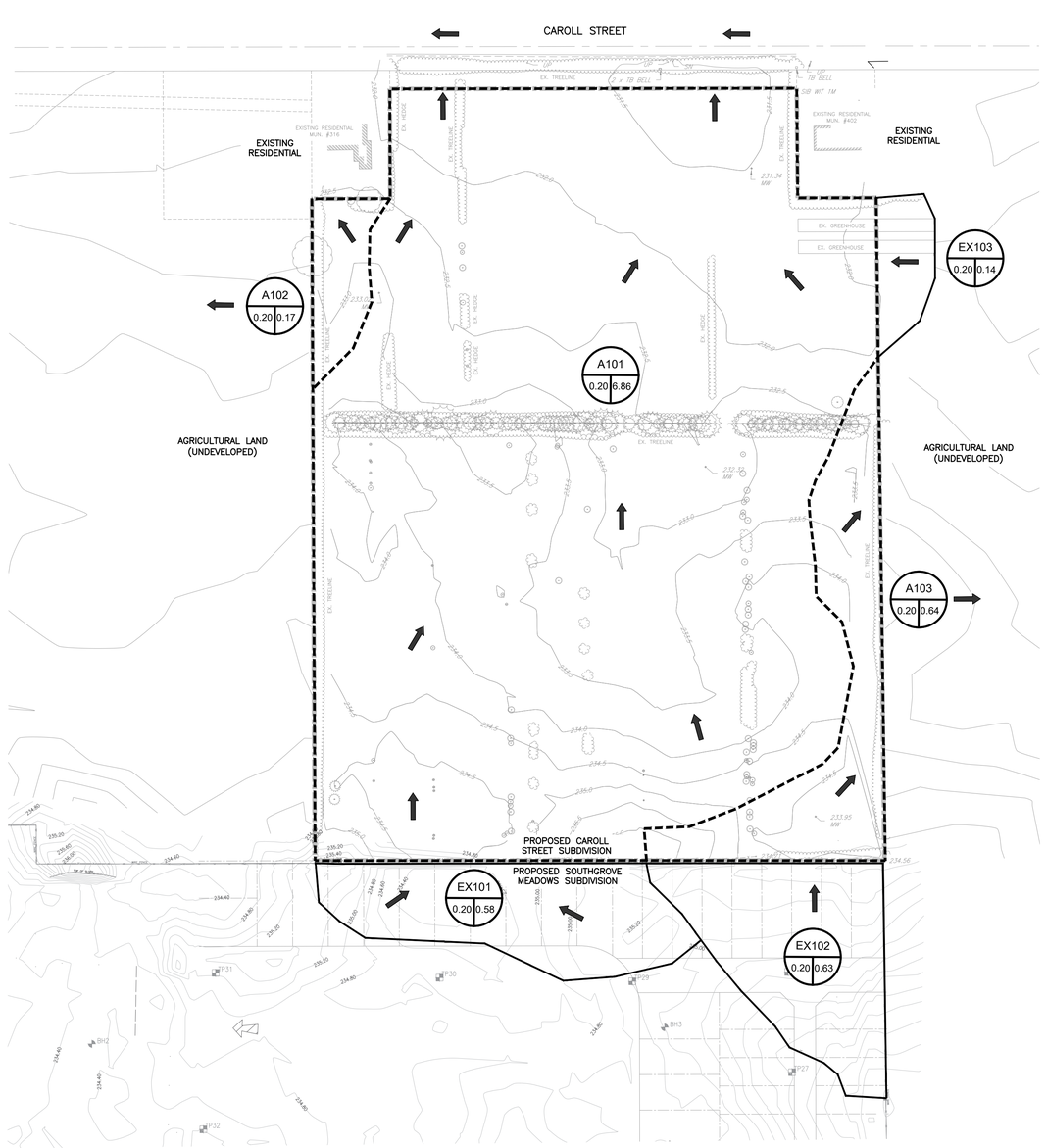
The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to exp by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. exp has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to exp.

STANDARD OF CARE

The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.

COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment form part of the Report. This material includes, but is not limited to, the terms of reference given to exp by its client ("Client"), communications between exp and the Client, other reports, proposals or documents prepared by exp for the Client in connection with the site described in the Report. In order to properly understand the suggestions, recommendations and opinions expressed in the Report, reference must be made to the Report in its entirety. exp is not responsible for use by any party of portions of the Report.



1:1250 0 12.5 37.5 62.5m

JUNE 2022
161414253

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2022-6-20 11:33 AM by: D'hoine, Nate

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007

Legend

EXISTING OVERLAND FLOW ROUTE
SUBDIVISION BOUNDARY
DRAINAGE AREA BOUNDARY
EXTERNAL DRAINAGE AREA BOUNDARY
EXISTING STORM SEWER

RUNOFF COEFFICIENT — A101 0.20 0.37 — AREA ID (PRE-DEVELOPMENT) / AREA (IN HECTARES)

Client/Project

CAROL STREET SUBDIVISION
STRATHROY, ON

Figure No.
1

Title
EXISTING STORM FIGURE

PONDING SCHEDULE			
PONDING #	AREA (m^2)	DEPTH (m)	VOLUME (m^3)
1		0.45	69.0
2		1.50	3777.0
3		0.45	50.0
4		0.45	180.0
	TOTAL		4076.0

SWM MODELING IS BASED ON THE FOLLOWING:

- A MINIMUM PERCENT IMPERVIOUS LEVEL OF 40% SHOULD BE USED FOR SINGLE FAMILY RESIDENTIAL WITH 30% DIRECTLY CONNECTED.
- A MINIMUM IMPERVIOUS LEVEL OF 70% SHOULD BE USED FOR MULTIFAMILY RESIDENTIAL WITH 55% DIRECTLY CONNECTED.
- ROADWAYS SHOULD BE MODELLED AT 60% IMPERVIOUS WITH 55% DIRECTLY CONNECTED.

IF ACTUAL CONDITIONS ARE ANTICIPATED TO EXCEED THESE NUMBERS THAN THE VALUES SHOULD BE CALCULATED AND SUPERSEDE THE ABOVE VALUES.
SEE TABLE BELOW FOR C–VALUES (STRATHROY SERVICING STANDARDS MANUAL, OCT. 2021)

The following runoff coefficients are to be used with the Rational Formula:

Single Family Residential (Lots smaller than 375 m^2)	0.60
Single Family Residential (Lots 375m^2 to 550m^2)	0.50
Single Family Residential (Lots larger than 550m^2)	0.45
Multi-Family Residential	0.65 – 0.80
Undeveloped Residential	0.50
Commercial	0.70 – 0.85
Industrial	0.70 – 0.90
Parks, Cemetery, Playgrounds & Farmlands	0.20

Figure 4.15: Pervious Catchbasin

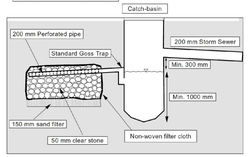
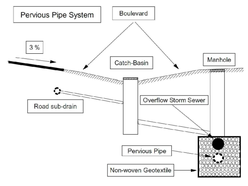
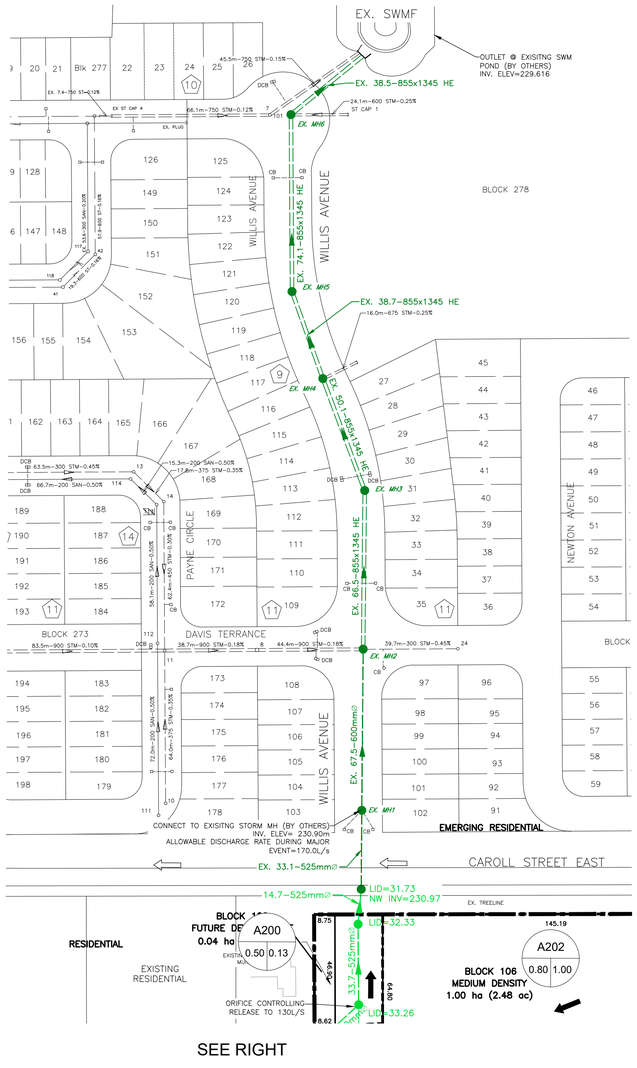


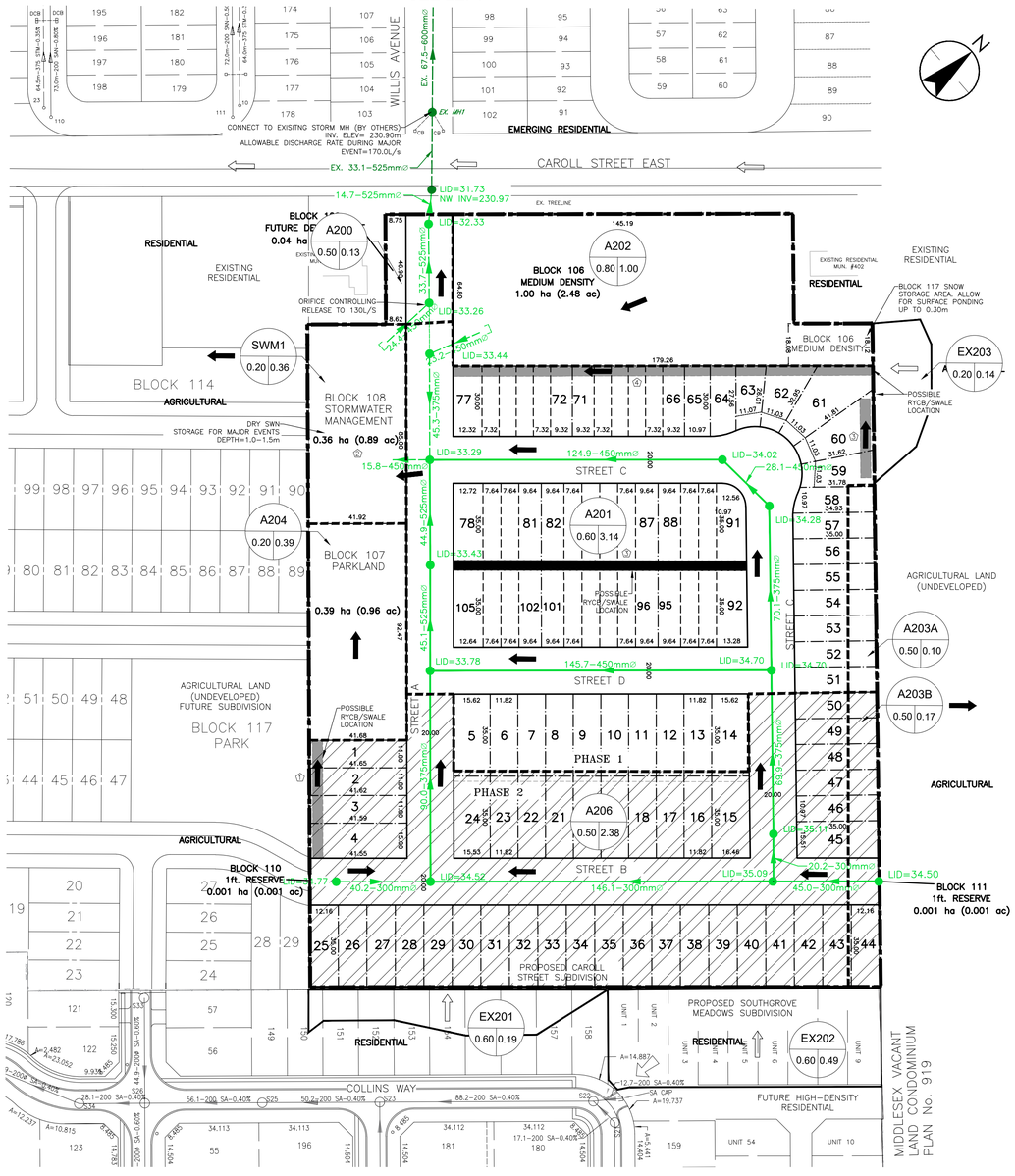
Figure 4.11: Pervious Pipe System



NOTE: STORM SEWERS AS SHOWN IN THIS PLAN ARE TO BE FITTED WITH PERVIOUS PIPE SYSTEMS TO PROMOTE EXFILTARTION OF COLLECTED STORM WATER. (SEE DETAIL ABOVE)



SEE RIGHT



1:1250 0 12.5 37.5 62.5m

JUNE 2024
161414253

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Stantec
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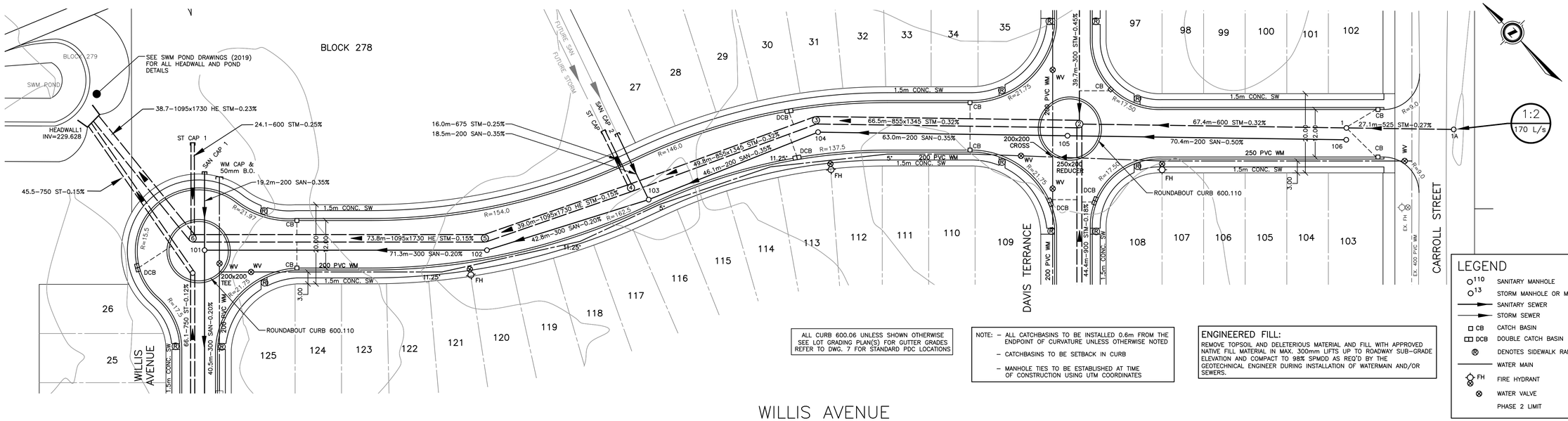
Legend

- SUBDIVISION BOUNDARY
- DRAINAGE AREA BOUNDARY
- EXTERNAL DRAINAGE AREA BOUNDARY
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER WITH THIRD PIPE EXFILTRATION SYSTEM
- PROPOSED OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE

Client/Project
LITERA GROUP
360 CAROLL STREET
STRATHROY, ON

Figure No.
2

Title
STORM ROUTING FIGURE

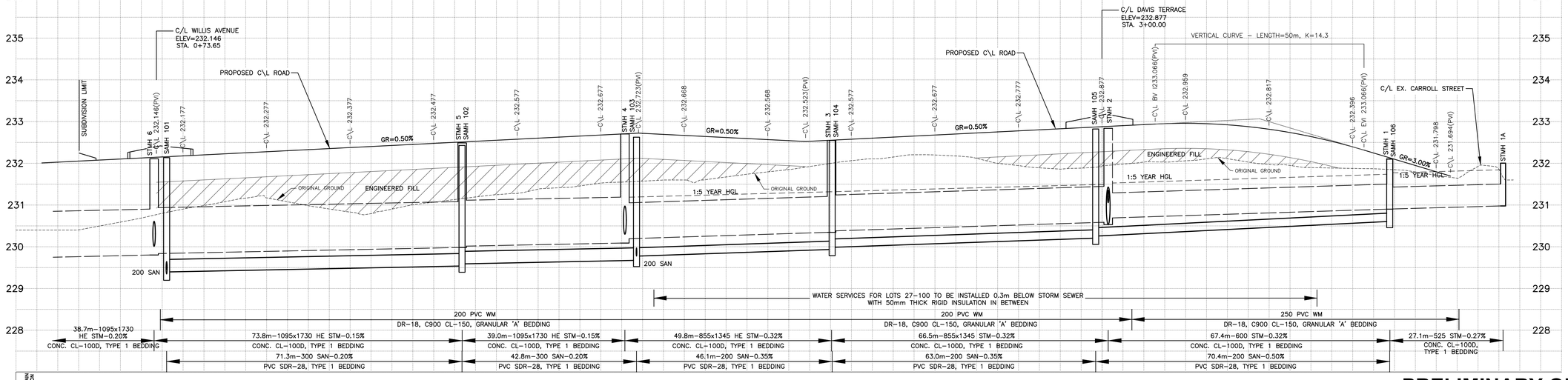


ALL CURB 600.06 UNLESS SHOWN OTHERWISE
SEE LOT GRADING PLAN(S) FOR GUTTER GRADES
REFER TO DWG. 7 FOR STANDARD PDC LOCATIONS

NOTE: – ALL CATCHBASINS TO BE INSTALLED 0.6m FROM THE ENDPOINT OF CURVATURE UNLESS OTHERWISE NOTED
– CATCHBASINS TO BE SETBACK IN CURB
– MANHOLE TIES TO BE ESTABLISHED AT TIME OF CONSTRUCTION USING UTM COORDINATES

ENGINEERED FILL:
REMOVE TOPSOIL AND DELETERIOUS MATERIAL AND FILL WITH APPROVED NATIVE FILL MATERIAL IN MAX. 300mm LIFTS UP TO ROADWAY SUB-GRADE ELEVATION AND COMPACT TO 98% SPMDD AS REQ'D BY THE GEOTECHNICAL ENGINEER DURING INSTALLATION OF WATERMAIN AND/OR SEWERS.

WILLIS AVENUE



PRELIMINARY OPTION 1

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN KAM				
					DRAWN BY IRA				
					CHECKED KAM				
					APPROVED KAM				
					DATE APR. 2022				

CONSULTANT OR DIVISION
MTE
Engineers, Scientists, Surveyors

ENGINEER'S STAMP

.\strathroy1.jpg

SCALE
SCALE – 1 : 500
5m 0 10m

FIELDCREST SUBDIVISION – PHASE 2
FIELDCREST LTD.

WILLIS AVENUE

PROJECT No. 44465–104
SHEET No. 9
PLAN FILE No.

Subject: CN Calculations
Project: Carroll Street
Project No.: 161414253
Client: Carroll Street East Developments
Date: 9-Jul-24

Site Soils: Sand

TABLE OF CURVE NUMBERS (CN's)								
Land Use	Hydrologic Soil Type							Manning's
	A	AB	B	BC	C	CD	D	'n'
Meadow	50	54	58	64.5	71	74.5	78	0.40
Woodlot	50	55.3	60.5	67	73.5	76.8	80	0.40
Long Grass	55	60	65	72	79	81.5	84	0.30
Lawns	60	65.5	71	77	83	86	89	0.25
Pasture/Range	58	61.5	65	70.5	76	78.5	81	0.17
Crop	66	70	74	78	82	84	86	0.13
Fallow (Bare)	77	82	86	89	91	93	94	0.05
Wetland	50	50	50	50	50	50	50	0.15

HYDROLOGIC SOIL TYPE (%)								
	Hydrologic Soil Type							
Catchment	A	AB	B	BC	C	CD	D	TOTAL
Existing Conditions								
A103		100.0						
Proposed Conditions								
EX201		100.0						100
EX202		100.0						100
EX203		100.0						100
Main Residential Area - A201 & A206		100.0						100
Medium Density Block - A202		100.0						100
A203A & A203B		100.0						100
A200		100.0						100
Park Blocks - A204 & SWM1		100.0						100

LAND USE (%)									
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Wetland	Total
Existing Conditions									
A103	100								
Proposed Conditions									
EX201				100					100
EX202				100					100
EX203	100								100
Main Residential Area - A201 & A206				100					100
Medium Density Block - A202				100					100
A203A & A203B				100					100
A200				100					100
Park Blocks - A204 & SWM1				100					100

CURVE NUMBER (CN)									
Catchment	Meadow	Woodlot	Long Grass	Lawns	Pasture Range	Crop	Fallow (Bare)	Wetland	Weighted CN
Existing Conditions									
A103	54.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.0
Proposed Conditions									
EX201	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0
EX202	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0
EX203	54.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.0
Main Residential Area - A201 & A206	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0
Medium Density Block - A202	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0
A203A & A203B	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0
A200	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0
Park Blocks - A204 & SWM1	0.0	0.0	0.0	65.5	0.0	0.0	0.0	0.0	65.0

*** post development catchments concerned with pervious CN values only*

*** AMC II assumed*

*** Hydrological Soil Group taken from MTO Drainage Manual for each soil type*

Subject: SWMHYMO Parameters
Project: Carroll Street
Project No.: 161414253
Client: Carroll Street East Developments
Date: 15-Jul-24

Site Soils: Sand

Existing Conditions

Area Description	Catchment Number	SWMHYMO Command	Area (ha)	CN	TIMP	XIMP	Slope (%)	Length (m)	Tc (hrs)	Tp (hrs)
Flows off site to the east/northeast	A103	DESIGN NASHYD	0.64	54	-	-	2.0	105	0.40	0.24

Interim Conditions

Area Description	Catchment Number	SWMHYMO Command	Area (ha)	CN	TIMP	XIMP	Slope (%)	Length (m)		Tc (hrs)	Tp (hrs)
The majority of the proposed Phase 1 residential area controlled by the proposed dry infiltration facility	A201	DESIGN STANDHYD	3.14	65	0.59	0.50	2.00	35	146		

Proposed Conditions

Area Description	Catchment Number	SWMHYMO Command	Area (ha)	CN	TIMP	XIMP	Slope (%)	Length (m)		Tc (hrs)	Tp (hrs)
								Pervious	Impervious		
External rearyards and rooftops draining to site from south	EX201	DESIGN STANDHYD	0.19	65	0.38	0.00	2.00	15	5		
External residential lots draining to site from south	EX202	DESIGN STANDHYD	0.49	65	0.62	0.00	2.00	42	16		
External flow from fields to the east	EX203	DESIGN NASHYD	0.14	54	-	-	2.00	25	-	0.19	0.12
The majority of the proposed residential area controlled by the proposed dry infiltration facility	Main Residential Area - A201 & A206	DESIGN STANDHYD	5.52	65	0.59	0.50	2.00	35	146		
Medium density block controlled by the proposed dry infiltration facility	Medium Density Block - A202	DESIGN STANDHYD	1.00	65	0.69	0.59	2.00	20	90		
Uncontrolled site flows towards east	A203A & A203B	DESIGN STANDHYD	0.27	65	0.38	0.00	2.00	13	13		
Uncontrolled site flows towards Carroll Street	A200	DESIGN STANDHYD	0.13	65	0.55	0.55	2.00	45	45		
Park block and SWM block on the western side of the site	Park and SWM Blocks - A204 & SWM1	DESIGN NASHYD	0.75	65	-	-	2.00	110	-	0.41	0.24
Total			8.49								

Notes:

CN calculated for pervious areas only for DESIGN STANDHYD. CN is a weighed average for DESIGN NASHYD

TIMP — *Total percent impervious*

XIMP — *Percent impervious directly connected*

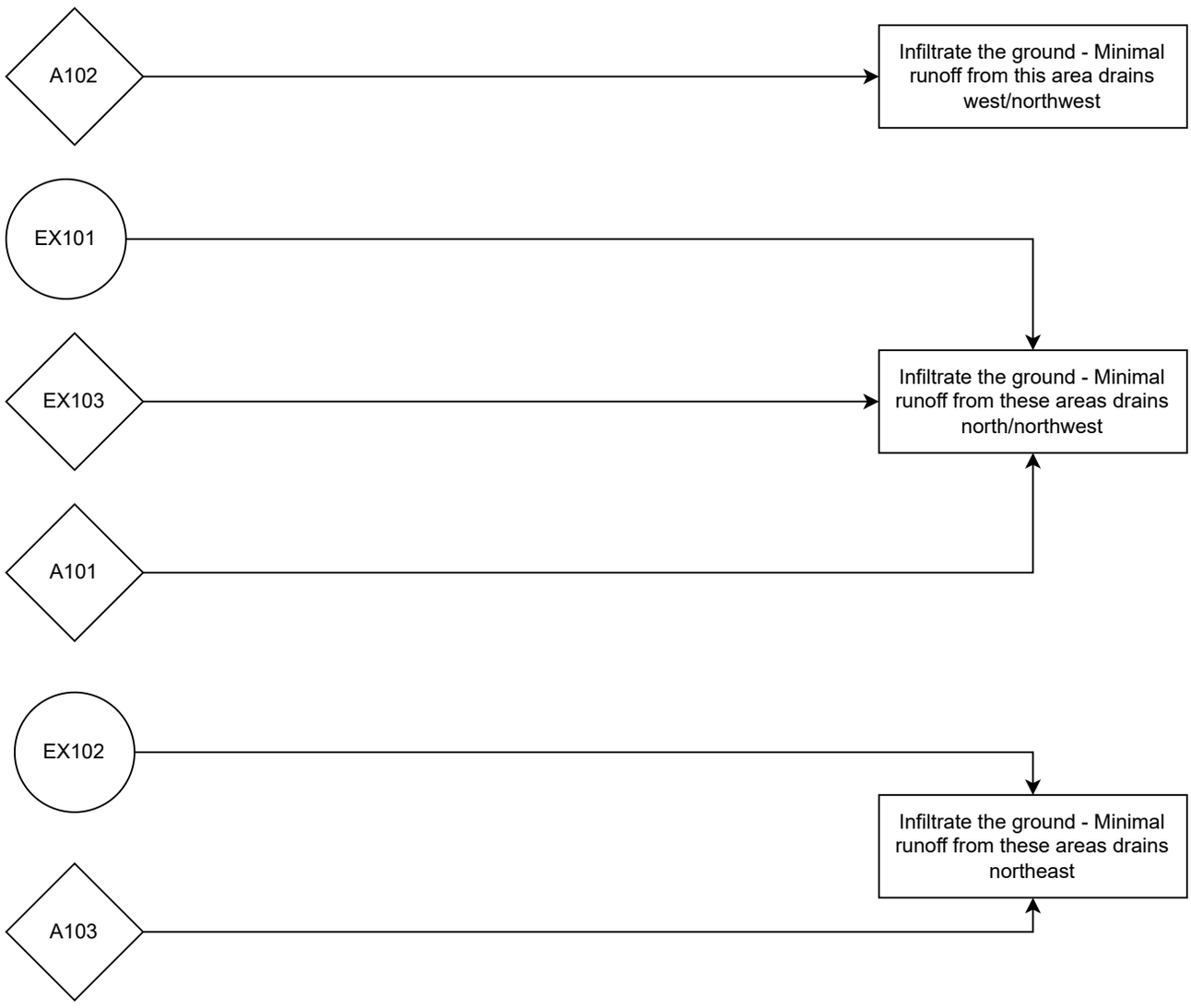
Length — *$L = [A*10000/1.5]^{0.5}$ For NASHYD*

Time of Concentration calculated using the Airport Method → *$Tc = [3.26 (1.1-C) L^{0.5}] / S^{0.33}$*

Where: *C = Runoff Coefficient = 0.2 for undeveloped areas*
L = Length of Overland Flow (m)
= (Area/1.5)^0.5
S = Slope (%)

Time to Peak → *Tp = 0.6Tc*

360 Caroll Street East
Existing Conditions

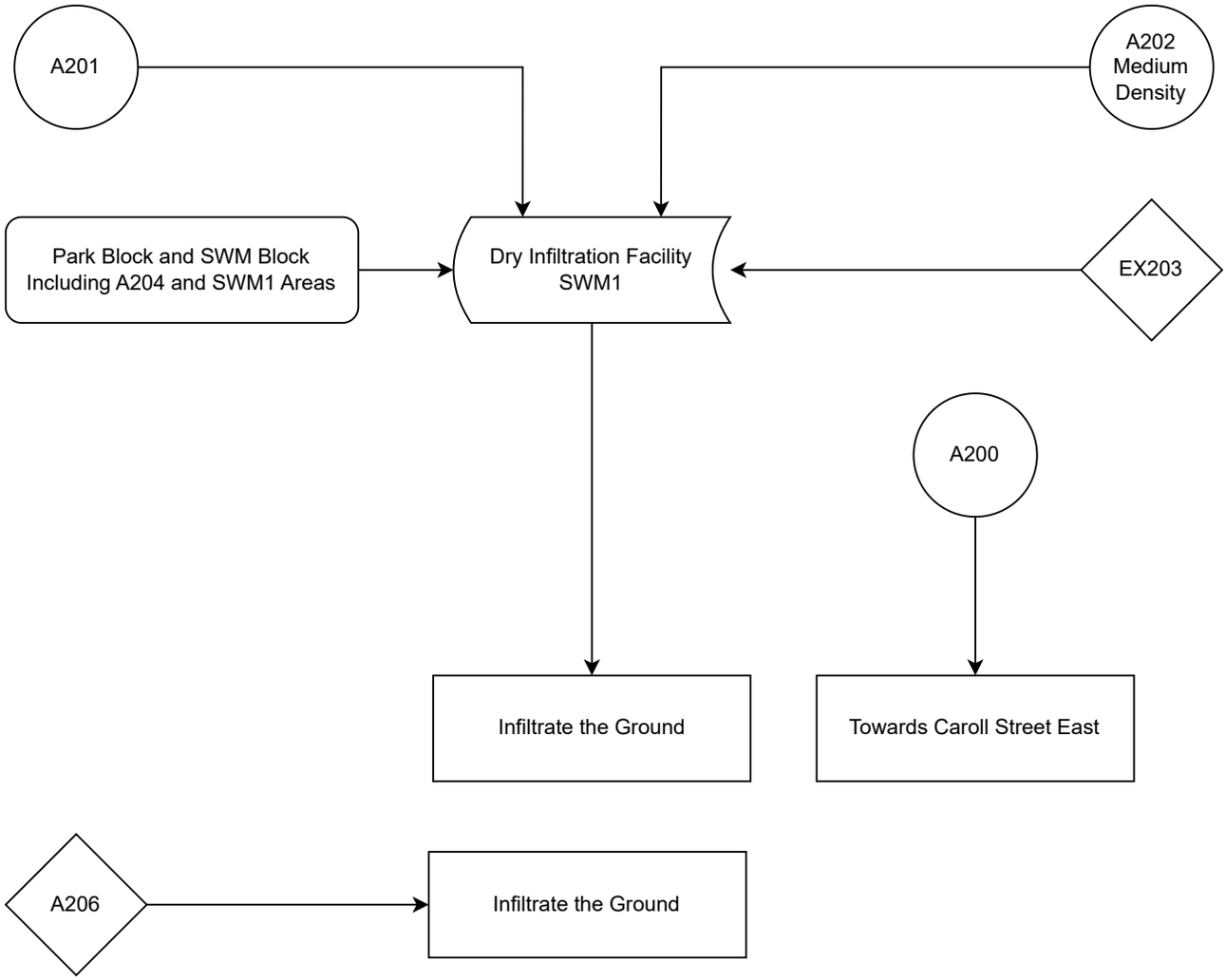


XXX — Developed Area

XXX — Undeveloped Area

Note: Under the proposed conditions, flows towards northeast are required to be lesser than or equal to the existing flows from A103. Flows from the remaining existing catchments have no impact on the target flow rates from the proposed site. Therefore, only A103 is included in the SWMHYMO model.

360 Caroll Street East
Interim Conditions



XXX Developed Area

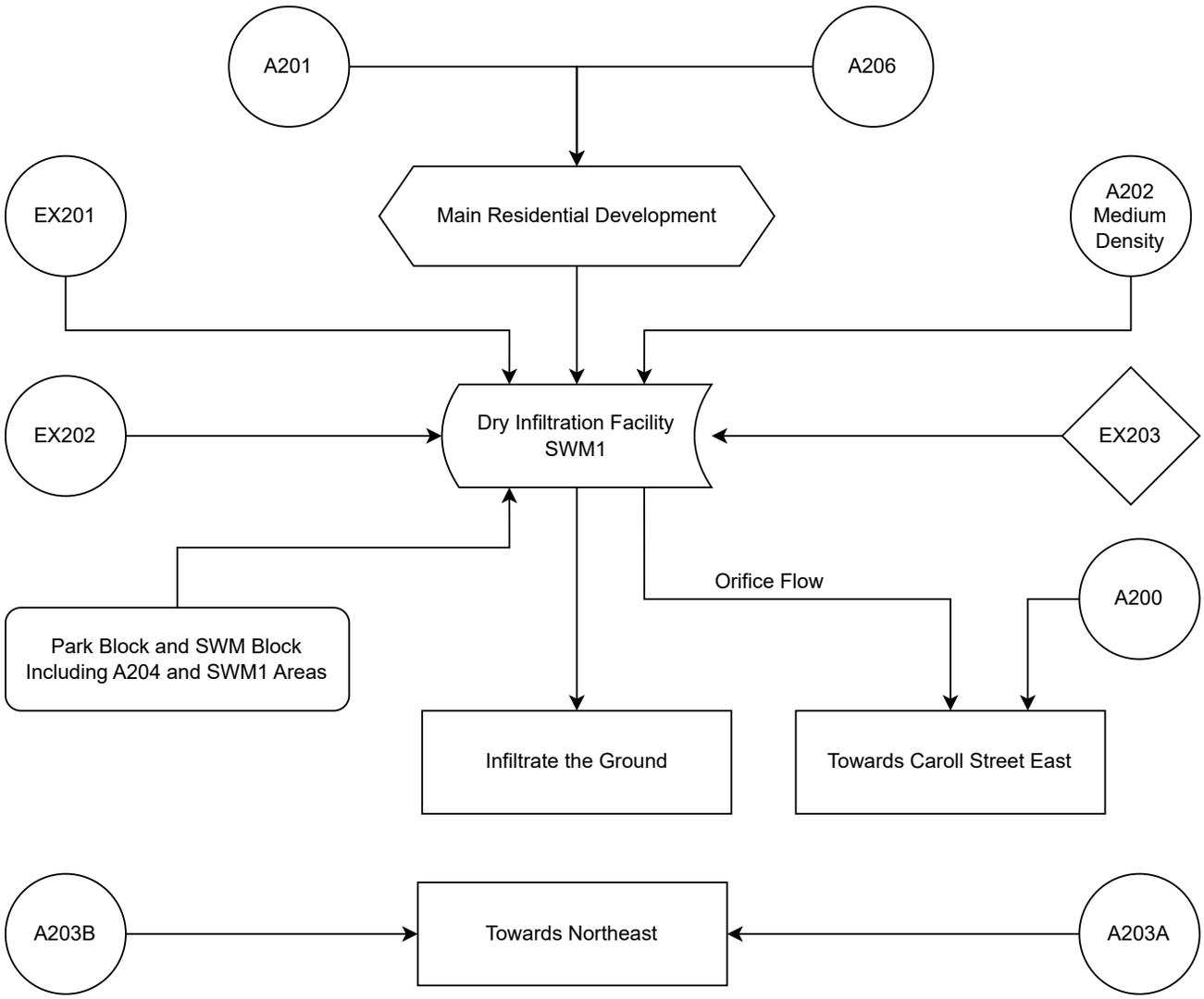
XXX Undeveloped Area

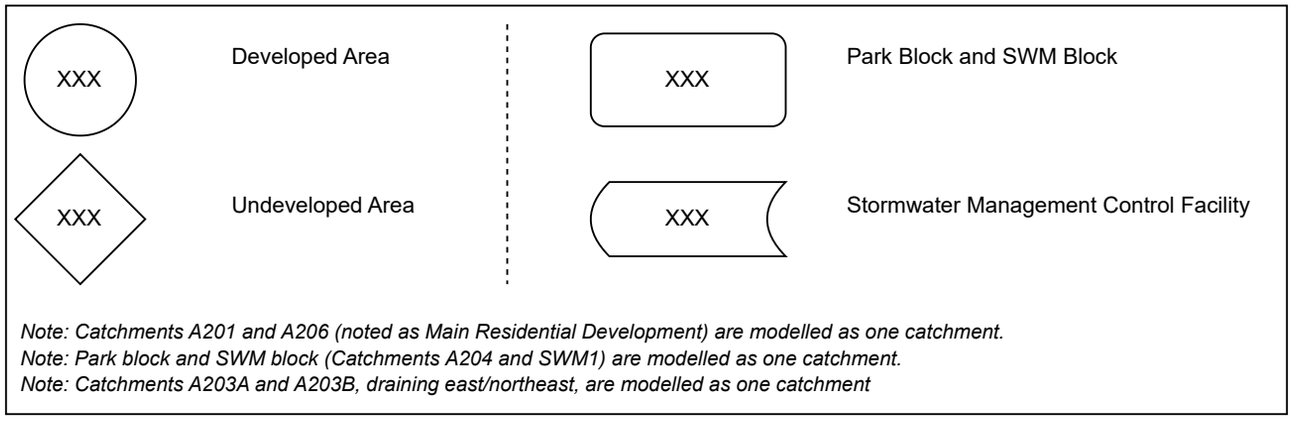
XXX Park Block and SWM Block

XXX Stormwater Management Control Facility

Note: Park block and SWM block (Catchments A204 and SWM1) are modelled as one catchment.

360 Caroll Street East
Ultimate Conditions





Note: Catchments A201 and A206 (noted as Main Residential Development) are modelled as one catchment.
Note: Park block and SWM block (Catchments A204 and SWM1) are modelled as one catchment.
Note: Catchments A203A and A203B, draining east/northeast, are modelled as one catchment

Subject: Storage Sizing
Project: Carroll Street
Project No.: 161414253
Client: Carroll Street East Developments
Date: 10-Jul-24

Dry Infiltration Facility

SWM Block Storage

Depth (m)	Side Slope (__:1)	Width (m)	Length (m)	Area (m^2)	Average Area (m^2)	Incremental Volume (m^3)	Cumulative Volume (m^3)
31.0	5	27.12	68	1844.16	1844.16	0.00	0.0
31.1	5	28.12	69	1940.28	1892.22	189.22	189.2
31.2	5	29.12	70	2038.40	1989.34	198.93	388.2
31.3	5	30.12	71	2138.52	2088.46	208.85	597.0
31.4	5	31.12	72	2240.64	2189.58	218.96	816.0
31.5	5	32.12	73	2344.76	2292.70	229.27	1045.2
31.6	5	33.12	74	2450.88	2397.82	239.78	1285.0
31.7	5	34.12	75	2559.00	2504.94	250.49	1535.5
31.8	5	35.12	76	2669.12	2614.06	261.41	1796.9
31.9	5	36.12	77	2781.24	2725.18	272.52	2069.4
32.0	5	37.12	78	2895.36	2838.30	283.83	2353.3
32.1	5	38.12	79	3011.48	2953.42	295.34	2648.6
32.2	5	39.12	80	3129.60	3070.54	307.05	2955.7
32.3	5	40.12	81	3249.72	3189.66	318.97	3274.6
32.4	5	41.12	82	3371.84	3310.78	331.08	3605.7
32.5	5	42.12	83	3495.96	3433.90	343.39	3949.1

Rearyard Swale

Depth (m)	Side Slope (__:1)	Width (m)	Length (m)	Area (m^2)	Average Area (m^2)	Incremental Volume (m^3)	Cumulative Volume (m^3)
0	3	0	150	0	0	0.0	0.0
0.4	3	2.4	150	360	180	72.0	72.0

Vertical Orifice Plate Downstream of the Proposed Storage

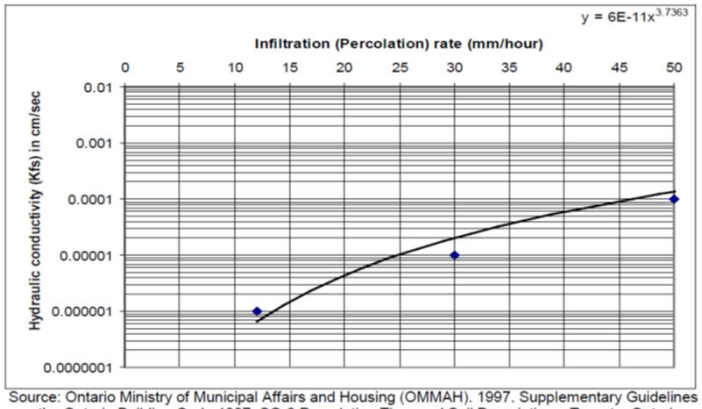
Elevation (m)	Orifice #1 (m^3/s)
31.30	0.000
31.40	0.007
31.50	0.017
31.60	0.022
31.70	0.027
31.80	0.031
31.90	0.034
32.00	0.037
32.10	0.040
32.20	0.043
32.30	0.045
32.40	0.048
32.50	0.050

Parameters	
Orifice #1	
Orifice #1 Elev. (m)	Orifice Coeff.
31.300	0.600
Orifice Mid Elev. (m)	Perimeter (m)
31.375	0.471
Orifice #1Diam.(mm)	Area (m^2)
150	0.018

Subject: **Infiltration Calculations - Interim Conditions**
Project: **Carroll Street**
Project No.: **161414253**
Client: **Carroll Street East Developments**
Date: **12-Jul-24**

	y (K (cm/s))	x (Inf (mm/hr))	
Site	5.5E-03	135	
Safety Factor	2.5		
Safety Infiltration Rate			**54.0** mm/hr

Note: y is as per Geotech report by exp



Source: Ontario Ministry of Municipal Affairs and Housing (OMMAH). 1997. Supplementary Guidelines to the Ontario Building Code 1997. SG-6 Percolation Time and Soil Descriptions. Toronto, Ontario.

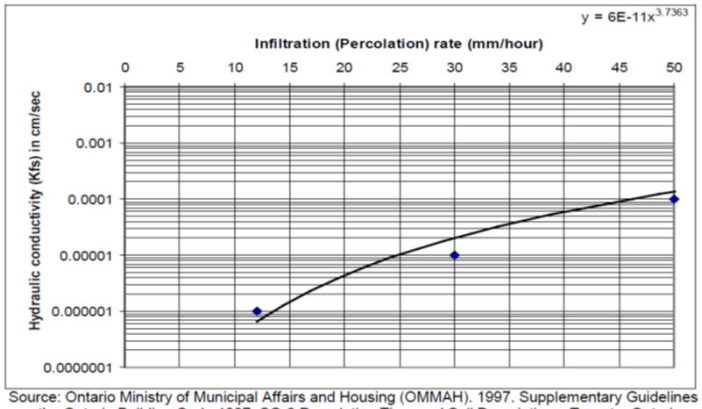
Roadway Infiltration				
Length of Road	459	m	Storage	37 m³
Area of Infiltration	458.8	m²	Drawdown Time	1.5 hrs
Void Ratio	0.4	-		
Infiltration Rate	24775	mm/hr		
	0.0069	m³/s		

SWMF Infiltration				
Area of Infiltration	1844.16	m²	Storage	3949 m³
Infiltration Rate	99585	mm/hr	Drawdown Time	39.7 hrs
	0.0277	m³/s		

Subject: **Infiltration Calculations - Ultimate Conditions**
Project: **Carroll Street**
Project No.: **161414253**
Client: **Carroll Street East Developments**
Date: **10-Jul-24**

	y (K (cm/s))	x (Inf (mm/hr))
Site	5.5E-03	135
Safety Factor	2.5	
Safety Infiltration Rate		**54.0** mm/hr

Note: y is as per Geotech report by exp



Source: Ontario Ministry of Municipal Affairs and Housing (OMMAH). 1997. Supplementary Guidelines to the Ontario Building Code 1997. SG-6 Percolation Time and Soil Descriptions. Toronto, Ontario.

Roadway Infiltration				
Length of Road	810	m	Storage	65 m³
Area of Infiltration	809.8	m²	Drawdown Time	1.5 hrs
Void Ratio	0.4	-		
Infiltration Rate	43729	mm/hr		
	0.0121	m³/s		

SWMF Infiltration				
Area of Infiltration	1844.16	m²	Storage	3949 m³
Infiltration Rate	99585	mm/hr	Drawdown Time	39.7 hrs
	0.0277	m³/s		

Rearyard Swale				
Length of Swale	150	m		
Area of Infiltration	360	m²	Storage	72 m³
Infiltration Rate	19440	mm/hr	Drawdown Time	3.7 hrs
	0.0054	m³/s		

Subject: Stage Storage
Project: Carroll Street
Project No.: 161414253
Client: Carroll Street East Developments
Date: 12-Jul-24

Stage-Storage-Discharge - Ultimate Conditions

Elevation (m)	SWMF Storage (m^3)	SWMF Storage (ha.m)	SWMF Infiltration (m^3/s)	SWMF Orifice Outflow (m^3/s)	Total Outflow (m^3/s)
30.8	0	0.0000	0.000	0.000	0.0000
31.0	0	0.0000	0.028	0.000	0.0277
31.1	189	0.0189	0.028	0.000	0.0277
31.2	388	0.0388	0.028	0.000	0.0277
31.3	597	0.0597	0.028	0.000	0.0277
31.4	816	0.0816	0.028	0.007	0.0351
31.5	1045	0.1045	0.028	0.017	0.0443
31.6	1285	0.1285	0.028	0.022	0.0499
31.7	1536	0.1536	0.028	0.027	0.0544
31.8	1797	0.1797	0.028	0.031	0.0583
31.9	2069	0.2069	0.028	0.034	0.0617
32.0	2353	0.2353	0.028	0.037	0.0648
32.1	2649	0.2649	0.028	0.040	0.0677
32.2	2956	0.2956	0.028	0.043	0.0703
32.3	3275	0.3275	0.028	0.045	0.0728
32.4	3606	0.3606	0.028	0.048	0.0752
32.5	3949	0.3949	0.028	0.050	0.0775

Stage-Storage-Discharge - Interim Conditions

Elevation (m)	SWMF Storage (m^3)	SWMF Storage (ha.m)	SWMF Infiltration (m^3/s)	Total Outflow (m^3/s)
30.8	0	0.0000	0.000	0.0000
31	0	0.0000	0.028	0.0277
31.1	189	0.0189	0.028	0.0277
31.2	388	0.0388	0.028	0.0277
31.3	597	0.0597	0.028	0.0277
31.4	816	0.0816	0.028	0.0277
31.5	1045	0.1045	0.028	0.0277
31.6	1285	0.1285	0.028	0.0277
31.7	1536	0.1536	0.028	0.0277
31.8	1797	0.1797	0.028	0.0277
31.9	2069	0.2069	0.028	0.0277
32	2353	0.2353	0.028	0.0277
32.1	2649	0.2649	0.028	0.0277
32.2	2956	0.2956	0.028	0.0277
32.3	3275	0.3275	0.028	0.0277
32.4	3606	0.3606	0.028	0.0277
32.5	3949	0.3949	0.028	0.0277

```
2     Metric units
*#************************************************************************
*#  Project Name: [360 Carroll Street]    Project Number: [161414253]
*#  Date        : 2024-07-15
*#  Modeller    : [MYK,AKK]
*#  Company     : Stantec Consulting Ltd. (London)
*#  License #   :  4730904
*#************************************************************************
*#************************************************************************
*#
*#  This model represents the hydologic characteristics of the proposed
*#  conditions in the proposed site plan.
*#  Storm events modeled are:
*#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
*#
*#************************************************************************
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[5]
                    ["5yr.3hr"]
*%-----------------|-------------------------------------------------------|
READ STORM          STORM_FILENAME=["STORM.001"]
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#
*#  Existing conditions
*#
*#************************************************************************
CALIB NASHYD        ID=[01], NHYD=["A103"], DT=[1]min, AREA=[0.64](ha),
                    DWF=[0](cms),  CN/C=[54], IA=[5](mm),
                    N=[3], TP=[0.24]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#
*#  Proposed conditions
*#
*#************************************************************************
CALIB STANDHYD      ID=[01], NHYD=["A201&A206"], DT=[1](min), AREA=[5.52](ha),
                    XIMP=[0.50], TIMP=[0.59], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[35](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[146](m), MNI=[0.013], SCI=[0](min)
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[02], NHYD=["A202"], DT=[1](min), AREA=[1.00](ha),
                    XIMP=[0.59], TIMP=[0.69], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[20](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[90](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[03], NHYD=["A203A&A203B"], DT=[1](min), AREA=[0.27](ha),
                    XIMP=[0.01], TIMP=[0.38], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[13](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[13](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[04], NHYD=["A200"], DT=[1](min), AREA=[0.13](ha),
                    XIMP=[0.55], TIMP=[0.55], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[45](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[45](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=[05], NHYD=["A204&SWM1"], DT=[1]min, AREA=[0.75](ha),
                    DWF=[0](cms),  CN/C=[65], IA=[5](mm),
                    N=[3], TP=[0.24]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[06], NHYD=["EX201"], DT=[1](min), AREA=[0.19](ha),
                    XIMP=[0.01], TIMP=[0.38], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[15](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[5](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[07], NHYD=["EX202"], DT=[1](min), AREA=[0.49](ha),
                    XIMP=[0.01], TIMP=[0.62], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[42](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[16](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=[08], NHYD=["EX203"], DT=[1]min, AREA=[0.14](ha),
                    DWF=[0](cms),  CN/C=[54], IA=[5](mm),
                    N=[3], TP=[0.12]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[09], NHYD=["To3rdPipe"], IDs to add=[01+06+07+08]
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#  Third Pipe System
*#************************************************************************
COMPUTE DUALHYD     IDin=[09], CINLET=[0.0121](cms), NINLET=[1],
                    MAJID=[06], MajNHYD=["ToStorage"],
                    MINID=[07], MinNHYD=["To3rd"],
                    TMJSTO=[65](cu-m)
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[09], NHYD=["ToStorageF"], IDs to add=[02+05+06]
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#  Dry Pond Storage
*#************************************************************************
ROUTE RESERVOIR     IDout=[01],   NHYD=["Storage"],  IDin=[09],
                    RDT=[1](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                [   0.0000 ,  0.0000 ]
                                [   0.0277 ,  0.0189 ]
                                [   0.0277 ,  0.0388 ]
                                [   0.0277 ,  0.0597 ]
                                [   0.0351 ,  0.0816 ]
                                [   0.0443 ,  0.1045 ]
                                [   0.0499 ,  0.1285 ]
                                [   0.0544 ,  0.1536 ]
                                [   0.0583 ,  0.1797 ]
                                [   0.0617 ,  0.2069 ]
                                [   0.0648 ,  0.2353 ]
                                [   0.0677 ,  0.2649 ]
                                [   0.0703 ,  0.2956 ]
                                [   0.0728 ,  0.3275 ]
                                [   0.0752 ,  0.3606 ]
                                [   0.0775 ,  0.3949 ]
                                [   -1  ,  -1  ]  (max twenty pts)
                    IDovf=[02], NHYDovf=["OVFL"]
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[01], CINLET=[0.0277](cms), NINLET=[1],
                    MAJID=[09], MajNHYD=["ToCarroll"],
                    MINID=[10], MinNHYD=["Infiltration"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[01], NHYD=["TowardsNW"], IDs to add=[02+04+09]
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#  Rearyard Swale Storage
*#************************************************************************
COMPUTE DUALHYD     IDin=[03], CINLET=[0.0054](cms), NINLET=[1],
                    MAJID=[02], MajNHYD=["TowardsNE"],
                    MINID=[04], MinNHYD=["InSwale"],
                    TMJSTO=[72](cu-m)
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#
*#  Interim conditions
*#
*#************************************************************************
CALIB STANDHYD      ID=[01], NHYD=["A201"], DT=[1](min), AREA=[3.14](ha),
                    XIMP=[0.50], TIMP=[0.59], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[35](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[146](m), MNI=[0.013], SCI=[0](min)
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[02], NHYD=["A202"], DT=[1](min), AREA=[1.00](ha),
                    XIMP=[0.59], TIMP=[0.69], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[20](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[90](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=[03], NHYD=["EX203"], DT=[1]min, AREA=[0.14](ha),
                    DWF=[0](cms),  CN/C=[54], IA=[5](mm),
                    N=[3], TP=[0.12]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=[04], NHYD=["A204&SWM1"], DT=[1]min, AREA=[0.75](ha),
                    DWF=[0](cms),  CN/C=[65], IA=[5](mm),
                    N=[3], TP=[0.24]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[05], NHYD=["To3rdPipe"], IDs to add=[01+03]
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#  Third Pipe System
*#************************************************************************
COMPUTE DUALHYD     IDin=[05], CINLET=[0.0069](cms), NINLET=[1],
                    MAJID=[06], MajNHYD=["ToStorage"],
                    MINID=[07], MinNHYD=["To3rd"],
                    TMJSTO=[37](cu-m)
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[09], NHYD=["ToStorageF"], IDs to add=[02+04+06]
*%-----------------|-------------------------------------------------------|
*#************************************************************************
*#  Dry Pond Storage
*#************************************************************************
CALIB STANDHYD      ID=[04], NHYD=["A200"], DT=[1](min), AREA=[0.13](ha),
                    XIMP=[0.55], TIMP=[0.55], DWF=[0.0](cms), LOSS=[2],
                    SCS curve number CN=[65],
                    Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
                                         LGP=[45](m), MNP=[0.24], SCP=[0](min),
                    Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
                                         LGI=[45](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*%-----------------|-------------------------------------------------------|
ROUTE RESERVOIR     IDout=[01],   NHYD=["Storage"],  IDin=[09],
                    RDT=[1](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                [   0.0000 ,  0.0000 ]
                                [   0.0277 ,  0.0189 ]
                                [   0.0277 ,  0.0388 ]
                                [   0.0277 ,  0.0597 ]
                                [   0.0277 ,  0.3949 ]
                                [   -1  ,  -1  ]  (max twenty pts)
                    IDovf=[02], NHYDovf=["OVFL"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[09], NHYD=["TowardsNW"], IDs to add=[02+04]
*%-----------------|-------------------------------------------------------|
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[10]
                    ["10YR.3hr"]
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[25]
                    ["25YR.3hr"]
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[50]
                    ["50YR.3hr"]
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[100]
                    ["100YR.3hr"]
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[250]
                    ["250YR.3hr"]
*%-----------------|-------------------------------------------------------|
FINISH
```

```
00001> ================================================================================
00002>
00003>    SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999    =========
00004>    S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
00005>    SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9   Ver  4.05
00006>        S  W W  M   M  M  H   H    Y    M   M  O   O       9999   9999   Sept 2011
00007>    SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9    =========
00008>                                                          9   9  9   9   # 4730904
00009>          StormWater Management HYdrologic Model           999    999    =========
00010>
00011> ********************************************************************************
00012> ***************************** SWMHYMO Ver/4.05  ********************************
00013> *********  A single event and continuous hydrologic simulation model  *********
00014> *********     based on the principles of HYMO and its successors      *********
00015> *********                 OTTHYMO-83 and OTTHYMO-89.                  *********
00016> ********************************************************************************
00017> ********* Distributed by:  J.F. Sabourin and Associates Inc.           *********
00018> *********                  Ottawa,  Ontario: (613) 836-3884           *********
00019> *********                  Gatineau, Quebec: (819) 243-6858           *********
00020> *********                  E-Mail: swmhymo@jfsa.com                   *********
00021> ********************************************************************************
00022>
00023> +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
00024> +++++++++ Licensed user: Stantec Consulting Ltd. (Kitchener)          +++++++++
00025> +++++++++                  Kitchener            SERIAL#:4730904       +++++++++
00026> +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
00027>
00028> ********************************************************************************
00029> *********            ++++++ PROGRAM ARRAY DIMENSIONS ++++++            *********
00030> *********           Maximum value for ID numbers  :     10            *********
00031> *********           Max. number of rainfall points: 105408            *********
00032> *********           Max. number of flow points    : 105408            *********
00033> ********************************************************************************
00034>
00035>
00036> *********************   D E T A I L E D   O U T P U T   **********************
00037> ********************************************************************************
00038> *         DATE: 2024-07-15     TIME: 14:48:05     RUN COUNTER: 000244         *
00039> ********************************************************************************
00040> * Input   filename: C:\MODELI~1\SWMHYMO\CAROLL~1\Prop13.dat                    *
00041> * Output  filename: C:\MODELI~1\SWMHYMO\CAROLL~1\Prop13.out                    *
00042> * Summary filename: C:\MODELI~1\SWMHYMO\CAROLL~1\Prop13.sum                    *
00043> * User comments:                                                              *
00044> * 1:_____________________________________________________________________________*
00045> * 2:_____________________________________________________________________________*
00046> * 3:_____________________________________________________________________________*
00047> ********************************************************************************
00048>
00049> --------------------------------------------------------------------------------
00050> 001:0001----------------------------------------------------------------------
00051> *#*******************************************************************************
00052> *#  Project Name: [360 Carroll Street]    Project Number: [161414253]
00053> *#  Date        : 2024-07-15
00054> *#  Modeller    : [MYK,AKK]
00055> *#  Company     : Stantec Consulting Ltd. (London)
00056> *#  License #   :  4730904
00057> *#*******************************************************************************
00058> *#*******************************************************************************
00059> *#
00060> *#  This model represents the hydologic characteristics of the proposed
00061> *#  conditions in the proposed site plan.
00062> *#  Storm events modeled are:
00063> *#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
00064> *#
00065> *#*******************************************************************************
00066>   ** END OF RUN :   4
00067>
00068> ********************************************************************************
00069>
00070>
00071>
00072>
00073>
00074> --------------------
00075> | START            |  Project  dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
00076> --------------------  Rainfall dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
00077>     TZERO =   .00 hrs on        0
00078>     METOUT=   2 (output = METRIC)
00079>     NRUN  = 005
00080>     NSTORM=   1
00081>            #  1=5yr.3hr
00082> --------------------------------------------------------------------------------
00083> 005:0002----------------------------------------------------------------------
00084> *#*******************************************************************************
00085> *#  Project Name: [360 Carroll Street]    Project Number: [161414253]
00086> *#  Date        : 2024-07-15
00087> *#  Modeller    : [MYK,AKK]
00088> *#  Company     : Stantec Consulting Ltd. (London)
00089> *#  License #   :  4730904
00090> *#*******************************************************************************
00091> *#*******************************************************************************
00092> *#
00093> *#  This model represents the hydologic characteristics of the proposed
00094> *#  conditions in the proposed site plan.
00095> *#  Storm events modeled are:
00096> *#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
00097> *#
00098> *#*******************************************************************************
00099> --------------------------------------------------------------------------------
00100> 005:0002----------------------------------------------------------------------
00101> --------------------
00102> | READ STORM       |    Filename: 5-yr, 3hr Chicago Storm from Strathroy I
00103> | Ptotal=  44.36 mm|    Comments: 5-yr, 3hr Chicago Storm from Strathroy I
00104> --------------------
00105>              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
00106>               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
00107>               .08   3.263 |    .83  20.866 |   1.58  10.120 |   2.33   4.397
00108>               .17   3.582 |    .92  49.986 |   1.67   8.819 |   2.42   4.145
00109>               .25   3.976 |   1.00 142.775 |   1.75   7.817 |   2.50   3.921
00110>               .33   4.476 |   1.08  64.719 |   1.83   7.022 |   2.58   3.722
00111>               .42   5.130 |   1.17  35.904 |   1.92   6.377 |   2.67   3.543
00112>               .50   6.023 |   1.25  24.205 |   2.00   5.844 |   2.75   3.382
00113>               .58   7.313 |   1.33  18.064 |   2.08   5.395 |   2.83   3.235
00114>               .67   9.334 |   1.42  14.343 |   2.17   5.013 |   2.92   3.102
00115>               .75  12.924 |   1.50  11.871 |   2.25   4.684 |   3.00   2.979
00116>
00117> --------------------------------------------------------------------------------
00118> 005:0003----------------------------------------------------------------------
00119> *#*******************************************************************************
00120> *#
00121> *#  Existing conditions
00122> *#
00123> *#*******************************************************************************
00124> ----------------------
00125> | CALIB NASHYD       |   Area     (ha)=     .64   Curve Number   (CN)=54.00
00126> | 01:A103   DT= 1.00 |   Ia       (mm)=   5.000   # of Linear Res.(N)= 3.00
00127> ----------------------   U.H. Tp(hrs)=    .240
00128>
00129>      Unit Hyd Qpeak  (cms)=     .102
00130>
00131>      PEAK FLOW       (cms)=     .011 (i)
00132>      TIME TO PEAK    (hrs)=    1.333
00133>      RUNOFF VOLUME    (mm)=    6.056
00134>      TOTAL RAINFALL   (mm)=   44.356
00135>      RUNOFF COEFFICIENT   =     .137
00136>
00137>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00138>
00139> --------------------------------------------------------------------------------
00140> 005:0004----------------------------------------------------------------------
00141> *#*******************************************************************************
00142> *#
00143> *#  Proposed conditions
00144> *#
00145> *#*******************************************************************************
00146> ----------------------
00147> | CALIB STANDHYD     |   Area     (ha)=    5.52
00148> | 01:A201&A DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
00149> ----------------------
00150>                                IMPERVIOUS    PERVIOUS (i)
00151>      Surface Area     (ha)=       3.26         2.26
00152>      Dep. Storage     (mm)=       2.00         5.00
00153>      Average Slope     (%)=       2.00         2.00
00154>      Length            (m)=     146.00        35.00
00155>      Mannings n            =       .013         .240
00156>
00157>      Max.eff.Inten.(mm/hr)=     142.77        24.71
00158>                    over (min)       2.00        13.00
00159>      Storage Coeff.  (min)=       2.26 (ii)   13.38 (ii)
00160>      Unit Hyd. Tpeak (min)=       2.00        13.00
00161>      Unit Hyd. peak  (cms)=        .52          .09
00162>                                                          *TOTALS*
00163>      PEAK FLOW       (cms)=        .99          .09         1.004 (iii)
00164>      TIME TO PEAK    (hrs)=       1.00         1.27         1.000
00165>      RUNOFF VOLUME    (mm)=      42.36        10.63        26.494
00166>      TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
00167>      RUNOFF COEFFICIENT   =        .95          .24          .597
00168>
00169>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00170>            CN* =  65.0    Ia = Dep. Storage  (Above)
00171>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00172>            THAN THE STORAGE COEFFICIENT.
00173>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00174>
00175> --------------------------------------------------------------------------------
00176> 005:0005----------------------------------------------------------------------
00177> ----------------------
00178> | CALIB STANDHYD     |   Area     (ha)=    1.00
00179> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
00180> ----------------------
00181>                                IMPERVIOUS    PERVIOUS (i)
00182>      Surface Area     (ha)=        .69          .31
00183>      Dep. Storage     (mm)=       2.00         5.00
00184>      Average Slope     (%)=       2.00         2.00
00185>      Length            (m)=      90.00        20.00
00186>      Mannings n            =       .013         .240
00187>
00188>      Max.eff.Inten.(mm/hr)=     142.77        33.52
00189>                    over (min)       2.00         9.00
00190>      Storage Coeff.  (min)=       1.69 (ii)    8.72 (ii)
00191>      Unit Hyd. Tpeak (min)=       2.00         9.00
00192>      Unit Hyd. peak  (cms)=        .62          .13
00193>                                                          *TOTALS*
00194>      PEAK FLOW       (cms)=        .22          .02          .228 (iii)
00195>      TIME TO PEAK    (hrs)=       1.00         1.17         1.000
00196>      RUNOFF VOLUME    (mm)=      42.36        11.43        29.678
00197>      TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
00198>      RUNOFF COEFFICIENT   =        .95          .26          .669
00199>
00200>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00201>            CN* =  65.0    Ia = Dep. Storage  (Above)
00202>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00203>            THAN THE STORAGE COEFFICIENT.
00204>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00205>
00206> --------------------------------------------------------------------------------
00207> 005:0006----------------------------------------------------------------------
00208> ----------------------
00209> | CALIB STANDHYD     |   Area     (ha)=     .27
00210> | 03:A203A& DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
00211> ----------------------
00212>                                IMPERVIOUS    PERVIOUS (i)
00213>      Surface Area     (ha)=        .10          .17
00214>      Dep. Storage     (mm)=       2.00         5.00
00215>      Average Slope     (%)=       2.00         2.00
00216>      Length            (m)=      13.00        13.00
00217>      Mannings n            =       .013         .240
00218>
00219>      Max.eff.Inten.(mm/hr)=     142.77        56.86
00220>                    over (min)       1.00         5.00
00221>      Storage Coeff.  (min)=        .53 (ii)    4.93 (ii)
00222>      Unit Hyd. Tpeak (min)=       1.00         5.00
00223>      Unit Hyd. peak  (cms)=       1.44          .23
00224>                                                          *TOTALS*
00225>      PEAK FLOW       (cms)=        .00          .02          .019 (iii)
00226>      TIME TO PEAK    (hrs)=       1.00         1.07         1.067
00227>      RUNOFF VOLUME    (mm)=      42.35        13.39        13.684
00228>      TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
00229>      RUNOFF COEFFICIENT   =        .95          .30          .309
00230>
00231>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00232>            CN* =  65.0    Ia = Dep. Storage  (Above)
00233>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00234>            THAN THE STORAGE COEFFICIENT.
00235>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00236>
00237> --------------------------------------------------------------------------------
00238> 005:0007----------------------------------------------------------------------
00239> ----------------------
00240> | CALIB STANDHYD     |   Area     (ha)=     .13
00241> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
00242> ----------------------
00243>                                IMPERVIOUS    PERVIOUS (i)
00244>      Surface Area     (ha)=        .07          .06
00245>      Dep. Storage     (mm)=       2.00         5.00
00246>      Average Slope     (%)=       2.00         2.00
00247>      Length            (m)=      45.00        45.00
00248>      Mannings n            =       .013         .240
00249>
00250>      Max.eff.Inten.(mm/hr)=     142.77        14.58
00251>                    over (min)       1.00        17.00
00252>      Storage Coeff.  (min)=       1.11 (ii)   17.08 (ii)
00253>      Unit Hyd. Tpeak (min)=       1.00        17.00
00254>      Unit Hyd. peak  (cms)=       1.01          .07
```

```
                                                        *TOTALS*
      PEAK FLOW       (cms)=        .03          .00          .028 (iii)
      TIME TO PEAK    (hrs)=       1.00         1.35         1.000
      RUNOFF VOLUME    (mm)=      42.36         8.79        27.253
      TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
      RUNOFF COEFFICIENT   =        .95          .20          .614

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  65.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

005:0008
 | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
 | 05:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
                        U.H. Tp(hrs)=    .240

      Unit Hyd Qpeak  (cms)=     .119

      PEAK FLOW       (cms)=     .019 (i)
      TIME TO PEAK    (hrs)=    1.333
      RUNOFF VOLUME    (mm)=    8.794
      TOTAL RAINFALL   (mm)=   44.356
      RUNOFF COEFFICIENT   =     .198

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

005:0009
 | CALIB STANDHYD     |   Area    (ha)=     .19
 | 06:EX201  DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00

                              IMPERVIOUS    PERVIOUS (i)
      Surface Area     (ha)=        .07          .12
      Dep. Storage     (mm)=       2.00         5.00
      Average Slope     (%)=       2.00         2.00
      Length            (m)=       5.00        15.00
      Mannings n           =       .013         .240

      Max.eff.Inten.(mm/hr)=     142.77        56.86
                  over (min)        1.00         5.00
      Storage Coeff.  (min)=        .30 (ii)    5.09 (ii)
      Unit Hyd. Tpeak (min)=       1.00         5.00
      Unit Hyd. peak  (cms)=       1.64          .22
                                                        *TOTALS*
      PEAK FLOW       (cms)=        .00          .01          .013 (iii)
      TIME TO PEAK    (hrs)=        .98         1.07         1.067
      RUNOFF VOLUME    (mm)=      42.36        13.39        13.684
      TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
      RUNOFF COEFFICIENT   =        .95          .30          .309

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  65.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

005:0010
 | CALIB STANDHYD     |   Area    (ha)=     .49
 | 07:EX202  DT= 1.00 |   Total Imp(%)=   62.00   Dir. Conn.(%)=    1.00

                              IMPERVIOUS    PERVIOUS (i)
      Surface Area     (ha)=        .30          .19
      Dep. Storage     (mm)=       2.00         5.00
      Average Slope     (%)=       2.00         2.00
      Length            (m)=      16.00        42.00
      Mannings n           =        .013         .240

      Max.eff.Inten.(mm/hr)=     142.77       125.78
                  over (min)        1.00         7.00
      Storage Coeff.  (min)=        .60 (ii)    7.07 (ii)
      Unit Hyd. Tpeak (min)=       1.00         7.00
      Unit Hyd. peak  (cms)=       1.38          .16
                                                        *TOTALS*
      PEAK FLOW       (cms)=        .00          .04          .044 (iii)
      TIME TO PEAK    (hrs)=       1.00         1.10         1.100
      RUNOFF VOLUME    (mm)=      42.35        18.97        19.204
      TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
      RUNOFF COEFFICIENT   =        .95          .43          .433

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  65.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

005:0011
 | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
 | 08:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
                        U.H. Tp(hrs)=    .120

      Unit Hyd Qpeak  (cms)=     .045

      PEAK FLOW       (cms)=     .003 (i)
      TIME TO PEAK    (hrs)=    1.167
      RUNOFF VOLUME    (mm)=    6.055
      TOTAL RAINFALL   (mm)=   44.356
      RUNOFF COEFFICIENT   =     .137

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

005:0012
 | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
                        |                  (ha)     (cms)   (hrs)   (mm)   (cms)
                         ID1 01:A201&A206      5.52    1.004    1.00  26.49    .000
                        +ID2 06:EX201          .19     .013    1.07  13.68    .000
                        +ID3 07:EX202          .49     .044    1.10  19.20    .000
                        +ID4 08:EX203          .14     .003    1.17   6.06    .000
                         ========================================================
                         SUM 09:To3rdPipe      6.34    1.036    1.00  25.10    .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

005:0013
*#*************************************************************************
*#  Third Pipe System
*#*************************************************************************
 | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .012  (cms)
 | TotalHyd 09:To3rdP |   Number of inlets in system [NINLET] =       1
                        Total minor system capacity          =    .012  (cms)
                        Total major system storage [TMJSTO] =      65.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)     (cms)
      TOTAL HYD.   09:To3rdP       6.34     1.036     1.000    25.096     .000
      ==========================================================================
      MAJOR SYST   06:ToStor       5.58     1.024     1.000    25.096     .000
      MINOR SYST   07:To3rd         .76      .012      .500    25.168     .000

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

      Maximum MAJOR SYSTEM storage used =      65.(cu.m.)

005:0014
 | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
                        |                  (ha)     (cms)   (hrs)   (mm)   (cms)
                         ID1 02:A202           1.00     .228    1.00  29.68    .000
                        +ID2 05:A204&SWM1       .75     .019    1.33   8.79    .000
                        +ID3 06:ToStorage      5.58    1.024    1.00  25.10    .000
                         ========================================================
                         SUM 09:ToStorageF     7.33    1.254    1.00  24.05    .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

005:0015
*#*************************************************************************
*#  Dry Pond Storage
*#*************************************************************************
 | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
 |  IN>09:(ToStor)    |
 | OUT<01:(Storag)    |    ========  OUTLFOW STORAGE TABLE  ========
                         OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                           (cms)    (ha.m.)    |    (cms)    (ha.m.)
                            .000  .0000E+00    |     .058  .1797E+00
                            .028  .1890E-01    |     .062  .2069E+00
                            .028  .3880E-01    |     .065  .2353E+00
                            .028  .5970E-01    |     .068  .2649E+00
                            .035  .8160E-01    |     .070  .2956E+00
                            .044  .1045E+00    |     .073  .3275E+00
                            .050  .1285E+00    |     .075  .3606E+00
                            .054  .1536E+00    |     .078  .3949E+00

      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
      ---------------------       (ha)     (cms)     (hrs)       (mm)
      INFLOW >09: (ToStor)       7.33     1.254     1.000     24.053
      OUTFLOW<01: (Storag)       7.33      .052     2.533     24.053
     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=       .00

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    4.151
                    TIME SHIFT OF PEAK FLOW         (min)=    92.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.1405E+00

005:0016
 | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .028  (cms)
 | TotalHyd 01:Storag |   Number of inlets in system [NINLET] =       1
                        Total minor system capacity          =    .028  (cms)
                        Total major system storage [TMJSTO] =      0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)     (cms)
      TOTAL HYD.   01:Storag       7.33      .052     2.533    24.053     .000
      ==========================================================================
      MAJOR SYST   09:ToCarr       1.64      .024     2.533    24.053     .000
      MINOR SYST   10:Infilt       5.69      .028      .950    24.053     .000

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

005:0017
 | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
                        |                  (ha)     (cms)   (hrs)   (mm)   (cms)
                         ID1 02:OVFL           .00     .000     .00    .00    .000
                        +ID2 04:A200           .13     .028    1.00  27.25    .000
                        +ID3 09:ToCarroll     1.64     .024    2.53  24.05    .000
                         ========================================================
                         SUM 01:TowardsNW     1.77     .028    1.00  24.29    .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

005:0018
*#*************************************************************************
*#  Rearyard Swale Storage
*#*************************************************************************
 | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .005  (cms)
 | TotalHyd 03:A203A& |   Number of inlets in system [NINLET] =       1
                        Total minor system capacity          =    .005  (cms)
                        Total major system storage [TMJSTO] =      72.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)     (cms)
      TOTAL HYD.   03:A203A&       .27      .019     1.067    13.684     .000
      ==========================================================================
      MAJOR SYST   02:Toward       .00      .000      .000      .000     .000
      MINOR SYST   04:InSwal       .27      .005     2.700    13.766     .000

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

      Maximum MAJOR SYSTEM storage used =      12.(cu.m.)

005:0019
*#*************************************************************************
*#
*#  Interim conditions
*#
*#*************************************************************************
 | CALIB STANDHYD     |   Area    (ha)=    3.14
```

```
| 01:A201   DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.85         1.29
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     146.00        35.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     142.77        24.71
               over (min)        2.00        13.00
     Storage Coeff.  (min)=       2.26 (ii)   13.38 (ii)
     Unit Hyd. Tpeak (min)=       2.00        13.00
     Unit Hyd. peak  (cms)=        .52          .09
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .56          .05          .571 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.27         1.000
     RUNOFF VOLUME    (mm)=      42.36        10.63        26.494
     TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
     RUNOFF COEFFICIENT   =        .95          .24          .597

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
005:0020--------------------------------------------------------------------------
----------------------
| CALIB STANDHYD     |   Area     (ha)=    1.00
| 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .69          .31
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      90.00        20.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     142.77        33.52
               over (min)        2.00         9.00
     Storage Coeff.  (min)=       1.69 (ii)    8.72 (ii)
     Unit Hyd. Tpeak (min)=       2.00         9.00
     Unit Hyd. peak  (cms)=        .62          .13
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .22          .02          .228 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.17         1.000
     RUNOFF VOLUME    (mm)=      42.36        11.43        29.678
     TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
     RUNOFF COEFFICIENT   =        .95          .26          .669

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
005:0021--------------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area     (ha)=     .14   Curve Number   (CN)=54.00
| 03:EX203  DT= 1.00 |   Ia       (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .120

     Unit Hyd Qpeak  (cms)=     .045

     PEAK FLOW       (cms)=     .003 (i)
     TIME TO PEAK    (hrs)=    1.167
     RUNOFF VOLUME    (mm)=    6.055
     TOTAL RAINFALL   (mm)=   44.356
     RUNOFF COEFFICIENT   =     .137

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

--------------------------------------------------------------------------------
005:0022--------------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area     (ha)=     .75   Curve Number   (CN)=65.00
| 04:A204&S DT= 1.00 |   Ia       (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .240

     Unit Hyd Qpeak  (cms)=     .119

     PEAK FLOW       (cms)=     .019 (i)
     TIME TO PEAK    (hrs)=    1.333
     RUNOFF VOLUME    (mm)=    8.794
     TOTAL RAINFALL   (mm)=   44.356
     RUNOFF COEFFICIENT   =     .198

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

--------------------------------------------------------------------------------
005:0023--------------------------------------------------------------------------
------------------------
| ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                        ID1 01:A201        3.14      .571    1.00  26.49    .000
                      +ID2 03:EX203         .14      .003    1.17   6.06    .000
                        ==========================================================
                        SUM 05:To3rdPipe     3.28     .572    1.00  25.62    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0024--------------------------------------------------------------------------
*#*************************************************************************
*#  Third Pipe System
*#*************************************************************************
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .007  (cms)
| TotalHyd 05:To3rdP |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity        =    .007  (cms)
                         Total major system storage [TMJSTO] =     37.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   05:To3rdP       3.28      .572     1.000   25.622     .000
     ====================================================================
     MAJOR SYST   06:ToStor       2.86      .565     1.000   25.622     .000
     MINOR SYST   07:To3rd         .42      .007      .500   25.712     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

     Maximum MAJOR SYSTEM storage used =      37.(cu.m.)

--------------------------------------------------------------------------------
005:0025--------------------------------------------------------------------------
------------------------
| ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                        ID1 02:A202        1.00      .228    1.00  29.68    .000
                      +ID2 04:A204&SWM1     .75      .019    1.33   8.79    .000
                      +ID3 06:ToStorage    2.86      .565    1.00  25.62    .000
                        ==========================================================
                        SUM 09:ToStorageF    4.61     .795    1.00  23.76    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0026--------------------------------------------------------------------------
*#*************************************************************************
*#  Dry Pond Storage
*#*************************************************************************
----------------------
| CALIB STANDHYD     |   Area     (ha)=     .13
| 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .07          .06
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      45.00        45.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     142.77        14.58
               over (min)        1.00        17.00
     Storage Coeff.  (min)=       1.11 (ii)   17.08 (ii)
     Unit Hyd. Tpeak (min)=       1.00        17.00
     Unit Hyd. peak  (cms)=       1.01          .07
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .03          .00          .028 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.35         1.000
     RUNOFF VOLUME    (mm)=      42.36         8.79        27.253
     TOTAL RAINFALL   (mm)=      44.36        44.36        44.356
     RUNOFF COEFFICIENT   =        .95          .20          .614

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
005:0027--------------------------------------------------------------------------
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>09:(ToStor)    |
| OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .028  .5970E-01
                            .028  .1890E-01   |     .028  .3949E+00
                            .028  .3880E-01   |     .000  .0000E+00

     ROUTING RESULTS             AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (ToStor)       4.61      .795     1.000     23.764
     OUTFLOW<01: (Storag)       4.61      .028      .983     23.763
    OVERFLOW<02: (OVFL  )        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =         0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=       .00

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     3.483
                    TIME SHIFT OF PEAK FLOW          (min)=    -1.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.8802E-01

--------------------------------------------------------------------------------
005:0028--------------------------------------------------------------------------
------------------------
| ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                        ID1 02:OVFL         .00      .000     .00     .00    .000
                      +ID2 04:A200          .13      .028    1.00  27.25    .000
                        ==========================================================
                        SUM 09:TowardsNW     .13     .028    1.00  27.25    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0029--------------------------------------------------------------------------
  ** END OF RUN :   9

********************************************************************************



----------------------
| START              |  Project  dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
----------------------  Rainfall dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
    TZERO =    .00 hrs on     0
    METOUT=   2 (output = METRIC)
    NRUN  = 010
    NSTORM=   1
              #  1=10YR.3hr

--------------------------------------------------------------------------------
010:0002--------------------------------------------------------------------------
*#*************************************************************************
*#  Project Name: [360 Carroll Street]    Project Number: [161414253]
*#  Date        : 2024-07-15
*#  Modeller    : [MYK,AKK]
*#  Company     : Stantec Consulting Ltd. (London)
*#  License #   :  4730904
*#*************************************************************************
*#*************************************************************************
*#
*#  This model represents the hydologic characteristics of the proposed
*#  conditions in the proposed site plan.
*#  Storm events modeled are:
*#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
*#
*#*************************************************************************
--------------------------------------------------------------------------------
010:0002--------------------------------------------------------------------------
----------------------
| READ STORM         |    Filename: 10-yr, 3hr Chicago Storm from Strathroy
| Ptotal=  51.88 mm  |    Comments: 10-yr, 3hr Chicago Storm from Strathroy
----------------------
               TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
```

```
00763>                hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
00764>                .08   3.605 |    .83  24.391 |   1.58  11.585 |   2.33   4.903
00765>                .17   3.969 |    .92  59.464 |   1.67  10.053 |   2.42   4.613
00766>                .25   4.420 |   1.00 170.842 |   1.75   8.876 |   2.50   4.357
00767>                .33   4.994 |   1.08  77.235 |   1.83   7.947 |   2.58   4.129
00768>                .42   5.748 |   1.17  42.478 |   1.92   7.195 |   2.67   3.925
00769>                .50   6.783 |   1.25  28.394 |   2.00   6.575 |   2.75   3.741
00770>                .58   8.287 |   1.33  21.032 |   2.08   6.055 |   2.83   3.574
00771>                .67  10.659 |   1.42  16.593 |   2.17   5.613 |   2.92   3.422
00772>                .75  14.907 |   1.50  13.657 |   2.25   5.233 |   3.00   3.283
00773>
00774> ------------------------------------------------------------------------------
00775> 010:0003----------------------------------------------------------------------
00776> *#*****************************************************************************
00777> *#
00778> *#  Existing conditions
00779> *#
00780> *#*****************************************************************************
00781> ----------------------
00782> | CALIB NASHYD       |   Area    (ha)=     .64   Curve Number   (CN)=54.00
00783> | 01:A103   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00784> ----------------------   U.H. Tp(hrs)=    .240
00785>
00786>      Unit Hyd Qpeak  (cms)=     .102
00787>
00788>      PEAK FLOW       (cms)=     .016 (i)
00789>      TIME TO PEAK    (hrs)=    1.333
00790>      RUNOFF VOLUME    (mm)=    8.347
00791>      TOTAL RAINFALL   (mm)=   51.878
00792>      RUNOFF COEFFICIENT   =     .161
00793>
00794>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00795>
00796> ------------------------------------------------------------------------------
00797> 010:0004----------------------------------------------------------------------
00798> *#*****************************************************************************
00799> *#
00800> *#  Proposed conditions
00801> *#
00802> *#*****************************************************************************
00803> ----------------------
00804> | CALIB STANDHYD     |   Area    (ha)=    5.52
00805> | 01:A201&A DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
00806> ----------------------
00807>                              IMPERVIOUS    PERVIOUS (i)
00808>      Surface Area     (ha)=       3.26         2.26
00809>      Dep. Storage     (mm)=       2.00         5.00
00810>      Average Slope     (%)=       2.00         2.00
00811>      Length            (m)=     146.00        35.00
00812>      Mannings n            =       .013         .240
00813>
00814>      Max.eff.Inten.(mm/hr)=     170.84        35.82
00815>                    over (min)        2.00        12.00
00816>      Storage Coeff.  (min)=       2.10 (ii)   11.69 (ii)
00817>      Unit Hyd. Tpeak (min)=       2.00        12.00
00818>      Unit Hyd. peak  (cms)=        .54          .10
00819>                                                          *TOTALS*
00820>      PEAK FLOW       (cms)=       1.20          .14         1.228 (iii)
00821>      TIME TO PEAK    (hrs)=       1.00         1.23         1.000
00822>      RUNOFF VOLUME    (mm)=      49.88        14.27        32.076
00823>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
00824>      RUNOFF COEFFICIENT   =         .96          .28          .618
00825>
00826>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00827>            CN* =  65.0    Ia = Dep. Storage  (Above)
00828>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00829>            THAN THE STORAGE COEFFICIENT.
00830>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00831>
00832> ------------------------------------------------------------------------------
00833> 010:0005----------------------------------------------------------------------
00834> ----------------------
00835> | CALIB STANDHYD     |   Area    (ha)=    1.00
00836> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
00837> ----------------------
00838>                              IMPERVIOUS    PERVIOUS (i)
00839>      Surface Area     (ha)=        .69          .31
00840>      Dep. Storage     (mm)=       2.00         5.00
00841>      Average Slope     (%)=       2.00         2.00
00842>      Length            (m)=      90.00        20.00
00843>      Mannings n            =       .013         .240
00844>
00845>      Max.eff.Inten.(mm/hr)=     170.84        47.60
00846>                    over (min)        2.00         8.00
00847>      Storage Coeff.  (min)=       1.57 (ii)    7.69 (ii)
00848>      Unit Hyd. Tpeak (min)=       2.00         8.00
00849>      Unit Hyd. peak  (cms)=        .65          .15
00850>                                                          *TOTALS*
00851>      PEAK FLOW       (cms)=        .27          .03          .278 (iii)
00852>      TIME TO PEAK    (hrs)=       1.00         1.13         1.000
00853>      RUNOFF VOLUME    (mm)=      49.88        15.27        35.688
00854>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
00855>      RUNOFF COEFFICIENT   =         .96          .29          .688
00856>
00857>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00858>            CN* =  65.0    Ia = Dep. Storage  (Above)
00859>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00860>            THAN THE STORAGE COEFFICIENT.
00861>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00862>
00863> ------------------------------------------------------------------------------
00864> 010:0006----------------------------------------------------------------------
00865> ----------------------
00866> | CALIB STANDHYD     |   Area    (ha)=     .27
00867> | 03:A203A& DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
00868> ----------------------
00869>                              IMPERVIOUS    PERVIOUS (i)
00870>      Surface Area     (ha)=        .10          .17
00871>      Dep. Storage     (mm)=       2.00         5.00
00872>      Average Slope     (%)=       2.00         2.00
00873>      Length            (m)=      13.00        13.00
00874>      Mannings n            =       .013         .240
00875>
00876>      Max.eff.Inten.(mm/hr)=     170.84        84.79
00877>                    over (min)        1.00         4.00
00878>      Storage Coeff.  (min)=        .49 (ii)    4.24 (ii)
00879>      Unit Hyd. Tpeak (min)=       1.00         4.00
00880>      Unit Hyd. peak  (cms)=       1.48          .27
00881>                                                          *TOTALS*
00882>      PEAK FLOW       (cms)=        .00          .03          .028 (iii)
00883>      TIME TO PEAK    (hrs)=       1.00         1.05         1.050
00884>      RUNOFF VOLUME    (mm)=      49.88        17.68        18.002
00885>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
00886>      RUNOFF COEFFICIENT   =         .96          .34          .347
00887>
00888>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00889>            CN* =  65.0    Ia = Dep. Storage  (Above)
00890>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00891>            THAN THE STORAGE COEFFICIENT.
00892>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00893>
00894> ------------------------------------------------------------------------------
00895> 010:0007----------------------------------------------------------------------
00896> ----------------------
00897> | CALIB STANDHYD     |   Area    (ha)=     .13
00898> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
00899> ----------------------
00900>                              IMPERVIOUS    PERVIOUS (i)
00901>      Surface Area     (ha)=        .07          .06
00902>      Dep. Storage     (mm)=       2.00         5.00
00903>      Average Slope     (%)=       2.00         2.00
00904>      Length            (m)=      45.00        45.00
00905>      Mannings n            =       .013         .240
00906>
00907>      Max.eff.Inten.(mm/hr)=     170.84        22.65
00908>                    over (min)        1.00        14.00
00909>      Storage Coeff.  (min)=       1.04 (ii)   14.42 (ii)
00910>      Unit Hyd. Tpeak (min)=       1.00        14.00
00911>      Unit Hyd. peak  (cms)=       1.05          .08
00912>                                                          *TOTALS*
00913>      PEAK FLOW       (cms)=        .03          .00          .034 (iii)
00914>      TIME TO PEAK    (hrs)=       1.00         1.28         1.000
00915>      RUNOFF VOLUME    (mm)=      49.88        11.97        32.817
00916>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
00917>      RUNOFF COEFFICIENT   =         .96          .23          .633
00918>
00919>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00920>            CN* =  65.0    Ia = Dep. Storage  (Above)
00921>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00922>            THAN THE STORAGE COEFFICIENT.
00923>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00924>
00925> ------------------------------------------------------------------------------
00926> 010:0008----------------------------------------------------------------------
00927> ----------------------
00928> | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
00929> | 05:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00930> ----------------------   U.H. Tp(hrs)=    .240
00931>
00932>      Unit Hyd Qpeak  (cms)=     .119
00933>
00934>      PEAK FLOW       (cms)=     .027 (i)
00935>      TIME TO PEAK    (hrs)=    1.333
00936>      RUNOFF VOLUME    (mm)=   11.966
00937>      TOTAL RAINFALL   (mm)=   51.878
00938>      RUNOFF COEFFICIENT   =     .231
00939>
00940>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00941>
00942> ------------------------------------------------------------------------------
00943> 010:0009----------------------------------------------------------------------
00944> ----------------------
00945> | CALIB STANDHYD     |   Area    (ha)=     .19
00946> | 06:EX201  DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
00947> ----------------------
00948>                              IMPERVIOUS    PERVIOUS (i)
00949>      Surface Area     (ha)=        .07          .12
00950>      Dep. Storage     (mm)=       2.00         5.00
00951>      Average Slope     (%)=       2.00         2.00
00952>      Length            (m)=       5.00        15.00
00953>      Mannings n            =       .013         .240
00954>
00955>      Max.eff.Inten.(mm/hr)=     170.84        84.79
00956>                    over (min)        1.00         4.00
00957>      Storage Coeff.  (min)=        .28 (ii)    4.36 (ii)
00958>      Unit Hyd. Tpeak (min)=       1.00         4.00
00959>      Unit Hyd. peak  (cms)=       1.65          .27
00960>                                                          *TOTALS*
00961>      PEAK FLOW       (cms)=        .00          .02          .019 (iii)
00962>      TIME TO PEAK    (hrs)=        .98         1.05         1.050
00963>      RUNOFF VOLUME    (mm)=      49.88        17.68        18.002
00964>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
00965>      RUNOFF COEFFICIENT   =         .96          .34          .347
00966>
00967>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00968>            CN* =  65.0    Ia = Dep. Storage  (Above)
00969>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00970>            THAN THE STORAGE COEFFICIENT.
00971>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00972>
00973> ------------------------------------------------------------------------------
00974> 010:0010----------------------------------------------------------------------
00975> ----------------------
00976> | CALIB STANDHYD     |   Area    (ha)=     .49
00977> | 07:EX202  DT= 1.00 |   Total Imp(%)=   62.00   Dir. Conn.(%)=    1.00
00978> ----------------------
00979>                              IMPERVIOUS    PERVIOUS (i)
00980>      Surface Area     (ha)=        .30          .19
00981>      Dep. Storage     (mm)=       2.00         5.00
00982>      Average Slope     (%)=       2.00         2.00
00983>      Length            (m)=      16.00        42.00
00984>      Mannings n            =       .013         .240
00985>
00986>      Max.eff.Inten.(mm/hr)=     170.84       178.14
00987>                    over (min)        1.00         6.00
00988>      Storage Coeff.  (min)=        .56 (ii)    6.19 (ii)
00989>      Unit Hyd. Tpeak (min)=       1.00         6.00
00990>      Unit Hyd. peak  (cms)=       1.42          .18
00991>                                                          *TOTALS*
00992>      PEAK FLOW       (cms)=        .00          .06          .063 (iii)
00993>      TIME TO PEAK    (hrs)=       1.00         1.08         1.083
00994>      RUNOFF VOLUME    (mm)=      49.88        24.36        24.616
00995>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
00996>      RUNOFF COEFFICIENT   =         .96          .47          .474
00997>
00998>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00999>            CN* =  65.0    Ia = Dep. Storage  (Above)
01000>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01001>            THAN THE STORAGE COEFFICIENT.
01002>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01003>
01004> ------------------------------------------------------------------------------
01005> 010:0011----------------------------------------------------------------------
01006> ----------------------
01007> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
01008> | 08:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01009> ----------------------   U.H. Tp(hrs)=    .120
01010>
01011>      Unit Hyd Qpeak  (cms)=     .045
01012>
01013>      PEAK FLOW       (cms)=     .005 (i)
01014>      TIME TO PEAK    (hrs)=    1.167
01015>      RUNOFF VOLUME    (mm)=    8.346
01016>      TOTAL RAINFALL   (mm)=   51.878
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```
01017>      RUNOFF COEFFICIENT   =     .161
01018>
01019>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01020>
01021> ---------------------------------------------------------------------------
01022> 010:0012-----------------------------------------------------------------
01023> ----------------------
01024> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01025> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
01026>                        ID1 01:A201&A206      5.52    1.228    1.00  32.08    .000
01027>                      +ID2 06:EX201           .19     .019    1.05  18.00    .000
01028>                      +ID3 07:EX202           .49     .063    1.08  24.62    .000
01029>                      +ID4 08:EX203           .14     .005    1.17   8.35    .000
01030>                       ========================================================
01031>                       SUM 09:To3rdPipe      6.34    1.281    1.00  30.55    .000
01032>
01033>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01034>
01035> ---------------------------------------------------------------------------
01036> 010:0013-----------------------------------------------------------------
01037> *#************************************************************************
01038> *#  Third Pipe System
01039> *#************************************************************************
01040> ----------------------
01041> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .012  (cms)
01042> | TotalHyd 09:To3rdP |   Number of inlets in system [NINLET] =       1
01043> ----------------------   Total minor system capacity          =    .012  (cms)
01044>                          Total major system storage [TMJSTO] =      65.(cu.m.)
01045>
01046>                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
01047>                                    (ha)     (cms)     (hrs)      (mm)     (cms)
01048>      TOTAL HYD.   09:To3rdP        6.34    1.281     1.000    30.553     .000
01049>      ============================================================================
01050>      MAJOR SYST   06:ToStor        5.71    1.269     1.000    30.553     .000
01051>      MINOR SYST   07:To3rd          .63     .012      .467    30.567     .000
01052>
01053>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01054>
01055>      Maximum MAJOR SYSTEM storage used =      65.(cu.m.)
01056>
01057> ---------------------------------------------------------------------------
01058> 010:0014-----------------------------------------------------------------
01059> ----------------------
01060> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01061> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
01062>                        ID1 02:A202           1.00     .278    1.00  35.69    .000
01063>                      +ID2 05:A204&SWM1       .75     .027    1.33  11.97    .000
01064>                      +ID3 06:ToStorage      5.71    1.269    1.00  30.55    .000
01065>                       ========================================================
01066>                       SUM 09:ToStorageF     7.46    1.551    1.00  29.37    .000
01067>
01068>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01069>
01070> ---------------------------------------------------------------------------
01071> 010:0015-----------------------------------------------------------------
01072> *#************************************************************************
01073> *#  Dry Pond Storage
01074> *#************************************************************************
01075> ----------------------
01076> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
01077> |  IN>09:(ToStor)    |
01078> | OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
01079> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
01080>                             (cms)     (ha.m.)  |    (cms)    (ha.m.)
01081>                              .000  .000E+00    |     .058  .1797E+00
01082>                              .028  .1890E-01   |     .062  .2069E+00
01083>                              .028  .3880E-01   |     .065  .2353E+00
01084>                              .028  .5970E-01   |     .068  .2649E+00
01085>                              .035  .8160E-01   |     .070  .2956E+00
01086>                              .044  .1045E+00   |     .073  .3275E+00
01087>                              .050  .1285E+00   |     .075  .3606E+00
01088>                              .054  .1536E+00   |     .078  .3949E+00
01089>
01090>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01091>      ---------------------       (ha)     (cms)     (hrs)       (mm)
01092>      INFLOW >09: (ToStor)       7.46     1.551     1.000     29.374
01093>      OUTFLOW<01: (Storag)       7.46      .058     2.617     29.373
01094>     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000
01095>
01096>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01097>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01098>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01099>
01100>
01101>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.745
01102>                    TIME SHIFT OF PEAK FLOW          (min)=    97.00
01103>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1782E+00
01104>
01105> ---------------------------------------------------------------------------
01106> 010:0016-----------------------------------------------------------------
01107> ----------------------
01108> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .028  (cms)
01109> | TotalHyd 01:Storag |   Number of inlets in system [NINLET] =       1
01110> ----------------------   Total minor system capacity          =    .028  (cms)
01111>                          Total major system storage [TMJSTO] =       0.(cu.m.)
01112>
01113>                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
01114>                                    (ha)     (cms)     (hrs)      (mm)     (cms)
01115>      TOTAL HYD.   01:Storag        7.46     .058     2.617    29.373     .000
01116>      ============================================================================
01117>      MAJOR SYST   09:ToCarr        2.14     .030     2.617    29.373     .000
01118>      MINOR SYST   10:Infilt        5.32     .028      .933    29.374     .000
01119>
01120>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01121>
01122> ---------------------------------------------------------------------------
01123> 010:0017-----------------------------------------------------------------
01124> ----------------------
01125> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01126> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
01127>                        ID1 02:OVFL           .00     .000     .00    .00    .000
01128>                      +ID2 04:A200            .13     .034    1.00  32.82    .000
01129>                      +ID3 09:ToCarroll      2.14     .030    2.62  29.37    .000
01130>                       ========================================================
01131>                       SUM 01:TowardsNW      2.27     .034    1.00  29.57    .000
01132>
01133>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01134>
01135> ---------------------------------------------------------------------------
01136> 010:0018-----------------------------------------------------------------
01137> *#************************************************************************
01138> *#  Rearyard Swale Storage
01139> *#************************************************************************
01140> ----------------------
01141> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .005  (cms)
01142> | TotalHyd 03:A203A& |   Number of inlets in system [NINLET] =       1
01143> ----------------------   Total minor system capacity          =    .005  (cms)
01144>                          Total major system storage [TMJSTO] =      72.(cu.m.)
01145>
01146>                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
01147>                                    (ha)     (cms)     (hrs)      (mm)     (cms)
01148>      TOTAL HYD.   03:A203A&        .27      .028     1.050    18.002     .000
01149>      ============================================================================
01150>      MAJOR SYST   02:Toward        .00      .000      .000      .000     .000
01151>      MINOR SYST   04:InSwal        .27      .005      .933    18.052     .000
01152>
01153>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01154>
01155>      Maximum MAJOR SYSTEM storage used =      21.(cu.m.)
01156>
01157> ---------------------------------------------------------------------------
01158> 010:0019-----------------------------------------------------------------
01159> *#************************************************************************
01160> *#
01161> *#  Interim conditions
01162> *#
01163> *#************************************************************************
01164> ----------------------
01165> | CALIB STANDHYD     |   Area    (ha)=    3.14
01166> | 01:A201   DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
01167> ----------------------
01168>                                IMPERVIOUS    PERVIOUS (i)
01169>      Surface Area     (ha)=        1.85         1.29
01170>      Dep. Storage     (mm)=        2.00         5.00
01171>      Average Slope     (%)=        2.00         2.00
01172>      Length            (m)=      146.00        35.00
01173>      Mannings n            =        .013         .240
01174>
01175>      Max.eff.Inten.(mm/hr)=      170.84        35.82
01176>                 over (min)          2.00        12.00
01177>      Storage Coeff.  (min)=        2.10 (ii)   11.69 (ii)
01178>      Unit Hyd. Tpeak (min)=        2.00        12.00
01179>      Unit Hyd. peak  (cms)=         .54          .10
01180>                                                          *TOTALS*
01181>      PEAK FLOW       (cms)=         .68          .08          .698 (iii)
01182>      TIME TO PEAK    (hrs)=        1.00         1.23         1.000
01183>      RUNOFF VOLUME    (mm)=       49.88        14.27        32.076
01184>      TOTAL RAINFALL   (mm)=       51.88        51.88        51.878
01185>      RUNOFF COEFFICIENT   =         .96          .28          .618
01186>
01187>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01188>            CN* =  65.0    Ia = Dep. Storage  (Above)
01189>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01190>            THAN THE STORAGE COEFFICIENT.
01191>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01192>
01193> ---------------------------------------------------------------------------
01194> 010:0020-----------------------------------------------------------------
01195> ----------------------
01196> | CALIB STANDHYD     |   Area    (ha)=    1.00
01197> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
01198> ----------------------
01199>                                IMPERVIOUS    PERVIOUS (i)
01200>      Surface Area     (ha)=         .69          .31
01201>      Dep. Storage     (mm)=        2.00         5.00
01202>      Average Slope     (%)=        2.00         2.00
01203>      Length            (m)=       90.00        20.00
01204>      Mannings n            =        .013         .240
01205>
01206>      Max.eff.Inten.(mm/hr)=      170.84        47.60
01207>                 over (min)          2.00         8.00
01208>      Storage Coeff.  (min)=        1.57 (ii)    7.69 (ii)
01209>      Unit Hyd. Tpeak (min)=        2.00         8.00
01210>      Unit Hyd. peak  (cms)=         .65          .15
01211>                                                          *TOTALS*
01212>      PEAK FLOW       (cms)=         .27          .03          .278 (iii)
01213>      TIME TO PEAK    (hrs)=        1.00         1.13         1.000
01214>      RUNOFF VOLUME    (mm)=       49.88        15.27        35.688
01215>      TOTAL RAINFALL   (mm)=       51.88        51.88        51.878
01216>      RUNOFF COEFFICIENT   =         .96          .29          .688
01217>
01218>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01219>            CN* =  65.0    Ia = Dep. Storage  (Above)
01220>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01221>            THAN THE STORAGE COEFFICIENT.
01222>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01223>
01224> ---------------------------------------------------------------------------
01225> 010:0021-----------------------------------------------------------------
01226> ----------------------
01227> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
01228> | 03:EX203  DT= 1.00 |   Ia      (mm)=    5.000  # of Linear Res.(N)= 3.00
01229> ----------------------   U.H. Tp(hrs)=    .120
01230>
01231>      Unit Hyd Qpeak  (cms)=     .045
01232>
01233>      PEAK FLOW       (cms)=     .005 (i)
01234>      TIME TO PEAK    (hrs)=    1.167
01235>      RUNOFF VOLUME    (mm)=    8.346
01236>      TOTAL RAINFALL   (mm)=   51.878
01237>      RUNOFF COEFFICIENT   =     .161
01238>
01239>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01240>
01241> ---------------------------------------------------------------------------
01242> 010:0022-----------------------------------------------------------------
01243> ----------------------
01244> | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
01245> | 04:A204&S DT= 1.00 |   Ia      (mm)=    5.000  # of Linear Res.(N)= 3.00
01246> ----------------------   U.H. Tp(hrs)=    .240
01247>
01248>      Unit Hyd Qpeak  (cms)=     .119
01249>
01250>      PEAK FLOW       (cms)=     .027 (i)
01251>      TIME TO PEAK    (hrs)=    1.333
01252>      RUNOFF VOLUME    (mm)=   11.966
01253>      TOTAL RAINFALL   (mm)=   51.878
01254>      RUNOFF COEFFICIENT   =     .231
01255>
01256>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01257>
01258> ---------------------------------------------------------------------------
01259> 010:0023-----------------------------------------------------------------
01260> ----------------------
01261> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01262> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
01263>                        ID1 01:A201           3.14     .698    1.00  32.08    .000
01264>                      +ID2 03:EX203           .14     .005    1.17   8.35    .000
01265>                       ========================================================
01266>                       SUM 05:To3rdPipe      3.28     .700    1.00  31.06    .000
01267>
01268>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01269>
01270> ---------------------------------------------------------------------------
```

```
01271> 010:0024----------------------------------------------------------------------------
01272> *#**************************************************************************
01273> *#  Third Pipe System
01274> *#**************************************************************************
01275> ---------------------
01276> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .007  (cms)
01277> | TotalHyd 05:To3rdP |   Number of inlets in system [NINLET] =      1
01278> ---------------------   Total minor system capacity         =    .007  (cms)
01279>                         Total major system storage [TMJSTO] =     37.(cu.m.)
01280>
01281>                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
01282>                                     (ha)     (cms)     (hrs)     (mm)    (cms)
01283>      TOTAL HYD.   05:To3rdP        3.28      .700     1.000   31.063     .000
01284>      ==========================================================================
01285>      MAJOR SYST   06:ToStor         2.93      .693     1.000   31.063     .000
01286>      MINOR SYST   07:To3rd          .35      .007      .467   31.172     .000
01287>
01288>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01289>
01290>      Maximum MAJOR SYSTEM storage used =      37.(cu.m.)
01291>
01292> ----------------------------------------------------------------------------
01293> 010:0025----------------------------------------------------------------------------
01294> -------------------------
01295> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01296> -------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
01297>                       ID1 02:A202          1.00      .278    1.00  35.69    .000
01298>                      +ID2 04:A204&SWM1      .75      .027    1.33  11.97    .000
01299>                      +ID3 06:ToStorage     2.93      .693    1.00  31.06    .000
01300>                       ==========================================================
01301>                       SUM 09:ToStorageF     4.68      .975    1.00  28.99    .000
01302>
01303>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01304>
01305> ----------------------------------------------------------------------------
01306> 010:0026----------------------------------------------------------------------------
01307> *#**************************************************************************
01308> *#  Dry Pond Storage
01309> *#**************************************************************************
01310> ---------------------
01311> | CALIB STANDHYD     |   Area    (ha)=     .13
01312> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
01313> ---------------------
01314>                              IMPERVIOUS    PERVIOUS (i)
01315>      Surface Area      (ha)=        .07          .06
01316>      Dep. Storage      (mm)=       2.00         5.00
01317>      Average Slope      (%)=       2.00         2.00
01318>      Length             (m)=      45.00        45.00
01319>      Mannings n            =       .013         .240
01320>
01321>      Max.eff.Inten.(mm/hr)=     170.84        22.65
01322>                  over (min)        1.00        14.00
01323>      Storage Coeff.  (min)=       1.04 (ii)   14.42 (ii)
01324>      Unit Hyd. Tpeak (min)=       1.00        14.00
01325>      Unit Hyd. peak  (cms)=       1.05          .08
01326>                                                          *TOTALS*
01327>      PEAK FLOW       (cms)=        .03          .00          .034 (iii)
01328>      TIME TO PEAK    (hrs)=       1.00         1.28         1.000
01329>      RUNOFF VOLUME    (mm)=      49.88        11.97        32.817
01330>      TOTAL RAINFALL   (mm)=      51.88        51.88        51.878
01331>      RUNOFF COEFFICIENT   =        .96          .23          .633
01332>
01333>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01334>            CN* =  65.0    Ia = Dep. Storage  (Above)
01335>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01336>            THAN THE STORAGE COEFFICIENT.
01337>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01338>
01339> ----------------------------------------------------------------------------
01340> 010:0027----------------------------------------------------------------------------
01341> ---------------------
01342> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
01343> |  IN>09:(ToStor)    |
01344> | OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
01345> ---------------------    OUTFLOW     STORAGE    |  OUTFLOW     STORAGE
01346>                            (cms)     (ha.m.)    |     (cms)     (ha.m.)
01347>                             .000  .0000E+00     |      .028  .5970E-01
01348>                             .028  .1890E-01     |      .028  .3949E+00
01349>                             .028  .3880E-01     |      .000  .0000E+00
01350>
01351>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01352>      ---------------            (ha)     (cms)     (hrs)       (mm)
01353>      INFLOW >09: (ToStor)       4.68      .975     1.000     28.991
01354>      OUTFLOW<01: (Storag)       4.68      .028      .967     28.990
01355>     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000
01356>
01357>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01358>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01359>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01360>
01361>
01362>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    2.842
01363>                     TIME SHIFT OF PEAK FLOW          (min)=    -2.00
01364>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1135E+00
01365>
01366> ----------------------------------------------------------------------------
01367> 010:0028----------------------------------------------------------------------------
01368> ---------------------
01369> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01370> -------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
01371>                       ID1 02:OVFL           .00      .000     .00     .00    .000
01372>                      +ID2 04:A200           .13      .034    1.00   32.82    .000
01373>                       ==========================================================
01374>                       SUM 09:TowardsNW       .13      .034    1.00   32.82    .000
01375>
01376>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01377>
01378> ----------------------------------------------------------------------------
01379> 010:0029----------------------------------------------------------------------------
01380> ----------------------------------------------------------------------------
01381> 010:0002----------------------------------------------------------------------------
01382>   ** END OF RUN :  24
01383>
01384> ****************************************************************************
01385>
01386>
01387>
01388>
01389>
01390> --------------------
01391> | START            |  Project  dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
01392> --------------------  Rainfall dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
01393>     TZERO =   .00 hrs on        0
01394>     METOUT=   2 (output = METRIC)
01395>     NRUN  = 025
01396>     NSTORM=   1
01397>            #  1=25YR.3hr
01398> ----------------------------------------------------------------------------
01399> 025:0002----------------------------------------------------------------------------
01400> *#**************************************************************************
01401> *#  Project Name: [360 Carroll Street]    Project Number: [161414253]
01402> *#  Date        : 2024-07-15
01403> *#  Modeller    : [MYK,AKK]
01404> *#  Company     : Stantec Consulting Ltd. (London)
01405> *#  License #   :  4730904
01406> *#**************************************************************************
01407> *#**************************************************************************
01408> *#
01409> *#  This model represents the hydologic characteristics of the proposed
01410> *#  conditions in the proposed site plan.
01411> *#  Storm events modeled are:
01412> *#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
01413> *#
01414> *#**************************************************************************
01415> ----------------------------------------------------------------------------
01416> 025:0002----------------------------------------------------------------------------
01417> --------------------
01418> | READ STORM       |    Filename: 25-yr, 3hr Chicago Storm from Strathroy
01419> | Ptotal=  61.64 mm|    Comments: 25-yr, 3hr Chicago Storm from Strathroy
01420> --------------------
01421>               TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
01422>               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
01423>               .08   4.019 |    .83  29.207 |   1.58  13.537 |   2.33   5.534
01424>               .17   4.442 |    .92  72.190 |   1.67  11.682 |   2.42   5.194
01425>               .25   4.968 |   1.00 205.331 |   1.75  10.264 |   2.50   4.894
01426>               .33   5.641 |   1.08  93.891 |   1.83   9.148 |   2.58   4.628
01427>               .42   6.531 |   1.17  51.449 |   1.92   8.249 |   2.67   4.390
01428>               .50   7.759 |   1.25  34.127 |   2.00   7.511 |   2.75   4.176
01429>               .58   9.557 |   1.33  25.078 |   2.08   6.893 |   2.83   3.983
01430>               .67  12.416 |   1.42  19.638 |   2.17   6.371 |   2.92   3.807
01431>               .75  17.581 |   1.50  16.054 |   2.25   5.922 |   3.00   3.647
01432>
01433> ----------------------------------------------------------------------------
01434> 025:0003----------------------------------------------------------------------------
01435> *#**************************************************************************
01436> *#
01437> *#  Existing conditions
01438> *#
01439> *#**************************************************************************
01440> ----------------------
01441> | CALIB NASHYD       |   Area    (ha)=     .64   Curve Number   (CN)=54.00
01442> | 01:A103   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01443> ----------------------   U.H. Tp(hrs)=    .240
01444>
01445>      Unit Hyd Qpeak  (cms)=     .102
01446>
01447>      PEAK FLOW       (cms)=     .023 (i)
01448>      TIME TO PEAK    (hrs)=    1.333
01449>      RUNOFF VOLUME    (mm)=   11.751
01450>      TOTAL RAINFALL   (mm)=   61.642
01451>      RUNOFF COEFFICIENT   =     .191
01452>
01453>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01454>
01455> ----------------------------------------------------------------------------
01456> 025:0004----------------------------------------------------------------------------
01457> *#**************************************************************************
01458> *#
01459> *#  Proposed conditions
01460> *#
01461> *#**************************************************************************
01462> ----------------------
01463> | CALIB STANDHYD     |   Area    (ha)=    5.52
01464> | 01:A201&A DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
01465> ----------------------
01466>                              IMPERVIOUS    PERVIOUS (i)
01467>      Surface Area      (ha)=       3.26         2.26
01468>      Dep. Storage      (mm)=       2.00         5.00
01469>      Average Slope      (%)=       2.00         2.00
01470>      Length             (m)=     146.00        35.00
01471>      Mannings n            =       .013         .240
01472>
01473>      Max.eff.Inten.(mm/hr)=     205.33        55.54
01474>                  over (min)        2.00        10.00
01475>      Storage Coeff.  (min)=       1.95 (ii)   10.00 (ii)
01476>      Unit Hyd. Tpeak (min)=       2.00        10.00
01477>      Unit Hyd. peak  (cms)=        .57          .11
01478>                                                          *TOTALS*
01479>      PEAK FLOW       (cms)=       1.46          .21         1.520 (iii)
01480>      TIME TO PEAK    (hrs)=       1.00         1.18         1.000
01481>      RUNOFF VOLUME    (mm)=      59.64        19.51        39.577
01482>      TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
01483>      RUNOFF COEFFICIENT   =        .97          .32          .642
01484>
01485>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01486>            CN* =  65.0    Ia = Dep. Storage  (Above)
01487>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01488>            THAN THE STORAGE COEFFICIENT.
01489>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01490>
01491> ----------------------------------------------------------------------------
01492> 025:0005----------------------------------------------------------------------------
01493> ----------------------
01494> | CALIB STANDHYD     |   Area    (ha)=    1.00
01495> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
01496> ----------------------
01497>                              IMPERVIOUS    PERVIOUS (i)
01498>      Surface Area      (ha)=        .69          .31
01499>      Dep. Storage      (mm)=       2.00         5.00
01500>      Average Slope      (%)=       2.00         2.00
01501>      Length             (m)=      90.00        20.00
01502>      Mannings n            =       .013         .240
01503>
01504>      Max.eff.Inten.(mm/hr)=     205.33        69.52
01505>                  over (min)        1.00         7.00
01506>      Storage Coeff.  (min)=       1.46 (ii)    6.72 (ii)
01507>      Unit Hyd. Tpeak (min)=       1.00         7.00
01508>      Unit Hyd. peak  (cms)=        .84          .17
01509>                                                          *TOTALS*
01510>      PEAK FLOW       (cms)=        .33          .04          .347 (iii)
01511>      TIME TO PEAK    (hrs)=       1.00         1.10         1.000
01512>      RUNOFF VOLUME    (mm)=      59.64        20.76        43.701
01513>      TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
01514>      RUNOFF COEFFICIENT   =        .97          .34          .709
01515>
01516>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01517>            CN* =  65.0    Ia = Dep. Storage  (Above)
01518>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01519>            THAN THE STORAGE COEFFICIENT.
01520>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01521>
01522> ----------------------------------------------------------------------------
01523> 025:0006----------------------------------------------------------------------------
01524> ----------------------
```

```
| CALIB STANDHYD     |   Area    (ha)=     .27
| 03:A203A& DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .10          .17
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      13.00        13.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     205.33       118.15
                   over (min)        1.00         4.00
     Storage Coeff.  (min)=        .46 (ii)    3.74 (ii)
     Unit Hyd. Tpeak (min)=       1.00         4.00
     Unit Hyd. peak  (cms)=       1.51          .29
                                                        *TOTALS*
     PEAK FLOW       (cms)=        .00          .04          .040 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.05         1.050
     RUNOFF VOLUME    (mm)=      59.64        23.75        24.106
     TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
     RUNOFF COEFFICIENT   =        .97          .39          .391

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
025:0007----------------------------------------------------------------------
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .13
| 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .07          .06
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      45.00        45.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     205.33        34.73
                   over (min)        1.00        12.00
     Storage Coeff.  (min)=        .96 (ii)   12.25 (ii)
     Unit Hyd. Tpeak (min)=       1.00        12.00
     Unit Hyd. peak  (cms)=       1.10          .09
                                                        *TOTALS*
     PEAK FLOW       (cms)=        .04          .00          .041 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.23         1.000
     RUNOFF VOLUME    (mm)=      59.64        16.59        40.268
     TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
     RUNOFF COEFFICIENT   =        .97          .27          .653

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
025:0008----------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
| 05:A204&S DT= 1.00 |   Ia      (mm)=    5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .240

     Unit Hyd Qpeak  (cms)=     .119

     PEAK FLOW       (cms)=     .039 (i)
     TIME TO PEAK    (hrs)=    1.317
     RUNOFF VOLUME    (mm)=   16.588
     TOTAL RAINFALL   (mm)=   61.642
     RUNOFF COEFFICIENT   =     .269

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

--------------------------------------------------------------------------------
025:0009----------------------------------------------------------------------
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .19
| 06:EX201  DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .07          .12
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=       5.00        15.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     205.33       118.15
                   over (min)        1.00         4.00
     Storage Coeff.  (min)=        .26 (ii)    3.83 (ii)
     Unit Hyd. Tpeak (min)=       1.00         4.00
     Unit Hyd. peak  (cms)=       1.66          .29
                                                        *TOTALS*
     PEAK FLOW       (cms)=        .00          .03          .028 (iii)
     TIME TO PEAK    (hrs)=        .97         1.05         1.050
     RUNOFF VOLUME    (mm)=      59.64        23.75        24.106
     TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
     RUNOFF COEFFICIENT   =        .97          .39          .391

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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025:0010----------------------------------------------------------------------
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .49
| 07:EX202  DT= 1.00 |   Total Imp(%)=   62.00   Dir. Conn.(%)=    1.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .30          .19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      16.00        42.00
     Mannings n            =      .013         .240

     Max.eff.Inten.(mm/hr)=     205.33       259.50
                   over (min)        1.00         5.00
     Storage Coeff.  (min)=        .52 (ii)    5.36 (ii)
     Unit Hyd. Tpeak (min)=       1.00         5.00
     Unit Hyd. peak  (cms)=       1.45          .22
                                                        *TOTALS*
     PEAK FLOW       (cms)=        .00          .09          .090 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.07         1.067
     RUNOFF VOLUME    (mm)=      59.64        31.78        32.063
     TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
     RUNOFF COEFFICIENT   =        .97          .52          .520

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
025:0011----------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
| 08:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .120

     Unit Hyd Qpeak  (cms)=     .045

     PEAK FLOW       (cms)=     .007 (i)
     TIME TO PEAK    (hrs)=    1.150
     RUNOFF VOLUME    (mm)=   11.750
     TOTAL RAINFALL   (mm)=   61.642
     RUNOFF COEFFICIENT   =     .191

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

--------------------------------------------------------------------------------
025:0012----------------------------------------------------------------------
----------------------
| ADD HYD (To3rdPipe ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
----------------------                     (ha)     (cms)   (hrs)   (mm)    (cms)
                      ID1 01:A201&A206      5.52    1.520    1.00  39.58    .000
                     +ID2 06:EX201           .19     .028    1.05  24.11    .000
                     +ID3 07:EX202           .49     .090    1.07  32.06    .000
                     +ID4 08:EX203           .14     .007    1.15  11.75    .000
                      ==========================================================
                      SUM 09:To3rdPipe      6.34    1.608    1.00  37.92    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
025:0013----------------------------------------------------------------------
*#*****************************************************************************
*#  Third Pipe System
*#*****************************************************************************
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .012  (cms)
| TotalHyd 09:To3rdP |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity         =    .012  (cms)
                         Total major system storage [TMJSTO] =      65.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                  (ha)     (cms)     (hrs)      (mm)     (cms)
     TOTAL HYD.   09:To3rdP       6.34     1.608     1.000    37.919     .000
     ================================================================================
     MAJOR SYST   06:ToStor       5.83     1.596     1.000    37.919     .000
     MINOR SYST   07:To3rd         .51      .012      .417    37.990     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

     Maximum MAJOR SYSTEM storage used =      65.(cu.m.)

--------------------------------------------------------------------------------
025:0014----------------------------------------------------------------------
----------------------
| ADD HYD (ToStorageF) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
----------------------                     (ha)     (cms)   (hrs)   (mm)    (cms)
                      ID1 02:A202           1.00      .347    1.00  43.70    .000
                     +ID2 05:A204&SWM1       .75      .039    1.32  16.59    .000
                     +ID3 06:ToStorage      5.83     1.596    1.00  37.92    .000
                      ==========================================================
                      SUM 09:ToStorageF     7.58     1.948    1.00  36.57    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
025:0015----------------------------------------------------------------------
*#*****************************************************************************
*#  Dry Pond Storage
*#*****************************************************************************
----------------------
| ROUTE RESERVOIR    |   Requested routing time step =  1.0 min.
|  IN>09:(ToStor)    |
| OUT<01:(Storag)    |   =========  OUTFLOW STORAGE TABLE  =========
----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                           (cms)     (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00    |     .058  .1797E+00
                          .028  .1890E-01    |     .062  .2069E+00
                          .028  .3880E-01    |     .065  .2353E+00
                          .028  .5970E-01    |     .068  .2649E+00
                          .035  .8160E-01    |     .070  .2956E+00
                          .044  .1045E+00    |     .073  .3275E+00
                          .050  .1285E+00    |     .075  .3606E+00
                          .054  .1536E+00    |     .078  .3949E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -----------------------     (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (ToStor)       7.58     1.948     1.000     36.571
     OUTFLOW<01: (Storag)       7.58      .064     2.700     36.571
    OVERFLOW<02: (OVFL  )        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=       .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.300
                    TIME SHIFT OF PEAK FLOW          (min)=   102.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2307E+00

--------------------------------------------------------------------------------
025:0016----------------------------------------------------------------------
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .028  (cms)
| TotalHyd 01:Storag |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity         =    .028  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                  (ha)     (cms)     (hrs)      (mm)     (cms)
     TOTAL HYD.   01:Storag       7.58      .064     2.700    36.571     .000
     ================================================================================
     MAJOR SYST   09:ToCarr       2.64      .037     2.700    36.571     .000
     MINOR SYST   10:Infilt       4.94      .028      .900    36.572     .000
```

```
01779>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01780>
01781> ---------------------------------------------------------------------------
01782> 025:0017---------------------------------------------------------------------
01783> ----------------------
01784> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01785> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
01786>                       ID1 02:OVFL           .00      .000     .00    .00    .000
01787>                     +ID2 04:A200            .13      .041    1.00  40.27    .000
01788>                     +ID3 09:ToCarroll      2.64      .037    2.70  36.57    .000
01789>                      ==========================================================
01790>                      SUM 01:TowardsNW      2.77      .043    1.00  36.74    .000
01791>
01792>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01793>
01794> ---------------------------------------------------------------------------
01795> 025:0018---------------------------------------------------------------------
01796> *#*************************************************************************
01797> *#  Rearyard Swale Storage
01798> *#*************************************************************************
01799> ----------------------
01800> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .005  (cms)
01801> | TotalHyd 03:A203A& |   Number of inlets in system [NINLET] =      1
01802> ----------------------   Total minor system capacity         =    .005  (cms)
01803>                          Total major system storage [TMJSTO] =     72.(cu.m.)
01804>
01805>                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
01806>                                     (ha)     (cms)     (hrs)     (mm)    (cms)
01807>      TOTAL HYD.   03:A203A&         .27      .040     1.050   24.106     .000
01808>      ==========================================================================
01809>      MAJOR SYST   02:Toward         .00      .000      .000     .000     .000
01810>      MINOR SYST   04:InSwal         .27      .005      .917   24.145     .000
01811>
01812>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01813>
01814>      Maximum MAJOR SYSTEM storage used =      34.(cu.m.)
01815>
01816> ---------------------------------------------------------------------------
01817> 025:0019---------------------------------------------------------------------
01818> *#*************************************************************************
01819> *#
01820> *#  Interim conditions
01821> *#
01822> *#*************************************************************************
01823> ----------------------
01824> | CALIB STANDHYD     |   Area    (ha)=    3.14
01825> | 01:A201   DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
01826> ----------------------
01827>                              IMPERVIOUS    PERVIOUS (i)
01828>      Surface Area     (ha)=       1.85         1.29
01829>      Dep. Storage     (mm)=       2.00         5.00
01830>      Average Slope     (%)=       2.00         2.00
01831>      Length            (m)=     146.00        35.00
01832>      Mannings n            =       .013         .240
01833>
01834>      Max.eff.Inten.(mm/hr)=     205.33        55.54
01835>                   over (min)       2.00        10.00
01836>      Storage Coeff.  (min)=       1.95 (ii)   10.00 (ii)
01837>      Unit Hyd. Tpeak (min)=       2.00        10.00
01838>      Unit Hyd. peak  (cms)=        .57          .11
01839>                                                          *TOTALS*
01840>      PEAK FLOW       (cms)=        .83          .12          .865 (iii)
01841>      TIME TO PEAK    (hrs)=       1.00         1.18         1.000
01842>      RUNOFF VOLUME    (mm)=      59.64        19.51        39.577
01843>      TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
01844>      RUNOFF COEFFICIENT   =        .97          .32          .642
01845>
01846>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01847>            CN* =  65.0    Ia = Dep. Storage  (Above)
01848>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01849>            THAN THE STORAGE COEFFICIENT.
01850>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01851>
01852> ---------------------------------------------------------------------------
01853> 025:0020---------------------------------------------------------------------
01854> ----------------------
01855> | CALIB STANDHYD     |   Area    (ha)=    1.00
01856> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
01857> ----------------------
01858>                              IMPERVIOUS    PERVIOUS (i)
01859>      Surface Area     (ha)=        .69          .31
01860>      Dep. Storage     (mm)=       2.00         5.00
01861>      Average Slope     (%)=       2.00         2.00
01862>      Length            (m)=      90.00        20.00
01863>      Mannings n            =       .013         .240
01864>
01865>      Max.eff.Inten.(mm/hr)=     205.33        69.52
01866>                   over (min)       1.00         7.00
01867>      Storage Coeff.  (min)=       1.46 (ii)    6.72 (ii)
01868>      Unit Hyd. Tpeak (min)=       1.00         7.00
01869>      Unit Hyd. peak  (cms)=        .84          .17
01870>                                                          *TOTALS*
01871>      PEAK FLOW       (cms)=        .33          .04          .347 (iii)
01872>      TIME TO PEAK    (hrs)=       1.00         1.10         1.000
01873>      RUNOFF VOLUME    (mm)=      59.64        20.76        43.701
01874>      TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
01875>      RUNOFF COEFFICIENT   =        .97          .34          .709
01876>
01877>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01878>            CN* =  65.0    Ia = Dep. Storage  (Above)
01879>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01880>            THAN THE STORAGE COEFFICIENT.
01881>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01882>
01883> ---------------------------------------------------------------------------
01884> 025:0021---------------------------------------------------------------------
01885> ----------------------
01886> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
01887> | 03:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01888> ----------------------   U.H. Tp(hrs)=    .120
01889>
01890>      Unit Hyd Qpeak  (cms)=     .045
01891>
01892>      PEAK FLOW       (cms)=     .007 (i)
01893>      TIME TO PEAK    (hrs)=    1.150
01894>      RUNOFF VOLUME    (mm)=   11.750
01895>      TOTAL RAINFALL   (mm)=   61.642
01896>      RUNOFF COEFFICIENT   =     .191
01897>
01898>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01899>
01900> ---------------------------------------------------------------------------
01901> 025:0022---------------------------------------------------------------------
01902> ----------------------
01903> | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
01904> | 04:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01905> ----------------------   U.H. Tp(hrs)=    .240
01906>
01907>      Unit Hyd Qpeak  (cms)=     .119
01908>
01909>      PEAK FLOW       (cms)=     .039 (i)
01910>      TIME TO PEAK    (hrs)=    1.317
01911>      RUNOFF VOLUME    (mm)=   16.588
01912>      TOTAL RAINFALL   (mm)=   61.642
01913>      RUNOFF COEFFICIENT   =     .269
01914>
01915>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01916>
01917> ---------------------------------------------------------------------------
01918> 025:0023---------------------------------------------------------------------
01919> ----------------------
01920> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01921> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
01922>                       ID1 01:A201           3.14      .865    1.00  39.58    .000
01923>                     +ID2 03:EX203            .14      .007    1.15  11.75    .000
01924>                      ==========================================================
01925>                      SUM 05:To3rdPipe      3.28      .867    1.00  38.39    .000
01926>
01927>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01928>
01929> ---------------------------------------------------------------------------
01930> 025:0024---------------------------------------------------------------------
01931> *#*************************************************************************
01932> *#  Third Pipe System
01933> *#*************************************************************************
01934> ----------------------
01935> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .007  (cms)
01936> | TotalHyd 05:To3rdP |   Number of inlets in system [NINLET] =      1
01937> ----------------------   Total minor system capacity         =    .007  (cms)
01938>                          Total major system storage [TMJSTO] =     37.(cu.m.)
01939>
01940>                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
01941>                                     (ha)     (cms)     (hrs)     (mm)    (cms)
01942>      TOTAL HYD.   05:To3rdP        3.28      .867     1.000   38.390     .000
01943>      ==========================================================================
01944>      MAJOR SYST   06:ToStor        3.00      .861     1.000   38.390     .000
01945>      MINOR SYST   07:To3rd          .28      .007      .417   38.404     .000
01946>
01947>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01948>
01949>      Maximum MAJOR SYSTEM storage used =      37.(cu.m.)
01950>
01951> ---------------------------------------------------------------------------
01952> 025:0025---------------------------------------------------------------------
01953> ----------------------
01954> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01955> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
01956>                       ID1 02:A202           1.00      .347    1.00  43.70    .000
01957>                     +ID2 04:A204&SWM1       .75      .039    1.32  16.59    .000
01958>                     +ID3 06:ToStorage      3.00      .861    1.00  38.39    .000
01959>                      ==========================================================
01960>                      SUM 09:ToStorageF     4.75     1.213    1.00  36.06    .000
01961>
01962>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01963>
01964> ---------------------------------------------------------------------------
01965> 025:0026---------------------------------------------------------------------
01966> *#*************************************************************************
01967> *#  Dry Pond Storage
01968> *#*************************************************************************
01969> ----------------------
01970> | CALIB STANDHYD     |   Area    (ha)=     .13
01971> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
01972> ----------------------
01973>                              IMPERVIOUS    PERVIOUS (i)
01974>      Surface Area     (ha)=        .07          .06
01975>      Dep. Storage     (mm)=       2.00         5.00
01976>      Average Slope     (%)=       2.00         2.00
01977>      Length            (m)=      45.00        45.00
01978>      Mannings n            =       .013         .240
01979>
01980>      Max.eff.Inten.(mm/hr)=     205.33        34.73
01981>                   over (min)       1.00        12.00
01982>      Storage Coeff.  (min)=        .96 (ii)   12.25 (ii)
01983>      Unit Hyd. Tpeak (min)=       1.00        12.00
01984>      Unit Hyd. peak  (cms)=       1.10          .09
01985>                                                          *TOTALS*
01986>      PEAK FLOW       (cms)=        .04          .00          .041 (iii)
01987>      TIME TO PEAK    (hrs)=       1.00         1.23         1.000
01988>      RUNOFF VOLUME    (mm)=      59.64        16.59        40.268
01989>      TOTAL RAINFALL   (mm)=      61.64        61.64        61.642
01990>      RUNOFF COEFFICIENT   =        .97          .27          .653
01991>
01992>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01993>            CN* =  65.0    Ia = Dep. Storage  (Above)
01994>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01995>            THAN THE STORAGE COEFFICIENT.
01996>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01997>
01998> ---------------------------------------------------------------------------
01999> 025:0027---------------------------------------------------------------------
02000> ----------------------
02001> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02002> |  IN>09:(ToStor)    |
02003> | OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
02004> ----------------------    OUTFLOW     STORAGE   |  OUTFLOW     STORAGE
02005>                             (cms)     (ha.m.)   |    (cms)     (ha.m.)
02006>                             .000   .0000E+00    |     .028   .5970E-01
02007>                             .028   .1890E-01    |     .028   .3949E+00
02008>                             .028   .3880E-01    |     .000   .0000E+00
02009>
02010>      ROUTING RESULTS             AREA     QPEAK     TPEAK       R.V.
02011>      ---------------------       (ha)     (cms)     (hrs)       (mm)
02012>      INFLOW >09: (ToStor)       4.75     1.213     1.000     36.063
02013>      OUTFLOW<01: (Storag)       4.75      .028      .950     36.063
02014>     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000
02015>
02016>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =         0
02017>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
02018>                     PERCENTAGE OF TIME OVERFLOWING    (%)=       .00
02019>
02020>
02021>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=     2.283
02022>                     TIME SHIFT OF PEAK FLOW          (min)=    -3.00
02023>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1485E+00
02024>
02025> ---------------------------------------------------------------------------
02026> 025:0028---------------------------------------------------------------------
02027> ----------------------
02028> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02029> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
02030>                       ID1 02:OVFL           .00      .000     .00    .00    .000
02031>                     +ID2 04:A200            .13      .041    1.00  40.27    .000
02032>                      ==========================================================
```

```
                    SUM 09:TowardsNW       .13     .041    1.00  40.27    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------- 025:0029----------
---------- 025:0002----------
---------- 025:0002----------
  ** END OF RUN :  49

**********

---------- 
| START            |  Project  dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
---------- Rainfall dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 050
    NSTORM=   1
           #  1=50YR.3hr
---------- 050:0002----------
*#**********
*#  Project Name: [360 Carroll Street]    Project Number: [161414253]
*#  Date         : 2024-07-15
*#  Modeller     : [MYK,AKK]
*#  Company      : Stantec Consulting Ltd. (London)
*#  License #    : 4730904
*#**********
*#**********
*#
*#  This model represents the hydologic characteristics of the proposed
*#  conditions in the proposed site plan.
*#  Storm events modeled are:
*#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
*#
*#**********
---------- 050:0002----------
---------- 
| READ STORM       |    Filename: 50-yr, 3hr Chicago Storm from Strathroy
| Ptotal=  69.59 mm|    Comments: 50-yr, 3hr Chicago Storm from Strathroy
----------
              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
               .08   4.324 |    .83  33.634 |   1.58  15.280 |   2.33   6.033
               .17   4.798 |    .92  83.173 |   1.67  13.118 |   2.42   5.647
               .25   5.392 |   1.00 228.894 |   1.75  11.471 |   2.50   5.308
               .33   6.155 |   1.08 107.905 |   1.83  10.179 |   2.58   5.008
               .42   7.169 |   1.17  59.542 |   1.92   9.141 |   2.67   4.740
               .50   8.577 |   1.25  39.395 |   2.00   8.291 |   2.75   4.500
               .58  10.652 |   1.33  28.800 |   2.08   7.583 |   2.83   4.283
               .67  13.974 |   1.42  22.420 |   2.17   6.986 |   2.92   4.087
               .75  20.011 |   1.50  18.223 |   2.25   6.474 |   3.00   3.908

---------- 050:0003----------
*#**********
*#
*#  Existing conditions
*#
*#**********
----------
| CALIB NASHYD       |   Area    (ha)=     .64   Curve Number   (CN)=54.00
| 01:A103   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------  U.H. Tp(hrs)=    .240

     Unit Hyd Qpeak  (cms)=     .102

     PEAK FLOW       (cms)=     .030 (i)
     TIME TO PEAK    (hrs)=    1.333
     RUNOFF VOLUME    (mm)=   14.848
     TOTAL RAINFALL   (mm)=   69.590
     RUNOFF COEFFICIENT   =     .213

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

---------- 050:0004----------
*#**********
*#
*#  Proposed conditions
*#
*#**********
----------
| CALIB STANDHYD     |   Area    (ha)=    5.52
| 01:A201&A DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
----------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.26         2.26
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     146.00        35.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=     228.89        70.56
                 over (min)       2.00         9.00
     Storage Coeff.  (min)=       1.87 (ii)    9.18 (ii)
     Unit Hyd. Tpeak (min)=       2.00         9.00
     Unit Hyd. peak  (cms)=        .58          .12
                                                          *TOTALS*
     PEAK FLOW       (cms)=       1.64          .28         1.733 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.17         1.000
     RUNOFF VOLUME    (mm)=      67.59        24.14        45.867
     TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
     RUNOFF COEFFICIENT   =        .97          .35          .659

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------- 050:0005----------
----------
| CALIB STANDHYD     |   Area    (ha)=    1.00
| 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
----------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .69          .31
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      90.00        20.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=     228.89        90.48
                 over (min)       1.00         6.00
     Storage Coeff.  (min)=       1.40 (ii)    6.13 (ii)
     Unit Hyd. Tpeak (min)=       1.00         6.00
     Unit Hyd. peak  (cms)=        .87          .19
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .37          .05          .396 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.08         1.000
     RUNOFF VOLUME    (mm)=      67.59        25.59        50.371
     TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
     RUNOFF COEFFICIENT   =        .97          .37          .724

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------- 050:0006----------
----------
| CALIB STANDHYD     |   Area    (ha)=     .27
| 03:A203A& DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
----------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .10          .17
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      13.00        13.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=     228.89       152.55
                 over (min)       1.00         3.00
     Storage Coeff.  (min)=        .44 (ii)    3.40 (ii)
     Unit Hyd. Tpeak (min)=       1.00         3.00
     Unit Hyd. peak  (cms)=       1.53          .34
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .00          .05          .052 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.03         1.033
     RUNOFF VOLUME    (mm)=      67.59        29.04        29.421
     TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
     RUNOFF COEFFICIENT   =        .97          .42          .423

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------- 050:0007----------
----------
| CALIB STANDHYD     |   Area    (ha)=     .13
| 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
----------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .07          .06
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      45.00        45.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=     228.89        45.72
                 over (min)       1.00        11.00
     Storage Coeff.  (min)=        .92 (ii)   11.03 (ii)
     Unit Hyd. Tpeak (min)=       1.00        11.00
     Unit Hyd. peak  (cms)=       1.12          .10
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .05          .00          .046 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.22         1.000
     RUNOFF VOLUME    (mm)=      67.59        20.72        46.497
     TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
     RUNOFF COEFFICIENT   =        .97          .30          .668

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------- 050:0008----------
----------
| CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
| 05:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------  U.H. Tp(hrs)=    .240

     Unit Hyd Qpeak  (cms)=     .119

     PEAK FLOW       (cms)=     .050 (i)
     TIME TO PEAK    (hrs)=    1.317
     RUNOFF VOLUME    (mm)=   20.718
     TOTAL RAINFALL   (mm)=   69.590
     RUNOFF COEFFICIENT   =     .298

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

---------- 050:0009----------
----------
| CALIB STANDHYD     |   Area    (ha)=     .19
| 06:EX201  DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
----------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .07          .12
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=       5.00        15.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=     228.89       144.65
                 over (min)       1.00         4.00
     Storage Coeff.  (min)=        .25 (ii)    3.55 (ii)
     Unit Hyd. Tpeak (min)=       1.00         4.00
     Unit Hyd. peak  (cms)=       1.67          .31
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .00          .03          .036 (iii)
     TIME TO PEAK    (hrs)=        .98         1.05         1.050
     RUNOFF VOLUME    (mm)=      67.59        29.04        29.421
     TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
     RUNOFF COEFFICIENT   =        .97          .42          .423
```

```
02287>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02288>            CN* =  65.0    Ia = Dep. Storage  (Above)
02289>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02290>            THAN THE STORAGE COEFFICIENT.
02291>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02292>
02293> ---------------------------------------------------------------------------
02294> 050:0010-----------------------------------------------------------------------
02295> ----------------------
02296> | CALIB STANDHYD     |   Area    (ha)=     .49
02297> | 07:EX202  DT= 1.00 |   Total Imp(%)=   62.00   Dir. Conn.(%)=    1.00
02298> ----------------------
02299>                              IMPERVIOUS    PERVIOUS (i)
02300>      Surface Area     (ha)=        .30          .19
02301>      Dep. Storage     (mm)=       2.00         5.00
02302>      Average Slope     (%)=       2.00         2.00
02303>      Length            (m)=      16.00        42.00
02304>      Mannings n             =      .013         .240
02305>
02306>      Max.eff.Inten.(mm/hr)=     228.89       311.85
02307>                 over (min)        1.00         5.00
02308>      Storage Coeff.  (min)=        .50 (ii)    5.00 (ii)
02309>      Unit Hyd. Tpeak (min)=       1.00         5.00
02310>      Unit Hyd. peak  (cms)=       1.47          .23
02311>                                                          *TOTALS*
02312>      PEAK FLOW       (cms)=        .00          .11          .111 (iii)
02313>      TIME TO PEAK    (hrs)=       1.00         1.07         1.067
02314>      RUNOFF VOLUME    (mm)=      67.59        38.11        38.402
02315>      TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
02316>      RUNOFF COEFFICIENT   =        .97          .55          .552
02317>
02318>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02319>            CN* =  65.0    Ia = Dep. Storage  (Above)
02320>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02321>            THAN THE STORAGE COEFFICIENT.
02322>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02323>
02324> ---------------------------------------------------------------------------
02325> 050:0011-----------------------------------------------------------------------
02326> ----------------------
02327> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
02328> | 08:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02329> ----------------------   U.H. Tp(hrs)=    .120
02330>
02331>      Unit Hyd Qpeak  (cms)=     .045
02332>
02333>      PEAK FLOW       (cms)=     .009 (i)
02334>      TIME TO PEAK    (hrs)=    1.150
02335>      RUNOFF VOLUME    (mm)=   14.847
02336>      TOTAL RAINFALL   (mm)=   69.590
02337>      RUNOFF COEFFICIENT   =     .213
02338>
02339>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02340>
02341> ---------------------------------------------------------------------------
02342> 050:0012-----------------------------------------------------------------------
02343> -------------------------
02344> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02345> -------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
02346>                       ID1 01:A201&A206      5.52    1.733    1.00  45.87    .000
02347>                      +ID2 06:EX201          .19     .036    1.05  29.42    .000
02348>                      +ID3 07:EX202          .49     .111    1.07  38.40    .000
02349>                      +ID4 08:EX203          .14     .009    1.15  14.85    .000
02350>                       ========================================================
02351>                       SUM 09:To3rdPipe      6.34    1.845    1.00  44.11    .000
02352>
02353>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02354>
02355> ---------------------------------------------------------------------------
02356> 050:0013-----------------------------------------------------------------------
02357> *#*************************************************************************
02358> *#  Third Pipe System
02359> *#*************************************************************************
02360> ----------------------
02361> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .012  (cms)
02362> | TotalHyd 09:To3rdP |   Number of inlets in system [NINLET] =       1
02363> ----------------------   Total minor system capacity         =    .012  (cms)
02364>                          Total major system storage [TMJSTO] =      65.(cu.m.)
02365>
02366>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
02367>                                   (ha)     (cms)     (hrs)     (mm)    (cms)
02368>      TOTAL HYD.   09:To3rdP       6.34     1.845     1.000    44.112     .000
02369>      ================================================================
02370>      MAJOR SYST   06:ToStor       5.90     1.833     1.000    44.112     .000
02371>      MINOR SYST   07:To3rd         .44      .012      .400    44.123     .000
02372>
02373>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02374>
02375>      Maximum MAJOR SYSTEM storage used =      65.(cu.m.)
02376>
02377> ---------------------------------------------------------------------------
02378> 050:0014-----------------------------------------------------------------------
02379> -------------------------
02380> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02381> -------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
02382>                       ID1 02:A202           1.00     .396    1.00  50.37    .000
02383>                      +ID2 05:A204&SWM1       .75     .050    1.32  20.72    .000
02384>                      +ID3 06:ToStorage      5.90    1.833    1.00  44.11    .000
02385>                       ========================================================
02386>                       SUM 09:ToStorageF     7.65    2.236    1.00  42.64    .000
02387>
02388>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02389>
02390> ---------------------------------------------------------------------------
02391> 050:0015-----------------------------------------------------------------------
02392> *#*************************************************************************
02393> *#  Dry Pond Storage
02394> *#*************************************************************************
02395> ----------------------
02396> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02397> |  IN>09:(ToStor)    |
02398> | OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
02399> ----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02400>                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
02401>                             .000  .0000E+00    |     .058  .1797E+00
02402>                             .028  .1890E-01    |     .062  .2069E+00
02403>                             .028  .3880E-01    |     .065  .2353E+00
02404>                             .028  .5970E-01    |     .068  .2649E+00
02405>                             .035  .8160E-01    |     .070  .2956E+00
02406>                             .044  .1045E+00    |     .073  .3275E+00
02407>                             .050  .1285E+00    |     .075  .3606E+00
02408>                             .054  .1536E+00    |     .078  .3949E+00
02409>
02410>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02411>      ---------------------      (ha)     (cms)     (hrs)       (mm)
02412>      INFLOW >09: (ToStor)       7.65     2.236     1.000      42.637
02413>      OUTFLOW<01: (Storag)       7.65      .069     2.783      42.637
02414>     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000
02415>
02416>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02417>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02418>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02419>
02420>
02421>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.068
02422>                    TIME SHIFT OF PEAK FLOW         (min)=   107.00
02423>                    MAXIMUM  STORAGE   USED       (ha.m.)=.2758E+00
02424>
02425> ---------------------------------------------------------------------------
02426> 050:0016-----------------------------------------------------------------------
02427> ----------------------
02428> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .028  (cms)
02429> | TotalHyd 01:Storag |   Number of inlets in system [NINLET] =       1
02430> ----------------------   Total minor system capacity         =    .028  (cms)
02431>                          Total major system storage [TMJSTO] =       0.(cu.m.)
02432>
02433>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
02434>                                   (ha)     (cms)     (hrs)     (mm)    (cms)
02435>      TOTAL HYD.   01:Storag       7.65      .069     2.783    42.637     .000
02436>      ================================================================
02437>      MAJOR SYST   09:ToCarr       2.96      .041     2.783    42.637     .000
02438>      MINOR SYST   10:Infilt       4.69      .028      .883    42.638     .000
02439>
02440>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02441>
02442> ---------------------------------------------------------------------------
02443> 050:0017-----------------------------------------------------------------------
02444> -------------------------
02445> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02446> -------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
02447>                       ID1 02:OVFL           .00      .000     .00     .00    .000
02448>                      +ID2 04:A200           .13      .046    1.00   46.50    .000
02449>                      +ID3 09:ToCarroll     2.96      .041    2.78   42.64    .000
02450>                       ========================================================
02451>                       SUM 01:TowardsNW      3.09      .052    1.00   42.80    .000
02452>
02453>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02454>
02455> ---------------------------------------------------------------------------
02456> 050:0018-----------------------------------------------------------------------
02457> *#*************************************************************************
02458> *#  Rearyard Swale Storage
02459> *#*************************************************************************
02460> ----------------------
02461> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .005  (cms)
02462> | TotalHyd 03:A203A& |   Number of inlets in system [NINLET] =       1
02463> ----------------------   Total minor system capacity         =    .005  (cms)
02464>                          Total major system storage [TMJSTO] =      72.(cu.m.)
02465>
02466>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
02467>                                   (ha)     (cms)     (hrs)     (mm)    (cms)
02468>      TOTAL HYD.   03:A203A&        .27      .052     1.033    29.421     .000
02469>      ================================================================
02470>      MAJOR SYST   02:Toward        .00      .000      .000     .000     .000
02471>      MINOR SYST   04:InSwal        .27      .005      .883    29.519     .000
02472>
02473>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02474>
02475>      Maximum MAJOR SYSTEM storage used =      46.(cu.m.)
02476>
02477> ---------------------------------------------------------------------------
02478> 050:0019-----------------------------------------------------------------------
02479> *#*************************************************************************
02480> *#
02481> *#  Interim conditions
02482> *#
02483> *#*************************************************************************
02484> ----------------------
02485> | CALIB STANDHYD     |   Area    (ha)=    3.14
02486> | 01:A201   DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
02487> ----------------------
02488>                              IMPERVIOUS    PERVIOUS (i)
02489>      Surface Area     (ha)=       1.85         1.29
02490>      Dep. Storage     (mm)=       2.00         5.00
02491>      Average Slope     (%)=       2.00         2.00
02492>      Length            (m)=     146.00        35.00
02493>      Mannings n             =      .013         .240
02494>
02495>      Max.eff.Inten.(mm/hr)=     228.89        70.56
02496>                 over (min)        2.00         9.00
02497>      Storage Coeff.  (min)=       1.87 (ii)    9.18 (ii)
02498>      Unit Hyd. Tpeak (min)=       2.00         9.00
02499>      Unit Hyd. peak  (cms)=        .58          .12
02500>                                                          *TOTALS*
02501>      PEAK FLOW       (cms)=        .93          .16          .986 (iii)
02502>      TIME TO PEAK    (hrs)=       1.00         1.17         1.000
02503>      RUNOFF VOLUME    (mm)=      67.59        24.14        45.867
02504>      TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
02505>      RUNOFF COEFFICIENT   =        .97          .35          .659
02506>
02507>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02508>            CN* =  65.0    Ia = Dep. Storage  (Above)
02509>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02510>            THAN THE STORAGE COEFFICIENT.
02511>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02512>
02513> ---------------------------------------------------------------------------
02514> 050:0020-----------------------------------------------------------------------
02515> ----------------------
02516> | CALIB STANDHYD     |   Area    (ha)=    1.00
02517> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
02518> ----------------------
02519>                              IMPERVIOUS    PERVIOUS (i)
02520>      Surface Area     (ha)=        .69          .31
02521>      Dep. Storage     (mm)=       2.00         5.00
02522>      Average Slope     (%)=       2.00         2.00
02523>      Length            (m)=      90.00        20.00
02524>      Mannings n             =      .013         .240
02525>
02526>      Max.eff.Inten.(mm/hr)=     228.89        90.48
02527>                 over (min)        1.00         6.00
02528>      Storage Coeff.  (min)=       1.40 (ii)    6.13 (ii)
02529>      Unit Hyd. Tpeak (min)=       1.00         6.00
02530>      Unit Hyd. peak  (cms)=        .87          .19
02531>                                                          *TOTALS*
02532>      PEAK FLOW       (cms)=        .37          .05          .396 (iii)
02533>      TIME TO PEAK    (hrs)=       1.00         1.08         1.000
02534>      RUNOFF VOLUME    (mm)=      67.59        25.59        50.371
02535>      TOTAL RAINFALL   (mm)=      69.59        69.59        69.590
02536>      RUNOFF COEFFICIENT   =        .97          .37          .724
02537>
02538>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02539>            CN* =  65.0    Ia = Dep. Storage  (Above)
02540>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
```

```
02541>            THAN THE STORAGE COEFFICIENT.
02542>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02543>
02544> ---------------------------------------------------------------------------
02545> 050:0021----------------------------------------------------------------------
02546> ----------------------
02547> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
02548> | 03:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02549> ----------------------   U.H. Tp(hrs)=    .120
02550>
02551>      Unit Hyd Qpeak  (cms)=     .045
02552>
02553>      PEAK FLOW       (cms)=     .009 (i)
02554>      TIME TO PEAK    (hrs)=    1.150
02555>      RUNOFF VOLUME    (mm)=   14.847
02556>      TOTAL RAINFALL   (mm)=   69.590
02557>      RUNOFF COEFFICIENT   =     .213
02558>
02559>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02560>
02561> ---------------------------------------------------------------------------
02562> 050:0022----------------------------------------------------------------------
02563> ----------------------
02564> | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
02565> | 04:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02566> ----------------------   U.H. Tp(hrs)=    .240
02567>
02568>      Unit Hyd Qpeak  (cms)=     .119
02569>
02570>      PEAK FLOW       (cms)=     .050 (i)
02571>      TIME TO PEAK    (hrs)=    1.317
02572>      RUNOFF VOLUME    (mm)=   20.718
02573>      TOTAL RAINFALL   (mm)=   69.590
02574>      RUNOFF COEFFICIENT   =     .298
02575>
02576>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02577>
02578> ---------------------------------------------------------------------------
02579> 050:0023----------------------------------------------------------------------
02580> ----------------------
02581> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02582> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
02583>                       ID1 01:A201          3.14     .986    1.00  45.87    .000
02584>                      +ID2 03:EX203         .14      .009    1.15  14.85    .000
02585>                       ========================================================
02586>                       SUM 05:To3rdPipe     3.28     .990    1.00  44.54    .000
02587>
02588>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02589>
02590> ---------------------------------------------------------------------------
02591> 050:0024----------------------------------------------------------------------
02592> *#*************************************************************************
02593> *#  Third Pipe System
02594> *#*************************************************************************
02595> ----------------------
02596> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .007  (cms)
02597> | TotalHyd 05:To3rdP |   Number of inlets in system [NINLET] =       1
02598> ----------------------   Total minor system capacity          =    .007  (cms)
02599>                          Total major system storage [TMJSTO] =     37.(cu.m.)
02600>
02601>                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
02602>                                   (ha)     (cms)     (hrs)     (mm)    (cms)
02603>      TOTAL HYD.   05:To3rdP      3.28      .990     1.000   44.543     .000
02604>      ============================================================================
02605>      MAJOR SYST   06:ToStor       3.03      .983     1.000   44.543     .000
02606>      MINOR SYST   07:To3rd         .25      .007      .400   44.642     .000
02607>
02608>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02609>
02610>      Maximum MAJOR SYSTEM storage used =      37.(cu.m.)
02611>
02612> ---------------------------------------------------------------------------
02613> 050:0025----------------------------------------------------------------------
02614> ----------------------
02615> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02616> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
02617>                       ID1 02:A202          1.00     .396    1.00  50.37    .000
02618>                      +ID2 04:A204&SWM1     .75      .050    1.32  20.72    .000
02619>                      +ID3 06:ToStorage     3.03     .983    1.00  44.54    .000
02620>                       ========================================================
02621>                       SUM 09:ToStorageF    4.78     1.386   1.00  42.03    .000
02622>
02623>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02624>
02625> ---------------------------------------------------------------------------
02626> 050:0026----------------------------------------------------------------------
02627> *#*************************************************************************
02628> *#  Dry Pond Storage
02629> *#*************************************************************************
02630> ----------------------
02631> | CALIB STANDHYD     |   Area    (ha)=     .13
02632> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
02633> ----------------------
02634>                              IMPERVIOUS    PERVIOUS (i)
02635>      Surface Area     (ha)=        .07          .06
02636>      Dep. Storage     (mm)=       2.00         5.00
02637>      Average Slope     (%)=       2.00         2.00
02638>      Length            (m)=      45.00        45.00
02639>      Mannings n            =       .013         .250
02640>
02641>      Max.eff.Inten.(mm/hr)=     228.89        45.72
02642>                over (min)        1.00        11.00
02643>      Storage Coeff.  (min)=       .92 (ii)   11.03 (ii)
02644>      Unit Hyd. Tpeak (min)=      1.00        11.00
02645>      Unit Hyd. peak  (cms)=      1.12          .10
02646>                                                          *TOTALS*
02647>      PEAK FLOW       (cms)=       .05          .00          .046 (iii)
02648>      TIME TO PEAK    (hrs)=      1.00         1.22         1.000
02649>      RUNOFF VOLUME    (mm)=     67.59        20.72        46.497
02650>      TOTAL RAINFALL   (mm)=     69.59        69.59        69.590
02651>      RUNOFF COEFFICIENT   =       .97          .30          .668
02652>
02653>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02654>            CN* =  65.0    Ia = Dep. Storage  (Above)
02655>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02656>            THAN THE STORAGE COEFFICIENT.
02657>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02658>
02659> ---------------------------------------------------------------------------
02660> 050:0027----------------------------------------------------------------------
02661> ----------------------
02662> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02663> |  IN>09:(ToStor)    |
02664> | OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
02665> ----------------------    OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
02666>                             (cms)     (ha.m.)    |    (cms)    (ha.m.)
02667>                              .000  .0000E+00     |     .028  .5970E-01
02668>                                                  |     .028  .1890E-01
02669>                                                  |     .028  .3880E-01
02670>
02671>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02672>      ---------------            (ha)     (cms)     (hrs)        (mm)
02673>      INFLOW >09: (ToStor)       4.78     1.386     1.000      42.026
02674>      OUTFLOW<01: (Storag)       4.78      .028      .917      42.026
02675>     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000
02676>
02677>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02678>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02679>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02680>
02681>
02682>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    1.998
02683>                    TIME SHIFT OF PEAK FLOW          (min)=    -5.00
02684>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1780E+00
02685>
02686> ---------------------------------------------------------------------------
02687> 050:0028----------------------------------------------------------------------
02688> ------------------------
02689> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02690> ------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
02691>                        ID1 02:OVFL          .00      .000     .00    .00    .000
02692>                       +ID2 04:A200          .13      .046    1.00  46.50    .000
02693>                        ========================================================
02694>                        SUM 09:TowardsNW      .13      .046    1.00  46.50    .000
02695>
02696>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02697>
02698> ---------------------------------------------------------------------------
02699> 050:0029----------------------------------------------------------------------
02700> ---------------------------------------------------------------------------
02701> 050:0002----------------------------------------------------------------------
02702> ---------------------------------------------------------------------------
02703> 050:0002----------------------------------------------------------------------
02704> ---------------------------------------------------------------------------
02705> 050:0002----------------------------------------------------------------------
02706>   ** END OF RUN :  99
02707>
02708> *************************************************************************
02709>
02710>
02711>
02712>
02713>
02714> --------------------
02715> | START            |  Project  dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
02716> --------------------  Rainfall dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
02717>     TZERO =   .00 hrs on        0
02718>     METOUT=   2 (output = METRIC)
02719>     NRUN  = 100
02720>     NSTORM=   1
02721>             #  1=100YR.3hr
02722> ---------------------------------------------------------------------------
02723> 100:0002----------------------------------------------------------------------
02724> *#*************************************************************************
02725> *#  Project Name: [360 Carroll Street]    Project Number: [161414253]
02726> *#  Date        : 2024-07-15
02727> *#  Modeller    : [MYK,AKK]
02728> *#  Company     : Stantec Consulting Ltd. (London)
02729> *#  License #   :  4730904
02730> *#*************************************************************************
02731> *#*************************************************************************
02732> *#
02733> *#  This model represents the hydologic characteristics of the proposed
02734> *#  conditions in the proposed site plan.
02735> *#  Storm events modeled are:
02736> *#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
02737> *#
02738> *#*************************************************************************
02739> ---------------------------------------------------------------------------
02740> 100:0002----------------------------------------------------------------------
02741> --------------------
02742> | READ STORM       |    Filename: 100-yr, 3hr Chicago Storm from Strathroy
02743> | Ptotal=  76.21 mm|    Comments: 100-yr, 3hr Chicago Storm from Strathroy
02744> --------------------
02745>              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
02746>               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
02747>               .08   4.566 |    .83  37.249 |   1.58  16.692 |   2.33   6.431
02748>               .17   5.082 |    .92  92.269 |   1.67  14.280 |   2.42   6.009
02749>               .25   5.730 |   1.00 249.639 |   1.75  12.446 |   2.50   5.639
02750>               .33   6.565 |   1.08 119.567 |   1.83  11.010 |   2.58   5.311
02751>               .42   7.680 |   1.17  66.191 |   1.92   9.859 |   2.67   5.019
02752>               .50   9.235 |   1.25  43.702 |   2.00   8.919 |   2.75   4.758
02753>               .58  11.535 |   1.33  31.833 |   2.08   8.137 |   2.83   4.522
02754>               .67  15.235 |   1.42  24.683 |   2.17   7.478 |   2.92   4.309
02755>               .75  21.985 |   1.50  19.982 |   2.25   6.916 |   3.00   4.116
02756>
02757> ---------------------------------------------------------------------------
02758> 100:0003----------------------------------------------------------------------
02759> *#*************************************************************************
02760> *#
02761> *#  Existing conditions
02762> *#
02763> *#*************************************************************************
02764> ----------------------
02765> | CALIB NASHYD       |   Area    (ha)=     .64   Curve Number   (CN)=54.00
02766> | 01:A103   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02767> ----------------------   U.H. Tp(hrs)=    .240
02768>
02769>      Unit Hyd Qpeak  (cms)=     .102
02770>
02771>      PEAK FLOW       (cms)=     .036 (i)
02772>      TIME TO PEAK    (hrs)=    1.317
02773>      RUNOFF VOLUME    (mm)=   17.635
02774>      TOTAL RAINFALL   (mm)=   76.215
02775>      RUNOFF COEFFICIENT   =     .231
02776>
02777>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02778>
02779> ---------------------------------------------------------------------------
02780> 100:0004----------------------------------------------------------------------
02781> *#*************************************************************************
02782> *#
02783> *#  Proposed conditions
02784> *#
02785> *#*************************************************************************
02786> ----------------------
02787> | CALIB STANDHYD     |   Area    (ha)=    5.52
02788> | 01:A201&A DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
02789> ----------------------
02790>                              IMPERVIOUS    PERVIOUS (i)
02791>      Surface Area     (ha)=       3.26         2.26
02792>      Dep. Storage     (mm)=       2.00         5.00
02793>      Average Slope     (%)=       2.00         2.00
02794>      Length            (m)=     146.00        35.00
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```
02795>      Mannings n          =       .013         .240
02796>
02797>      Max.eff.Inten.(mm/hr)=     249.64        83.37
02798>                over (min)        2.00         9.00
02799>      Storage Coeff.  (min)=       1.81 (ii)    8.64 (ii)
02800>      Unit Hyd. Tpeak (min)=       2.00         9.00
02801>      Unit Hyd. peak  (cms)=        .60          .13
02802>                                                          *TOTALS*
02803>      PEAK FLOW       (cms)=       1.80          .34         1.916 (iii)
02804>      TIME TO PEAK    (hrs)=       1.00         1.17         1.000
02805>      RUNOFF VOLUME    (mm)=      74.21        28.22        51.219
02806>      TOTAL RAINFALL   (mm)=      76.21        76.21        76.215
02807>      RUNOFF COEFFICIENT   =        .97          .37          .672
02808>
02809>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02810>            CN* =  65.0    Ia = Dep. Storage  (Above)
02811>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02812>            THAN THE STORAGE COEFFICIENT.
02813>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02814>
02815> ----------------------------------------------------------------------------
02816> 100:0005--------------------------------------------------------------------
02817> ----------------------
02818> | CALIB STANDHYD     |   Area    (ha)=    1.00
02819> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
02820> ----------------------
02821>                              IMPERVIOUS    PERVIOUS (i)
02822>      Surface Area     (ha)=        .69          .31
02823>      Dep. Storage     (mm)=       2.00         5.00
02824>      Average Slope     (%)=       2.00         2.00
02825>      Length            (m)=      90.00        20.00
02826>      Mannings n          =        .013         .240
02827>
02828>      Max.eff.Inten.(mm/hr)=     249.64       106.60
02829>                over (min)        1.00         6.00
02830>      Storage Coeff.  (min)=       1.35 (ii)    5.78 (ii)
02831>      Unit Hyd. Tpeak (min)=       1.00         6.00
02832>      Unit Hyd. peak  (cms)=        .89          .19
02833>                                                          *TOTALS*
02834>      PEAK FLOW       (cms)=        .40          .06          .437 (iii)
02835>      TIME TO PEAK    (hrs)=       1.00         1.08         1.000
02836>      RUNOFF VOLUME    (mm)=      74.21        29.84        56.020
02837>      TOTAL RAINFALL   (mm)=      76.21        76.21        76.215
02838>      RUNOFF COEFFICIENT   =        .97          .39          .735
02839>
02840>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02841>            CN* =  65.0    Ia = Dep. Storage  (Above)
02842>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02843>            THAN THE STORAGE COEFFICIENT.
02844>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02845>
02846> ----------------------------------------------------------------------------
02847> 100:0006--------------------------------------------------------------------
02848> ----------------------
02849> | CALIB STANDHYD     |   Area    (ha)=    .27
02850> | 02:A203A& DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
02851> ----------------------
02852>                              IMPERVIOUS    PERVIOUS (i)
02853>      Surface Area     (ha)=        .10          .17
02854>      Dep. Storage     (mm)=       2.00         5.00
02855>      Average Slope     (%)=       2.00         2.00
02856>      Length            (m)=      13.00        13.00
02857>      Mannings n          =        .013         .240
02858>
02859>      Max.eff.Inten.(mm/hr)=     249.64       177.52
02860>                over (min)        1.00         3.00
02861>      Storage Coeff.  (min)=        .42 (ii)    3.21 (ii)
02862>      Unit Hyd. Tpeak (min)=       1.00         3.00
02863>      Unit Hyd. peak  (cms)=       1.54          .36
02864>                                                          *TOTALS*
02865>      PEAK FLOW       (cms)=        .00          .06          .062 (iii)
02866>      TIME TO PEAK    (hrs)=       1.00         1.03         1.033
02867>      RUNOFF VOLUME    (mm)=      74.21        33.65        34.054
02868>      TOTAL RAINFALL   (mm)=      76.21        76.21        76.215
02869>      RUNOFF COEFFICIENT   =        .97          .44          .447
02870>
02871>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02872>            CN* =  65.0    Ia = Dep. Storage  (Above)
02873>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02874>            THAN THE STORAGE COEFFICIENT.
02875>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02876>
02877> ----------------------------------------------------------------------------
02878> 100:0007--------------------------------------------------------------------
02879> ----------------------
02880> | CALIB STANDHYD     |   Area    (ha)=    .13
02881> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
02882> ----------------------
02883>                              IMPERVIOUS    PERVIOUS (i)
02884>      Surface Area     (ha)=        .07          .06
02885>      Dep. Storage     (mm)=       2.00         5.00
02886>      Average Slope     (%)=       2.00         2.00
02887>      Length            (m)=      45.00        45.00
02888>      Mannings n          =        .013         .240
02889>
02890>      Max.eff.Inten.(mm/hr)=     249.64        57.04
02891>                over (min)        1.00        10.00
02892>      Storage Coeff.  (min)=        .89 (ii)   10.14 (ii)
02893>      Unit Hyd. Tpeak (min)=       1.00        10.00
02894>      Unit Hyd. peak  (cms)=       1.15          .11
02895>                                                          *TOTALS*
02896>      PEAK FLOW       (cms)=        .05          .01          .051 (iii)
02897>      TIME TO PEAK    (hrs)=       1.00         1.20         1.000
02898>      RUNOFF VOLUME    (mm)=      74.21        24.38        51.791
02899>      TOTAL RAINFALL   (mm)=      76.21        76.21        76.215
02900>      RUNOFF COEFFICIENT   =        .97          .32          .680
02901>
02902>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02903>            CN* =  65.0    Ia = Dep. Storage  (Above)
02904>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02905>            THAN THE STORAGE COEFFICIENT.
02906>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02907>
02908> ----------------------------------------------------------------------------
02909> 100:0008--------------------------------------------------------------------
02910> ----------------------
02911> | CALIB NASHYD       |   Area    (ha)=    .75   Curve Number   (CN)=65.00
02912> | 05:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02913> ----------------------   U.H. Tp(hrs)=    .240
02914>
02915>      Unit Hyd Qpeak  (cms)=     .119
02916>
02917>      PEAK FLOW       (cms)=     .060 (i)
02918>      TIME TO PEAK    (hrs)=    1.317
02919>      RUNOFF VOLUME    (mm)=   24.384
02920>      TOTAL RAINFALL   (mm)=   76.215
02921>      RUNOFF COEFFICIENT   =     .320
02922>
02923>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02924>
02925> ----------------------------------------------------------------------------
02926> 100:0009--------------------------------------------------------------------
02927> ----------------------
02928> | CALIB STANDHYD     |   Area    (ha)=     .19
02929> | 06:EX201  DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
02930> ----------------------
02931>                              IMPERVIOUS    PERVIOUS (i)
02932>      Surface Area     (ha)=        .07          .12
02933>      Dep. Storage     (mm)=       2.00         5.00
02934>      Average Slope     (%)=       2.00         2.00
02935>      Length            (m)=       5.00        15.00
02936>      Mannings n          =        .013         .240
02937>
02938>      Max.eff.Inten.(mm/hr)=     249.64       177.52
02939>                over (min)        1.00         3.00
02940>      Storage Coeff.  (min)=        .24 (ii)    3.28 (ii)
02941>      Unit Hyd. Tpeak (min)=       1.00         3.00
02942>      Unit Hyd. peak  (cms)=       1.67          .35
02943>                                                          *TOTALS*
02944>      PEAK FLOW       (cms)=        .00          .04          .043 (iii)
02945>      TIME TO PEAK    (hrs)=        .98         1.03         1.033
02946>      RUNOFF VOLUME    (mm)=      74.21        33.65        34.054
02947>      TOTAL RAINFALL   (mm)=      76.21        76.21        76.215
02948>      RUNOFF COEFFICIENT   =        .97          .44          .447
02949>
02950>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02951>            CN* =  65.0    Ia = Dep. Storage  (Above)
02952>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02953>            THAN THE STORAGE COEFFICIENT.
02954>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02955>
02956> ----------------------------------------------------------------------------
02957> 100:0010--------------------------------------------------------------------
02958> ----------------------
02959> | CALIB STANDHYD     |   Area    (ha)=     .49
02960> | 07:EX202  DT= 1.00 |   Total Imp(%)=   62.00   Dir. Conn.(%)=    1.00
02961> ----------------------
02962>                              IMPERVIOUS    PERVIOUS (i)
02963>      Surface Area     (ha)=        .30          .19
02964>      Dep. Storage     (mm)=       2.00         5.00
02965>      Average Slope     (%)=       2.00         2.00
02966>      Length            (m)=      16.00        42.00
02967>      Mannings n          =        .013         .240
02968>
02969>      Max.eff.Inten.(mm/hr)=     249.64       358.67
02970>                over (min)        1.00         5.00
02971>      Storage Coeff.  (min)=        .48 (ii)    4.73 (ii)
02972>      Unit Hyd. Tpeak (min)=       1.00         5.00
02973>      Unit Hyd. peak  (cms)=       1.49          .23
02974>                                                          *TOTALS*
02975>      PEAK FLOW       (cms)=        .00          .13          .130 (iii)
02976>      TIME TO PEAK    (hrs)=       1.00         1.07         1.067
02977>      RUNOFF VOLUME    (mm)=      74.21        43.53        43.841
02978>      TOTAL RAINFALL   (mm)=      76.21        76.21        76.215
02979>      RUNOFF COEFFICIENT   =        .97          .57          .575
02980>
02981>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02982>            CN* =  65.0    Ia = Dep. Storage  (Above)
02983>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02984>            THAN THE STORAGE COEFFICIENT.
02985>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02986>
02987> ----------------------------------------------------------------------------
02988> 100:0011--------------------------------------------------------------------
02989> ----------------------
02990> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
02991> | 08:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02992> ----------------------   U.H. Tp(hrs)=    .120
02993>
02994>      Unit Hyd Qpeak  (cms)=     .045
02995>
02996>      PEAK FLOW       (cms)=     .011 (i)
02997>      TIME TO PEAK    (hrs)=    1.150
02998>      RUNOFF VOLUME    (mm)=   17.633
02999>      TOTAL RAINFALL   (mm)=   76.215
03000>      RUNOFF COEFFICIENT   =     .231
03001>
03002>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03003>
03004> ----------------------------------------------------------------------------
03005> 100:0012--------------------------------------------------------------------
03006> ----------------------
03007> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03008> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
03009>                       ID1 01:A201&A206      5.52     1.916   1.00  51.22    .000
03010>                      +ID2 06:EX201           .19      .043   1.03  34.05    .000
03011>                      +ID3 07:EX202           .49      .130   1.07  43.84    .000
03012>                      +ID4 08:EX203           .14      .011   1.15  17.63    .000
03013>                       ================================================================
03014>                       SUM 09:To3rdPipe      6.34     2.054   1.00  49.39    .000
03015>
03016>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03017>
03018> ----------------------------------------------------------------------------
03019> 100:0013--------------------------------------------------------------------
03020> *#############################################################################
03021> *#  Third Pipe System
03022> *#############################################################################
03023> ----------------------
03024> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .012  (cms)
03025> | TotalHyd 09:To3rdP |   Number of inlets in system [NINLET] =       1
03026> ----------------------   Total minor system capacity         =    .012  (cms)
03027>                          Total major system storage [TMJSTO] =     65.(cu.m.)
03028>
03029>                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.      DWF
03030>                                     (ha)     (cms)     (hrs)      (mm)     (cms)
03031>      TOTAL HYD.   09:To3rdP        6.34     2.054     1.000    49.393     .000
03032>      ================================================================
03033>      MAJOR SYST   06:ToStor         5.95     2.042     1.000    49.393     .000
03034>      MINOR SYST   07:To3rd          .39      .012     4.800    49.409     .000
03035>
03036>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03037>
03038>      Maximum MAJOR SYSTEM storage used =      65.(cu.m.)
03039>
03040> ----------------------------------------------------------------------------
03041> 100:0014--------------------------------------------------------------------
03042> ----------------------
03043> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03044> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
03045>                       ID1 02:A202           1.00      .437   1.00  56.02    .000
03046>                      +ID2 05:A204&SWM1       .75      .060   1.32  24.38    .000
03047>                      +ID3 06:ToStorage      5.95     2.042   1.00  49.39    .000
03048>                       ================================================================
```

```
                    SUM 09:ToStorageF     7.70    2.488    1.00  47.82    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
100:0015----------------------------------------------------------------------
*#*************************************************************************
*#  Dry Pond Storage
*#*************************************************************************
----------------------
| ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
|  IN>09:(ToStor)   |
| OUT<01:(Storag)   |    =========  OUTFLOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                             .000  .0000E+00    |     .058  .1797E+00
                             .028  .1890E-01    |     .062  .2069E+00
                             .028  .3880E-01    |     .065  .2353E+00
                             .028  .5970E-01    |     .068  .2649E+00
                             .035  .8160E-01    |     .070  .2956E+00
                             .044  .1045E+00    |     .073  .3275E+00
                             .050  .1285E+00    |     .075  .3606E+00
                             .054  .1536E+00    |     .078  .3949E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ----------------------      (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (ToStor)       7.70     2.488     1.000     47.817
     OUTFLOW<01: (Storag)       7.70      .072     2.850     47.817
    OVERFLOW<02: (OVFL  )        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=     .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    2.886
                    TIME SHIFT OF PEAK FLOW       (min)=   111.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.3147E+00

---------------------------------------------------------------------------
100:0016----------------------------------------------------------------------
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .028  (cms)
| TotalHyd 01:Storag |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity         =    .028  (cms)
                         Total major system storage [TMJSTO] =      0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   01:Storag       7.70      .072     2.850   47.817     .000
     ==========================================================================
     MAJOR SYST   09:ToCarr       3.19      .044      .867   47.818     .000
     MINOR SYST   10:Infilt       4.51      .028      .867   47.818     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
100:0017----------------------------------------------------------------------
-------------------------
| ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
-------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                      ID1 02:OVFL            .00      .000     .00     .00    .000
                     +ID2 04:A200            .13      .051    1.00   51.79    .000
                     +ID3 09:ToCarroll      3.19      .044    2.85   47.82    .000
                      ==========================================================
                      SUM 01:TowardsNW      3.32      .061    1.00   47.97    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
100:0018----------------------------------------------------------------------
*#*************************************************************************
*#  Rearyard Swale Storage
*#*************************************************************************
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .005  (cms)
| TotalHyd 03:A203A& |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity         =    .005  (cms)
                         Total major system storage [TMJSTO] =     72.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   03:A203A&        .27      .062     1.033   34.054     .000
     ==========================================================================
     MAJOR SYST   02:Toward        .00      .000      .000     .000     .000
     MINOR SYST   04:InSwal        .27      .005      .867   34.081     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

     Maximum MAJOR SYSTEM storage used =      57.(cu.m.)

---------------------------------------------------------------------------
100:0019----------------------------------------------------------------------
*#*************************************************************************
*#
*#  Interim conditions
*#
*#*************************************************************************
----------------------
| CALIB STANDHYD     |   Area    (ha)=    3.14
| 01:A201   DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
----------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        1.85          1.29
     Dep. Storage     (mm)=        2.00          5.00
     Average Slope     (%)=        2.00          2.00
     Length            (m)=      146.00         35.00
     Mannings n             =       .013          .240

     Max.eff.Inten.(mm/hr)=      249.64         83.37
               over (min)         2.00          9.00
     Storage Coeff.  (min)=        1.81 (ii)     8.64 (ii)
     Unit Hyd. Tpeak (min)=        2.00          9.00
     Unit Hyd. peak  (cms)=         .60           .13
                                                          *TOTALS*
     PEAK FLOW       (cms)=        1.03           .19          1.090 (iii)
     TIME TO PEAK    (hrs)=        1.00          1.17          1.000
     RUNOFF VOLUME    (mm)=       74.21         28.22         51.219
     TOTAL RAINFALL   (mm)=       76.21         76.21         76.215
     RUNOFF COEFFICIENT   =         .97           .37           .672

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------------------------------------------------------------------------
100:0020----------------------------------------------------------------------
----------------------
| CALIB STANDHYD     |   Area    (ha)=    1.00
| 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
----------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .69           .31
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       2.00          2.00
     Length            (m)=      90.00         20.00
     Mannings n             =      .013          .240

     Max.eff.Inten.(mm/hr)=     249.64        106.60
               over (min)         1.00          6.00
     Storage Coeff.  (min)=        1.35 (ii)     5.78 (ii)
     Unit Hyd. Tpeak (min)=        1.00          6.00
     Unit Hyd. peak  (cms)=         .89           .19
                                                          *TOTALS*
     PEAK FLOW       (cms)=         .40           .06           .437 (iii)
     TIME TO PEAK    (hrs)=        1.00          1.08          1.000
     RUNOFF VOLUME    (mm)=       74.21         29.84         56.020
     TOTAL RAINFALL   (mm)=       76.21         76.21         76.215
     RUNOFF COEFFICIENT   =         .97           .39           .735

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------------------------------------------------------------------------
100:0021----------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
| 03:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .120

     Unit Hyd Qpeak  (cms)=     .045

     PEAK FLOW       (cms)=     .011 (i)
     TIME TO PEAK    (hrs)=    1.150
     RUNOFF VOLUME    (mm)=   17.633
     TOTAL RAINFALL   (mm)=   76.215
     RUNOFF COEFFICIENT   =     .231

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

---------------------------------------------------------------------------
100:0022----------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
| 04:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .240

     Unit Hyd Qpeak  (cms)=     .119

     PEAK FLOW       (cms)=     .060 (i)
     TIME TO PEAK    (hrs)=    1.317
     RUNOFF VOLUME    (mm)=   24.384
     TOTAL RAINFALL   (mm)=   76.215
     RUNOFF COEFFICIENT   =     .320

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

---------------------------------------------------------------------------
100:0023----------------------------------------------------------------------
-------------------------
| ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
-------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                      ID1 01:A201           3.14    1.090    1.00   51.22    .000
                     +ID2 03:EX203           .14     .011    1.15   17.63    .000
                      ==========================================================
                      SUM 05:To3rdPipe      3.28    1.094    1.00   49.79    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
100:0024----------------------------------------------------------------------
*#*************************************************************************
*#  Third Pipe System
*#*************************************************************************
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .007  (cms)
| TotalHyd 05:To3rdP |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity         =    .007  (cms)
                         Total major system storage [TMJSTO] =     37.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   05:To3rdP       3.28    1.094     1.000   49.785     .000
     ==========================================================================
     MAJOR SYST   06:ToStor       3.06    1.087     1.000   49.785     .000
     MINOR SYST   07:To3rd         .22     .007      .383   49.885     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

     Maximum MAJOR SYSTEM storage used =      37.(cu.m.)

---------------------------------------------------------------------------
100:0025----------------------------------------------------------------------
-------------------------
| ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
-------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                      ID1 02:A202           1.00     .437    1.00   56.02    .000
                     +ID2 04:A204&SWM1       .75     .060    1.32   24.38    .000
                     +ID3 06:ToStorage      3.06    1.087    1.00   49.79    .000
                      ==========================================================
                      SUM 09:ToStorageF     4.81    1.534    1.00   47.12    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

---------------------------------------------------------------------------
100:0026----------------------------------------------------------------------
*#*************************************************************************
*#  Dry Pond Storage
*#*************************************************************************
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .13
| 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
----------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .07           .06
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       2.00          2.00
     Length            (m)=      45.00         45.00
     Mannings n             =      .013          .240
```

```
03303>
03304>      Max.eff.Inten.(mm/hr)=     249.64        57.04
03305>                   over (min)        1.00        10.00
03306>      Storage Coeff.  (min)=         .89 (ii)   10.14 (ii)
03307>      Unit Hyd. Tpeak (min)=        1.00        10.00
03308>      Unit Hyd. peak  (cms)=        1.15          .11
03309>                                                          *TOTALS*
03310>      PEAK FLOW       (cms)=         .05          .01          .051 (iii)
03311>      TIME TO PEAK    (hrs)=        1.00         1.20         1.000
03312>      RUNOFF VOLUME    (mm)=       74.21        24.38        51.791
03313>      TOTAL RAINFALL   (mm)=       76.21        76.21        76.215
03314>      RUNOFF COEFFICIENT   =         .97          .32          .680
03315>
03316>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03317>            CN* =  65.0    Ia = Dep. Storage  (Above)
03318>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03319>            THAN THE STORAGE COEFFICIENT.
03320>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03321>
03322> ---------------------------------------------------------------------------
03323> 100:0027-----------------------------------------------------------------
03324> ----------------------
03325> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
03326> |  IN>09:(ToStor)   |
03327> | OUT<01:(Storag)   |    =========  OUTLFOW STORAGE TABLE  =========
03328> ----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
03329>                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
03330>                             .000  .0000E+00    |     .028  .5970E-01
03331>                             .028  .1890E-01     |     .028  .3949E+00
03332>                             .028  .3880E-01     |     .000  .0000E+00
03333>
03334>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
03335>      --------------------        (ha)     (cms)     (hrs)       (mm)
03336>      INFLOW >09: (ToStor)       4.81     1.534     1.000     47.120
03337>      OUTFLOW<01: (Storag)       4.81      .028      .900     47.120
03338>     OVERFLOW<02: (OVFL  )        .00      .000      .000       .000
03339>
03340>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
03341>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
03342>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
03343>
03344>
03345>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    1.806
03346>                     TIME SHIFT OF PEAK FLOW          (min)=    -6.00
03347>                     MAXIMUM  STORAGE   USED       (ha.m.)=.2032E+00
03348>
03349> ---------------------------------------------------------------------------
03350> 100:0028-----------------------------------------------------------------
03351> -------------------------
03352> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03353> -------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
03354>                       ID1 02:OVFL           .00      .000     .00    .00     .000
03355>                      +ID2 04:A200           .13      .051    1.00  51.79     .000
03356>                       ========================================================
03357>                       SUM 09:TowardsNW       .13      .051    1.00  51.79     .000
03358>
03359>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03360>
03361> ---------------------------------------------------------------------------
03362> 100:0029-----------------------------------------------------------------
03363> ---------------------------------------------------------------------------
03364> 100:0002-----------------------------------------------------------------
03365> ---------------------------------------------------------------------------
03366> 100:0002-----------------------------------------------------------------
03367> ---------------------------------------------------------------------------
03368> 100:0002-----------------------------------------------------------------
03369> ---------------------------------------------------------------------------
03370> 100:0002-----------------------------------------------------------------
03371>   ** END OF RUN : 249
03372>
03373> ***************************************************************************
03374>
03375>
03376>
03377>
03378>
03379> --------------------
03380> | START            |  Project  dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
03381> --------------------  Rainfall dir.: C:\MODELI~1\SWMHYMO\CAROLL~1\
03382>     TZERO =   .00 hrs on        0
03383>     METOUT=   2 (output = METRIC)
03384>     NRUN  = 250
03385>     NSTORM=   1
03386>            #  1=250YR.3hr
03387> ---------------------------------------------------------------------------
03388> 250:0002-----------------------------------------------------------------
03389> *#************************************************************************
03390> *#  Project Name: [360 Carroll Street]    Project Number: [161414253]
03391> *#  Date        : 2024-07-15
03392> *#  Modeller    : [MYK,AKK]
03393> *#  Company     : Stantec Consulting Ltd. (London)
03394> *#  License #   :  4730904
03395> *#************************************************************************
03396> *#************************************************************************
03397> *#
03398> *#  This model represents the hydologic characteristics of the proposed
03399> *#  conditions in the proposed site plan.
03400> *#  Storm events modeled are:
03401> *#  5YR, 10YR, 25YR, 50YR, 100YR and 250YR 3hr Chicago STORMS (Strathroy IDF)
03402> *#
03403> *#************************************************************************
03404> ---------------------------------------------------------------------------
03405> 250:0002-----------------------------------------------------------------
03406> --------------------
03407> | READ STORM       |    Filename: 250-yr, 3hr Chicago Storm from Strathroy
03408> | Ptotal=  86.60 mm|    Comments: 250-yr, 3hr Chicago Storm from Strathroy
03409> --------------------
03410>               TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
03411>                hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
03412>                .08   5.095 |    .83  43.425 |   1.58  19.302 |   2.33   7.254
03413>                .17   5.690 |    .92 106.077 |   1.67  16.460 |   2.42   6.764
03414>                .25   6.440 |   1.00 274.730 |   1.75  14.300 |   2.50   6.334
03415>                .33   7.410 |   1.08 136.668 |   1.83  12.612 |   2.58   5.955
03416>                .42   8.710 |   1.17  76.864 |   1.92  11.261 |   2.67   5.617
03417>                .50  10.529 |   1.25  50.954 |   2.00  10.158 |   2.75   5.316
03418>                .58  13.230 |   1.33  37.106 |   2.08   9.244 |   2.83   5.044
03419>                .67  17.585 |   1.42  28.713 |   2.17   8.474 |   2.92   4.799
03420>                .75  25.536 |   1.50  23.179 |   2.25   7.819 |   3.00   4.577
03421>
03422> ---------------------------------------------------------------------------
03423> 250:0003-----------------------------------------------------------------
03424> *#************************************************************************
03425> *#
03426> *#  Existing conditions
03427> *#
03428> *#************************************************************************
03429> ----------------------
03430> | CALIB NASHYD       |   Area    (ha)=     .64   Curve Number   (CN)=54.00
03431> | 01:A103   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03432> ----------------------   U.H. Tp(hrs)=    .240
03433>
03434>      Unit Hyd Qpeak  (cms)=     .102
03435>
03436>      PEAK FLOW       (cms)=     .046 (i)
03437>      TIME TO PEAK    (hrs)=    1.333
03438>      RUNOFF VOLUME    (mm)=   22.347
03439>      TOTAL RAINFALL   (mm)=   86.603
03440>      RUNOFF COEFFICIENT   =     .258
03441>
03442>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03443>
03444> ---------------------------------------------------------------------------
03445> 250:0004-----------------------------------------------------------------
03446> *#************************************************************************
03447> *#
03448> *#  Proposed conditions
03449> *#
03450> *#************************************************************************
03451> ----------------------
03452> | CALIB STANDHYD     |   Area    (ha)=    5.52
03453> | 01:A201&A DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
03454> ----------------------
03455>                                IMPERVIOUS    PERVIOUS (i)
03456>      Surface Area     (ha)=       3.26         2.26
03457>      Dep. Storage     (mm)=       2.00         5.00
03458>      Average Slope     (%)=       2.00         2.00
03459>      Length            (m)=     146.00        35.00
03460>      Mannings n             =       .013         .240
03461>
03462>      Max.eff.Inten.(mm/hr)=     274.73       104.55
03463>                   over (min)        2.00         8.00
03464>      Storage Coeff.  (min)=       1.74 (ii)    7.98 (ii)
03465>      Unit Hyd. Tpeak (min)=        2.00         8.00
03466>      Unit Hyd. peak  (cms)=         .61          .14
03467>                                                          *TOTALS*
03468>      PEAK FLOW       (cms)=        2.00          .43         2.170 (iii)
03469>      TIME TO PEAK    (hrs)=        1.00         1.15         1.000
03470>      RUNOFF VOLUME    (mm)=       84.60        34.97        59.785
03471>      TOTAL RAINFALL   (mm)=       86.60        86.60        86.603
03472>      RUNOFF COEFFICIENT   =         .98          .40          .690
03473>
03474>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03475>            CN* =  65.0    Ia = Dep. Storage  (Above)
03476>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03477>            THAN THE STORAGE COEFFICIENT.
03478>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03479>
03480> ---------------------------------------------------------------------------
03481> 250:0005-----------------------------------------------------------------
03482> ----------------------
03483> | CALIB STANDHYD     |   Area    (ha)=    1.00
03484> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
03485> ----------------------
03486>                                IMPERVIOUS    PERVIOUS (i)
03487>      Surface Area     (ha)=        .69          .31
03488>      Dep. Storage     (mm)=       2.00         5.00
03489>      Average Slope     (%)=       2.00         2.00
03490>      Length            (m)=      90.00        20.00
03491>      Mannings n             =       .013         .240
03492>
03493>      Max.eff.Inten.(mm/hr)=     274.73       138.27
03494>                   over (min)        1.00         5.00
03495>      Storage Coeff.  (min)=       1.30 (ii)    5.29 (ii)
03496>      Unit Hyd. Tpeak (min)=        1.00         5.00
03497>      Unit Hyd. peak  (cms)=         .91          .22
03498>                                                          *TOTALS*
03499>      PEAK FLOW       (cms)=         .44          .08          .497 (iii)
03500>      TIME TO PEAK    (hrs)=        1.00         1.07         1.000
03501>      RUNOFF VOLUME    (mm)=       84.60        36.83        65.017
03502>      TOTAL RAINFALL   (mm)=       86.60        86.60        86.603
03503>      RUNOFF COEFFICIENT   =         .98          .43          .751
03504>
03505>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03506>            CN* =  65.0    Ia = Dep. Storage  (Above)
03507>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03508>            THAN THE STORAGE COEFFICIENT.
03509>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03510>
03511> ---------------------------------------------------------------------------
03512> 250:0006-----------------------------------------------------------------
03513> ----------------------
03514> | CALIB STANDHYD     |   Area    (ha)=     .27
03515> | 03:A203A& DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
03516> ----------------------
03517>                                IMPERVIOUS    PERVIOUS (i)
03518>      Surface Area     (ha)=        .10          .17
03519>      Dep. Storage     (mm)=       2.00         5.00
03520>      Average Slope     (%)=       2.00         2.00
03521>      Length            (m)=      13.00        13.00
03522>      Mannings n             =       .013         .240
03523>
03524>      Max.eff.Inten.(mm/hr)=     274.73       212.02
03525>                   over (min)        1.00         3.00
03526>      Storage Coeff.  (min)=         .41 (ii)    3.01 (ii)
03527>      Unit Hyd. Tpeak (min)=        1.00         3.00
03528>      Unit Hyd. peak  (cms)=        1.55          .37
03529>                                                          *TOTALS*
03530>      PEAK FLOW       (cms)=         .00          .08          .076 (iii)
03531>      TIME TO PEAK    (hrs)=        1.00         1.03         1.033
03532>      RUNOFF VOLUME    (mm)=       84.60        41.20        41.631
03533>      TOTAL RAINFALL   (mm)=       86.60        86.60        86.603
03534>      RUNOFF COEFFICIENT   =         .98          .48          .481
03535>
03536>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03537>            CN* =  65.0    Ia = Dep. Storage  (Above)
03538>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03539>            THAN THE STORAGE COEFFICIENT.
03540>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03541>
03542> ---------------------------------------------------------------------------
03543> 250:0007-----------------------------------------------------------------
03544> ----------------------
03545> | CALIB STANDHYD     |   Area    (ha)=     .13
03546> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
03547> ----------------------
03548>                                IMPERVIOUS    PERVIOUS (i)
03549>      Surface Area     (ha)=        .07          .06
03550>      Dep. Storage     (mm)=       2.00         5.00
03551>      Average Slope     (%)=       2.00         2.00
03552>      Length            (m)=      45.00        45.00
03553>      Mannings n             =       .013         .240
03554>
03555>      Max.eff.Inten.(mm/hr)=     274.73        71.89
03556>                   over (min)        1.00         9.00
```

```
03557>      Storage Coeff.  (min)=       .86 (ii)    9.29 (ii)
03558>      Unit Hyd. Tpeak (min)=      1.00         9.00
03559>      Unit Hyd. peak  (cms)=      1.17          .12
03560>                                                        *TOTALS*
03561>      PEAK FLOW       (cms)=       .05          .01          .057 (iii)
03562>      TIME TO PEAK    (hrs)=      1.00         1.18         1.000
03563>      RUNOFF VOLUME    (mm)=     84.60        30.49        60.254
03564>      TOTAL RAINFALL   (mm)=     86.60        86.60        86.603
03565>      RUNOFF COEFFICIENT   =       .98          .35          .696
03566>
03567>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03568>            CN* =  65.0    Ia = Dep. Storage  (Above)
03569>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03570>            THAN THE STORAGE COEFFICIENT.
03571>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03572>
03573> ------------------------------------------------------------------------------
03574> 250:0008--------------------------------------------------------------------------
03575> ----------------------
03576> | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
03577> | 05:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03578> ----------------------   U.H. Tp(hrs)=    .240
03579>
03580>      Unit Hyd Qpeak  (cms)=     .119
03581>
03582>      PEAK FLOW       (cms)=     .075 (i)
03583>      TIME TO PEAK    (hrs)=    1.317
03584>      RUNOFF VOLUME    (mm)=   30.493
03585>      TOTAL RAINFALL   (mm)=   86.603
03586>      RUNOFF COEFFICIENT   =     .352
03587>
03588>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03589>
03590> ------------------------------------------------------------------------------
03591> 250:0009--------------------------------------------------------------------------
03592> ----------------------
03593> | CALIB STANDHYD     |   Area    (ha)=     .19
03594> | 06:EX201  DT= 1.00 |   Total Imp(%)=   38.00   Dir. Conn.(%)=    1.00
03595> ----------------------
03596>                                IMPERVIOUS    PERVIOUS (i)
03597>      Surface Area     (ha)=        .07          .12
03598>      Dep. Storage     (mm)=       2.00         5.00
03599>      Average Slope     (%)=       2.00         2.00
03600>      Length            (m)=       5.00        15.00
03601>      Mannings n            =       .013         .240
03602>
03603>      Max.eff.Inten.(mm/hr)=     274.73       212.02
03604>                over (min)        1.00         3.00
03605>      Storage Coeff.  (min)=       .23 (ii)    3.06 (ii)
03606>      Unit Hyd. Tpeak (min)=      1.00         3.00
03607>      Unit Hyd. peak  (cms)=      1.68          .37
03608>                                                        *TOTALS*
03609>      PEAK FLOW       (cms)=       .00          .05          .053 (iii)
03610>      TIME TO PEAK    (hrs)=       .97         1.03         1.033
03611>      RUNOFF VOLUME    (mm)=     84.60        41.20        41.631
03612>      TOTAL RAINFALL   (mm)=     86.60        86.60        86.603
03613>      RUNOFF COEFFICIENT   =       .98          .48          .481
03614>
03615>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03616>            CN* =  65.0    Ia = Dep. Storage  (Above)
03617>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03618>            THAN THE STORAGE COEFFICIENT.
03619>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03620>
03621> ------------------------------------------------------------------------------
03622> 250:0010--------------------------------------------------------------------------
03623> ----------------------
03624> | CALIB STANDHYD     |   Area    (ha)=     .49
03625> | 07:EX202  DT= 1.00 |   Total Imp(%)=   62.00   Dir. Conn.(%)=    1.00
03626> ----------------------
03627>                                IMPERVIOUS    PERVIOUS (i)
03628>      Surface Area     (ha)=        .30          .19
03629>      Dep. Storage     (mm)=       2.00         5.00
03630>      Average Slope     (%)=       2.00         2.00
03631>      Length            (m)=      16.00        42.00
03632>      Mannings n            =       .013         .240
03633>
03634>      Max.eff.Inten.(mm/hr)=     274.73       440.34
03635>                over (min)        1.00         4.00
03636>      Storage Coeff.  (min)=       .46 (ii)    4.38 (ii)
03637>      Unit Hyd. Tpeak (min)=      1.00         4.00
03638>      Unit Hyd. peak  (cms)=      1.50          .27
03639>                                                        *TOTALS*
03640>      PEAK FLOW       (cms)=       .00          .16          .161 (iii)
03641>      TIME TO PEAK    (hrs)=      1.00         1.05         1.050
03642>      RUNOFF VOLUME    (mm)=     84.60        52.28        52.599
03643>      TOTAL RAINFALL   (mm)=     86.60        86.60        86.603
03644>      RUNOFF COEFFICIENT   =       .98          .60          .607
03645>
03646>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03647>            CN* =  65.0    Ia = Dep. Storage  (Above)
03648>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03649>            THAN THE STORAGE COEFFICIENT.
03650>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03651>
03652> ------------------------------------------------------------------------------
03653> 250:0011--------------------------------------------------------------------------
03654> ----------------------
03655> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
03656> | 08:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03657> ----------------------   U.H. Tp(hrs)=    .120
03658>
03659>      Unit Hyd Qpeak  (cms)=     .045
03660>
03661>      PEAK FLOW       (cms)=     .014 (i)
03662>      TIME TO PEAK    (hrs)=    1.150
03663>      RUNOFF VOLUME    (mm)=   22.346
03664>      TOTAL RAINFALL   (mm)=   86.603
03665>      RUNOFF COEFFICIENT   =     .258
03666>
03667>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03668>
03669> ------------------------------------------------------------------------------
03670> 250:0012--------------------------------------------------------------------------
03671> ------------------------
03672> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03673> ------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
03674>                       ID1 01:A201&A206      5.52    2.170    1.00  59.79    .000
03675>                      +ID2 06:EX201          .19     .053    1.03  41.63    .000
03676>                      +ID3 07:EX202          .49     .161    1.05  52.60    .000
03677>                      +ID4 08:EX203          .14     .014    1.15  22.35    .000
03678>                       ================================================================
03679>                       SUM 09:To3rdPipe      6.34    2.357    1.00  57.86    .000
03680>
03681>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03682>
03683> ------------------------------------------------------------------------------
03684> 250:0013--------------------------------------------------------------------------
03685> *#*************************************************************************
03686> *#  Third Pipe System
03687> *#*************************************************************************
03688> ----------------------
03689> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .012  (cms)
03690> | TotalHyd 09:To3rdP |   Number of inlets in system [NINLET] =      1
03691> ----------------------   Total minor system capacity         =    .012  (cms)
03692>                          Total major system storage [TMJSTO] =     65.(cu.m.)
03693>
03694>                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
03695>                                    (ha)     (cms)     (hrs)     (mm)     (cms)
03696>      TOTAL HYD.    09:To3rdP       6.34     2.357     1.000    57.859     .000
03697>      ================================================================
03698>      MAJOR SYST    06:ToStor       6.00     2.345     1.000    57.859     .000
03699>      MINOR SYST    07:To3rd         .34      .012      .350    57.971     .000
03700>
03701>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03702>
03703>      Maximum MAJOR SYSTEM storage used =      65.(cu.m.)
03704>
03705> ------------------------------------------------------------------------------
03706> 250:0014--------------------------------------------------------------------------
03707> ------------------------
03708> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03709> ------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
03710>                       ID1 02:A202          1.00      .497    1.00  65.02    .000
03711>                      +ID2 05:A204&SWM1      .75      .075    1.32  30.49    .000
03712>                      +ID3 06:ToStorage     6.00     2.345    1.00  57.86    .000
03713>                       ================================================================
03714>                       SUM 09:ToStorageF     7.75    2.855    1.00  56.14    .000
03715>
03716>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03717>
03718> ------------------------------------------------------------------------------
03719> 250:0015--------------------------------------------------------------------------
03720> *#*************************************************************************
03721> *#  Dry Pond Storage
03722> *#*************************************************************************
03723> ----------------------
03724> | ROUTE RESERVOIR    |   Requested routing time step =  1.0 min.
03725> |  IN>09:(ToStor)    |
03726> | OUT<01:(Storag)    |   =========  OUTFLOW STORAGE TABLE  =========
03727> ----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
03728>                            (cms)     (ha.m.)  |    (cms)     (ha.m.)
03729>                             .000  .0000E+00    |     .058  .1797E+00
03730>                             .028  .1890E-01    |     .062  .2069E+00
03731>                             .028  .3880E-01    |     .065  .2353E+00
03732>                             .028  .5970E-01    |     .068  .2649E+00
03733>                             .035  .8160E-01    |     .070  .2956E+00
03734>                             .044  .1045E+00    |     .073  .3275E+00
03735>                             .050  .1285E+00    |     .075  .3606E+00
03736>                             .054  .1536E+00    |     .078  .3949E+00
03737>
03738>      ROUTING RESULTS             AREA     QPEAK     TPEAK       R.V.
03739>      --------------------        (ha)     (cms)     (hrs)       (mm)
03740>      INFLOW >09: (ToStor)        7.75     2.855     1.000      56.135
03741>      OUTFLOW<01: (Storag)        7.75      .076     2.983      56.136
03742>     OVERFLOW<02: (OVFL  )         .00      .000      .000       .000
03743>
03744>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
03745>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
03746>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
03747>
03748>
03749>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    2.675
03750>                    TIME SHIFT OF PEAK FLOW         (min)=   119.00
03751>                    MAXIMUM  STORAGE   USED       (ha.m.)=.3777E+00
03752>
03753> ------------------------------------------------------------------------------
03754> 250:0016--------------------------------------------------------------------------
03755> ----------------------
03756> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .028  (cms)
03757> | TotalHyd 01:Storag |   Number of inlets in system [NINLET] =      1
03758> ----------------------   Total minor system capacity         =    .028  (cms)
03759>                          Total major system storage [TMJSTO] =      0.(cu.m.)
03760>
03761>                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
03762>                                    (ha)     (cms)     (hrs)     (mm)     (cms)
03763>      TOTAL HYD.    01:Storag       7.75      .076     2.983    56.136     .000
03764>      ================================================================
03765>      MAJOR SYST    09:ToCarr       3.48      .049     2.983    56.136     .000
03766>      MINOR SYST    10:Infilt       4.27      .028      .833    56.135     .000
03767>
03768>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03769>
03770> ------------------------------------------------------------------------------
03771> 250:0017--------------------------------------------------------------------------
03772> ------------------------
03773> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03774> ------------------------                  (ha)     (cms)   (hrs)   (mm)    (cms)
03775>                       ID1 02:OVFL           .00      .000     .00     .00    .000
03776>                      +ID2 04:A200           .13      .057    1.00  60.25    .000
03777>                      +ID3 09:ToCarroll     3.48      .049    2.98  56.14    .000
03778>                       ================================================================
03779>                       SUM 01:TowardsNW      3.61      .073    1.00  56.28    .000
03780>
03781>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03782>
03783> ------------------------------------------------------------------------------
03784> 250:0018--------------------------------------------------------------------------
03785> *#*************************************************************************
03786> *#  Rearyard Swale Storage
03787> *#*************************************************************************
03788> ----------------------
03789> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .005  (cms)
03790> | TotalHyd 03:A203A& |   Number of inlets in system [NINLET] =      1
03791> ----------------------   Total minor system capacity         =    .005  (cms)
03792>                          Total major system storage [TMJSTO] =     72.(cu.m.)
03793>
03794>                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
03795>                                    (ha)     (cms)     (hrs)     (mm)     (cms)
03796>      TOTAL HYD.    03:A203A&        .27      .076     1.033    41.631     .000
03797>      ================================================================
03798>      MAJOR SYST    02:Toward        .01      .004     1.683    41.631     .000
03799>      MINOR SYST    04:InSwal        .26      .005      .850    41.701     .000
03800>
03801>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03802>
03803>      Maximum MAJOR SYSTEM storage used =      72.(cu.m.)
03804>
03805> ------------------------------------------------------------------------------
03806> 250:0019--------------------------------------------------------------------------
03807> *#*************************************************************************
03808> *#
03809> *#  Interim conditions
03810> *#
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```
03811> *#*************************************************************************
03812> ----------------------
03813> | CALIB STANDHYD     |   Area    (ha)=    3.14
03814> | 01:A201   DT= 1.00 |   Total Imp(%)=   59.00   Dir. Conn.(%)=   50.00
03815> ----------------------
03816>                              IMPERVIOUS    PERVIOUS (i)
03817>      Surface Area     (ha)=       1.85         1.29
03818>      Dep. Storage     (mm)=       2.00         5.00
03819>      Average Slope     (%)=       2.00         2.00
03820>      Length            (m)=     146.00        35.00
03821>      Mannings n           =       .013         .240
03822>
03823>      Max.eff.Inten.(mm/hr)=     274.73       104.55
03824>                   over (min)       2.00         8.00
03825>      Storage Coeff.  (min)=       1.74 (ii)    7.98 (ii)
03826>      Unit Hyd. Tpeak (min)=       2.00         8.00
03827>      Unit Hyd. peak  (cms)=        .61          .14
03828>                                                          *TOTALS*
03829>      PEAK FLOW       (cms)=       1.14          .25         1.234 (iii)
03830>      TIME TO PEAK    (hrs)=       1.00         1.15         1.000
03831>      RUNOFF VOLUME    (mm)=      84.60        34.97        59.785
03832>      TOTAL RAINFALL   (mm)=      86.60        86.60        86.603
03833>      RUNOFF COEFFICIENT   =        .98          .40          .690
03834>
03835>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03836>            CN* =  65.0    Ia = Dep. Storage  (Above)
03837>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03838>            THAN THE STORAGE COEFFICIENT.
03839>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03840>
03841> -------------------------------------------------------------------------
03842> 250:0020---------------------------------------------------------------------
03843> ----------------------
03844> | CALIB STANDHYD     |   Area    (ha)=    1.00
03845> | 02:A202   DT= 1.00 |   Total Imp(%)=   69.00   Dir. Conn.(%)=   59.00
03846> ----------------------
03847>                              IMPERVIOUS    PERVIOUS (i)
03848>      Surface Area     (ha)=        .69          .31
03849>      Dep. Storage     (mm)=       2.00         5.00
03850>      Average Slope     (%)=       2.00         2.00
03851>      Length            (m)=      90.00        20.00
03852>      Mannings n           =       .013         .240
03853>
03854>      Max.eff.Inten.(mm/hr)=     274.73       138.27
03855>                   over (min)       1.00         5.00
03856>      Storage Coeff.  (min)=       1.30 (ii)    5.29 (ii)
03857>      Unit Hyd. Tpeak (min)=       1.00         5.00
03858>      Unit Hyd. peak  (cms)=        .91          .22
03859>                                                          *TOTALS*
03860>      PEAK FLOW       (cms)=        .44          .08          .497 (iii)
03861>      TIME TO PEAK    (hrs)=       1.00         1.07         1.000
03862>      RUNOFF VOLUME    (mm)=      84.60        36.83        65.017
03863>      TOTAL RAINFALL   (mm)=      86.60        86.60        86.603
03864>      RUNOFF COEFFICIENT   =        .98          .43          .751
03865>
03866>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03867>            CN* =  65.0    Ia = Dep. Storage  (Above)
03868>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03869>            THAN THE STORAGE COEFFICIENT.
03870>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03871>
03872> -------------------------------------------------------------------------
03873> 250:0021---------------------------------------------------------------------
03874> ----------------------
03875> | CALIB NASHYD       |   Area    (ha)=     .14   Curve Number   (CN)=54.00
03876> | 03:EX203  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03877> ----------------------   U.H. Tp(hrs)=    .120
03878>
03879>      Unit Hyd Qpeak  (cms)=     .045
03880>
03881>      PEAK FLOW       (cms)=     .014 (i)
03882>      TIME TO PEAK    (hrs)=    1.150
03883>      RUNOFF VOLUME    (mm)=   22.346
03884>      TOTAL RAINFALL   (mm)=   86.603
03885>      RUNOFF COEFFICIENT   =     .258
03886>
03887>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03888>
03889> -------------------------------------------------------------------------
03890> 250:0022---------------------------------------------------------------------
03891> ----------------------
03892> | CALIB NASHYD       |   Area    (ha)=     .75   Curve Number   (CN)=65.00
03893> | 04:A204&S DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03894> ----------------------   U.H. Tp(hrs)=    .240
03895>
03896>      Unit Hyd Qpeak  (cms)=     .119
03897>
03898>      PEAK FLOW       (cms)=     .075 (i)
03899>      TIME TO PEAK    (hrs)=    1.317
03900>      RUNOFF VOLUME    (mm)=   30.493
03901>      TOTAL RAINFALL   (mm)=   86.603
03902>      RUNOFF COEFFICIENT   =     .352
03903>
03904>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03905>
03906> -------------------------------------------------------------------------
03907> 250:0023---------------------------------------------------------------------
03908> ----------------------
03909> | ADD HYD (To3rdPipe ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03910> ----------------------   ID1 01:A201          (ha)     (cms)   (hrs)   (mm)   (cms)
03911>                       +ID2 03:EX203          3.14    1.234    1.00  59.79    .000
03912>                        ========================      .14     .014    1.15  22.35    .000
03913>                        SUM 05:To3rdPipe      3.28    1.240    1.00  58.19    .000
03914>                        ========================================================
03915>
03916>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03917>
03918> -------------------------------------------------------------------------
03919> 250:0024---------------------------------------------------------------------
03920> *#*************************************************************************
03921> *#  Third Pipe System
03922> *#*************************************************************************
03923> ----------------------
03924> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .007  (cms)
03925> | TotalHyd 05:To3rdP |   Number of inlets in system [NINLET] =       1
03926> ----------------------   Total minor system capacity          =    .007  (cms)
03927>                          Total major system storage [TMJSTO] =      37.(cu.m.)
03928>
03929>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
03930>                                    (ha)     (cms)     (hrs)     (mm)    (cms)
03931>      TOTAL HYD.   05:To3rdP       3.28     1.240     1.000   58.187     .000
03932>      ================================================================
03933>      MAJOR SYST   06:ToStor       3.09     1.233     1.000   58.187     .000
03934>      MINOR SYST   07:To3rd         .19      .007      .350   58.376     .000
03935>
03936>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03937>
03938>      Maximum MAJOR SYSTEM storage used =      37.(cu.m.)
03939>
03940> -------------------------------------------------------------------------
03941> 250:0025---------------------------------------------------------------------
03942> ----------------------
03943> | ADD HYD (ToStorageF) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03944> ----------------------   ID1 02:A202          (ha)     (cms)   (hrs)   (mm)   (cms)
03945>                       +ID2 04:A204&SWM1      1.00     .497    1.00  65.02    .000
03946>                       +ID3 06:ToStorage       .75     .075    1.32  30.49    .000
03947>                        ========================     3.09    1.233    1.00  58.19    .000
03948>                        SUM 09:ToStorageF     4.84    1.742    1.00  55.31    .000
03949>                        ========================================================
03950>
03951>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03952>
03953> -------------------------------------------------------------------------
03954> 250:0026---------------------------------------------------------------------
03955> *#*************************************************************************
03956> *#  Dry Pond Storage
03957> *#*************************************************************************
03958> ----------------------
03959> | CALIB STANDHYD     |   Area    (ha)=     .13
03960> | 04:A200   DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   55.00
03961> ----------------------
03962>                              IMPERVIOUS    PERVIOUS (i)
03963>      Surface Area     (ha)=        .07          .06
03964>      Dep. Storage     (mm)=       2.00         5.00
03965>      Average Slope     (%)=       2.00         2.00
03966>      Length            (m)=      45.00        45.00
03967>      Mannings n           =       .013         .240
03968>
03969>      Max.eff.Inten.(mm/hr)=     274.73        71.89
03970>                   over (min)       1.00         9.00
03971>      Storage Coeff.  (min)=        .86 (ii)    9.29 (ii)
03972>      Unit Hyd. Tpeak (min)=       1.00         9.00
03973>      Unit Hyd. peak  (cms)=       1.17          .12
03974>                                                          *TOTALS*
03975>      PEAK FLOW       (cms)=        .05          .01          .057 (iii)
03976>      TIME TO PEAK    (hrs)=       1.00         1.18         1.000
03977>      RUNOFF VOLUME    (mm)=      84.60        30.49        60.254
03978>      TOTAL RAINFALL   (mm)=      86.60        86.60        86.603
03979>      RUNOFF COEFFICIENT   =        .98          .35          .696
03980>
03981>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03982>            CN* =  65.0    Ia = Dep. Storage  (Above)
03983>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03984>            THAN THE STORAGE COEFFICIENT.
03985>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03986>
03987> -------------------------------------------------------------------------
03988> 250:0027---------------------------------------------------------------------
03989> ----------------------
03990> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
03991> |  IN>09:(ToStor)    |
03992> | OUT<01:(Storag)    |    =========  OUTLFOW STORAGE TABLE  =========
03993> ----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
03994>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
03995>                            .000  .0000E+00   |     .028  .5970E-01
03996>                            .028  .1890E-01   |     .028  .3949E+00
03997>                            .028  .3880E-01   |     .000  .0000E+00
03998>
03999>      ROUTING RESULTS             AREA     QPEAK     TPEAK        R.V.
04000>      -----------------------      (ha)     (cms)     (hrs)        (mm)
04001>      INFLOW >09: (ToStor)        4.84     1.742     1.000      55.307
04002>     OUTFLOW<01: (Storag)         4.84      .028      .883      55.307
04003>    OVERFLOW<02: (OVFL  )          .00      .000      .000        .000
04004>
04005>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =         0
04006>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
04007>                    PERCENTAGE OF TIME OVERFLOWING    (%)=       .00
04008>
04009>
04010>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    1.590
04011>                    TIME SHIFT OF PEAK FLOW         (min)=    -7.00
04012>                    MAXIMUM  STORAGE   USED       (ha.m.)=.2438E+00
04013>
04014> -------------------------------------------------------------------------
04015> 250:0028---------------------------------------------------------------------
04016> ----------------------
04017> | ADD HYD (TowardsNW ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04018> ----------------------   ID1 02:OVFL          (ha)     (cms)   (hrs)   (mm)   (cms)
04019>                       +ID2 04:A200           .00      .000     .00     .00    .000
04020>                        ========================      .13     .057    1.00  60.25    .000
04021>                        SUM 09:TowardsNW      .13     .057    1.00  60.25    .000
04022>                        ========================================================
04023>
04024>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04025>
04026> -------------------------------------------------------------------------
04027> 250:0029---------------------------------------------------------------------
04028> -------------------------------------------------------------------------
04029> 250:0002---------------------------------------------------------------------
04030> -------------------------------------------------------------------------
04031> 250:0002---------------------------------------------------------------------
04032> -------------------------------------------------------------------------
04033> 250:0002---------------------------------------------------------------------
04034> -------------------------------------------------------------------------
04035> 250:0002---------------------------------------------------------------------
04036> -------------------------------------------------------------------------
04037> 250:0002---------------------------------------------------------------------
04038>      FINISH
04039> -------------------------------------------------------------------------
04040> *************************************************************************
04041>      WARNINGS / ERRORS / NOTES
04042>      -------------------------
04043>    Simulation ended on 2024-07-15     at 14:48:09
04044> =========================================================================
04045>
```