Stantec

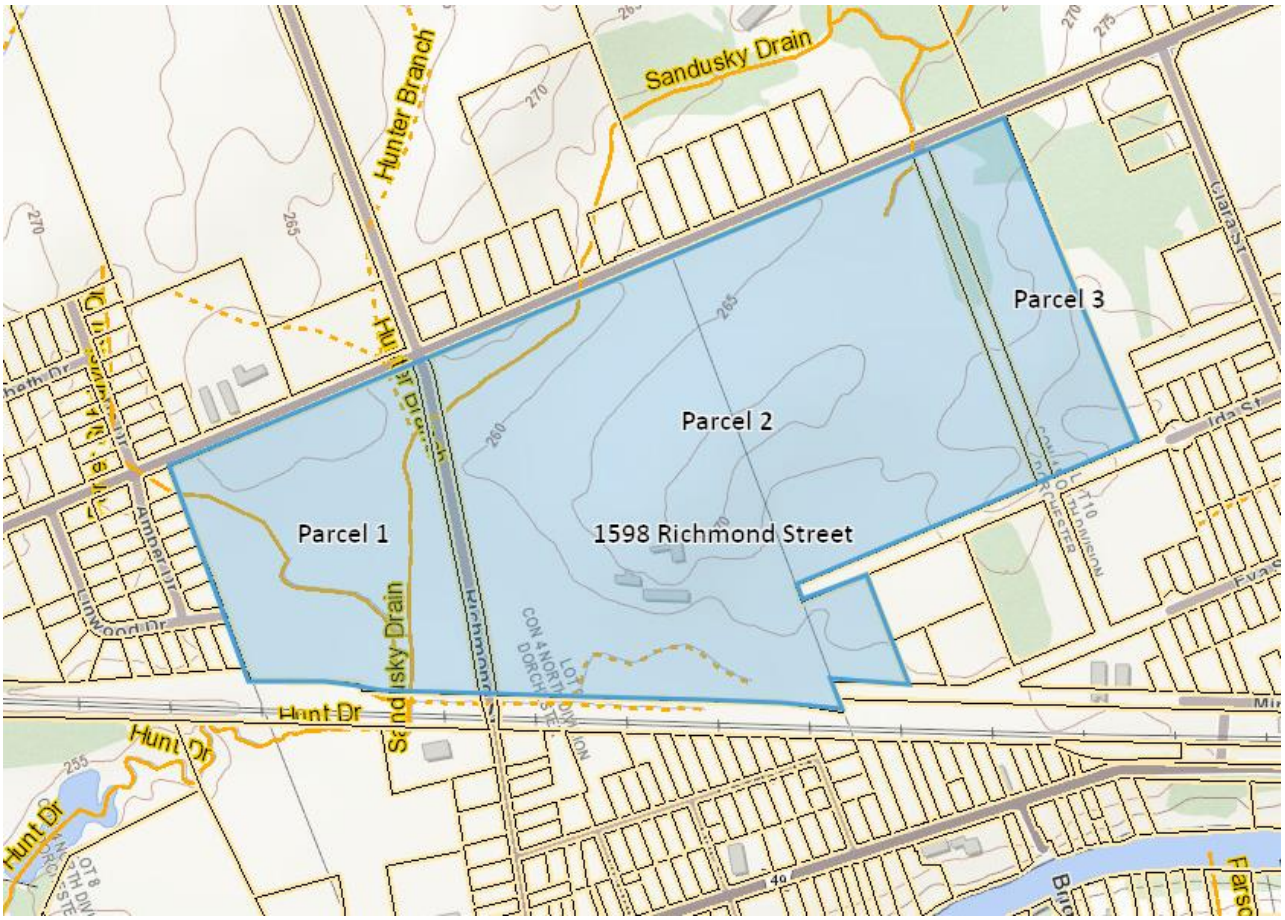
Memo

To:	Auburn Developments London ON Office	From:	Stantec Consulting Ltd. London ON Office
File:	161414095 – Hunter Property Subdivision	Date:	May 16, 2022

Reference: **Conceptual SWM Strategy**
Hunter Property – 1598 Richmond Street

The conceptual plan (attached in the Appendix A) was reviewed to evaluate the Stormwater Management (SWM) strategy for the three parcels located at 1598 Richmond Street. The site is bounded by existing residential to the west, Marion Street to the north, agricultural lands and Clara Street to the east, and the CN Railway (CNR) to the south. The total area of the three parcels is approximately 45.4 ha. Figure 1 illustrates the location and limits of the proposed site.

Figure 1 – Site Location



Reference: **Conceptual SWM Strategy**

EXISTING DRAINAGE CONDITIONS

The existing condition of the site is currently agricultural land. Various municipal drains cross through the site including Sandusky Drain, Hunter Branch, Porter Subdivision Drain and Hunt Drain. Refer to the as-built Drains information, in Appendix B.

SITE DRAINAGE AREAS

Available OBM topographic mapping indicates that the bulk of the site drains to Sandusky Drain and a small portion drains toward Ida Street, as illustrated on Figure 2 and described as follows:

- **Parcel 1** (West of Richmond Street)
  - Most of Parcel 1 drains to Sandusky Drain via overland flow.
  - The Hunter Branch of Sandusky Drain enters Parcel 1 immediately west of Richmond Street, at Marion Street.
  - Some overland runoff from Parcel 1 is collected within Porter Subdivision Drain, which enters Parcel 1 at the northwest corner and discharges to Sandusky Drain, just north of the CNR.
  - Hunt Drain originates in - and conveys runoff from - the southern portion of Parcel 1 and discharges to Sandusky Drain, immediately north of the CNR.

- **Parcel 2** (East of Richmond Street):
  - The northwest part of Parcel 2 drains to Sandusky Drain via overland flow.
  - The southwest part of Parcel 2 drains to the existing CNR ditch and culvert at the southern limit of the site, which ultimately discharges to Sandusky Drain, west of Richmond Street.
  - The northeast part of Parcel 2 drains northward via overland flow, crosses Marion Street through a culvert and ultimately discharges to Sandusky Drain.

- **Parcel 3** (East of Richmond Street):
  - The northern portion of Parcel 3 drains northward, via overland flow, crosses Marion Street through a culvert and ultimately discharges to Sandusky Drain.
  - The southern portion of Parcel 3 drains southward, via overland flow, toward Ida Street. Drawing TC-1367 (Development Engineering -Appendix B), shows that the south part of Parcel 3 falls toward the southeast. Area #2, shown in blue on Drawing TC-183 (Pioneer Developments – Appendix B), indicates that approximately 1.6 ha of the southeast part of Parcel 3 is accounted for in the existing storm servicing on Ida Street.

The existing information for all municipal drains is based on the Ontario Ministry of Agriculture Food and Rural Affairs mapping tool. Any deviation in the existing drainage patterns assumptions would require further assessment on the implications of the proposed strategy in the next sections. Refer to Figure 2 for the existing site conditions.

EXTERNAL DRAINAGE AREAS

Stantec has reviewed existing storm watershed area plans developed by others to further assess existing drainage patterns and contributions from external areas. Drawing number 35-30-1 (H. M. Gibson Consulting Engineers, Appendix B), confirms that Parcel 1, and the north part of Parcels 2 and 3 flow toward Sandusky Drain. This drawing also shows that there are five (5) external drainage areas that drain through the site via Sandusky Drain:

Reference: Conceptual SWM Strategy

1. 19.10 ha northwest of Parcel 1 (Area EXT-1) drains through Parcel 1 via Porter Subdivision Drain, which discharges to Sandusky Drain. Upon initial investigation using Google Earth images, catch basins exist on Amber Drive to collect minor flows, and major flows are conveyed via Porter Subdivision Drain and ultimately to Sandusky Drain.

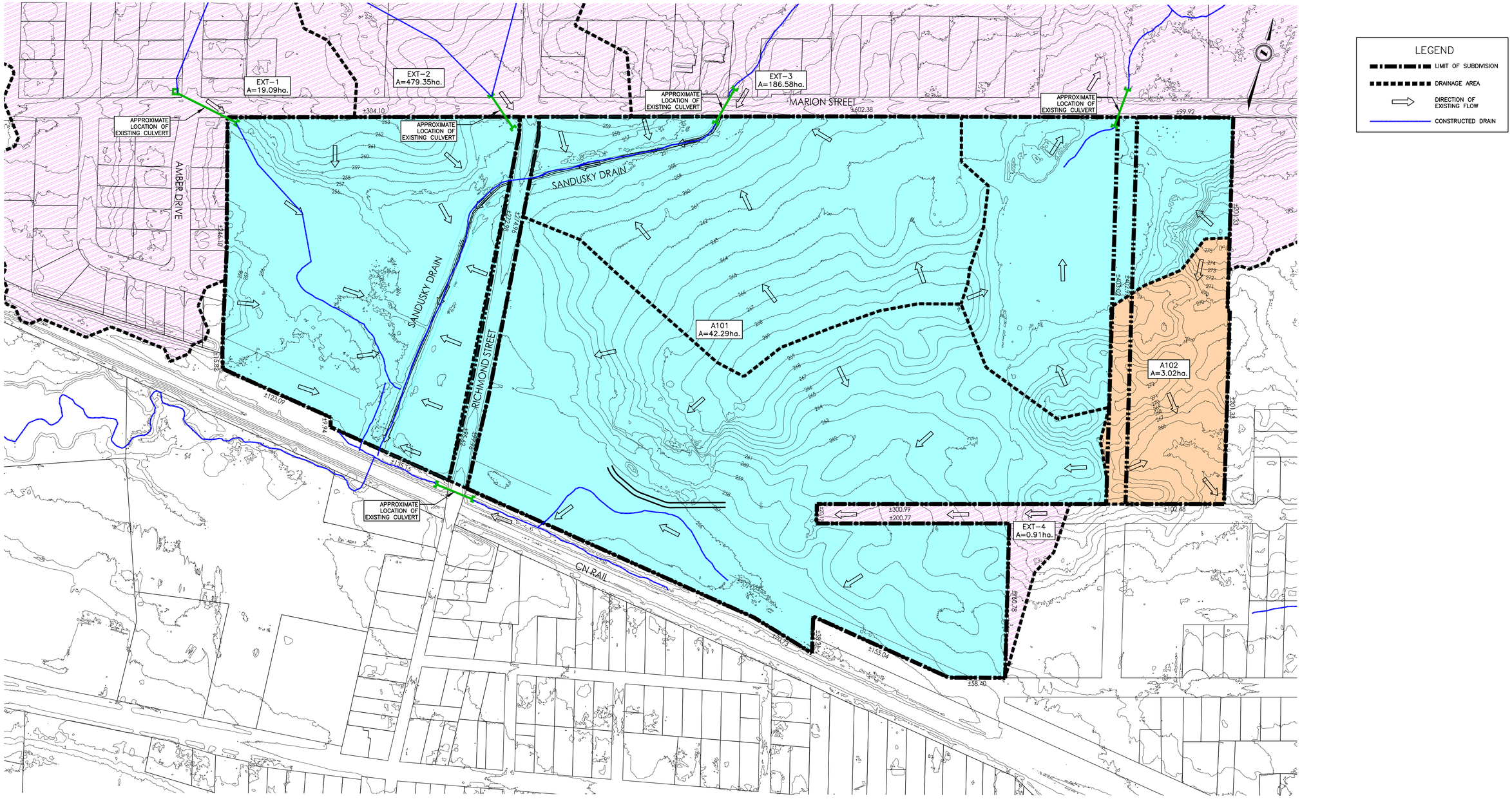
2. 479.35 ha north of Marion Street and Parcel 1 (Area EXT-2) drains to Hunter Branch, which crosses Parcel 1 through the northeast corner and connects to Sandusky Drain.

3. 186.58 ha north of Marion Street and Parcel 2 (Area EXT-3) is tributary to Sandusky Drain and crosses Parcel 2 on the northwest corner. Runoff from this external area is conveyed through Sandusky Drain via a culvert which crosses Marion Street on the north and discharge west through a culvert which crosses Richmond Street.

4. 0.91 ha (Area EXT-4) of Ida Street and lands to the south of Ida Street, is tributary to the site. Runoff from this area enters Parcel 2 via overland flow and is tributary to Sandusky Drain.

5. 0.78 ha (Area 205b) constituting the Richmond Street right-of-way (ROW) is tributary to Sandusky Drain. Runoff from this area enters Parcel 1 through a low point on Richmond Street and conveyed via overland flow through Parcel 1 to Sandusky Drain. This area is delineated in the proposed development storm drainage area plan, refer to Figure 3 For more information.

Refer to Figure 2 for more information about external areas to the site.



EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN JC				
					DRAWN BY JC				
					CHECKED MM				
					APPROVED MM				
					DATE 2022-03-31				

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TITLE

1598 RICHMOND STREET

DORCHESTER, ON CANADA

EXISTING STORM DRAINAGE AREA FIGURE

PROJECT No. 161414095

SHEET No. Figure 2

PLAN FILE No.

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5/12/2022 7:23:21 AM by:Childs, Jason

EXISTING GEOTECHNICAL AND HYDROGEOLOGIC CONDITIONS

In June of 2021, EXP Services Inc. carried out a geotechnical investigation for the proposed Subdivision. The fieldwork for the investigation involved the excavation of 22 test pits. EXP is currently completing a Hydrogeological Assessment and Water Balance report for the current Site. The fieldwork carried out for this investigation included the completion of nine (9) boreholes with monitoring well installations and the excavation of sixteen (16) test pits.

Based on the results of EXP preliminary geotechnical investigation, the subsurface stratigraphy for the area west of Richmond Street, generally consists of topsoil overlaying a layer of peat and marl, sand to sand and gravel, silt to sandy silt, and glacial till. On the area east of Richmond Street, stratigraphy is generally topsoil overlaying a layer of fill, sand/silty sand to sand and gravel, silt/sandy silt/clayey silt and glacial till.

Short-term groundwater levels within the open boreholes were observed. EXP has documented the observations pertaining to groundwater conditions at the test hole locations and stabilized groundwater levels in the monitoring wells. The report shows that the majority of the site has shallow groundwater table ranging from 0.57 to 1.52 mbgs. For further information about EXP investigation refer to Appendix C.

PRELIMINARY SWM ASSESSMENT

SWM CRITERIA

The SWM design criteria for the proposed development, as provided by the Municipality of Thames Centre (2021) Standard are as follows:

- **Water Quantity Control:** Control post-development runoff from the site to Sandusky Drain to pre-development levels for all storm events from 2 Year to 250 Year;
- **Water Quality Control:** Provide Enhanced protection in accordance with MECP water quality guidelines; therefore, an average removal of 80% for suspended solids in the total runoff volume is required;
- **Infiltration and Low Impact Development (LID):** Infiltration of roof water shall be considered in areas where soils permit. LID techniques shall be given consideration where deemed feasible;
- **Floodplain modelling:** may be required for the Drain and aside from the associated costs, the results may find that the required setbacks result in a loss of the medium density blocks adjacent to the Drain.

HYDROLOGIC MODELING

The modelling software SWMHYMO was used to predict flows for the existing and proposed development conditions to develop a preliminary design of the necessary SWM measures. To address the criteria identified above, existing and proposed development conditions were modeled for the 25 mm to 100-year, 4-hour Chicago distribution, and 250-year, 24-hour Chicago distribution derived from Municipality of Thames Centre IDF parameters. All modelling is provided in Appendix D.

PRELIMINARY SWM DESIGN

As part of this submission, Stantec has conducted a preliminary analysis to assess the SWM requirements for the proposed site. Figure 3 shows the catchment areas plan under proposed development conditions. Refer to Appendix D for the design parameter calculations, modeling schematic, and preliminary SWM modeling and stage-storage discharge relationship for the proposed SWM facilities. The following are the findings and recommendations for the SWM of the site:

1. **Parcel 1** (West of Richmond Street):
   - No quantity control is proposed within Parcel 1. Instead, extra storage will be provided within the south proposed SWM facility east of Richmond Street (see below) to over-control runoff from Parcel 2 and ensure no increase in peak flows to Sandusky Drain.

   - For quality control, a treatment-train approach is recommended. Oil and grit separators (OGS) will provide an average removal of 70% of suspended solids from runoff within the low and medium density blocks. Additional sediment removal will be achieved with installation of CB Shields within catchbasins and/or conveyance of runoff through vegetated swales to meet the 80% removal criteria.

   - It is required to maintain conveyance of flows from EXT-1 and EXT-2 through the site to Sandusky Drain following development of the site. It has been assumed that all major and minor event runoff from EXT-1 will be conveyed through Parcel 1 via the existing Porter Subdivision Drain works under proposed conditions. The existing alignment and conveyance measures for the Porter Subdivision Drain will need to be confirmed at the next design stage and may impact the limits of the proposed medium and low density blocks (areas 201 and 203), east of Sandusky Drain.
     Proposed sizing and location of features to maintain conveyance of flow from EXT-2 through Parcel 1 to Sandusky Drain were not determined as a part of this study. The developable area of the medium density block immediately south of Marion Street (Area 201) may be reduced or impacted based on sizing and setback requirements for that conveyance.

   - Infiltration in the medium density blocks (Areas 201 and 205a) is not deemed feasible, given the ground water elevations of only 0.75 to 1.52 mbgs and possibly the poor soil infiltration capabilities.

   - A 15 m buffer from Sandusky Drain has been assumed and is subject to approval and/or change by the UTRCA. An email was sent to UTRCA on April 13 2022 to request information and specific requirements for the floodline elevations, drain cross section, and model, refer to Appendix D for the email to UTRCA. UTRCA have followed up with a telephonic conversation indicating that only cross-section survey data are available for the drain. For the email to UTRCA, refer to Appendix E.

   - Dependent upon the findings of more thorough field investigations, it may be necessary to re-route and/or improve the Porter Subdivision and/or Hunter Branch drains to provide for conveyance following

development. Such works may impact sizing and alignment of the proposed residential blocks and must be completed in accordance with the Drainage Act.

2. **Parcel 2 and Parcel 3** (East of Richmond Street):
   - **Quantity Control** (post to pre for all storm events)
     - Area 205b – Uncontrolled runoff from the Richmond Street ROW will be conveyed directly to Sandusky Drain, as under existing conditions.
     - Areas 207 and 208a – Uncontrolled runoff from these areas will be conveyed directly and indirectly via Richmond Street, to Sandusky Drain. Extra storage will be provided within the south proposed SWM facility (see next bullets) to over-control runoff from the remaining area of Parcel 2 and ensure no increase in peak flows to Sandusky Drain.
     - Area 208b – All runoff will be directed to a wet pond in the south (South facility). Extra volume will be provided within the facility to compensate for the uncontrolled flows from Parcel 1 and Areas 207 and 208a (as discussed above).
     - Area 209 – All runoff will be directed to a dry pond in the north (North facility).
     - Area 210 – Uncontrolled runoff from the open space and park areas will be directed northward to Sandusky Drain, as under existing conditions.
     - Area 211 – All runoff from future low density residential block will be conveyed directly to Ida Street. The proposed area draining to Ida Street is considerably smaller than that under existing conditions and it is anticipated that no quantity controls will be required to match existing peak rates.
     - Area 212 – It is unclear at this time whether development will occur within this block or not and no SWM measures have been sized/recommended at this time. Any future development in this block will be required to meet the SWM criteria identified above.

   Target (i.e., existing) and proposed peak flow rates are summarized in Table 1 and the modelling files are provided in Appendix D. The listed flows are the estimated peak rates within Sandusky Drain at the downstream end of the site (i.e., immediately upstream of the CNR). As illustrated in Table 1, water quantity targets have been met as proposed peak flow rates are at, or below, target levels. Note that the proposed peak flows represent a conservative estimate as they do not account for infiltration of clean runoff or parking lot storage – either of which may be deemed feasible/appropriate at the final design stage.

Table 1: Peak Flow Summary – Sandusky Drain at CNR

Storm Event	25 mm	2-year	5-year	50-year	100-year	Regional
Existing Peak Flow Rate from site directly to the Drain (m^3/s)*	1.74	5.89	6.29	8.48	11.37	13.75
Proposed Peak Flow Rate from site (m^3/s)*	1.74	5.86	6.26	8.42	11.26	13.60

**Peak flow rates include flow from site and external areas under pre- and post-development conditions*

   - **Water Quality Control** (Enhanced)
     - Area 205b – No water quality control will be provided for the Richmond Street ROW, as under existing conditions.

- Area 207 and 208a – Combination of OGS (70% average annual TSS removal), CB Shields and/or vegetated swales.
- Area 208b – South SWM facility.
- Area 209 – OGS and north SWM facility (dry pond).
- Area 210 – No quality control required as this area constitutes park and open space.
- Area 211 – This area is small and will contain very limited development and as such no quality control is considered to be required.
- Area 212 – Quality control for this area will be determined at a later stage, if it is determined that development will occur.

- **Infiltration**
  - The geotechnical work performed by EXP was completed in 2021 to assess the subsurface soil and groundwater conditions at the proposed developments and did not address infiltration in the report. Further geotechnical and/or hydrogeological investigations will be required to address the new draft plan and provide recommendations on Low Impact Development (LID) techniques.
  - LID techniques will be given consideration to promote infiltration and mimic the natural hydrology of the site as it is developed. Pending further soils infiltration testing, implementation of soakaway pits for rooftop runoff from the 25 mm event will be considered at the detailed design stage if soils permit.
  - Referring to the Ministry of Agriculture, Food and Rural Affairs map, the on-site soils have been classified as hydrologic soil group 'B'. Soils in this group have moderate infiltration rate when thoroughly wet. These soils have a moderate rate of water transmission.
  - Further investigation/analysis will be necessary at the detailed design and site plan stages to confirm infiltration rates and depth to high groundwater levels at the base of any proposed infiltration facilities.

3. External Areas and Additional Drainage Considerations

- All runoff from external areas EXT-1, -2, and -3 will be directed to Sandusky Drain, uncontrolled, as under existing conditions. If any alterations to the Porter Subdivision Drain or Hunter Branch of the Sandusky Drain are required to accommodate conveyance of these flows through the proposed development, they will be made in accordance with the Drainage Act.

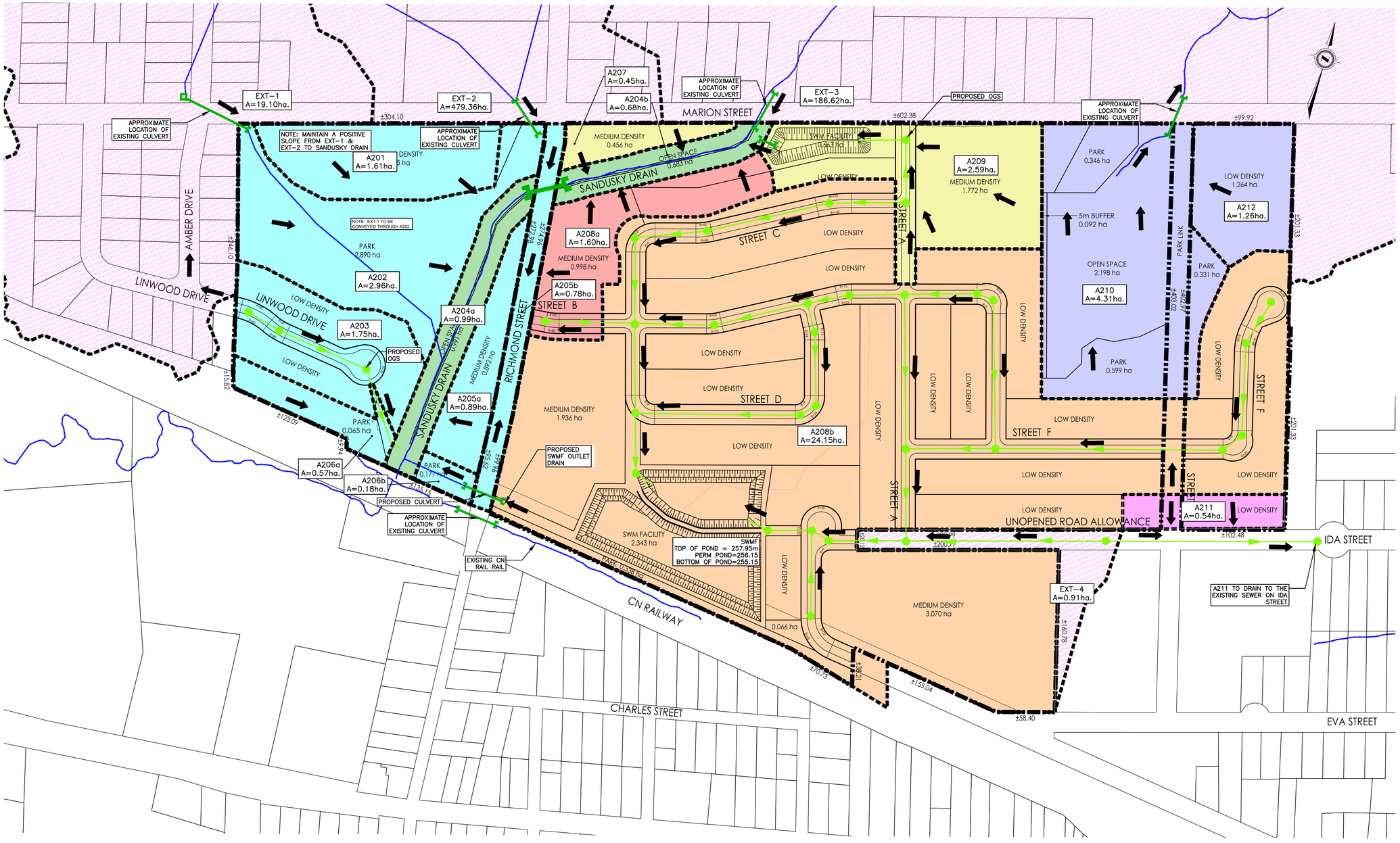
- Minor and major storm flows from the external area to the east (EXT-4) will be conveyed and controlled (quantity only, and no quality control) in the proposed South SWM facility.

- Under existing conditions, the majority of Area 208b flows overland, southward to the existing CNR ditch. A new ditch/storm sewer and culvert crossing Richmond Street will be required to convey flows from the South SWM to the Sandusky Drain. Alternatively, upon CNR approval, the existing ditch and culvert crossing Richmond Street could be utilized under post-development conditions to convey outflows from the SWM wet pond toward Sandusky Drain. A re-design may be required to accommodate elevations, grades and sizing of the CNR conveyance system if this option is pursued.

- The assumed 15 m buffer from Sandusky Drain is subject to approval and/or change by the UTRCA.

- A 5.0 m buffer is provided from the top of the SWM facilities to the property line of the SWM blocks. This is wide enough to accommodate the required maintenance access; however due to the substantial drop in grade across both SWM blocks, the blocks may need to be increased to accommodate grading.

- For the open space and estate lot located on the northeast (A210 and A212), Google Earth suggests that there is a fall from the south toward the north and sheet flows are conveyed through a branch from Sandusky Drain toward a culvert crossing through Marion Street.
- As per the storm as built information (by others, See Appendix B), the area located on the southeast flows toward Ida Street. Under the proposed conditions, the single-family residentials along Ida Street will be directed toward the east and a storm sewer is proposed to connect to the existing connection. The capacity of the downstream system will need to be analyzed.



LEGEND

- LIMIT OF SUBDIVISION
- DRAINAGE AREA
- DIRECTION OF EXISTING FLOW
- CONSTRUCTED DRAIN

ASSUMPTIONS:

1. LOCATION OF THE EXISTING DRAIN INLETS & OUTLET ARE APPROXIMATE
2. THIS IS A COMPILED PLAN AND SHOULD NOT BE CONSIDERED A PLAN OF SURVEY.
3. ONTARIO BASE MAPPING USED FOR AREAS AND DIMENSIONS. LEGAL PLAN REQUIRED FOR PRECISE CALCULATIONS.
4. CONCEPT PLAN IS PRELIMINARY AND HAS NOT BEEN REVIEWED BY THE CITY.
5. ZONING BY–LAW AMENDMENT MAY BE REQUIRED.
6. THIS DRAINAGE AREAS IN THIS FIGURE ARE BASED ON GRADING THAT IS TO BE CONFIRMED IN DETAIL DESIGN

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	JC
DRAWN BY	JC
CHECKED	MM
APPROVED	MM
DATE	2022–03–31

No.	REVISIONS	DATE	CONSULTANT

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TITLE

1598 RICHMOND STREET

DORCHESTER, ON CANADA

STORM DRAINAGE AREA FIGURE

PROJECT No. 161414095

SHEET No. Figure 3

PLAN FILE No.

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Reference: **Conceptual SWM Strategy**

The SWM blocks and facilities on site are sized and conceptually designed to provide the required quantity and quality controls under the proposed conditions. The following SWM block sizes and volumes are listed below and presented in the SWM preliminary grading plan:

- SWM dry facility (north)
  SWM block size = 0.66 ha
  25 mm storm event volume = 206 m^3 and 250 Years storm event volume = 1,395 m^3

- SWM wet facility (south)
  SWM block size = 3.64 ha
  25 mm storm event volume = 2,505 m^3 and 250 Years storm event volume = 11,890 m^3

The two proposed SWM facilities east of Richmond Street can provide adequate quantity control to match existing flow rates for the entire property and it is possible that no quantity control will be required west of Richmond Street, however, quality controls will be required for all future development west of Richmond St.

Please treat this analysis as conceptual based on the current information and conditions of the site and would require confirmation closer to detail design, once rough grading and servicing is complete. It should be noted that further hydrogeologic assessment would also be useful if LID measures are to be utilized in such a manner. This is to confirm seasonal high groundwater table, soil permeability, infiltration capabilities, and LIDs recommendations.

We trust this meets with your requirements. Should you have any question, or require further information, please contact the undersigned.

Sincerely,

Stantec Consulting Ltd.

LICENSED PROFESSIONAL ENGINEER
M. F. MEQDAD
100214405
PROVINCE OF ONTARIO

Digitally signed by Meqdad, Mohammad
Date: 2022.05.17 11:45:29 -04'00'

Mohammad Meqdad MEng., P.Eng., PMP, LEED Green Associate
Project Manager, Community Development
Phone: 519 630 3627
Mohammad.Meqdad@stantec.com

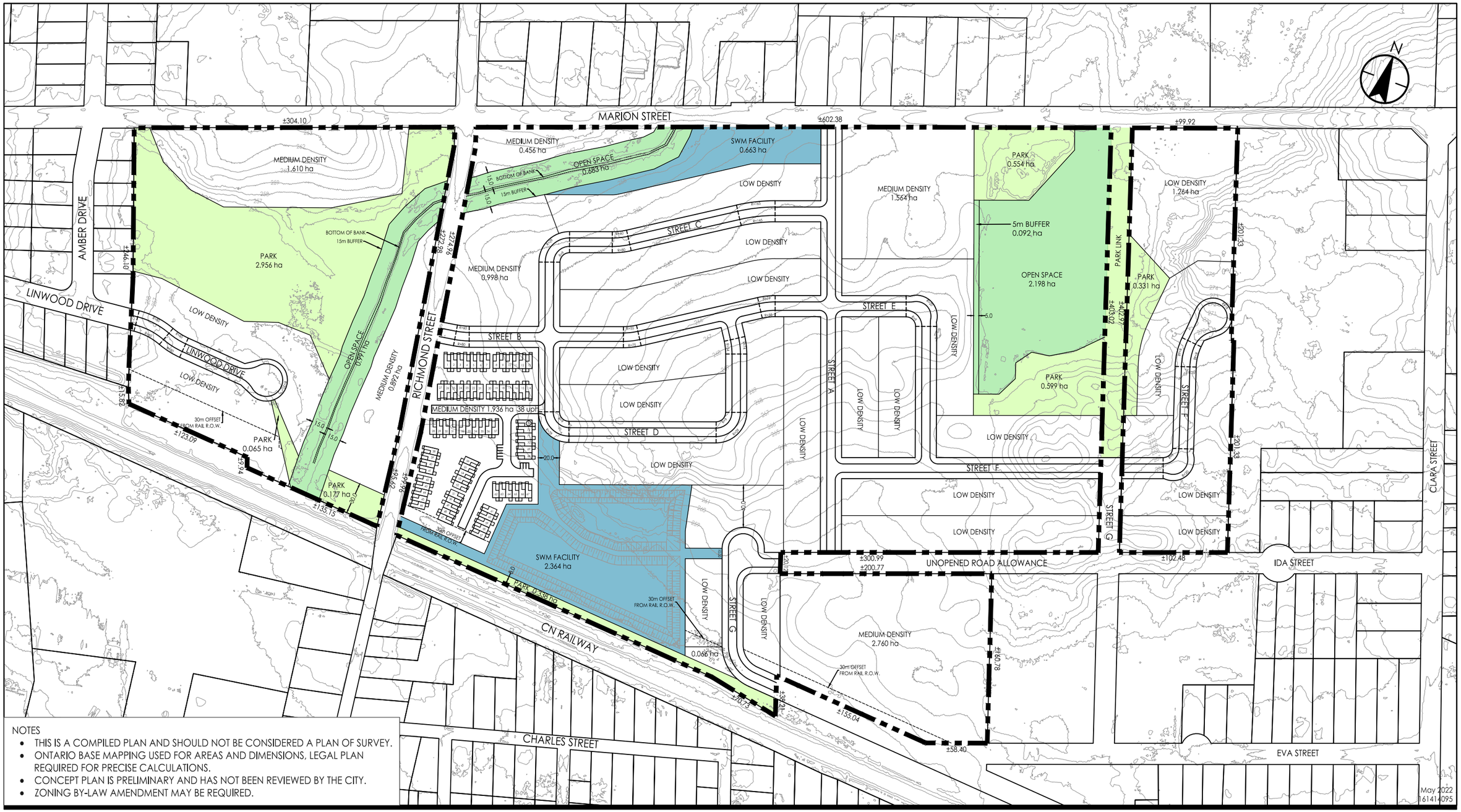
Attachment: Appendix A
Appendix B
Appendix C
Appendix D
Appendix E

c. Brian Blackwell, Stantec
Tim Stubgen, Stantec

APPENDICES

Appendix ‘A’, ‘B’, ‘C’, and ‘D’

Appendix A – CONCEPT AND DRAFT PLANS



NOTES

- THIS IS A COMPILED PLAN AND SHOULD NOT BE CONSIDERED A PLAN OF SURVEY.
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May 2022
161414095

Client/Project

Stantec

600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
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Design Data:
Subject Site - ±43.711 ha / ±108.012 ac

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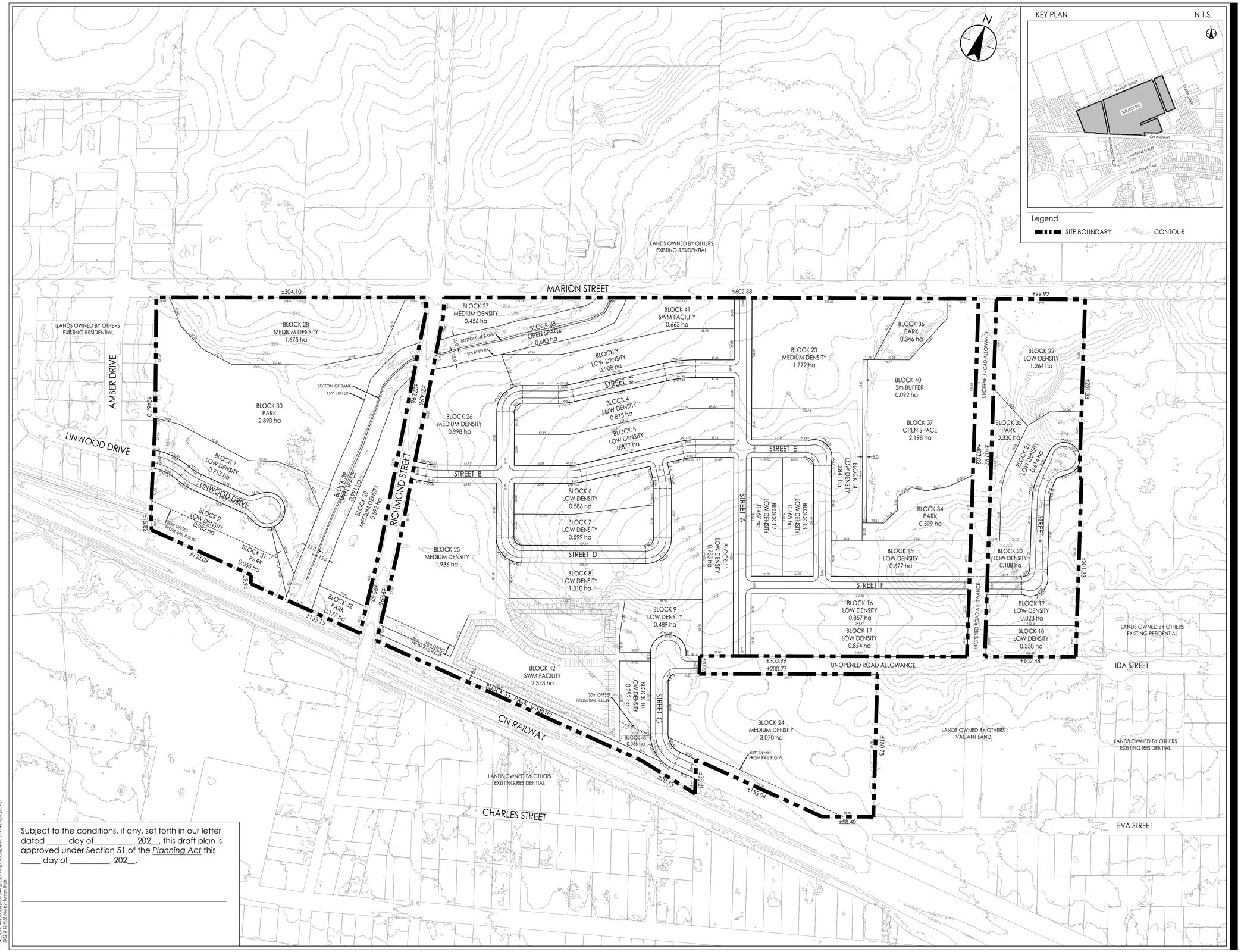
35 0 70m

1598 Richmond Street
Dorchester, ON Canada

Figure No.
1.0

Title
Block Plan
May 10, 2022



Subject to the conditions, if any, set forth in our letter dated _____ day of_____, 202__, this draft plan is approved under Section 51 of the *Planning Act* this _____ day of _____, 202__.

_____

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DRAFT PLAN OF SUBDIVISION
HUNTER PROPERTY

PART OF
LOTS 9 & 10
CONCESSION 4
IN THE
TOWN OF DORCHESTER
COUNTY OF MIDDLESEX

INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

A: AS SHOWN ON DRAFT PLAN
B: AS SHOWN ON DRAFT AND KEY PLAN
C: AS SHOWN ON DRAFT AND KEY PLAN
D: ACCORDING TO LAND USE SCHEDULE
E: RESIDENTIAL, AGRICULTURAL
F: AS SHOWN ON DRAFT PLAN
G: AS SHOWN ON DRAFT AND KEY PLAN
H: MUNICIPAL PIPED WATER TO BE INSTALLED
I : T.B.D.
J: AS SHOWN ON DRAFT PLAN
K: MUNICIPAL SANITARY AND STORM SEWERS TO BE INSTALLED
L: AS SHOWN ON PLAN

SCHEDULE OF LAND USE

LOW DENSITY RESIDENTIAL	- BLOCKS 1 - 22	15.977 ha
MEDIUM DENSITY RESIDENTIAL	- BLOCKS 23 - 29	10.799 ha
PARK	- BLOCKS 30 - 36	4.745 ha
OPEN SPACE	- BLOCKS 37 - 39	3.872 ha
5m BUFFER	- BLOCK 40	0.092 ha
SWM FACILITY	- BLOCKS 41 - 42	3.006 ha
PUMPING STATION	- BLOCK 43	0.066 ha
ROADS		5.155 ha
	TOTAL	43.712 ha

OWNER'S AUTHORIZATION

THE UNDERSIGNED AUTHORIZES THE PREPARATION AND SUBMISSION OF THIS DRAFT PLAN OF SUBDIVISION.

JAMIE CRICH, PRESIDENT
AUBURN DEVELOPMENTS INC.
AUTHORIZING AGENT

DATE

SURVEYOR'S CERTIFICATE

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

JEREMY C.E. MATTHEWS O.L.S.
STANTEC GEOMATICS

DATE

File Name: 161414095_r-cp	RT	BB	RT	22.05.12
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Client/Project

AUBURN DEVELOPMENTS INC.

HUNTER PROPERTY

Dorchester, ON Canada

Title

DRAFT PLAN OF SUBDIVISION

Project No.	Scale	
161414095	HORZ – 1 : 2000 (20 0 40m)	
Drawing No.	Sheet	Revision
1	1 of 1	

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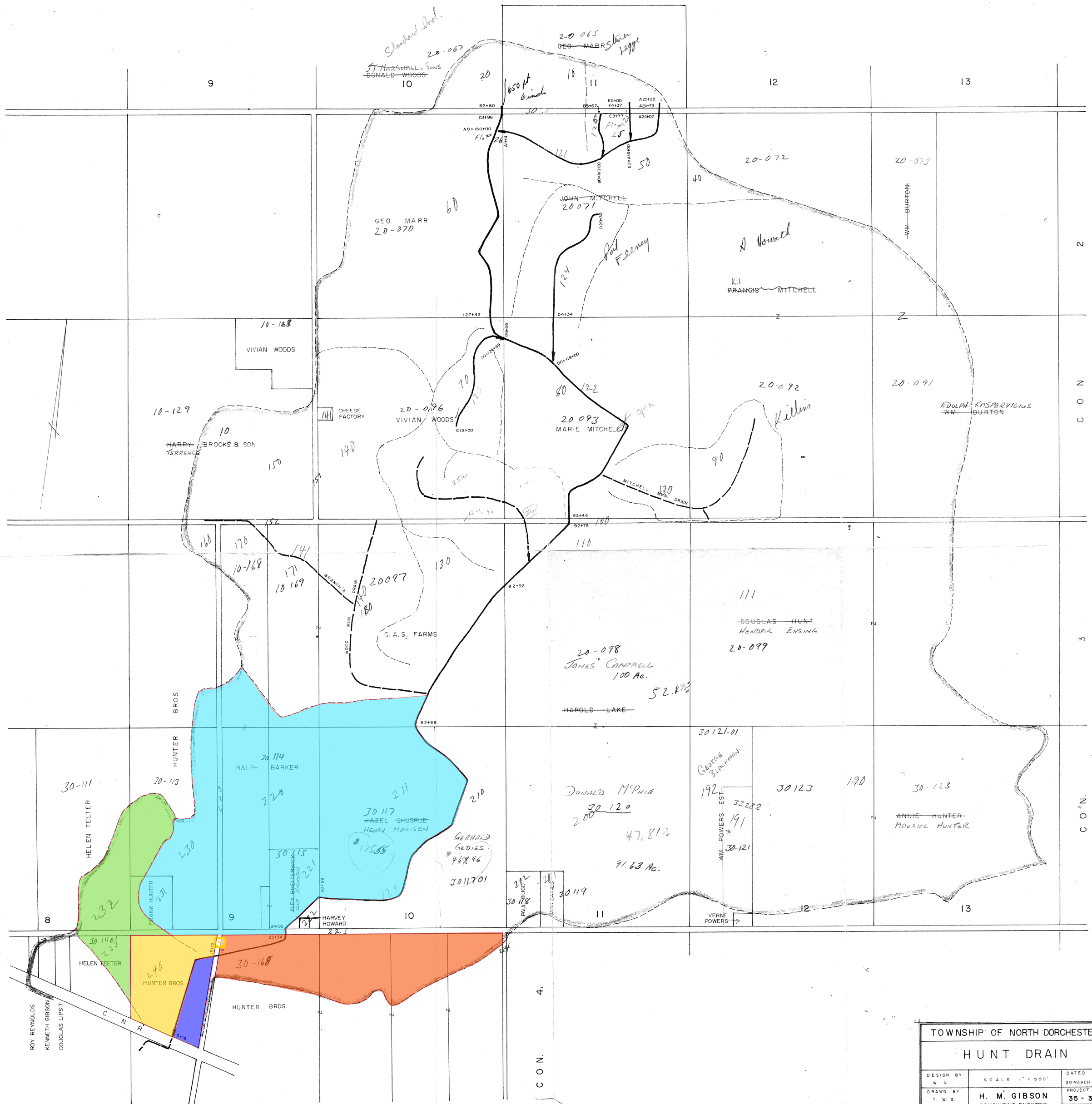
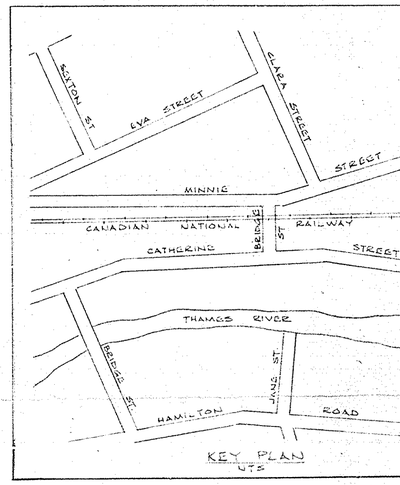
Appendix B – EXISTING INFORMATION



TOWNSHIP OF NORTH DORCHESTER		
HUNT DRAIN		
DESIGN BY W. N	SCALE 1" = 500'	DATED 30 MARCH 1967
DRAWN BY T. W. S.	H. M. GIBSON CONSULTING ENGINEER LONDON	PROJECT NO. 35 - 30
CHECKED BY H. M. G.		SHEET NO. 35-30-1



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TC- 1367

TC- 1367

AS CONSTRUCTED NOTES	AS CONSTRUCTED SERVICES	COMPLETION		No	REVISIONS	DATE	BY
1 SEE DRAWING No FOR FURTHER DETAIL			DESIGN LGWS				
2 SEWER DESIGN: TRANSITION WIDTH OR AS NOTED			DRAWN LGWS, CD				
3 REFERENCE B.M. No ELEVATION m			CHECKED				
4			APPROVED				
5			DATE				

Consulting Civil Engineers
Landscape Architects
361 Dufferin Avenue
London, Ontario N6B 1Z5
(519) 672-8310

development engineering (London) Limited

PROJECT ENGINEER

ENGR'S STAMP

Township of North Dorchester

P.O. BOX 209, 215 HAMILTON ROAD, DORCHESTER, ONTARIO N0L 1G0 Telephone (519) 268-7334

SCALE 1: 2000

m 0 m Horizontal

m 0 m Vertical

TITLE CLARA / EVA / RAILWAY / MINNIE STREET PRIDE PROGRAM

STORM WATERSHED AREA PLAN

-Drains Crossing the Site-

Legend

- @ language-layer-assessment-parcel
- @ language-layer-constructed-drains
  - Open or Unknown
  - Closed/Tiled

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Ontario

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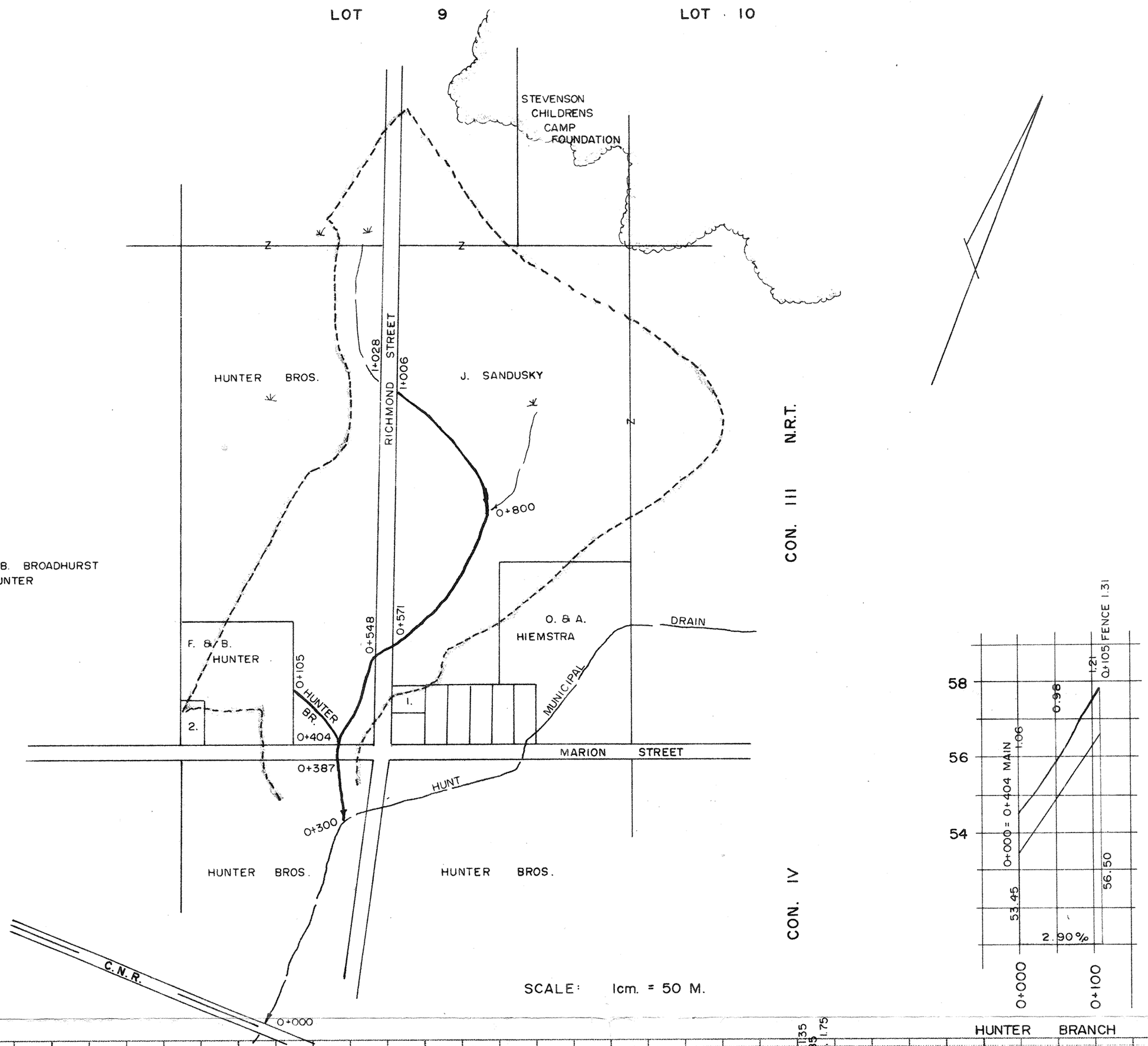
Map Created: 9/14/2021
Map Center: 42.99358 N, -81.06483 W



BENCHMARKS

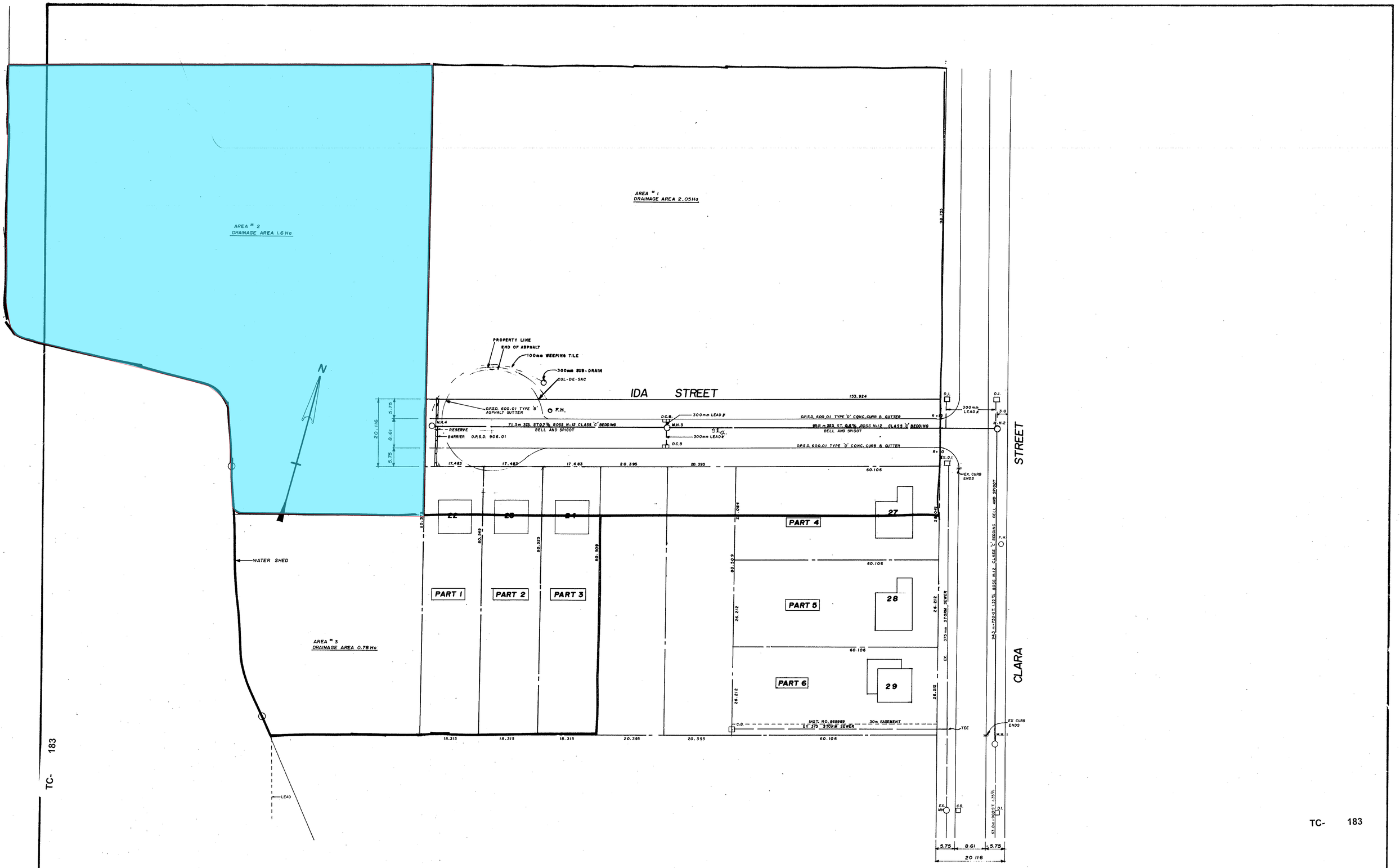
STA. 0+404 SPK. IN H. POLE 15 M. E'LY EL. 54.95
STA. 0+571 TOP NUT ON UPPER GATE BOLT 20 M. S'LY EL. 58.21
STA. 1+008 TCDS RD. CULVERT EL. 62.80

CATCHBASINS

600 mm X 600 mm OFFSET DITCH INLET CATCHBASINS AT 0+404, 0+571, 1+028, HUNTER BR. 0+105

REVISED: NOV. 15, 1983
OCT. 6, 1983

SANDUSKY MUNICIPAL DRAIN		
TOWNSHIP OF NORTH DORCHESTER		
W. J. BARTLETT & ASSOCIATES LTD.		
CONSULTING CIVIL ENGINEERS		
DORCHESTER ONTARIO		
SCALE	DESIGN: W.J.B.	FILE
HORZ. 1cm. = 50 M.	CHECKED: R.B.H.	8311
VERT. 1cm. = 1 M.	DRAWN: W.J.B.	



AS CONSTRUCTED NOTES	AS CONSTRUCTED SERVICES	COMPLETION		No	REVISIONS	DATE	BY
1 SEE DRAWING No FOR FURTHER DETAIL	STORM SEWER	DEC/93	DESIGN	J.H.V.	AS PER SUBMISSION I	07-29-92	F.M.
2 SEWER DESIGN TRANSITION WIDTH OR AS NOTED	WATERMAIN	JAN/93	DRAWN	F.M.	AS CONSTRUCTION	07-19-93	F.M.
3 REFERENCE B.M. No ELEVATION m	CURB & GUTTER	APRIL/93	CHECKED	J.H.V.	AS PER SUBMISSION III	08-12-93	F.M.
4	RESTORATION	APRIL/93	APPROVED				
	GRANULAR A	MAR/93	DATE				
5	GRANULR B	MAR/93					
	ASPHALT BASE	MAY/93					
	FINISH	MAY/93					

J.H. Vincent Services
A DIVISION OF 509228 ONTARIO LIMITED
449 Lawson Road
London, Ontario N6G 1X9
(519) 472-9068
PROJECT ENGINEER

ENGR'S STAMP

PIONEER DEVELOPMENTS
A DIVISON OF 344602 ONT. LTD.

SCALE
HOR 1:500
VERT 1:50
Horizontal
Vertical

TITLE
STORM DRAINAGE PLAN

PROJECT No

SHEET No 3

PLAN FILE No

TC- 183

Appendix C – GEOTECHNICAL REPORT

Preliminary Geotechnical Investigation

Auburn Developments Inc.

Project Name:
Hunter Farm Development
Marion Street
Dorchester, Ontario

Project Number:
LON-00017033-GE

Prepared By:
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Date Submitted:
June 2021

Preliminary Geotechnical Investigation

Auburn Developments Inc.

Type of Document:

Preliminary Geotechnical Report

Project Name:
Hunter Farm Development
Marion Street
Dorchester, Ontario

Project Number:

LON-21008138-A0

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Geotechnical Services

DRAFT

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Vice President, Earth & Environment, Southwestern Ontario

Date Submitted:

June 2021

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1. Introduction and Background

1.1 Introduction

EXP Services Inc. (EXP) was retained by **Auburn Developments Inc.** to carry out a preliminary geotechnical investigation and prepare a report relating to the proposed development on the Hunter Farm along Marion Street in Dorchester, Ontario, hereinafter referred to as the 'Site'.

At the time of writing this report, no firm development plan was available for the Site. It is anticipated, however, that the overall development will consist of low-density single-family homes. In this regard, the residential subdivision is expected to have complete municipal servicing and will be accessed with paved neighbourhood streets.

Based on an interpretation of the factual test hole data and a review of soil and groundwater information from test holes advanced at the site by EXP and others, EXP has provided geotechnical engineering guidelines to support the proposed Site development.

1.2 Terms of Reference

The investigation was generally completed in accordance with the scope of work outlined through email correspondence. Authorization to proceed with this investigation was received from Mr. Steve Stapleton of **Auburn Developments Inc.** through email correspondence.

The purpose of the investigation was to examine the subsoil and groundwater conditions at the site by advancing a series of boreholes and test pits at the locations chosen by EXP and illustrated on the attached Test Hole Location Plan (**Drawing 1**). Subsoil and groundwater information from the Hydrogeological Assessment being carried out concurrently by EXP was used to assist in the preparation of this report.

Based on an interpretation of the factual borehole data, and a review of soil and groundwater information from test holes advanced at the site, EXP Services Inc. has provided engineering guidelines for the geotechnical design and construction of the proposed development. More specifically, this report provides comments on site preparation, excavations, dewatering, foundations, slab-on-grade and basement construction, earthquake design considerations, pavement recommendations, and curbs and sidewalks.

This report is provided on the basis of the terms of reference presented above, and on the assumption that the design will be in accordance with applicable codes and standards. If there are any changes in the design features relevant to the geotechnical and hydrogeological analyses, or if any questions arise concerning geotechnical and hydrogeological aspects of the codes and standards, this office should be contacted to review the design.

The information in this report in no way reflects on the environmental aspects of the soil. Should specific information in this regard be needed, additional testing may be required.

Reference is made to **Appendix D** of this report, which contains further information necessary for the proper interpretation and use of this report.

1.3 Background Information

EXP is currently completing a Hydrogeological Assessment and Water Balance report for the current Site. The fieldwork carried out for this investigation included the completion of nine (9) boreholes with monitoring well installations and the excavation of sixteen (16) test pits.

2. Methodology

The geotechnical fieldwork was carried out on May 11th, and 12rd, 2021. In general, the geotechnical investigation consisted of the excavation of twenty-two (22) test pits at the locations denoted on **Drawing 1** as TP1 to TP16B.

The field work for the ongoing Hydrogeological Assessment (fieldwork completed May 11th and 12th, 2021) consisted of the advancement of nine (9) boreholes with monitoring well installations at the locations denoted on **Drawing 1** as BH1/MW to BH9/MW. A nested well set was installed at BH7/MWA and BH7/MWB.

Prior to the drilling and excavation, buried service clearances were obtained for the test hole locations by EXP.

The boreholes were completed by a specialist drilling subcontractor under the full-time supervision of EXP geotechnical staff. The boreholes were advanced to depths of 5.0 m to 11.1 m below ground surface (bgs) utilizing a track-mounted drill rig equipped with continuous flight solid and hollow stem augers, soil sampling and soil testing equipment. In each borehole, disturbed soil samples were recovered at depth intervals of 0.75 m and 1.5 m using conventional split spoon sampling equipment and Standard Penetration Test (SPT) methods or auger samples.

During the drilling and excavation, the stratigraphy in the test holes was examined and logged in the field by EXP geotechnical personnel.

Short-term groundwater levels within the open boreholes were observed. These observations pertaining to groundwater conditions at the test hole locations and stabilized groundwater levels in the monitoring wells are recorded in the borehole logs found in **Appendix A**.

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. Laboratory testing for this investigation comprised of routine moisture content determinations, with results presented on the borehole logs found in **Appendix A**.

Samples remaining after the classification testing will be stored for a period of three months following the issuance of report (i.e., until August 2021). After this time, they will be discarded unless prior arrangements have been made for longer storage.

The location of each test hole was established in the field in conjunction with reference to the proposed development configuration provided by the Client.

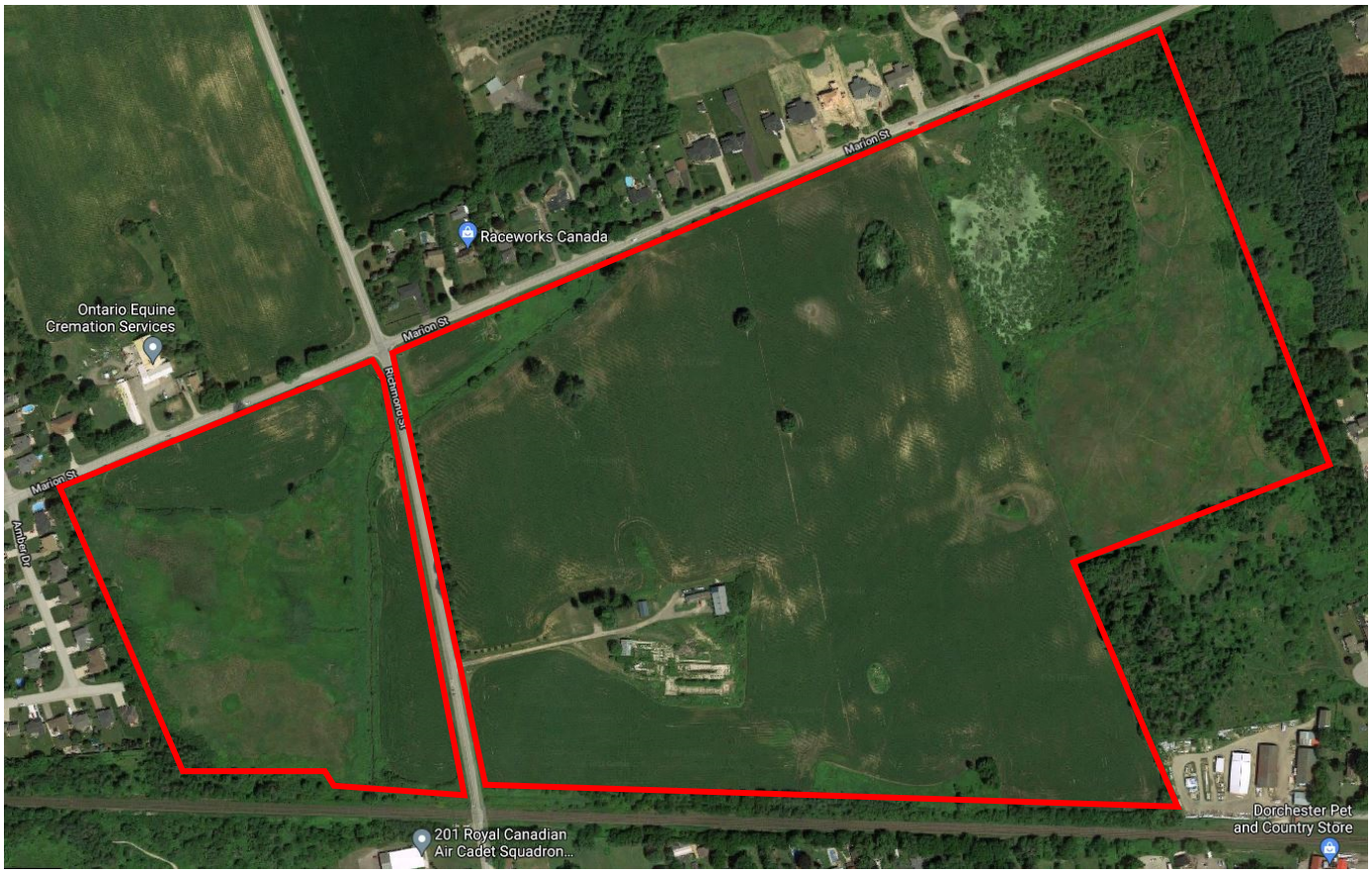
3. Site and Subsurface Conditions

3.1 Site Description

The Site is located on the south side of Marion Street, on both the east and west sides of Richmond Street in Dorchester, Ontario and is currently occupied by agricultural fields and some barn structures on the east side of Richmond Street.

The Site is irregular in shape and measures approximately 26.5 ha in total area. The site is bounded by Canadian National Railway tracks to the south, undeveloped land/residential development to the east, and residential development to the north and west (**Drawing 1**).

An aerial photograph (taken from Google Earth, June 2021) is provided below for reference.



Various municipal drains (Sandusky Drain, Hunter Branch, Porter Subdivision Drain and Hunt Drain) cross the Site as shown on the aerial photograph from Ontario AgMaps (Ministry of Agriculture, Food and Rural Affairs);

3.2 Soil Stratigraphy

The detailed stratigraphy encountered in EXP's boreholes is shown on the borehole and test pit logs found in **Appendix A** and summarized in the following paragraphs. It must be noted that the boundaries of the soil indicated on the test hole logs are inferred from non-continuous sampling and observations during excavation. These boundaries are intended to reflect transition zones for geotechnical design and should not be interpreted as exact planes of geological change.

3.3 West of Richmond Street (BH1-BH3, TP1-TP5)

3.3.1 Topsoil

Topsoil was observed at the surface of each test hole. The topsoil ranged in thickness from 250 mm to 1,200 mm.

In cultivated areas, it should be anticipated that surficial topsoil has been blended into the underlying subgrade soils. In wooded areas, the topsoil may be thicker, and contain areas with significant roots.

It should be noted that topsoil quantities should not be established from the information provided at the test hole locations only. If required, a more detailed analysis (involving additional shallow test pits) is recommended to accurately quantify the amount of topsoil to be removed for construction purposes.

3.3.2 Alluvial Materials

Beneath the topsoil and extending to between 1.4 m and 2.9 m below ground surface (bgs) in test pits TP1, TP1A and TP3 was a layer of peat and marl.

The overall compactness condition of the alluvium should be considered 'loose' and unpredictable with a susceptibility to being 'highly compressible'. The alluvial peat and marl can be considered wet with seams and layers of high moisture content organic silts. Further details are available in the test pit logs, **Appendix A.**

Additional alluvium should be anticipated to be associated with municipal drains located throughout the site.

A summary of the organic materials encountered in the boreholes and test pits is provide below.

Table 1 – Organic Material Summary

Test Location	Organic Soil Layer	Depth/Thickness (m)
TP1	Topsoil and Marl	2.0
TP1A	Topsoil and Marl/Peat	2.0
TP2	Topsoil	0.25
TP3	Topsoil and Peat and Marl	3.0
TP3A	Topsoil	0.3
TP4	Topsoil	0.3
TP5	Topsoil	0.3
TP5A	Topsoil/Fill/Organics	1.2

3.3.3 Sand to Sand and Gravel

Beneath the topsoil/alluvium and extending to between 2.5 m and 4.7 m below ground surface (bgs) in each test hole, with the exception of BH1 and BH2 was a layer of sand to sand and gravel. In general, the sand/sand and gravel was described as brown to grey with depth in colour, with trace silt to silty and trace gravel. It was loose to compact based on observed excavator resistance and SPT N-values ranging from 5 to 27 blows per 300 mm sample spoon penetration. The sand/sand and gravel was in a wet state with *in situ* moisture contents ranging from 11 to 24 percent.

Within Borehole BH1, a lower sand/sand and gravel was encountered at a depth of 7.1 m bgs and extended to the borehole termination depth. The lower sand and gravel was generally described as brown to grey in colour with trace silt and gravel. The sand/sand and gravel was compact to dense with an SPT N-values of 21 to 30 blows per 300 mm sample spoon penetration. The sand/sand and gravel was in a wet state with *in situ* moisture content of about 8 to 16 percent.

3.3.4 Silt to Sandy Silt

Beneath the topsoil in Boreholes BH1, BH2, and beneath the sand in BH3, silt to sandy silt was encountered at depths ranging between about 0.4 to 4.7 m bgs. The silt/sandy silt was generally described as brown to grey with depth in colour and dilatant with trace sand and gravel. The silt/sandy silt was very loose to compact with SPT N-values ranging from 3 to 27 blows per 300 mm sample spoon penetration. The silt/sandy silt was in a moist to wet state with *in situ* moisture contents ranging from 11 to 22 percent.

3.3.5 Glacial Till

Underlying the sandy silt/silt in test holes TP2 and BH1 was a layer of clayey silt/silt till. The till was brown becoming grey in colour with depth and extended to a depth of 7.1 m bgs within BH1, while TP2 was terminated in the till at 3.5 m bgs. The clayey silt/silt till typically contained trace sand, trace gravel, wet dilatant silt layering and was compact/very stiff to hard in consistency (observed excavator resistance and SPT N Values of 20 to 37). Laboratory testing of the clayey silt till yielded *in situ* moisture contents of 13 to 21 percent, indicative of moist conditions.

3.4 East of Richmond Street (BH3-BH5A, TP5-TP16A)

3.4.1 Topsoil

Topsoil was observed at the surface of each test hole. The topsoil ranged in thickness from 300 mm to 1,200 mm.

In cultivated areas, it should be anticipated that surficial topsoil has been blended into the underlying subgrade soils. In wooded areas, the topsoil may be thicker, and contain areas with significant roots.

It should be noted that topsoil quantities should not be established from the information provided at the test hole locations only. If required, a more detailed analysis (involving additional shallow test pits) is recommended to accurately quantify the amount of topsoil to be removed for construction purposes.

3.4.2 Fill

Beneath the topsoil at test holes TP16, TP16B and BH4, fill was encountered to a depth ranging between about 1.3 and 1.6 m below ground surface (bgs). In general, the fill consists of brown/grey/black, sand/silty sand/clayey silt with organics and trace gravel. The consistency of the fill materials is loose, based on observed excavator resistance and SPT N Values of 6 blows per 300 mm split spoon sampler penetration. Based on laboratory testing, the *in situ* moisture content of the fill is about 21 to 22 percent, generally indicative of very moist to wet soil conditions.

Additional fill should be anticipated to be associated with agricultural drainage tile and related trench fill throughout the site.

A summary of the organic and fill materials encountered in the boreholes and test pits is provide below.

Table 2 – Organic Material Summary

Test Location	Organic Soil Layer	Depth/Thickness (m)
TP6	Topsoil	0.3
TP6A	Topsoil/Peat	1.2
TP7	Topsoil	0.4
TP8	Topsoil	0.4
TP9	Topsoil	0.4
TP10	Topsoil	0.3
TP11	Topsoil/Fill/Organic	0.5
TP12	Topsoil	0.3
TP13	Topsoil	0.25
TP14	Topsoil	0.3
TP15	Topsoil	0.3
TP16	Topsoil/Fill/Organic	1.6
TP16A	Topsoil	0.3
TP16B	Topsoil/fill	1.2
BH4	Topsoil	0.3

3.4.3 Sand/Silty Sand to Sand and Gravel

Beneath the topsoil and fill and extending to between 0.7 m and 5.0 m below ground surface (bgs) in test holes TP6, TP8, TP12, TP13, TP14, TP15, TP16, BH4, BH6 and BH9 was a layer of sand/silty sand to sand and gravel. In general, the sand/silty sand to sand and gravel was described as brown to grey with depth in colour, with trace silt to silty and trace gravel. It was loose to compact based on observed excavator resistance and SPT N-values ranging from 6 to 25 blows per 300 mm sample spoon penetration. The sand/silty to sand and gravel was in a moist to wet state with *in situ* moisture contents ranging from 10 to 20 percent.

Within test holes TP10, TP11, BH5, BH6 and BH8, a lower sand to sand and gravel was encountered at a depth of 2.0 to 5.6 m bgs. The lower sand to sand and gravel was generally described as brown to grey in colour with trace silt and trace gravel. The sand to sand and gravel was loose to compact based on observed excavator resistance and SPT N-values of 6 to 17 blows per 300 mm sample spoon penetration. The sand to sand and gravel was in a moist to wet state with *in situ* moisture content of about 6 to 12 percent.

3.4.4 Silt/Sandy Silt/Clayey Silt

Beneath the topsoil in test holes TP6A, TP7, TP10, BH5, BH7 and BH8 a strata of silt/sandy silt/clayey silt was encountered with varying thicknesses. In general, the layers are described as brown to grey with trace clay, trace gravel, and loose/soft to compact/stiff (based on excavator resistance and SPT N Values of 5 to 14 blows per 300 mm split spoon sampler penetration). Based on *in situ* moisture contents of 18 to 24 percent, the silt layers are described as moist to wet.

3.4.5 Glacial Till

Underlying the sand and silt stratums a layer of clayey silt/silt till was encountered in each test hole with the exception of TP6A, TP12, TP14, BH4, BH6 and BH9. The till was brown becoming grey in colour with depth and extended to a depth of 2.5 and 2.0 m bgs within TP10 and TP11 respectively. The remaining test holes were terminated in the till. The clayey silt/silt till typically contained trace sand, trace gravel, cobbles, wet dilatant silt layering and was compact to very dense in consistency (observed excavator resistance and SPT N Values of 27 to 50 blows per 150 mm sample spoon penetration). Laboratory testing of the clayey silt till yielded *in situ* moisture contents of 9 to 23 percent, indicative of moist to wet conditions.

3.5 Groundwater Conditions

Details of the groundwater conditions observed within the test holes are provided on the attached Borehole and Test Pit Logs.

To allow for long-term monitoring of the water levels, monitoring wells were installed at each borehole location. Of these, a nested well set was installed at installed in BH7A/MW and BH7B/MW, with details shown on the Borehole Logs. The wells were installed to depths ranging between about 3.8 and 10.7 m bgs. The summary of well construction details and stabilized groundwater levels are presented in the tables below.

Table 3 – Monitoring Well Construction Details

Borehole ID	Ground Surface Elevation (m)	Completion Depth (m bgs)	Screen Length (m)
BH1/MW	260.2	9.1	4.5
BH2/MW	259.5	4.6	1.5
BH3/MW	259.1	5.3	1.5
BH4/MW	259.8	4.6	1.5
BH5/MW	259.5	3.8	1.5
BH6/MW	270.4	10.7	1.5
BH7A/MW	265.5	6.1	1.5
BH7B/MW	265.5	3.1	1.5
BH8/MW	260.3	3.8	1.5
BH9/MW	268.9	4.6	1.5

Table 4 – Stabilized Groundwater Level

Borehole ID	Ground Surface Elevation (m)	Depth to Groundwater, m bgs May 17, 2021
BH1/MW	260.2	4.71 (255.49)
BH2/MW	259.5	1.10 (258.40)
BH3/MW	259.1	1.28 (257.82)
BH4/MW	259.8	1.52 (258.28)
BH5/MW	259.5	0.90 (258.60)
BH6/MW	270.4	9.27 (261.13)
BH7A/MW	265.5	0.64 (264.86)
BH7B/MW	265.5	0.57 (264.93)
BH8/MW	260.3	0.62 (259.68)
BH9/MW	268.9	1.37 (267.53)

The EXP monitoring wells have been registered with the Ministry of the 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 required.

Based on the ongoing monitoring of the observations wells, the groundwater levels fluctuate from 257.82 m to 267.53 m bgs over the monitored period. Further information regarding groundwater conditions will be available within the Hydrogeological Assessment report.

Details of the groundwater conditions observed within the test holes are provided on the attached borehole logs. Upon completion of excavation, the test pits were examined for the presence of groundwater and groundwater seepage. Groundwater was measured near depths of 0.8 m to 3.0 m bgs in the test pits. Test Pits TP2, TP4, TP6, TP7 and TP9 were dry at completion. Where glacial till has encountered the groundwater is likely perched within the silty/sandy layers above the less permeable clayey deposits.

It is noted that insufficient time was available for the measurement of the depth to the stabilized groundwater table in the test pits prior to backfilling the test holes without monitoring wells installed.

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.

3.6 Methane Gas

No methane gas producing materials or significant organic matter was encountered at the borehole locations, except a thin veneer of topsoil.

An RKI Gx-2003 Gas Detector was used in the upper levels of the open boreholes. The unit measures LEL combustibles, methane gas, oxygen content, carbon monoxide and hydrogen sulfide in standard confined space gases. No significant methane gas concentration was detected in the boreholes.

4. Discussion and Recommendations

At the time of writing this report, no firm development plan was available for the Site. It is anticipated, however, that the overall development will consist of low-density single-family homes and a stormwater management facility. In this regard, the residential subdivision is expected to have complete municipal servicing and will be accessed with paved neighbourhood streets.

The following sections of this report provide geotechnical comments and recommendations regarding site preparation, excavations and dewatering, foundations, slab-on-grade and basement design, earthquake design considerations, pavement design and curbs and sidewalks.

4.1 Site Preparation

Prior to placement foundations and/or engineered fill, all surficial topsoil, vegetation and/or otherwise deleterious materials should be stripped. Thicker areas of topsoil may be anticipated in areas with trees and/or heavy vegetative cover. It is anticipated that the surficial topsoil may be stockpiled on site for possible reuse as landscaping fill.

Following the removal of the topsoil and unsuitable materials described above and prior to fill placement, the exposed subgrade should be inspected by a Geotechnical Engineer. Any loose or soft zones noted in the inspection should be over-excavated and replaced with approved fill.

It is recommended that construction traffic be minimized on the finished subgrade, and that the subgrade be sloped to promote surface drainage and runoff.

In the building area where the grade will be raised, the fill material should comprise imported granular or approved onsite (excavated) material. The fill material should be inspected and approved by a Geotechnical Engineer, placed in maximum 300 mm (12 inch) thick lifts and uniformly compacted to 100 percent Standard Proctor Maximum Dry Density (SPMDD) within 3 percent of optimum moisture content. The geometric requirements for engineered fill are provided on **Drawing 2**.

The natural and inorganic fill materials on site would be suitable for reuse as engineered fill. The material should be examined and approved by a Geotechnical Engineer prior to reuse.

In areas along the proposed roadways, fill material used to raise grades may comprise of onsite excavated soils, or imported granular fill approved by an Engineer. The fill should be placed in maximum 300 mm (12 inch) thick loose lifts and uniformly compacted to 95/98 percent SPMDD, depending on depth, within 3 percent of optimum moisture content in order to provide adequate stability for the new pavements. Refer to **Drawings 4** and **5** for specified compaction levels.

In situ compaction testing should be carried out during the fill placement to ensure that the specified compaction is being achieved.

If imported fill material is utilized at the site, verification of the suitability of the fill may be required from an environmental standpoint. Conventional geotechnical testing will not determine the suitability of the material in this regard. Analytical testing and environmental site assessment may be required at the source. This will best be assessed prior to the selection of the material source.

A quality assurance program should be implemented to ensure that the fill material will comply with the current Ministry of Environment, Conservation and Parks (MECP) standards for placement and transportation. The disposal of excavated materials must also conform to the MECP Guidelines and requirements. EXP can be of assistance if an assessment of the materials is required.

4.2 Excavation and Groundwater Control

4.2.1 Excess Soil Management

It should be noted that Ontario Regulation 406/19 made under the Environmental Protection Act (November 28, 2019) was implemented on January 1, 2021. The new regulation dictates the testing protocol that will be required for the management and disposal of Excess Soils. As set forth in the Regulation, specific analytical testing protocols will need to be implemented and followed based on the volume of soil to be managed. The testing protocols are specific as to whether the soils are stockpiled or in situ. In either scenario, the testing protocols are far more onerous than have been historically carried out as part of standard industry practices. These decisions should be factored in and accounted for prior to the initiation of the project-defined scope of work. EXP would be pleased to assist with the implementation of a soil management and testing program that would satisfy the requirements of Ontario Regulation 406/19.

The following is the regulated sampling and testing regiment.

Table 5 – Recommended Ex-Situ (e.g., Stockpiles)

Soil Volume	Sampling Frequency
<130 m^3	Minimum of 3
>130 - 220 m^3	4
>220 - 5000 m^3	5-32*
>5000 m^3	N = 32 + (Volume – 5000) / 300

*refer to stockpile sampling frequency in O.Reg. 153/04 for specifics. Essentially, one sample for every 150 m^3 after 800 m^3

Table 6 – Recommended *In Situ*

Soil Volume	Sampling Frequency
<600 m^3	Minimum of 3
>600 m3 - 10,000 m^3	1 sample per every additional 200 m^3
>10,000 m3 – 40,000 m^3	1 sample per every additional 450 m^3
>40,000 m^3	1 sample per every additional 2000 m^3

Soil Analytical Testing Requirements:

- Samples to be tested for a minimum of Petroleum Hydrocarbons (PHCs) – Fractions F1-F4, Benzene, Toluene, Ethylbenzene & Xylenes (BTEX), Metals & Hydrides, including Electrical Conductivity (EC) and Sodium Absorption Ration (SAR), only if from an area where de-icing has historically occurred.
- Any potential Contaminant of Concern identified in past uses report (comes into effect January 1, 2022)
- Leachate analysis (not required for volumes under 350 m3: between 350 m3 and 600 m3 (minimum of 3); greater than 600 m3 (10 % of samples). Note, leachate not required unless address and Area of Potential Environmental Concern (APEC), as identified in the past uses report (January 1, 2022).

4.2.2 General

All work associated with design and construction relative to excavations must be carried out in accordance with Part III of Ontario Regulation 213/91 under the Occupational Health and Safety Act. Based on the results of the geotechnical investigation and in accordance with Section 226 of Ontario Regulation 213/91, the alluvial soils, fill, sand/sand and gravel soils, silt and stiff/compact glacial till encountered within the test holes are classified as Type 3 soil.

Where excavations extend into or through Type 3 soil, excavation side slopes must be cut back at a maximum inclination of about 1H:1V from the base of the excavation. Should groundwater egress loosen the side slopes of Type 2 or Type 3 soils, slopes of 3H:1V or flatter will be required.

The very stiff/dense glacial till encountered within the test holes is classified as Type 2 soils depending on the consistency and moisture content. Excavations in Type 2 soils (very stiff/dense) may be vertical in the bottom 1.2 m and then sloped at a minimal inclination of 1H:1V above that level.

When excavations extend through Type 2 and Type 3 soils, the excavation should be cut as a Type 3 soil. In the event groundwater egress loosens the sidewalls, flatter slopes of 3H:1V will be required and the soils should be considered Type 4.

Geotechnical inspection at the time of excavation can confirm the soil type present.

It should be noted that the presence of cobbles and boulders in natural glacial deposits may influence the progress of excavation and construction.

4.2.3 Excavation Support

The recommendations for side slopes given in the above section would apply to most of the conventional excavations expected for the proposed development. However, in areas adjacent to buried services that are located above the base of the excavations, side slopes may require support to prevent possible disturbance or distress to these structures. This concept also applies to connections to existing services. In granular soils above the groundwater and in cohesive natural soils, bracing will not normally be required if the structures are behind a 45-degree line drawn up from the toe of the excavation. In wet sandy or silty soils, the setback should be about 3H to 1V if bracing is to be avoided.

For support of excavations such as for any deep manholes, shoring such as sheeting or soldier piles and lagging can be considered. The design and use of the support system should conform to the requirements set out in the most recent version of the Occupational Health and Safety Act for Construction Projects and approved by the Ministry of Labour. Excavations should conform to the guidelines set out in the proceeding section and the Safety Act.

The shoring should also be designed in accordance with the guidelines set out in the Canadian Foundation Engineering Manual, 4th Edition. Soil-related parameters considered appropriate for a soldier pile and lagging system are shown below.

Where applicable, the lateral earth pressure acting on the excavation shoring walls may be calculated from the following equation:

$$P = K (\gamma h+q)$$

where, P = lateral earth pressure in kPa acting at depth h;

γ = natural unit weight, a value of 20.4 kN/m3 may be assumed;

h = depth of point of interest in m;

q = equivalent value of any surcharge on the ground surface in kPa.

The earth pressure coefficient (K) may be taken as 0.25 where small movements are acceptable and adjacent footing or movement sensitive services are not above a line extending at 45 degrees from the bottom edge of the excavation; 0.35 where utilities, roads, sidewalks must be protected from significant movement; and 0.45 where adjacent building footings or movement sensitive services (gas and water mains) are above a line of 60 degrees from the horizontal extending from the bottom edge of the excavation.

For long term design, a K at rest (K_o) of a minimum of 0.5 should be considered.

The above expression assumes that no hydrostatic pressure will be applied against the shoring system. It should be recognized that the final shoring design will be prepared by the shoring contractor. It is not possible to comment further on specific design details until this design is completed.

If the shoring is exposed to freezing temperatures, appropriate insulation may be provided to prevent outward movement.

The performance of the shoring must be checked through monitoring for lateral movement of the walls of the excavation to ensure that the shoring movements remain within design limits. The most effective method for monitoring the shoring movements can best be devised by this office when the shoring plans become available. The shoring designer should however assess the specific site requirements and submit the shoring plans to the engineer for review and comment.

4.2.4 Construction Dewatering

As stated in Section 3.5, groundwater was noted in alluvial materials and perched between 0.6 m and 9.3 m bgs (Elevation 179.15 m to 174.8 m). Based on the soil texture encountered during the investigation, significant groundwater infiltration may be anticipated within the building and service trench excavations depending on the depth of excavation and stratigraphy encountered.

For excavations extending below the groundwater table, suitable groundwater control measures will be required to maintain a dry and stable excavation base and sides. Based on the results of the current investigation, significant groundwater infiltration is anticipated for excavations that extend below an elevation of about 179 m. The variance in water levels is attributed to the various pockets of organic materials within the alluvium, causing water to perch at different elevations. Depending on the final grades, a dewatering plan will be required to control the water ingress. Ongoing liaison from this office will be required.

This groundwater is attributed to a shallow perched aquifer and will need to be controlled to maintain a workable foundation subgrade. Additional information to be provide in the Hydrogeological Assessment is required to assess the quantity of water that will require management. This will become a permanent feature of any structure with foundations and floor levels below the perched groundwater level.

Wet sand and silt lenses were noted within the clayey silt deposits at the location of several of the boreholes. Temporary relief wells may be required to depressurize localized, saturated cohesionless layers.

The collected water should be discharged a sufficient distance away from the excavated area to prevent the discharge water from returning to the excavation. Sediment control measures should be provided at the discharge point of the dewatering system. Caution should also be taken to avoid any adverse impacts to the environment.

It is important to mention that for any projects requiring positive groundwater control with a removal rate of 50,000 liters to less than 400,000 liters per day, an Environmental Activity and Sector Registry (EASR) will be required. Permit to take Water (PTTW) applications are required for removal rates more than 400,000 L per day and will need to be approved by the MECP per Sections 34 and 98 of the Ontario Water Resources Act R.S.O. 1990 and the Water Taking and Transfer Regulation O. Reg. 387/04.

4.3 Foundations – Preliminary Comments

4.3.1 Conventional Strip and Spread Footings

At the time of reporting, no firm development plan was available for the Site. Low-rise residential buildings can be supported on conventional spread and strip footings founded below the topsoil or unsuitable soils on the natural competent subgrade soils or approved engineered fill. Based on the borehole findings, conventional foundations on the natural subgrade or engineered fill are practical for the site.

As noted in section 4.2.4, seams and lenses of saturated sand and silt conditions underly the site as previously described. In this regard, the foundation design should incorporate measures to resist potential basal heave. Waterproofing the foundations should also be taken into consideration as part of the substructure design scheme.

Bearing pressures and approximate elevations are provided in the table below for the design of strip and spread footings founded on the natural soils at the borehole locations.

Table 7 – Recommended Bearing Levels at the BH Locations

Test Location	Ground Surface Elevation (m)	Minimum Depth (m bgs)	Elevation (m)	Bearing Resistance at Serviceability Limit States -SLS (kPa)	Factored Bearing Resistance at Ultimate Limit State - ULS (kPa)
TP1	257.8	2.0	255.8	100	150
TP1A	257.8	2.0	255.8	100	150
TP2	258.5	1.2	257.3	145	215
TP3	256.7	3.0	253.7	100	150
TP3A	256.7	1.2	255.5	100	150
TP4	256.8	1.2	255.6	100	150
TP5	257.8	1.2	256.6	100	150
TP5A	257.8	1.2	256.6	100	150
TP6	259.8	1.2	258.6	145	215
TP6A	259.8	1.4	258.4	100	150
TP7	259.8	1.5	258.3	145	215
TP8	259.5	1.2	258.3	145	215
TP9	259.5	1.2	258.3	145	215
TP10	266.7	1.2	265.5	145	215
TP11	266.7	1.2	265.5	145	215
TP12	267.8	1.2	266.6	145	215

Test Location	Ground Surface Elevation (m)	Minimum Depth (m bgs)	Elevation (m)	Bearing Resistance at Serviceability Limit States -SLS (kPa)	Factored Bearing Resistance at Ultimate Limit State - ULS (kPa)
TP13	266.0	1.2	264.8	145	215
TP14	264.7	1.2	263.5	100	150
TP15	263.5	1.2	262.3	145	215
TP16	258.5	1.6	256.9	145	215
TP16A	258.5	1.3	257.2	145	215
TP16B	258.5	1.2	257.3	145	215
BH1/MW	260.2	3.0	257.2	145	215
BH2/MW	259.5	1.2	258.3	100	150
BH3/MW	259.1	2.5	256.6	145	215
BH4/MW	259.8	1.5	258.3	145	215
BH5/MW	259.5	2.5	257	145	215
BH6/MW	270.4	2.0	268.4	145	215
BH7A/MW	265.5	3.0	262.5	145	215
BH7B/MW	265.5	3.0	262.5	145	215
BH8/MW	260.3	1.2	259.1	145	215
BH9/MW	268.9	3.1	265.8	145	215

If the grades are to be raised or restored, engineered fill can be used for foundation support. If the thickness of fill is more than 3 m, imported granular soil should be considered, especially if the foundation is constructed immediately after the engineered fill placement.

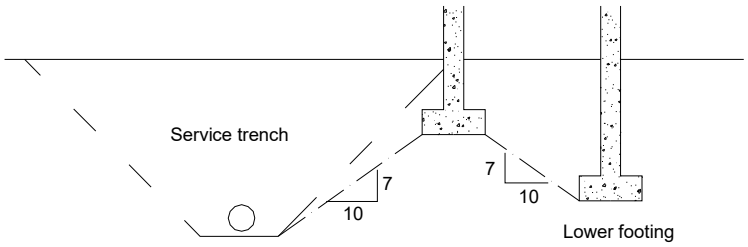
The geometric requirements for the fill placement are shown on **Drawing 2**, appended. In the areas with a lower bearing capacity of 100 kPa, the available SLS bearing capacity for the engineered fill is 125 kPa (2,610 psf) provided that a minimum total thickness of 0.6 m of engineered fill placed in 300 mm lifts and compacted as set out in Section 4.1. In the remaining areas the available SLS and ULS bearing capacities for the engineered fill is 145 kPa (3,000 psf) and 215 kPa (4,500 psf) respectively.

For footings placed on engineered fill, it is recommended that the strip footings be widened to 500 mm (20 inches) and contain nominal concrete reinforcing steel. The engineered fill construction should be monitored on a full-time basis by qualified geotechnical personnel to examine and approve fill materials, to evaluate placement operations, and to verify that the specified degree of compaction is being achieved uniformly throughout the fill.

In areas where wet sand and silt are exposed following removal of the fill and/or otherwise deleterious material, the exposed subgrade will likely be susceptible to disturbance by construction traffic. It is recommended that, in these areas, construction traffic be minimized on the finished subgrade, and the subgrade be sloped to promote surface water drainage. Where sensitive subgrade soils are exposed, tracked hydraulic excavators may be required to move some of the fill material.

4.3.2 Foundations - General

Footings at different elevations should be located such that the higher footings are set below a line drawn up at 10 horizontal to 7 vertical from the near edge of the lower footing. This concept should also be applied to service excavation, etc. to ensure that undermining is not a problem.



FOOTINGS NEAR SERVICE TRENCHES OR AT DIFFERENT ELEVATIONS

Provided that the footing bases are not disturbed due to construction activity, precipitation, freezing and thawing action, etc., and the aforementioned bearing pressures are not exceeded, the total and differential settlements of footings designed in accordance with the recommendations of this report and with careful attention to construction detail are expected to be less than 25 mm and 20 mm (1 and ¾ inch) respectively.

All footings exposed to seasonal freezing conditions should be protected from frost action by at least 1.2 m (4 ft) of soil cover or equivalent insulation.

It should be noted that the recommended bearing capacities have been calculated by EXP from the borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of underground conditions becomes available. For example, if more specific information becomes available with respect to conditions between boreholes when foundation construction is underway. The interpretation between the boreholes and the recommendations of this report must therefore be checked through field inspections provided by EXP to validate the information for use during the construction stage.

4.4 Basements

If the development includes buildings with basements, the basement floors can be constructed using cast slab-on-grade techniques provided the subgrade is stripped of all topsoil and other obviously objectionable material. The subgrade should then be proof-rolled thoroughly. Any soft zones detected should be dug out and replaced with compactable excavated material placed in accordance with the requirements outlined in the previous Section 4.1.

A 200 mm (8 inch) compacted layer of 19 mm (¾ inch) clear stone should be placed between the prepared subgrade and the floor slab to serve as a moisture barrier. An alternative option would be to place 300 mm of OPSS Granular 'A' material compacted to 100 percent SPMDD.

The installation and requirement of a vapour barrier under the floor slab, where applicable, should conform to the flooring manufacturer's and designer's requirements. Moisture emission testing is recommended to determine the concrete condition prior to flooring installation.

All basement walls should be damp-proofed and must be designed to resist a horizontal earth pressure 'p' at any depth 'h' below the surface as given by the following expression:

$$p = K(\gamma h + q)$$

where:

p = lateral earth pressure in kPa acting at a depth h:
K = earth pressure coefficient, assumed to be 0.4;
γ = unit weight of backfill, a value of 20.4 kN/m^3 may be assumed;
h = depth to point of interest in m and,
q = equivalent value of any surcharge on the ground surface.

If basements are planned, installation of perimeter drains is required. The above expression assumes that the perimeter drainage system prevents the build-up of any hydrostatic pressure behind the wall. Suggestions for permanent perimeter drainage are given on **Drawing 3**.

4.5 Slab-on-Grade Construction

Preparation of the subgrade should include the removal of all topsoil and/or deleterious material from the proposed building area. The entire floor slab area should then be thoroughly proof-rolled with a heavy roller and examined by a Geotechnical Engineer. Any excessively soft or loose areas should be sub-excavated and replaced with suitable compacted fill. Where the exposed subgrade requires reconstruction to achieve the design elevations, structural fill should be used. It is recommended that structural fill comprises granular material, such as OPSS Granular 'B', or approved alternative material. The fill should be placed in maximum 300 mm thick lifts and compacted to a minimum of 98 percent Standard Proctor Maximum Dry Density (SPMDD). For best compaction results, the *in situ* moisture content of the fill should be within about three percent of optimum, as determined by Standard Proctor density testing.

No special underfloor drains are required provided that the exterior grades are lower than the floor slab, and positively sloped away from the slab. It is recommended that an impermeable soil seal such as clay, asphalt or concrete be provided on the surface to minimize water infiltration from the exterior of the building. See **Drawing 4** for Drainage and Backfill recommendations for slab-on-grade construction.

A moisture barrier, consisting of a 200 mm (8 in.) thick, compacted layer of 19 mm (3/4 in.) clear stone, should be then placed between the prepared granular sub-base and the floor slab. An alternative option would be to place 300 mm of OPSS Granular 'A' material compacted to 100 percent SPMDD.

The installation and requirement of a vapour barrier under a concrete slab should conform to the flooring manufacturer's and designer's requirements. Moisture emission testing will be required to determine the concrete condition prior to flooring installation.

order to minimize the potential for excess moisture in the floor slab at the time of the flooring installation, a concrete mixture with a low water-to-cement ratio (i.e., 0.45 to 0.55) should be used. Chemical additives may be required at the time of placement to make the concrete workable, and should be used in place of additional water at the point of placement. Ongoing liaison from this office will be required.

For slab on grade design, the modulus of subgrade reaction (k) can be taken as 20 MPa/m for the compacted stone layer over the compacted granular subbase.

The water-to-cement ratio and slump of concrete utilized in the floor slabs should be strictly controlled to minimize shrinkage of the slabs. Adequate joints should be provided in the floor slab to further control cracking. During placement of concrete at the construction site, testing should be performed on the concrete.

4.6 Foundation Backfill

In general, the existing non-saturated natural soils excavated from the foundation area should be suitable for re-use as foundation wall backfill if the work is carried out during relatively dry weather. The materials to be re-used should be within three percent of optimum moisture for best compaction results. Materials should be stockpiled per their composition; i.e. sandy soils should not be mixed with clayey soils.

If the weather conditions are very wet during construction, then imported granular material such as OPSS Granular 'B' should be used. Site review by the geotechnical consultant may be advised.

The backfill must be brought up evenly on both sides of walls not designed to resist lateral earth pressures.

During construction, the fill surface around the perimeter of structures should be sloped in such a way that the surface runoff water does not accumulate around the structure.

4.7 Site Servicing

The subgrade soils beneath the water and sewer pipes which will service the site are generally expected to consist of alluvial soils or native sand/sand and gravel, silt or glacial till. Although no bearing problems are anticipated for flexible or rigid pipes founded on the native deposits, localized base improvement along the trench bottom may be required for excavations which terminate in wet soils or within zones having wet seams, especially in wet weather seasons. The extent of base improvement or stabilization is best determined in the field during construction, with consultation from a Geotechnical Engineer.

Test holes at the site encountered perched groundwater trapped in permeable sandy and silty layers and seams, perched within or above the less permeable glacial till at shallow depths of less than 4 m. If excavating penetrates into these strata, positive groundwater control and base stabilization will be required. Ongoing liaison from this office will be needed.

For services constructed on the natural soils or engineered fill, the bedding should conform to OPS Standards. The bedding course may be thickened if portions of the subgrade become wet during excavation. Bedding aggregate should be placed around the pipe to at least 300 mm (12 inch) above the pipe, and be compacted to a minimum 95 percent SPMDD.

Water and sewer lines installed outside of heated areas should be provided with a minimum 1.2 m (4 ft.) of soil cover for frost protection.

To minimize disturbance to the base, pipe laying should be carried out in short sections, with backfilling following closely after laying and no section of trench should be left open overnight.

The trenches above the specified pipe bedding should be backfilled with inorganic on-site soils placed in 300 mm thick lifts and uniformly compacted to at least 95% SPMDD. For trench backfill within 1 metre below the roadway subbase, the fill should be uniformly compacted to at least 98% SPMDD. A program of *in situ* density testing should be set up to ensure that satisfactory levels of compaction are achieved.

Requirements for backfill in service trenches, etc. should also have regard for Municipal requirements. A summary of the general recommendations for trench backfill is presented on **Drawing 5** and **6**. A program of *in situ* density testing should be set up to ensure that satisfactory levels of compaction are achieved.

Based on the results of this investigation, the majority of the excavated natural soils may be used for construction backfill provided that reasonable care is exercised in handling. In this regard, the material should be within 3 percent of the optimum moisture as determined in the Standard Proctor density test, and stockpiling of material for prolonged periods of time should be avoided. This is particularly important if construction is carried out in wet or otherwise adverse weather.

Soils excavated from below the stabilized groundwater table may be too wet for reuse as backfill unless adequate time is allowed for drying, or if the material is blended with approved dry fill; otherwise, it may be stockpiled onsite for reuse as landscape fill.

As noted previously, disposal of excavated materials off site should conform to current MECP guidelines.

4.8 Earthquake Design Considerations

The recommendations for the geotechnical aspects to determine the earthquake loading for design using the OBC 2020 are presented below.

The subsoil and groundwater information at this Site have been examined in relation to Section 4.1.8.4 of the OBC 2020. The subsoils at the Site generally consist of topsoil and alluvial deposits over sand/sand and gravel, silt, and glacial till deposits. It is anticipated that the proposed structures will be founded on the natural deposits, below any loose or soft zones.

Table 4.1.8.4.A. Site Classification for Seismic Site Response in OBC 2012 indicated that to determine the site classification, the average properties in the top 30 m (below the lowest basement level) are to be used. The boreholes advanced at this Site were excavated to a maximum depth of 11.1 m below existing grade. Therefore, the Site Classification recommendation would be based on the available information as well as our interpretation of conditions below the boreholes based on our knowledge of the soil conditions in the area.

Based on the above assumptions, interpretations in combination with the known local geological conditions, the Site Class for the proposed development is “D” as per Table 4.1.8.4.A, Site Classification for Seismic Site Response, OBC 2020. Additional depth drilling may be advised to determine if the soil conditions below the current depth of exploration can support a higher Site Classification.

4.9 Site Pavement Design

Areas to be paved should be stripped of all topsoil, organics and other obviously unsuitable material. The exposed subgrade must then be thoroughly proof-rolled. Any soft areas revealed by this or any other observations must be over-excavated and backfilled with approved material. All fill required to backfill service trenches or to raise the subgrade to design levels must conform to requirements outlined previously. Preferably, the natural inorganic excavated soils should be used to maintain uniform subgrade conditions, provided adequate compaction can be achieved.

Provided the preceding recommendations are followed, the pavement thickness design requirements given in the following table are recommended for the anticipated specified classification and anticipated subgrade conditions.

Table 8 – Recommended Pavement Structure Thicknesses

Pavement Layer	Compaction Requirements	Neighbourhood Street	Neighbourhood Connector
Asphaltic Concrete	92% MRD[1] or 97% BRD[1]	40 mm HL-3 50 mm HL-8	40 mm HL-3 2 x 45 mm HL-8
Granular 'A' (Base)	100% SPMDD[1]	150 mm	150 mm
Granular 'B' (Base)	100% SPMDD[1]	300 mm	450 mm

*Notes:
1) SPMDD denotes Standard Proctor Maximum Dry Density, MRD denotes Maximum Relative Density, BRD denotes Bulk Relative Density.
2) The subgrade must be compacted to 98% SPMDD.
3) The above recommendations are minimum requirements.

The recommended pavement structures provided in the above table are based on the existing subgrade soil properties determined from visual examination and textural classification of the soil samples. Consequently, the recommended pavement structures should be considered for preliminary design purposes only. Other granular configurations may also be possible provided the granular base equivalency (GBE) thickness is maintained. These recommendations on thickness design are not intended to support heavy and concentrated construction traffic, particularly where only a portion of the pavement section is installed.

If construction is undertaken under adverse weather conditions (i.e., wet or freezing conditions) subgrade preparation and granular sub-base requirements should be reviewed by the Geotechnical Engineer. If the sub-base is set on wet or dilatant silty soils, a geotextile will be required. A woven type geotextile such as Terrafix 200W or equivalent would be suitable for this application.

If only a portion of the pavement will be in place during construction, the granular subbase may have to be thickened. This is best determined in the field during the site servicing stage of construction, prior to road construction.

Samples of both the Granular 'A' and Granular 'B' aggregate should be checked for conformance to OPSS 1010 prior to utilization on Site, and during construction. The Granular 'B' subbase and the Granular 'A' base courses must be compacted to 100 percent SPMDD.

The asphaltic concrete paving materials should conform to the requirements of OPSS MUNI 1150. The asphalt should be placed in accordance with OPSS 310 and compacted to at least 97 percent of the Marshall mix design bulk relative density or 92% of maximum relative density. A tack coat should be applied between the surface and binder asphalt courses.

Good drainage provisions will optimize pavement performance. The finished pavement surface should be free of depressions and should be sloped (preferably at a minimum grade of two percent) to provide effective surface drainage toward catch basins. Surface water should not be allowed to pond adjacent to the outside edges of pavement areas. In low areas, sub-drains should be installed to intercept excess subsurface moisture and prevent subgrade softening, as shown on **Drawing 7**. This is particularly important in heavier traffic areas at the site entrances.

The locations and extent of sub-drainage required within the paved areas should be reviewed by this office in conjunction with the proposed grading.

A program of *in situ* density testing must be carried out to verify that satisfactory levels of compaction are being achieved.

To minimize the effects of differential settlements of service trench fill, it is recommended that wherever practical, placement of binder asphalt be delayed for approximately six months after the granular sub-base is put down. The surface course asphalt should be delayed for a further one year. Prior to the surface asphalt being placed, it is recommended that a pavement evaluation be carried out on the base asphalt to identify repair areas or areas requiring remedial works prior to surface asphalt being placed.

4.10 Curbs and Sidewalks

It is recommended that the concrete for curb and gutter and sidewalks should be proportioned, mixed, placed, and cured in accordance with the requirements of OPSS 353, OPSS 1350 and Municipal Specifications.

During cold weather, the freshly placed concrete must be covered with insulating blankets to protect against freezing. Three cylinders from each day's pour should be taken for compressive strength testing. Air entrainment, temperature, and slump tests should be made from the same batch of concrete from which test cylinders are made.

The subgrade for the sidewalks should comprise undisturbed natural competent soil of well-compacted fill. A minimum 150 mm thick layer of compacted Granular 'A' type aggregate should be placed beneath the sidewalk slabs. It is recommended that the Granular 'A' be compacted to a minimum 100 percent SPMDD, to provide adequate support for the concrete sidewalk. Construction traffic should be kept off the placed curbs and sidewalks as they are not designed to withstand heavy traffic load.

4.11 Methane Gas Testing

No methane gas producing materials or significant organic matter was encountered at the borehole locations, except a thin veneer of topsoil.

An RKI Gx-2003 Gas Detector was used in the upper levels of the open boreholes. The unit measures LEL combustibles, methane gas, oxygen content, carbon monoxide and hydrogen sulfide in standard confined space gases. No significant methane gas was detected in any of the boreholes.

Based on the present information, no special methane gas abatement measures are indicated at this site.

4.12 Inspection and Testing Requirements

An effective inspection and testing program is an essential part of construction monitoring. The Inspection and Testing Program typically includes the following items:

- Subgrade examination following the removal of existing services (if any), fill and organics, prior to foundation installation and engineered fill placement (if required);
- Inspection and Materials testing during engineered fill placement (full-time supervision is recommended) and site servicing works, including soil sampling, laboratory testing (moisture contents and Standard Proctor density test on the pipe bedding, trench backfill and engineered fill material), monitoring of fill placement, and *in situ* density testing;
- Footing Base Examinations to confirm suitability to support the design bearing pressures and visual examination of concrete reinforcing steel placement in footings set on engineered fill;
- Materials testing for concrete foundations, floor slab, curbs and sidewalks;
- Inspection and Materials testing during paved area construction, including subgrade examination of the paved area subgrade soils following site servicing, laboratory testing (grain size analyses and Standard Proctor density tests on the Granular A and B material placed on site roadways), and *in situ* density testing;
- Inspection and Materials testing for base and surface asphalt, including laboratory testing on asphalt sampling to confirm conformance to project specifications and standards.

EXP would be pleased to prepare an inspection and testing work program prior to construction, incorporating the above items.

5. General Comments

The information presented in this report is based on the interpretation of geotechnical information provided to EXP and a limited investigation carried out by EXP designed to provide information to support an assessment of the current geotechnical and hydrogeological conditions within the subject property. The conclusions and recommendations presented in this report reflect site conditions existing at the time of the investigation. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent. Should this occur, EXP Services Inc. should be contacted to assess the situation, and the need for additional testing and reporting. EXP has qualified personnel to provide assistance in regards to any future geotechnical and environmental issues related to this property.

Our undertaking at EXP, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the engineering profession.

The comments given in this report are intended only for the guidance of design engineers. The number of test holes required to determine the localized underground conditions between test holes affecting construction costs, techniques, sequencing, equipment, scheduling, etc. would be much greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should in this light, decide on their own investigations, as well as their own interpretations of the factual test hole results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

EXP Services Inc. should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not afforded the privilege of making this review, EXP Services Inc. will assume no responsibility for interpretation of the recommendations in this report.

This report was prepared for the exclusive use of **Auburn Developments Inc.** and may not be reproduced in whole or in part, without the prior written consent of EXP, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Drawings

-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-21008138-A0.

Geotechnical Investigation

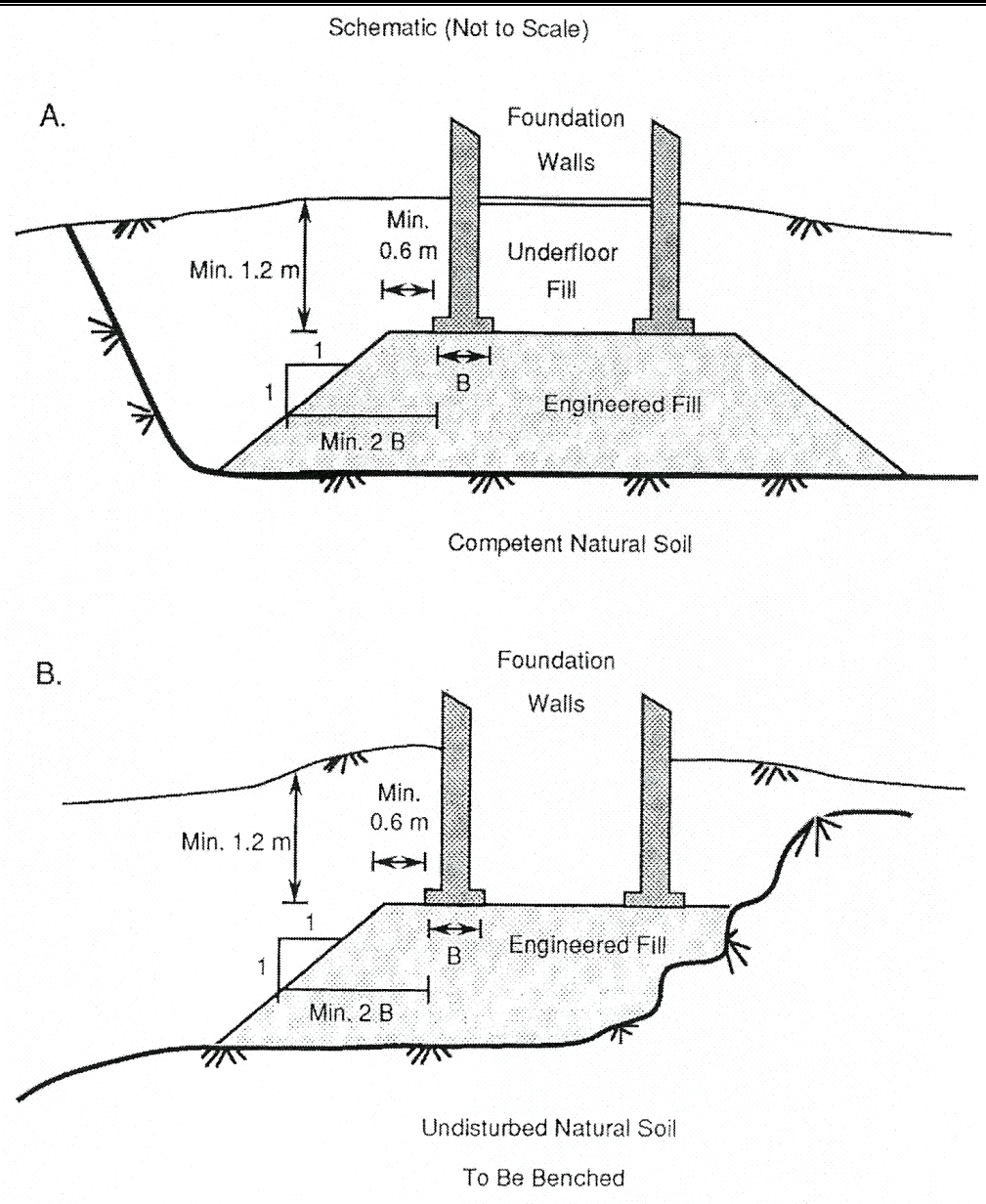
Hunter Farm Development

Marion Street, Dorchester, Ontario

CLIENT	Auburn Developments Inc.
TITLE	Borehole 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.
APRIL 2021	1:5,000	LON-21008138-A0	1

DRAWING 2 – GEOMETRIC REQUIREMENTS FOR FOUNDATIONS ON ENGINEERED FILL



SECTION VIEW

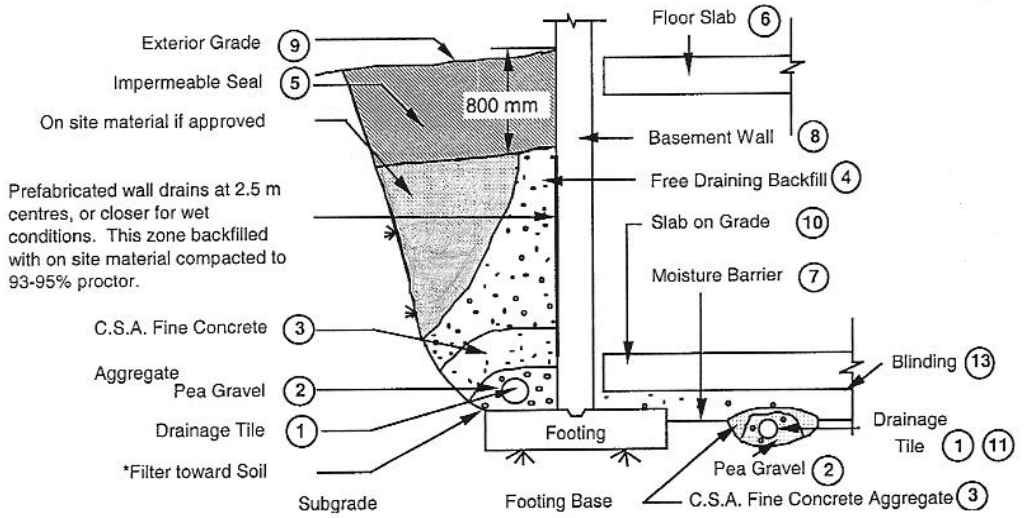
Section A – Typical Section of Slab-on-Grade Building
Section B – Typical Section of Building with Basement

Refer to Detailed Notes on following page.

NOTES FOR ENGINEERED FILL PLACMENT:

1. The area must be stripped of all topsoil contaminated fill material, and other unsuitable soils, and proof rolled. Soft spots must be dug out. The stripped natural subgrade must be examined and approved by an EXP Engineer prior to placement of engineered fill.
2. In areas where engineered fill is placed on a slope, the fill should be benched into the approved subgrade soils. EXP would be pleased to provide additional comments and recommendations in this regard, if required.
3. All excavations must be carried out in accordance with the Occupational Health and Safety Regulation of Ontario (Construction Projects - O.Reg. 213.91)
4. Material used for engineered fill must be free of topsoil, organics, frost and frozen material, and otherwise unsuitable or compressible soils, as determined by a Geotechnical Engineer. Any material proposed for use as engineered fill must be examined and approved by EXP, prior to use onsite. Clean compactable granular fill is preferred.
5. Approved engineered fill should be placed in maximum 300 mm thick lifts, and uniformly compacted to 100% Standard Proctor dry density throughout. For best compaction results, engineered fill should be within 3 percent of its optimum moisture content, as determined by the Standard Proctor density test. Imported fill should satisfy the MECP regulations and requirements.
6. Full time geotechnical monitoring, inspection and in situ density (compaction) testing by EXP is required during placement of the engineered fill.
7. Site grades should be maintained during area grading activities to promote drainage, and to minimize ponding of surface water on the engineered fill mat. Rutting by construction equipment should be kept to a minimum, where possible. Additional work to ensure suitability of engineered fill may be required if fill is placed in extreme (hot/cold) weather.
8. The fill must be placed such that the specified geometry is achieved. Refer to sketches (previous page) for minimum requirements. Proper environmental protection will be required, such as providing frost penetration during construction, and after the completion of the engineered fill mat.
9. An allowable bearing pressure of 125-145 kPa (2610-3000 psf) may be used provided that all conditions outlined above, and in the Geotechnical Report are adhered to.
10. These guidelines are to be read in conjunction with the attached Geotechnical Report. (EXP Project No. LON-21008138-A0)
11. For foundations set on engineered fill, footing enhancement and/or concrete reinforcing steel placement is recommended. The footing geometry and extent of concrete reinforcing steel will depend on site specific conditions. In general, consideration may be given to having a minimum strip footing width of 500 mm (20 inches), containing nominal steel reinforcement. Alternatively, concrete reinforcement may be recommended in the top and bottom of the foundation wall strip. The final footing geometry and extent of reinforcement is best determined in the field, by a Geotechnical Engineer.

DRAWING 3 – BACKFILL AND BASEMENT DRAINAGE DETAIL (NOT TO SCALE)

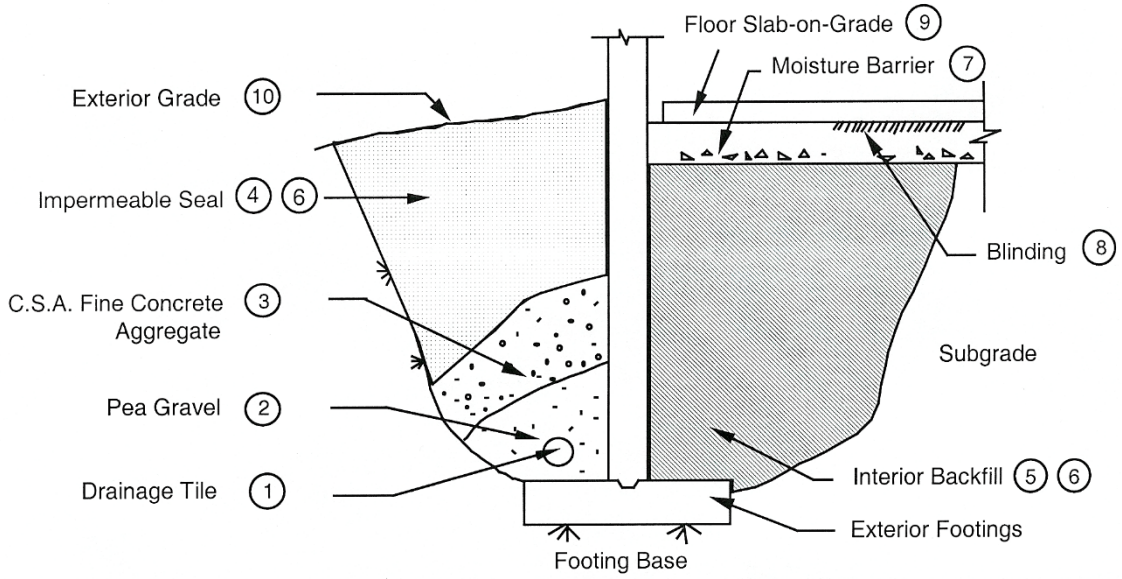


NOTES:

1. Drainage tile to consist of 100 mm (4 in.) diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be minimum of 150 mm (6 in.) below underside of floor slab.
2. Pea gravel 150 mm (6 in.) top and sides of drain. If drain is not on footing, place 100 mm (4 in.) of pea gravel below drain. 20 mm (3/4 in.) clear stone may be used provided if it is covered by an approved porous geotextile fabric membrane (Terrafix 270R or equivalent).
3. C.S.A. fine concrete aggregate to act as filter material. Minimum 300 mm (12 in.) top and side of drain. This may be replaced by an approved porous geotextile membrane (Terrafix 270R or equivalent).
6. 4. Free-draining backfill - OPSS Granular B or equivalent compacted to 93 to 95 (maximum) percent Standard Proctor density. Do not compact closer than l.8 m (6 ft) from wall with heavy equipment. Use hand controlled light compaction equipment within 1.8 m (6 ft) of wall.
5. Impermeable backfill seal of compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to consist of compacted 20 mm (3/4 in.) clear, crushed stone or equivalent free-draining material. Layer to be 200 mm (8 in.) minimum thickness.
8. Basement walls to be damp-proofed.
9. Exterior grade to slope away from wall.
10. Slab on grade should not be structurally connected to wall or footing.
11. Underfloor drain invert to be at least 300 mm (12 in.) below underside of floor slab. Drainage tile placed in parallel rows 6 to 8 m (20 to 25 ft.) centres one way. Place drain on 100 mm (4 in.) of pea gravel with 150 mm (6 in.) of pea gravel top and sides. CSA fine concrete aggregate to be provided as filter material or an approved porous geotextile membrane (as in 2 above) may be used.
12. Do not connect the underfloor drains to perimeter drains.
13. If the 20 mm (3/4 in.) clear stone requires surface binding, use 6 mm (1/4 in.) clear stone chips.

Note: a) Underfloor drainage can be deleted where not required (see report).
b) Free draining backfill, item 4 may be replaced by wall drains, as indicated, if more economical.

DRAWING 4 – DRAINAGE AND BACKFILL RECOMMENDATIONS (NOT TO SCALE)

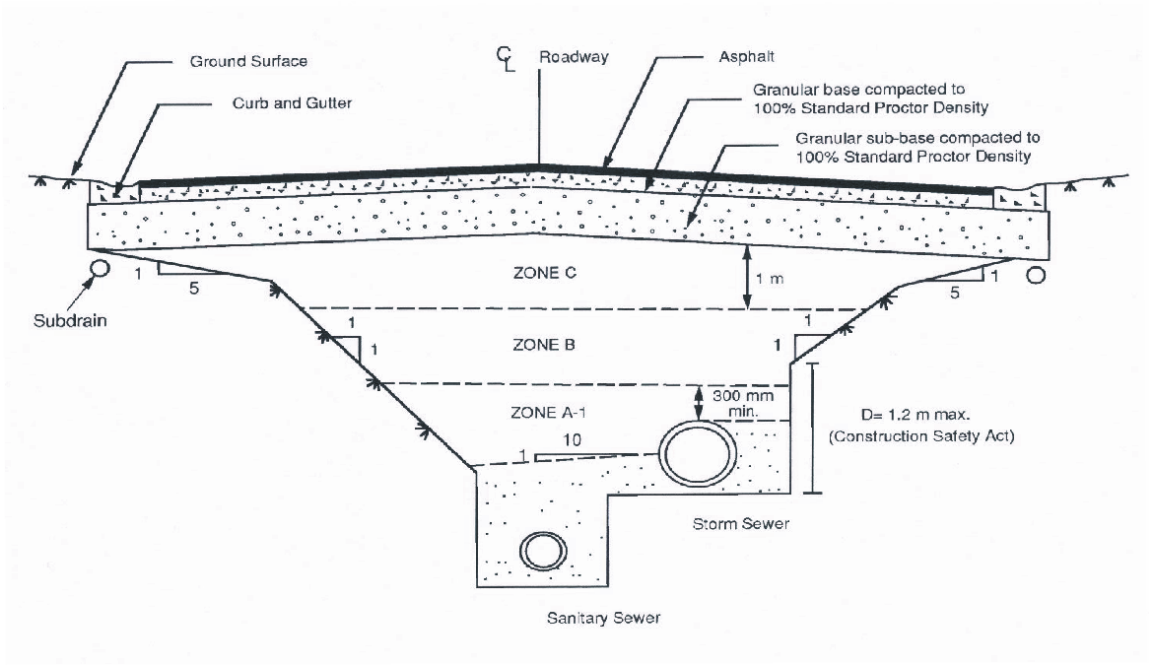


NOTES:

1. Drainage tile to consist of 100 mm (4 in.) diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be minimum of 150 mm (6 in.) below underside of interior floor slab.
2. Pea gravel 150 mm (6 in.) top and sides of drain. If drain is not on footing, place 100 mm (4 in.) of pea gravel below drain. 20 mm (3/4 in.) clear stone may be used provided if it is covered by an approved porous geotextile fabric membrane (Terrafix 270R or equivalent).
3. C.S.A. fine concrete aggregate to act as filter material. Minimum 300 mm (12 in.) top and side of drain. This may be replaced by an approved porous geotextile membrane (Terrafix 270R or equivalent).
4. Impermeable backfill seal of compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted. Compact backfill to 95 percent Standard Proctor Maximum Dry Density.
5. The interior fill may be any clean, inorganic soil which may be compacted to at least 95 percent Standard Proctor density in this confined space.
6. Do not use heavy compaction equipment within 450 mm (18 in.) of the wall. Do not fill or compact within 1.8 m (6 ft) of wall unless fill is placed on both sides simultaneously.
7. Moisture barrier to be at least 200 mm (8 in.) of compacted 20 mm (3/4 in.) clear, crushed stone or equivalent free-draining material.
8. If the 20 mm (3/4 in.) clear stone requires surface binding, use 60 mm (1/4 in.) clear stone chips.
9. Slab on grade should not be structurally connected to wall or footing.
10. Exterior grade to slope away from building.

This system is not normally required if the floor is at least 300 mm (1 ft.) above exterior grade.

DRAWING 5 – TYPICAL BACKFILL DETAIL
STORM AND SANITARY SEWER (COMMON TRENCH)



SECTION VIEW

NOTES:

ZONE A
Granular bedding satisfying current Municipal Standards compacted to 95% Standard Proctor maximum dry density.

ZONE A-l
To be compacted to 95% Standard Proctor maximum dry density.

ZONE B
To be compacted to 95% Standard Proctor maximum dry density.

ZONE C
To be compacted to 98% Standard Proctor maximum dry density.

The excavations shown above are for Type 1 or 2 soils. Where excavations extend through Type 3 soils, the side walls should be sloped back at a maximum inclination of 1 horizontal to 1 vertical from the base (Reference O.Reg 219/31).

DRAWING 6 – TRENCH BACKFILL REQUIREMENTS

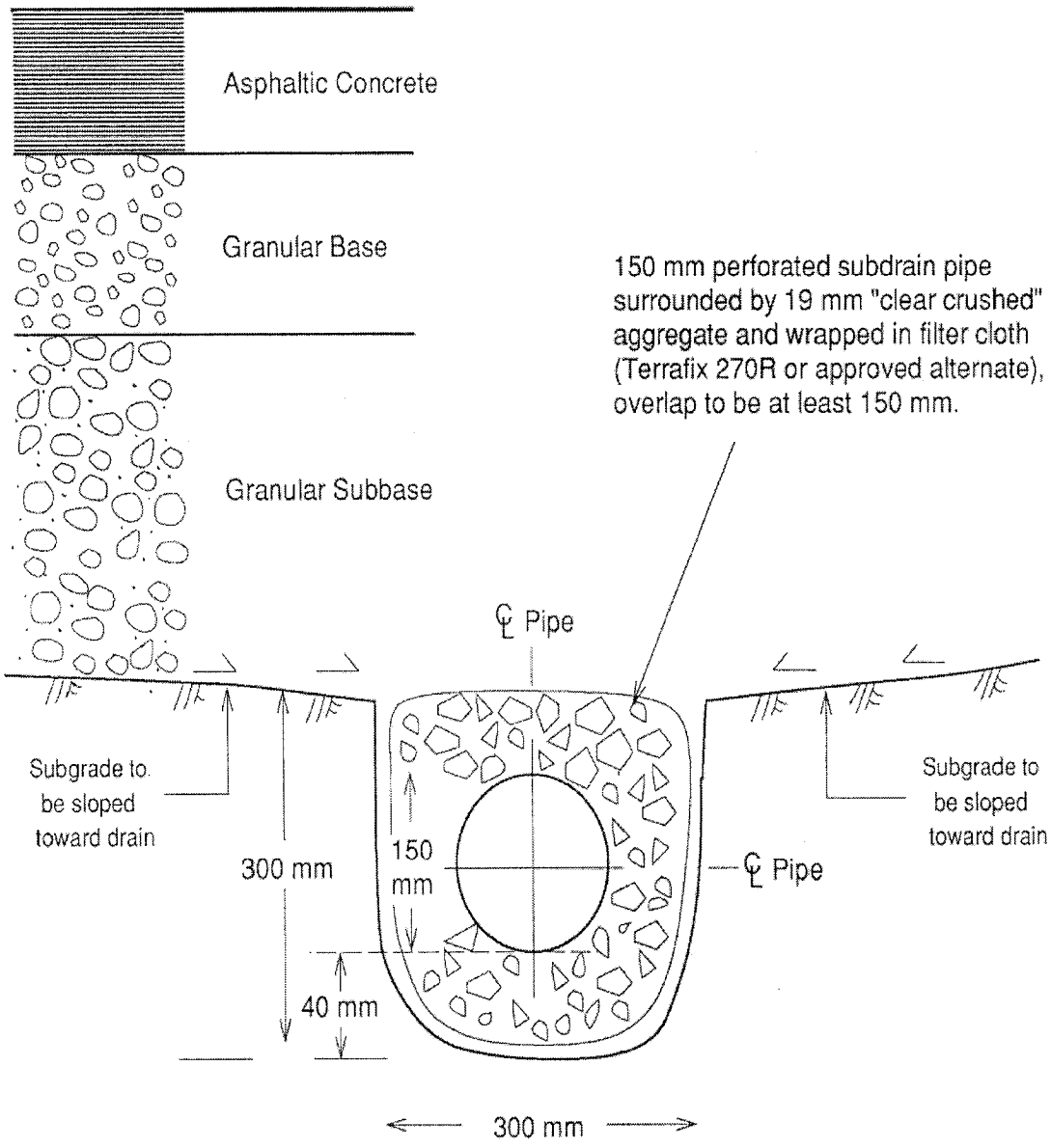
Requirements for backfill in service trenches, etc. should conform to current Municipal and OPSS requirements. A summary of the general recommendations for trench backfill is presented on **Drawing 5**.

The bedding materials for the services designated as Zone A on the attached drawings should consist of approved granular material satisfying the current Municipal minimum standards and specifications. (Class B bedding should provide adequate support for the pipes). These materials should be uniformly compacted to 95 percent of standard Proctor dry density. Some problems may be encountered in maintaining alignment when bedding pipes in wet sandy soil. If Granular 'A' or other sandy material is used for bedding, they may become 'spongy' when saturated. If significant amounts of clear stone are used to stabilize the base, a geotextile should be incorporated to avoid problems with migration of fine grained materials and differential settlement under the pipes as the groundwater rises after backfilling. For minor local use of crushed stone without a geotextile filter, a graded HL3 stone is preferable.

The backfill in Zone B will consist of the native material. This material should be placed in loose lifts not exceeding 300 mm (12 inches) and be uniformly compacted to 95 percent of the standard Proctor maximum dry density. Material wetter than 5 percent above optimum must be allowed to dry sufficiently or should be discarded or used in landscaped areas.

The upper 1 meter of the general backfill (i.e. Zone C) should be placed in loose lifts not exceeding 300 mm (12 inches) and be uniformly compacted to at least 98 percent of the standard Proctor maximum dry density. To achieve satisfactory compaction, the fill material should be within 3 percent of standard Proctor optimum moisture content at placement.

DRAWING 7 – PAVEMENT SUBDRAIN DETAIL



NOTES:

1. All dimensions in millimetres.
2. All sub drains to be set on at least 1% grade draining to a positive outlet.
3. Subgrade soil conditions should be verified onsite, during subgrade preparation works, following site servicing installations.

Scale: NTS

Appendix A – Borehole and Test Pit Logs

NOTES ON SAMPLE DESCRIPTIONS

1. All descriptions included in this report follow the 'modified' Massachusetts Institute of Technology (M.I.T.) soil classification system. The laboratory grain-size analysis also follows this classification system. Others may designate the Unified Classification System as their source; a comparison of the two is shown for your information. Please note that, with the exception of those samples where the grain size analysis has been carried out, all samples are classified visually and the accuracy of the visual examination is not sufficient to differentiate between the classification systems or exact grain sizing. The M.I.T. system has been modified and the EXP classification includes a designation for cobbles above the 75 mm size and boulders above the 200 mm size.

UNIFIED SOIL CLASSIFICATION	Fines (silt and clay)		Sand			Gravel		Cobbles
			Fine	Medium	Coarse	Fine	Coarse	
M.I.T. SOIL CLASSIFICATION	Clay	Silt	Sand			Gravel		
			Fine	Medium	Coarse			
Sieve Sizes			200	40	10	4	3/4	
Particle Size (mm)	0.002	0.06	0.075	0.2	0.6	2.0	5.0	20	80

2. **Fill**: Where fill is designated on the test hole log, it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The test hole description therefore, may not be applicable as a general description of the site fill material. All fills should be expected to contain obstructions such as large concrete pieces or subsurface basements, floors, tanks, even though none of these obstructions may have been encountered in the test hole. Despite the use of test holes, the heterogeneous nature of fill will leave some ambiguity as to the exact and correct composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. The fill at this site has been monitored for the presence of methane gas and the results are recorded on the test hole logs. The monitoring process neither indicates the volume of gas that can be potentially generated or pinpoints the source of the gas. These readings are to advise of a potential or existing problem (if they exist) and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic waste that renders the material unacceptable for deposition in any but designated land fill sites; unless specifically stated, the fill on the site has not been tested for contaminants that may be considered hazardous. This testing and a potential hazard study can be carried out if you so request. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common, but not detectable using conventional geotechnical procedures.

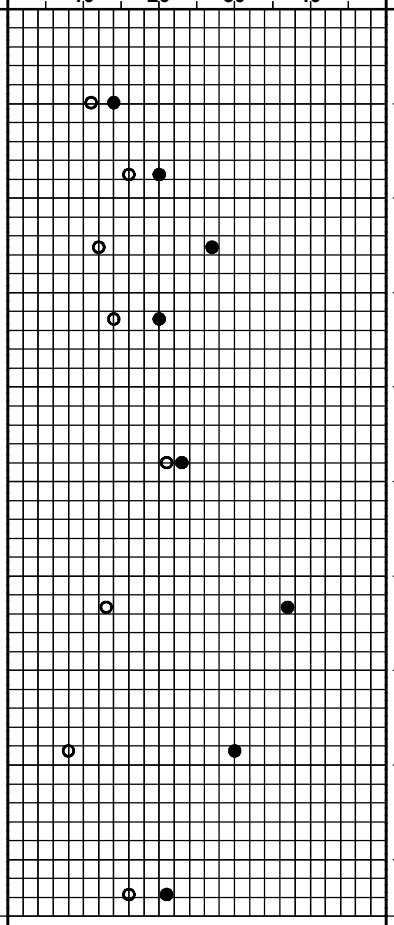
3. **Glacial Till**: The term till on the test hole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process, the till must be considered heterogeneous in composition and as such, may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (75 to 200 mm in diameter) or boulders (greater than 200 mm diameter) and therefore, contractors may encounter them during excavation, even if they are not indicated on the test hole logs. It should be appreciated that normal sampling equipment can not differentiate the size or type of obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited area; therefore, caution is essential when dealing with sensitive excavations or dewatering programs in till material.

BOREHOLE LOG

BH1/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 12, 2021** Water Level

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	260.2						
0	259.9	**TOPSOIL** - 300 mm					
		SILT - brown, trace to some clay, trace sand, trace gravel, compact, moist	SS	SA 1	350	14	11
1			SS	SA 2	450	20	16
2			SS	SA 3	100	27	12
	257.3						
3		**CLAYEY SILT TILL** - brown, trace sand, trace gravel, very stiff, damp	SS	SA 4	450	20	14
4							
		- some brown, dilatent silt layerin at 4.5 m bgs	SS	SA 5	400	23	21
5							
6		- becoming hard near 6.0 m bgs	SS	SA 6	450	37	13
7	253.1						
		SAND and GRAVEL - brown, trace silt, well graded, dense, wet	SS	SA 7	450	30	8
8	251.6						
9		**SAND** - grey, fine to medium grained, trace silt, trace gravel, compact, wet	SS	SA 8	350	21	16
	250.6						
10		**End of borehole at 9.6 m bgs.**					
11							
12							



NOTES

1) Borehole Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 4.71 m bgs (Elevation 255.49 m)

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

WATER LEVELS
Apparent
Measured
Artesian (see Notes)

BOREHOLE LOG

BH2/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 12, 2021** Water Level

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLES TYPE	NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	259.5						
0	259.1	**TOPSOIL** - 400 mm					
		SILT - grey, trace to some sand, trace gravel, dilatent, very loose to compact, very moist to wet					
1			SS	SA 1	400	10	15
2			SS	SA 2	350	8	17
			SS	SA 3	350	9	14
3			SS	SA 4	350	10	15
4		- sandy seams encountered near 3.8 m bgs	SS	SA 5	400	11	17
5	254.5		SS	SA 6	450	3	19
		End of borehole at 5.0 m bgs.					
6							
7							
8							
9							
10							
11							
12							

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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 1.10 m bgs (Elevation 258.40 m)

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

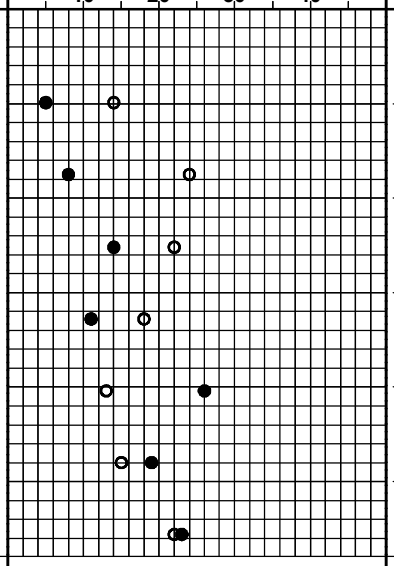
WATER LEVELS
Apparent Measured Artesian (see Notes)

BOREHOLE LOG

BH3/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 12, 2021** Water Level

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLES TYPE	NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	259.1						
0	258.8	**TOPSOIL** - 280 mm					
		SAND - brown, fine to medium grained, trace to some silt, trace gravel, loose to compact, very moist to wet	SS	SA 1	150	5	14
1			SS	SA 2	400	8	24
2			SS	SA 3	150	14	22
3		- some grey, stiff, clayey silt layering encountered at 3.15 m bgs - becoming grey, compact and wet at 3.3 m bgs	SS	SA 4	450	11	18
4	254.4		SS	SA 5	450	26	13
5		**SANDY SILT** - grey, trace gravel, compact, very moist to wet	SS	SA 6	450	19	15
	253.3		SS	SA 7	450	23	22
6		**End of borehole at 5.8 m bgs.**					
7							
8							
9							
10							
11							
12							



NOTES

1) Borehole Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 1.28 m bgs (Elevation 257.82 m)

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

WATER LEVELS
Apparent
Measured
Artesian (see Notes)

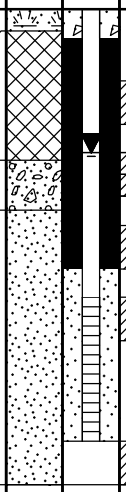
BOREHOLE LOG

BH4/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 11, 2021** Water Level

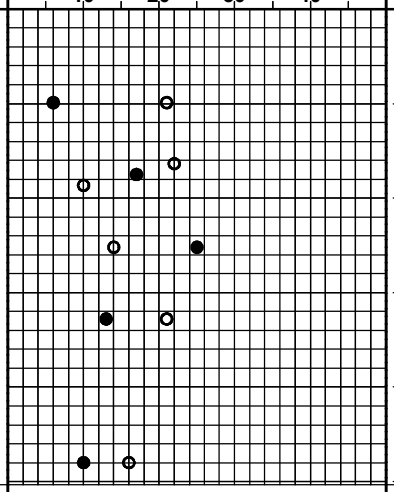
DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	259.8						
0	259.6	**TOPSOIL** - 230 mm					
		FILL - SAND - brown/grey/black, trace silt, trace gravel, topsoil inclusions, building debris, loose, very moist					
1			SS	SA 1	350	6	21
	258.2						
		SAND and GRAVEL - grey, trace silt, well graded, compact, wet	SS	SA 2	400	17	22 10
2	257.7						
		SAND - brown, some gravel, trace silt, compact, wet	SS	SA 3	450	25	14
3			SS	SA 4	450	13	21
4							
5	254.8		SS	SA 5	300	10	16
		End of borehole at 5.0 m bgs.					
6							
7							
8							
9							
10							
11							
12							

STRATA PLOT / WELL LOG



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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 1.52 m bgs (Elevation 258.28 m)

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)

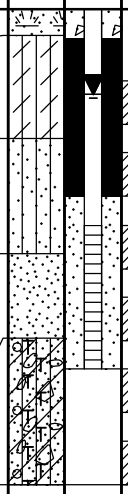
BOREHOLE LOG

BH5/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 12, 2021** Water Level

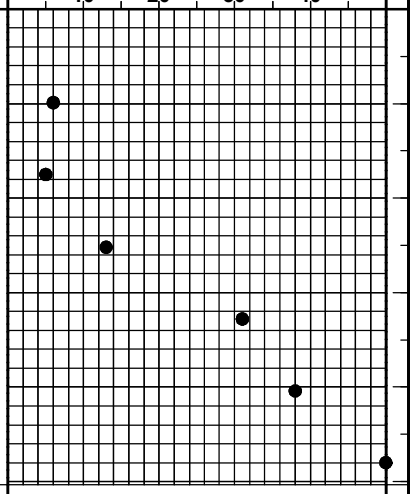
DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLES TYPE	NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	259.5						
0	259.2	**TOPSOIL** - 280 mm					
		CLAYEY SILT - grey, trace sand, trace gravel, firm, moist	SS	SA 1	450	6	
1	258.1						
		SANDY SILT - grey, some gravel, compact, moist	SS	SA 2	450	5	
2	256.9		SS	SA 3	400	13	
		SAND - grey, fine to medium grained, some silt to silty, compact, wet					
3	256.0	-some silt layering encountered at 3.3 m bgs	SS	SA 4	400	31	
		SILT TILL - grey, some sand to sandy, trace gravel, dense to very dense, moist	SS	SA 5	450	38	
4	254.5		SS	SA 6	450	50*	
5		**End of borehole at 5.0 m bgs.**					
6							
7							
8							
9							
10							
11							
12							

STRATA PLOT / WELL LOG



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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) * denotes 50 blows per less than 150 mm split spoon sampler penetration.
5) Elevation interpreted from MNR contour mapping.
6) Water level, May 17, 2021: 0.90 m bgs (Elevation 258.60 m)

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

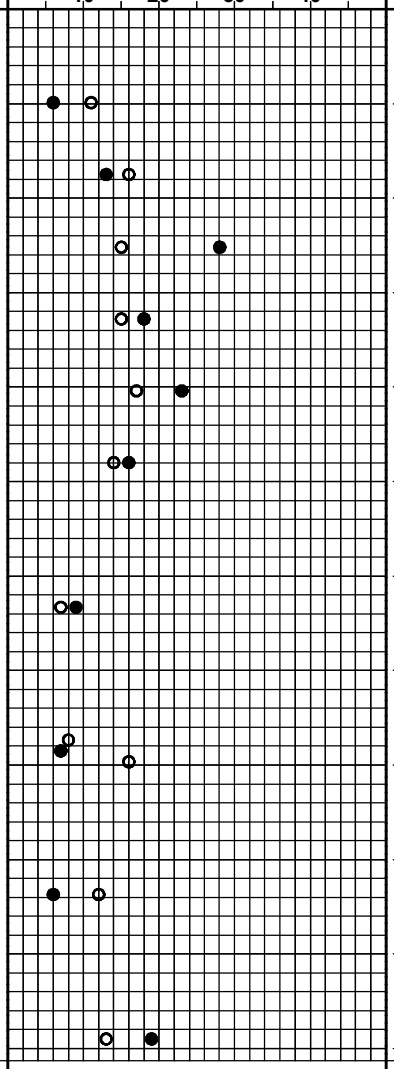
WATER LEVELS
▽ Apparent ▼ Measured ▲ Artesian (see Notes)

BOREHOLE LOG

BH6/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 11, 2021** Water Level

DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	270.4						
0	270.3	**TOPSOIL** - 150 mm					
		SILTY SAND - brown, trace gravel, loose, very moist	SS	SA 1	300	6	11
1	269.0						
		SILT - brown, some sand, trace gravel, dilatent, sand laminations, compact, moist to very moist	SS	SA 2	300	13	16
2	268.3						
		CLAYEY SILT - brown, trace to some sand, trace gravel, sand laminations, moist to very moist, very stiff to dense	SS	SA 3	50	28	15
3		-some very moist silt layering encountered at 2.9 m bgs	SS	SA 4	400	18	15
4	266.0		SS	SA 5	400	23	17
		SANDY SILT - brown, trace gravel, moist, moist	SS	SA 6	450	16	14
5	264.8						
		SAND - brown, fine to medium grained, trace silt, trace gravel, loose, moist	SS	SA 7	400	9	7
6							
7							
	262.6	-some silt layering encountered at 7.8 m bgs	SS	SA 8	450	7	8
8		**CLAYEY SILT** - brown, trace sand, trace gravel, stiff, moist					16
	261.8						
		SAND - brown, fine to medium grained, trace to some silt, trace gravel, compact, moist	SS	SA 9	400	6	12
9							
10	260.3						
		CLAYEY SILT - grey, trace sand, trac gravel, soft, very stiff, very moist to wet	SS	SA 10	400	19	13
11	259.3						
		End of borehole at 11.1 m bgs.					
12							



NOTES

1) Borehole Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 9.27 m bgs (Elevation 261.13 m)

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

WATER LEVELS
Apparent
Measured
Artesian (see Notes)

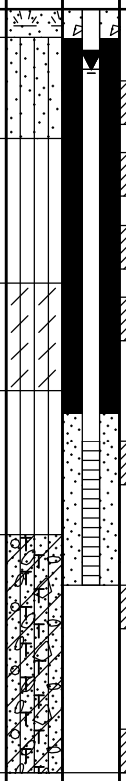
BOREHOLE LOG

BH7A/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 11, 2021** Water Level

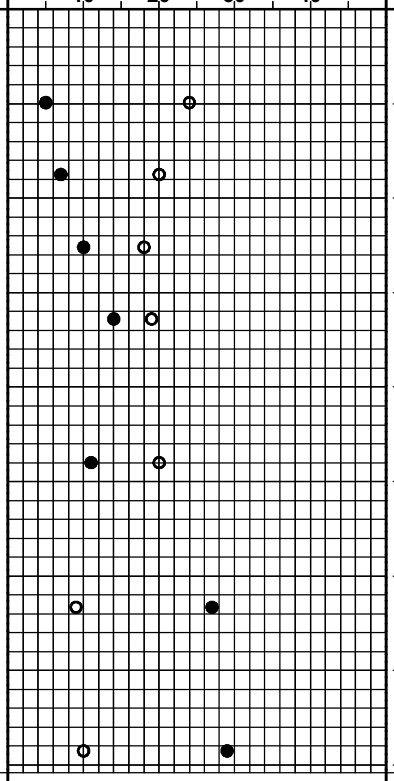
DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	265.5						
0	265.2	**TOPSOIL** - 300 mm					
1	264.1	**SANDY SILT** - brown, trace gravel, loose to compact, very moist	SS	SA 1	50	5	24
2	262.6	**SILT** - grey, trace to some sand, trace gravel, dilatent, loose, wet	SS	SA 2	400	7	20
			SS	SA 3	400	10	18
3	261.5	**CLAYEY SILT** - grey, trace sand, trace gravel, saturated silt lamination, stiff, moist	SS	SA 4	450	14	19
4	259.9	**SILT** - grey, trace sand, trace gravel, dilatent, loose, wet	SS	SA 5	400	11	20
6	257.4	**SILT TILL** - grey, some sand, trace gravel, saturated sand lamination, thin clay laminations, compact, moist	SS	SA 6	400	27	9
8			SS	SA 7	450	29	10
		End of borehole at 8.1 m bgs.					

STRATA PLOT / WELL LOG



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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 0.64 m bgs (Elevation 264.86 m)

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

BH7B/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, 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 (%)
	265.5								
0	265.2	**TOPSOIL** - 300 mm							
		SANDY SILT - brown, trace gravel, loose to compact, very moist							
1	264.1								
		SILT - grey, trace to some sand, trace gravel, dilatent, loose, wet							
2	262.6								
3		**CLAYEY SILT** - grey, trace sand, trace gravel, saturated silt lamination, stiff, moist							
4	261.5								
		SILT - grey, trace sand, trace gravel, dilatent, loose, wet							
5	259.9								
6		**SILT TILL** - grey, some sand, trace gravel, saturated sand lamination, thin clay laminations, compact, moist							
7									
8	257.4								
		End of borehole at 8.1 m bgs.							
9									
10									
11									
12									

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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 0.57 m bgs (Elevation 264.93 m)

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)

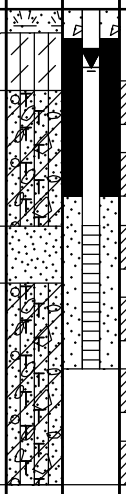
BOREHOLE LOG

BH8/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 11, 2021** Water Level

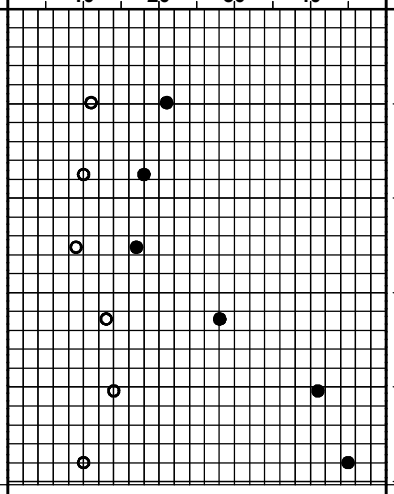
DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLES TYPE	NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	260.3						
0	260.1	**TOPSOIL** - 250 mm					
	259.4	**CLAYEY SILT** - brown, some sand to sandy, trace gravel, stiff, moist					
1		**SILT TILL** - brown, trace sand, trace gravel, compact, moist to wet -some sand layering encountered at 1.2 m bgs	SS	SA 1	450	21	11
2			SS	SA 2	450	18	10
	258.0						
	257.4	**SAND** - brown, some silt chunks, trace gravel, compact, wet	SS	SA 3	350	17	9
3		**SILT TILL** - brown, some sand to sand, trace gravel, thin wet sand laminations, compact, very moist to wet	SS	SA 4	350	28	13
4			SS	SA 5	350	41	14
		- becoming grey and dense at 4.4 m bgs					
5	255.3		SS	SA 6	450	45	10
		End of borehole at 5.0 m bgs.					
6							
7							
8							
9							
10							
11							
12							

STRATA PLOT / WELL LOG



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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 0.62 m bgs (Elevation 259.68 m)

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)

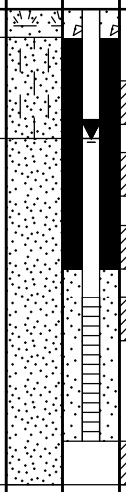
BOREHOLE LOG

BH9/MW
Sheet 1 of 1

CLIENT **Auburn Developments Inc.** PROJECT NO. **LON-21008138-A0**
PROJECT **Hunter Farm** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Boring **May 11, 2021** Water Level

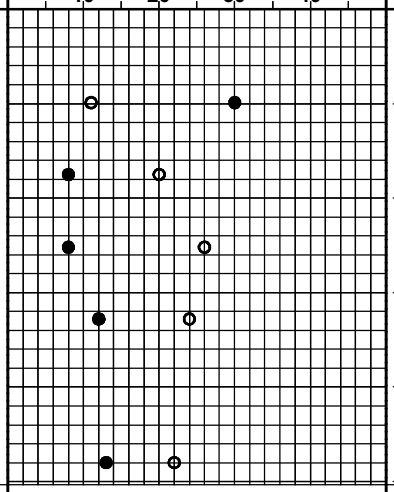
DEPTH (m bgs)	ELEVATION (~m)	STRATA DESCRIPTION	SAMPLES TYPE	NUMBER	RECOVERY (mm)	N VALUE (blows)	MOISTURE CONTENT (%)
	268.9						
0	268.6	**TOPSOIL** - 300 mm					
		SILTY SAND - brown, trace gravel, dense, moist					
1	267.5		SS	SA 1	300	30	11
		SAND - fine to medium grained, brown, trace to some silt, trace gravel, loose to compact, wet					
2			SS	SA 2	250	8	20
			SS	SA 3	450	8	26
3			SS	SA 4	400	12	24
4		- becoming grey near 4.0 m bgs					
5	263.9		SS	SA 5	400	13	22
		End of borehole at 5.0 m bgs.					
6							
7							
8							
9							
10							
11							
12							

STRATA PLOT / WELL LOG



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 Log interpretation requires assistance by EXP before use by others. Borehole Log must be read in conjunction with EXP Report LON-21008138-A0.
2) No significant methane gas detected upon completion of drilling.
3) bgs denotes below ground surface.
4) Elevation interpreted from MNR contour mapping.
5) Water level, May 17, 2021: 1.37 m bgs (Elevation 267.53 m)

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

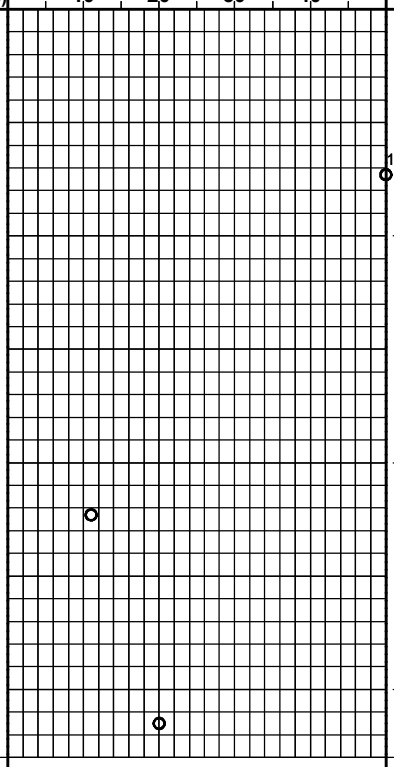
TP1
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 257.8	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)
0		**TOPSOIL** - 500 mm							
	257.3								
		MARL - mixed peat, light grey, wet			GB	SA 1			
1									
	255.8								
2		**SAND and GRAVEL** -grey, alluvial, loose, wet			GB	SA 2			
	254.8								
3		**SAND** - brown/grey, fine to medium grained, loose, wet			GB	SA 3			
	254.5								
		End of test pit at 3.3 m bgs.							
4									
5									

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40



NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 2.0 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP1A
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 257.8	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	257.5	**TOPSOIL** - 300 mm								
	255.8	**MARL** - mixed peat, light grey, wet			GB	SA 1				
1										
2	254.8	**SAND** - brown/grey, fine to medium grained, loose, wet			GB	SA 2				
3		**End of test pit at 3.0 m bgs.**								
4										
5										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
40 80 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 2.5 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	258.5	**TOPSOIL** - 250 mm								
	258.3	**SAND** , brown, weathered, some silt to silty, loose, very moist			GB	SA 1				
	258.0	**SILT TILL** - brown/grey, trace gravel, compact, moist			GB	SA 2				
1										
2		- becoming grey near 2.0 m bgs								
3	255.0									
		End of test pit at 3.5 m bgs.								
4										
5										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 256.7	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	256.4	**TOPSOIL** - 300 mm								
	255.7	**PEAT** - black, fibrous, wet			GB	SA 1				323
1		**MARL** - mixed peat, light grey, wet			GB	SA 2				100
2										
3	253.7	**SAND** - brown, loose, wet			GB	SA 3				
	253.2	**End of test pit at 3.5 m bgs.**								
4										
5										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 3.0 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

TEST PIT LOG

TP3A
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 256.7	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0	256.4	**TOPSOIL** - 300 mm								
		SAND - brown/grey, trace gravel, loose, wet			GB	SA 1				
1										
2	254.2									
		End of test pit at 2.5 m bgs due to unstable sidewalls.								
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 256.8	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 300 mm								
	256.5	**SAND** - brown/grey, some silt, loose, moist to very moist			GB	SA 1				
1										
2		- becoming grey near 2.0 m bgs								
	253.8									
3		**End of test pit at 3.0 m bgs.**								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	257.8	**TOPSOIL** - 300 mm								
	257.5	**SAND and GRAVEL** - brown, trace silt, loose, moist to wet			GB	SA 1				
1					GB	SA 2				
2		- becoming grey near 2.0 m bgs								
	255.3	**End of test pit at 2.5 m bgs due to unstable sidewalls.**								
3										
4										
5										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
40 80 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 2.0 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP5A
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 257.8	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40 – 80 kPa); Atterberg Limits and Moisture W_P W W_L; ● SPT N Value ✕ Dynamic Cone (10 – 20 – 30 – 40)
0		**TOPSOIL** - mixed fill, 1.2 m								
1	256.6	**SAND and GRAVEL** - grey, loose, wet			GB	SA 1				
	256.3	**SILTY SAND** - grey, loose, wet			GB	SA 2				
2										
	254.8	**End of test pit at 3.0 m bgs.**								
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 1.2 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP6

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)
0	259.8								
	259.5	**TOPSOIL** - 300 mm							
	259.2	**SAND and GRAVEL** - brown, loose, moist			GB	SA 1			
1		**SILT TILL** - brown, some clay, trace gravel, compact, moist			GB	SA 2			
2		- becoming grey near 2.5 m bgs			GB	SA 3			
3									
4	255.8	**End of test pit at 4.0 m bgs.**							
5									

SHEAR STRENGTH

✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane

40 80 kPa

Atterberg Limits and Moisture

W_P W W_L

● SPT N Value × Dynamic Cone

10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

TEST PIT LOG

TP6A

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	259.8	**TOPSOIL** - mixed peat, 1.2 m								
1	258.6	**SANDY SILT** - brown/grey, trace gravel, trace clay, loose, very moist to wet			GB	SA 1				
2	257.8	**End of test pit at 2.0 m bgs.**								
3										
4										
5										

SHEAR STRENGTH: ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane — 40 80 kPa

Atterberg Limits and Moisture: W_P W W_L

● SPT N Value × Dynamic Cone — 10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 1.8 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP7
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40 – 80 kPa) / Atterberg Limits and Moisture W_P W W_L ● SPT N Value ✕ Dynamic Cone (10 – 20 – 30 – 40)
0	259.5	**TOPSOIL** - 400 mm								
	259.1	**SANDY SILT** - brown, trace clay, trace gravel, , loose, moist			GB	SA 1				
1	258.0	**CLAYEY SILT TILL** - grey, trace sand and gravel, stiff, moist			GB	SA 2				
2										
3	256.0	**End of test pit at 3.5 m bgs.**								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP8
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 259.5	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)
0	259.1	**TOPSOIL** - 400 mm							
	258.3	**SILTY SAND** - brown, loose to compact, moist			GB	SA 1			
1	257.5	**CLAYEY SILT TILL** - brown, trace sand, stiff, moist			GB	SA 2			
2	256.0	**SILT TILL** - grey, compact, moist - dilatant silt layering encountered near 3.0 m bgs			GB	SA 3			
3		**End of test pit at 3.5 m bgs.**							
4									
5									

SHEAR STRENGTH
✚ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and water observed near 1.2 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP9
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 264.7	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	264.3	**TOPSOIL** - 400 mm								
		CLAYEY SILT TILL - brown, stiff, moist			GB	SA 1				
1										
2	262.2									
		SILT TILL - brown, some clay, compact, moist			GB	SA 2				
3	260.7									
4		**End of test pit at 4.0 m bgs.**								
5										

SHEAR STRENGTH: S Field Vane Test (#=Sensitivity); Penetrometer; Torvane; 40; 80 kPa
Atterberg Limits and Moisture: W_P W W_L; SPT N Value; Dynamic Cone; 10; 20; 30; 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

WATER LEVELS
Apparent; Measured; Artesian (see Notes)

TEST PIT LOG

TP10

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

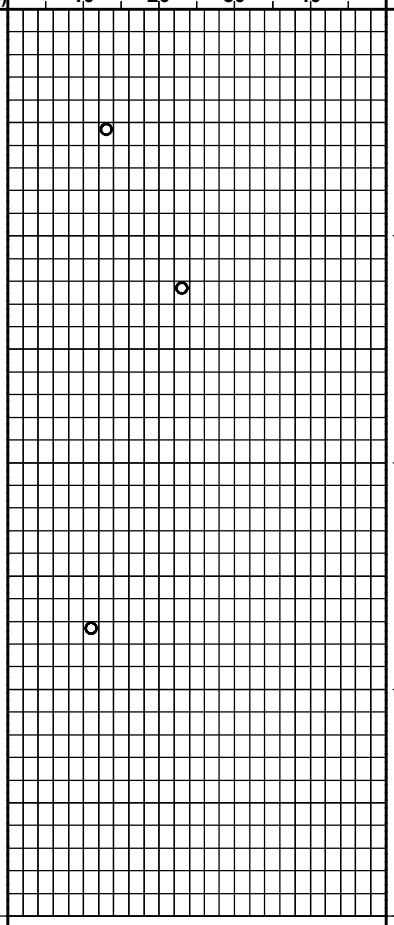
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)
0	266.7	**TOPSOIL** - 300 mm							
	266.4	**CLAYEY SILT** - brown, soft to firm, moist			GB	SA 1			
1	265.7	**SILT TILL** - brown, stiff, moist			GB	SA 2			
2	264.2	**SAND and GRAVEL** - brown/grey, trace cobble, compact, wet			GB	SA 3			
3	262.7								
4		**End of test pit at 4.0 m bgs.**							
5									

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40



NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 3.0 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP11
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 266.7	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0		**TOPSOIL** - organic fill, 500 mm								
	266.2									
1		**SILT TILL** - grey, some clay, wet sand layering, cobbles, compact, moist			GB	SA 1				
	264.7									
2		**SAND** - grey, fine to medium grained, compact, wet			GB	SA 2				
	263.7									
3		**End of test pit at 3.0 m bgs.**								
4										
5										

SHEAR STRENGTH
✚ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and 0.3 m of water observed upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP12
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 267.8	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	267.5	**TOPSOIL** - 300 mm								
		SAND - brown, fine to medium sand, trace silt, compact, moist to very moist			GB	SA 1				
1					GB	SA 2				
2					GB	SA 3				
3	264.8	**End of test pit at 3.0 m bgs.**								
4										
5										

SHEAR STRENGTH: ✚ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane; 40, 80 kPa
Atterberg Limits and Moisture: W_P W W_L
● SPT N Value × Dynamic Cone; 10, 20, 30, 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

WATER LEVELS
Apparent Measured Artesian (see Notes)

TEST PIT LOG

TP13
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 266.0	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40 – 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10 – 20 – 30 – 40)
0		**TOPSOIL** - 250 mm								
	265.8	**SILTY SAND** - brown/grey, loose, wet			GB	SA 1				
	265.3	**SILT TILL** - grey, some clay, wet sand layering, cobbles, compact, moist			GB	SA 2				
1										
2										
3										
4	262.0	**End of test pit at 4.0 m bgs.**								
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and water observed near 0.8 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP14
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m) 264.7	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0	264.4	**TOPSOIL** - 300 mm								
		SILTY SAND - brown, trace gravel, weathered, loose, moist			GB	SA 1				
1		- becoming grey, compact, very moist to wet near 1.0 m bgs			GB	SA 2				
2										
3	261.7	**End of test pit at 3.0 m bgs due to unstable sidewalls.**								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and 1.8 m of water observed upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP15

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40 – 80 kPa); Atterberg Limits and Moisture W_P W W_L; ● SPT N Value × Dynamic Cone (10 – 20 – 30 – 40)
0	263.5	**TOPSOIL** - 300 mm								
	263.2	**SAND and GRAVEL** - grey, looset to compact, very moist to wet			GB	SA 1				
1	262.5	**SILT TILL** - grey, some clay, trace gravel, occassional cobble and boulder, wet sand layering, compact, moist to very moist			GB	SA 2				
2										
3	260.0									
		End of test pit at 3.5 m bgs.								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 1.0 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

TEST PIT LOG

TP16

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)
0	258.5	**TOPSOIL** - 400 mm							
	258.1								
		FILL - SAND AND GRAVEL - dark brown/grey, loose, wet			GB	SA 1			
1	257.2								
		FILL - CLAYEY SILT - dark grey/black, organics, firm, wet			GB	SA 2			
	256.9								
		CLAYEY SILT TILL - grey, some sand and gravel, occassional cobble and boulder, wet sand layering, stiff, moist			GB	SA 3			
2									
3	255.5	**End of test pit at 3.0 m bgs.**							
4									
5									

SHEAR STRENGTH

✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane

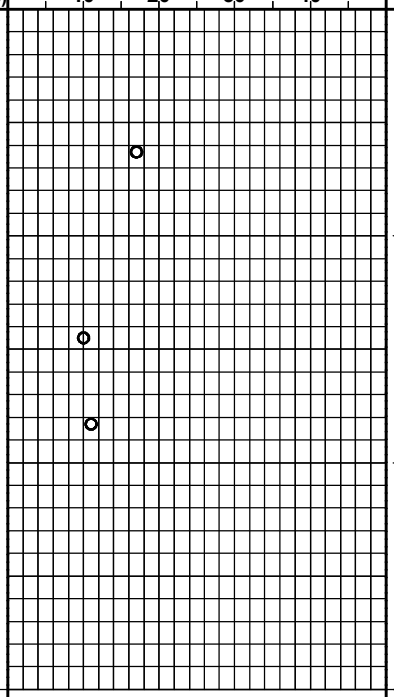
40 80 kPa

Atterberg Limits and Moisture

W_P W W_L

● SPT N Value × Dynamic Cone

10 20 30 40



NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 1.3 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP16A
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	258.5	**TOPSOIL** - 300 mm								
	258.2	**SAND and GRAVEL** - grey, trace silt, compact, moist			GB	SA 1				
1	257.2									
	257.1	**SILT TILL**, grey, trace to some clay, wet sand layering, compact, moist to very moist								
		End of test pit at 1.4 m bgs.								
2										
3										
4										
5										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
40 80 kPa
Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 1.3 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP16B

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **May 12, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0	258.5	**TOPSOIL** - 300 mm								
	258.2	**FILL - SILTY SAND** - dark brown/black, loose/compact, moist			GB	SA 1				
1	257.3									
	257.1	**SILT TILL**, grey, trace to some clay, wet sand layering, compact, moist to very moist								
		End of test pit at 1.4 m bgs.								
2										
3										
4										
5										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit caved and water observed near 1.3 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

Appendix B – Inspection and Testing Schedule

INSPECTION & TESTING SCHEDULE

The following program outlines suggested minimum testing requirements during backfilling of service trenches and construction of pavements. In adverse weather conditions (wet/freezing), increased testing will be required. The testing frequencies are general requirements and may be adjusted at the discretion of the engineer based on test results and prevailing construction conditions.

I TRENCH BACKFILL

ZONE A	- one in situ density test per 100 cubic meters or 50 linear metres of trench whichever is less - one laboratory grain size and Proctor density test per 50 density tests or 4000 cubic metres or on change of material (source, visual)
ZONE A1	- one in situ density test per 75 cubic metres of material or 25 linear metres of each lift of fill - one laboratory grain size and Proctor density test per each 50 density tests or 4000 cubic metres of material placed or as directed by the engineer
ZONES B & C	- one in situ density test per 150 cubic metres of material or 50 linear metres or each lift whichever is less - one laboratory grain size and Proctor density test per 50 density tests or 4000 cubic metres of material placed or as directed by the engineer

II PAVEMENT MATERIALS

GRANULAR SUBBASE	- one in situ density test per 50 linear metres of road - one laboratory grain size and standard Proctor test per 50 density tests or 4000 cubic metres or each change of material (visual, source), as determined by the engineer
GRANULAR BASE	- one in situ density test per 50 linear metres of road - one laboratory grain size and Proctor per 50 density tests or 8000 cubic metres or change in material (visual, source), as determined by the engineer - Benkelman beam testing at 10 metre intervals per lane, after final grading and compaction. Asphaltic concrete should not be placed until rebound criteria have been satisfied.
ASPHALTIC CONCRETE	- one in situ density test per 25 linear metres of roadway - one complete Marshall Compliance test including stability flow, etc. for each mix type to check mix acceptability. One extraction and gradation test per each day of paving to be compared to job mix formula

NOTES: Where testing indicates inadequate compaction, additional fill should not be placed until the area is recompacted and retested at the discretion of the engineer.

Appendix D – Limitations and Use of Report

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 test hole results contained in the Report. The number of test holes 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.

USE OF REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorized use of the Report.

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Where EXP has submitted both electronic file and a hard copy of the Report, or any document forming part of the Report, only the signed and sealed hard copy shall be the original documents for record and working purposes. In the event of a dispute or discrepancy, the hard copy shall govern. Electronic files transmitted by EXP have utilize specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client's current or future software and hardware systems. Regardless of format, the documents described herein are EXP's instruments of professional service and shall not be altered without the written consent of EXP.

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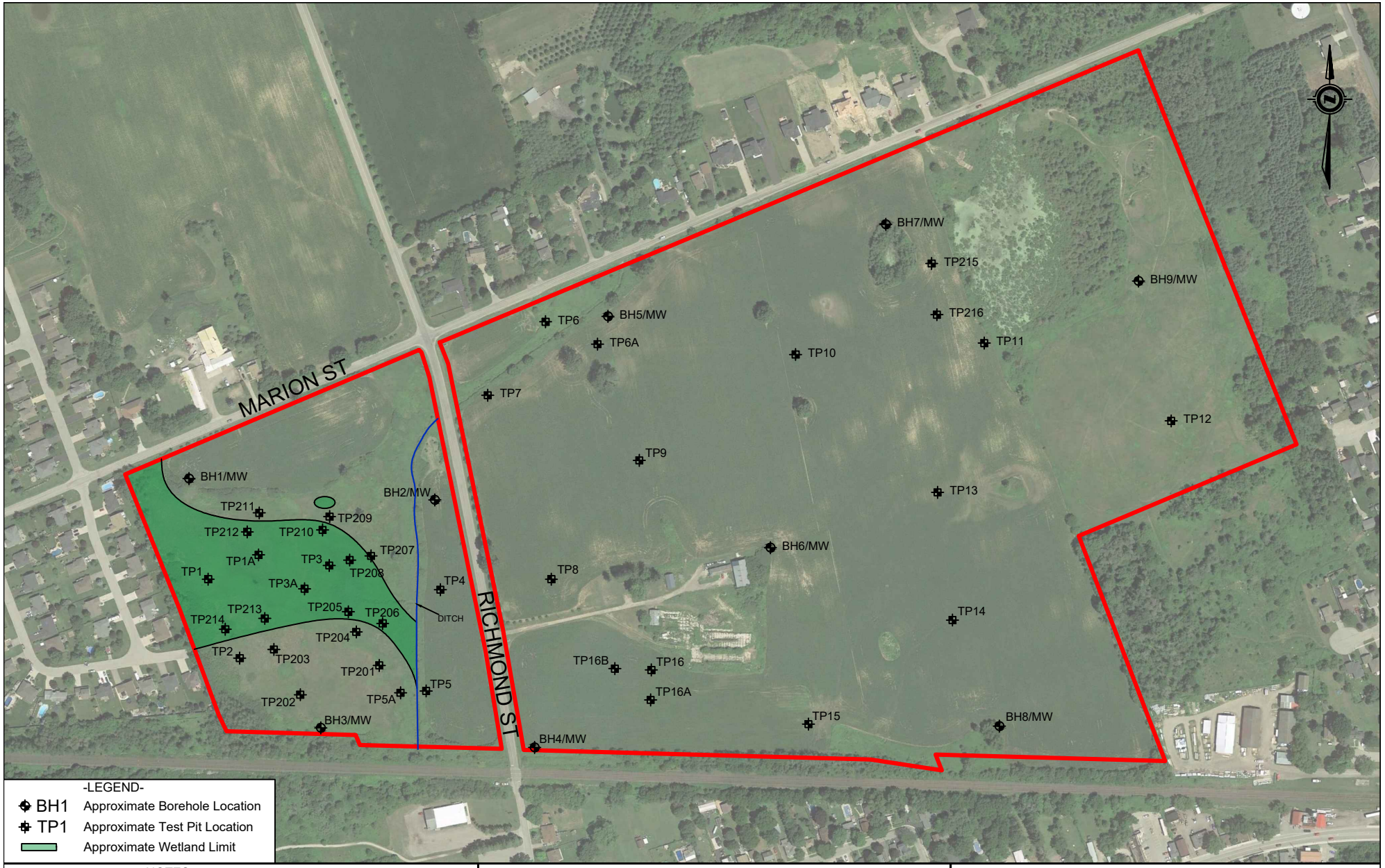


-NOTES-

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-21008138-A0.

Geotechnical Investigation

Hunter Farm Development

Marion Street, Dorchester, Ontario

CLIENT	Auburn Developments Inc.
TITLE	Borehole 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.
AUGUST 2021	1:5,000	LON-21008138-A0	1

TEST PIT LOG

TP201
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0		**TOPSOIL** - 400 mm								
	0.4	**SAND and GRAVEL** -grey, coarse-grained, loose to compact, moist to very moist								
1	1.5									
		End of test pit at 1.5 m bgs.								
2										
3										
4										
5										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

TEST PIT LOG

TP202
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 300 mm								
	0.3	**SILTY SAND** , brown, trace gravel, trace cobbles, loose to compact, moist								
1	1.0	**SANDY SILT** , grey, fine-grained, trace clay, loose to compact, moist								
	1.5	**End of test pit at 1.5 m bgs.**								
2										
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

WATER LEVELS
Apparent Measured Artesian (see Notes)

TEST PIT LOG

TP203
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 300 mm								
	0.3	**SILTY SAND** , brown, fine to medium-grained, moist -becoming grey, fine-grained and very moist at 0.6 m bgs								
	1.0	**End of test pit at 1.0 m bgs.**								
1										
2										
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

TEST PIT LOG

TP204
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 300 mm								
	0.3	**SILTY SAND** , grey, fine to medium-grained, loose to compact, very moist								
	0.6	**SAND AND GRAVEL** , grey, fine-grained, loose to compact, wet								
1	1.2	**End of test pit at 1.2 m bgs.**								
2										
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 0.6 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP205

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**PEAT** , black, fibrous, wet								
1	1.2									
		MARL , grey, mixed alluvial clay/silt, wet								
2										
3										
	3.5									
	3.6	**SAND AND GRAVEL** , grey, wet								
		End of test pit at 3.6 m bgs.								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 1.2 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP206

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**PEAT** , black, fibrous, wet								
1										
	1.5	**MARL** , grey, mixed alluvial clay/silt, wet								
2										
3										
	3.5									
	3.6	**SAND AND GRAVEL** , grey, wet								
		End of test pit at 3.6 m bgs.								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 1.5 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

WATER LEVELS

▽ Apparent ▼ Measured ▲ Artesian (see Notes)

TEST PIT LOG

TP207
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0		**TOPSOIL** - 500 mm								
	0.5	**MARL** , grey, mixed alluvial clay/silt, wet								
1	1.0									
	1.2	**SILTY SAND** , brown, loose, very moist to wet								
		End of test pit at 1.2 m bgs.								
2										
3										
4										
5										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 0.5 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

TEST PIT LOG

TP208
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**PEAT** , black, fibrous, wet								
1	1.2									
		MARL , grey, mixed alluvial clay/silt, wet								
2										
3	3.7									
	3.8	**SANDY SILT** , brown, loose, very moist								
		End of test pit at 3.75 m bgs.								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 1.2 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP209
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa); Atterberg Limits and Moisture W_P W W_L; ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 300 mm								
	0.3	**SILTY SAND** , brown, loose to compact, very moist								
	1.0									
1		**End of test pit at 1.0 m bgs.**								
2										
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

TEST PIT LOG

TP210
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0		**PEAT** , black, fibrous, wet								
	1.0									
1		**MARL** , grey, mixed alluvial clay/silt, wet								
2										
3										
	3.5									
	3.6	**SILTY SAND** , brown, loose, wet								
		End of test pit at 3.6 m bgs.								
4										
5										

SHEAR STRENGTH
✤ S Field Vane Test (#=Sensitivity)
▲ Penetrometer ■ Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
● SPT N Value × Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 1.0 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

TEST PIT LOG

TP211

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**

CLIENT **Auburn Developments Inc.** DATUM **Geodetic**

LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH / Atterberg Limits and Moisture
0		**TOPSOIL** - 300 mm								
	0.3	**SAND AND GRAVEL** , brown, loose to compact, wet								
	1.0									
1		**End of test pit at 1.0 m bgs.**								
2										
3										
4										
5										

SHEAR STRENGTH
S Field Vane Test (#=Sensitivity)
Penetrometer Torvane
40 80 kPa

Atterberg Limits and Moisture
W_P W W_L
SPT N Value Dynamic Cone
10 20 30 40

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 0.3 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP212
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**PEAT** , black, fibrous, wet								
1	1.2									
		MARL , grey, mixed alluvial clay/silt, wet								
2										
	3.0									
3		**End of test pit at 3.0 m bgs due to cave.**								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 1.2 m bgs, unable to excavate beyond 3.0 m bgs due to cave.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP213
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**PEAT** , black, fibrous, wet								
	0.5	**MARL** , grey, mixed alluvial clay/silt, wet								
	1.0									
1		**End of test pit at 1.0 m bgs.**								
2										
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 0.5 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP214
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa); Atterberg Limits and Moisture W_P W W_L; ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**PEAT** , black, fibrous, wet								
	0.5	**SILTY SAND** , grey, loose, wet								
1										
	2.0									
2		**End of test pit at 2.0 m bgs.**								
3										
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 0.5 m bgs, test pit caved upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP215
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 200 mm								
	0.2	**SILTY SAND** , brown, trace gravel, loose to compact, moist to very moist								
1										
2										
3		- becoming wet at 3.0 m bgs								
	3.5	**End of test pit at 3.5 m bgs.**								
4										
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Water observed near 3.0 m bgs upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

TP216
Sheet 1 of 1

PROJECT **Hunter Farm** PROJECT NO. **LON-21008138-A0**
CLIENT **Auburn Developments Inc.** DATUM **Geodetic**
LOCATION **Marion Street, Dorchester, ON** DATES: Excavation **August 4, 2021** Water Level

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WELL LOG	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or (%)	SAMPLES N VALUE (blows) or RQD (%)	BULK DENSITY (kN/m3)	SHEAR STRENGTH ✤ S Field Vane Test (#=Sensitivity) ▲ Penetrometer ■ Torvane (40, 80 kPa) / Atterberg Limits and Moisture W_P W W_L / ● SPT N Value ✕ Dynamic Cone (10, 20, 30, 40)
0		**TOPSOIL** - 200 mm								
	0.2	**SILTY SAND** , brown, trace gravel, trace clay, loose to compact, moist to very moist								
1										
2										
3										
	4.0									
4		**End of test pit at 4.0 m bgs.**								
5										

NOTES

1) Test pit interpretation requires assistance by EXP before use by others. Test pit log must be read in conjunction with EXP Report LON-21008138-A0.
2) Test pit is based on observations of the excavator resistance.
3) Test pit open and dry upon completion of excavation.
4) bgs denotes below ground surface.
5) Elevation interpreted from MNR contour mapping.

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

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

Reference: **Conceptual SWM Strategy**

Appendix D – SWM ANALYSIS

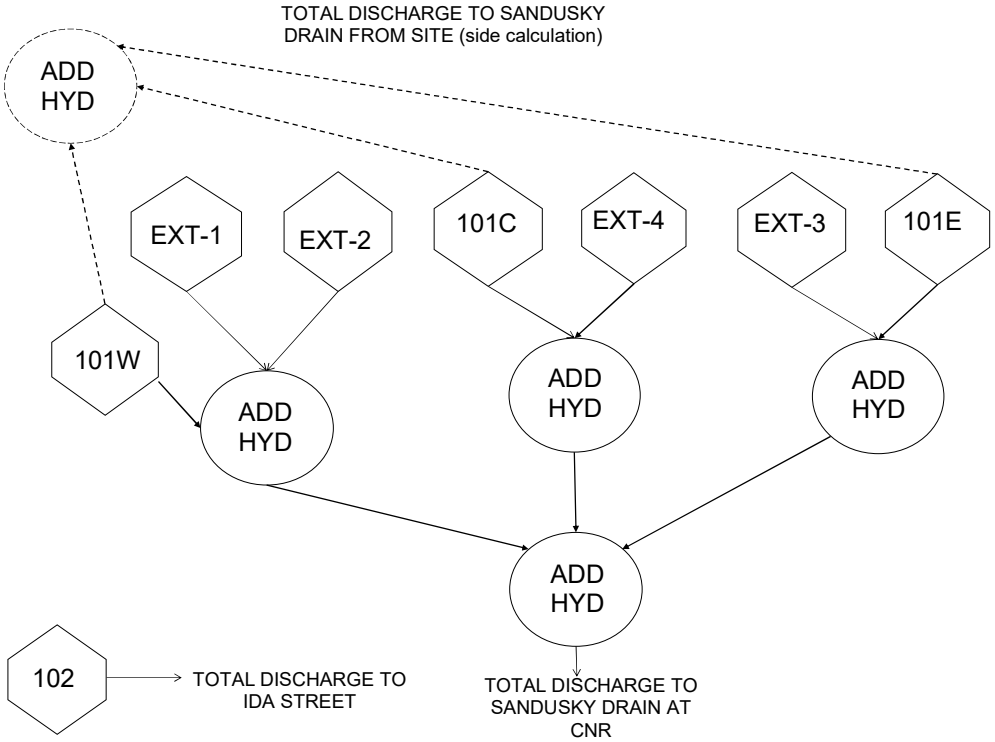
HUNTER PROPERTY

SWMHYMO Model Flowchart

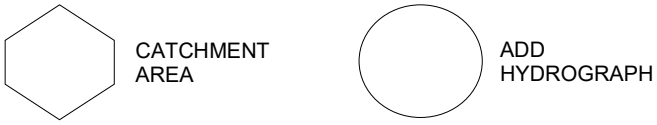
Dorchester, Ontario

Project Number: 161414095
Date: 5/16/2022
Design By: MM

PRE-DEVELOPMENT CONDITION



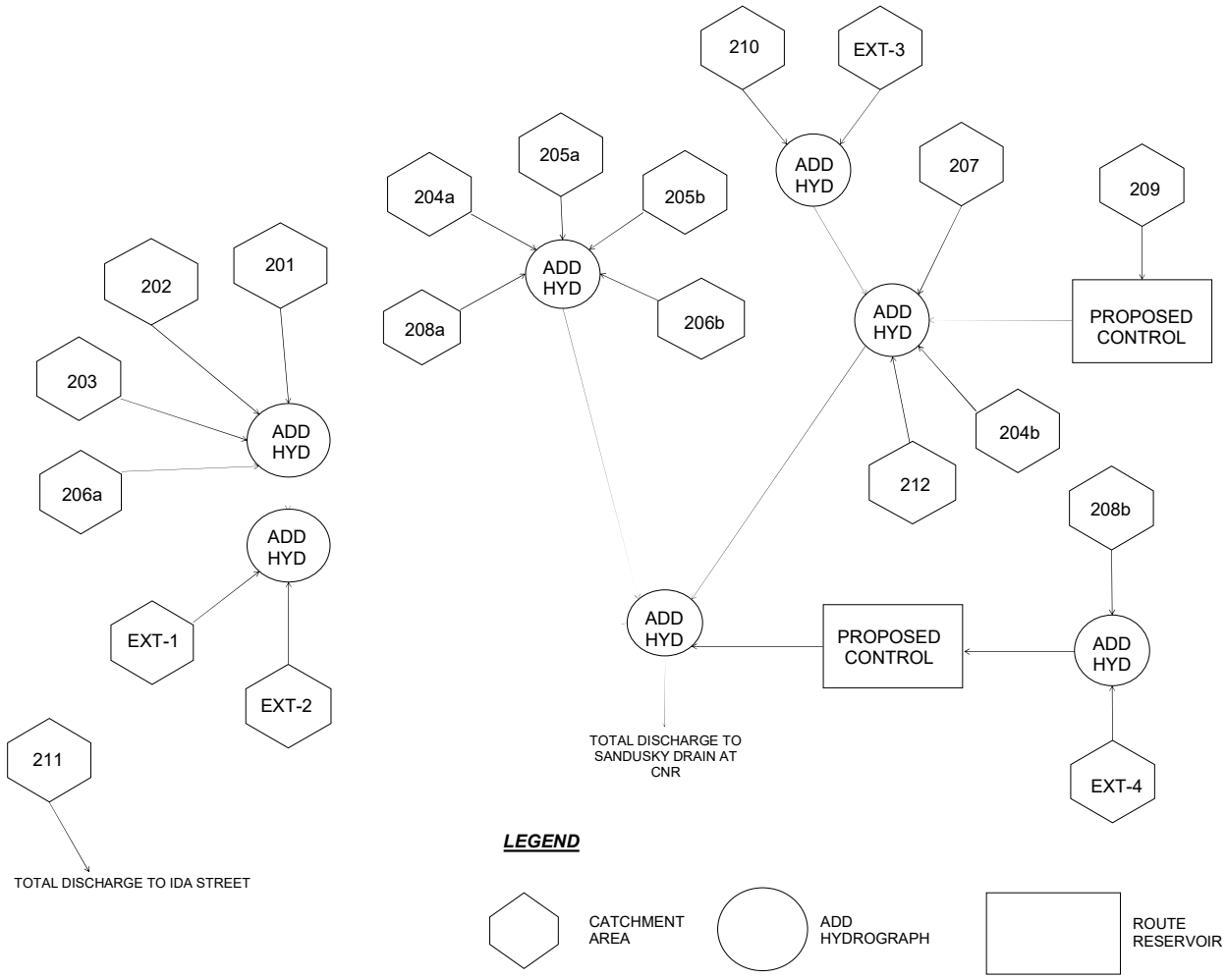
LEGEND



HUNTER PROPERTY
SWMHYMO Model Flowchart
Dorchester, Ontario

Project Number: 161414095
Date: 5/16/2022
Design By: MM

POST-DEVELOPMENT CONDITION



Pre-Development Conditions:

Catchment Number	Area (ha)	C	AxC	CN	AxC	IA	AxIA	Description
101W	8.33	0.20	1.666	79	658.070	5	41.650	Site with runoff toward Sandusky Drain
101C	27.77	0.20	5.554	75	2082.750	5	138.850	Site central part
101E	6.19	0.20	1.238	79	489.010	5	30.950	Site east part
102	3.02	0.20	0.604	75	226.500	5	15.100	Southeast corner with runoff toward IDA
EXT-1	19.09	0.20	3.818	75	1431.750	5	95.450	External on northwest with runoff toward Sandusky Drain
EXT-2	479.35	0.20	95.870	75	35951.250	5	2396.750	External on north with runoff toward Sandusky Drain Via Hunter Branch
EXT-3	186.58	0.20	37.316	75	13993.500	5	932.900	External on northeast with runoff toward Sandusky Drain through site
EXT-4	0.91	0.20	0.182	75	68.250	5	4.550	External on southeast corner of site through IDA toward Sandusky Drain
Total	731.24		146.248		54901.080		3656.200	

Airport Method

$$Tc = \frac{3.26(1.1-C)L^{0.5}}{S^{0.33}}$$

Tc = Time of Concentration (min)
C = Runoff Coefficient
L = Catchment Length (m)
S = Catchment Slope (%)

Area 101W

Area A =	8.33	ha
C =	0.20	
Length L =	414.00	m
Slope S =	0.720	
IA =	5.00	
Tc =	66.53	min
Tp =	0.67	hr

Area 101C

Area A =	27.77	ha
C =	0.00	
Length L =	888.00	m
Slope S =	1.580	
IA =	5.00	
Tc =	91.89	min
Tp =	0.92	hr

Area 101E

Area A =	6.19	ha
C =	0.20	
Length L =	1657.00	m
Slope S =	0.840	
IA =	5.00	
Tc =	126.51	min
Tp =	1.27	hr

Area 102

Area A =	3.02	ha
C =	0.20	
Length L =	268.00	m
Slope S =	2.590	
IA =	5.00	
Tc =	35.09	min
Tp =	0.35	hr

Area EXT-1

Area A =	19.09	ha
C =	0.20	
Length L =	1055.00	m
Slope S =	1.330	
IA =	5.00	
Tc =	86.74	min
Tp =	0.87	hr

Area EXT-2

Area A =	479.35	ha
C =	0.20	
Length L =	4067.00	m
Slope S =	0.630	
IA =	5.00	
Tc =	217.93	min
Tp =	2.18	hr

Area EXT-3

Area A =	186.58	ha
C =	0.20	
Length L =	3482.00	m
Slope S =	0.720	
IA =	5.00	
Tc =	192.95	min
Tp =	1.93	hr

Area EXT-4

Area A =	0.91	ha
C =	0.20	
Length L =	909.00	m
Slope S =	0.610	
IA =	0.00	
Tc =	104.13	min
Tp =	1.04	hr

Post-Development Conditions:

Sub-Catchment	Area (ha)	TIMP	AxC	XIMP	AxC	CN	AxCN	IA	AxIA	Description
201	1.61	0.65	1.047	0.55	0.886	61	98.210	5	8.050	MD on the north of the west of Richmond part from the site.
202	2.96	0.20	0.591	0.05	0.148	75	221.700	5	14.780	Park block on west of Richmond
203	1.76	0.55	0.968	0.45	0.792	61	107.360	5	8.800	SF blocks on the south of the west of Richmond part from the site
204a	0.99	0.20	0.198	0.20	0.198	75	74.250	5	4.950	Sandusky drain on west of Richmond
204b	0.68	0.20	0.136	0.20	0.136	75	51.000	5	3.400	Sandusky drain on east of Richmond
205a	0.89	0.65	0.579	0.55	0.490	61	54.290	5	4.450	MD between Sandusky drain and Richmond
205b	0.78	0.70	0.546	0.60	0.468	61	47.580	5	3.900	Richmond street
206a	0.59	0.20	0.118	0.05	0.030	75	44.250	5	2.950	West park block on south boundary of west of Richmond
206b	0.18	0.20	0.036	0.05	0.009	75	13.500	5	0.900	East park block on the south boundary of west of Richmond
207	0.45	0.65	0.293	0.55	0.248	61	27.450	5	2.250	MD between Sandusky drain and Marion Street.
208a (MD)	0.91	0.65	0.592	0.55	0.501	61	55.567	5	4.555	-
208a (SF)	0.37	0.55	0.204	0.45	0.167	61	22.626	5	1.855	-
208a (Roads)	0.15	0.70	0.105	0.60	0.090	61	9.150	5	0.750	-
208a (OS)	0.17	0.20	0.034	0.05	0.009	61	10.412	5	0.853	-
208a (Weighted)	**1.60**	**0.58**	**0.935**	**0.48**	**0.766**	**61**	**97.754**	**5**	**8.013**	Proposed uncontrolled toward the Drain
208b (MD)	4.21	0.65	2.737	0.55	2.316	61	256.810	5	21.050	
208b (SF)	12.00	0.55	6.599	0.45	5.399	61	731.840	5	59.987	-
208b (Roads)	4.00	0.70	2.798	0.60	2.399	61	243.849	5	19.988	-
208b (OS)	3.95	0.20	0.790	0.05	0.198	61	240.950	5	19.750	-
208b (Weighted)	**24.15**	**0.54**	**12.92**	**0.43**	**10.31**	**61**	**1473.45**	**5**	**120.77**	Proposed site toward south SWMF toward Sandusky drain
209 (MD)	1.56	0.65	1.017	0.55	0.860	61	95.404	5	7.820	-
209 (SF)	0.25	0.55	0.138	0.45	0.113	61	15.250	5	1.250	-
209 (Roads)	0.31	0.70	0.217	0.60	0.186	61	18.910	5	1.550	-
209 (OS)	0.49	0.20	0.098	0.05	0.025	61	29.890	5	2.450	-
209 (Weighted)	**2.61**	**0.56**	**1.47**	**0.45**	**1.18**	**61**	**159.45**	**5**	**13.07**	Proposed site toward north SWMF toward Sandusky drain
210 (OS)	2.20	0.20	0.440	0.05	0.110	75	164.850	10	21.980	Undeveloped open space area
210 (Roads)	0.48	0.70	0.336	0.60	0.288	75	36.000	5	2.400	-
210 (Parks)	1.58	0.20	0.315	0.05	0.079	75	118.200	5	7.880	-
210 (Weighted)	**4.25**	**0.26**	**1.09**	**0.11**	**0.48**	**75**	**319.05**	**8**	**32.26**	Proposed parks on northeast toward the north
211	0.54	0.55	0.297	0.45	0.243	61	32.940	5	2.700	SF blocks on the southeast toward IDA Street
212	1.26	0.55	0.693	0.45	0.567	75	94.500	5	6.300	SF blocks on the northeast
Total	**45.31**	**0.48**	**21.92**	**0.37**	**16.95**	**64**	**2916.74**	**5**	**237.55**	-

Sub-Catchment	Area (ha)	C	AxC	CN	AxC	IA	AxIA	Description
EXT-1	19.09	0.20	3.818	75	1431.750	5	95.450	External on northwest with runoff toward Sandusky Drain
EXT-2	479.35	0.20	95.870	75	35951.250	5	2396.750	External on north with runoff toward Sandusky Drain Via Hunter Branch
EXT-3	186.58	0.20	37.316	75	13993.500	5	932.900	External on northeast with runoff toward Sandusky Drain through site
EXT-4	0.91	0.20	0.182	75	68.250	5	4.550	External on southeast corner of site through IDA toward Sandusky Drain
Total	**685.93**		**137.19**		**51444.75**		**3429.65**	

Airport Method

$$Tc = \frac{3.26(1.1-C)L^{0.5}}{S^{0.33}}$$

Tc = Time of Concentration (min)
C = Runoff Coefficient
L = Catchment Length (m)
S = Catchment Slope (%)

730.70
730.70

Area 202

Area A =	2.76	ha
C =	0.20	
Length L =	463.00	m
Slope S =	2.000	
IA =	5.00	
Tc =	50.22	min
Tp =	0.50	hr

Area 206a

Area A =	0.59	ha
C =	0.20	
Length L =	173.00	m
Slope S =	3.000	
IA =	5.00	
Tc =	26.86	min
Tp =	0.27	hr

Area 206b

Area A =	0.18	ha
C =	0.20	
Length L =	60.00	m
Slope S =	3.000	
IA =	5.00	
Tc =	15.82	min
Tp =	0.16	hr

Area 204a

Area A =	0.99	ha
C =	0.20	
Length L =	318.00	m
Slope S =	0.300	
IA =	5.00	
Tc =	77.84	min
Tp =	0.78	hr

Area 204b

Area A =	0.68	ha
C =	0.20	
Length L =	204.00	m
Slope S =	0.500	
IA =	5.00	
Tc =	52.68	min
Tp =	0.53	hr

Area 210 (OS)

Area A =	2.20	ha
C =	0.20	
Length L =	134.00	m
Slope S =	0.750	
IA =	10.00	
Tc =	37.35	min
Tp =	0.37	hr

MOE VOLUMES

Quality Control	Basic 60% long-term S.S. Removal
Facility	Dry Pond
Catchment Area (ha)	2.61
Imperviousness (%)	56.00
Storage Volume Requirement (m3/ha)	153.33
Permanent Pool Required (m3)	295.80
Extended Detention Volume Required (m3)	104.40

STAGE-STORAGE RELATIONSHIP

Stage	Active Depth	Pond					Comments	Stage
		Area	Volume	Cumulative Volume	Volume Summary	Ponding Elevation		
m	*m*	*m^2*	*m^3*	*m^3*	*m^3*	*m*		*m*
0.00	0.00	305	0	0				0.00
0.10	0.10	398	35	35				0.10
0.20	0.20	492	44	80				0.20
0.30	0.30	585	54	133	104	0.25	MOE Extended Detention	0.30
0.40	0.40	678	63	197				0.40
0.50	0.50	771	72	269	206	0.42	25mm Event	0.50
0.60	0.60	865	82	351				0.60
0.70	0.70	958	91	442	486	0.75	2yr Event	0.70
0.80	0.80	1051	100	543	507	0.77	5yr Event	0.80
0.90	0.90	1145	110	652				0.90
1.00	1.00	1238	119	771	639	0.89	10yr Event	1.00
1.10	1.10	1331	128	900	804	1.03	25yr Event	1.10
1.20	1.20	1425	138	1038	938	1.13	50yr Event	1.20
1.30	1.30	1518	147	1185	1074	1.23	100yr Event	1.30
1.40	1.40	1611	156	1341	1395	1.44	250yr Event	1.40
1.50	1.50	1704	166	1507				1.50
1.60	1.60	1798	175	1682				1.60
1.70	1.70	1891	184	1867				1.70
1.80	1.80	1984	194	2060				1.80
1.90	1.90	2078	203	2263				1.90
2.00	2.00	2171	212	2476				2.00
2.10	2.10	2264	222	2698				2.10
2.20	2.20	2358	231	2929				2.20
2.30	2.30	2451	240	3169				2.30
2.40	2.40	2544	250	3419				2.40
2.50	2.50	2637	259	3678				2.50
2.60	2.60	2731	268	3946				2.60
2.70	2.70	2824	278	4224				2.70

	Orifice
C_d	0.63
Invert (m)	0.00
Width (m)	
Diameter/Height (m)	0.100
Type (H/V)	V

STAGE-DISCHARGE RELATIONSHIP

Stage	Active Volume	Orifice			Total Flow		Average Discharge	Increment Volume	Increment Dewatering Time	Extended Detention	Erosion Control
		Area	Head	Flow						Cumulative Dewatering Time	Cumulative Dewatering Time
m	*m^3*	*m^2*	*m*	*m^3/s*	*m^3/s*		*m^3/s*	*m^3*	*hours*	*hours*	*hours*
0.00	0	0.00	0.00	0.0000	0.0000		0.0025	35	3.99	5.83	8.84
0.10	35	0.01	0.05	0.0049	0.0049		0.0067	44	1.85	1.85	4.85
0.20	80	0.01	0.15	0.0085	0.0085		0.0097	54	1.54		3.00
0.30	133	0.01	0.25	0.0110	0.0110		0.0120	63	1.47		1.47
0.40	197	0.01	0.35	0.0130	0.0130		0.0138	72	1.46		
0.50	269	0.01	0.45	0.0147	0.0147		0.0155	82	1.47		
0.60	351	0.01	0.55	0.0163	0.0163		0.0170	91	1.49		
0.70	442	0.01	0.65	0.0177	0.0177		0.0183	100	1.52		
0.80	543	0.01	0.75	0.0190	0.0190		0.0196	110	1.56		
0.90	652	0.01	0.85	0.0202	0.0202		0.0208	119	1.59		
1.00	771	0.01	0.95	0.0214	0.0214		0.0219	128	1.63		
1.10	900	0.01	1.05	0.0225	0.0225		0.0230	138	1.67		
1.20	1038	0.01	1.15	0.0235	0.0235		0.0240	147	1.70		
1.30	1185	0.01	1.25	0.0245	0.0245		0.0250	156	1.74		
1.40	1341	0.01	1.35	0.0255	0.0255		0.0259	166	1.78		
1.50	1507	0.01	1.45	0.0264	0.0264		0.0268	175	1.81		
1.60	1682	0.01	1.55	0.0273	0.0273		0.0277	184	1.85		
1.70	1867	0.01	1.65	0.0282	0.0282		0.0286	194	1.88		
1.80	2060	0.01	1.75	0.0290	0.0290		0.0294	203	1.92		
1.90	2263	0.01	1.85	0.0298	0.0298		0.0302	212	1.95		
2.00	2476	0.01	1.95	0.0306	0.0306		0.0310	222	1.99		
2.10	2698	0.01	2.05	0.0314	0.0314		0.0318	231	2.02		
2.20	2929	0.01	2.15	0.0321	0.0321		0.0325	240	2.05		
2.30	3169	0.01	2.25	0.0329	0.0329		0.0332	250	2.09		
2.40	3419	0.01	2.35	0.0336	0.0336		0.0340	259	2.12		
2.50	3678	0.01	2.45	0.0343	0.0343		0.0347	268	2.15		
2.60	3946	0.01	2.55	0.0350	0.0350		0.0353	278	2.18		
2.70	4224	0.01	2.65	0.0357	0.0357						

MOE VOLUMES

Quality Control	Enhanced 80% long-term S.S. removal
Facility	Wet Pond
Catchment Area (ha)	24.15
Imperviousness (%)	56.00
Storage Volume Requirement (m3/ha)	192.33
Permanent Pool Required (m3)	3678.85
Extended Detention Volume Required (m3)	966.00

STAGE-STORAGE RELATIONSHIP

Stage	Active Depth	Forebay			Main Pond			Total	Active			Comments	Stage
		Area	Volume	Cumulative Volume	Area	Volume	Cumulative Volume	Pond Volume	Storage Volume	Volume Summary	Ponding Elevation		
m	*m*	*m^2*	*m^3*	*m^3*	*m^2*	*m^3*	*m^3*	*m^3*	*m^3*	*m^3*	*m*		*m*
255.15		3090	0	0	6478	0	0						255.15
255.25		3192	314	314	6655	657	657						255.25
255.35		3293	324	638	6832	674	1331						255.35
255.45		3394	334	973	7009	692	2023						255.45
255.55		3495	344	1317	7186	710	2733						255.55
255.65		3596	355	1672	7364	727	3460						255.65
255.75		3698	365	2036	7541	745	4205						255.75
255.85		3799	375	2411	7718	763	4968						255.85
255.95		3900	385	2796	7895	781	5749						255.95
256.05		4001	395	3191	8072	798	6547						256.05
256.15		4103	405	3596	8249	816	7364	10960				Permanent Pool	256.15
256.15	0.00				12352	0	7364	10960	0				256.15
256.25	0.10				12648	1250	8614	12210	1250	966	256.23	MOE Extended Detention	256.25
256.35	0.20				12945	1280	9893	13490	2530	2264	256.33	25mm Event	256.35
256.45	0.30				13241	1309	11203	14799	3839				256.45
256.55	0.40				13538	1339	12541	16138	5178	4399	256.50	2yr Event	256.55
256.65	0.50				13834	1369	13910	17507	6547	4556	256.51	5yr Event	256.65
256.75	0.60				14131	1398	15308	18905	7945	5482	256.58	10yr Event	256.75
256.85	0.70				14427	1428	16736	20333	9373	6592	256.66	25yr Event	256.85
256.95	0.80				14723	1458	18194	21790	10830	7443	256.72	50yr Event	256.95
257.05	0.90				15020	1487	19681	23277	12317	8312	256.79	100yr Event	257.05
257.15	1.00				15316	1517	21198	24794	13834	10630	256.94	250 Year Event	257.15
257.25	1.10				15613	1546	22744	26341	15381				257.25
257.35	1.20				15909	1576	24320	27917	16957				257.35
257.45	1.30				16206	1606	25926	29522	18562	18562	257.45	Emergency Freeboard	257.45
257.55	1.40				16502	1635	27561	31158	20198				257.55
257.65	1.50				16798	1665	29226	32823	21863				257.65
257.75	1.60				17095	1695	30921	34517	23557				257.75
257.85	1.70				17391	1724	32645	36242	25282				257.85
257.95	1.80				17688	1754	34399	37996	27036				257.95

Orifice Calculations

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

	Orifice 1	Orifice 2
C_d	0.63	0.63
Invert (m)	256.15	256.50
Width (m)		
Diameter/Height (m)	0.620	0.850
Type (H/V)	V	V

Weir Calculations

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

C_d	0.50
Invert (m)	500.00
Length (m)	5.000
Side Slope (H:V)	1
Side Slope (rad)	0.785

STAGE-DISCHARGE RELATIONSHIP

Stage	Active Volume	Orifice 1			Orifice 2			Weir Flow	Total Flow		Average Discharge	Increment Volume	Increment Dewatering Time	Extended Detention Cumulative Dewatering Time	Erosion Control Cumulative Dewatering Time
		Area	H_o	Flow	Area	H_o	Flow								
m	*m^3*	*m^2*	*m*	*m^3/s*	*m^2*	*m*	*m^3/s*	*m^3/s*	*m^3/s*		*m^3/s*	*m^3*	*hours*	*hours*	*hours*
256.15	0	0.00	0.00	0.0000	0.00	0.00	0.0000	0.0000	0.0000		0.0098	1250	35.28	42.85	47.77
256.25	1250	0.03	0.05	0.0197	0.00	0.00	0.0000	0.0000	0.0197		0.0470	1280	7.56	7.56	12.49
256.35	2530	0.08	0.10	0.0743	0.00	0.00	0.0000	0.0000	0.0743		0.1154	1309	3.15		4.93
256.45	3839	0.14	0.15	0.1564	0.00	0.00	0.0000	0.0000	0.1564		0.2097	1339	1.77		1.77
256.55	5178	0.21	0.20	0.2570	0.01	0.03	0.0060	0.0000	0.2630		0.3393	1369	1.12		
256.65	6547	0.26	0.25	0.3640	0.07	0.08	0.0516	0.0000	0.4156		0.5050	1398	0.77		
256.75	7945	0.30	0.30	0.4570	0.14	0.13	0.1374	0.0000	0.5944		0.6888	1428	0.58		
256.85	9373	0.30	0.39	0.5261	0.22	0.18	0.2572	0.0000	0.7833		0.8884	1458	0.46		
256.95	10830	0.30	0.49	0.5897	0.30	0.23	0.4037	0.0000	0.9934		1.1045	1487	0.37		
257.05	12317	0.30	0.59	0.6471	0.39	0.28	0.5684	0.0000	1.2155		1.3280	1517	0.32		
257.15	13834	0.30	0.69	0.6998	0.47	0.33	0.7407	0.0000	1.4406		1.5475	1546	0.28		
257.25	15381	0.30	0.79	0.7488	0.53	0.38	0.9057	0.0000	1.6545		1.7408	1576	0.25		
257.35	16957	0.30	0.89	0.7948	0.57	0.43	1.0323	0.0000	1.8271		1.9064	1606	0.23		
257.45	18562	0.30	0.99	0.8383	0.57	0.53	1.1474	0.0000	1.9856		2.0585	1635	0.22		
257.55	20198	0.30	1.09	0.8796	0.57	0.63	1.2519	0.0000	2.1314		2.1994	1665	0.21		
257.65	21863	0.30	1.19	0.9190	0.57	0.73	1.3483	0.0000	2.2673		2.3313	1695	0.20		
257.75	23557	0.30	1.29	0.9569	0.57	0.83	1.4383	0.0000	2.3952		2.4557	1724	0.20		
257.85	25282	0.30	1.39	0.9933	0.57	0.93	1.5230	0.0000	2.5162		2.5739	1754	0.19		
257.95	27036	0.30	1.49	1.0284	0.57	1.03	1.6032	0.0000	2.6316						

Pre-Development Flows				Peak Flows				
	25mm	2yr	5yr	10yr	25yr	50yr	100yr	250yr
Total	**1.74**	**5.89**	**6.29**	**8.48**	**11.37**	**13.75**	**16.19**	**22.85**
				Peak Flows				
Post-Development Flows	25mm	2yr	5yr	10yr	25yr	50yr	100yr	250yr
Total Attenuated Discharge	**1.74**	**5.86**	**6.26**	**8.42**	**11.26**	**13.60**	**16.01**	**22.55**
Check	Not ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok

```
00001> 2     Metric units
00002> *#*****************************************************************************
00003> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
00004> *#  Date        : FEB 2022
00005> *#  Modeller    : [MM]
00006> *#  Company     : STANTEC CONSULTING LTD.
00007> *#  License #   :
00008> *#*****************************************************************************
00009> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[1]
00010> *%                   ["25mm.HYT"] <--storm filename, one per line for NSTORM tim
00011> *%-----------------|-------------------------------------------------------------|
00012> READ STORM          STORM_FILENAME=["STORM.001"]
00013> *%-----------------|-------------------------------------------------------------|
00014> *%
00015> *%==============================================================================
00016> *%CHICAGO STORM PARAMETERS WERE OBTAINED FROM MUNICIPALITY OF THAMES CENTRE'S
00017> *%ENGINEERING DESIGN STANDARDS
00018> *%==============================================================================
00019> *%
00020> *==============================================================================
00021> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
00022> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
00023> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00024> *==============================================================================
00025> CALIB NASHYD        ID=[1], NHYD=["101W"], DT=[1.0]min, AREA=[8.33](ha),
00026>                     DWF=[0.0](cms),  CN/C=[79], IA=[5](mm),
00027>                     N=[3], TP=[0.67]hrs,
00028>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00029> *%-----------------|-------------------------------------------------------------|
00030> *==============================================================================
00031> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
00032> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00033> *==============================================================================
00034> CALIB NASHYD        ID=[2], NHYD=["EXT-1"], DT=[1.0]min, AREA=[19.09](ha),
00035>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00036>                     N=[3], TP=[0.87]hrs,
00037>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00038> *%-----------------|-------------------------------------------------------------|
00039> *==============================================================================
00040> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
00041> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00042> *==============================================================================
00043> CALIB NASHYD        ID=[3], NHYD=["EXT-2"], DT=[1.0]min, AREA=[479.35](ha),
00044>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00045>                     N=[3], TP=[2.18]hrs,
00046>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00047> *%-----------------|-------------------------------------------------------------|
00048> *==============================================================================
00049> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
00050> *==============================================================================
00051> ADD HYD              IDsum=[10], NHYD=["1010"], IDs to add=[1+2+3]
00052> *%-----------------|-------------------------------------------------------------|
00053> *==============================================================================
00054> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
00055> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
00056> *IS ASSUMED
00057> *==============================================================================
00058> CALIB NASHYD        ID=[2], NHYD=["101C"], DT=[1.0]min, AREA=[27.77](ha),
00059>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00060>                     N=[3], TP=[0.75]hrs,
00061>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00062> *%-----------------|-------------------------------------------------------------|
00063> *==============================================================================
00064> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00065> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
```

```
00066> *==============================================================================
00067> CALIB NASHYD        ID=[3], NHYD=["EXT-4"], DT=[1.0]min, AREA=[0.91](ha),
00068>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00069>                     N=[3], TP=[1.04]hrs,
00070>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00071> *%-----------------|-------------------------------------------------------------|
00072> *==============================================================================
00073> *TOTAL RUNOFF FROM 101C AND EXT-4
00074> *==============================================================================
00075> ADD HYD              IDsum=[9], NHYD=["1009"], IDs to add=[2+3]
00076> *%-----------------|-------------------------------------------------------------|
00077> *==============================================================================
00078> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00079> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00080> *==============================================================================
00081> CALIB NASHYD        ID=[3], NHYD=["EXT-3"], DT=[1.0]min, AREA=[186.58](ha),
00082>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00083>                     N=[3], TP=[1.93]hrs,
00084>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00085> *%-----------------|-------------------------------------------------------------|
00086> *==============================================================================
00087> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
00088> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
00089> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00090> *==============================================================================
00091> CALIB NASHYD        ID=[4], NHYD=["101E"], DT=[1.0]min, AREA=[6.19](ha),
00092>                     DWF=[0.0](cms),  CN/C=[79], IA=[5](mm),
00093>                     N=[3], TP=[1.27]hrs,
00094>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00095> *%-----------------|-------------------------------------------------------------|
00096> *==============================================================================
00097> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
00098> *==============================================================================
00099> ADD HYD              IDsum=[8], NHYD=["1008"], IDs to add=[3+4]
00100> *%-----------------|-------------------------------------------------------------|
00101> *==============================================================================
00102> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
00103> *==============================================================================
00104> *%-----------------|-------------------------------------------------------------|
00105> ADD HYD              IDsum=[7], NHYD=["1007"], IDs to add=[1+2+4]
00106> *%-----------------|-------------------------------------------------------------|
00107> *==============================================================================
00108> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
00109> *==============================================================================
00110> *%-----------------|-------------------------------------------------------------|
00111> ADD HYD              IDsum=[1], NHYD=["1001"], IDs to add=[10+9+8]
00112> *%-----------------|-------------------------------------------------------------|
00113> *==============================================================================
00114> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
00115> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
00116> *CONTOURED AGRICULTURAL LAND IS ASSUMED
00117> *==============================================================================
00118> CALIB NASHYD        ID=[2], NHYD=["102"], DT=[1.0]min, AREA=[3.02](ha),
00119>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00120>                     N=[3], TP=[0.35]hrs,
00121>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00122> *%-----------------|-------------------------------------------------------------|
00123> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[2]
00124> *%                   ["2YR.HYT"] <--storm filename, one per line for NSTORM time
00125> *%-----------------|-------------------------------------------------------------|
00126> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[3]
00127> *%                   ["5YR.HYT"] <--storm filename, one per line for NSTORM time
00128> *%-----------------|-------------------------------------------------------------|
00129> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[4]
00130> *%                   ["10YR.HYT"] <--storm filename, one per line for NSTORM tim
```

```
00131> *%-----------------|-------------------------------------------------------------|
00132> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[5]
00133> *%                   ["25YR.HYT"] <--storm filename, one per line for NSTORM tim
00134> *%-----------------|-------------------------------------------------------------|
00135> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[6]
00136> *%                   ["50YR.HYT"] <--storm filename, one per line for NSTORM tim
00137> *%-----------------|-------------------------------------------------------------|
00138> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[7]
00139> *%                   ["100YR.HYT"] <--storm filename, one per line for NSTORM ti
00140> *%-----------------|-------------------------------------------------------------|
00141> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[8]
00142> *%                   ["250YR.HYT"] <--storm filename, one per line for NSTORM ti
00143> *%-----------------|-------------------------------------------------------------|
00144> FINISH
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  SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO       999    999    =========
  S      W W W  MM MM  H   H   Y Y   MM MM  O   O     9   9  9   9
  SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O ##  9   9  9   9   Ver  4.05
      S   W W   M   M  H   H    Y    M   M  O   O      9999   9999   Sept 2011
  SSSSS   W W   M   M  H   H    Y    M   M   OOO          9      9   =========
                                                      9   9  9   9   # 4730904
       StormWater Management HYdrologic Model          999    999    =========

 *****************************************************************************
 **************************** SWMHYMO Ver/4.05 *****************************
 *********  A single event and continuous hydrologic simulation model *********
 *********     based on the principles of HYMO and its successors     *********
 *********                  OTTHYMO-83 and OTTHYMO-89.                *********
 *****************************************************************************
 ********* Distributed by:  J.F. Sabourin and Associates Inc.         *********
 *********                  Ottawa,  Ontario: (613) 836-3884          *********
 *********                  Gatineau, Quebec: (819) 243-6858          *********
 *********                  E-Mail: swmhymo@jfsa.Com                  *********
 *****************************************************************************

 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 +++++++++ Licensed user: Stantec Consulting Ltd. (Kitchener)         +++++++++
 +++++++++                Kitchener           SERIAL#:4730904         +++++++++
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 *****************************************************************************
 *********          ++++++ PROGRAM ARRAY DIMENSIONS ++++++            *********
 *********          Maximum value for ID numbers  :     10            *********
 *********          Max. number of rainfall points: 105408            *********
 *********          Max. number of flow points    : 105408            *********
 *****************************************************************************


 *********************   D E T A I L E D   O U T P U T   *********************
 *****************************************************************************
 *        DATE: 2022-03-09     TIME: 13:40:16     RUN COUNTER: 000415        *
 *****************************************************************************
 * Input   filename: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\PRE.dat       *
 * Output  filename: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\PRE.out       *
 * Summary filename: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\PRE.sum       *
 * User comments:                                                            *
 * 1:________________________________________________________________________*
 * 2:________________________________________________________________________*
 * 3:________________________________________________________________________*
 *****************************************************************************

-------------------------------------------------------------------------------
001:0001-----------------------------------------------------------------------
*#*****************************************************************************
*#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
*#  Date        : FEB 2022
*#  Modeller    : [MM]
*#  Company     : STANTEC CONSULTING LTD.
*#  License #   :
*#*****************************************************************************
--------------------
| START             |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
--------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
    TZERO =   .00 hrs on      0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   1
           #  1=25mm.HYT
-------------------------------------------------------------------------------
001:0002-----------------------------------------------------------------------
--------------------
| READ STORM        |    Filename: 25mm Chicago 4-hr duration
| Ptotal=  25.07 mm|    Comments: 25mm Chicago 4-hr duration
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.02	1.326	1.03	5.280	2.05	4.563	3.07	1.965
.03	1.341	1.05	5.587	2.07	4.460	3.08	1.948
.05	1.357	1.07	5.933	2.08	4.362	3.10	1.931
.07	1.372	1.08	6.326	2.10	4.268	3.12	1.915
.08	1.389	1.10	6.776	2.12	4.179	3.13	1.899
.10	1.405	1.12	7.297	2.13	4.093	3.15	1.883
.12	1.422	1.13	7.905	2.15	4.011	3.17	1.867
.13	1.440	1.15	8.624	2.17	3.932	3.18	1.852
.15	1.458	1.17	9.486	2.18	3.857	3.20	1.837
.17	1.476	1.18	10.537	2.20	3.785	3.22	1.822
.18	1.495	1.20	11.844	2.22	3.715	3.23	1.807
.20	1.515	1.22	13.505	2.23	3.648	3.25	1.793
.22	1.535	1.23	15.680	2.25	3.583	3.27	1.779
.23	1.556	1.25	18.632	2.27	3.521	3.28	1.765
.25	1.577	1.27	22.824	2.28	3.461	3.30	1.752
.27	1.599	1.28	29.158	2.30	3.404	3.32	1.738
.28	1.622	1.30	39.586	2.32	3.348	3.33	1.725
.30	1.645	1.32	59.118	2.33	3.294	3.35	1.712
.32	1.669	1.33	104.502	2.35	3.242	3.37	1.700
.33	1.694	1.35	91.771	2.37	3.192	3.38	1.687
.35	1.720	1.37	69.029	2.38	3.143	3.40	1.675
.37	1.747	1.38	54.503	2.40	3.096	3.42	1.663
.38	1.774	1.40	44.578	2.42	3.051	3.43	1.651
.40	1.803	1.42	37.448	2.43	3.007	3.45	1.639
.42	1.833	1.43	32.122	2.45	2.964	3.47	1.628
.43	1.863	1.45	28.020	2.47	2.922	3.48	1.616
.45	1.895	1.47	24.778	2.48	2.882	3.50	1.605
.47	1.928	1.48	22.163	2.50	2.843	3.52	1.594
.48	1.963	1.50	20.016	2.52	2.805	3.53	1.583
.50	1.998	1.52	18.226	2.53	2.768	3.55	1.572
.52	2.036	1.53	16.714	2.55	2.732	3.57	1.562
.53	2.074	1.55	15.422	2.57	2.697	3.58	1.552
.55	2.115	1.57	14.308	2.58	2.663	3.60	1.541
.57	2.157	1.58	13.338	2.60	2.630	3.62	1.531
.58	2.201	1.60	12.487	2.62	2.598	3.63	1.521
.60	2.247	1.62	11.735	2.63	2.566	3.65	1.512
.62	2.295	1.63	11.066	2.65	2.536	3.67	1.502
.63	2.345	1.65	10.468	2.67	2.506	3.68	1.492
.65	2.398	1.67	9.930	2.68	2.477	3.70	1.483
.67	2.454	1.68	9.444	2.70	2.449	3.72	1.474
.68	2.513	1.70	9.003	2.72	2.421	3.73	1.464
.70	2.574	1.72	8.601	2.73	2.394	3.75	1.456
.72	2.639	1.73	8.233	2.75	2.368	3.77	1.447
.73	2.707	1.75	7.895	2.77	2.342	3.78	1.438
.75	2.780	1.77	7.584	2.78	2.317	3.80	1.429
.77	2.857	1.78	7.297	2.80	2.293	3.82	1.421
.78	2.938	1.80	7.031	2.82	2.269	3.83	1.412
.80	3.025	1.82	6.783	2.83	2.246	3.85	1.404
.82	3.118	1.83	6.553	2.85	2.223	3.87	1.396
.83	3.216	1.85	6.338	2.87	2.200	3.88	1.388
.85	3.322	1.87	6.137	2.88	2.178	3.90	1.380
.87	3.435	1.88	5.949	2.90	2.157	3.92	1.372
.88	3.557	1.90	5.772	2.92	2.136	3.93	1.364
.90	3.688	1.92	5.606	2.93	2.115	3.95	1.356
.92	3.830	1.93	5.449	2.95	2.095	3.97	1.349
.93	3.985	1.95	5.301	2.97	2.076	3.98	1.341
.95	4.153	1.97	5.161	2.98	2.056	4.00	1.334
.97	4.336	1.98	5.029	3.00	2.037	4.02	1.326
.98	4.537	2.00	4.903	3.02	2.019		
1.00	4.760	2.02	4.784	3.03	2.001		
1.02	5.006	2.03	4.671	3.05	1.983		

```
-------------------------------------------------------------------------------
001:0003-----------------------------------------------------------------------
*==============================================================================
*EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
*INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
*POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
| 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .670

    Unit Hyd Qpeak  (cms)=     .475

    PEAK FLOW       (cms)=     .051 (i)
    TIME TO PEAK    (hrs)=    2.367
    RUNOFF VOLUME    (mm)=    4.597
    TOTAL RAINFALL   (mm)=   25.067
    RUNOFF COEFFICIENT   =     .183

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

-------------------------------------------------------------------------------
001:0004-----------------------------------------------------------------------
*==============================================================================
*EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
*ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
| 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .870

    Unit Hyd Qpeak  (cms)=     .838

    PEAK FLOW       (cms)=     .083 (i)
    TIME TO PEAK    (hrs)=    2.650
    RUNOFF VOLUME    (mm)=    3.845
    TOTAL RAINFALL   (mm)=   25.067
    RUNOFF COEFFICIENT   =     .153

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

-------------------------------------------------------------------------------
001:0005-----------------------------------------------------------------------
*==============================================================================
*EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
*IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
| 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   2.180

    Unit Hyd Qpeak  (cms)=    8.399

    PEAK FLOW       (cms)=    1.125 (i)
    TIME TO PEAK    (hrs)=    4.400
    RUNOFF VOLUME    (mm)=    3.845
    TOTAL RAINFALL   (mm)=   25.067
    RUNOFF COEFFICIENT   =     .153

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

-------------------------------------------------------------------------------
001:0006-----------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM EXT-1 AND EXT-2
*==============================================================================
-----------------------
| ADD HYD (1010      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
-----------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                    ID1 01:101W          8.33      .051    2.37   4.60    .000
                   +ID2 02:EXT-1        19.09      .083    2.65   3.84    .000
                   +ID3 03:EXT-2       479.35     1.125    4.40   3.84    .000
                    ===========================================================
                    SUM 10:1010        506.77     1.181    4.28   3.86    .000

  NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0007-----------------------------------------------------------------------
*==============================================================================
*EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
*HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
*IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
| 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .750

    Unit Hyd Qpeak  (cms)=    1.414

    PEAK FLOW       (cms)=     .133 (i)
    TIME TO PEAK    (hrs)=    2.483
    RUNOFF VOLUME    (mm)=    3.845
    TOTAL RAINFALL   (mm)=   25.067
    RUNOFF COEFFICIENT   =     .153

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

-------------------------------------------------------------------------------
001:0008-----------------------------------------------------------------------
*==============================================================================
*EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
*IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
| 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   1.040

    Unit Hyd Qpeak  (cms)=     .033

    PEAK FLOW       (cms)=     .004 (i)
    TIME TO PEAK    (hrs)=    2.900
    RUNOFF VOLUME    (mm)=    3.844
    TOTAL RAINFALL   (mm)=   25.067
    RUNOFF COEFFICIENT   =     .153

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

-------------------------------------------------------------------------------
001:0009-----------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM 101C AND EXT-4
*==============================================================================
-----------------------
| ADD HYD (1009      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
-----------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                    ID1 02:101C         27.77      .133    2.48   3.84    .000
                   +ID2 03:EXT-4          .91      .004    2.90   3.84    .000
                    ===========================================================
                    SUM 09:1009         28.68      .136    2.50   3.84    .000
```

```
00271>
00272>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00273>
00274> ------------------------------------------------------------------------------
00275> 001:0010------------------------------------------------------------------------
00276> *============================================================================
00277> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00278> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00279> *============================================================================
00280> ----------------------
00281> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
00282> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00283> ----------------------   U.H. Tp(hrs)=   1.930
00284>
00285>      Unit Hyd Qpeak  (cms)=    3.692
00286>
00287>      PEAK FLOW       (cms)=     .477 (i)
00288>      TIME TO PEAK    (hrs)=    4.133
00289>      RUNOFF VOLUME    (mm)=    3.845
00290>      TOTAL RAINFALL   (mm)=   25.067
00291>      RUNOFF COEFFICIENT   =     .153
00292>
00293>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00294>
00295> ------------------------------------------------------------------------------
00296> 001:0011------------------------------------------------------------------------
00297> *============================================================================
00298> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
00299> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
00300> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00301> *============================================================================
00302> ----------------------
00303> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
00304> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00305> ----------------------   U.H. Tp(hrs)=   1.270
00306>
00307>      Unit Hyd Qpeak  (cms)=     .186
00308>
00309>      PEAK FLOW       (cms)=     .025 (i)
00310>      TIME TO PEAK    (hrs)=    3.217
00311>      RUNOFF VOLUME    (mm)=    4.597
00312>      TOTAL RAINFALL   (mm)=   25.067
00313>      RUNOFF COEFFICIENT   =     .183
00314>
00315>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00316>
00317> ------------------------------------------------------------------------------
00318> 001:0012------------------------------------------------------------------------
00319> *============================================================================
00320> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
00321> *============================================================================
00322> ------------------------
00323> | ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00324> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00325>                         ID1 03:EXT-3     186.58     .477    4.13   3.84    .000
00326>                        +ID2 04:101E        6.19     .025    3.22   4.60    .000
00327>                         ==================================================
00328>                         SUM 08:1008      192.77     .498    4.10   3.87    .000
00329>
00330>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00331>
00332> ------------------------------------------------------------------------------
00333> 001:0013------------------------------------------------------------------------
00334> *============================================================================
00335> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
00336> *============================================================================
00337> ------------------------
00338> | ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00339> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00340>                         ID1 01:101W        8.33     .051    2.37   4.60    .000
00341>                        +ID2 02:101C       27.77     .133    2.48   3.84    .000
00342>                        +ID3 04:101E        6.19     .025    3.22   4.60    .000
00343>                         ==================================================
00344>                         SUM 07:1007       42.29     .203    2.50   4.10    .000
00345>
00346>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00347>
00348> ------------------------------------------------------------------------------
00349> 001:0014------------------------------------------------------------------------
00350> *============================================================================
00351> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
00352> *============================================================================
00353> ------------------------
00354> | ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00355> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00356>                         ID1 10:1010      506.77    1.181    4.28   3.86    .000
00357>                        +ID2 09:1009       28.68     .136    2.50   3.84    .000
00358>                        +ID3 08:1008      192.77     .498    4.10   3.87    .000
00359>                         ==================================================
00360>                         SUM 01:1001      728.22    1.737    4.15   3.86    .000
00361>
00362>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00363>
00364> ------------------------------------------------------------------------------
00365> 001:0015------------------------------------------------------------------------
00366> *============================================================================
00367> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
00368> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
00369> *CONTOURED AGRICULTURAL LAND IS ASSUMED
00370> *============================================================================
00371> ----------------------
00372> | CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
00373> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00374> ----------------------   U.H. Tp(hrs)=    .350
00375>
00376>      Unit Hyd Qpeak  (cms)=     .330
00377>
00378>      PEAK FLOW       (cms)=     .023 (i)
00379>      TIME TO PEAK    (hrs)=    1.900
00380>      RUNOFF VOLUME    (mm)=    3.845
00381>      TOTAL RAINFALL   (mm)=   25.067
00382>      RUNOFF COEFFICIENT   =     .153
00383>
00384>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00385>
00386> ------------------------------------------------------------------------------
00387> 001:0016------------------------------------------------------------------------
00388>   ** END OF RUN :   1
00389>
00390> ******************************************************************************
00391>
00392>
00393>
00394>
00395>
00396> ----------------------
00397> | START              |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00398> ----------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00399>     TZERO =   .00 hrs on        0
00400>     METOUT=   2 (output = METRIC)
00401>     NRUN  = 002
00402>     NSTORM=   1
00403>            #  1=2YR.HYT
00404> ------------------------------------------------------------------------------
00405> 002:0002------------------------------------------------------------------------
00406> *#****************************************************************************
00407> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
00408> *#  Date        : FEB 2022
00409> *#  Modeller    : [MM]
00410> *#  Company     : STANTEC CONSULTING LTD.
00411> *#  License #   :
00412> *#****************************************************************************
00413> ------------------------------------------------------------------------------
00414> 002:0002------------------------------------------------------------------------
00415> ----------------------
00416> | READ STORM         |    Filename: 2YR Chicago 4-hr duration
00417> | Ptotal=  44.97 mm|    Comments: 2YR Chicago 4-hr duration
00418> ----------------------
00419>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
00420>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
00421>                 .02   1.904 |   1.03   9.238 |   2.05   7.822 |   3.07   2.976
00422>                 .03   1.928 |   1.05   9.851 |   2.07   7.621 |   3.08   2.947
00423>                 .05   1.953 |   1.07  10.546 |   2.08   7.430 |   3.10   2.918
00424>                 .07   1.979 |   1.08  11.339 |   2.10   7.247 |   3.12   2.889
00425>                 .08   2.005 |   1.10  12.253 |   2.12   7.073 |   3.13   2.861
00426>                 .10   2.032 |   1.12  13.315 |   2.13   6.907 |   3.15   2.834
00427>                 .12   2.060 |   1.13  14.561 |   2.15   6.749 |   3.17   2.807
00428>                 .13   2.089 |   1.15  16.040 |   2.17   6.597 |   3.18   2.781
00429>                 .15   2.118 |   1.17  17.820 |   2.18   6.452 |   3.20   2.755
00430>                 .17   2.149 |   1.18  19.996 |   2.20   6.313 |   3.22   2.730
00431>                 .18   2.180 |   1.20  22.703 |   2.22   6.180 |   3.23   2.705
00432>                 .20   2.213 |   1.22  26.144 |   2.23   6.053 |   3.25   2.681
00433>                 .22   2.246 |   1.23  30.633 |   2.25   5.930 |   3.27   2.657
00434>                 .23   2.280 |   1.25  36.678 |   2.27   5.812 |   3.28   2.633
00435>                 .25   2.316 |   1.27  45.148 |   2.28   5.699 |   3.30   2.610
00436>                 .27   2.353 |   1.28  57.645 |   2.30   5.590 |   3.32   2.587
00437>                 .28   2.391 |   1.30  77.410 |   2.32   5.485 |   3.33   2.565
00438>                 .30   2.430 |   1.32 111.909 |   2.33   5.384 |   3.35   2.543
00439>                 .32   2.471 |   1.33 181.956 |   2.35   5.286 |   3.37   2.522
00440>                 .33   2.513 |   1.35 163.519 |   2.37   5.192 |   3.38   2.501
00441>                 .35   2.556 |   1.37 128.303 |   2.38   5.101 |   3.40   2.480
00442>                 .37   2.602 |   1.38 104.034 |   2.40   5.013 |   3.42   2.460
00443>                 .38   2.649 |   1.40  86.527 |   2.42   4.929 |   3.43   2.440
00444>                 .40   2.697 |   1.42  73.438 |   2.43   4.847 |   3.45   2.420
00445>                 .42   2.748 |   1.43  63.365 |   2.45   4.767 |   3.47   2.401
00446>                 .43   2.801 |   1.45  55.426 |   2.47   4.691 |   3.48   2.382
00447>                 .45   2.855 |   1.47  49.042 |   2.48   4.616 |   3.50   2.363
00448>                 .47   2.912 |   1.48  43.822 |   2.50   4.545 |   3.52   2.344
00449>                 .48   2.972 |   1.50  39.491 |   2.52   4.475 |   3.53   2.326
00450>                 .50   3.034 |   1.52  35.850 |   2.53   4.407 |   3.55   2.309
00451>                 .52   3.098 |   1.53  32.757 |   2.55   4.342 |   3.57   2.291
00452>                 .53   3.166 |   1.55  30.102 |   2.57   4.278 |   3.58   2.274
00453>                 .55   3.237 |   1.57  27.804 |   2.58   4.216 |   3.60   2.257
00454>                 .57   3.310 |   1.58  25.799 |   2.60   4.156 |   3.62   2.240
00455>                 .58   3.388 |   1.60  24.037 |   2.62   4.098 |   3.63   2.223
00456>                 .60   3.469 |   1.62  22.479 |   2.63   4.041 |   3.65   2.207
00457>                 .62   3.555 |   1.63  21.092 |   2.65   3.986 |   3.67   2.191
00458>                 .63   3.644 |   1.65  19.853 |   2.67   3.932 |   3.68   2.175
00459>                 .65   3.739 |   1.67  18.739 |   2.68   3.880 |   3.70   2.160
00460>                 .67   3.838 |   1.68  17.733 |   2.70   3.829 |   3.72   2.145
00461>                 .68   3.944 |   1.70  16.821 |   2.72   3.780 |   3.73   2.129
00462>                 .70   4.055 |   1.72  15.992 |   2.73   3.732 |   3.75   2.115
00463>                 .72   4.172 |   1.73  15.234 |   2.75   3.685 |   3.77   2.100
00464>                 .73   4.297 |   1.75  14.540 |   2.77   3.639 |   3.78   2.086
00465>                 .75   4.430 |   1.77  13.903 |   2.78   3.594 |   3.80   2.071
00466>                 .77   4.570 |   1.78  13.315 |   2.80   3.551 |   3.82   2.057
00467>                 .78   4.721 |   1.80  12.771 |   2.82   3.508 |   3.83   2.044
00468>                 .80   4.881 |   1.82  12.268 |   2.83   3.467 |   3.85   2.030
00469>                 .82   5.053 |   1.83  11.800 |   2.85   3.426 |   3.87   2.016
00470>                 .83   5.237 |   1.85  11.365 |   2.87   3.387 |   3.88   2.003
00471>                 .85   5.435 |   1.87  10.959 |   2.88   3.348 |   3.90   1.990
00472>                 .87   5.649 |   1.88  10.579 |   2.90   3.310 |   3.92   1.977
00473>                 .88   5.879 |   1.90  10.224 |   2.92   3.274 |   3.93   1.965
00474>                 .90   6.129 |   1.92   9.890 |   2.93   3.238 |   3.95   1.952
00475>                 .92   6.401 |   1.93   9.577 |   2.95   3.202 |   3.97   1.940
00476>                 .93   6.698 |   1.95   9.281 |   2.97   3.168 |   3.98   1.927
00477>                 .95   7.022 |   1.97   9.003 |   2.98   3.134 |   4.00   1.915
00478>                 .97   7.379 |   1.98   8.740 |   3.00   3.101 |   4.02   1.904
00479>                 .98   7.772 |   2.00   8.492 |   3.02   3.069 |
00480>                1.00   8.208 |   2.02   8.257 |   3.03   3.037 |
00481>                1.02   8.694 |   2.03   8.034 |   3.05   3.007 |
00482>
00483> ------------------------------------------------------------------------------
00484> 002:0003------------------------------------------------------------------------
00485> *============================================================================
00486> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
00487> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
00488> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00489> *============================================================================
00490> ----------------------
00491> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
00492> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00493> ----------------------   U.H. Tp(hrs)=    .670
00494>
00495>      Unit Hyd Qpeak  (cms)=     .475
00496>
00497>      PEAK FLOW       (cms)=     .187 (i)
00498>      TIME TO PEAK    (hrs)=    2.267
00499>      RUNOFF VOLUME    (mm)=   14.865
00500>      TOTAL RAINFALL   (mm)=   44.973
00501>      RUNOFF COEFFICIENT   =     .331
00502>
00503>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00504>
00505> ------------------------------------------------------------------------------
00506> 002:0004------------------------------------------------------------------------
00507> *============================================================================
00508> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
00509> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00510> *============================================================================
00511> ----------------------
00512> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
00513> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00514> ----------------------   U.H. Tp(hrs)=    .870
00515>
00516>      Unit Hyd Qpeak  (cms)=     .838
00517>
00518>      PEAK FLOW       (cms)=     .304 (i)
00519>      TIME TO PEAK    (hrs)=    2.533
00520>      RUNOFF VOLUME    (mm)=   12.820
00521>      TOTAL RAINFALL   (mm)=   44.973
00522>      RUNOFF COEFFICIENT   =     .285
00523>
00524>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00525>
00526> ------------------------------------------------------------------------------
00527> 002:0005------------------------------------------------------------------------
00528> *============================================================================
00529> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
00530> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00531> *============================================================================
00532> ----------------------
00533> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
00534> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00535> ----------------------   U.H. Tp(hrs)=   2.180
00536>
00537>      Unit Hyd Qpeak  (cms)=    8.399
00538>
00539>      PEAK FLOW       (cms)=    3.819 (i)
00540>      TIME TO PEAK    (hrs)=    4.183
```

```
00541>      RUNOFF VOLUME    (mm)=   12.820
00542>      TOTAL RAINFALL   (mm)=   44.973
00543>      RUNOFF COEFFICIENT   =     .285
00544>
00545>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00546>
00547> ---------------------------------------------------------------------------
00548> 002:0006-------------------------------------------------------------------
00549> *===========================================================================
00550> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
00551> *===========================================================================
00552> ------------------------
00553> | ADD HYD (1010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00554> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00555>                        ID1 01:101W         8.33     .187    2.27  14.86    .000
00556>                       +ID2 02:EXT-1       19.09     .304    2.53  12.82    .000
00557>                       +ID3 03:EXT-2      479.35    3.819    4.18  12.82    .000
00558>                        ==========================================================
00559>                        SUM 10:1010        506.77    3.998    4.07  12.85    .000
00560>
00561>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00562>
00563> ---------------------------------------------------------------------------
00564> 002:0007-------------------------------------------------------------------
00565> *===========================================================================
00566> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
00567> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
00568> *IS ASSUMED
00569> *===========================================================================
00570> ----------------------
00571> | CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
00572> | 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00573> ----------------------   U.H. Tp(hrs)=    .750
00574>
00575>      Unit Hyd Qpeak  (cms)=    1.414
00576>
00577>      PEAK FLOW       (cms)=     .492 (i)
00578>      TIME TO PEAK    (hrs)=    2.383
00579>      RUNOFF VOLUME    (mm)=   12.820
00580>      TOTAL RAINFALL   (mm)=   44.973
00581>      RUNOFF COEFFICIENT   =     .285
00582>
00583>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00584>
00585> ---------------------------------------------------------------------------
00586> 002:0008-------------------------------------------------------------------
00587> *===========================================================================
00588> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00589> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00590> *===========================================================================
00591> ----------------------
00592> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
00593> | 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00594> ----------------------   U.H. Tp(hrs)=   1.040
00595>
00596>      Unit Hyd Qpeak  (cms)=     .033
00597>
00598>      PEAK FLOW       (cms)=     .013 (i)
00599>      TIME TO PEAK    (hrs)=    2.750
00600>      RUNOFF VOLUME    (mm)=   12.819
00601>      TOTAL RAINFALL   (mm)=   44.973
00602>      RUNOFF COEFFICIENT   =     .285
00603>
00604>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00605>
00606> ---------------------------------------------------------------------------
00607> 002:0009-------------------------------------------------------------------
00608> *===========================================================================
00609> *TOTAL RUNOFF FROM 101C AND EXT-4
00610> *===========================================================================
00611> ------------------------
00612> | ADD HYD (1009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00613> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00614>                        ID1 02:101C        27.77     .492    2.38  12.82    .000
00615>                       +ID2 03:EXT-4        .91     .013    2.75  12.82    .000
00616>                        ==========================================================
00617>                        SUM 09:1009        28.68     .504    2.38  12.82    .000
00618>
00619>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00620>
00621> ---------------------------------------------------------------------------
00622> 002:0010-------------------------------------------------------------------
00623> *===========================================================================
00624> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00625> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00626> *===========================================================================
00627> ----------------------
00628> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
00629> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00630> ----------------------   U.H. Tp(hrs)=   1.930
00631>
00632>      Unit Hyd Qpeak  (cms)=    3.692
00633>
00634>      PEAK FLOW       (cms)=    1.633 (i)
00635>      TIME TO PEAK    (hrs)=    3.883
00636>      RUNOFF VOLUME    (mm)=   12.820
00637>      TOTAL RAINFALL   (mm)=   44.973
00638>      RUNOFF COEFFICIENT   =     .285
00639>
00640>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00641>
00642> ---------------------------------------------------------------------------
00643> 002:0011-------------------------------------------------------------------
00644> *===========================================================================
00645> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
00646> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
00647> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00648> *===========================================================================
00649> ----------------------
00650> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
00651> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00652> ----------------------   U.H. Tp(hrs)=   1.270
00653>
00654>      Unit Hyd Qpeak  (cms)=     .186
00655>
00656>      PEAK FLOW       (cms)=     .087 (i)
00657>      TIME TO PEAK    (hrs)=    3.033
00658>      RUNOFF VOLUME    (mm)=   14.865
00659>      TOTAL RAINFALL   (mm)=   44.973
00660>      RUNOFF COEFFICIENT   =     .331
00661>
00662>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00663>
00664> ---------------------------------------------------------------------------
00665> 002:0012-------------------------------------------------------------------
00666> *===========================================================================
00667> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
00668> *===========================================================================
00669> ------------------------
00670> | ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00671> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00672>                        ID1 03:EXT-3       186.58    1.633    3.88  12.82    .000
00673>                       +ID2 04:101E         6.19     .087    3.03  14.86    .000
00674>                        ==========================================================
00675>                        SUM 08:1008        192.77    1.705    3.83  12.89    .000
00676>
00677>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00678>
00679> ---------------------------------------------------------------------------
00680> 002:0013-------------------------------------------------------------------
00681> *===========================================================================
00682> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
00683> *===========================================================================
00684> ------------------------
00685> | ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00686> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00687>                        ID1 01:101W         8.33     .187    2.27  14.86    .000
00688>                       +ID2 02:101C        27.77     .492    2.38  12.82    .000
00689>                       +ID3 04:101E         6.19     .087    3.03  14.86    .000
00690>                        ==========================================================
00691>                        SUM 07:1007        42.29     .746    2.40  13.52    .000
00692>
00693>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00694>
00695> ---------------------------------------------------------------------------
00696> 002:0014-------------------------------------------------------------------
00697> *===========================================================================
00698> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
00699> *===========================================================================
00700> ------------------------
00701> | ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00702> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00703>                        ID1 10:1010        506.77    3.998    4.07  12.85    .000
00704>                       +ID2 09:1009         28.68     .504    2.38  12.82    .000
00705>                       +ID3 08:1008        192.77    1.705    3.83  12.89    .000
00706>                        ==========================================================
00707>                        SUM 01:1001        728.22    5.887    3.88  12.86    .000
00708>
00709>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00710>
00711> ---------------------------------------------------------------------------
00712> 002:0015-------------------------------------------------------------------
00713> *===========================================================================
00714> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
00715> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
00716> *CONTOURED AGRICULTURAL LAND IS ASSUMED
00717> *===========================================================================
00718> ----------------------
00719> | CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
00720> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00721> ----------------------   U.H. Tp(hrs)=    .350
00722>
00723>      Unit Hyd Qpeak  (cms)=     .330
00724>
00725>      PEAK FLOW       (cms)=     .090 (i)
00726>      TIME TO PEAK    (hrs)=    1.867
00727>      RUNOFF VOLUME    (mm)=   12.820
00728>      TOTAL RAINFALL   (mm)=   44.973
00729>      RUNOFF COEFFICIENT   =     .285
00730>
00731>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00732>
00733> ---------------------------------------------------------------------------
00734> 002:0016-------------------------------------------------------------------
00735> ---------------------------------------------------------------------------
00736> 002:0002-------------------------------------------------------------------
00737>   ** END OF RUN :   2
00738>
00739> ***************************************************************************
00740>
00741>
00742>
00743>
00744>
00745> --------------------
00746> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00747> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00748>     TZERO =   .00 hrs on        0
00749>     METOUT=   2 (output = METRIC)
00750>     NRUN  = 003
00751>     NSTORM=   1
00752>            #  1=5YR.HYT
00753> ---------------------------------------------------------------------------
00754> 003:0002-------------------------------------------------------------------
00755> *#**************************************************************************
00756> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
00757> *#  Date        : FEB 2022
00758> *#  Modeller    : [MM]
00759> *#  Company     : STANTEC CONSULTING LTD.
00760> *#  License #   :
00761> *#**************************************************************************
00762> ---------------------------------------------------------------------------
00763> 003:0002-------------------------------------------------------------------
00764> --------------------
00765> | READ STORM       |    Filename: 5YR Chicago 4-hr duration
00766> | Ptotal=  46.73 mm|    Comments: 5YR Chicago 4-hr duration
00767> --------------------
00768>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
00769>                hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
00770>                 .02   2.193 |  1.03   9.731 |  2.05   8.314 |  3.07   3.345
00771>                 .03   2.220 |  1.05  10.342 |  2.07   8.112 |  3.08   3.314
00772>                 .05   2.247 |  1.07  11.032 |  2.08   7.920 |  3.10   3.283
00773>                 .07   2.275 |  1.08  11.819 |  2.10   7.736 |  3.12   3.253
00774>                 .08   2.303 |  1.10  12.724 |  2.12   7.561 |  3.13   3.223
00775>                 .10   2.333 |  1.12  13.772 |  2.13   7.393 |  3.15   3.194
00776>                 .12   2.363 |  1.13  15.000 |  2.15   7.233 |  3.17   3.166
00777>                 .13   2.395 |  1.15  16.455 |  2.17   7.080 |  3.18   3.138
00778>                 .15   2.427 |  1.17  18.204 |  2.18   6.933 |  3.20   3.110
00779>                 .17   2.460 |  1.18  20.339 |  2.20   6.793 |  3.22   3.083
00780>                 .18   2.494 |  1.20  22.994 |  2.22   6.657 |  3.23   3.057
00781>                 .20   2.529 |  1.22  26.369 |  2.23   6.528 |  3.25   3.031
00782>                 .22   2.565 |  1.23  30.778 |  2.25   6.403 |  3.27   3.005
00783>                 .23   2.602 |  1.25  36.730 |  2.27   6.283 |  3.28   2.980
00784>                 .25   2.640 |  1.27  45.112 |  2.28   6.167 |  3.30   2.956
00785>                 .27   2.680 |  1.28  57.587 |  2.30   6.056 |  3.32   2.931
00786>                 .28   2.721 |  1.30  77.604 |  2.32   5.949 |  3.33   2.908
00787>                 .30   2.763 |  1.32 113.424 |  2.33   5.846 |  3.35   2.884
00788>                 .32   2.806 |  1.33 189.580 |  2.35   5.746 |  3.37   2.861
00789>                 .33   2.852 |  1.35 169.096 |  2.37   5.649 |  3.38   2.839
00790>                 .35   2.898 |  1.37 130.839 |  2.38   5.556 |  3.40   2.816
00791>                 .37   2.947 |  1.38 105.147 |  2.40   5.466 |  3.42   2.795
00792>                 .38   2.997 |  1.40  86.961 |  2.42   5.379 |  3.43   2.773
00793>                 .40   3.049 |  1.42  73.552 |  2.43   5.295 |  3.45   2.752
00794>                 .42   3.103 |  1.43  63.343 |  2.45   5.214 |  3.47   2.731
00795>                 .43   3.159 |  1.45  55.362 |  2.47   5.135 |  3.48   2.711
00796>                 .45   3.217 |  1.47  48.986 |  2.48   5.058 |  3.50   2.691
00797>                 .47   3.278 |  1.48  43.797 |  2.50   4.984 |  3.52   2.671
00798>                 .48   3.341 |  1.50  39.508 |  2.52   4.912 |  3.53   2.651
00799>                 .50   3.406 |  1.52  35.914 |  2.53   4.842 |  3.55   2.632
00800>                 .52   3.474 |  1.53  32.867 |  2.55   4.774 |  3.57   2.613
00801>                 .53   3.546 |  1.55  30.256 |  2.57   4.708 |  3.58   2.595
00802>                 .55   3.620 |  1.57  27.998 |  2.58   4.644 |  3.60   2.576
00803>                 .57   3.698 |  1.58  26.031 |  2.60   4.582 |  3.62   2.558
00804>                 .58   3.780 |  1.60  24.302 |  2.62   4.521 |  3.63   2.540
00805>                 .60   3.865 |  1.62  22.774 |  2.63   4.462 |  3.65   2.523
00806>                 .62   3.955 |  1.63  21.414 |  2.65   4.405 |  3.67   2.506
00807>                 .63   4.049 |  1.65  20.199 |  2.67   4.349 |  3.68   2.488
00808>                 .65   4.147 |  1.67  19.106 |  2.68   4.295 |  3.70   2.472
00809>                 .67   4.251 |  1.68  18.118 |  2.70   4.242 |  3.72   2.455
00810>                 .68   4.361 |  1.70  17.223 |  2.72   4.190 |  3.73   2.439
```

```
00811>                .70   4.476 |   1.72  16.408 |   2.73   4.140 |   3.75   2.423
00812>                .72   4.599 |   1.73  15.663 |   2.75   4.091 |   3.77   2.407
00813>                .73   4.728 |   1.75  14.980 |   2.77   4.043 |   3.78   2.391
00814>                .75   4.865 |   1.77  14.352 |   2.78   3.996 |   3.80   2.376
00815>                .77   5.011 |   1.78  13.772 |   2.80   3.951 |   3.82   2.361
00816>                .78   5.166 |   1.80  13.236 |   2.82   3.906 |   3.83   2.346
00817>                .80   5.331 |   1.82  12.738 |   2.83   3.862 |   3.85   2.331
00818>                .82   5.507 |   1.83  12.276 |   2.85   3.820 |   3.87   2.316
00819>                .83   5.696 |   1.85  11.845 |   2.87   3.778 |   3.88   2.302
00820>                .85   5.898 |   1.87  11.442 |   2.88   3.738 |   3.90   2.288
00821>                .87   6.116 |   1.88  11.066 |   2.90   3.698 |   3.92   2.273
00822>                .88   6.351 |   1.90  10.712 |   2.92   3.659 |   3.93   2.260
00823>                .90   6.606 |   1.92  10.381 |   2.93   3.621 |   3.95   2.246
00824>                .92   6.881 |   1.93  10.068 |   2.95   3.584 |   3.97   2.233
00825>                .93   7.181 |   1.95   9.774 |   2.97   3.548 |   3.98   2.219
00826>                .95   7.509 |   1.97   9.497 |   2.98   3.513 |   4.00   2.206
00827>                .97   7.869 |   1.98   9.234 |   3.00   3.478 |   4.02   2.193
00828>                .98   8.264 |   2.00   8.986 |   3.02   3.444 |
00829>               1.00   8.702 |   2.02   8.750 |   3.03   3.410 |
00830>               1.02   9.188 |   2.03   8.527 |   3.05   3.378 |
00831>
00832> ------------------------------------------------------------------------------
00833> 003:0003-----------------------------------------------------------------------
00834> *============================================================================
00835> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
00836> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
00837> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00838> *============================================================================
00839> ----------------------
00840> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
00841> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00842> ----------------------   U.H. Tp(hrs)=    .670
00843>
00844>      Unit Hyd Qpeak  (cms)=     .475
00845>
00846>      PEAK FLOW       (cms)=     .196 (i)
00847>      TIME TO PEAK    (hrs)=    2.283
00848>      RUNOFF VOLUME    (mm)=   15.940
00849>      TOTAL RAINFALL   (mm)=   46.730
00850>      RUNOFF COEFFICIENT   =     .341
00851>
00852>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00853>
00854> ------------------------------------------------------------------------------
00855> 003:0004-----------------------------------------------------------------------
00856> *============================================================================
00857> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
00858> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00859> *============================================================================
00860> ----------------------
00861> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
00862> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00863> ----------------------   U.H. Tp(hrs)=    .870
00864>
00865>      Unit Hyd Qpeak  (cms)=     .838
00866>
00867>      PEAK FLOW       (cms)=     .320 (i)
00868>      TIME TO PEAK    (hrs)=    2.550
00869>      RUNOFF VOLUME    (mm)=   13.777
00870>      TOTAL RAINFALL   (mm)=   46.730
00871>      RUNOFF COEFFICIENT   =     .295
00872>
00873>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00874>
00875> ------------------------------------------------------------------------------
00876> 003:0005-----------------------------------------------------------------------
00877> *============================================================================
00878> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
00879> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00880> *============================================================================
00881> ----------------------
00882> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
00883> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00884> ----------------------   U.H. Tp(hrs)=   2.180
00885>
00886>      Unit Hyd Qpeak  (cms)=    8.399
00887>
00888>      PEAK FLOW       (cms)=    4.081 (i)
00889>      TIME TO PEAK    (hrs)=    4.217
00890>      RUNOFF VOLUME    (mm)=   13.777
00891>      TOTAL RAINFALL   (mm)=   46.730
00892>      RUNOFF COEFFICIENT   =     .295
00893>
00894>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00895>
00896> ------------------------------------------------------------------------------
00897> 003:0006-----------------------------------------------------------------------
00898> *============================================================================
00899> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
00900> *============================================================================
00901> ------------------------
00902> | ADD HYD (1010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00903> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00904>                         ID1 01:101W        8.33     .196    2.28  15.94    .000
00905>                        +ID2 02:EXT-1      19.09     .320    2.55  13.78    .000
00906>                        +ID3 03:EXT-2     479.35    4.081    4.22  13.78    .000
00907>                         ==============================================================
00908>                         SUM 10:1010       506.77    4.274    4.10  13.81    .000
00909>
00910>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00911>
00912> ------------------------------------------------------------------------------
00913> 003:0007-----------------------------------------------------------------------
00914> *============================================================================
00915> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
00916> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
00917> *IS ASSUMED
00918> *============================================================================
00919> ----------------------
00920> | CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
00921> | 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00922> ----------------------   U.H. Tp(hrs)=    .750
00923>
00924>      Unit Hyd Qpeak  (cms)=    1.414
00925>
00926>      PEAK FLOW       (cms)=     .518 (i)
00927>      TIME TO PEAK    (hrs)=    2.383
00928>      RUNOFF VOLUME    (mm)=   13.777
00929>      TOTAL RAINFALL   (mm)=   46.730
00930>      RUNOFF COEFFICIENT   =     .295
00931>
00932>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00933>
00934> ------------------------------------------------------------------------------
00935> 003:0008-----------------------------------------------------------------------
00936> *============================================================================
00937> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00938> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00939> *============================================================================
00940> ----------------------
00941> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
00942> | 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00943> ----------------------   U.H. Tp(hrs)=   1.040
00944>
00945>      Unit Hyd Qpeak  (cms)=     .033
00946>
00947>      PEAK FLOW       (cms)=     .013 (i)
00948>      TIME TO PEAK    (hrs)=    2.767
00949>      RUNOFF VOLUME    (mm)=   13.776
00950>      TOTAL RAINFALL   (mm)=   46.730
00951>      RUNOFF COEFFICIENT   =     .295
00952>
00953>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00954>
00955> ------------------------------------------------------------------------------
00956> 003:0009-----------------------------------------------------------------------
00957> *============================================================================
00958> *TOTAL RUNOFF FROM 101C AND EXT-4
00959> *============================================================================
00960> ------------------------
00961> | ADD HYD (1009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00962> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00963>                         ID1 02:101C       27.77     .518    2.38  13.78    .000
00964>                        +ID2 03:EXT-4        .91     .013    2.77  13.78    .000
00965>                         ==============================================================
00966>                         SUM 09:1009       28.68     .530    2.40  13.78    .000
00967>
00968>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00969>
00970> ------------------------------------------------------------------------------
00971> 003:0010-----------------------------------------------------------------------
00972> *============================================================================
00973> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
00974> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
00975> *============================================================================
00976> ----------------------
00977> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
00978> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00979> ----------------------   U.H. Tp(hrs)=   1.930
00980>
00981>      Unit Hyd Qpeak  (cms)=    3.692
00982>
00983>      PEAK FLOW       (cms)=    1.741 (i)
00984>      TIME TO PEAK    (hrs)=    3.917
00985>      RUNOFF VOLUME    (mm)=   13.777
00986>      TOTAL RAINFALL   (mm)=   46.730
00987>      RUNOFF COEFFICIENT   =     .295
00988>
00989>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00990>
00991> ------------------------------------------------------------------------------
00992> 003:0011-----------------------------------------------------------------------
00993> *============================================================================
00994> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
00995> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
00996> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
00997> *============================================================================
00998> ----------------------
00999> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
01000> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01001> ----------------------   U.H. Tp(hrs)=   1.270
01002>
01003>      Unit Hyd Qpeak  (cms)=     .186
01004>
01005>      PEAK FLOW       (cms)=     .092 (i)
01006>      TIME TO PEAK    (hrs)=    3.050
01007>      RUNOFF VOLUME    (mm)=   15.940
01008>      TOTAL RAINFALL   (mm)=   46.730
01009>      RUNOFF COEFFICIENT   =     .341
01010>
01011>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01012>
01013> ------------------------------------------------------------------------------
01014> 003:0012-----------------------------------------------------------------------
01015> *============================================================================
01016> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
01017> *============================================================================
01018> ------------------------
01019> | ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01020> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01021>                         ID1 03:EXT-3     186.58    1.741    3.92  13.78    .000
01022>                        +ID2 04:101E        6.19     .092    3.05  15.94    .000
01023>                         ==============================================================
01024>                         SUM 08:1008      192.77    1.818    3.87  13.85    .000
01025>
01026>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01027>
01028> ------------------------------------------------------------------------------
01029> 003:0013-----------------------------------------------------------------------
01030> *============================================================================
01031> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
01032> *============================================================================
01033> ------------------------
01034> | ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01035> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01036>                         ID1 01:101W        8.33     .196    2.28  15.94    .000
01037>                        +ID2 02:101C       27.77     .518    2.38  13.78    .000
01038>                        +ID3 04:101E        6.19     .092    3.05  15.94    .000
01039>                         ==============================================================
01040>                         SUM 07:1007       42.29     .785    2.40  14.52    .000
01041>
01042>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01043>
01044> ------------------------------------------------------------------------------
01045> 003:0014-----------------------------------------------------------------------
01046> *============================================================================
01047> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
01048> *============================================================================
01049> ------------------------
01050> | ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01051> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01052>                         ID1 10:1010      506.77    4.274    4.10  13.81    .000
01053>                        +ID2 09:1009       28.68     .530    2.40  13.78    .000
01054>                        +ID3 08:1008      192.77    1.818    3.87  13.85    .000
01055>                         ==============================================================
01056>                         SUM 01:1001      728.22    6.289    3.93  13.82    .000
01057>
01058>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01059>
01060> ------------------------------------------------------------------------------
01061> 003:0015-----------------------------------------------------------------------
01062> *============================================================================
01063> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
01064> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
01065> *CONTOURED AGRICULTURAL LAND IS ASSUMED
01066> *============================================================================
01067> ----------------------
01068> | CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
01069> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01070> ----------------------   U.H. Tp(hrs)=    .350
01071>
01072>      Unit Hyd Qpeak  (cms)=     .330
01073>
01074>      PEAK FLOW       (cms)=     .094 (i)
01075>      TIME TO PEAK    (hrs)=    1.850
01076>      RUNOFF VOLUME    (mm)=   13.777
01077>      TOTAL RAINFALL   (mm)=   46.730
01078>      RUNOFF COEFFICIENT   =     .295
01079>
01080>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
01081>
01082> ----------------------------------------------------------------------------
01083> 003:0016-------------------------------------------------------------------
01084> ----------------------------------------------------------------------------
01085> 003:0002-------------------------------------------------------------------
01086> ----------------------------------------------------------------------------
01087> 003:0002-------------------------------------------------------------------
01088>   ** END OF RUN :   3
01089>
01090> ****************************************************************************
01091>
01092>
01093>
01094>
01095>
01096> --------------------
01097> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
01098> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
01099>     TZERO =   .00 hrs on        0
01100>     METOUT=   2 (output = METRIC)
01101>     NRUN  = 004
01102>     NSTORM=   1
01103>               #  1=10YR.HYT
01104> ----------------------------------------------------------------------------
01105> 004:0002-------------------------------------------------------------------
01106> *#**************************************************************************
01107> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
01108> *#  Date        : FEB 2022
01109> *#  Modeller    : [MM]
01110> *#  Company     : STANTEC CONSULTING LTD.
01111> *#  License #   :
01112> *#**************************************************************************
01113> ----------------------------------------------------------------------------
01114> 004:0002-------------------------------------------------------------------
01115> --------------------
01116> | READ STORM       |    Filename: 10YR Chicago 4-hr duration
01117> | Ptotal=  54.79 mm|    Comments: 10YR Chicago 4-hr duration
01118> --------------------
01119>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
01120>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
01121>                 .02   2.343 |   1.03  11.463 |   2.05   9.703 |   3.07   3.674
01122>                 .03   2.373 |   1.05  12.225 |   2.07   9.452 |   3.08   3.637
01123>                 .05   2.404 |   1.07  13.087 |   2.08   9.214 |   3.10   3.601
01124>                 .07   2.436 |   1.08  14.072 |   2.10   8.987 |   3.12   3.565
01125>                 .08   2.468 |   1.10  15.206 |   2.12   8.771 |   3.13   3.531
01126>                 .10   2.502 |   1.12  16.521 |   2.13   8.565 |   3.15   3.497
01127>                 .12   2.537 |   1.13  18.063 |   2.15   8.367 |   3.17   3.463
01128>                 .13   2.572 |   1.15  19.892 |   2.17   8.179 |   3.18   3.431
01129>                 .15   2.609 |   1.17  22.088 |   2.18   7.998 |   3.20   3.399
01130>                 .17   2.647 |   1.18  24.768 |   2.20   7.825 |   3.22   3.367
01131>                 .18   2.686 |   1.20  28.094 |   2.22   7.660 |   3.23   3.336
01132>                 .20   2.726 |   1.22  32.309 |   2.23   7.501 |   3.25   3.306
01133>                 .22   2.767 |   1.23  37.786 |   2.25   7.348 |   3.27   3.277
01134>                 .23   2.810 |   1.25  45.125 |   2.27   7.201 |   3.28   3.247
01135>                 .25   2.854 |   1.27  55.341 |   2.28   7.060 |   3.30   3.219
01136>                 .27   2.900 |   1.28  70.282 |   2.30   6.924 |   3.32   3.191
01137>                 .28   2.947 |   1.30  93.617 |   2.32   6.794 |   3.33   3.163
01138>                 .30   2.996 |   1.32 133.590 |   2.33   6.668 |   3.35   3.136
01139>                 .32   3.046 |   1.33 212.318 |   2.35   6.547 |   3.37   3.109
01140>                 .33   3.098 |   1.35 191.878 |   2.37   6.429 |   3.38   3.083
01141>                 .35   3.152 |   1.37 152.288 |   2.38   6.316 |   3.40   3.058
01142>                 .37   3.209 |   1.38 124.543 |   2.40   6.207 |   3.42   3.032
01143>                 .38   3.267 |   1.40 104.269 |   2.42   6.102 |   3.43   3.007
01144>                 .40   3.327 |   1.42  88.954 |   2.43   6.000 |   3.45   2.983
01145>                 .42   3.390 |   1.43  77.070 |   2.45   5.901 |   3.47   2.959
01146>                 .43   3.455 |   1.45  67.639 |   2.47   5.806 |   3.48   2.935
01147>                 .45   3.523 |   1.47  60.014 |   2.48   5.713 |   3.50   2.912
01148>                 .47   3.594 |   1.48  53.747 |   2.50   5.624 |   3.52   2.889
01149>                 .48   3.668 |   1.50  48.526 |   2.52   5.537 |   3.53   2.867
01150>                 .50   3.745 |   1.52  44.123 |   2.53   5.453 |   3.55   2.845
01151>                 .52   3.825 |   1.53  40.370 |   2.55   5.371 |   3.57   2.823
01152>                 .53   3.909 |   1.55  37.140 |   2.57   5.292 |   3.58   2.802
01153>                 .55   3.997 |   1.57  34.337 |   2.58   5.215 |   3.60   2.780
01154>                 .57   4.089 |   1.58  31.887 |   2.60   5.140 |   3.62   2.760
01155>                 .58   4.185 |   1.60  29.730 |   2.62   5.068 |   3.63   2.739
01156>                 .60   4.286 |   1.62  27.819 |   2.63   4.997 |   3.65   2.719
01157>                 .62   4.392 |   1.63  26.116 |   2.65   4.929 |   3.67   2.699
01158>                 .63   4.504 |   1.65  24.592 |   2.67   4.862 |   3.68   2.680
01159>                 .65   4.621 |   1.67  23.220 |   2.68   4.797 |   3.70   2.661
01160>                 .67   4.745 |   1.68  21.981 |   2.70   4.734 |   3.72   2.642
01161>                 .68   4.876 |   1.70  20.856 |   2.72   4.672 |   3.73   2.623
01162>                 .70   5.014 |   1.72  19.832 |   2.73   4.612 |   3.75   2.605
01163>                 .72   5.161 |   1.73  18.896 |   2.75   4.554 |   3.77   2.586
01164>                 .73   5.316 |   1.75  18.038 |   2.77   4.497 |   3.78   2.569
01165>                 .75   5.481 |   1.77  17.249 |   2.78   4.442 |   3.80   2.551
01166>                 .77   5.656 |   1.78  16.521 |   2.80   4.387 |   3.82   2.533
01167>                 .78   5.843 |   1.80  15.848 |   2.82   4.335 |   3.83   2.516
01168>                 .80   6.043 |   1.82  15.224 |   2.83   4.283 |   3.85   2.500
01169>                 .82   6.256 |   1.83  14.644 |   2.85   4.233 |   3.87   2.483
01170>                 .83   6.486 |   1.85  14.104 |   2.87   4.184 |   3.88   2.467
01171>                 .85   6.732 |   1.87  13.600 |   2.88   4.136 |   3.90   2.450
01172>                 .87   6.998 |   1.88  13.129 |   2.90   4.089 |   3.92   2.434
01173>                 .88   7.285 |   1.90  12.687 |   2.92   4.043 |   3.93   2.419
01174>                 .90   7.596 |   1.92  12.273 |   2.93   3.998 |   3.95   2.403
01175>                 .92   7.935 |   1.93  11.884 |   2.95   3.954 |   3.97   2.388
01176>                 .93   8.304 |   1.95  11.517 |   2.97   3.912 |   3.98   2.373
01177>                 .95   8.707 |   1.97  11.171 |   2.98   3.870 |   4.00   2.358
01178>                 .97   9.151 |   1.98  10.844 |   3.00   3.829 |   4.02   2.343
01179>                 .98   9.641 |   2.00  10.536 |   3.02   3.789 |
01180>                1.00  10.183 |   2.02  10.243 |   3.03   3.750 |
01181>                1.02  10.787 |   2.03   9.966 |   3.05   3.711 |
01182>
01183> ----------------------------------------------------------------------------
01184> 004:0003-------------------------------------------------------------------
01185> *========================================================================
01186> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
01187> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
01188> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
01189> *========================================================================
01190> ----------------------
01191> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
01192> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01193> ----------------------   U.H. Tp(hrs)=    .670
01194>
01195>      Unit Hyd Qpeak  (cms)=     .475
01196>
01197>      PEAK FLOW       (cms)=     .268 (i)
01198>      TIME TO PEAK    (hrs)=    2.267
01199>      RUNOFF VOLUME    (mm)=   21.132
01200>      TOTAL RAINFALL   (mm)=   54.789
01201>      RUNOFF COEFFICIENT   =     .386
01202>
01203>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01204>
01205> ----------------------------------------------------------------------------
01206> 004:0004-------------------------------------------------------------------
01207> *========================================================================
01208> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
01209> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01210> *========================================================================
01211> ----------------------
01212> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
01213> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01214> ----------------------   U.H. Tp(hrs)=    .870
01215>
01216>      Unit Hyd Qpeak  (cms)=     .838
01217>
01218>      PEAK FLOW       (cms)=     .440 (i)
01219>      TIME TO PEAK    (hrs)=    2.533
01220>      RUNOFF VOLUME    (mm)=   18.437
01221>      TOTAL RAINFALL   (mm)=   54.789
01222>      RUNOFF COEFFICIENT   =     .337
01223>
01224>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01225>
01226> ----------------------------------------------------------------------------
01227> 004:0005-------------------------------------------------------------------
01228> *========================================================================
01229> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
01230> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01231> *========================================================================
01232> ----------------------
01233> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
01234> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01235> ----------------------   U.H. Tp(hrs)=   2.180
01236>
01237>      Unit Hyd Qpeak  (cms)=    8.399
01238>
01239>      PEAK FLOW       (cms)=    5.502 (i)
01240>      TIME TO PEAK    (hrs)=    4.150
01241>      RUNOFF VOLUME    (mm)=   18.437
01242>      TOTAL RAINFALL   (mm)=   54.789
01243>      RUNOFF COEFFICIENT   =     .337
01244>
01245>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01246>
01247> ----------------------------------------------------------------------------
01248> 004:0006-------------------------------------------------------------------
01249> *========================================================================
01250> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
01251> *========================================================================
01252> -------------------------
01253> | ADD HYD (1010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01254> -------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01255>                         ID1 01:101W          8.33     .268    2.27  21.13    .000
01256>                        +ID2 02:EXT-1        19.09     .440    2.53  18.44    .000
01257>                        +ID3 03:EXT-2       479.35    5.502    4.15  18.44    .000
01258>                         ==========================================================
01259>                         SUM 10:1010         506.77    5.758    4.03  18.48    .000
01260>
01261>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01262>
01263> ----------------------------------------------------------------------------
01264> 004:0007-------------------------------------------------------------------
01265> *========================================================================
01266> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
01267> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
01268> *IS ASSUMED
01269> *========================================================================
01270> ----------------------
01271> | CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
01272> | 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01273> ----------------------   U.H. Tp(hrs)=    .750
01274>
01275>      Unit Hyd Qpeak  (cms)=    1.414
01276>
01277>      PEAK FLOW       (cms)=     .714 (i)
01278>      TIME TO PEAK    (hrs)=    2.367
01279>      RUNOFF VOLUME    (mm)=   18.437
01280>      TOTAL RAINFALL   (mm)=   54.789
01281>      RUNOFF COEFFICIENT   =     .337
01282>
01283>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01284>
01285> ----------------------------------------------------------------------------
01286> 004:0008-------------------------------------------------------------------
01287> *========================================================================
01288> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
01289> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01290> *========================================================================
01291> ----------------------
01292> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
01293> | 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01294> ----------------------   U.H. Tp(hrs)=   1.040
01295>
01296>      Unit Hyd Qpeak  (cms)=     .033
01297>
01298>      PEAK FLOW       (cms)=     .018 (i)
01299>      TIME TO PEAK    (hrs)=    2.750
01300>      RUNOFF VOLUME    (mm)=   18.437
01301>      TOTAL RAINFALL   (mm)=   54.789
01302>      RUNOFF COEFFICIENT   =     .336
01303>
01304>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01305>
01306> ----------------------------------------------------------------------------
01307> 004:0009-------------------------------------------------------------------
01308> *========================================================================
01309> *TOTAL RUNOFF FROM 101C AND EXT-4
01310> *========================================================================
01311> -------------------------
01312> | ADD HYD (1009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01313> -------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01314>                         ID1 02:101C         27.77     .714    2.37  18.44    .000
01315>                        +ID2 03:EXT-4          .91     .018    2.75  18.44    .000
01316>                         ==========================================================
01317>                         SUM 09:1009         28.68     .730    2.38  18.44    .000
01318>
01319>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01320>
01321> ----------------------------------------------------------------------------
01322> 004:0010-------------------------------------------------------------------
01323> *========================================================================
01324> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
01325> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01326> *========================================================================
01327> ----------------------
01328> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
01329> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01330> ----------------------   U.H. Tp(hrs)=   1.930
01331>
01332>      Unit Hyd Qpeak  (cms)=    3.692
01333>
01334>      PEAK FLOW       (cms)=    2.354 (i)
01335>      TIME TO PEAK    (hrs)=    3.850
01336>      RUNOFF VOLUME    (mm)=   18.437
01337>      TOTAL RAINFALL   (mm)=   54.789
01338>      RUNOFF COEFFICIENT   =     .337
01339>
01340>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01341>
01342> ----------------------------------------------------------------------------
01343> 004:0011-------------------------------------------------------------------
01344> *========================================================================
01345> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
01346> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
01347> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
01348> *========================================================================
01349> ----------------------
01350> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
```

```
01351> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01352> ----------------------   U.H. Tp(hrs)=   1.270
01353>
01354>      Unit Hyd Qpeak  (cms)=     .186
01355>
01356>      PEAK FLOW       (cms)=     .124 (i)
01357>      TIME TO PEAK    (hrs)=    3.017
01358>      RUNOFF VOLUME    (mm)=   21.132
01359>      TOTAL RAINFALL   (mm)=   54.789
01360>      RUNOFF COEFFICIENT   =     .386
01361>
01362>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01363>
01364> ---------------------------------------------------------------------------
01365> 004:0012-------------------------------------------------------------------
01366> *==========================================================================
01367> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
01368> *==========================================================================
01369> ------------------------
01370> | ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01371> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01372>                         ID1 03:EXT-3     186.58    2.354    3.85  18.44    .000
01373>                        +ID2 04:101E        6.19     .124    3.02  21.13    .000
01374>                         ==============================================================
01375>                         SUM 08:1008      192.77    2.458    3.80  18.52    .000
01376>
01377>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01378>
01379> ---------------------------------------------------------------------------
01380> 004:0013-------------------------------------------------------------------
01381> *==========================================================================
01382> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
01383> *==========================================================================
01384> ------------------------
01385> | ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01386> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01387>                         ID1 01:101W        8.33     .268    2.27  21.13    .000
01388>                        +ID2 02:101C      27.77     .714    2.37  18.44    .000
01389>                        +ID3 04:101E       6.19     .124    3.02  21.13    .000
01390>                         ==============================================================
01391>                         SUM 07:1007       42.29    1.078    2.38  19.36    .000
01392>
01393>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01394>
01395> ---------------------------------------------------------------------------
01396> 004:0014-------------------------------------------------------------------
01397> *==========================================================================
01398> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
01399> *==========================================================================
01400> ------------------------
01401> | ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01402> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01403>                         ID1 10:1010      506.77    5.758    4.03  18.48    .000
01404>                        +ID2 09:1009       28.68     .730    2.38  18.44    .000
01405>                        +ID3 08:1008      192.77    2.458    3.80  18.52    .000
01406>                         ==============================================================
01407>                         SUM 01:1001      728.22    8.480    3.87  18.49    .000
01408>
01409>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01410>
01411> ---------------------------------------------------------------------------
01412> 004:0015-------------------------------------------------------------------
01413> *==========================================================================
01414> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
01415> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
01416> *CONTOURED AGRICULTURAL LAND IS ASSUMED
01417> *==========================================================================
01418> ----------------------
01419> | CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
01420> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01421> ----------------------   U.H. Tp(hrs)=    .350
01422>
01423>      Unit Hyd Qpeak  (cms)=     .330
01424>
01425>      PEAK FLOW       (cms)=     .131 (i)
01426>      TIME TO PEAK    (hrs)=    1.850
01427>      RUNOFF VOLUME    (mm)=   18.437
01428>      TOTAL RAINFALL   (mm)=   54.789
01429>      RUNOFF COEFFICIENT   =     .337
01430>
01431>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01432>
01433> ---------------------------------------------------------------------------
01434> 004:0016-------------------------------------------------------------------
01435> ---------------------------------------------------------------------------
01436> 004:0002-------------------------------------------------------------------
01437> ---------------------------------------------------------------------------
01438> 004:0002-------------------------------------------------------------------
01439> ---------------------------------------------------------------------------
01440> 004:0002-------------------------------------------------------------------
01441>   ** END OF RUN :   4
01442>
01443> ***************************************************************************
01444>
01445>
01446>
01447>
01448>
01449> --------------------
01450> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
01451> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
01452>     TZERO =   .00 hrs on        0
01453>     METOUT=   2 (output = METRIC)
01454>     NRUN  = 005
01455>     NSTORM=   1
01456>              #  1=25YR.HYT
01457> ---------------------------------------------------------------------------
01458> 005:0002-------------------------------------------------------------------
01459> *#*************************************************************************
01460> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
01461> *#  Date        : FEB 2022
01462> *#  Modeller    : [MM]
01463> *#  Company     : STANTEC CONSULTING LTD.
01464> *#  License #   :
01465> *#*************************************************************************
01466> ---------------------------------------------------------------------------
01467> 005:0002-------------------------------------------------------------------
01468> --------------------
01469> | READ STORM       |    Filename: 25YR Chicago 4-hr duration
01470> | Ptotal=  64.51 mm|    Comments: 25YR Chicago 4-hr duration
01471> --------------------
01472>              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
01473>               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
01474>               .02   2.569 |   1.03  13.474 |   2.05  11.332 |   3.07   4.111
01475>               .03   2.604 |   1.05  14.402 |   2.07  11.028 |   3.08   4.068
01476>               .05   2.639 |   1.07  15.456 |   2.08  10.739 |   3.10   4.025
01477>               .07   2.675 |   1.08  16.659 |   2.10  10.465 |   3.12   3.984
01478>               .08   2.713 |   1.10  18.045 |   2.12  10.203 |   3.13   3.944
01479>               .10   2.752 |   1.12  19.656 |   2.13   9.953 |   3.15   3.904
01480>               .12   2.791 |   1.13  21.545 |   2.15   9.714 |   3.17   3.865
01481>               .13   2.832 |   1.15  23.786 |   2.17   9.486 |   3.18   3.827
01482>               .15   2.874 |   1.17  26.479 |   2.18   9.268 |   3.20   3.789
01483>               .17   2.918 |   1.18  29.762 |   2.20   9.059 |   3.22   3.753
01484>               .18   2.963 |   1.20  33.833 |   2.22   8.860 |   3.23   3.717
01485>               .20   3.009 |   1.22  38.986 |   2.23   8.668 |   3.25   3.682
01486>               .22   3.057 |   1.23  45.664 |   2.25   8.484 |   3.27   3.647
01487>               .23   3.106 |   1.25  54.576 |   2.27   8.307 |   3.28   3.613
01488>               .25   3.157 |   1.27  66.910 |   2.28   8.138 |   3.30   3.580
01489>               .27   3.210 |   1.28  84.790 |   2.30   7.974 |   3.32   3.547
01490>               .28   3.264 |   1.30 112.342 |   2.32   7.817 |   3.33   3.515
01491>               .30   3.321 |   1.32 158.550 |   2.33   7.666 |   3.35   3.484
01492>               .32   3.379 |   1.33 246.350 |   2.35   7.521 |   3.37   3.453
01493>               .33   3.440 |   1.35 223.928 |   2.37   7.380 |   3.38   3.422
01494>               .35   3.503 |   1.37 179.766 |   2.38   7.245 |   3.40   3.393
01495>               .37   3.568 |   1.38 148.195 |   2.40   7.114 |   3.42   3.363
01496>               .38   3.636 |   1.40 124.774 |   2.42   6.988 |   3.43   3.335
01497>               .40   3.706 |   1.42 106.873 |   2.43   6.866 |   3.45   3.306
01498>               .42   3.779 |   1.43  92.851 |   2.45   6.748 |   3.47   3.279
01499>               .43   3.856 |   1.45  81.641 |   2.47   6.634 |   3.48   3.251
01500>               .45   3.935 |   1.47  72.522 |   2.48   6.524 |   3.50   3.224
01501>               .47   4.018 |   1.48  64.992 |   2.50   6.417 |   3.52   3.198
01502>               .48   4.104 |   1.50  58.692 |   2.52   6.313 |   3.53   3.172
01503>               .50   4.194 |   1.52  53.361 |   2.53   6.213 |   3.55   3.146
01504>               .52   4.288 |   1.53  48.806 |   2.55   6.116 |   3.57   3.121
01505>               .53   4.387 |   1.55  44.877 |   2.57   6.022 |   3.58   3.096
01506>               .55   4.490 |   1.57  41.461 |   2.58   5.930 |   3.60   3.072
01507>               .57   4.598 |   1.58  38.470 |   2.60   5.841 |   3.62   3.048
01508>               .58   4.711 |   1.60  35.834 |   2.62   5.755 |   3.63   3.024
01509>               .60   4.830 |   1.62  33.496 |   2.63   5.671 |   3.65   3.001
01510>               .62   4.955 |   1.63  31.413 |   2.65   5.590 |   3.67   2.978
01511>               .63   5.087 |   1.65  29.546 |   2.67   5.511 |   3.68   2.956
01512>               .65   5.226 |   1.67  27.865 |   2.68   5.434 |   3.70   2.934
01513>               .67   5.372 |   1.68  26.347 |   2.70   5.359 |   3.72   2.912
01514>               .68   5.528 |   1.70  24.968 |   2.72   5.286 |   3.73   2.891
01515>               .70   5.692 |   1.72  23.713 |   2.73   5.215 |   3.75   2.869
01516>               .72   5.865 |   1.73  22.566 |   2.75   5.146 |   3.77   2.848
01517>               .73   6.050 |   1.75  21.514 |   2.77   5.079 |   3.78   2.828
01518>               .75   6.246 |   1.77  20.547 |   2.78   5.014 |   3.80   2.808
01519>               .77   6.455 |   1.78  19.656 |   2.80   4.950 |   3.82   2.788
01520>               .78   6.678 |   1.80  18.831 |   2.82   4.887 |   3.83   2.768
01521>               .80   6.917 |   1.82  18.068 |   2.83   4.826 |   3.85   2.749
01522>               .82   7.173 |   1.83  17.358 |   2.85   4.767 |   3.87   2.730
01523>               .83   7.448 |   1.85  16.698 |   2.87   4.709 |   3.88   2.711
01524>               .85   7.743 |   1.87  16.082 |   2.88   4.653 |   3.90   2.692
01525>               .87   8.063 |   1.88  15.506 |   2.90   4.598 |   3.92   2.674
01526>               .88   8.408 |   1.90  14.967 |   2.92   4.544 |   3.93   2.656
01527>               .90   8.783 |   1.92  14.461 |   2.93   4.491 |   3.95   2.638
01528>               .92   9.191 |   1.93  13.986 |   2.95   4.440 |   3.97   2.621
01529>               .93   9.637 |   1.95  13.539 |   2.97   4.390 |   3.98   2.603
01530>               .95  10.126 |   1.97  13.118 |   2.98   4.340 |   4.00   2.586
01531>               .97  10.663 |   1.98  12.720 |   3.00   4.293 |   4.02   2.569
01532>               .98  11.257 |   2.00  12.344 |   3.02   4.246 |
01533>              1.00  11.916 |   2.02  11.989 |   3.03   4.200 |
01534>              1.02  12.650 |   2.03  11.652 |   3.05   4.155 |
01535>
01536> ---------------------------------------------------------------------------
01537> 005:0003-------------------------------------------------------------------
01538> *==========================================================================
01539> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
01540> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
01541> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
01542> *==========================================================================
01543> ----------------------
01544> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
01545> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01546> ----------------------   U.H. Tp(hrs)=    .670
01547>
01548>      Unit Hyd Qpeak  (cms)=     .475
01549>
01550>      PEAK FLOW       (cms)=     .363 (i)
01551>      TIME TO PEAK    (hrs)=    2.250
01552>      RUNOFF VOLUME    (mm)=   27.879
01553>      TOTAL RAINFALL   (mm)=   64.510
01554>      RUNOFF COEFFICIENT   =     .432
01555>
01556>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01557>
01558> ---------------------------------------------------------------------------
01559> 005:0004-------------------------------------------------------------------
01560> *==========================================================================
01561> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
01562> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01563> *==========================================================================
01564> ----------------------
01565> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
01566> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01567> ----------------------   U.H. Tp(hrs)=    .870
01568>
01569>      Unit Hyd Qpeak  (cms)=     .838
01570>
01571>      PEAK FLOW       (cms)=     .599 (i)
01572>      TIME TO PEAK    (hrs)=    2.500
01573>      RUNOFF VOLUME    (mm)=   24.563
01574>      TOTAL RAINFALL   (mm)=   64.510
01575>      RUNOFF COEFFICIENT   =     .381
01576>
01577>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01578>
01579> ---------------------------------------------------------------------------
01580> 005:0005-------------------------------------------------------------------
01581> *==========================================================================
01582> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
01583> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01584> *==========================================================================
01585> ----------------------
01586> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
01587> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01588> ----------------------   U.H. Tp(hrs)=   2.180
01589>
01590>      Unit Hyd Qpeak  (cms)=    8.399
01591>
01592>      PEAK FLOW       (cms)=    7.374 (i)
01593>      TIME TO PEAK    (hrs)=    4.100
01594>      RUNOFF VOLUME    (mm)=   24.563
01595>      TOTAL RAINFALL   (mm)=   64.510
01596>      RUNOFF COEFFICIENT   =     .381
01597>
01598>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01599>
01600> ---------------------------------------------------------------------------
01601> 005:0006-------------------------------------------------------------------
01602> *==========================================================================
01603> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
01604> *==========================================================================
01605> ------------------------
01606> | ADD HYD (1010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01607> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01608>                         ID1 01:101W        8.33     .363    2.25  27.88    .000
01609>                        +ID2 02:EXT-1      19.09     .599    2.50  24.56    .000
01610>                        +ID3 03:EXT-2     479.35    7.374    4.10  24.56    .000
01611>                         ==============================================================
01612>                         SUM 10:1010       506.77    7.713    3.98  24.62    .000
01613>
01614>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01615>
01616> ---------------------------------------------------------------------------
01617> 005:0007-------------------------------------------------------------------
01618> *==========================================================================
01619> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
01620> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
```

```
*IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
| 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .750

     Unit Hyd Qpeak  (cms)=    1.414

     PEAK FLOW       (cms)=     .972 (i)
     TIME TO PEAK    (hrs)=    2.350
     RUNOFF VOLUME    (mm)=   24.563
     TOTAL RAINFALL   (mm)=   64.510
     RUNOFF COEFFICIENT   =    .381

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

--------------------------------------------------------------------------------
005:0008--------------------------------------------------------------------------
*==============================================================================
*EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
*IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
| 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   1.040

     Unit Hyd Qpeak  (cms)=     .033

     PEAK FLOW       (cms)=     .025 (i)
     TIME TO PEAK    (hrs)=    2.717
     RUNOFF VOLUME    (mm)=   24.563
     TOTAL RAINFALL   (mm)=   64.510
     RUNOFF COEFFICIENT   =    .381

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

--------------------------------------------------------------------------------
005:0009--------------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM 101C AND EXT-4
*==============================================================================
------------------------
| ADD HYD (1009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                       ID1 02:101C        27.77      .972    2.35  24.56    .000
                      +ID2 03:EXT-4        .91      .025    2.72  24.56    .000
                       ==============================================================
                       SUM 09:1009        28.68      .995    2.37  24.56    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0010--------------------------------------------------------------------------
*==============================================================================
*EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
*IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
| 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   1.930

     Unit Hyd Qpeak  (cms)=    3.692

     PEAK FLOW       (cms)=    3.162 (i)
     TIME TO PEAK    (hrs)=    3.800
     RUNOFF VOLUME    (mm)=   24.563
     TOTAL RAINFALL   (mm)=   64.510
     RUNOFF COEFFICIENT   =    .381

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

--------------------------------------------------------------------------------
005:0011--------------------------------------------------------------------------
*==============================================================================
*EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
*UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
*AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
| 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   1.270

     Unit Hyd Qpeak  (cms)=     .186

     PEAK FLOW       (cms)=     .166 (i)
     TIME TO PEAK    (hrs)=    2.983
     RUNOFF VOLUME    (mm)=   27.879
     TOTAL RAINFALL   (mm)=   64.510
     RUNOFF COEFFICIENT   =    .432

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

--------------------------------------------------------------------------------
005:0012--------------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM AREA 101E AND EXT-3
*==============================================================================
------------------------
| ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                       ID1 03:EXT-3       186.58     3.162    3.80  24.56    .000
                      +ID2 04:101E         6.19      .166    2.98  27.88    .000
                       ==============================================================
                       SUM 08:1008       192.77     3.300    3.75  24.67    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0013--------------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
*==============================================================================
------------------------
| ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                       ID1 01:101W         8.33      .363    2.25  27.88    .000
                      +ID2 02:101C        27.77      .972    2.35  24.56    .000
                      +ID3 04:101E         6.19      .166    2.98  27.88    .000
                       ==============================================================
                       SUM 07:1007        42.29     1.463    2.37  25.70    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0014--------------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
*==============================================================================
------------------------
| ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                       ID1 10:1010        506.77     7.713    3.98  24.62    .000
                      +ID2 09:1009         28.68      .995    2.37  24.56    .000
                      +ID3 08:1008        192.77     3.300    3.75  24.67    .000
                       ==============================================================
                       SUM 01:1001        728.22    11.368    3.80  24.63    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0015--------------------------------------------------------------------------
*==============================================================================
*EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
*TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
*CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
| 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .350

     Unit Hyd Qpeak  (cms)=     .330

     PEAK FLOW       (cms)=     .180 (i)
     TIME TO PEAK    (hrs)=    1.850
     RUNOFF VOLUME    (mm)=   24.563
     TOTAL RAINFALL   (mm)=   64.510
     RUNOFF COEFFICIENT   =    .381

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

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005:0016--------------------------------------------------------------------------
--------------------------------------------------------------------------------
005:0002--------------------------------------------------------------------------
--------------------------------------------------------------------------------
005:0002--------------------------------------------------------------------------
--------------------------------------------------------------------------------
005:0002--------------------------------------------------------------------------
--------------------------------------------------------------------------------
005:0002--------------------------------------------------------------------------
  ** END OF RUN :   5

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

--------------------
| START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
--------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 006
    NSTORM=   1
            #  1=50YR.HYT
--------------------------------------------------------------------------------
006:0002--------------------------------------------------------------------------
*#*************************************************************************
*#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
*#  Date        : FEB 2022
*#  Modeller    : [MM]
*#  Company     : STANTEC CONSULTING LTD.
*#  License #   :
*#*************************************************************************
--------------------------------------------------------------------------------
006:0002--------------------------------------------------------------------------
--------------------
| READ STORM       |    Filename: 50YR Chicago 4-hr duration
| Ptotal= 72.10 mm|    Comments: 50YR Chicago 4-hr duration
--------------------
                 TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
                  hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
                  .02   2.864 |   1.03  15.112 |   2.05  12.704 |   3.07   4.591
                  .03   2.902 |   1.05  16.156 |   2.07  12.363 |   3.08   4.543
                  .05   2.942 |   1.07  17.340 |   2.08  12.038 |   3.10   4.495
                  .07   2.983 |   1.08  18.693 |   2.10  11.729 |   3.12   4.449
                  .08   3.025 |   1.10  20.251 |   2.12  11.434 |   3.13   4.404
                  .10   3.068 |   1.12  22.060 |   2.13  11.154 |   3.15   4.359
                  .12   3.112 |   1.13  24.183 |   2.15  10.885 |   3.17   4.315
                  .13   3.158 |   1.15  26.700 |   2.17  10.629 |   3.18   4.273
                  .15   3.205 |   1.17  29.724 |   2.18  10.384 |   3.20   4.231
                  .17   3.254 |   1.18  33.409 |   2.20  10.149 |   3.22   4.190
                  .18   3.304 |   1.20  37.976 |   2.22   9.925 |   3.23   4.150
                  .20   3.356 |   1.22  43.751 |   2.23   9.709 |   3.25   4.110
                  .22   3.410 |   1.23  51.229 |   2.25   9.503 |   3.27   4.071
                  .23   3.465 |   1.25  61.197 |   2.27   9.304 |   3.28   4.033
                  .25   3.522 |   1.27  74.969 |   2.28   9.113 |   3.30   3.996
                  .27   3.581 |   1.28  94.888 |   2.30   8.930 |   3.32   3.960
                  .28   3.642 |   1.30 125.487 |   2.32   8.753 |   3.33   3.924
                  .30   3.706 |   1.32 176.565 |   2.33   8.584 |   3.35   3.888
                  .32   3.771 |   1.33 272.901 |   2.35   8.420 |   3.37   3.854
                  .33   3.839 |   1.35 248.380 |   2.37   8.262 |   3.38   3.820
                  .35   3.910 |   1.37 199.925 |   2.38   8.110 |   3.40   3.786
                  .37   3.983 |   1.38 165.143 |   2.40   7.963 |   3.42   3.753
                  .38   4.059 |   1.40 139.257 |   2.42   7.821 |   3.43   3.721
                  .40   4.138 |   1.42 119.422 |   2.43   7.684 |   3.45   3.689
                  .42   4.220 |   1.43 103.853 |   2.45   7.552 |   3.47   3.658
                  .43   4.305 |   1.45  91.385 |   2.47   7.424 |   3.48   3.628
                  .45   4.394 |   1.47  81.227 |   2.48   7.300 |   3.50   3.597
                  .47   4.487 |   1.48  72.829 |   2.50   7.180 |   3.52   3.568
                  .48   4.584 |   1.50  65.796 |   2.52   7.064 |   3.53   3.539
                  .50   4.685 |   1.52  59.840 |   2.53   6.951 |   3.55   3.510
                  .52   4.790 |   1.53  54.745 |   2.55   6.842 |   3.57   3.482
                  .53   4.901 |   1.55  50.348 |   2.57   6.736 |   3.58   3.454
                  .55   5.016 |   1.57  46.524 |   2.58   6.633 |   3.60   3.427
                  .57   5.137 |   1.58  43.173 |   2.60   6.533 |   3.62   3.400
                  .58   5.265 |   1.60  40.219 |   2.62   6.437 |   3.63   3.374
                  .60   5.398 |   1.62  37.598 |   2.63   6.343 |   3.65   3.348
                  .62   5.539 |   1.63  35.261 |   2.65   6.251 |   3.67   3.322
                  .63   5.687 |   1.65  33.166 |   2.67   6.162 |   3.68   3.297
                  .65   5.843 |   1.67  31.281 |   2.68   6.076 |   3.70   3.272
                  .67   6.007 |   1.68  29.576 |   2.70   5.992 |   3.72   3.247
                  .68   6.181 |   1.70  28.028 |   2.72   5.910 |   3.73   3.224
                  .70   6.365 |   1.72  26.618 |   2.73   5.831 |   3.75   3.200
                  .72   6.560 |   1.73  25.330 |   2.75   5.753 |   3.77   3.176
                  .73   6.768 |   1.75  24.149 |   2.77   5.678 |   3.78   3.153
                  .75   6.988 |   1.77  23.062 |   2.78   5.604 |   3.80   3.131
                  .77   7.223 |   1.78  22.060 |   2.80   5.532 |   3.82   3.108
                  .78   7.474 |   1.80  21.134 |   2.82   5.462 |   3.83   3.086
                  .80   7.742 |   1.82  20.276 |   2.83   5.394 |   3.85   3.065
                  .82   8.029 |   1.83  19.479 |   2.85   5.328 |   3.87   3.043
                  .83   8.338 |   1.85  18.736 |   2.87   5.263 |   3.88   3.022
                  .85   8.670 |   1.87  18.044 |   2.88   5.199 |   3.90   3.001
                  .87   9.029 |   1.88  17.397 |   2.90   5.137 |   3.92   2.981
                  .88   9.417 |   1.90  16.791 |   2.92   5.077 |   3.93   2.961
                  .90   9.839 |   1.92  16.222 |   2.93   5.018 |   3.95   2.941
                  .92  10.298 |   1.93  15.688 |   2.95   4.960 |   3.97   2.921
                  .93  10.799 |   1.95  15.186 |   2.97   4.904 |   3.98   2.902
                  .95  11.348 |   1.97  14.712 |   2.98   4.849 |   4.00   2.883
                  .97  11.952 |   1.98  14.265 |   3.00   4.795 |   4.02   2.864
                  .98  12.620 |   2.00  13.842 |   3.02   4.742 |
                 1.00  13.361 |   2.02  13.443 |   3.03   4.691 |
                 1.02  14.186 |   2.03  13.064 |   3.05   4.640 |
```

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01891> ------------------------------------------------------------------------------
01892> 006:0003------------------------------------------------------------------------
01893> ==============================================================================
01894> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
01895> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
01896> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
01897> ==============================================================================
01898> ----------------------
01899> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
01900> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01901> ----------------------   U.H. Tp(hrs)=    .670
01902>
01903>      Unit Hyd Qpeak  (cms)=     .475
01904>
01905>      PEAK FLOW       (cms)=     .438 (i)
01906>      TIME TO PEAK    (hrs)=    2.233
01907>      RUNOFF VOLUME    (mm)=   33.444
01908>      TOTAL RAINFALL   (mm)=   72.098
01909>      RUNOFF COEFFICIENT   =     .464
01910>
01911>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01912>
01913> ------------------------------------------------------------------------------
01914> 006:0004------------------------------------------------------------------------
01915> ==============================================================================
01916> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
01917> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01918> ==============================================================================
01919> ----------------------
01920> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
01921> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01922> ----------------------   U.H. Tp(hrs)=    .870
01923>
01924>      Unit Hyd Qpeak  (cms)=     .838
01925>
01926>      PEAK FLOW       (cms)=     .727 (i)
01927>      TIME TO PEAK    (hrs)=    2.500
01928>      RUNOFF VOLUME    (mm)=   29.665
01929>      TOTAL RAINFALL   (mm)=   72.098
01930>      RUNOFF COEFFICIENT   =     .411
01931>
01932>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01933>
01934> ------------------------------------------------------------------------------
01935> 006:0005------------------------------------------------------------------------
01936> ==============================================================================
01937> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
01938> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01939> ==============================================================================
01940> ----------------------
01941> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
01942> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01943> ----------------------   U.H. Tp(hrs)=   2.180
01944>
01945>      Unit Hyd Qpeak  (cms)=    8.399
01946>
01947>      PEAK FLOW       (cms)=    8.917 (i)
01948>      TIME TO PEAK    (hrs)=    4.083
01949>      RUNOFF VOLUME    (mm)=   29.665
01950>      TOTAL RAINFALL   (mm)=   72.098
01951>      RUNOFF COEFFICIENT   =     .411
01952>
01953>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01954>
01955> ------------------------------------------------------------------------------
01956> 006:0006------------------------------------------------------------------------
01957> ==============================================================================
01958> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
01959> ==============================================================================
01960> ------------------------
01961> | ADD HYD (1010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01962> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01963>                        ID1 01:101W         8.33     .438    2.23  33.44    .000
01964>                       +ID2 02:EXT-1       19.09     .727    2.50  29.67    .000
01965>                       +ID3 03:EXT-2      479.35    8.917    4.08  29.67    .000
01966>                        ==========================================================
01967>                        SUM 10:1010        506.77    9.326    3.97  29.73    .000
01968>
01969>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01970>
01971> ------------------------------------------------------------------------------
01972> 006:0007------------------------------------------------------------------------
01973> ==============================================================================
01974> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
01975> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
01976> *IS ASSUMED
01977> ==============================================================================
01978> ----------------------
01979> | CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
01980> | 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01981> ----------------------   U.H. Tp(hrs)=    .750
01982>
01983>      Unit Hyd Qpeak  (cms)=    1.414
01984>
01985>      PEAK FLOW       (cms)=    1.182 (i)
01986>      TIME TO PEAK    (hrs)=    2.350
01987>      RUNOFF VOLUME    (mm)=   29.665
01988>      TOTAL RAINFALL   (mm)=   72.098
01989>      RUNOFF COEFFICIENT   =     .411
01990>
01991>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01992>
01993> ------------------------------------------------------------------------------
01994> 006:0008------------------------------------------------------------------------
01995> ==============================================================================
01996> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
01997> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
01998> ==============================================================================
01999> ----------------------
02000> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
02001> | 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02002> ----------------------   U.H. Tp(hrs)=   1.040
02003>
02004>      Unit Hyd Qpeak  (cms)=     .033
02005>
02006>      PEAK FLOW       (cms)=     .030 (i)
02007>      TIME TO PEAK    (hrs)=    2.717
02008>      RUNOFF VOLUME    (mm)=   29.665
02009>      TOTAL RAINFALL   (mm)=   72.098
02010>      RUNOFF COEFFICIENT   =     .411
02011>
02012>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02013>
02014> ------------------------------------------------------------------------------
02015> 006:0009------------------------------------------------------------------------
02016> ==============================================================================
02017> *TOTAL RUNOFF FROM 101C AND EXT-4
02018> ==============================================================================
02019> ------------------------
02020> | ADD HYD (1009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02021> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02022>                        ID1 02:101C        27.77    1.182    2.35  29.67    .000
02023>                       +ID2 03:EXT-4        .91     .030    2.72  29.66    .000
02024>                        ==========================================================
02025>                        SUM 09:1009        28.68    1.209    2.35  29.67    .000
02026>
02027>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02028>
02029> ------------------------------------------------------------------------------
02030> 006:0010------------------------------------------------------------------------
02031> ==============================================================================
02032> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
02033> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02034> ==============================================================================
02035> ----------------------
02036> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
02037> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02038> ----------------------   U.H. Tp(hrs)=   1.930
02039>
02040>      Unit Hyd Qpeak  (cms)=    3.692
02041>
02042>      PEAK FLOW       (cms)=    3.826 (i)
02043>      TIME TO PEAK    (hrs)=    3.783
02044>      RUNOFF VOLUME    (mm)=   29.665
02045>      TOTAL RAINFALL   (mm)=   72.098
02046>      RUNOFF COEFFICIENT   =     .411
02047>
02048>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02049>
02050> ------------------------------------------------------------------------------
02051> 006:0011------------------------------------------------------------------------
02052> ==============================================================================
02053> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
02054> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
02055> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
02056> ==============================================================================
02057> ----------------------
02058> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
02059> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02060> ----------------------   U.H. Tp(hrs)=   1.270
02061>
02062>      Unit Hyd Qpeak  (cms)=     .186
02063>
02064>      PEAK FLOW       (cms)=     .200 (i)
02065>      TIME TO PEAK    (hrs)=    2.983
02066>      RUNOFF VOLUME    (mm)=   33.444
02067>      TOTAL RAINFALL   (mm)=   72.098
02068>      RUNOFF COEFFICIENT   =     .464
02069>
02070>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02071>
02072> ------------------------------------------------------------------------------
02073> 006:0012------------------------------------------------------------------------
02074> ==============================================================================
02075> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
02076> ==============================================================================
02077> ------------------------
02078> | ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02079> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02080>                        ID1 03:EXT-3       186.58    3.826    3.78  29.67    .000
02081>                       +ID2 04:101E         6.19     .200    2.98  33.44    .000
02082>                        ==========================================================
02083>                        SUM 08:1008        192.77    3.993    3.75  29.79    .000
02084>
02085>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02086>
02087> ------------------------------------------------------------------------------
02088> 006:0013------------------------------------------------------------------------
02089> ==============================================================================
02090> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
02091> ==============================================================================
02092> ------------------------
02093> | ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02094> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02095>                        ID1 01:101W         8.33     .438    2.23  33.44    .000
02096>                       +ID2 02:101C        27.77    1.182    2.35  29.67    .000
02097>                       +ID3 04:101E         6.19     .200    2.98  33.44    .000
02098>                        ==========================================================
02099>                        SUM 07:1007         42.29    1.774    2.35  30.96    .000
02100>
02101>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02102>
02103> ------------------------------------------------------------------------------
02104> 006:0014------------------------------------------------------------------------
02105> ==============================================================================
02106> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
02107> ==============================================================================
02108> ------------------------
02109> | ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02110> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02111>                        ID1 10:1010        506.77    9.326    3.97  29.73    .000
02112>                       +ID2 09:1009         28.68    1.209    2.35  29.67    .000
02113>                       +ID3 08:1008        192.77    3.993    3.75  29.79    .000
02114>                        ==========================================================
02115>                        SUM 01:1001        728.22   13.748    3.78  29.74    .000
02116>
02117>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02118>
02119> ------------------------------------------------------------------------------
02120> 006:0015------------------------------------------------------------------------
02121> ==============================================================================
02122> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
02123> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
02124> *CONTOURED AGRICULTURAL LAND IS ASSUMED
02125> ==============================================================================
02126> ----------------------
02127> | CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
02128> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02129> ----------------------   U.H. Tp(hrs)=    .350
02130>
02131>      Unit Hyd Qpeak  (cms)=     .330
02132>
02133>      PEAK FLOW       (cms)=     .219 (i)
02134>      TIME TO PEAK    (hrs)=    1.833
02135>      RUNOFF VOLUME    (mm)=   29.665
02136>      TOTAL RAINFALL   (mm)=   72.098
02137>      RUNOFF COEFFICIENT   =     .411
02138>
02139>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02140>
02141> ------------------------------------------------------------------------------
02142> 006:0016------------------------------------------------------------------------
02143> ------------------------------------------------------------------------------
02144> 006:0002------------------------------------------------------------------------
02145> ------------------------------------------------------------------------------
02146> 006:0002------------------------------------------------------------------------
02147> ------------------------------------------------------------------------------
02148> 006:0002------------------------------------------------------------------------
02149> ------------------------------------------------------------------------------
02150> 006:0002------------------------------------------------------------------------
02151> ------------------------------------------------------------------------------
02152> 006:0002------------------------------------------------------------------------
02153>   ** END OF RUN :   6
02154>
02155> ******************************************************************************
02156>
02157>
02158>
02159>
02160>
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02161> --------------------
02162> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
02163> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
02164>     TZERO =   .00 hrs on        0
02165>     METOUT=   2 (output = METRIC)
02166>     NRUN  = 007
02167>     NSTORM=   1
02168>            #  1=100YR.HYT
02169> ----------------------------------------------------------------------------
02170> 007:0002-------------------------------------------------------------------
02171> *#***************************************************************************
02172> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
02173> *#  Date        : FEB 2022
02174> *#  Modeller    : [MM]
02175> *#  Company     : STANTEC CONSULTING LTD.
02176> *#  License #   :
02177> *#***************************************************************************
02178> ----------------------------------------------------------------------------
02179> 007:0002-------------------------------------------------------------------
02180> --------------------
02181> | READ STORM       |    Filename: 100YR Chicago 4-hr duration
02182> | Ptotal=  79.43 mm|    Comments: 100YR Chicago 4-hr duration
02183> --------------------
02184>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
02185>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
02186>                 .02   3.037 |   1.03  16.685 |   2.05  13.979 |   3.07   4.929
02187>                 .03   3.079 |   1.05  17.859 |   2.07  13.595 |   3.08   4.876
02188>                 .05   3.122 |   1.07  19.192 |   2.08  13.231 |   3.10   4.824
02189>                 .07   3.167 |   1.08  20.716 |   2.10  12.884 |   3.12   4.773
02190>                 .08   3.212 |   1.10  22.470 |   2.12  12.554 |   3.13   4.723
02191>                 .10   3.260 |   1.12  24.509 |   2.13  12.239 |   3.15   4.674
02192>                 .12   3.308 |   1.13  26.900 |   2.15  11.938 |   3.17   4.626
02193>                 .13   3.358 |   1.15  29.736 |   2.17  11.651 |   3.18   4.579
02194>                 .15   3.409 |   1.17  33.140 |   2.18  11.376 |   3.20   4.533
02195>                 .17   3.463 |   1.18  37.287 |   2.20  11.114 |   3.22   4.488
02196>                 .18   3.517 |   1.20  42.423 |   2.22  10.862 |   3.23   4.443
02197>                 .20   3.574 |   1.22  48.907 |   2.23  10.621 |   3.25   4.400
02198>                 .22   3.632 |   1.23  57.287 |   2.25  10.390 |   3.27   4.358
02199>                 .23   3.693 |   1.25  68.424 |   2.27  10.168 |   3.28   4.316
02200>                 .25   3.755 |   1.27  83.749 |   2.28   9.954 |   3.30   4.275
02201>                 .27   3.820 |   1.28 105.785 |   2.30   9.749 |   3.32   4.235
02202>                 .28   3.887 |   1.30 139.348 |   2.32   9.552 |   3.33   4.195
02203>                 .30   3.956 |   1.32 194.650 |   2.33   9.363 |   3.35   4.156
02204>                 .32   4.028 |   1.33 296.789 |   2.35   9.180 |   3.37   4.119
02205>                 .33   4.103 |   1.35 271.039 |   2.37   9.004 |   3.38   4.081
02206>                 .35   4.180 |   1.37 219.664 |   2.38   8.834 |   3.40   4.044
02207>                 .37   4.260 |   1.38 182.358 |   2.40   8.670 |   3.42   4.009
02208>                 .38   4.344 |   1.40 154.343 |   2.42   8.512 |   3.43   3.973
02209>                 .40   4.430 |   1.42 132.722 |   2.43   8.359 |   3.45   3.938
02210>                 .42   4.520 |   1.43 115.653 |   2.45   8.212 |   3.47   3.904
02211>                 .43   4.614 |   1.45 101.920 |   2.47   8.069 |   3.48   3.871
02212>                 .45   4.712 |   1.47  90.688 |   2.48   7.931 |   3.50   3.838
02213>                 .47   4.814 |   1.48  81.372 |   2.50   7.797 |   3.52   3.805
02214>                 .48   4.921 |   1.50  73.549 |   2.52   7.668 |   3.53   3.773
02215>                 .50   5.032 |   1.52  66.909 |   2.53   7.543 |   3.55   3.742
02216>                 .52   5.149 |   1.53  61.219 |   2.55   7.421 |   3.57   3.711
02217>                 .53   5.270 |   1.55  56.301 |   2.57   7.304 |   3.58   3.681
02218>                 .55   5.398 |   1.57  52.017 |   2.58   7.189 |   3.60   3.651
02219>                 .57   5.532 |   1.58  48.259 |   2.60   7.079 |   3.62   3.622
02220>                 .58   5.673 |   1.60  44.943 |   2.62   6.971 |   3.63   3.593
02221>                 .60   5.820 |   1.62  41.998 |   2.63   6.867 |   3.65   3.565
02222>                 .62   5.976 |   1.63  39.371 |   2.65   6.765 |   3.67   3.537
02223>                 .63   6.139 |   1.65  37.015 |   2.67   6.667 |   3.68   3.509
02224>                 .65   6.312 |   1.67  34.893 |   2.68   6.571 |   3.70   3.482
02225>                 .67   6.495 |   1.68  32.974 |   2.70   6.478 |   3.72   3.455
02226>                 .68   6.687 |   1.70  31.231 |   2.72   6.387 |   3.73   3.429
02227>                 .70   6.892 |   1.72  29.643 |   2.73   6.299 |   3.75   3.403
02228>                 .72   7.108 |   1.73  28.192 |   2.75   6.213 |   3.77   3.378
02229>                 .73   7.339 |   1.75  26.861 |   2.77   6.129 |   3.78   3.353
02230>                 .75   7.584 |   1.77  25.637 |   2.78   6.048 |   3.80   3.328
02231>                 .77   7.845 |   1.78  24.509 |   2.80   5.969 |   3.82   3.304
02232>                 .78   8.125 |   1.80  23.465 |   2.82   5.891 |   3.83   3.280
02233>                 .80   8.423 |   1.82  22.498 |   2.83   5.816 |   3.85   3.256
02234>                 .82   8.744 |   1.83  21.600 |   2.85   5.742 |   3.87   3.233
02235>                 .83   9.088 |   1.85  20.764 |   2.87   5.670 |   3.88   3.210
02236>                 .85   9.459 |   1.87  19.985 |   2.88   5.600 |   3.90   3.187
02237>                 .87   9.860 |   1.88  19.256 |   2.90   5.532 |   3.92   3.165
02238>                 .88  10.294 |   1.90  18.574 |   2.92   5.465 |   3.93   3.143
02239>                 .90  10.766 |   1.92  17.934 |   2.93   5.400 |   3.95   3.121
02240>                 .92  11.280 |   1.93  17.333 |   2.95   5.336 |   3.97   3.100
02241>                 .93  11.841 |   1.95  16.768 |   2.97   5.274 |   3.98   3.079
02242>                 .95  12.457 |   1.97  16.235 |   2.98   5.213 |   4.00   3.058
02243>                 .97  13.134 |   1.98  15.733 |   3.00   5.154 |   4.02   3.037
02244>                 .98  13.884 |   2.00  15.258 |   3.02   5.096 |
02245>                1.00  14.716 |   2.02  14.808 |   3.03   5.039 |
02246>                1.02  15.644 |   2.03  14.382 |   3.05   4.983 |
02247>
02248> ----------------------------------------------------------------------------
02249> 007:0003-------------------------------------------------------------------
02250> *==========================================================================
02251> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
02252> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
02253> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
02254> *==========================================================================
02255> ----------------------
02256> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
02257> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02258> ----------------------   U.H. Tp(hrs)=    .670
02259>
02260>      Unit Hyd Qpeak  (cms)=     .475
02261>
02262>      PEAK FLOW       (cms)=     .517 (i)
02263>      TIME TO PEAK    (hrs)=    2.233
02264>      RUNOFF VOLUME    (mm)=   39.027
02265>      TOTAL RAINFALL   (mm)=   79.430
02266>      RUNOFF COEFFICIENT   =     .491
02267>
02268>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02269>
02270> ----------------------------------------------------------------------------
02271> 007:0004-------------------------------------------------------------------
02272> *==========================================================================
02273> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
02274> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02275> *==========================================================================
02276> ----------------------
02277> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
02278> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02279> ----------------------   U.H. Tp(hrs)=    .870
02280>
02281>      Unit Hyd Qpeak  (cms)=     .838
02282>
02283>      PEAK FLOW       (cms)=     .862 (i)
02284>      TIME TO PEAK    (hrs)=    2.483
02285>      RUNOFF VOLUME    (mm)=   34.821
02286>      TOTAL RAINFALL   (mm)=   79.430
02287>      RUNOFF COEFFICIENT   =     .438
02288>
02289>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02290>
02291> ----------------------------------------------------------------------------
02292> 007:0005-------------------------------------------------------------------
02293> *==========================================================================
02294> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
02295> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02296> *==========================================================================
02297> ----------------------
02298> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
02299> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02300> ----------------------   U.H. Tp(hrs)=   2.180
02301>
02302>      Unit Hyd Qpeak  (cms)=    8.399
02303>
02304>      PEAK FLOW       (cms)=   10.501 (i)
02305>      TIME TO PEAK    (hrs)=    4.067
02306>      RUNOFF VOLUME    (mm)=   34.821
02307>      TOTAL RAINFALL   (mm)=   79.430
02308>      RUNOFF COEFFICIENT   =     .438
02309>
02310>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02311>
02312> ----------------------------------------------------------------------------
02313> 007:0006-------------------------------------------------------------------
02314> *==========================================================================
02315> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
02316> *==========================================================================
02317> ----------------------
02318> | ADD HYD (1010      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
02319> ----------------------                     (ha)     (cms)   (hrs)   (mm)   (cms)
02320>                         ID1 01:101W          8.33      .517    2.23  39.03    .000
02321>                        +ID2 02:EXT-1        19.09      .862    2.48  34.82    .000
02322>                        +ID3 03:EXT-2       479.35    10.501    4.07  34.82    .000
02323>                         ==========================================================
02324>                         SUM 10:1010         506.77    10.979    3.93  34.89    .000
02325>
02326>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02327>
02328> ----------------------------------------------------------------------------
02329> 007:0007-------------------------------------------------------------------
02330> *==========================================================================
02331> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
02332> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
02333> *IS ASSUMED
02334> *==========================================================================
02335> ----------------------
02336> | CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
02337> | 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02338> ----------------------   U.H. Tp(hrs)=    .750
02339>
02340>      Unit Hyd Qpeak  (cms)=    1.414
02341>
02342>      PEAK FLOW       (cms)=    1.402 (i)
02343>      TIME TO PEAK    (hrs)=    2.350
02344>      RUNOFF VOLUME    (mm)=   34.821
02345>      TOTAL RAINFALL   (mm)=   79.430
02346>      RUNOFF COEFFICIENT   =     .438
02347>
02348>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02349>
02350> ----------------------------------------------------------------------------
02351> 007:0008-------------------------------------------------------------------
02352> *==========================================================================
02353> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
02354> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02355> *==========================================================================
02356> ----------------------
02357> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
02358> | 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02359> ----------------------   U.H. Tp(hrs)=   1.040
02360>
02361>      Unit Hyd Qpeak  (cms)=     .033
02362>
02363>      PEAK FLOW       (cms)=     .036 (i)
02364>      TIME TO PEAK    (hrs)=    2.700
02365>      RUNOFF VOLUME    (mm)=   34.820
02366>      TOTAL RAINFALL   (mm)=   79.430
02367>      RUNOFF COEFFICIENT   =     .438
02368>
02369>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02370>
02371> ----------------------------------------------------------------------------
02372> 007:0009-------------------------------------------------------------------
02373> *==========================================================================
02374> *TOTAL RUNOFF FROM 101C AND EXT-4
02375> *==========================================================================
02376> ----------------------
02377> | ADD HYD (1009      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
02378> ----------------------                     (ha)     (cms)   (hrs)   (mm)   (cms)
02379>                         ID1 02:101C         27.77    1.402    2.35  34.82    .000
02380>                        +ID2 03:EXT-4          .91     .036    2.70  34.82    .000
02381>                         ==========================================================
02382>                         SUM 09:1009         28.68    1.435    2.35  34.82    .000
02383>
02384>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02385>
02386> ----------------------------------------------------------------------------
02387> 007:0010-------------------------------------------------------------------
02388> *==========================================================================
02389> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
02390> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02391> *==========================================================================
02392> ----------------------
02393> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
02394> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02395> ----------------------   U.H. Tp(hrs)=   1.930
02396>
02397>      Unit Hyd Qpeak  (cms)=    3.692
02398>
02399>      PEAK FLOW       (cms)=    4.510 (i)
02400>      TIME TO PEAK    (hrs)=    3.767
02401>      RUNOFF VOLUME    (mm)=   34.821
02402>      TOTAL RAINFALL   (mm)=   79.430
02403>      RUNOFF COEFFICIENT   =     .438
02404>
02405>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02406>
02407> ----------------------------------------------------------------------------
02408> 007:0011-------------------------------------------------------------------
02409> *==========================================================================
02410> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
02411> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
02412> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
02413> *==========================================================================
02414> ----------------------
02415> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
02416> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02417> ----------------------   U.H. Tp(hrs)=   1.270
02418>
02419>      Unit Hyd Qpeak  (cms)=     .186
02420>
02421>      PEAK FLOW       (cms)=     .235 (i)
02422>      TIME TO PEAK    (hrs)=    2.967
02423>      RUNOFF VOLUME    (mm)=   39.027
02424>      TOTAL RAINFALL   (mm)=   79.430
02425>      RUNOFF COEFFICIENT   =     .491
02426>
02427>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02428>
02429> ----------------------------------------------------------------------------
02430> 007:0012-------------------------------------------------------------------
```

```
*==============================================================================
*TOTAL RUNOFF FROM AREA 101E AND EXT-3
*==============================================================================
-------------------------
| ADD HYD (1008      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
-------------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                     ID1 03:EXT-3      186.58    4.510    3.77  34.82    .000
                    +ID2 04:101E         6.19     .235    2.97  39.03    .000
                     =========================================================
                     SUM 08:1008       192.77    4.706    3.72  34.96    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
007:0013-----------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
*==============================================================================
-------------------------
| ADD HYD (1007      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
-------------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                     ID1 01:101W         8.33     .517    2.23  39.03    .000
                    +ID2 02:101C        27.77    1.402    2.35  34.82    .000
                    +ID3 04:101E         6.19     .235    2.97  39.03    .000
                     =========================================================
                     SUM 07:1007        42.29    2.101    2.35  36.26    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
007:0014-----------------------------------------------------------------------
*==============================================================================
*TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
*==============================================================================
-------------------------
| ADD HYD (1001      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
-------------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                     ID1 10:1010       506.77   10.979    3.93  34.89    .000
                    +ID2 09:1009        28.68    1.435    2.35  34.82    .000
                    +ID3 08:1008       192.77    4.706    3.72  34.96    .000
                     =========================================================
                     SUM 01:1001       728.22   16.191    3.77  34.90    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
007:0015-----------------------------------------------------------------------
*==============================================================================
*EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
*TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
*CONTOURED AGRICULTURAL LAND IS ASSUMED
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
| 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .350

     Unit Hyd Qpeak  (cms)=     .330

     PEAK FLOW       (cms)=     .261 (i)
     TIME TO PEAK    (hrs)=    1.833
     RUNOFF VOLUME    (mm)=   34.821
     TOTAL RAINFALL   (mm)=   79.430
     RUNOFF COEFFICIENT   =     .438

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

-------------------------------------------------------------------------------
007:0016-----------------------------------------------------------------------
-------------------------------------------------------------------------------
007:0002-----------------------------------------------------------------------
-------------------------------------------------------------------------------
007:0002-----------------------------------------------------------------------
-------------------------------------------------------------------------------
007:0002-----------------------------------------------------------------------
-------------------------------------------------------------------------------
007:0002-----------------------------------------------------------------------
-------------------------------------------------------------------------------
007:0002-----------------------------------------------------------------------
-------------------------------------------------------------------------------
007:0002-----------------------------------------------------------------------
  ** END OF RUN :   7

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

--------------------
| START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
--------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 008
    NSTORM=   1
           #  1=250YR.HYT
-------------------------------------------------------------------------------
008:0002-----------------------------------------------------------------------
*#*****************************************************************************
*#  Project Name: [HUNTER SUBDIVISION]    Project Number: [1614-14095]
*#  Date         : FEB 2022
*#  Modeller     : [MM]
*#  Company      : STANTEC CONSULTING LTD.
*#  License #    :
*#*****************************************************************************
-------------------------------------------------------------------------------
008:0002-----------------------------------------------------------------------
--------------------
| READ STORM       |    Filename: 250YR Chicago 24-hr duration
| Ptotal= 114.02 mm|    Comments: 250YR Chicago 24-hr duration
--------------------
                  TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
                   hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
                   .02    .561 |   6.03   2.265 |  12.05   2.123 |  18.07    .868
                   .03    .562 |   6.05   2.286 |  12.07   2.114 |  18.08    .867
                   .05    .563 |   6.07   2.307 |  12.08   2.105 |  18.10    .866
                   .07    .565 |   6.08   2.328 |  12.10   2.096 |  18.12    .864
                   .08    .566 |   6.10   2.351 |  12.12   2.088 |  18.13    .863
                   .10    .567 |   6.12   2.373 |  12.13   2.079 |  18.15    .862
                   .12    .568 |   6.13   2.396 |  12.15   2.071 |  18.17    .860
                   .13    .569 |   6.15   2.419 |  12.17   2.062 |  18.18    .859
                   .15    .570 |   6.17   2.443 |  12.18   2.054 |  18.20    .858
                   .17    .571 |   6.18   2.468 |  12.20   2.046 |  18.22    .856
                   .18    .572 |   6.20   2.493 |  12.22   2.038 |  18.23    .855
                   .20    .574 |   6.22   2.518 |  12.23   2.029 |  18.25    .854
                   .22    .575 |   6.23   2.544 |  12.25   2.021 |  18.27    .852
                   .23    .576 |   6.25   2.570 |  12.27   2.013 |  18.28    .851
                   .25    .577 |   6.27   2.597 |  12.28   2.005 |  18.30    .850
                   .27    .578 |   6.28   2.625 |  12.30   1.998 |  18.32    .848
                   .28    .580 |   6.30   2.653 |  12.32   1.990 |  18.33    .847
                   .30    .581 |   6.32   2.682 |  12.33   1.982 |  18.35    .846
                   .32    .582 |   6.33   2.712 |  12.35   1.974 |  18.37    .845
                   .33    .583 |   6.35   2.742 |  12.37   1.967 |  18.38    .843
                   .35    .584 |   6.37   2.773 |  12.38   1.959 |  18.40    .842
                   .37    .586 |   6.38   2.805 |  12.40   1.952 |  18.42    .841
                   .38    .587 |   6.40   2.837 |  12.42   1.944 |  18.43    .839
                   .40    .588 |   6.42   2.870 |  12.43   1.937 |  18.45    .838
                   .42    .589 |   6.43   2.904 |  12.45   1.930 |  18.47    .837
                   .43    .590 |   6.45   2.939 |  12.47   1.922 |  18.48    .836
                   .45    .591 |   6.47   2.975 |  12.48   1.915 |  18.50    .834
                   .47    .593 |   6.48   3.011 |  12.50   1.908 |  18.52    .833
                   .48    .594 |   6.50   3.049 |  12.52   1.901 |  18.53    .832
                   .50    .595 |   6.52   3.087 |  12.53   1.894 |  18.55    .831
                   .52    .596 |   6.53   3.126 |  12.55   1.887 |  18.57    .829
                   .53    .598 |   6.55   3.167 |  12.57   1.880 |  18.58    .828
                   .55    .599 |   6.57   3.209 |  12.58   1.873 |  18.60    .827
                   .57    .600 |   6.58   3.251 |  12.60   1.866 |  18.62    .826
                   .58    .602 |   6.60   3.295 |  12.62   1.859 |  18.63    .824
                   .60    .603 |   6.62   3.340 |  12.63   1.853 |  18.65    .823
                   .62    .604 |   6.63   3.387 |  12.65   1.846 |  18.67    .822
                   .63    .605 |   6.65   3.434 |  12.67   1.839 |  18.68    .821
                   .65    .607 |   6.67   3.483 |  12.68   1.833 |  18.70    .820
                   .67    .608 |   6.68   3.534 |  12.70   1.826 |  18.72    .818
                   .68    .609 |   6.70   3.586 |  12.72   1.820 |  18.73    .817
                   .70    .611 |   6.72   3.640 |  12.73   1.813 |  18.75    .816
                   .72    .612 |   6.73   3.695 |  12.75   1.807 |  18.77    .815
                   .73    .613 |   6.75   3.752 |  12.77   1.801 |  18.78    .813
                   .75    .615 |   6.77   3.810 |  12.78   1.794 |  18.80    .812
                   .77    .616 |   6.78   3.871 |  12.80   1.788 |  18.82    .811
                   .78    .617 |   6.80   3.934 |  12.82   1.782 |  18.83    .810
                   .80    .619 |   6.82   3.998 |  12.83   1.776 |  18.85    .809
                   .82    .620 |   6.83   4.065 |  12.85   1.770 |  18.87    .808
                   .83    .621 |   6.85   4.134 |  12.87   1.763 |  18.88    .806
                   .85    .623 |   6.87   4.206 |  12.88   1.757 |  18.90    .805
                   .87    .624 |   6.88   4.280 |  12.90   1.751 |  18.92    .804
                   .88    .626 |   6.90   4.357 |  12.92   1.746 |  18.93    .803
                   .90    .627 |   6.92   4.436 |  12.93   1.740 |  18.95    .802
                   .92    .628 |   6.93   4.518 |  12.95   1.734 |  18.97    .801
                   .93    .630 |   6.95   4.604 |  12.97   1.728 |  18.98    .799
                   .95    .631 |   6.97   4.693 |  12.98   1.722 |  19.00    .798
                   .97    .633 |   6.98   4.785 |  13.00   1.716 |  19.02    .797
                   .98    .634 |   7.00   4.881 |  13.02   1.711 |  19.03    .796
                  1.00    .635 |   7.02   4.981 |  13.03   1.705 |  19.05    .795
                  1.02    .637 |   7.03   5.085 |  13.05   1.699 |  19.07    .794
                  1.03    .638 |   7.05   5.194 |  13.07   1.694 |  19.08    .793
                  1.05    .640 |   7.07   5.307 |  13.08   1.688 |  19.10    .791
                  1.07    .641 |   7.08   5.425 |  13.10   1.683 |  19.12    .790
                  1.08    .643 |   7.10   5.548 |  13.12   1.677 |  19.13    .789
                  1.10    .644 |   7.12   5.677 |  13.13   1.672 |  19.15    .788
                  1.12    .646 |   7.13   5.813 |  13.15   1.666 |  19.17    .787
                  1.13    .647 |   7.15   5.954 |  13.17   1.661 |  19.18    .786
                  1.15    .649 |   7.17   6.103 |  13.18   1.656 |  19.20    .785
                  1.17    .650 |   7.18   6.259 |  13.20   1.651 |  19.22    .784
                  1.18    .652 |   7.20   6.423 |  13.22   1.645 |  19.23    .783
                  1.20    .653 |   7.22   6.595 |  13.23   1.640 |  19.25    .781
                  1.22    .655 |   7.23   6.777 |  13.25   1.635 |  19.27    .780
                  1.23    .656 |   7.25   6.969 |  13.27   1.630 |  19.28    .779
                  1.25    .658 |   7.27   7.172 |  13.28   1.625 |  19.30    .778
                  1.27    .659 |   7.28   7.386 |  13.30   1.620 |  19.32    .777
                  1.28    .661 |   7.30   7.613 |  13.32   1.615 |  19.33    .776
                  1.30    .662 |   7.32   7.854 |  13.33   1.610 |  19.35    .775
                  1.32    .664 |   7.33   8.110 |  13.35   1.605 |  19.37    .774
                  1.33    .665 |   7.35   8.383 |  13.37   1.599 |  19.38    .773
                  1.35    .667 |   7.37   8.674 |  13.38   1.595 |  19.40    .772
                  1.37    .669 |   7.38   8.985 |  13.40   1.590 |  19.42    .771
                  1.38    .670 |   7.40   9.318 |  13.42   1.585 |  19.43    .770
                  1.40    .672 |   7.42   9.675 |  13.43   1.580 |  19.45    .769
                  1.42    .674 |   7.43  10.059 |  13.45   1.575 |  19.47    .768
                  1.43    .675 |   7.45  10.472 |  13.47   1.571 |  19.48    .766
                  1.45    .677 |   7.47  10.920 |  13.48   1.566 |  19.50    .766
                  1.47    .678 |   7.48  11.404 |  13.50   1.561 |  19.52    .764
                  1.48    .680 |   7.50  11.931 |  13.52   1.556 |  19.53    .763
                  1.50    .682 |   7.52  12.505 |  13.53   1.552 |  19.55    .762
                  1.52    .683 |   7.53  13.133 |  13.55   1.547 |  19.57    .761
                  1.53    .685 |   7.55  13.822 |  13.57   1.543 |  19.58    .760
                  1.55    .687 |   7.57  14.580 |  13.58   1.538 |  19.60    .759
                  1.57    .688 |   7.58  15.420 |  13.60   1.533 |  19.62    .758
                  1.58    .690 |   7.60  16.353 |  13.62   1.529 |  19.63    .757
                  1.60    .692 |   7.62  17.395 |  13.63   1.524 |  19.65    .756
                  1.62    .694 |   7.63  18.564 |  13.65   1.520 |  19.67    .755
                  1.63    .695 |   7.65  19.885 |  13.67   1.515 |  19.68    .754
                  1.65    .697 |   7.67  21.385 |  13.68   1.511 |  19.70    .753
                  1.67    .699 |   7.68  23.103 |  13.70   1.507 |  19.72    .752
                  1.68    .701 |   7.70  25.084 |  13.72   1.502 |  19.73    .751
                  1.70    .702 |   7.72  27.388 |  13.73   1.498 |  19.75    .750
                  1.72    .704 |   7.73  30.097 |  13.75   1.494 |  19.77    .749
                  1.73    .706 |   7.75  33.315 |  13.77   1.490 |  19.78    .748
                  1.75    .708 |   7.77  37.188 |  13.78   1.485 |  19.80    .747
                  1.77    .710 |   7.78  41.917 |  13.80   1.481 |  19.82    .746
                  1.78    .711 |   7.80  47.791 |  13.82   1.477 |  19.83    .745
                  1.80    .713 |   7.82  55.235 |  13.83   1.473 |  19.85    .744
                  1.82    .715 |   7.83  64.896 |  13.85   1.469 |  19.87    .743
                  1.83    .717 |   7.85  77.803 |  13.87   1.464 |  19.88    .742
                  1.85    .719 |   7.87  95.679 |  13.88   1.460 |  19.90    .741
                  1.87    .721 |   7.88 121.597 |  13.90   1.456 |  19.92    .740
                  1.88    .723 |   7.90 161.512 |  13.92   1.452 |  19.93    .739
                  1.90    .724 |   7.92 228.308 |  13.93   1.448 |  19.95    .738
                  1.92    .726 |   7.93 354.580 |  13.95   1.444 |  19.97    .737
                  1.93    .728 |   7.95 322.417 |  13.97   1.440 |  19.98    .736
                  1.95    .730 |   7.97 258.901 |  13.98   1.436 |  20.00    .735
                  1.97    .732 |   7.98 213.358 |  14.00   1.432 |  20.02    .734
                  1.98    .734 |   8.00 179.503 |  14.02   1.429 |  20.03    .733
                  2.00    .736 |   8.02 153.593 |  14.03   1.425 |  20.05    .733
                  2.02    .738 |   8.03 133.281 |  14.05   1.421 |  20.07    .732
                  2.03    .740 |   8.05 117.034 |  14.07   1.417 |  20.08    .731
                  2.05    .742 |   8.07 103.814 |  14.08   1.413 |  20.10    .730
                  2.07    .744 |   8.08  92.897 |  14.10   1.409 |  20.12    .729
                  2.08    .746 |   8.10  83.767 |  14.12   1.406 |  20.13    .728
                  2.10    .748 |   8.12  76.043 |  14.13   1.402 |  20.15    .727
                  2.12    .750 |   8.13  69.445 |  14.15   1.398 |  20.17    .726
                  2.13    .752 |   8.15  63.757 |  14.17   1.394 |  20.18    .725
                  2.15    .754 |   8.17  58.815 |  14.18   1.391 |  20.20    .724
                  2.17    .756 |   8.18  54.490 |  14.20   1.387 |  20.22    .723
                  2.18    .758 |   8.20  50.680 |  14.22   1.383 |  20.23    .722
                  2.20    .760 |   8.22  47.305 |  14.23   1.380 |  20.25    .721
                  2.22    .762 |   8.23  44.298 |  14.25   1.376 |  20.27    .720
                  2.23    .764 |   8.25  41.606 |  14.27   1.372 |  20.28    .719
                  2.25    .767 |   8.27  39.185 |  14.28   1.369 |  20.30    .718
                  2.27    .769 |   8.28  36.998 |  14.30   1.365 |  20.32    .717
                  2.28    .771 |   8.30  35.015 |  14.32   1.362 |  20.33    .717
                  2.30    .773 |   8.32  33.210 |  14.33   1.358 |  20.35    .716
                  2.32    .775 |   8.33  31.562 |  14.35   1.355 |  20.37    .715
                  2.33    .777 |   8.35  30.053 |  14.37   1.351 |  20.38    .714
                  2.35    .780 |   8.37  28.666 |  14.38   1.348 |  20.40    .713
                  2.37    .782 |   8.38  27.388 |  14.40   1.344 |  20.42    .712
                  2.38    .784 |   8.40  26.208 |  14.42   1.341 |  20.43    .711
                  2.40    .786 |   8.42  25.115 |  14.43   1.338 |  20.45    .710
                  2.42    .789 |   8.43  24.101 |  14.45   1.334 |  20.47    .709
                  2.43    .791 |   8.45  23.158 |  14.47   1.331 |  20.48    .709
                  2.45    .793 |   8.47  22.279 |  14.48   1.327 |  20.50    .708
                  2.47    .795 |   8.48  21.458 |  14.50   1.324 |  20.52    .707
                  2.48    .798 |   8.50  20.689 |  14.52   1.321 |  20.53    .706
                  2.50    .800 |   8.52  19.969 |  14.53   1.317 |  20.55    .705
                  2.52    .802 |   8.53  19.293 |  14.55   1.314 |  20.57    .704
                  2.53    .805 |   8.55  18.657 |  14.57   1.311 |  20.58    .703
                  2.55    .807 |   8.57  18.059 |  14.58   1.308 |  20.60    .702
                  2.57    .809 |   8.58  17.494 |  14.60   1.304 |  20.62    .701
                  2.58    .812 |   8.60  16.961 |  14.62   1.301 |  20.63    .701
                  2.60    .814 |   8.62  16.456 |  14.63   1.298 |  20.65    .700
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02701>	2.62	.817	8.63	15.979	14.65	1.295	20.67	.699
02702>	2.63	.819	8.65	15.526	14.67	1.292	20.68	.698
02703>	2.65	.822	8.67	15.097	14.68	1.289	20.70	.697
02704>	2.67	.824	8.68	14.688	14.70	1.286	20.72	.696
02705>	2.68	.827	8.70	14.300	14.72	1.282	20.73	.695
02706>	2.70	.829	8.72	13.930	14.73	1.279	20.75	.695
02707>	2.72	.832	8.73	13.578	14.75	1.276	20.77	.694
02708>	2.73	.834	8.75	13.241	14.77	1.273	20.78	.693
02709>	2.75	.837	8.77	12.920	14.78	1.270	20.80	.692
02710>	2.77	.839	8.78	12.613	14.80	1.267	20.82	.691
02711>	2.78	.842	8.80	12.319	14.82	1.264	20.83	.690
02712>	2.80	.845	8.82	12.038	14.83	1.261	20.85	.689
02713>	2.82	.847	8.83	11.769	14.85	1.258	20.87	.689
02714>	2.83	.850	8.85	11.511	14.87	1.255	20.88	.688
02715>	2.85	.852	8.87	11.263	14.88	1.252	20.90	.687
02716>	2.87	.855	8.88	11.025	14.90	1.249	20.92	.686
02717>	2.88	.858	8.90	10.796	14.92	1.246	20.93	.685
02718>	2.90	.861	8.92	10.576	14.93	1.243	20.95	.684
02719>	2.92	.863	8.93	10.364	14.95	1.240	20.97	.684
02720>	2.93	.866	8.95	10.161	14.97	1.237	20.98	.683
02721>	2.95	.869	8.97	9.964	14.98	1.235	21.00	.682
02722>	2.97	.872	8.98	9.775	15.00	1.232	21.02	.681
02723>	2.98	.874	9.00	9.592	15.02	1.229	21.03	.680
02724>	3.00	.877	9.02	9.416	15.03	1.226	21.05	.680
02725>	3.02	.880	9.03	9.246	15.05	1.223	21.07	.679
02726>	3.03	.883	9.05	9.082	15.07	1.220	21.08	.678
02727>	3.05	.886	9.07	8.923	15.08	1.218	21.10	.677
02728>	3.07	.889	9.08	8.769	15.10	1.215	21.12	.676
02729>	3.08	.892	9.10	8.620	15.12	1.212	21.13	.675
02730>	3.10	.895	9.12	8.476	15.13	1.209	21.15	.675
02731>	3.12	.898	9.13	8.337	15.15	1.207	21.17	.674
02732>	3.13	.901	9.15	8.202	15.17	1.204	21.18	.673
02733>	3.15	.904	9.17	8.071	15.18	1.201	21.20	.672
02734>	3.17	.907	9.18	7.944	15.20	1.198	21.22	.672
02735>	3.18	.910	9.20	7.821	15.22	1.196	21.23	.671
02736>	3.20	.913	9.22	7.701	15.23	1.193	21.25	.670
02737>	3.22	.916	9.23	7.585	15.25	1.190	21.27	.669
02738>	3.23	.919	9.25	7.472	15.27	1.188	21.28	.668
02739>	3.25	.922	9.27	7.363	15.28	1.185	21.30	.668
02740>	3.27	.925	9.28	7.256	15.30	1.183	21.32	.667
02741>	3.28	.928	9.30	7.153	15.32	1.180	21.33	.666
02742>	3.30	.932	9.32	7.052	15.33	1.177	21.35	.665
02743>	3.32	.935	9.33	6.954	15.35	1.175	21.37	.664
02744>	3.33	.938	9.35	6.859	15.37	1.172	21.38	.664
02745>	3.35	.941	9.37	6.766	15.38	1.169	21.40	.663
02746>	3.37	.945	9.38	6.675	15.40	1.167	21.42	.662
02747>	3.38	.948	9.40	6.587	15.42	1.164	21.43	.661
02748>	3.40	.951	9.42	6.501	15.43	1.162	21.45	.661
02749>	3.42	.955	9.43	6.418	15.45	1.159	21.47	.660
02750>	3.43	.958	9.45	6.336	15.47	1.157	21.48	.659
02751>	3.45	.962	9.47	6.256	15.48	1.154	21.50	.658
02752>	3.47	.965	9.48	6.179	15.50	1.152	21.52	.658
02753>	3.48	.969	9.50	6.103	15.52	1.149	21.53	.657
02754>	3.50	.972	9.52	6.029	15.53	1.147	21.55	.656
02755>	3.52	.976	9.53	5.956	15.55	1.145	21.57	.655
02756>	3.53	.979	9.55	5.886	15.57	1.142	21.58	.655
02757>	3.55	.983	9.57	5.817	15.58	1.140	21.60	.654
02758>	3.57	.986	9.58	5.749	15.60	1.137	21.62	.653
02759>	3.58	.990	9.60	5.683	15.62	1.135	21.63	.652
02760>	3.60	.994	9.62	5.619	15.63	1.132	21.65	.651
02761>	3.62	.997	9.63	5.556	15.65	1.130	21.67	.651
02762>	3.63	1.001	9.65	5.494	15.67	1.128	21.68	.650
02763>	3.65	1.005	9.67	5.434	15.68	1.125	21.70	.649
02764>	3.67	1.009	9.68	5.375	15.70	1.123	21.72	.649
02765>	3.68	1.013	9.70	5.317	15.72	1.120	21.73	.648
02766>	3.70	1.016	9.72	5.261	15.73	1.118	21.75	.647
02767>	3.72	1.020	9.73	5.205	15.75	1.116	21.77	.646
02768>	3.73	1.024	9.75	5.151	15.77	1.114	21.78	.646
02769>	3.75	1.028	9.77	5.098	15.78	1.111	21.80	.645
02770>	3.77	1.032	9.78	5.046	15.80	1.109	21.82	.644
02771>	3.78	1.036	9.80	4.995	15.82	1.107	21.83	.643
02772>	3.80	1.040	9.82	4.945	15.83	1.104	21.85	.643
02773>	3.82	1.044	9.83	4.896	15.85	1.102	21.87	.642
02774>	3.83	1.048	9.85	4.848	15.87	1.100	21.88	.641
02775>	3.85	1.053	9.87	4.801	15.88	1.098	21.90	.641
02776>	3.87	1.057	9.88	4.754	15.90	1.095	21.92	.640
02777>	3.88	1.061	9.90	4.709	15.92	1.093	21.93	.639
02778>	3.90	1.065	9.92	4.665	15.93	1.091	21.95	.638
02779>	3.92	1.069	9.93	4.621	15.95	1.089	21.97	.638
02780>	3.93	1.074	9.95	4.578	15.97	1.087	21.98	.637
02781>	3.95	1.078	9.97	4.536	15.98	1.084	22.00	.636
02782>	3.97	1.083	9.98	4.495	16.00	1.082	22.02	.636
02783>	3.98	1.087	10.00	4.454	16.02	1.080	22.03	.635
02784>	4.00	1.092	10.02	4.414	16.03	1.078	22.05	.634
02785>	4.02	1.096	10.03	4.375	16.05	1.076	22.07	.633
02786>	4.03	1.101	10.05	4.337	16.07	1.074	22.08	.633
02787>	4.05	1.105	10.07	4.299	16.08	1.071	22.10	.632
02788>	4.07	1.110	10.08	4.262	16.10	1.069	22.12	.631
02789>	4.08	1.115	10.10	4.225	16.12	1.067	22.13	.631
02790>	4.10	1.119	10.12	4.189	16.13	1.065	22.15	.630
02791>	4.12	1.124	10.13	4.154	16.15	1.063	22.17	.629
02792>	4.13	1.129	10.15	4.120	16.17	1.061	22.18	.629
02793>	4.15	1.134	10.17	4.085	16.18	1.059	22.20	.628
02794>	4.17	1.138	10.18	4.052	16.20	1.057	22.22	.627
02795>	4.18	1.143	10.20	4.019	16.22	1.055	22.23	.627
02796>	4.20	1.148	10.22	3.987	16.23	1.053	22.25	.626
02797>	4.22	1.153	10.23	3.955	16.25	1.051	22.27	.625
02798>	4.23	1.158	10.25	3.923	16.27	1.048	22.28	.624
02799>	4.25	1.164	10.27	3.892	16.28	1.046	22.30	.624
02800>	4.27	1.169	10.28	3.862	16.30	1.044	22.32	.623
02801>	4.28	1.174	10.30	3.832	16.32	1.042	22.33	.622
02802>	4.30	1.179	10.32	3.802	16.33	1.040	22.35	.622
02803>	4.32	1.185	10.33	3.773	16.35	1.038	22.37	.621
02804>	4.33	1.190	10.35	3.745	16.37	1.036	22.38	.620
02805>	4.35	1.195	10.37	3.717	16.38	1.035	22.40	.620
02806>	4.37	1.201	10.38	3.689	16.40	1.033	22.42	.619
02807>	4.38	1.206	10.40	3.662	16.42	1.031	22.43	.618
02808>	4.40	1.212	10.42	3.635	16.43	1.029	22.45	.618
02809>	4.42	1.218	10.43	3.608	16.45	1.027	22.47	.617
02810>	4.43	1.223	10.45	3.582	16.47	1.025	22.48	.616
02811>	4.45	1.229	10.47	3.556	16.48	1.023	22.50	.616
02812>	4.47	1.235	10.48	3.531	16.50	1.021	22.52	.615
02813>	4.48	1.241	10.50	3.506	16.52	1.019	22.53	.614
02814>	4.50	1.247	10.52	3.481	16.53	1.017	22.55	.614
02815>	4.52	1.253	10.53	3.457	16.55	1.015	22.57	.613
02816>	4.53	1.259	10.55	3.433	16.57	1.013	22.58	.613
02817>	4.55	1.265	10.57	3.409	16.58	1.011	22.60	.612
02818>	4.57	1.271	10.58	3.386	16.60	1.009	22.62	.611
02819>	4.58	1.277	10.60	3.363	16.62	1.008	22.63	.610
02820>	4.60	1.283	10.62	3.340	16.63	1.006	22.65	.610
02821>	4.62	1.290	10.63	3.318	16.65	1.004	22.67	.609
02822>	4.63	1.296	10.65	3.296	16.67	1.002	22.68	.609
02823>	4.65	1.303	10.67	3.274	16.68	1.000	22.70	.608
02824>	4.67	1.309	10.68	3.253	16.70	.998	22.72	.607
02825>	4.68	1.316	10.70	3.231	16.72	.996	22.73	.607
02826>	4.70	1.322	10.72	3.211	16.73	.995	22.75	.606
02827>	4.72	1.329	10.73	3.190	16.75	.993	22.77	.605
02828>	4.73	1.336	10.75	3.170	16.77	.991	22.78	.605
02829>	4.75	1.343	10.77	3.149	16.78	.989	22.80	.604
02830>	4.77	1.350	10.78	3.129	16.80	.987	22.82	.604
02831>	4.78	1.357	10.80	3.110	16.82	.986	22.83	.603
02832>	4.80	1.364	10.82	3.091	16.83	.984	22.85	.602
02833>	4.82	1.372	10.83	3.072	16.85	.982	22.87	.602
02834>	4.83	1.379	10.85	3.053	16.87	.980	22.88	.601
02835>	4.85	1.386	10.87	3.034	16.88	.979	22.90	.600
02836>	4.87	1.394	10.88	3.016	16.90	.977	22.92	.600
02837>	4.88	1.401	10.90	2.997	16.92	.975	22.93	.599
02838>	4.90	1.409	10.92	2.979	16.93	.973	22.95	.598
02839>	4.92	1.417	10.93	2.962	16.95	.971	22.97	.598
02840>	4.93	1.424	10.95	2.944	16.97	.970	22.98	.597
02841>	4.95	1.432	10.97	2.927	16.98	.968	23.00	.597
02842>	4.97	1.440	10.98	2.910	17.00	.966	23.02	.596
02843>	4.98	1.448	11.00	2.893	17.02	.965	23.03	.595
02844>	5.00	1.457	11.02	2.876	17.03	.963	23.05	.595
02845>	5.02	1.465	11.03	2.860	17.05	.961	23.07	.594
02846>	5.03	1.473	11.05	2.843	17.07	.960	23.08	.594
02847>	5.05	1.482	11.07	2.827	17.08	.958	23.10	.593
02848>	5.07	1.490	11.08	2.811	17.10	.956	23.12	.592
02849>	5.08	1.499	11.10	2.796	17.12	.955	23.13	.592
02850>	5.10	1.508	11.12	2.780	17.13	.953	23.15	.591
02851>	5.12	1.517	11.13	2.764	17.15	.951	23.17	.590
02852>	5.13	1.526	11.15	2.749	17.17	.950	23.18	.590
02853>	5.15	1.535	11.17	2.734	17.18	.948	23.20	.589
02854>	5.17	1.544	11.18	2.719	17.20	.946	23.22	.589
02855>	5.18	1.554	11.20	2.705	17.22	.945	23.23	.588
02856>	5.20	1.563	11.22	2.690	17.23	.943	23.25	.587
02857>	5.22	1.573	11.23	2.676	17.25	.941	23.27	.587
02858>	5.23	1.582	11.25	2.661	17.27	.940	23.28	.586
02859>	5.25	1.592	11.27	2.647	17.28	.938	23.30	.586
02860>	5.27	1.602	11.28	2.633	17.30	.937	23.32	.585
02861>	5.28	1.612	11.30	2.620	17.32	.935	23.33	.585
02862>	5.30	1.623	11.32	2.606	17.33	.933	23.35	.584
02863>	5.32	1.633	11.33	2.592	17.35	.932	23.37	.583
02864>	5.33	1.643	11.35	2.579	17.37	.930	23.38	.583
02865>	5.35	1.654	11.37	2.566	17.38	.929	23.40	.582
02866>	5.37	1.665	11.38	2.553	17.40	.927	23.42	.581
02867>	5.38	1.676	11.40	2.540	17.42	.925	23.43	.581
02868>	5.40	1.687	11.42	2.527	17.43	.924	23.45	.580
02869>	5.42	1.698	11.43	2.514	17.45	.922	23.47	.580
02870>	5.43	1.710	11.45	2.502	17.47	.921	23.48	.579
02871>	5.45	1.721	11.47	2.490	17.48	.919	23.50	.579
02872>	5.47	1.733	11.48	2.477	17.50	.918	23.52	.578
02873>	5.48	1.745	11.50	2.465	17.52	.916	23.53	.577
02874>	5.50	1.757	11.52	2.453	17.53	.915	23.55	.577
02875>	5.52	1.770	11.53	2.441	17.55	.913	23.57	.576
02876>	5.53	1.782	11.55	2.429	17.57	.912	23.58	.576
02877>	5.55	1.795	11.57	2.418	17.58	.910	23.60	.575
02878>	5.57	1.808	11.58	2.406	17.60	.909	23.62	.575
02879>	5.58	1.821	11.60	2.395	17.62	.907	23.63	.574
02880>	5.60	1.834	11.62	2.383	17.63	.905	23.65	.573
02881>	5.62	1.847	11.63	2.372	17.65	.904	23.67	.573
02882>	5.63	1.861	11.65	2.361	17.67	.903	23.68	.572
02883>	5.65	1.875	11.67	2.350	17.68	.901	23.70	.572
02884>	5.67	1.889	11.68	2.339	17.70	.900	23.72	.571
02885>	5.68	1.903	11.70	2.328	17.72	.898	23.73	.571
02886>	5.70	1.917	11.72	2.317	17.73	.897	23.75	.570
02887>	5.72	1.932	11.73	2.307	17.75	.895	23.77	.570
02888>	5.73	1.947	11.75	2.296	17.77	.894	23.78	.569
02889>	5.75	1.962	11.77	2.286	17.78	.892	23.80	.568
02890>	5.77	1.978	11.78	2.276	17.80	.891	23.82	.568
02891>	5.78	1.993	11.80	2.265	17.82	.889	23.83	.567
02892>	5.80	2.010	11.82	2.255	17.83	.888	23.85	.567
02893>	5.82	2.026	11.83	2.245	17.85	.887	23.87	.566
02894>	5.83	2.042	11.85	2.235	17.87	.885	23.88	.566
02895>	5.85	2.059	11.87	2.225	17.88	.884	23.90	.565
02896>	5.87	2.076	11.88	2.216	17.90	.882	23.92	.564
02897>	5.88	2.093	11.90	2.206	17.92	.881	23.93	.564
02898>	5.90	2.111	11.92	2.196	17.93	.879	23.95	.563
02899>	5.92	2.129	11.93	2.187	17.95	.878	23.97	.563
02900>	5.93	2.148	11.95	2.178	17.97	.877	23.98	.562
02901>	5.95	2.166	11.97	2.168	17.98	.875	24.00	.562
02902>	5.97	2.185	11.98	2.159	18.00	.874	24.02	.561
02903>	5.98	2.204	12.00	2.150	18.02	.873		
02904>	6.00	2.224	12.02	2.141	18.03	.871		
02905>	6.02	2.244	12.03	2.132	18.05	.870		

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02906>
02907> ------------------------------------------------------------------------------
02908> 008:0003-----------------------------------------------------------------------
02909> *============================================================================
02910> *EXISTING - HUNTER SUBDIVISION - WEST OF RICHMOND ST (101W) - WEST
02911> *INCLUDING RICHMOND STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A
02912> *POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
02913> *============================================================================
02914> ----------------------
02915> | CALIB NASHYD       |   Area    (ha)=    8.33   Curve Number   (CN)=79.00
02916> | 01:101W   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02917> ----------------------   U.H. Tp(hrs)=    .670
02918>
02919>      Unit Hyd Qpeak  (cms)=     .475
02920>
02921>      PEAK FLOW       (cms)=     .733 (i)
02922>      TIME TO PEAK    (hrs)=    8.783
02923>      RUNOFF VOLUME    (mm)=   67.325
02924>      TOTAL RAINFALL   (mm)=  114.021
02925>      RUNOFF COEFFICIENT   =     .590
02926>
02927>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02928>
02929> ------------------------------------------------------------------------------
02930> 008:0004-----------------------------------------------------------------------
02931> *============================================================================
02932> *EXTERNAL AREA 1 (EXT-1) ON THE NORTHWEST. HYDROLOGIC SOIL GROUP "B" IS
02933> *ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02934> *============================================================================
02935> ----------------------
02936> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
02937> | 02:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02938> ----------------------   U.H. Tp(hrs)=    .870
02939>
02940>      Unit Hyd Qpeak  (cms)=     .838
02941>
02942>      PEAK FLOW       (cms)=    1.236 (i)
02943>      TIME TO PEAK    (hrs)=    9.033
02944>      RUNOFF VOLUME    (mm)=   61.365
02945>      TOTAL RAINFALL   (mm)=  114.021
02946>      RUNOFF COEFFICIENT   =     .538
02947>
02948>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02949>
02950> ------------------------------------------------------------------------------
02951> 008:0005-----------------------------------------------------------------------
02952> *============================================================================
02953> *EXTERNAL AREA 2 (EXT-2) ON THE NORTH HYDROLOGIC SOIL GROUP "B"
02954> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
02955> *============================================================================
02956> ----------------------
02957> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
02958> | 03:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02959> ----------------------   U.H. Tp(hrs)=   2.180
02960>
02961>      Unit Hyd Qpeak  (cms)=    8.399
02962>
02963>      PEAK FLOW       (cms)=   14.816 (i)
02964>      TIME TO PEAK    (hrs)=   10.567
02965>      RUNOFF VOLUME    (mm)=   61.365
02966>      TOTAL RAINFALL   (mm)=  114.021
02967>      RUNOFF COEFFICIENT   =     .538
02968>
02969>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02970>
```

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02971> ------------------------------------------------------------------------------
02972> 008:0006------------------------------------------------------------------------
02973> *============================================================================
02974> *TOTAL RUNOFF FROM EXT-1 AND EXT-2
02975> *============================================================================
02976> ------------------------
02977> | ADD HYD (1010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02978> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02979>                         ID1 01:101W        8.33      .733    8.78  67.33    .000
02980>                        +ID2 02:EXT-1      19.09    1.236    9.03  61.36    .000
02981>                        +ID3 03:EXT-2     479.35   14.816   10.57  61.37    .000
02982>                         ==================================================
02983>                         SUM 10:1010       506.77   15.484   10.43  61.46    .000
02984>
02985>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02986>
02987> ------------------------------------------------------------------------------
02988> 008:0007------------------------------------------------------------------------
02989> *============================================================================
02990> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (101C) - CENTRE
02991> *HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND
02992> *IS ASSUMED
02993> *============================================================================
02994> ----------------------
02995> | CALIB NASHYD       |   Area    (ha)=   27.77   Curve Number   (CN)=75.00
02996> | 02:101C   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02997> ----------------------   U.H. Tp(hrs)=    .750
02998>
02999>      Unit Hyd Qpeak  (cms)=    1.414
03000>
03001>      PEAK FLOW       (cms)=    2.015 (i)
03002>      TIME TO PEAK    (hrs)=    8.900
03003>      RUNOFF VOLUME    (mm)=   61.365
03004>      TOTAL RAINFALL   (mm)=  114.021
03005>      RUNOFF COEFFICIENT   =     .538
03006>
03007>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03008>
03009> ------------------------------------------------------------------------------
03010> 008:0008------------------------------------------------------------------------
03011> *============================================================================
03012> *EXTERNAL AREA 4 (EXT-4) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
03013> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
03014> *============================================================================
03015> ----------------------
03016> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
03017> | 03:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03018> ----------------------   U.H. Tp(hrs)=   1.040
03019>
03020>      Unit Hyd Qpeak  (cms)=     .033
03021>
03022>      PEAK FLOW       (cms)=     .051 (i)
03023>      TIME TO PEAK    (hrs)=    9.233
03024>      RUNOFF VOLUME    (mm)=   61.364
03025>      TOTAL RAINFALL   (mm)=  114.021
03026>      RUNOFF COEFFICIENT   =     .538
03027>
03028>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03029>
03030> ------------------------------------------------------------------------------
03031> 008:0009------------------------------------------------------------------------
03032> *============================================================================
03033> *TOTAL RUNOFF FROM 101C AND EXT-4
03034> *============================================================================
03035> ------------------------
03036> | ADD HYD (1009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03037> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03038>                         ID1 02:101C       27.77    2.015    8.90  61.36    .000
03039>                        +ID2 03:EXT-4        .91     .051    9.23  61.36    .000
03040>                         ==================================================
03041>                         SUM 09:1009       28.68    2.062    8.90  61.36    .000
03042>
03043>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03044>
03045> ------------------------------------------------------------------------------
03046> 008:0010------------------------------------------------------------------------
03047> *============================================================================
03048> *EXTERNAL AREA 3 (EXT-3) ON THE SOUTHEAST. HYDROLOGIC SOIL GROUP "B"
03049> *IS ADOPTED AND A GOOD CONTOURED AGRICULTURAL LAND IS ASSUMED
03050> *============================================================================
03051> ----------------------
03052> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
03053> | 03:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03054> ----------------------   U.H. Tp(hrs)=   1.930
03055>
03056>      Unit Hyd Qpeak  (cms)=    3.692
03057>
03058>      PEAK FLOW       (cms)=    6.378 (i)
03059>      TIME TO PEAK    (hrs)=   10.267
03060>      RUNOFF VOLUME    (mm)=   61.365
03061>      TOTAL RAINFALL   (mm)=  114.021
03062>      RUNOFF COEFFICIENT   =     .538
03063>
03064>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03065>
03066> ------------------------------------------------------------------------------
03067> 008:0011------------------------------------------------------------------------
03068> *============================================================================
03069> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (104E) - EAST
03070> *UCONTROLLED TOWARD THE NORTHEAST HYDROLOGIC SOIL GROUP "B" IS ADOPTED
03071> *AND A POOR CONTOURED AGRICULTURAL LAND IS ASSUMED
03072> *============================================================================
03073> ----------------------
03074> | CALIB NASHYD       |   Area    (ha)=    6.19   Curve Number   (CN)=79.00
03075> | 04:101E   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03076> ----------------------   U.H. Tp(hrs)=   1.270
03077>
03078>      Unit Hyd Qpeak  (cms)=     .186
03079>
03080>      PEAK FLOW       (cms)=     .331 (i)
03081>      TIME TO PEAK    (hrs)=    9.500
03082>      RUNOFF VOLUME    (mm)=   67.325
03083>      TOTAL RAINFALL   (mm)=  114.021
03084>      RUNOFF COEFFICIENT   =     .590
03085>
03086>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03087>
03088> ------------------------------------------------------------------------------
03089> 008:0012------------------------------------------------------------------------
03090> *============================================================================
03091> *TOTAL RUNOFF FROM AREA 101E AND EXT-3
03092> *============================================================================
03093> ------------------------
03094> | ADD HYD (1008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03095> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03096>                         ID1 03:EXT-3     186.58    6.378   10.27  61.36    .000
03097>                        +ID2 04:101E        6.19     .331    9.50  67.33    .000
03098>                         ==================================================
03099>                         SUM 08:1008      192.77    6.653   10.23  61.56    .000
03100>
03101>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03102>
03103> ------------------------------------------------------------------------------
03104> 008:0013------------------------------------------------------------------------
03105> *============================================================================
03106> *TOTAL RUNOFF FROM AREA 101W, EXT-1 AND EXT-2
03107> *============================================================================
03108> ------------------------
03109> | ADD HYD (1007      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03110> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03111>                         ID1 01:101W        8.33      .733    8.78  67.33    .000
03112>                        +ID2 02:101C       27.77    2.015    8.90  61.36    .000
03113>                        +ID3 04:101E        6.19     .331    9.50  67.33    .000
03114>                         ==================================================
03115>                         SUM 07:1007       42.29    3.005    8.90  63.41    .000
03116>
03117>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03118>
03119> ------------------------------------------------------------------------------
03120> 008:0014------------------------------------------------------------------------
03121> *============================================================================
03122> *TOTAL RUNOFF FROM SITE AND EXTERNAL AREAS
03123> *============================================================================
03124> ------------------------
03125> | ADD HYD (1001      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03126> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03127>                         ID1 10:1010      506.77   15.484   10.43  61.46    .000
03128>                        +ID2 09:1009       28.68    2.062    8.90  61.36    .000
03129>                        +ID3 08:1008      192.77    6.653   10.23  61.56    .000
03130>                         ==================================================
03131>                         SUM 01:1001      728.22   22.854   10.25  61.48    .000
03132>
03133>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03134>
03135> ------------------------------------------------------------------------------
03136> 008:0015------------------------------------------------------------------------
03137> *============================================================================
03138> *EXISTING - HUNTER SUBDIVISION - EAST OF RICHMOND ST (AREA 105) - SOUTHEAST
03139> *TOWARD IDA STREET. HYDROLOGIC SOIL GROUP "B" IS ADOPTED AND A GOOD
03140> *CONTOURED AGRICULTURAL LAND IS ASSUMED
03141> *============================================================================
03142> ----------------------
03143> | CALIB NASHYD       |   Area    (ha)=    3.02   Curve Number   (CN)=75.00
03144> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03145> ----------------------   U.H. Tp(hrs)=    .350
03146>
03147>      Unit Hyd Qpeak  (cms)=     .330
03148>
03149>      PEAK FLOW       (cms)=     .379 (i)
03150>      TIME TO PEAK    (hrs)=    8.400
03151>      RUNOFF VOLUME    (mm)=   61.365
03152>      TOTAL RAINFALL   (mm)=  114.021
03153>      RUNOFF COEFFICIENT   =     .538
03154>
03155>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03156>
03157> ------------------------------------------------------------------------------
03158> 008:0016------------------------------------------------------------------------
03159> ------------------------------------------------------------------------------
03160> 008:0002------------------------------------------------------------------------
03161> ------------------------------------------------------------------------------
03162> 008:0002------------------------------------------------------------------------
03163> ------------------------------------------------------------------------------
03164> 008:0002------------------------------------------------------------------------
03165> ------------------------------------------------------------------------------
03166> 008:0002------------------------------------------------------------------------
03167> ------------------------------------------------------------------------------
03168> 008:0002------------------------------------------------------------------------
03169> ------------------------------------------------------------------------------
03170> 008:0002------------------------------------------------------------------------
03171> ------------------------------------------------------------------------------
03172> 008:0002------------------------------------------------------------------------
03173>      FINISH
03174> ------------------------------------------------------------------------------
03175> ******************************************************************************
03176>      WARNINGS / ERRORS / NOTES
03177>      -------------------------
03178>    Simulation ended on 2022-03-09     at 13:40:18
03179> ==============================================================================
03180>
```

```
00001> 2     Metric units
00002> *#*****************************************************************************
00003> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
00004> *#  Date        : APRIL 2022
00005> *#  Modeller    : [MM]
00006> *#  Company     : STANTEC CONSULTING LTD.
00007> *#  License #   :
00008> *#*****************************************************************************
00009> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[1]
00010> *%                   ["25mm.HYT"] <--storm filename, one per line for NSTORM tim
00011> *%-----------------|-------------------------------------------------------------|
00012> READ STORM          STORM_FILENAME=["STORM.001"]
00013> *%-----------------|-------------------------------------------------------------|
00014> *%
00015> *%==============================================================================
00016> *%CHICAGO STORM PARAMETERS WERE OBTAINED FROM MUNICIPALITY OF THAMES CENTRE'S
00017> *%ENGINEERING DESIGN STANDARDS
00018> *%==============================================================================
00019> * WEST OF RICHMOND STREET
00020> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
00021> *==============================================================================
00022> CALIB STANDHYD      ID=[1], NHYD=["201"], DT=[1.0](min), AREA=[1.61](ha),
00023>                     XIMP=[0.55], TIMP=[0.65], DWF=[0.0](cms), LOSS=[2],
00024>                     SCS curve number CN=[61],
00025>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00026>                                          LGP=[35](m), MNP=[0.24], SCP=[0](min),
00027>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00028>                                          LGI=[217](m), MNI=[0.013], SCI=[0](min)
00029>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00030> *%-----------------|-------------------------------------------------------------|
00031> *==============================================================================
00032> * WEST OF RICHMOND STREET
00033> * PARK AREA (202)
00034> *==============================================================================
00035> CALIB NASHYD        ID=[2], NHYD=["202"], DT=[1.0]min, AREA=[2.96](ha),
00036>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00037>                     N=[3], TP=[0.5]hrs,
00038>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00039> *%-----------------|-------------------------------------------------------------|
00040> *%==============================================================================
00041> * WEST OF RICHMOND STREET
00042> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
00043> *==============================================================================
00044> CALIB STANDHYD      ID=[3], NHYD=["203"], DT=[1.0](min), AREA=[1.76](ha),
00045>                     XIMP=[0.45], TIMP=[0.55], DWF=[0.0](cms), LOSS=[2],
00046>                     SCS curve number CN=[61],
00047>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00048>                                          LGP=[40](m), MNP=[0.24], SCP=[0](min),
00049>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00050>                                          LGI=[35](m), MNI=[0.013], SCI=[0](min),
00051>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00052> *%-----------------|-------------------------------------------------------------|
00053> *==============================================================================
00054> * WEST OF RICHMOND STREET
00055> * PARK AREA ON THE SOUTH BOUNDARY (206a)
00056> *==============================================================================
00057> CALIB NASHYD        ID=[4], NHYD=["206a"], DT=[1.0]min, AREA=[0.59](ha),
00058>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00059>                     N=[3], TP=[0.27]hrs,
00060>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00061> *%-----------------|-------------------------------------------------------------|
00062> *==============================================================================
00063> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
00064> *==============================================================================
00065> ADD HYD             IDsum=[5], NHYD=["2005"], IDs to add=[1+2+3+4]
```

```
00066> *%-----------------|-------------------------------------------------------------|
00067> *==============================================================================
00068> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
00069> *==============================================================================
00070> CALIB NASHYD        ID=[1], NHYD=["EXT-1"], DT=[1.0]min, AREA=[19.09](ha),
00071>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00072>                     N=[3], TP=[0.87]hrs,
00073>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00074> *%-----------------|-------------------------------------------------------------|
00075> *==============================================================================
00076> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
00077> *==============================================================================
00078> CALIB NASHYD        ID=[2], NHYD=["EXT-2"], DT=[1.0]min, AREA=[479.35](ha),
00079>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00080>                     N=[3], TP=[2.18]hrs,
00081>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00082> *%-----------------|-------------------------------------------------------------|
00083> *==============================================================================
00084> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
00085> *==============================================================================
00086> ADD HYD             IDsum=[10], NHYD=["2010"], IDs to add=[5+1+2]
00087> *%-----------------|-------------------------------------------------------------|
00088> *==============================================================================
00089> * EAST OF RICHMOND STREET
00090> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
00091> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
00092> *==============================================================================
00093> CALIB STANDHYD      ID=[1], NHYD=["208a"], DT=[1.0](min), AREA=[1.6](ha),
00094>                     XIMP=[0.48], TIMP=[0.58], DWF=[0.0](cms), LOSS=[2],
00095>                     SCS curve number CN=[61],
00096>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00097>                                          LGP=[35](m), MNP=[0.24], SCP=[0](min),
00098>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00099>                                          LGI=[269](m), MNI=[0.013], SCI=[0](min)
00100>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00101> *%-----------------|-------------------------------------------------------------|
00102> *==============================================================================
00103> * WEST OF RICHMOND STREET
00104> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
00105> *==============================================================================
00106> CALIB NASHYD        ID=[2], NHYD=["204a"], DT=[1.0]min, AREA=[0.99](ha),
00107>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00108>                     N=[3], TP=[0.78]hrs,
00109>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00110> *%-----------------|-------------------------------------------------------------|
00111> *==============================================================================
00112> * WEST OF RICHMOND STREET
00113> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
00114> *==============================================================================
00115> CALIB STANDHYD      ID=[3], NHYD=["205a"], DT=[1.0](min), AREA=[0.89](ha),
00116>                     XIMP=[0.55], TIMP=[0.65], DWF=[0.0](cms), LOSS=[2],
00117>                     SCS curve number CN=[61],
00118>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00119>                                          LGP=[35](m), MNP=[0.24], SCP=[0](min),
00120>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00121>                                          LGI=[241](m), MNI=[0.013], SCI=[0](min)
00122>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00123> *%-----------------|-------------------------------------------------------------|
00124> *==============================================================================
00125> * RICHMOND STREET
00126> * PROPOSED - HUNTER SUBDIVISION (205b)
00127> *==============================================================================
00128> CALIB STANDHYD      ID=[4], NHYD=["205b"], DT=[1.0](min), AREA=[0.78](ha),
00129>                     XIMP=[0.60], TIMP=[0.70], DWF=[0.0](cms), LOSS=[2],
00130>                     SCS curve number CN=[61],
```

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00131>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00132>                                           LGP=[194](m), MNP=[0.24], SCP=[0](min),
00133>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00134>                                           LGI=[388](m), MNI=[0.013], SCI=[0](min)
00135>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00136> *%-----------------|-------------------------------------------------------------|
00137> *==============================================================================
00138> * WEST OF RICHMOND STREET
00139> * PARK AREA ON THE SOUTH BOUNDARY (206b)
00140> *==============================================================================
00141> CALIB NASHYD        ID=[5], NHYD=["206b"], DT=[1.0]min, AREA=[0.18](ha),
00142>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00143>                     N=[3], TP=[0.16]hrs,
00144>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00145> *%-----------------|-------------------------------------------------------------|
00146> *==============================================================================
00147> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
00148> *==============================================================================
00149> ADD HYD             IDsum=[9], NHYD=["2009"], IDs to add=[1+2+3+4+5]
00150> *%-----------------|-------------------------------------------------------------|
00151> *==============================================================================
00152> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
00153> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
00154> *==============================================================================
00155> CALIB STANDHYD      ID=[1], NHYD=["210"], DT=[1.0](min), AREA=[4.25](ha),
00156>                     XIMP=[0.11], TIMP=[0.26], DWF=[0.0](cms), LOSS=[2],
00157>                     SCS curve number CN=[75],
00158>                     Pervious   surfaces: IAper=[8](mm), SLPP=[2](%),
00159>                                           LGP=[237](m), MNP=[0.24], SCP=[0](min),
00160>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00161>                                           LGI=[256](m), MNI=[0.013], SCI=[0](min)
00162>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00163> *%-----------------|-------------------------------------------------------------|
00164> *==============================================================================
00165> * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
00166> *==============================================================================
00167> CALIB NASHYD        ID=[2], NHYD=["EXT-3"], DT=[1.0]min, AREA=[186.58](ha),
00168>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00169>                     N=[3], TP=[1.93]hrs,
00170>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00171> *%-----------------|-------------------------------------------------------------|
00172> *==============================================================================
00173> *SUB-TOTAL FLOW TO SANDUSKY DRAIN
00174> *==============================================================================
00175> ADD HYD             IDsum=[3], NHYD=["2003"], IDs to add=[1+2]
00176> *%-----------------|-------------------------------------------------------------|
00177> *==============================================================================
00178> * SF ON THE NORTHEAST (ESTATE LOT)
00179> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
00180> *==============================================================================
00181> CALIB STANDHYD      ID=[1], NHYD=["212"], DT=[1.0](min), AREA=[1.26](ha),
00182>                     XIMP=[0.45], TIMP=[0.55], DWF=[0.0](cms), LOSS=[2],
00183>                     SCS curve number CN=[75],
00184>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00185>                                           LGP=[40](m), MNP=[0.24], SCP=[0](min),
00186>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00187>                                           LGI=[35](m), MNI=[0.013], SCI=[0](min),
00188>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00189> *%-----------------|-------------------------------------------------------------|
00190> *==============================================================================
00191> * EAST OF RICHMOND STREET
00192> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
00193> *==============================================================================
00194> CALIB STANDHYD      ID=[2], NHYD=["207"], DT=[1.0](min), AREA=[0.45](ha),
00195>                     XIMP=[0.55], TIMP=[0.65], DWF=[0.0](cms), LOSS=[2],
```

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00196>                     SCS curve number CN=[61],
00197>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00198>                                           LGP=[35](m), MNP=[0.24], SCP=[0](min),
00199>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00200>                                           LGI=[155](m), MNI=[0.013], SCI=[0](min)
00201>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00202> *%-----------------|-------------------------------------------------------------|
00203> *==========================================================================
00204> * EAST OF RICHMOND STREET
00205> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
00206> *==========================================================================
00207> CALIB NASHYD        ID=[4], NHYD=["204b"], DT=[1.0]min, AREA=[0.68](ha),
00208>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00209>                     N=[3], TP=[0.53]hrs,
00210>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00211> *%-----------------|-------------------------------------------------------------|
00212> *==========================================================================
00213> * EAST OF RICHMOND STREET
00214> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
00215> *==========================================================================
00216> CALIB STANDHYD      ID=[5], NHYD=["209"], DT=[1.0](min), AREA=[2.61](ha),
00217>                     XIMP=[0.45], TIMP=[0.56], DWF=[0.0](cms), LOSS=[2],
00218>                     SCS curve number CN=[61],
00219>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00220>                                           LGP=[35](m), MNP=[0.24], SCP=[0](min),
00221>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00222>                                           LGI=[126](m), MNI=[0.013], SCI=[0](min)
00223>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00224> *%-----------------|-------------------------------------------------------------|
00225> *==========================================================================
00226> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
00227> *==========================================================================
00228> ROUTE RESERVOIR     IDout=[6],   NHYD=[2006],  IDin=[5],
00229>                     RDT=[1](min),
00230>                           TABLE of ( OUTFLOW-STORAGE ) values
00231>                                      (cms) - (ha-m)
00232>                                    [ 0.0000 ,  0.0000 ]
00233>                                    [ 0.0085 ,  0.0080 ]
00234>                                    [ 0.0130 ,  0.0197 ]
00235>                                    [ 0.0163 ,  0.0351 ]
00236>                                    [ 0.0190 ,  0.0543 ]
00237>                                    [ 0.0214 ,  0.0771 ]
00238>                                    [ 0.0235 ,  0.1038 ]
00239>                                    [ 0.0255 ,  0.1341 ]
00240>                                    [ 0.0273 ,  0.1682 ]
00241>                                    [ 0.0290 ,  0.2060 ]
00242>                                    [ 0.0298 ,  0.2263 ]
00243>                                    [ 0.0306 ,  0.2476 ]
00244>                                    [ 0.0314 ,  0.2698 ]
00245>                                    [ 0.0321 ,  0.2929 ]
00246>                                    [ 0.0329 ,  0.3169 ]
00247>                                    [ 0.0336 ,  0.3419 ]
00248>                                    [ 0.0343 ,  0.3678 ]
00249>                                    [ 0.0350 ,  0.3946 ]
00250>                                    [ 0.0357 ,  0.4224 ]
00251>                                    [   -1   ,   -1    ]  (max twenty pts)
00252>                           IDovf=[7], NHYDovf=[2007]
00253> *%-----------------------|-----------------------------------------------------|
00254> *==========================================================================
00255> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
00256> *==========================================================================
00257> ADD HYD             IDsum=[8], NHYD=["2008"], IDs to add=[1+2+3+4+6]
00258> *%-----------------|-------------------------------------------------------------|
00259> *==========================================================================
00260> * EAST OF RICHMOND STREET
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00261> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
00262> *==============================================================================
00263> CALIB STANDHYD      ID=[1], NHYD=["208b"], DT=[1.0](min), AREA=[24.15](ha),
00264>                     XIMP=[0.43], TIMP=[0.54], DWF=[0.0](cms), LOSS=[2],
00265>                     SCS curve number CN=[61],
00266>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00267>                                          LGP=[40](m), MNP=[0.24], SCP=[0](min),
00268>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00269>                                          LGI=[35](m), MNI=[0.013], SCI=[0](min),
00270>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00271> *%-----------------|-------------------------------------------------------------|
00272> *==============================================================================
00273> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
00274> *==============================================================================
00275> CALIB NASHYD        ID=[2], NHYD=["EXT-4"], DT=[1.0]min, AREA=[0.91](ha),
00276>                     DWF=[0.0](cms),  CN/C=[75], IA=[5](mm),
00277>                     N=[3], TP=[1.04]hrs,
00278>                     RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
00279> *%-----------------|-------------------------------------------------------------|
00280> *==============================================================================
00281> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
00282> *==============================================================================
00283> ADD HYD             IDsum=[3], NHYD=["SUM"], IDs to add=[1+2]
00284> *%-----------------------------------------------------------------------------|
00285> *==============================================================================
00286> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
00287> *==============================================================================
00288> ROUTE RESERVOIR     IDout=[4],   NHYD=[2004],  IDin=[3],
00289>                     RDT=[1](min),
00290>                           TABLE of ( OUTFLOW-STORAGE ) values
00291>                                       (cms) - (ha-m)
00292>                                    [ 0.0000 ,  0.0000 ]
00293>                                    [ 0.0197 ,  0.1250 ]
00294>                                    [ 0.0743 ,  0.2530 ]
00295>                                    [ 0.1564 ,  0.3839 ]
00296>                                    [ 0.2630 ,  0.5178 ]
00297>                                    [ 0.4156 ,  0.6547 ]
00298>                                    [ 0.5944 ,  0.7945 ]
00299>                                    [ 0.7833 ,  0.9373 ]
00300>                                    [ 0.9934 ,  1.0830 ]
00301>                                    [ 1.2155 ,  1.2317 ]
00302>                                    [ 1.4406 ,  1.3834 ]
00303>                                    [ 1.6545 ,  1.5381 ]
00304>                                    [ 1.8271 ,  1.6957 ]
00305>                                    [ 1.9856 ,  1.8562 ]
00306>                                    [   -1   ,   -1    ]  (max twenty pts)
00307>                           IDovf=[1], NHYDovf=[2001]
00308> *%-----------------------|-----------------------------------------------------|
00309> *==============================================================================
00310> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
00311> *==============================================================================
00312> ADD HYD             IDsum=[7], NHYD=["TotalCNR"], IDs to add=[10+9+8+4]
00313> *%-----------------|-------------------------------------------------------------|
00314> *%=============================================================================
00315> *PROPOSED - FLOW TO IDA STREET
00316> *==============================================================================
00317> CALIB STANDHYD      ID=[2], NHYD=["211"], DT=[1.0](min), AREA=[0.54](ha),
00318>                     XIMP=[0.45], TIMP=[0.55], DWF=[0.0](cms), LOSS=[2],
00319>                     SCS curve number CN=[61],
00320>                     Pervious   surfaces: IAper=[5](mm), SLPP=[2](%),
00321>                                          LGP=[40](m), MNP=[0.24], SCP=[0](min),
00322>                     Impervious surfaces: IAimp=[2](mm), SLPI=[2](%),
00323>                                          LGI=[35](m), MNI=[0.013], SCI=[0](min),
00324>                     RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
00325> *%-----------------|-------------------------------------------------------------|
```

```
00326> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[2]
00327> *%                    ["2YR.HYT"] <--storm filename, one per line for NSTORM time
00328> *%-----------------|-------------------------------------------------------------|
00329> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[3]
00330> *%                    ["5YR.HYT"] <--storm filename, one per line for NSTORM time
00331> *%-----------------|-------------------------------------------------------------|
00332> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[4]
00333> *%                    ["10YR.HYT"] <--storm filename, one per line for NSTORM tim
00334> *%-----------------|-------------------------------------------------------------|
00335> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[5]
00336> *%                    ["25YR.HYT"] <--storm filename, one per line for NSTORM tim
00337> *%-----------------|-------------------------------------------------------------|
00338> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[6]
00339> *%                    ["50YR.HYT"] <--storm filename, one per line for NSTORM tim
00340> *%-----------------|-------------------------------------------------------------|
00341> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[7]
00342> *%                    ["100YR.HYT"] <--storm filename, one per line for NSTORM ti
00343> *%-----------------|-------------------------------------------------------------|
00344> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[8]
00345> *%                    ["250YR.HYT"] <--storm filename, one per line for NSTORM ti
00346> *%-----------------|-------------------------------------------------------------|
00347> FINISH
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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  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: 2022-05-06     TIME: 14:22:48     RUN COUNTER: 000505         *
00039>  ******************************************************************************
00040>  * Input   filename: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\POST.DAT        *
00041>  * Output  filename: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\POST.out        *
00042>  * Summary filename: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\POST.sum        *
00043>  * User comments:                                                              *
00044>  * 1:_________________________________________________________________________*
00045>  * 2:_________________________________________________________________________*
00046>  * 3:_________________________________________________________________________*
00047>  ******************************************************************************
00048>
00049> ------------------------------------------------------------------------------
00050> 001:0001-----------------------------------------------------------------------
00051> *#****************************************************************************
00052> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
00053> *#  Date        : APRIL 2022
00054> *#  Modeller    : [MM]
00055> *#  Company     : STANTEC CONSULTING LTD.
00056> *#  License #   :
00057> *#****************************************************************************
00058> --------------------
00059> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00060> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00061>     TZERO =   .00 hrs on        0
00062>     METOUT=   2 (output = METRIC)
00063>     NRUN  = 001
00064>     NSTORM=   1
00065>            #  1=25mm.HYT
00066> ------------------------------------------------------------------------------
00067> 001:0002-----------------------------------------------------------------------
00068> --------------------
00069> | READ STORM      |    Filename: 25mm Chicago 4-hr duration
00070> | Ptotal=  25.07 mm|    Comments: 25mm Chicago 4-hr duration
00071> --------------------
00072>                TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
00073>                 hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
00074>                 .02   1.326 |  1.03   5.280 |  2.05   4.563 |  3.07   1.965
00075>                 .03   1.341 |  1.05   5.587 |  2.07   4.460 |  3.08   1.948
00076>                 .05   1.357 |  1.07   5.933 |  2.08   4.362 |  3.10   1.931
00077>                 .07   1.372 |  1.08   6.326 |  2.10   4.268 |  3.12   1.915
00078>                 .08   1.389 |  1.10   6.776 |  2.12   4.179 |  3.13   1.899
00079>                 .10   1.405 |  1.12   7.297 |  2.13   4.093 |  3.15   1.883
00080>                 .12   1.422 |  1.13   7.905 |  2.15   4.011 |  3.17   1.867
00081>                 .13   1.440 |  1.15   8.624 |  2.17   3.932 |  3.18   1.852
00082>                 .15   1.458 |  1.17   9.486 |  2.18   3.857 |  3.20   1.837
00083>                 .17   1.476 |  1.18  10.537 |  2.20   3.785 |  3.22   1.822
00084>                 .18   1.495 |  1.20  11.844 |  2.22   3.715 |  3.23   1.807
00085>                 .20   1.515 |  1.22  13.505 |  2.23   3.648 |  3.25   1.793
00086>                 .22   1.535 |  1.23  15.680 |  2.25   3.583 |  3.27   1.779
00087>                 .23   1.556 |  1.25  18.632 |  2.27   3.521 |  3.28   1.765
00088>                 .25   1.577 |  1.27  22.824 |  2.28   3.461 |  3.30   1.752
00089>                 .27   1.599 |  1.28  29.158 |  2.30   3.404 |  3.32   1.738
00090>                 .28   1.622 |  1.30  39.586 |  2.32   3.348 |  3.33   1.725
00091>                 .30   1.645 |  1.32  59.118 |  2.33   3.294 |  3.35   1.712
00092>                 .32   1.669 |  1.33 104.502 |  2.35   3.242 |  3.37   1.700
00093>                 .33   1.694 |  1.35  91.771 |  2.37   3.192 |  3.38   1.687
00094>                 .35   1.720 |  1.37  69.029 |  2.38   3.143 |  3.40   1.675
00095>                 .37   1.747 |  1.38  54.503 |  2.40   3.096 |  3.42   1.663
00096>                 .38   1.774 |  1.40  44.578 |  2.42   3.051 |  3.43   1.651
00097>                 .40   1.803 |  1.42  37.448 |  2.43   3.007 |  3.45   1.639
00098>                 .42   1.833 |  1.43  32.122 |  2.45   2.964 |  3.47   1.628
00099>                 .43   1.863 |  1.45  28.020 |  2.47   2.922 |  3.48   1.616
00100>                 .45   1.895 |  1.47  24.778 |  2.48   2.882 |  3.50   1.605
00101>                 .47   1.928 |  1.48  22.163 |  2.50   2.843 |  3.52   1.594
00102>                 .48   1.963 |  1.50  20.016 |  2.52   2.805 |  3.53   1.583
00103>                 .50   1.998 |  1.52  18.226 |  2.53   2.768 |  3.55   1.572
00104>                 .52   2.036 |  1.53  16.714 |  2.55   2.732 |  3.57   1.562
00105>                 .53   2.074 |  1.55  15.422 |  2.57   2.697 |  3.58   1.552
00106>                 .55   2.115 |  1.57  14.308 |  2.58   2.663 |  3.60   1.541
00107>                 .57   2.157 |  1.58  13.338 |  2.60   2.630 |  3.62   1.531
00108>                 .58   2.201 |  1.60  12.487 |  2.62   2.598 |  3.63   1.521
00109>                 .60   2.247 |  1.62  11.735 |  2.63   2.566 |  3.65   1.512
00110>                 .62   2.295 |  1.63  11.066 |  2.65   2.536 |  3.67   1.502
00111>                 .63   2.345 |  1.65  10.468 |  2.67   2.506 |  3.68   1.492
00112>                 .65   2.398 |  1.67   9.930 |  2.68   2.477 |  3.70   1.483
00113>                 .67   2.454 |  1.68   9.444 |  2.70   2.449 |  3.72   1.474
00114>                 .68   2.513 |  1.70   9.003 |  2.72   2.421 |  3.73   1.464
00115>                 .70   2.574 |  1.72   8.601 |  2.73   2.394 |  3.75   1.456
00116>                 .72   2.639 |  1.73   8.233 |  2.75   2.368 |  3.77   1.447
00117>                 .73   2.707 |  1.75   7.895 |  2.77   2.342 |  3.78   1.438
00118>                 .75   2.780 |  1.77   7.584 |  2.78   2.317 |  3.80   1.429
00119>                 .77   2.857 |  1.78   7.297 |  2.80   2.293 |  3.82   1.421
00120>                 .78   2.938 |  1.80   7.031 |  2.82   2.269 |  3.83   1.412
00121>                 .80   3.025 |  1.82   6.783 |  2.83   2.246 |  3.85   1.404
00122>                 .82   3.118 |  1.83   6.553 |  2.85   2.223 |  3.87   1.396
00123>                 .83   3.216 |  1.85   6.338 |  2.87   2.200 |  3.88   1.388
00124>                 .85   3.322 |  1.87   6.137 |  2.88   2.178 |  3.90   1.380
00125>                 .87   3.435 |  1.88   5.949 |  2.90   2.157 |  3.92   1.372
00126>                 .88   3.557 |  1.90   5.772 |  2.92   2.136 |  3.93   1.364
00127>                 .90   3.688 |  1.92   5.606 |  2.93   2.115 |  3.95   1.356
00128>                 .92   3.830 |  1.93   5.449 |  2.95   2.095 |  3.97   1.349
00129>                 .93   3.985 |  1.95   5.301 |  2.97   2.076 |  3.98   1.341
00130>                 .95   4.153 |  1.97   5.161 |  2.98   2.056 |  4.00   1.334
00131>                 .97   4.336 |  1.98   5.029 |  3.00   2.037 |  4.02   1.326
00132>                 .98   4.537 |  2.00   4.903 |  3.02   2.019 |
00133>                1.00   4.760 |  2.02   4.784 |  3.03   2.001 |
00134>                1.02   5.006 |  2.03   4.671 |  3.05   1.983 |
00135>
00136> ------------------------------------------------------------------------------
00137> 001:0003-----------------------------------------------------------------------
00138> * WEST OF RICHMOND STREET
00139> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
00140> *============================================================================
00141> ----------------------
00142> | CALIB STANDHYD     |   Area    (ha)=    1.61
00143> | 01:201    DT= 1.00 |   Total Imp(ha)=   65.00   Dir. Conn.(ha)=   55.00
00144> ----------------------
00145>                                  IMPERVIOUS    PERVIOUS (i)
00146>      Surface Area      (ha)=       1.05          .56
00147>      Dep. Storage      (mm)=       2.00         5.00
00148>      Average Slope      (%)=       2.00         2.00
00149>      Length             (m)=     217.00        35.00
00150>      Mannings n           =        .013         .240
00151>
00152>      Max.eff.Inten.(mm/hr)=      81.10         4.63
00153>                 over (min)        4.00        25.00
00154>      Storage Coeff.  (min)=       3.59 (ii)   25.32 (ii)
00155>      Unit Hyd. Tpeak (min)=       4.00        25.00
00156>      Unit Hyd. peak  (cms)=        .30          .04
00157>                                                          *TOTALS*
00158>      PEAK FLOW       (cms)=        .15          .00          .148 (iii)
00159>      TIME TO PEAK    (hrs)=       1.40         1.90         1.400
00160>      RUNOFF VOLUME    (mm)=      23.07         3.04        14.055
00161>      TOTAL RAINFALL   (mm)=      25.07        25.07        25.067
00162>      RUNOFF COEFFICIENT   =        .92          .12          .561
00163>
00164>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00165>            CN* =  61.0    Ia = Dep. Storage  (Above)
00166>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00167>            THAN THE STORAGE COEFFICIENT.
00168>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00169>
00170> ------------------------------------------------------------------------------
00171> 001:0004-----------------------------------------------------------------------
00172> *============================================================================
00173> * WEST OF RICHMOND STREET
00174> * PARK AREA (202)
00175> *============================================================================
00176> ----------------------
00177> | CALIB NASHYD       |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
00178> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00179> ----------------------   U.H. Tp(hrs)=    .500
00180>
00181>      Unit Hyd Qpeak  (cms)=     .226
00182>
00183>      PEAK FLOW       (cms)=     .018 (i)
00184>      TIME TO PEAK    (hrs)=    2.133
00185>      RUNOFF VOLUME    (mm)=    3.845
00186>      TOTAL RAINFALL   (mm)=   25.067
00187>      RUNOFF COEFFICIENT   =     .153
00188>
00189>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00190>
00191> ------------------------------------------------------------------------------
00192> 001:0005-----------------------------------------------------------------------
00193> * WEST OF RICHMOND STREET
00194> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
00195> *============================================================================
00196> ----------------------
00197> | CALIB STANDHYD     |   Area    (ha)=    1.76
00198> | 03:203    DT= 1.00 |   Total Imp(ha)=   55.00   Dir. Conn.(ha)=   45.00
00199> ----------------------
00200>                                  IMPERVIOUS    PERVIOUS (i)
00201>      Surface Area      (ha)=        .97          .79
00202>      Dep. Storage      (mm)=       2.00         5.00
00203>      Average Slope      (%)=       2.00         2.00
00204>      Length             (m)=      35.00        40.00
00205>      Mannings n           =        .013         .240
00206>
00207>      Max.eff.Inten.(mm/hr)=     104.50         4.03
00208>                 over (min)        1.00        26.00
00209>      Storage Coeff.  (min)=       1.09 (ii)   25.98 (ii)
00210>      Unit Hyd. Tpeak (min)=       1.00        26.00
00211>      Unit Hyd. peak  (cms)=       1.02          .04
00212>                                                          *TOTALS*
00213>      PEAK FLOW       (cms)=        .19          .00          .194 (iii)
00214>      TIME TO PEAK    (hrs)=       1.35         1.92         1.350
00215>      RUNOFF VOLUME    (mm)=      23.07         2.86        11.953
00216>      TOTAL RAINFALL   (mm)=      25.07        25.07        25.067
00217>      RUNOFF COEFFICIENT   =        .92          .11          .477
00218>
00219>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00220>            CN* =  61.0    Ia = Dep. Storage  (Above)
00221>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00222>            THAN THE STORAGE COEFFICIENT.
00223>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00224>
00225> ------------------------------------------------------------------------------
00226> 001:0006-----------------------------------------------------------------------
00227> *============================================================================
00228> * WEST OF RICHMOND STREET
00229> * PARK AREA ON THE SOUTH BOUNDARY (206a)
00230> *============================================================================
00231> ----------------------
00232> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
00233> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00234> ----------------------   U.H. Tp(hrs)=    .270
00235>
00236>      Unit Hyd Qpeak  (cms)=     .083
00237>
00238>      PEAK FLOW       (cms)=     .005 (i)
00239>      TIME TO PEAK    (hrs)=    1.783
00240>      RUNOFF VOLUME    (mm)=    3.844
00241>      TOTAL RAINFALL   (mm)=   25.067
00242>      RUNOFF COEFFICIENT   =     .153
00243>
00244>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00245>
00246> ------------------------------------------------------------------------------
00247> 001:0007-----------------------------------------------------------------------
00248> *============================================================================
00249> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
00250> *============================================================================
00251> ----------------------
00252> | ADD HYD (2005      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00253> ----------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
00254>                          ID1 01:201       1.61     .148    1.40  14.06    .000
00255>                         +ID2 02:202       2.96     .018    2.13   3.84    .000
00256>                         +ID3 03:203       1.76     .194    1.35  11.95    .000
00257>                         +ID4 04:206a       .59     .005    1.78   3.84    .000
00258>                          ==================================================
00259>                          SUM 05:2005      6.92     .290    1.37   8.28    .000
00260>
00261>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00262>
00263> ------------------------------------------------------------------------------
00264> 001:0008-----------------------------------------------------------------------
00265> *============================================================================
00266> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
00267> *============================================================================
00268> ----------------------
00269> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
00270> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
```

```
---------------------   U.H. Tp(hrs)=    .870

     Unit Hyd Qpeak  (cms)=     .838

     PEAK FLOW       (cms)=     .083 (i)
     TIME TO PEAK    (hrs)=    2.650
     RUNOFF VOLUME    (mm)=    3.845
     TOTAL RAINFALL   (mm)=   25.067
     RUNOFF COEFFICIENT   =     .153

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

--------------------------------------------------------------------------------
001:0009----------------------------------------------------------------------
*==============================================================================
*EXTERNAL AREA ON THE NORTHWEST (EXT-2)
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
| 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   2.180

     Unit Hyd Qpeak  (cms)=    8.399

     PEAK FLOW       (cms)=    1.125 (i)
     TIME TO PEAK    (hrs)=    4.400
     RUNOFF VOLUME    (mm)=    3.845
     TOTAL RAINFALL   (mm)=   25.067
     RUNOFF COEFFICIENT   =     .153

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

--------------------------------------------------------------------------------
001:0010----------------------------------------------------------------------
*==============================================================================
*SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
*==============================================================================
------------------------
| ADD HYD (2010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                       ID1 05:2005          6.92     .290    1.37   8.28    .000
                      +ID2 01:EXT-1        19.09     .083    2.65   3.84    .000
                      +ID3 02:EXT-2       479.35    1.125    4.40   3.84    .000
                       ==========================================================
                       SUM 10:2010        505.36    1.170    4.30   3.91    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0011----------------------------------------------------------------------
*==============================================================================
* EAST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
* UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
*==============================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=    1.60
| 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .93          .67
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     269.00        35.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=      81.10         4.07
                over (min)        4.00        27.00
     Storage Coeff.  (min)=       4.09 (ii)   26.97 (ii)
     Unit Hyd. Tpeak (min)=       4.00        27.00
     Unit Hyd. peak  (cms)=        .28         .04
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .12         .00          .123 (iii)
     TIME TO PEAK    (hrs)=       1.40        1.93         1.400
     RUNOFF VOLUME    (mm)=      23.07        2.91        12.583
     TOTAL RAINFALL   (mm)=      25.07       25.07        25.067
     RUNOFF COEFFICIENT   =        .92         .12          .502

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
001:0012----------------------------------------------------------------------
*==============================================================================
* WEST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
| 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .780

     Unit Hyd Qpeak  (cms)=     .048

     PEAK FLOW       (cms)=     .005 (i)
     TIME TO PEAK    (hrs)=    2.533
     RUNOFF VOLUME    (mm)=    3.844
     TOTAL RAINFALL   (mm)=   25.067
     RUNOFF COEFFICIENT   =     .153

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

--------------------------------------------------------------------------------
001:0013----------------------------------------------------------------------
*==============================================================================
* WEST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
*==============================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .89
| 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .58         .31
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     241.00        35.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=      81.10         4.53
                over (min)        4.00        26.00
     Storage Coeff.  (min)=       3.82 (ii)   25.74 (ii)
     Unit Hyd. Tpeak (min)=       4.00        26.00
     Unit Hyd. peak  (cms)=        .29         .04
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .08         .00          .080 (iii)
     TIME TO PEAK    (hrs)=       1.40        1.92         1.400
     RUNOFF VOLUME    (mm)=      23.07        3.04        14.055
     TOTAL RAINFALL   (mm)=      25.07       25.07        25.067
     RUNOFF COEFFICIENT   =        .92         .12          .561

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
001:0014----------------------------------------------------------------------
*==============================================================================
* RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION (205b)
*==============================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .78
| 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .55         .23
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     388.00       194.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=      75.78         2.41
                over (min)        5.00        84.00
     Storage Coeff.  (min)=       5.23 (ii)   84.04 (ii)
     Unit Hyd. Tpeak (min)=       5.00        84.00
     Unit Hyd. peak  (cms)=        .22         .01
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .07         .00          .067 (iii)
     TIME TO PEAK    (hrs)=       1.42        3.03         1.417
     RUNOFF VOLUME    (mm)=      23.07        3.18        15.110
     TOTAL RAINFALL   (mm)=      25.07       25.07        25.067
     RUNOFF COEFFICIENT   =        .92         .13          .603

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
001:0015----------------------------------------------------------------------
*==============================================================================
* WEST OF RICHMOND STREET
* PARK AREA ON THE SOUTH BOUNDARY (206b)
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
| 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .160

     Unit Hyd Qpeak  (cms)=     .043

     PEAK FLOW       (cms)=     .002 (i)
     TIME TO PEAK    (hrs)=    1.617
     RUNOFF VOLUME    (mm)=    3.843
     TOTAL RAINFALL   (mm)=   25.067
     RUNOFF COEFFICIENT   =     .153

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

--------------------------------------------------------------------------------
001:0016----------------------------------------------------------------------
*==============================================================================
* SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
*==============================================================================
------------------------
| ADD HYD (2009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                       ID1 01:208a          1.60      .123    1.40  12.58    .000
                      +ID2 02:204a           .99      .005    2.53   3.84    .000
                      +ID3 03:205a           .89      .080    1.40  14.06    .000
                      +ID4 04:205b           .78      .067    1.42  15.11    .000
                      +ID5 05:206b           .18      .002    1.62   3.84    .000
                       ==========================================================
                       SUM 09:2009          4.44      .267    1.42  11.02    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0017----------------------------------------------------------------------
*==============================================================================
* UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
* ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
*==============================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=    4.25
| 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         3.14
     Dep. Storage     (mm)=       2.00         8.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     256.00       237.00
     Mannings n           =       .013         .240

     Max.eff.Inten.(mm/hr)=      81.10         2.42
                over (min)        4.00        93.00
     Storage Coeff.  (min)=       3.97 (ii)   92.63 (ii)
     Unit Hyd. Tpeak (min)=       4.00        93.00
     Unit Hyd. peak  (cms)=        .28         .01
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .08         .01          .075 (iii)
     TIME TO PEAK    (hrs)=       1.40        3.32         1.400
     RUNOFF VOLUME    (mm)=      23.07        3.82         5.936
     TOTAL RAINFALL   (mm)=      25.07       25.07        25.067
     RUNOFF COEFFICIENT   =        .92         .15          .237

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  75.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
001:0018----------------------------------------------------------------------
*==============================================================================
* EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
*==============================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
| 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   1.930

     Unit Hyd Qpeak  (cms)=    3.692

     PEAK FLOW       (cms)=     .477 (i)
     TIME TO PEAK    (hrs)=    4.133
     RUNOFF VOLUME    (mm)=    3.845
     TOTAL RAINFALL   (mm)=   25.067
     RUNOFF COEFFICIENT   =     .153

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

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00541> 001:0019-----------------------------------------------------------------------
00542> *===========================================================================
00543> *SUB-TOTAL FLOW TO SANDUSKY DRAIN
00544> *===========================================================================
00545> -----------------------
00546> | ADD HYD (2003      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00547> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00548>                        ID1 01:210          4.25     .075    1.40   5.94    .000
00549>                       +ID2 02:EXT-3      186.58     .477    4.13   3.84    .000
00550>                        ==================================================
00551>                        SUM 03:2003        190.83     .488    4.05   3.89    .000
00552>
00553>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00554>
00555> -----------------------------------------------------------------------------
00556> 001:0020-----------------------------------------------------------------------
00557> *===========================================================================
00558> * SF ON THE NORTHEAST (ESTATE LOT)
00559> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
00560> *===========================================================================
00561> -----------------------
00562> | CALIB STANDHYD    |   Area    (ha)=    1.26
00563> | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
00564> -----------------------
00565>                                IMPERVIOUS    PERVIOUS (i)
00566>      Surface Area     (ha)=       .69          .57
00567>      Dep. Storage     (mm)=      2.00         5.00
00568>      Average Slope     (%)=      2.00         2.00
00569>      Length            (m)=     35.00        40.00
00570>      Mannings n           =      .013         .240
00571>
00572>      Max.eff.Inten.(mm/hr)=    104.50         8.13
00573>                 over (min)      1.00        20.00
00574>      Storage Coeff.  (min)=     1.09 (ii)   19.88 (ii)
00575>      Unit Hyd. Tpeak (min)=     1.00        20.00
00576>      Unit Hyd. peak  (cms)=     1.02          .06
00577>                                                          *TOTALS*
00578>      PEAK FLOW       (cms)=      .14          .01          .139 (iii)
00579>      TIME TO PEAK    (hrs)=     1.35         1.78         1.350
00580>      RUNOFF VOLUME    (mm)=    23.07         4.87        13.061
00581>      TOTAL RAINFALL   (mm)=    25.07        25.07        25.067
00582>      RUNOFF COEFFICIENT   =      .92          .19          .521
00583>
00584>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00585>            CN* =  75.0    Ia = Dep. Storage  (Above)
00586>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00587>            THAN THE STORAGE COEFFICIENT.
00588>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00589>
00590> -----------------------------------------------------------------------------
00591> 001:0021-----------------------------------------------------------------------
00592> *===========================================================================
00593> * EAST OF RICHMOND STREET
00594> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
00595> *===========================================================================
00596> -----------------------
00597> | CALIB STANDHYD    |   Area    (ha)=     .45
00598> | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
00599> -----------------------
00600>                                IMPERVIOUS    PERVIOUS (i)
00601>      Surface Area     (ha)=       .29          .16
00602>      Dep. Storage     (mm)=      2.00         5.00
00603>      Average Slope     (%)=      2.00         2.00
00604>      Length            (m)=    155.00        35.00
00605>      Mannings n           =      .013         .240
00606>
00607>      Max.eff.Inten.(mm/hr)=     88.43         4.73
00608>                 over (min)      3.00        24.00
00609>      Storage Coeff.  (min)=     2.84 (ii)   24.38 (ii)
00610>      Unit Hyd. Tpeak (min)=     3.00        24.00
00611>      Unit Hyd. peak  (cms)=      .39          .05
00612>                                                          *TOTALS*
00613>      PEAK FLOW       (cms)=      .05          .00          .046 (iii)
00614>      TIME TO PEAK    (hrs)=     1.38         1.88         1.383
00615>      RUNOFF VOLUME    (mm)=    23.07         3.04        14.055
00616>      TOTAL RAINFALL   (mm)=    25.07        25.07        25.067
00617>      RUNOFF COEFFICIENT   =      .92          .12          .561
00618>
00619>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00620>            CN* =  61.0    Ia = Dep. Storage  (Above)
00621>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00622>            THAN THE STORAGE COEFFICIENT.
00623>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00624>
00625> -----------------------------------------------------------------------------
00626> 001:0022-----------------------------------------------------------------------
00627> *===========================================================================
00628> * EAST OF RICHMOND STREET
00629> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
00630> *===========================================================================
00631> -----------------------
00632> | CALIB NASHYD      |   Area    (ha)=     .68   Curve Number   (CN)=75.00
00633> | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00634> -----------------------   U.H. Tp(hrs)=    .530
00635>
00636>      Unit Hyd Qpeak  (cms)=     .049
00637>
00638>      PEAK FLOW       (cms)=     .004 (i)
00639>      TIME TO PEAK    (hrs)=    2.167
00640>      RUNOFF VOLUME    (mm)=    3.844
00641>      TOTAL RAINFALL   (mm)=   25.067
00642>      RUNOFF COEFFICIENT   =     .153
00643>
00644>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00645>
00646> -----------------------------------------------------------------------------
00647> 001:0023-----------------------------------------------------------------------
00648> *===========================================================================
00649> * EAST OF RICHMOND STREET
00650> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
00651> *===========================================================================
00652> -----------------------
00653> | CALIB STANDHYD    |   Area    (ha)=    2.61
00654> | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
00655> -----------------------
00656>                                IMPERVIOUS    PERVIOUS (i)
00657>      Surface Area     (ha)=      1.46         1.15
00658>      Dep. Storage     (mm)=      2.00         5.00
00659>      Average Slope     (%)=      2.00         2.00
00660>      Length            (m)=    126.00        35.00
00661>      Mannings n           =      .013         .240
00662>
00663>      Max.eff.Inten.(mm/hr)=     98.14         4.33
00664>                 over (min)      2.00        25.00
00665>      Storage Coeff.  (min)=     2.40 (ii)   24.71 (ii)
00666>      Unit Hyd. Tpeak (min)=     2.00        25.00
00667>      Unit Hyd. peak  (cms)=      .49          .05
00668>                                                          *TOTALS*
00669>      PEAK FLOW       (cms)=      .23          .01          .232 (iii)
00670>      TIME TO PEAK    (hrs)=     1.37         1.90         1.367
00671>      RUNOFF VOLUME    (mm)=    23.07         2.94        11.997
00672>      TOTAL RAINFALL   (mm)=    25.07        25.07        25.067
00673>      RUNOFF COEFFICIENT   =      .92          .12          .479
00674>
00675>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00676>            CN* =  61.0    Ia = Dep. Storage  (Above)
00677>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00678>            THAN THE STORAGE COEFFICIENT.
00679>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00680>
00681> -----------------------------------------------------------------------------
00682> 001:0024-----------------------------------------------------------------------
00683> *===========================================================================
00684> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
00685> *===========================================================================
00686> -----------------------
00687> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
00688> |  IN>05:(209    )  |
00689> | OUT<06:(002006)   |    ========  OUTLFOW STORAGE TABLE  ========
00690> -----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00691>                              (cms)     (ha.m.)   |    (cms)     (ha.m.)
00692>                               .000  .0000E+00    |     .030  .2263E+00
00693>                               .009  .8000E-02    |     .031  .2476E+00
00694>                               .013  .1970E-01    |     .031  .2698E+00
00695>                               .016  .3510E-01    |     .032  .2929E+00
00696>                               .019  .5430E-01    |     .033  .3169E+00
00697>                               .021  .7710E-01    |     .034  .3419E+00
00698>                               .023  .1038E+00    |     .034  .3678E+00
00699>                               .025  .1341E+00    |     .035  .3946E+00
00700>                               .027  .1682E+00    |     .036  .4224E+00
00701>                               .029  .2060E+00    |     .000  .0000E+00
00702>
00703>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00704>      -------------------        (ha)     (cms)     (hrs)       (mm)
00705>      INFLOW >05: (209   )       2.61      .232     1.367     11.997
00706>      OUTFLOW<06: (002006)       2.61      .013     2.617     11.997
00707>     OVERFLOW<07: (002007)        .00      .000      .000       .000
00708>
00709>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =         0
00710>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
00711>                    PERCENTAGE OF TIME OVERFLOWING    (%)=       .00
00712>
00713>
00714>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    5.683
00715>                    TIME SHIFT OF PEAK FLOW         (min)=     75.00
00716>                    MAXIMUM  STORAGE   USED       (ha.m.)=.2059E-01
00717>
00718> -----------------------------------------------------------------------------
00719> 001:0025-----------------------------------------------------------------------
00720> *===========================================================================
00721> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
00722> *===========================================================================
00723> -----------------------
00724> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00725> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00726>                        ID1 01:212          1.26     .139    1.35  13.06    .000
00727>                       +ID2 02:207           .45     .046    1.38  14.06    .000
00728>                       +ID3 03:2003        190.83     .488    4.05   3.89    .000
00729>                       +ID4 04:204b          .68     .004    2.17   3.84    .000
00730>                       +ID5 06:      2006    2.61     .013    2.62  12.00    .000
00731>                        ==================================================
00732>                        SUM 08:2008         195.83     .507    4.02   4.08    .000
00733>
00734>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00735>
00736> -----------------------------------------------------------------------------
00737> 001:0026-----------------------------------------------------------------------
00738> *===========================================================================
00739> * EAST OF RICHMOND STREET
00740> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
00741> *===========================================================================
00742> -----------------------
00743> | CALIB STANDHYD    |   Area    (ha)=   24.15
00744> | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
00745> -----------------------
00746>                                IMPERVIOUS    PERVIOUS (i)
00747>      Surface Area     (ha)=     13.04        11.11
00748>      Dep. Storage     (mm)=      2.00         5.00
00749>      Average Slope     (%)=      2.00         2.00
00750>      Length            (m)=     35.00        40.00
00751>      Mannings n           =      .013         .240
00752>
00753>      Max.eff.Inten.(mm/hr)=    104.50         4.16
00754>                 over (min)      1.00        26.00
00755>      Storage Coeff.  (min)=     1.09 (ii)   25.66 (ii)
00756>      Unit Hyd. Tpeak (min)=     1.00        26.00
00757>      Unit Hyd. peak  (cms)=     1.02          .04
00758>                                                          *TOTALS*
00759>      PEAK FLOW       (cms)=     2.54          .07         2.542 (iii)
00760>      TIME TO PEAK    (hrs)=     1.35         1.92         1.350
00761>      RUNOFF VOLUME    (mm)=    23.07         2.91        11.576
00762>      TOTAL RAINFALL   (mm)=    25.07        25.07        25.067
00763>      RUNOFF COEFFICIENT   =      .92          .12          .462
00764>
00765>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00766>            CN* =  61.0    Ia = Dep. Storage  (Above)
00767>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00768>            THAN THE STORAGE COEFFICIENT.
00769>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00770>
00771> -----------------------------------------------------------------------------
00772> 001:0027-----------------------------------------------------------------------
00773> *===========================================================================
00774> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
00775> *===========================================================================
00776> -----------------------
00777> | CALIB NASHYD      |   Area    (ha)=     .91   Curve Number   (CN)=75.00
00778> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00779> -----------------------   U.H. Tp(hrs)=   1.040
00780>
00781>      Unit Hyd Qpeak  (cms)=     .033
00782>
00783>      PEAK FLOW       (cms)=     .004 (i)
00784>      TIME TO PEAK    (hrs)=    2.900
00785>      RUNOFF VOLUME    (mm)=    3.844
00786>      TOTAL RAINFALL   (mm)=   25.067
00787>      RUNOFF COEFFICIENT   =     .153
00788>
00789>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00790>
00791> -----------------------------------------------------------------------------
00792> 001:0028-----------------------------------------------------------------------
00793> *===========================================================================
00794> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
00795> *===========================================================================
00796> -----------------------
00797> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00798> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
00799>                        ID1 01:208b        24.15    2.542    1.35  11.58    .000
00800>                       +ID2 02:EXT-4         .91     .004    2.90   3.84    .000
00801>                        ==================================================
00802>                        SUM 03:SUM         25.06    2.542    1.35  11.30    .000
00803>
00804>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00805>
00806> -----------------------------------------------------------------------------
00807> 001:0029-----------------------------------------------------------------------
00808> *===========================================================================
00809> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
00810> *===========================================================================
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00811> ---------------------
00812> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
00813> |  IN>03:(SUM    )   |
00814> | OUT<04:(002004)    |    =========  OUTLFOW STORAGE TABLE  =========
00815> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00816>                              (cms)    (ha.m)    |    (cms)    (ha.m)
00817>                               .000  .0000E+00   |     .783  .9373E+00
00818>                               .020  .1250E+00   |     .993  .1083E+01
00819>                               .074  .2530E+00   |    1.215  .1232E+01
00820>                               .156  .3839E+00   |    1.441  .1383E+01
00821>                               .263  .5178E+00   |    1.655  .1538E+01
00822>                               .416  .6547E+00   |    1.827  .1696E+01
00823>                               .594  .7945E+00   |    1.986  .1856E+01
00824>
00825>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00826>     --------------------       (ha)     (cms)     (hrs)       (mm)
00827>     INFLOW >03: (SUM    )     25.06     2.542     1.350     11.296
00828>     OUTFLOW<04: (002004)      25.06      .063     3.817     11.295
00829>    OVERFLOW<01: (002001)        .00      .000      .000       .000
00830>
00831>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00832>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
00833>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
00834>
00835>
00836>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    2.478
00837>                    TIME SHIFT OF PEAK FLOW         (min)=   148.00
00838>                    MAXIMUM  STORAGE   USED       (ha.m)=.2264E+00
00839>
00840> ------------------------------------------------------------------------------
00841> 001:0030------------------------------------------------------------------------
00842> *==============================================================================
00843> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
00844> *==============================================================================
00845> ----------------------------------------------------------------------------
00846> | ADD HYD (TotalCNR  ) | ID: NHYD          AREA    QPEAK   TPEAK   R.V.    DWF
00847> ------------------------                    (ha)    (cms)   (hrs)   (mm)   (cms)
00848>                        ID1 10:2010         505.36   1.170    4.30   3.91    .000
00849>                       +ID2 09:2009           4.44    .267    1.42  11.02    .000
00850>                       +ID3 08:2008         195.83    .507    4.02   4.08    .000
00851>                       +ID4 04:      2004    25.06    .063    3.82  11.30    .000
00852>                        ==========================================================
00853>                        SUM 07:TotalCNR     730.69   1.743    4.02   4.25    .000
00854>
00855>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00856>
00857> ------------------------------------------------------------------------------
00858> 001:0031------------------------------------------------------------------------
00859> *PROPOSED - FLOW TO IDA STREET
00860> *==============================================================================
00861> ----------------------
00862> | CALIB STANDHYD     |   Area    (ha)=     .54
00863> | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
00864> ----------------------
00865>                                IMPERVIOUS    PERVIOUS (i)
00866>      Surface Area     (ha)=        .30          .24
00867>      Dep. Storage     (mm)=       2.00         5.00
00868>      Average Slope     (%)=       2.00         2.00
00869>      Length            (m)=      35.00        40.00
00870>      Mannings n          =        .013         .240
00871>
00872>      Max.eff.Inten.(mm/hr)=     104.50         4.03
00873>                 over (min)        1.00        26.00
00874>      Storage Coeff.  (min)=       1.09 (ii)   25.98 (ii)
00875>      Unit Hyd. Tpeak (min)=       1.00        26.00
00876>      Unit Hyd. peak  (cms)=       1.02          .04
00877>                                                          *TOTALS*
00878>      PEAK FLOW       (cms)=        .06          .00          .059 (iii)
00879>      TIME TO PEAK    (hrs)=       1.35         1.92         1.350
00880>      RUNOFF VOLUME    (mm)=      23.07        2.86        11.953
00881>      TOTAL RAINFALL   (mm)=      25.07        25.07        25.067
00882>      RUNOFF COEFFICIENT   =        .92          .11          .477
00883>
00884>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00885>            CN* =  61.0    Ia = Dep. Storage  (Above)
00886>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00887>            THAN THE STORAGE COEFFICIENT.
00888>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00889>
00890> ------------------------------------------------------------------------------
00891> 001:0032------------------------------------------------------------------------
00892>   ** END OF RUN :   1
00893>
00894> ******************************************************************************
00895>
00896>
00897>
00898>
00899>
00900> ----------------------
00901> | START              |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00902> ----------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
00903>      TZERO =    .00 hrs on        0
00904>      METOUT=   2 (output = METRIC)
00905>      NRUN  = 002
00906>      NSTORM=   1
00907>              #  1=2YR.HYT
00908> ------------------------------------------------------------------------------
00909> 002:0002------------------------------------------------------------------------
00910> *#*****************************************************************************
00911> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
00912> *#  Date        : APRIL 2022
00913> *#  Modeller    : [MM]
00914> *#  Company     : STANTEC CONSULTING LTD.
00915> *#  License #   :
00916> *#*****************************************************************************
00917> ------------------------------------------------------------------------------
00918> 002:0002------------------------------------------------------------------------
00919> ----------------------
00920> | READ STORM        |    Filename: 2YR Chicago 4-hr duration
00921> | Ptotal=  44.97 mm|    Comments: 2YR Chicago 4-hr duration
00922> ----------------------
00923>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
00924>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
00925>                 .02   1.904 |   1.03   9.238 |   2.05   7.822 |   3.07   2.976
00926>                 .03   1.928 |   1.05   9.851 |   2.07   7.621 |   3.08   2.947
00927>                 .05   1.953 |   1.07  10.546 |   2.08   7.430 |   3.10   2.918
00928>                 .07   1.979 |   1.08  11.339 |   2.10   7.247 |   3.12   2.889
00929>                 .08   2.005 |   1.10  12.253 |   2.12   7.073 |   3.13   2.861
00930>                 .10   2.032 |   1.12  13.315 |   2.13   6.907 |   3.15   2.834
00931>                 .12   2.060 |   1.13  14.561 |   2.15   6.749 |   3.17   2.807
00932>                 .13   2.089 |   1.15  16.040 |   2.17   6.597 |   3.18   2.781
00933>                 .15   2.118 |   1.17  17.820 |   2.18   6.452 |   3.20   2.755
00934>                 .17   2.149 |   1.18  19.996 |   2.20   6.313 |   3.22   2.730
00935>                 .18   2.180 |   1.20  22.703 |   2.22   6.180 |   3.23   2.705
00936>                 .20   2.213 |   1.22  26.144 |   2.23   6.053 |   3.25   2.681
00937>                 .22   2.246 |   1.23  30.633 |   2.25   5.930 |   3.27   2.657
00938>                 .23   2.280 |   1.25  36.678 |   2.27   5.812 |   3.28   2.633
00939>                 .25   2.316 |   1.27  45.148 |   2.28   5.699 |   3.30   2.610
00940>                 .27   2.353 |   1.28  57.645 |   2.30   5.590 |   3.32   2.587
00941>                 .28   2.391 |   1.30  77.410 |   2.32   5.485 |   3.33   2.565
00942>                 .30   2.430 |   1.32 111.909 |   2.33   5.384 |   3.35   2.543
00943>                 .32   2.471 |   1.33 181.956 |   2.35   5.286 |   3.37   2.522
00944>                 .33   2.513 |   1.35 163.519 |   2.37   5.192 |   3.38   2.501
00945>                 .35   2.556 |   1.37 128.303 |   2.38   5.101 |   3.40   2.480
00946>                 .37   2.602 |   1.38 104.034 |   2.40   5.013 |   3.42   2.460
00947>                 .38   2.649 |   1.40  86.527 |   2.42   4.929 |   3.43   2.440
00948>                 .40   2.697 |   1.42  73.438 |   2.43   4.847 |   3.45   2.420
00949>                 .42   2.748 |   1.43  63.365 |   2.45   4.767 |   3.47   2.401
00950>                 .43   2.801 |   1.45  55.426 |   2.47   4.691 |   3.48   2.382
00951>                 .45   2.855 |   1.47  49.042 |   2.48   4.616 |   3.50   2.363
00952>                 .47   2.912 |   1.48  43.822 |   2.50   4.545 |   3.52   2.344
00953>                 .48   2.972 |   1.50  39.491 |   2.52   4.475 |   3.53   2.326
00954>                 .50   3.034 |   1.52  35.850 |   2.53   4.407 |   3.55   2.309
00955>                 .52   3.098 |   1.53  32.757 |   2.55   4.342 |   3.57   2.291
00956>                 .53   3.166 |   1.55  30.102 |   2.57   4.278 |   3.58   2.274
00957>                 .55   3.237 |   1.57  27.804 |   2.58   4.216 |   3.60   2.257
00958>                 .57   3.310 |   1.58  25.799 |   2.60   4.156 |   3.62   2.240
00959>                 .58   3.388 |   1.60  24.037 |   2.62   4.098 |   3.63   2.223
00960>                 .60   3.469 |   1.62  22.479 |   2.63   4.041 |   3.65   2.207
00961>                 .62   3.555 |   1.63  21.092 |   2.65   3.986 |   3.67   2.191
00962>                 .63   3.644 |   1.65  19.853 |   2.67   3.932 |   3.68   2.175
00963>                 .65   3.739 |   1.67  18.739 |   2.68   3.880 |   3.70   2.160
00964>                 .67   3.838 |   1.68  17.733 |   2.70   3.829 |   3.72   2.145
00965>                 .68   3.944 |   1.70  16.821 |   2.72   3.780 |   3.73   2.129
00966>                 .70   4.055 |   1.72  15.992 |   2.73   3.732 |   3.75   2.115
00967>                 .72   4.172 |   1.73  15.234 |   2.75   3.685 |   3.77   2.100
00968>                 .73   4.297 |   1.75  14.540 |   2.77   3.639 |   3.78   2.086
00969>                 .75   4.430 |   1.77  13.903 |   2.78   3.594 |   3.80   2.071
00970>                 .77   4.570 |   1.78  13.315 |   2.80   3.551 |   3.82   2.057
00971>                 .78   4.721 |   1.80  12.771 |   2.82   3.508 |   3.83   2.044
00972>                 .80   4.881 |   1.82  12.268 |   2.83   3.467 |   3.85   2.030
00973>                 .82   5.053 |   1.83  11.800 |   2.85   3.426 |   3.87   2.016
00974>                 .83   5.237 |   1.85  11.365 |   2.87   3.387 |   3.88   2.003
00975>                 .85   5.435 |   1.87  10.959 |   2.88   3.348 |   3.90   1.990
00976>                 .87   5.649 |   1.88  10.579 |   2.90   3.310 |   3.92   1.977
00977>                 .88   5.879 |   1.90  10.224 |   2.92   3.274 |   3.93   1.965
00978>                 .90   6.129 |   1.92   9.890 |   2.93   3.238 |   3.95   1.952
00979>                 .92   6.401 |   1.93   9.577 |   2.95   3.202 |   3.97   1.940
00980>                 .93   6.698 |   1.95   9.281 |   2.97   3.168 |   3.98   1.927
00981>                 .95   7.022 |   1.97   9.003 |   2.98   3.134 |   4.00   1.915
00982>                 .97   7.379 |   1.98   8.740 |   3.00   3.101 |   4.02   1.904
00983>                 .98   7.772 |   2.00   8.492 |   3.02   3.069 |
00984>                1.00   8.208 |   2.02   8.257 |   3.03   3.037 |
00985>                1.02   8.694 |   2.03   8.034 |   3.05   3.007 |
00986>
00987> ------------------------------------------------------------------------------
00988> 002:0003------------------------------------------------------------------------
00989> * WEST OF RICHMOND STREET
00990> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
00991> *==============================================================================
00992> ----------------------
00993> | CALIB STANDHYD     |   Area    (ha)=    1.61
00994> | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
00995> ----------------------
00996>                                IMPERVIOUS    PERVIOUS (i)
00997>      Surface Area     (ha)=       1.05          .56
00998>      Dep. Storage     (mm)=       2.00         5.00
00999>      Average Slope     (%)=       2.00         2.00
01000>      Length            (m)=     217.00        35.00
01001>      Mannings n          =       .013         .240
01002>
01003>      Max.eff.Inten.(mm/hr)=     157.93        23.37
01004>                 over (min)        3.00        14.00
01005>      Storage Coeff.  (min)=       2.75 (ii)   14.12 (ii)
01006>      Unit Hyd. Tpeak (min)=       3.00        14.00
01007>      Unit Hyd. peak  (cms)=        .40          .08
01008>                                                          *TOTALS*
01009>      PEAK FLOW       (cms)=        .30          .02          .303 (iii)
01010>      TIME TO PEAK    (hrs)=       1.38         1.65         1.383
01011>      RUNOFF VOLUME    (mm)=      42.97        10.08        28.173
01012>      TOTAL RAINFALL   (mm)=      44.97        44.97        44.973
01013>      RUNOFF COEFFICIENT   =        .96          .22          .626
01014>
01015>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01016>            CN* =  61.0    Ia = Dep. Storage  (Above)
01017>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01018>            THAN THE STORAGE COEFFICIENT.
01019>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01020>
01021> ------------------------------------------------------------------------------
01022> 002:0004------------------------------------------------------------------------
01023> *==============================================================================
01024> * WEST OF RICHMOND STREET
01025> * PARK AREA (202)
01026> *==============================================================================
01027> ----------------------
01028> | CALIB NASHYD       |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
01029> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01030> ----------------------   U.H. Tp(hrs)=    .500
01031>
01032>      Unit Hyd Qpeak  (cms)=     .226
01033>
01034>      PEAK FLOW       (cms)=     .070 (i)
01035>      TIME TO PEAK    (hrs)=    2.067
01036>      RUNOFF VOLUME    (mm)=   12.820
01037>      TOTAL RAINFALL   (mm)=   44.973
01038>      RUNOFF COEFFICIENT   =     .285
01039>
01040>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01041>
01042> ------------------------------------------------------------------------------
01043> 002:0005------------------------------------------------------------------------
01044> * WEST OF RICHMOND STREET
01045> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
01046> *==============================================================================
01047> ----------------------
01048> | CALIB STANDHYD     |   Area    (ha)=    1.76
01049> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
01050> ----------------------
01051>                                IMPERVIOUS    PERVIOUS (i)
01052>      Surface Area     (ha)=        .97          .79
01053>      Dep. Storage     (mm)=       2.00         5.00
01054>      Average Slope     (%)=       2.00         2.00
01055>      Length            (m)=      35.00        40.00
01056>      Mannings n          =       .013         .240
01057>
01058>      Max.eff.Inten.(mm/hr)=     181.96        21.09
01059>                 over (min)        1.00        14.00
01060>      Storage Coeff.  (min)=        .87 (ii)   13.70 (ii)
01061>      Unit Hyd. Tpeak (min)=       1.00        14.00
01062>      Unit Hyd. peak  (cms)=       1.16          .08
01063>                                                          *TOTALS*
01064>      PEAK FLOW       (cms)=        .35          .03          .356 (iii)
01065>      TIME TO PEAK    (hrs)=       1.35         1.65         1.350
01066>      RUNOFF VOLUME    (mm)=      42.97         9.62        24.628
01067>      TOTAL RAINFALL   (mm)=      44.97        44.97        44.973
01068>      RUNOFF COEFFICIENT   =        .96          .21          .548
01069>
01070>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01071>            CN* =  61.0    Ia = Dep. Storage  (Above)
01072>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01073>            THAN THE STORAGE COEFFICIENT.
01074>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01075>
01076> ------------------------------------------------------------------------------
01077> 002:0006------------------------------------------------------------------------
01078> *==============================================================================
01079> * WEST OF RICHMOND STREET
01080> * PARK AREA ON THE SOUTH BOUNDARY (206a)
```

```
01081> *==========================================================================
01082> ----------------------
01083> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
01084> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01085> ----------------------   U.H. Tp(hrs)=    .270
01086>
01087>      Unit Hyd Qpeak  (cms)=     .083
01088>
01089>      PEAK FLOW       (cms)=     .021 (i)
01090>      TIME TO PEAK    (hrs)=    1.750
01091>      RUNOFF VOLUME    (mm)=   12.819
01092>      TOTAL RAINFALL   (mm)=   44.973
01093>      RUNOFF COEFFICIENT   =     .285
01094>
01095>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01096>
01097> ---------------------------------------------------------------------------
01098> 002:0007-------------------------------------------------------------------
01099> *==========================================================================
01100> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
01101> *==========================================================================
01102> ----------------------
01103> | ADD HYD (2005      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
01104> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
01105>                        ID1 01:201          1.61     .303    1.38  28.17    .000
01106>                       +ID2 02:202          2.96     .070    2.07  12.82    .000
01107>                       +ID3 03:203          1.76     .356    1.35  24.63    .000
01108>                       +ID4 04:206a          .59     .021    1.75  12.82    .000
01109>                        ==========================================================
01110>                        SUM 05:2005          6.92     .598    1.37  19.40    .000
01111>
01112>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01113>
01114> ---------------------------------------------------------------------------
01115> 002:0008-------------------------------------------------------------------
01116> *==========================================================================
01117> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
01118> *==========================================================================
01119> ----------------------
01120> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
01121> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01122> ----------------------   U.H. Tp(hrs)=    .870
01123>
01124>      Unit Hyd Qpeak  (cms)=     .838
01125>
01126>      PEAK FLOW       (cms)=     .304 (i)
01127>      TIME TO PEAK    (hrs)=    2.533
01128>      RUNOFF VOLUME    (mm)=   12.820
01129>      TOTAL RAINFALL   (mm)=   44.973
01130>      RUNOFF COEFFICIENT   =     .285
01131>
01132>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01133>
01134> ---------------------------------------------------------------------------
01135> 002:0009-------------------------------------------------------------------
01136> *==========================================================================
01137> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
01138> *==========================================================================
01139> ----------------------
01140> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
01141> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01142> ----------------------   U.H. Tp(hrs)=   2.180
01143>
01144>      Unit Hyd Qpeak  (cms)=    8.399
01145>
01146>      PEAK FLOW       (cms)=    3.819 (i)
01147>      TIME TO PEAK    (hrs)=    4.183
01148>      RUNOFF VOLUME    (mm)=   12.820
01149>      TOTAL RAINFALL   (mm)=   44.973
01150>      RUNOFF COEFFICIENT   =     .285
01151>
01152>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01153>
01154> ---------------------------------------------------------------------------
01155> 002:0010-------------------------------------------------------------------
01156> *==========================================================================
01157> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
01158> *==========================================================================
01159> ------------------------
01160> | ADD HYD (2010      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
01161> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
01162>                        ID1 05:2005         6.92     .598    1.37  19.40    .000
01163>                       +ID2 01:EXT-1       19.09     .304    2.53  12.82    .000
01164>                       +ID3 02:EXT-2      479.35    3.819    4.18  12.82    .000
01165>                        ==========================================================
01166>                        SUM 10:2010        505.36    3.972    4.02  12.91    .000
01167>
01168>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01169>
01170> ---------------------------------------------------------------------------
01171> 002:0011-------------------------------------------------------------------
01172> *==========================================================================
01173> * EAST OF RICHMOND STREET
01174> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
01175> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
01176> *==========================================================================
01177> ----------------------
01178> | CALIB STANDHYD     |   Area    (ha)=    1.60
01179> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
01180> ----------------------
01181>                                IMPERVIOUS    PERVIOUS (i)
01182>      Surface Area     (ha)=        .93          .67
01183>      Dep. Storage     (mm)=       2.00         5.00
01184>      Average Slope     (%)=       2.00         2.00
01185>      Length            (m)=     269.00        35.00
01186>      Mannings n          =        .013         .240
01187>
01188>      Max.eff.Inten.(mm/hr)=     157.93        20.98
01189>                 over (min)        3.00        15.00
01190>      Storage Coeff.  (min)=       3.13 (ii)   15.00 (ii)
01191>      Unit Hyd. Tpeak (min)=       3.00        15.00
01192>      Unit Hyd. peak  (cms)=        .36          .08
01193>                                                          *TOTALS*
01194>      PEAK FLOW       (cms)=        .25          .02          .253 (iii)
01195>      TIME TO PEAK    (hrs)=       1.38         1.67         1.383
01196>      RUNOFF VOLUME    (mm)=      42.97         9.74        25.690
01197>      TOTAL RAINFALL   (mm)=      44.97        44.97        44.973
01198>      RUNOFF COEFFICIENT   =        .96          .22          .571
01199>
01200>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01201>            CN* =  61.0    Ia = Dep. Storage  (Above)
01202>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01203>            THAN THE STORAGE COEFFICIENT.
01204>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01205>
01206> ---------------------------------------------------------------------------
01207> 002:0012-------------------------------------------------------------------
01208> *==========================================================================
01209> * WEST OF RICHMOND STREET
01210> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
01211> *==========================================================================
01212> ----------------------
01213> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
01214> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01215> ----------------------   U.H. Tp(hrs)=    .780
01216>
01217>      Unit Hyd Qpeak  (cms)=     .048
01218>
01219>      PEAK FLOW       (cms)=     .017 (i)
01220>      TIME TO PEAK    (hrs)=    2.417
01221>      RUNOFF VOLUME    (mm)=   12.819
01222>      TOTAL RAINFALL   (mm)=   44.973
01223>      RUNOFF COEFFICIENT   =     .285
01224>
01225>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01226>
01227> ---------------------------------------------------------------------------
01228> 002:0013-------------------------------------------------------------------
01229> *==========================================================================
01230> * WEST OF RICHMOND STREET
01231> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
01232> *==========================================================================
01233> ----------------------
01234> | CALIB STANDHYD     |   Area    (ha)=     .89
01235> | 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
01236> ----------------------
01237>                                IMPERVIOUS    PERVIOUS (i)
01238>      Surface Area     (ha)=        .58          .31
01239>      Dep. Storage     (mm)=       2.00         5.00
01240>      Average Slope     (%)=       2.00         2.00
01241>      Length            (m)=     241.00        35.00
01242>      Mannings n          =        .013         .240
01243>
01244>      Max.eff.Inten.(mm/hr)=     157.93        23.37
01245>                 over (min)        3.00        14.00
01246>      Storage Coeff.  (min)=       2.93 (ii)   14.30 (ii)
01247>      Unit Hyd. Tpeak (min)=       3.00        14.00
01248>      Unit Hyd. peak  (cms)=        .38          .08
01249>                                                          *TOTALS*
01250>      PEAK FLOW       (cms)=        .16          .01          .164 (iii)
01251>      TIME TO PEAK    (hrs)=       1.38         1.65         1.383
01252>      RUNOFF VOLUME    (mm)=      42.97        10.08        28.173
01253>      TOTAL RAINFALL   (mm)=      44.97        44.97        44.973
01254>      RUNOFF COEFFICIENT   =        .96          .22          .626
01255>
01256>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01257>            CN* =  61.0    Ia = Dep. Storage  (Above)
01258>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01259>            THAN THE STORAGE COEFFICIENT.
01260>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01261>
01262> ---------------------------------------------------------------------------
01263> 002:0014-------------------------------------------------------------------
01264> *==========================================================================
01265> * RICHMOND STREET
01266> * PROPOSED - HUNTER SUBDIVISION (205b)
01267> *==========================================================================
01268> ----------------------
01269> | CALIB STANDHYD     |   Area    (ha)=     .78
01270> | 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
01271> ----------------------
01272>                                IMPERVIOUS    PERVIOUS (i)
01273>      Surface Area     (ha)=        .55          .23
01274>      Dep. Storage     (mm)=       2.00         5.00
01275>      Average Slope     (%)=       2.00         2.00
01276>      Length            (m)=     388.00       194.00
01277>      Mannings n          =        .013         .240
01278>
01279>      Max.eff.Inten.(mm/hr)=     146.42        13.07
01280>                 over (min)        4.00        44.00
01281>      Storage Coeff.  (min)=       4.02 (ii)   44.10 (ii)
01282>      Unit Hyd. Tpeak (min)=       4.00        44.00
01283>      Unit Hyd. peak  (cms)=        .28          .03
01284>                                                          *TOTALS*
01285>      PEAK FLOW       (cms)=        .14          .00          .138 (iii)
01286>      TIME TO PEAK    (hrs)=       1.40         2.22         1.400
01287>      RUNOFF VOLUME    (mm)=      42.97        10.42        29.954
01288>      TOTAL RAINFALL   (mm)=      44.97        44.97        44.973
01289>      RUNOFF COEFFICIENT   =        .96          .23          .666
01290>
01291>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01292>            CN* =  61.0    Ia = Dep. Storage  (Above)
01293>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01294>            THAN THE STORAGE COEFFICIENT.
01295>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01296>
01297> ---------------------------------------------------------------------------
01298> 002:0015-------------------------------------------------------------------
01299> *==========================================================================
01300> * WEST OF RICHMOND STREET
01301> * PARK AREA ON THE SOUTH BOUNDARY (206b)
01302> *==========================================================================
01303> ----------------------
01304> | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
01305> | 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01306> ----------------------   U.H. Tp(hrs)=    .160
01307>
01308>      Unit Hyd Qpeak  (cms)=     .043
01309>
01310>      PEAK FLOW       (cms)=     .009 (i)
01311>      TIME TO PEAK    (hrs)=    1.600
01312>      RUNOFF VOLUME    (mm)=   12.818
01313>      TOTAL RAINFALL   (mm)=   44.973
01314>      RUNOFF COEFFICIENT   =     .285
01315>
01316>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01317>
01318> ---------------------------------------------------------------------------
01319> 002:0016-------------------------------------------------------------------
01320> *==========================================================================
01321> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
01322> *==========================================================================
01323> ------------------------
01324> | ADD HYD (2009      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
01325> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
01326>                        ID1 01:208a         1.60     .253    1.38  25.69    .000
01327>                       +ID2 02:204a          .99     .017    2.42  12.82    .000
01328>                       +ID3 03:205a          .89     .164    1.38  28.17    .000
01329>                       +ID4 04:205b          .78     .138    1.40  29.95    .000
01330>                       +ID5 05:206b          .18     .009    1.60  12.82    .000
01331>                        ==========================================================
01332>                        SUM 09:2009          4.44     .552    1.40  23.55    .000
01333>
01334>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01335>
01336> ---------------------------------------------------------------------------
01337> 002:0017-------------------------------------------------------------------
01338> *==========================================================================
01339> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
01340> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
01341> *==========================================================================
01342> ----------------------
01343> | CALIB STANDHYD     |   Area    (ha)=    4.25
01344> | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
01345> ----------------------
01346>                                IMPERVIOUS    PERVIOUS (i)
01347>      Surface Area     (ha)=       1.11         3.14
01348>      Dep. Storage     (mm)=       2.00         8.00
01349>      Average Slope     (%)=       2.00         2.00
01350>      Length            (m)=     256.00       237.00
```

```
     Mannings n          =       .013        .240

     Max.eff.Inten.(mm/hr)=     157.93       15.01
                over (min)        3.00       46.00
     Storage Coeff.  (min)=       3.04 (ii)  45.81 (ii)
     Unit Hyd. Tpeak (min)=       3.00       46.00
     Unit Hyd. peak  (cms)=        .37         .02
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .15         .07          .155 (iii)
     TIME TO PEAK    (hrs)=       1.38        2.27         1.383
     RUNOFF VOLUME    (mm)=      42.97       13.51        16.749
     TOTAL RAINFALL   (mm)=      44.97       44.97        44.973
     RUNOFF COEFFICIENT   =        .96         .30          .372

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  75.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
002:0018-------------------------------------------------------------------------
*======================================================================================
* EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
*======================================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
| 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=   1.930

     Unit Hyd Qpeak  (cms)=    3.692

     PEAK FLOW       (cms)=    1.633 (i)
     TIME TO PEAK    (hrs)=    3.883
     RUNOFF VOLUME    (mm)=   12.820
     TOTAL RAINFALL   (mm)=   44.973
     RUNOFF COEFFICIENT   =     .285

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

--------------------------------------------------------------------------------
002:0019-------------------------------------------------------------------------
*======================================================================================
*SUB-TOTAL FLOW TO SANDUSKY DRAIN
*======================================================================================
------------------------
| ADD HYD (2003      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
                        ID1 01:210           4.25      .155    1.38  16.75    .000
                       +ID2 02:EXT-3       186.58     1.633    3.88  12.82    .000
                        ==================================================
                        SUM 03:2003        190.83     1.664    3.83  12.91    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
002:0020-------------------------------------------------------------------------
*======================================================================================
* SF ON THE NORTHEAST (ESTATE LOT)
* ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
*======================================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=    1.26
| 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
----------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .69          .57
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      35.00        40.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     181.96       38.73
                over (min)        1.00       11.00
     Storage Coeff.  (min)=        .87 (ii)  10.94 (ii)
     Unit Hyd. Tpeak (min)=       1.00       11.00
     Unit Hyd. peak  (cms)=       1.16         .10
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .25         .04          .258 (iii)
     TIME TO PEAK    (hrs)=       1.35        1.58         1.350
     RUNOFF VOLUME    (mm)=      42.97       15.17        27.683
     TOTAL RAINFALL   (mm)=      44.97       44.97        44.973
     RUNOFF COEFFICIENT   =        .96         .34          .616

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  75.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
002:0021-------------------------------------------------------------------------
*======================================================================================
* EAST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
*======================================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .45
| 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
----------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .29          .16
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     155.00        35.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     172.74       24.15
                over (min)        2.00       13.00
     Storage Coeff.  (min)=       2.17 (ii)  13.39 (ii)
     Unit Hyd. Tpeak (min)=       2.00       13.00
     Unit Hyd. peak  (cms)=        .53         .09
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .09         .01          .092 (iii)
     TIME TO PEAK    (hrs)=       1.37        1.63         1.367
     RUNOFF VOLUME    (mm)=      42.97       10.08        28.173
     TOTAL RAINFALL   (mm)=      44.97       44.97        44.973
     RUNOFF COEFFICIENT   =        .96         .22          .626

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
002:0022-------------------------------------------------------------------------
*======================================================================================
* EAST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
*======================================================================================
----------------------
| CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
| 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .530

     Unit Hyd Qpeak  (cms)=     .049

     PEAK FLOW       (cms)=     .015 (i)
     TIME TO PEAK    (hrs)=    2.100
     RUNOFF VOLUME    (mm)=   12.819
     TOTAL RAINFALL   (mm)=   44.973
     RUNOFF COEFFICIENT   =     .285

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

--------------------------------------------------------------------------------
002:0023-------------------------------------------------------------------------
*======================================================================================
* EAST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
*======================================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=    2.61
| 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
----------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.46         1.15
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     126.00        35.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     172.74       22.81
                over (min)        2.00       13.00
     Storage Coeff.  (min)=       1.92 (ii)  13.40 (ii)
     Unit Hyd. Tpeak (min)=       2.00       13.00
     Unit Hyd. peak  (cms)=        .57         .09
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .45         .04          .452 (iii)
     TIME TO PEAK    (hrs)=       1.37        1.63         1.367
     RUNOFF VOLUME    (mm)=      42.97        9.82        24.741
     TOTAL RAINFALL   (mm)=      44.97       44.97        44.973
     RUNOFF COEFFICIENT   =        .96         .22          .550

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
002:0024-------------------------------------------------------------------------
*======================================================================================
* CONTROL AREA 208 IN NORTH DRY SWM FACILITY
*======================================================================================
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>05:(209   )    |
| OUT<06:(002006)    |    =========  OUTFLOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .030   .0000E+00    |     .030   .2263E+00
                            .009   .8000E-02    |     .031   .2476E+00
                            .013   .1970E-01    |     .031   .2698E+00
                            .016   .3510E-01    |     .032   .2929E+00
                            .019   .5430E-01    |     .033   .3169E+00
                            .021   .7710E-01    |     .034   .3419E+00
                            .023   .1038E+00    |     .034   .3678E+00
                            .025   .1341E+00    |     .035   .3946E+00
                            .027   .1682E+00    |     .036   .4224E+00
                            .029   .2060E+00    |     .000   .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >05: (209   )       2.61      .452     1.367     24.741
     OUTFLOW<06: (002006)       2.61      .018     2.900     24.741
    OVERFLOW<07: (002007)        .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](%)=    4.025
                    TIME SHIFT OF PEAK FLOW         (min)=    92.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.4855E-01

--------------------------------------------------------------------------------
002:0025-------------------------------------------------------------------------
*======================================================================================
*SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
*======================================================================================
------------------------
| ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                        ID1 01:212          1.26      .258    1.35  27.68    .000
                       +ID2 02:207           .45      .092    1.37  28.17    .000
                       +ID3 03:2003        190.83     1.664    3.83  12.91    .000
                       +ID4 04:204b          .68      .015    2.10  12.82    .000
                       +ID5 06:      2006    2.61      .018    2.90  24.74    .000
                        ==================================================
                        SUM 08:2008        195.83     1.693    3.83  13.19    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
002:0026-------------------------------------------------------------------------
*======================================================================================
* EAST OF RICHMOND STREET
* PROPOSED - HUNTER SUBDIVISION - SOUTH PART
*======================================================================================
----------------------
| CALIB STANDHYD     |   Area    (ha)=   24.15
| 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
----------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      13.04        11.11
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      35.00        40.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     181.96       22.41
                over (min)        1.00       13.00
     Storage Coeff.  (min)=        .87 (ii)  13.40 (ii)
     Unit Hyd. Tpeak (min)=       1.00       13.00
     Unit Hyd. peak  (cms)=       1.16         .09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       4.64         .41         4.680 (iii)
     TIME TO PEAK    (hrs)=       1.35        1.63         1.350
     RUNOFF VOLUME    (mm)=      42.97        9.74        24.033
     TOTAL RAINFALL   (mm)=      44.97       44.97        44.973
     RUNOFF COEFFICIENT   =        .96         .22          .534

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
01621>
01622> -------------------------------------------------------------------------------
01623> 002:0027-----------------------------------------------------------------------
01624> *==============================================================================
01625> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
01626> *==============================================================================
01627> ----------------------
01628> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
01629> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01630> ----------------------   U.H. Tp(hrs)=   1.040
01631>
01632>      Unit Hyd Qpeak  (cms)=     .033
01633>
01634>      PEAK FLOW       (cms)=     .013 (i)
01635>      TIME TO PEAK    (hrs)=    2.750
01636>      RUNOFF VOLUME    (mm)=   12.819
01637>      TOTAL RAINFALL   (mm)=   44.973
01638>      RUNOFF COEFFICIENT   =     .285
01639>
01640>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01641>
01642> -------------------------------------------------------------------------------
01643> 002:0028-----------------------------------------------------------------------
01644> *==============================================================================
01645> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
01646> *==============================================================================
01647> ------------------------
01648> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01649> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01650>                         ID1 01:208b      24.15    4.680   1.35  24.03    .000
01651>                        +ID2 02:EXT-4       .91     .013   2.75  12.82    .000
01652>                         ==============================================================
01653>                         SUM 03:SUM       25.06    4.680   1.35  23.63    .000
01654>
01655>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01656>
01657> -------------------------------------------------------------------------------
01658> 002:0029-----------------------------------------------------------------------
01659> *==============================================================================
01660> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
01661> *==============================================================================
01662> ---------------------
01663> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
01664> |  IN>03:(SUM   )   |
01665> | OUT<04:(002004)   |    =========  OUTLFOW STORAGE TABLE  =========
01666> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
01667>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
01668>                              .000  .0000E+00   |     .783  .9373E+00
01669>                              .020  .1250E+00   |     .993  .1083E+01
01670>                              .074  .2530E+00   |    1.215  .1232E+01
01671>                              .156  .3839E+00   |    1.441  .1383E+01
01672>                              .263  .5178E+00   |    1.655  .1538E+01
01673>                              .416  .6547E+00   |    1.827  .1696E+01
01674>                              .594  .7945E+00   |    1.986  .1856E+01
01675>
01676>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01677>      ---------------------      (ha)     (cms)     (hrs)       (mm)
01678>      INFLOW >03: (SUM   )     25.06     4.680     1.350     23.625
01679>      OUTFLOW<04: (002004)     25.06      .201     2.733     23.625
01680>     OVERFLOW<01: (002001)       .00      .000      .000       .000
01681>
01682>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01683>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01684>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01685>
01686>
01687>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    4.295
01688>                     TIME SHIFT OF PEAK FLOW         (min)=    83.00
01689>                     MAXIMUM  STORAGE   USED       (ha.m.)=.4399E+00
01690>
01691> -------------------------------------------------------------------------------
01692> 002:0030-----------------------------------------------------------------------
01693> *==============================================================================
01694> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
01695> *==============================================================================
01696> ------------------------
01697> | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01698> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01699>                         ID1 10:2010     505.36    3.972    4.02  12.91    .000
01700>                        +ID2 09:2009       4.44     .552    1.40  23.55    .000
01701>                        +ID3 08:2008     195.83    1.693    3.83  13.19    .000
01702>                        +ID4 04:    2004  25.06     .201    2.73  23.62    .000
01703>                         ==============================================================
01704>                         SUM 07:TotalCNR  730.69    5.859    3.98  13.42    .000
01705>
01706>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01707>
01708> -------------------------------------------------------------------------------
01709> 002:0031-----------------------------------------------------------------------
01710> *PROPOSED - FLOW TO IDA STREET
01711> *==============================================================================
01712> ----------------------
01713> | CALIB STANDHYD    |   Area    (ha)=     .54
01714> | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
01715> ----------------------
01716>                                IMPERVIOUS    PERVIOUS (i)
01717>      Surface Area     (ha)=        .30          .24
01718>      Dep. Storage     (mm)=       2.00         5.00
01719>      Average Slope     (%)=       2.00         2.00
01720>      Length            (m)=      35.00        40.00
01721>      Mannings n           =       .013         .240
01722>
01723>      Max.eff.Inten.(mm/hr)=     181.96        21.09
01724>                 over (min)        1.00        14.00
01725>      Storage Coeff.  (min)=        .87 (ii)   13.70 (ii)
01726>      Unit Hyd. Tpeak (min)=       1.00        14.00
01727>      Unit Hyd. peak  (cms)=       1.16          .08
01728>                                                          *TOTALS*
01729>      PEAK FLOW       (cms)=        .11          .01          .109 (iii)
01730>      TIME TO PEAK    (hrs)=       1.35         1.65         1.350
01731>      RUNOFF VOLUME    (mm)=      42.97         9.62        24.628
01732>      TOTAL RAINFALL   (mm)=      44.97        44.97        44.973
01733>      RUNOFF COEFFICIENT   =        .96          .21          .548
01734>
01735>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01736>             CN* =  61.0    Ia = Dep. Storage  (Above)
01737>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01738>            THAN THE STORAGE COEFFICIENT.
01739>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01740>
01741> -------------------------------------------------------------------------------
01742> 002:0032-----------------------------------------------------------------------
01743> -------------------------------------------------------------------------------
01744> 002:0002-----------------------------------------------------------------------
01745>   ** END OF RUN :   2
01746>
01747> ******************************************************************************
01748>
01749>
01750>
01751>
01752>
01753> --------------------
01754> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
01755> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
01756>     TZERO =   .00 hrs on        0
01757>     METOUT=   2 (output = METRIC)
01758>     NRUN  = 003
01759>     NSTORM=   1
01760>            #  1=5YR.HYT
01761> -------------------------------------------------------------------------------
01762> 003:0002-----------------------------------------------------------------------
01763> *#****************************************************************************
01764> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
01765> *#  Date        : APRIL 2022
01766> *#  Modeller    : [MM]
01767> *#  Company     : STANTEC CONSULTING LTD.
01768> *#  License #   :
01769> *#****************************************************************************
01770> -------------------------------------------------------------------------------
01771> 003:0002-----------------------------------------------------------------------
01772> --------------------
01773> | READ STORM       |    Filename: 5YR Chicago 4-hr duration
01774> | Ptotal=  46.73 mm|    Comments: 5YR Chicago 4-hr duration
01775> --------------------
01776>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
01777>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
01778>                 .02   2.193 |   1.03   9.731 |   2.05   8.314 |   3.07   3.345
01779>                 .03   2.220 |   1.05  10.342 |   2.07   8.112 |   3.08   3.314
01780>                 .05   2.247 |   1.07  11.032 |   2.08   7.920 |   3.10   3.283
01781>                 .07   2.275 |   1.08  11.819 |   2.10   7.736 |   3.12   3.253
01782>                 .08   2.303 |   1.10  12.724 |   2.12   7.561 |   3.13   3.223
01783>                 .10   2.333 |   1.12  13.772 |   2.13   7.393 |   3.15   3.194
01784>                 .12   2.363 |   1.13  15.000 |   2.15   7.233 |   3.17   3.166
01785>                 .13   2.395 |   1.15  16.455 |   2.17   7.080 |   3.18   3.138
01786>                 .15   2.427 |   1.17  18.204 |   2.18   6.933 |   3.20   3.110
01787>                 .17   2.460 |   1.18  20.339 |   2.20   6.793 |   3.22   3.083
01788>                 .18   2.494 |   1.20  22.994 |   2.22   6.657 |   3.23   3.057
01789>                 .20   2.529 |   1.22  26.369 |   2.23   6.528 |   3.25   3.031
01790>                 .22   2.565 |   1.23  30.778 |   2.25   6.403 |   3.27   3.005
01791>                 .23   2.602 |   1.25  36.730 |   2.27   6.283 |   3.28   2.980
01792>                 .25   2.640 |   1.27  45.112 |   2.28   6.167 |   3.30   2.956
01793>                 .27   2.680 |   1.28  57.587 |   2.30   6.056 |   3.32   2.931
01794>                 .28   2.721 |   1.30  77.604 |   2.32   5.949 |   3.33   2.908
01795>                 .30   2.763 |   1.32 113.424 |   2.33   5.846 |   3.35   2.884
01796>                 .32   2.806 |   1.33 189.580 |   2.35   5.746 |   3.37   2.861
01797>                 .33   2.852 |   1.35 169.096 |   2.37   5.649 |   3.38   2.839
01798>                 .35   2.898 |   1.37 130.839 |   2.38   5.556 |   3.40   2.816
01799>                 .37   2.947 |   1.38 105.147 |   2.40   5.466 |   3.42   2.795
01800>                 .38   2.997 |   1.40  86.961 |   2.42   5.379 |   3.43   2.773
01801>                 .40   3.049 |   1.42  73.552 |   2.43   5.295 |   3.45   2.752
01802>                 .42   3.103 |   1.43  63.343 |   2.45   5.214 |   3.47   2.731
01803>                 .43   3.159 |   1.45  55.362 |   2.47   5.135 |   3.48   2.711
01804>                 .45   3.217 |   1.47  48.986 |   2.48   5.058 |   3.50   2.691
01805>                 .47   3.278 |   1.48  43.797 |   2.50   4.984 |   3.52   2.671
01806>                 .48   3.341 |   1.50  39.508 |   2.52   4.912 |   3.53   2.651
01807>                 .50   3.406 |   1.52  35.914 |   2.53   4.842 |   3.55   2.632
01808>                 .52   3.474 |   1.53  32.867 |   2.55   4.774 |   3.57   2.613
01809>                 .53   3.546 |   1.55  30.256 |   2.57   4.708 |   3.58   2.595
01810>                 .55   3.620 |   1.57  27.998 |   2.58   4.644 |   3.60   2.576
01811>                 .57   3.698 |   1.58  26.031 |   2.60   4.582 |   3.62   2.558
01812>                 .58   3.780 |   1.60  24.302 |   2.62   4.521 |   3.63   2.540
01813>                 .60   3.865 |   1.62  22.774 |   2.63   4.462 |   3.65   2.523
01814>                 .62   3.955 |   1.63  21.414 |   2.65   4.405 |   3.67   2.506
01815>                 .63   4.049 |   1.65  20.199 |   2.67   4.349 |   3.68   2.488
01816>                 .65   4.147 |   1.67  19.106 |   2.68   4.295 |   3.70   2.472
01817>                 .67   4.251 |   1.68  18.118 |   2.70   4.242 |   3.72   2.455
01818>                 .68   4.361 |   1.70  17.223 |   2.72   4.190 |   3.73   2.439
01819>                 .70   4.476 |   1.72  16.408 |   2.73   4.140 |   3.75   2.423
01820>                 .72   4.599 |   1.73  15.663 |   2.75   4.091 |   3.77   2.407
01821>                 .73   4.728 |   1.75  14.980 |   2.77   4.043 |   3.78   2.391
01822>                 .75   4.865 |   1.77  14.352 |   2.78   3.996 |   3.80   2.376
01823>                 .77   5.011 |   1.78  13.772 |   2.80   3.951 |   3.82   2.361
01824>                 .78   5.166 |   1.80  13.236 |   2.82   3.906 |   3.83   2.346
01825>                 .80   5.331 |   1.82  12.738 |   2.83   3.862 |   3.85   2.331
01826>                 .82   5.507 |   1.83  12.276 |   2.85   3.820 |   3.87   2.316
01827>                 .83   5.696 |   1.85  11.845 |   2.87   3.778 |   3.88   2.302
01828>                 .85   5.898 |   1.87  11.442 |   2.88   3.738 |   3.90   2.288
01829>                 .87   6.116 |   1.88  11.066 |   2.90   3.698 |   3.92   2.273
01830>                 .88   6.351 |   1.90  10.712 |   2.92   3.659 |   3.93   2.260
01831>                 .90   6.606 |   1.92  10.381 |   2.93   3.621 |   3.95   2.246
01832>                 .92   6.881 |   1.93  10.068 |   2.95   3.584 |   3.97   2.233
01833>                 .93   7.181 |   1.95   9.774 |   2.97   3.548 |   3.98   2.219
01834>                 .95   7.509 |   1.97   9.497 |   2.98   3.513 |   4.00   2.206
01835>                 .97   7.869 |   1.98   9.234 |   3.00   3.478 |   4.02   2.193
01836>                 .98   8.264 |   2.00   8.986 |   3.02   3.444 |
01837>                1.00   8.702 |   2.02   8.750 |   3.03   3.410 |
01838>                1.02   9.188 |   2.03   8.527 |   3.05   3.378 |
01839>
01840> -------------------------------------------------------------------------------
01841> 003:0003-----------------------------------------------------------------------
01842> * WEST OF RICHMOND STREET
01843> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
01844> *==============================================================================
01845> ----------------------
01846> | CALIB STANDHYD    |   Area    (ha)=    1.61
01847> | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
01848> ----------------------
01849>                                IMPERVIOUS    PERVIOUS (i)
01850>      Surface Area     (ha)=       1.05          .56
01851>      Dep. Storage     (mm)=       2.00         5.00
01852>      Average Slope     (%)=       2.00         2.00
01853>      Length            (m)=     217.00        35.00
01854>      Mannings n           =       .013         .240
01855>
01856>      Max.eff.Inten.(mm/hr)=     163.17        24.49
01857>                 over (min)        3.00        14.00
01858>      Storage Coeff.  (min)=       2.72 (ii)   13.87 (ii)
01859>      Unit Hyd. Tpeak (min)=       3.00        14.00
01860>      Unit Hyd. peak  (cms)=        .40          .08
01861>                                                          *TOTALS*
01862>      PEAK FLOW       (cms)=        .31          .02          .313 (iii)
01863>      TIME TO PEAK    (hrs)=       1.38         1.65         1.383
01864>      RUNOFF VOLUME    (mm)=      44.73        10.85        29.484
01865>      TOTAL RAINFALL   (mm)=      46.73        46.73        46.730
01866>      RUNOFF COEFFICIENT   =        .96          .23          .631
01867>
01868>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01869>             CN* =  61.0    Ia = Dep. Storage  (Above)
01870>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01871>            THAN THE STORAGE COEFFICIENT.
01872>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01873>
01874> -------------------------------------------------------------------------------
01875> 003:0004-----------------------------------------------------------------------
01876> *==============================================================================
01877> * WEST OF RICHMOND STREET
01878> * PARK AREA (202)
01879> *==============================================================================
01880> ----------------------
01881> | CALIB NASHYD      |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
01882> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01883> ----------------------   U.H. Tp(hrs)=    .500
01884>
01885>      Unit Hyd Qpeak  (cms)=     .226
01886>
01887>      PEAK FLOW       (cms)=     .073 (i)
01888>      TIME TO PEAK    (hrs)=    2.067
01889>      RUNOFF VOLUME    (mm)=   13.777
01890>      TOTAL RAINFALL   (mm)=   46.730
```

```
01891>      RUNOFF COEFFICIENT   =     .295
01892>
01893>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01894>
01895> ----------------------------------------------------------------------------
01896> 003:0005----------------------------------------------------------------------
01897> * WEST OF RICHMOND STREET
01898> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
01899> *============================================================================
01900> ----------------------
01901> | CALIB STANDHYD     |   Area    (ha)=    1.76
01902> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
01903> ----------------------
01904>                                IMPERVIOUS    PERVIOUS (i)
01905>      Surface Area     (ha)=       .97          .79
01906>      Dep. Storage     (mm)=      2.00         5.00
01907>      Average Slope     (%)=      2.00         2.00
01908>      Length            (m)=     35.00        40.00
01909>      Mannings n          =       .013         .240
01910>
01911>      Max.eff.Inten.(mm/hr)=     189.58        22.87
01912>                 over (min)       1.00        13.00
01913>      Storage Coeff.  (min)=       .86 (ii)   13.28 (ii)
01914>      Unit Hyd. Tpeak (min)=      1.00        13.00
01915>      Unit Hyd. peak  (cms)=      1.17          .09
01916>                                                          *TOTALS*
01917>      PEAK FLOW       (cms)=       .37          .03          .370 (iii)
01918>      TIME TO PEAK    (hrs)=      1.35         1.63         1.350
01919>      RUNOFF VOLUME    (mm)=     44.73        10.36        25.826
01920>      TOTAL RAINFALL   (mm)=     46.73        46.73        46.730
01921>      RUNOFF COEFFICIENT   =       .96          .22          .553
01922>
01923>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01924>            CN* =  61.0    Ia = Dep. Storage  (Above)
01925>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01926>            THAN THE STORAGE COEFFICIENT.
01927>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01928>
01929> ----------------------------------------------------------------------------
01930> 003:0006----------------------------------------------------------------------
01931> *============================================================================
01932> * WEST OF RICHMOND STREET
01933> * PARK AREA ON THE SOUTH BOUNDARY (206a)
01934> *============================================================================
01935> ----------------------
01936> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
01937> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01938> ----------------------   U.H. Tp(hrs)=    .270
01939>
01940>      Unit Hyd Qpeak  (cms)=     .083
01941>
01942>      PEAK FLOW       (cms)=     .022 (i)
01943>      TIME TO PEAK    (hrs)=    1.750
01944>      RUNOFF VOLUME    (mm)=   13.777
01945>      TOTAL RAINFALL   (mm)=   46.730
01946>      RUNOFF COEFFICIENT   =     .295
01947>
01948>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01949>
01950> ----------------------------------------------------------------------------
01951> 003:0007----------------------------------------------------------------------
01952> *============================================================================
01953> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
01954> *============================================================================
01955> ------------------------
01956> | ADD HYD (2005      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01957> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
01958>                         ID1 01:201         1.61      .313    1.38  29.48    .000
01959>                        +ID2 02:202         2.96      .073    2.07  13.78    .000
01960>                        +ID3 03:203         1.76      .370    1.35  25.83    .000
01961>                        +ID4 04:206a         .59      .022    1.75  13.78    .000
01962>                         ==============================================================
01963>                         SUM 05:2005         6.92     .616    1.37  20.50    .000
01964>
01965>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01966>
01967> ----------------------------------------------------------------------------
01968> 003:0008----------------------------------------------------------------------
01969> *============================================================================
01970> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
01971> *============================================================================
01972> ----------------------
01973> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
01974> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01975> ----------------------   U.H. Tp(hrs)=    .870
01976>
01977>      Unit Hyd Qpeak  (cms)=     .838
01978>
01979>      PEAK FLOW       (cms)=     .320 (i)
01980>      TIME TO PEAK    (hrs)=    2.550
01981>      RUNOFF VOLUME    (mm)=   13.777
01982>      TOTAL RAINFALL   (mm)=   46.730
01983>      RUNOFF COEFFICIENT   =     .295
01984>
01985>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01986>
01987> ----------------------------------------------------------------------------
01988> 003:0009----------------------------------------------------------------------
01989> *============================================================================
01990> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
01991> *============================================================================
01992> ----------------------
01993> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
01994> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01995> ----------------------   U.H. Tp(hrs)=   2.180
01996>
01997>      Unit Hyd Qpeak  (cms)=    8.399
01998>
01999>      PEAK FLOW       (cms)=    4.081 (i)
02000>      TIME TO PEAK    (hrs)=    4.217
02001>      RUNOFF VOLUME    (mm)=   13.777
02002>      TOTAL RAINFALL   (mm)=   46.730
02003>      RUNOFF COEFFICIENT   =     .295
02004>
02005>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02006>
02007> ----------------------------------------------------------------------------
02008> 003:0010----------------------------------------------------------------------
02009> *============================================================================
02010> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
02011> *============================================================================
02012> ------------------------
02013> | ADD HYD (2010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02014> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02015>                         ID1 05:2005        6.92     .616    1.37  20.50    .000
02016>                        +ID2 01:EXT-1      19.09     .320    2.55  13.78    .000
02017>                        +ID3 02:EXT-2     479.35    4.081    4.22  13.78    .000
02018>                         ==============================================================
02019>                         SUM 10:2010       505.36    4.243    4.02  13.87    .000
02020>
02021>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02022>
02023> ----------------------------------------------------------------------------
02024> 003:0011----------------------------------------------------------------------
02025> *============================================================================
02026> * EAST OF RICHMOND STREET
02027> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
02028> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
02029> *============================================================================
02030> ----------------------
02031> | CALIB STANDHYD     |   Area    (ha)=    1.60
02032> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
02033> ----------------------
02034>                                IMPERVIOUS    PERVIOUS (i)
02035>      Surface Area     (ha)=       .93          .67
02036>      Dep. Storage     (mm)=      2.00         5.00
02037>      Average Slope     (%)=      2.00         2.00
02038>      Length            (m)=    269.00        35.00
02039>      Mannings n          =       .013         .240
02040>
02041>      Max.eff.Inten.(mm/hr)=     163.17        21.98
02042>                 over (min)       3.00        15.00
02043>      Storage Coeff.  (min)=      3.09 (ii)   14.74 (ii)
02044>      Unit Hyd. Tpeak (min)=      3.00        15.00
02045>      Unit Hyd. peak  (cms)=       .37          .08
02046>                                                          *TOTALS*
02047>      PEAK FLOW       (cms)=       .26          .02          .261 (iii)
02048>      TIME TO PEAK    (hrs)=      1.38         1.67         1.383
02049>      RUNOFF VOLUME    (mm)=     44.73        10.48        26.922
02050>      TOTAL RAINFALL   (mm)=     46.73        46.73        46.730
02051>      RUNOFF COEFFICIENT   =       .96          .22          .576
02052>
02053>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02054>            CN* =  61.0    Ia = Dep. Storage  (Above)
02055>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02056>            THAN THE STORAGE COEFFICIENT.
02057>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02058>
02059> ----------------------------------------------------------------------------
02060> 003:0012----------------------------------------------------------------------
02061> *============================================================================
02062> * WEST OF RICHMOND STREET
02063> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
02064> *============================================================================
02065> ----------------------
02066> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
02067> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02068> ----------------------   U.H. Tp(hrs)=    .780
02069>
02070>      Unit Hyd Qpeak  (cms)=     .048
02071>
02072>      PEAK FLOW       (cms)=     .018 (i)
02073>      TIME TO PEAK    (hrs)=    2.433
02074>      RUNOFF VOLUME    (mm)=   13.777
02075>      TOTAL RAINFALL   (mm)=   46.730
02076>      RUNOFF COEFFICIENT   =     .295
02077>
02078>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02079>
02080> ----------------------------------------------------------------------------
02081> 003:0013----------------------------------------------------------------------
02082> *============================================================================
02083> * WEST OF RICHMOND STREET
02084> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
02085> *============================================================================
02086> ----------------------
02087> | CALIB STANDHYD     |   Area    (ha)=     .89
02088> | 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
02089> ----------------------
02090>                                IMPERVIOUS    PERVIOUS (i)
02091>      Surface Area     (ha)=       .58          .31
02092>      Dep. Storage     (mm)=      2.00         5.00
02093>      Average Slope     (%)=      2.00         2.00
02094>      Length            (m)=    241.00        35.00
02095>      Mannings n          =       .013         .240
02096>
02097>      Max.eff.Inten.(mm/hr)=     163.17        24.49
02098>                 over (min)       3.00        14.00
02099>      Storage Coeff.  (min)=      2.89 (ii)   14.05 (ii)
02100>      Unit Hyd. Tpeak (min)=      3.00        14.00
02101>      Unit Hyd. peak  (cms)=       .38          .08
02102>                                                          *TOTALS*
02103>      PEAK FLOW       (cms)=       .17          .01          .170 (iii)
02104>      TIME TO PEAK    (hrs)=      1.38         1.65         1.383
02105>      RUNOFF VOLUME    (mm)=     44.73        10.85        29.484
02106>      TOTAL RAINFALL   (mm)=     46.73        46.73        46.730
02107>      RUNOFF COEFFICIENT   =       .96          .23          .631
02108>
02109>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02110>            CN* =  61.0    Ia = Dep. Storage  (Above)
02111>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02112>            THAN THE STORAGE COEFFICIENT.
02113>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02114>
02115> ----------------------------------------------------------------------------
02116> 003:0014----------------------------------------------------------------------
02117> *============================================================================
02118> * WECHMOND STREET
02119> * PROPOSED - HUNTER SUBDIVISION (205b)
02120> *============================================================================
02121> ----------------------
02122> | CALIB STANDHYD     |   Area    (ha)=     .78
02123> | 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
02124> ----------------------
02125>                                IMPERVIOUS    PERVIOUS (i)
02126>      Surface Area     (ha)=       .55          .23
02127>      Dep. Storage     (mm)=      2.00         5.00
02128>      Average Slope     (%)=      2.00         2.00
02129>      Length            (m)=    388.00       194.00
02130>      Mannings n          =       .013         .240
02131>
02132>      Max.eff.Inten.(mm/hr)=     150.73        13.92
02133>                 over (min)       4.00        43.00
02134>      Storage Coeff.  (min)=      3.97 (ii)   43.06 (ii)
02135>      Unit Hyd. Tpeak (min)=      4.00        43.00
02136>      Unit Hyd. peak  (cms)=       .28          .03
02137>                                                          *TOTALS*
02138>      PEAK FLOW       (cms)=       .14          .01          .142 (iii)
02139>      TIME TO PEAK    (hrs)=      1.40         2.20         1.400
02140>      RUNOFF VOLUME    (mm)=     44.73        11.21        31.322
02141>      TOTAL RAINFALL   (mm)=     46.73        46.73        46.730
02142>      RUNOFF COEFFICIENT   =       .96          .24          .670
02143>
02144>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02145>            CN* =  61.0    Ia = Dep. Storage  (Above)
02146>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02147>            THAN THE STORAGE COEFFICIENT.
02148>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02149>
02150> ----------------------------------------------------------------------------
02151> 003:0015----------------------------------------------------------------------
02152> *============================================================================
02153> * WEST OF RICHMOND STREET
02154> * PARK AREA ON THE SOUTH BOUNDARY (206b)
02155> *============================================================================
02156> ----------------------
02157> | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
02158> | 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02159> ----------------------   U.H. Tp(hrs)=    .160
02160>
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02161>      Unit Hyd Qpeak  (cms)=     .043
02162>
02163>      PEAK FLOW       (cms)=     .009 (i)
02164>      TIME TO PEAK    (hrs)=    1.583
02165>      RUNOFF VOLUME    (mm)=   13.775
02166>      TOTAL RAINFALL   (mm)=   46.730
02167>      RUNOFF COEFFICIENT   =     .295
02168>
02169>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02170>
02171> ---------------------------------------------------------------------------
02172> 003:0016-------------------------------------------------------------------
02173> *===========================================================================
02174> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
02175> *===========================================================================
02176> -----------------------
02177> | ADD HYD (2009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02178> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02179>                         ID1 01:208        1.60     .261    1.38  26.92    .000
02180>                        +ID2 02:204a        .99     .018    2.43  13.78    .000
02181>                        +ID3 03:205a        .89     .170    1.38  29.48    .000
02182>                        +ID4 04:205b        .78     .142    1.40  31.32    .000
02183>                        +ID5 05:206b        .18     .009    1.58  13.78    .000
02184>                         ==============================================================
02185>                         SUM 09:2009       4.44     .567    1.38  24.74    .000
02186>
02187>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02188>
02189> ---------------------------------------------------------------------------
02190> 003:0017-------------------------------------------------------------------
02191> *===========================================================================
02192> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
02193> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
02194> *===========================================================================
02195> -----------------------
02196> | CALIB STANDHYD     |   Area    (ha)=    4.25
02197> | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
02198> -----------------------
02199>                                IMPERVIOUS    PERVIOUS (i)
02200>      Surface Area     (ha)=       1.11         3.14
02201>      Dep. Storage     (mm)=       2.00         8.00
02202>      Average Slope     (%)=       2.00         2.00
02203>      Length            (m)=     256.00       237.00
02204>      Mannings n           =       .013         .240
02205>
02206>      Max.eff.Inten.(mm/hr)=     163.17        16.01
02207>                 over (min)        3.00        45.00
02208>      Storage Coeff.  (min)=       3.00 (ii)   44.67 (ii)
02209>      Unit Hyd. Tpeak (min)=       3.00        45.00
02210>      Unit Hyd. peak  (cms)=        .38          .03
02211>                                                          *TOTALS*
02212>      PEAK FLOW       (cms)=        .16          .08          .160 (iii)
02213>      TIME TO PEAK    (hrs)=       1.38         2.25         1.383
02214>      RUNOFF VOLUME    (mm)=      44.73        14.54        17.861
02215>      TOTAL RAINFALL   (mm)=      46.73        46.73        46.730
02216>      RUNOFF COEFFICIENT   =        .96          .31          .382
02217>
02218>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02219>            CN* =  75.0    Ia = Dep. Storage  (Above)
02220>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02221>            THAN THE STORAGE COEFFICIENT.
02222>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02223>
02224> ---------------------------------------------------------------------------
02225> 003:0018-------------------------------------------------------------------
02226> *===========================================================================
02227> * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
02228> *===========================================================================
02229> -----------------------
02230> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
02231> | 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02232> -----------------------   U.H. Tp(hrs)=   1.930
02233>
02234>      Unit Hyd Qpeak  (cms)=    3.692
02235>
02236>      PEAK FLOW       (cms)=    1.741 (i)
02237>      TIME TO PEAK    (hrs)=    3.917
02238>      RUNOFF VOLUME    (mm)=   13.777
02239>      TOTAL RAINFALL   (mm)=   46.730
02240>      RUNOFF COEFFICIENT   =     .295
02241>
02242>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02243>
02244> ---------------------------------------------------------------------------
02245> 003:0019-------------------------------------------------------------------
02246> *===========================================================================
02247> *SUB-TOTAL FLOW TO SANDUSKY DRAIN
02248> *===========================================================================
02249> -----------------------
02250> | ADD HYD (2003      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02251> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02252>                         ID1 01:210        4.25     .160    1.38  17.86    .000
02253>                        +ID2 02:EXT-3    186.58    1.741    3.92  13.78    .000
02254>                         ==============================================================
02255>                         SUM 03:2003     190.83    1.775    3.88  13.87    .000
02256>
02257>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02258>
02259> ---------------------------------------------------------------------------
02260> 003:0020-------------------------------------------------------------------
02261> *===========================================================================
02262> * SF ON THE NORTHEAST (ESTATE LOT)
02263> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
02264> *===========================================================================
02265> -----------------------
02266> | CALIB STANDHYD     |   Area    (ha)=    1.26
02267> | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
02268> -----------------------
02269>                                IMPERVIOUS    PERVIOUS (i)
02270>      Surface Area     (ha)=        .69          .57
02271>      Dep. Storage     (mm)=       2.00         5.00
02272>      Average Slope     (%)=       2.00         2.00
02273>      Length            (m)=      35.00        40.00
02274>      Mannings n           =       .013         .240
02275>
02276>      Max.eff.Inten.(mm/hr)=     189.58        40.58
02277>                 over (min)        1.00        11.00
02278>      Storage Coeff.  (min)=        .86 (ii)   10.73 (ii)
02279>      Unit Hyd. Tpeak (min)=       1.00        11.00
02280>      Unit Hyd. peak  (cms)=       1.17          .10
02281>                                                          *TOTALS*
02282>      PEAK FLOW       (cms)=        .26          .04          .268 (iii)
02283>      TIME TO PEAK    (hrs)=       1.35         1.58         1.350
02284>      RUNOFF VOLUME    (mm)=      44.73        16.25        29.064
02285>      TOTAL RAINFALL   (mm)=      46.73        46.73        46.730
02286>      RUNOFF COEFFICIENT   =        .96          .35          .622
02287>
02288>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02289>            CN* =  75.0    Ia = Dep. Storage  (Above)
02290>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02291>            THAN THE STORAGE COEFFICIENT.
02292>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02293>
02294> ---------------------------------------------------------------------------
02295> 003:0021-------------------------------------------------------------------
02296> *===========================================================================
02297> * EAST OF RICHMOND STREET
02298> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
02299> *===========================================================================
02300> -----------------------
02301> | CALIB STANDHYD     |   Area    (ha)=     .45
02302> | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
02303> -----------------------
02304>                                IMPERVIOUS    PERVIOUS (i)
02305>      Surface Area     (ha)=        .29          .16
02306>      Dep. Storage     (mm)=       2.00         5.00
02307>      Average Slope     (%)=       2.00         2.00
02308>      Length            (m)=     155.00        35.00
02309>      Mannings n           =       .013         .240
02310>
02311>      Max.eff.Inten.(mm/hr)=     179.34        25.33
02312>                 over (min)        2.00        13.00
02313>      Storage Coeff.  (min)=       2.14 (ii)   13.15 (ii)
02314>      Unit Hyd. Tpeak (min)=       2.00        13.00
02315>      Unit Hyd. peak  (cms)=        .54          .09
02316>                                                          *TOTALS*
02317>      PEAK FLOW       (cms)=        .09          .01          .095 (iii)
02318>      TIME TO PEAK    (hrs)=       1.37         1.63         1.367
02319>      RUNOFF VOLUME    (mm)=      44.73        10.85        29.484
02320>      TOTAL RAINFALL   (mm)=      46.73        46.73        46.730
02321>      RUNOFF COEFFICIENT   =        .96          .23          .631
02322>
02323>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02324>            CN* =  61.0    Ia = Dep. Storage  (Above)
02325>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02326>            THAN THE STORAGE COEFFICIENT.
02327>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02328>
02329> ---------------------------------------------------------------------------
02330> 003:0022-------------------------------------------------------------------
02331> *===========================================================================
02332> * EAST OF RICHMOND STREET
02333> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
02334> *===========================================================================
02335> -----------------------
02336> | CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
02337> | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02338> -----------------------   U.H. Tp(hrs)=    .530
02339>
02340>      Unit Hyd Qpeak  (cms)=     .049
02341>
02342>      PEAK FLOW       (cms)=     .016 (i)
02343>      TIME TO PEAK    (hrs)=    2.100
02344>      RUNOFF VOLUME    (mm)=   13.776
02345>      TOTAL RAINFALL   (mm)=   46.730
02346>      RUNOFF COEFFICIENT   =     .295
02347>
02348>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02349>
02350> ---------------------------------------------------------------------------
02351> 003:0023-------------------------------------------------------------------
02352> *===========================================================================
02353> * EAST OF RICHMOND STREET
02354> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
02355> *===========================================================================
02356> -----------------------
02357> | CALIB STANDHYD     |   Area    (ha)=    2.61
02358> | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
02359> -----------------------
02360>                                IMPERVIOUS    PERVIOUS (i)
02361>      Surface Area     (ha)=       1.46         1.15
02362>      Dep. Storage     (mm)=       2.00         5.00
02363>      Average Slope     (%)=       2.00         2.00
02364>      Length            (m)=     126.00        35.00
02365>      Mannings n           =       .013         .240
02366>
02367>      Max.eff.Inten.(mm/hr)=     179.34        23.94
02368>                 over (min)        2.00        13.00
02369>      Storage Coeff.  (min)=       1.89 (ii)   13.15 (ii)
02370>      Unit Hyd. Tpeak (min)=       2.00        13.00
02371>      Unit Hyd. peak  (cms)=        .58          .09
02372>                                                          *TOTALS*
02373>      PEAK FLOW       (cms)=        .46          .05          .468 (iii)
02374>      TIME TO PEAK    (hrs)=       1.37         1.63         1.367
02375>      RUNOFF VOLUME    (mm)=      44.73        10.58        25.945
02376>      TOTAL RAINFALL   (mm)=      46.73        46.73        46.730
02377>      RUNOFF COEFFICIENT   =        .96          .23          .555
02378>
02379>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02380>            CN* =  61.0    Ia = Dep. Storage  (Above)
02381>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02382>            THAN THE STORAGE COEFFICIENT.
02383>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02384>
02385> ---------------------------------------------------------------------------
02386> 003:0024-------------------------------------------------------------------
02387> *===========================================================================
02388> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
02389> *===========================================================================
02390> -----------------------
02391> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02392> |  IN>05:(209   )    |
02393> | OUT<06:(002006)    |    =========  OUTLFOW STORAGE TABLE  =========
02394> -----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02395>                              (cms)    (ha.m.)   |    (cms)    (ha.m.)
02396>                               .000  .0000E+00    |     .030  .2263E+00
02397>                               .009  .8000E-02    |     .031  .2476E+00
02398>                               .013  .1970E-01    |     .031  .2698E+00
02399>                               .016  .3510E-01    |     .032  .2929E+00
02400>                               .019  .5430E-01    |     .033  .3169E+00
02401>                               .021  .7710E-01    |     .034  .3419E+00
02402>                               .023  .1038E+00    |     .034  .3678E+00
02403>                               .025  .1341E+00    |     .035  .3946E+00
02404>                               .027  .1682E+00    |     .036  .4224E+00
02405>                               .029  .2060E+00    |     .000  .0000E+00
02406>
02407>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02408>      ---------------------       (ha)     (cms)     (hrs)       (mm)
02409>      INFLOW >05: (209   )       2.61      .468     1.367     25.945
02410>      OUTFLOW<06: (002006)       2.61      .018     3.033     25.945
02411>     OVERFLOW<07: (002007)        .00      .000      .000       .000
02412>
02413>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =         0
02414>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02415>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02416>
02417>
02418>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.956
02419>                     TIME SHIFT OF PEAK FLOW         (min)=   100.00
02420>                     MAXIMUM  STORAGE   USED       (ha.m.)=.5071E-01
02421>
02422> ---------------------------------------------------------------------------
02423> 003:0025-------------------------------------------------------------------
02424> *===========================================================================
02425> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
02426> *===========================================================================
02427> -----------------------
02428> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02429> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02430>                         ID1 01:212        1.26     .268    1.35  29.06    .000
```

```
                   +ID2 02:207          .45     .095    1.37  29.48    .000
                   +ID3 03:2003       190.83   1.775    3.88  13.87    .000
                   +ID4 04:204b         .68     .016    2.10  13.78    .000
                   +ID5 06:      2006  2.61     .018    3.03  25.95    .000
                    ==========================================================
                    SUM 08:2008       195.83   1.806    3.87  14.16    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 --------------------------------------------------------------------------------
 003:0026------------------------------------------------------------------------
 *===============================================================================
 * EAST OF RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
 *===============================================================================
 ----------------------
 | CALIB STANDHYD     |   Area    (ha)=   24.15
 | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
 ----------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     13.04         11.11
     Dep. Storage     (mm)=      2.00          5.00
     Average Slope     (%)=      2.00          2.00
     Length            (m)=     35.00         40.00
     Mannings n          =       .013          .240

     Max.eff.Inten.(mm/hr)=    189.58         23.52
                over (min)       1.00         13.00
     Storage Coeff.  (min)=       .86 (ii)   13.14 (ii)
     Unit Hyd. Tpeak (min)=      1.00         13.00
     Unit Hyd. peak  (cms)=      1.17           .09
                                                          *TOTALS*
     PEAK FLOW       (cms)=      4.81           .43          4.853 (iii)
     TIME TO PEAK    (hrs)=      1.35          1.63          1.350
     RUNOFF VOLUME    (mm)=     44.73         10.49         25.214
     TOTAL RAINFALL   (mm)=     46.73         46.73         46.730
     RUNOFF COEFFICIENT   =       .96           .22           .540

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 --------------------------------------------------------------------------------
 003:0027------------------------------------------------------------------------
 *===============================================================================
 * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
 *===============================================================================
 ----------------------
 | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
 | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ----------------------   U.H. Tp(hrs)=   1.040

     Unit Hyd Qpeak  (cms)=     .033

     PEAK FLOW       (cms)=     .013 (i)
     TIME TO PEAK    (hrs)=    2.767
     RUNOFF VOLUME    (mm)=   13.776
     TOTAL RAINFALL   (mm)=   46.730
     RUNOFF COEFFICIENT   =     .295

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

 --------------------------------------------------------------------------------
 003:0028------------------------------------------------------------------------
 *===============================================================================
 *TOTAL RUNOFF FROM AREA 212 AND EXT-4
 *===============================================================================
 ------------------------
 | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
 ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                    ID1 01:208b          24.15     4.853    1.35  25.21    .000
                   +ID2 02:EXT-4           .91      .013    2.77  13.78    .000
                    ==========================================================
                    SUM 03:SUM           25.06     4.853    1.35  24.80    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 --------------------------------------------------------------------------------
 003:0029------------------------------------------------------------------------
 *===============================================================================
 *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
 *===============================================================================
 ---------------------
 | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
 |  IN>03:(SUM   )   |
 | OUT<04:(002004)   |    =========  OUTLFOW STORAGE TABLE  =========
 ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)    (ha.m.)   |   (cms)     (ha.m.)
                             .000  .0000E+00   |     .783  .9373E+00
                             .020  .1250E+00   |     .993  .1083E+01
                             .074  .2530E+00   |    1.215  .1232E+01
                             .156  .3839E+00   |    1.441  .1383E+01
                             .263  .5178E+00   |    1.655  .1538E+01
                             .416  .6547E+00   |    1.827  .1696E+01
                             .594  .7945E+00   |    1.986  .1856E+01

     ROUTING RESULTS              AREA      QPEAK      TPEAK         R.V.
     --------------------         (ha)      (cms)      (hrs)         (mm)
     INFLOW >03: (SUM   )        25.06      4.853      1.350       24.799
     OUTFLOW<04: (002004)        25.06       .213      2.783       24.798
    OVERFLOW<01: (002001)          .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](%)=     4.398
                  TIME SHIFT OF PEAK FLOW         (min)=     86.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.4556E+00

 --------------------------------------------------------------------------------
 003:0030------------------------------------------------------------------------
 *===============================================================================
 * TOTAL FLOW TO SANDUSKY DRAIN AT CN
 *===============================================================================
 ------------------------
 | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
 ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                    ID1 10:2010         505.36     4.243    4.02  13.87    .000
                   +ID2 09:2009           4.44      .567    1.38  24.74    .000
                   +ID3 08:2008         195.83     1.806    3.87  14.16    .000
                   +ID4 04:      2004    25.06      .213    2.78  24.80    .000
                    ==========================================================
                    SUM 07:TotalCNR     730.69     6.262    4.02  14.39    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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 003:0031------------------------------------------------------------------------
 *PROPOSED - FLOW TO IDA STREET
 *===============================================================================
 ---------------------
 | CALIB STANDHYD     |   Area    (ha)=     .54
 | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
 ----------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       .30           .24
     Dep. Storage     (mm)=      2.00          5.00
     Average Slope     (%)=      2.00          2.00
     Length            (m)=     35.00         40.00
     Mannings n          =       .013          .240

     Max.eff.Inten.(mm/hr)=    189.58         22.87
                over (min)       1.00         13.00
     Storage Coeff.  (min)=       .86 (ii)   13.28 (ii)
     Unit Hyd. Tpeak (min)=      1.00         13.00
     Unit Hyd. peak  (cms)=      1.17           .09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       .11           .01           .113 (iii)
     TIME TO PEAK    (hrs)=      1.35          1.63          1.350
     RUNOFF VOLUME    (mm)=     44.73         10.36         25.826
     TOTAL RAINFALL   (mm)=     46.73         46.73         46.730
     RUNOFF COEFFICIENT   =       .96           .22           .553

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 --------------------------------------------------------------------------------
 003:0032------------------------------------------------------------------------
 --------------------------------------------------------------------------------
 003:0002------------------------------------------------------------------------
 --------------------------------------------------------------------------------
 003:0002------------------------------------------------------------------------
   ** END OF RUN :   3

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





 --------------------
 | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
 --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
     TZERO =   .00 hrs on        0
     METOUT=   2 (output = METRIC)
     NRUN  = 004
     NSTORM=   1
           #  1=10YR.HYT
 --------------------------------------------------------------------------------
 004:0002------------------------------------------------------------------------
 *#******************************************************************************
 *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
 *#  Date          : APRIL 2022
 *#  Modeller      : [MM]
 *#  Company       : STANTEC CONSULTING LTD.
 *#  License #     :
 *#******************************************************************************
 --------------------------------------------------------------------------------
 004:0002------------------------------------------------------------------------
 --------------------
 | READ STORM       |    Filename: 10YR Chicago 4-hr duration
 | Ptotal=  54.79 mm|    Comments: 10YR Chicago 4-hr duration
 --------------------
                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
                 .02   2.343 |   1.03  11.463 |   2.05   9.703 |   3.07   3.674
                 .03   2.373 |   1.05  12.225 |   2.07   9.452 |   3.08   3.637
                 .05   2.404 |   1.07  13.087 |   2.08   9.214 |   3.10   3.601
                 .07   2.436 |   1.08  14.072 |   2.10   8.987 |   3.12   3.565
                 .08   2.468 |   1.10  15.206 |   2.12   8.771 |   3.13   3.531
                 .10   2.502 |   1.12  16.521 |   2.13   8.565 |   3.15   3.497
                 .12   2.537 |   1.13  18.063 |   2.15   8.367 |   3.17   3.463
                 .13   2.572 |   1.15  19.892 |   2.17   8.179 |   3.18   3.431
                 .15   2.609 |   1.17  22.088 |   2.18   7.998 |   3.20   3.399
                 .17   2.647 |   1.18  24.768 |   2.20   7.825 |   3.22   3.367
                 .18   2.686 |   1.20  28.094 |   2.22   7.660 |   3.23   3.336
                 .20   2.726 |   1.22  32.309 |   2.23   7.501 |   3.25   3.306
                 .22   2.767 |   1.23  37.786 |   2.25   7.348 |   3.27   3.277
                 .23   2.810 |   1.25  45.125 |   2.27   7.201 |   3.28   3.247
                 .25   2.854 |   1.27  55.341 |   2.28   7.060 |   3.30   3.219
                 .27   2.900 |   1.28  70.282 |   2.30   6.924 |   3.32   3.191
                 .28   2.947 |   1.30  93.617 |   2.32   6.794 |   3.33   3.163
                 .30   2.996 |   1.32 133.590 |   2.33   6.668 |   3.35   3.136
                 .32   3.046 |   1.33 212.318 |   2.35   6.547 |   3.37   3.109
                 .33   3.098 |   1.35 191.878 |   2.37   6.429 |   3.38   3.083
                 .35   3.152 |   1.37 152.288 |   2.38   6.316 |   3.40   3.058
                 .37   3.209 |   1.38 124.543 |   2.40   6.207 |   3.42   3.032
                 .38   3.267 |   1.40 104.269 |   2.42   6.102 |   3.43   3.007
                 .40   3.327 |   1.42  88.954 |   2.43   6.000 |   3.45   2.983
                 .42   3.390 |   1.43  77.070 |   2.45   5.901 |   3.47   2.959
                 .43   3.455 |   1.45  67.639 |   2.47   5.806 |   3.48   2.935
                 .45   3.523 |   1.47  60.014 |   2.48   5.713 |   3.50   2.912
                 .47   3.594 |   1.48  53.747 |   2.50   5.624 |   3.52   2.889
                 .48   3.668 |   1.50  48.526 |   2.52   5.537 |   3.53   2.867
                 .50   3.745 |   1.52  44.123 |   2.53   5.453 |   3.55   2.845
                 .52   3.825 |   1.53  40.370 |   2.55   5.371 |   3.57   2.823
                 .53   3.909 |   1.55  37.140 |   2.57   5.292 |   3.58   2.802
                 .55   3.997 |   1.57  34.337 |   2.58   5.215 |   3.60   2.780
                 .57   4.089 |   1.58  31.887 |   2.60   5.140 |   3.62   2.760
                 .58   4.185 |   1.60  29.730 |   2.62   5.068 |   3.63   2.739
                 .60   4.286 |   1.62  27.819 |   2.63   4.997 |   3.65   2.719
                 .62   4.392 |   1.63  26.116 |   2.65   4.929 |   3.67   2.699
                 .63   4.504 |   1.65  24.592 |   2.67   4.862 |   3.68   2.680
                 .65   4.621 |   1.67  23.220 |   2.68   4.797 |   3.70   2.661
                 .67   4.745 |   1.68  21.981 |   2.70   4.734 |   3.72   2.642
                 .68   4.876 |   1.70  20.856 |   2.72   4.672 |   3.73   2.623
                 .70   5.014 |   1.72  19.832 |   2.73   4.612 |   3.75   2.605
                 .72   5.161 |   1.73  18.896 |   2.75   4.554 |   3.77   2.586
                 .73   5.316 |   1.75  18.038 |   2.77   4.497 |   3.78   2.569
                 .75   5.481 |   1.77  17.249 |   2.78   4.442 |   3.80   2.551
                 .77   5.656 |   1.78  16.521 |   2.80   4.387 |   3.82   2.533
                 .78   5.843 |   1.80  15.848 |   2.82   4.335 |   3.83   2.516
                 .80   6.043 |   1.82  15.224 |   2.83   4.283 |   3.85   2.500
                 .82   6.256 |   1.83  14.644 |   2.85   4.233 |   3.87   2.483
                 .83   6.486 |   1.85  14.104 |   2.87   4.184 |   3.88   2.467
                 .85   6.732 |   1.87  13.600 |   2.88   4.136 |   3.90   2.450
                 .87   6.998 |   1.88  13.129 |   2.90   4.089 |   3.92   2.434
                 .88   7.285 |   1.90  12.687 |   2.92   4.043 |   3.93   2.419
                 .90   7.596 |   1.92  12.273 |   2.93   3.998 |   3.95   2.403
                 .92   7.935 |   1.93  11.884 |   2.95   3.954 |   3.97   2.388
                 .93   8.304 |   1.95  11.517 |   2.97   3.912 |   3.98   2.373
                 .95   8.707 |   1.97  11.171 |   2.98   3.870 |   4.00   2.358
                 .97   9.151 |   1.98  10.844 |   3.00   3.829 |   4.02   2.343
                 .98   9.641 |   2.00  10.536 |   3.02   3.789 |
                1.00  10.183 |   2.02  10.243 |   3.03   3.750 |
                1.02  10.787 |   2.03   9.966 |   3.05   3.711 |

 --------------------------------------------------------------------------------
 004:0003------------------------------------------------------------------------
 * WEST OF RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
 *===============================================================================
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```
02701> | CALIB STANDHYD     |   Area    (ha)=    1.61
02702> | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
02703> ----------------------
02704>                              IMPERVIOUS    PERVIOUS (i)
02705>      Surface Area     (ha)=       1.05          .56
02706>      Dep. Storage     (mm)=       2.00         5.00
02707>      Average Slope     (%)=       2.00         2.00
02708>      Length            (m)=     217.00        35.00
02709>      Mannings n           =       .013         .240
02710>
02711>      Max.eff.Inten.(mm/hr)=     185.49        36.11
02712>                 over (min)       3.00        12.00
02713>      Storage Coeff.  (min)=       2.58 (ii)   12.13 (ii)
02714>      Unit Hyd. Tpeak (min)=       3.00        12.00
02715>      Unit Hyd. peak  (cms)=        .41         .09
02716>                                                          *TOTALS*
02717>      PEAK FLOW       (cms)=        .36         .03          .368 (iii)
02718>      TIME TO PEAK    (hrs)=       1.38        1.62         1.383
02719>      RUNOFF VOLUME    (mm)=      52.79       14.62        35.613
02720>      TOTAL RAINFALL   (mm)=      54.79       54.79        54.789
02721>      RUNOFF COEFFICIENT   =        .96         .27          .650
02722>
02723>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02724>             CN* =  61.0    Ia = Dep. Storage  (Above)
02725>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02726>             THAN THE STORAGE COEFFICIENT.
02727>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02728>
02729> ---------------------------------------------------------------------------
02730> 004:0004-------------------------------------------------------------------
02731> *==========================================================================
02732> * WEST OF RICHMOND STREET
02733> * PARK AREA (202)
02734> *==========================================================================
02735> ----------------------
02736> | CALIB NASHYD       |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
02737> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02738> ----------------------   U.H. Tp(hrs)=    .500
02739>
02740>      Unit Hyd Qpeak  (cms)=     .226
02741>
02742>      PEAK FLOW       (cms)=     .101 (i)
02743>      TIME TO PEAK    (hrs)=    2.050
02744>      RUNOFF VOLUME    (mm)=   18.437
02745>      TOTAL RAINFALL   (mm)=   54.789
02746>      RUNOFF COEFFICIENT   =     .337
02747>
02748>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02749>
02750> ---------------------------------------------------------------------------
02751> 004:0005-------------------------------------------------------------------
02752> * WEST OF RICHMOND STREET
02753> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
02754> *==========================================================================
02755> ----------------------
02756> | CALIB STANDHYD     |   Area    (ha)=    1.76
02757> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
02758> ----------------------
02759>                              IMPERVIOUS    PERVIOUS (i)
02760>      Surface Area     (ha)=        .97         .79
02761>      Dep. Storage     (mm)=       2.00         5.00
02762>      Average Slope     (%)=       2.00         2.00
02763>      Length            (m)=      35.00        40.00
02764>      Mannings n           =       .013         .240
02765>
02766>      Max.eff.Inten.(mm/hr)=     212.32        32.71
02767>                 over (min)       1.00        12.00
02768>      Storage Coeff.  (min)=        .82 (ii)   11.59 (ii)
02769>      Unit Hyd. Tpeak (min)=       1.00        12.00
02770>      Unit Hyd. peak  (cms)=       1.20         .10
02771>                                                          *TOTALS*
02772>      PEAK FLOW       (cms)=        .42         .04          .423 (iii)
02773>      TIME TO PEAK    (hrs)=       1.35        1.60         1.350
02774>      RUNOFF VOLUME    (mm)=      52.79       14.00        31.456
02775>      TOTAL RAINFALL   (mm)=      54.79       54.79        54.789
02776>      RUNOFF COEFFICIENT   =        .96         .26          .574
02777>
02778>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02779>             CN* =  61.0    Ia = Dep. Storage  (Above)
02780>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02781>             THAN THE STORAGE COEFFICIENT.
02782>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02783>
02784> ---------------------------------------------------------------------------
02785> 004:0006-------------------------------------------------------------------
02786> *==========================================================================
02787> * WEST OF RICHMOND STREET
02788> * PARK AREA ON THE SOUTH BOUNDARY (206a)
02789> *==========================================================================
02790> ----------------------
02791> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
02792> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02793> ----------------------   U.H. Tp(hrs)=    .270
02794>
02795>      Unit Hyd Qpeak  (cms)=     .083
02796>
02797>      PEAK FLOW       (cms)=     .030 (i)
02798>      TIME TO PEAK    (hrs)=    1.750
02799>      RUNOFF VOLUME    (mm)=   18.437
02800>      TOTAL RAINFALL   (mm)=   54.789
02801>      RUNOFF COEFFICIENT   =     .336
02802>
02803>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02804>
02805> ---------------------------------------------------------------------------
02806> 004:0007-------------------------------------------------------------------
02807> *==========================================================================
02808> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
02809> *==========================================================================
02810> ------------------------
02811> | ADD HYD (2005      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02812> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02813>                         ID1 01:201         1.61     .368    1.38  35.61    .000
02814>                        +ID2 02:202         2.96     .101    2.05  18.44    .000
02815>                        +ID3 03:203         1.76     .423    1.35  31.46    .000
02816>                        +ID4 04:206a         .59     .030    1.75  18.44    .000
02817>                         ==========================================================
02818>                         SUM 05:2005        6.92     .721    1.37  25.74    .000
02819>
02820>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02821>
02822> ---------------------------------------------------------------------------
02823> 004:0008-------------------------------------------------------------------
02824> *==========================================================================
02825> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
02826> *==========================================================================
02827> ----------------------
02828> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
02829> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02830> ----------------------   U.H. Tp(hrs)=    .870
02831>
02832>      Unit Hyd Qpeak  (cms)=     .838
02833>
02834>      PEAK FLOW       (cms)=     .440 (i)
02835>      TIME TO PEAK    (hrs)=    2.533
02836>      RUNOFF VOLUME    (mm)=   18.437
02837>      TOTAL RAINFALL   (mm)=   54.789
02838>      RUNOFF COEFFICIENT   =     .337
02839>
02840>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02841>
02842> ---------------------------------------------------------------------------
02843> 004:0009-------------------------------------------------------------------
02844> *==========================================================================
02845> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
02846> *==========================================================================
02847> ----------------------
02848> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
02849> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02850> ----------------------   U.H. Tp(hrs)=   2.180
02851>
02852>      Unit Hyd Qpeak  (cms)=    8.399
02853>
02854>      PEAK FLOW       (cms)=    5.502 (i)
02855>      TIME TO PEAK    (hrs)=    4.150
02856>      RUNOFF VOLUME    (mm)=   18.437
02857>      TOTAL RAINFALL   (mm)=   54.789
02858>      RUNOFF COEFFICIENT   =     .337
02859>
02860>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02861>
02862> ---------------------------------------------------------------------------
02863> 004:0010-------------------------------------------------------------------
02864> *==========================================================================
02865> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
02866> *==========================================================================
02867> ------------------------
02868> | ADD HYD (2010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02869> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02870>                         ID1 05:2005        6.92     .721    1.37  25.74    .000
02871>                        +ID2 01:EXT-1      19.09     .440    2.53  18.44    .000
02872>                        +ID3 02:EXT-2     479.35    5.502    4.15  18.44    .000
02873>                         ==========================================================
02874>                         SUM 10:2010      505.36    5.722    4.02  18.54    .000
02875>
02876>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02877>
02878> ---------------------------------------------------------------------------
02879> 004:0011-------------------------------------------------------------------
02880> *==========================================================================
02881> * EAST OF RICHMOND STREET
02882> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
02883> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
02884> *==========================================================================
02885> ----------------------
02886> | CALIB STANDHYD     |   Area    (ha)=    1.60
02887> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
02888> ----------------------
02889>                              IMPERVIOUS    PERVIOUS (i)
02890>      Surface Area     (ha)=        .93         .67
02891>      Dep. Storage     (mm)=       2.00         5.00
02892>      Average Slope     (%)=       2.00         2.00
02893>      Length            (m)=     269.00        35.00
02894>      Mannings n           =       .013         .240
02895>
02896>      Max.eff.Inten.(mm/hr)=     185.49        32.45
02897>                 over (min)       3.00        13.00
02898>      Storage Coeff.  (min)=       2.93 (ii)   12.91 (ii)
02899>      Unit Hyd. Tpeak (min)=       3.00        13.00
02900>      Unit Hyd. peak  (cms)=        .38         .09
02901>                                                          *TOTALS*
02902>      PEAK FLOW       (cms)=        .30         .04          .308 (iii)
02903>      TIME TO PEAK    (hrs)=       1.38        1.63         1.383
02904>      RUNOFF VOLUME    (mm)=      52.79       14.16        32.701
02905>      TOTAL RAINFALL   (mm)=      54.79       54.79        54.789
02906>      RUNOFF COEFFICIENT   =        .96         .26          .597
02907>
02908>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02909>             CN* =  61.0    Ia = Dep. Storage  (Above)
02910>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02911>             THAN THE STORAGE COEFFICIENT.
02912>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02913>
02914> ---------------------------------------------------------------------------
02915> 004:0012-------------------------------------------------------------------
02916> *==========================================================================
02917> * WEST OF RICHMOND STREET
02918> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
02919> *==========================================================================
02920> ----------------------
02921> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
02922> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02923> ----------------------   U.H. Tp(hrs)=    .780
02924>
02925>      Unit Hyd Qpeak  (cms)=     .048
02926>
02927>      PEAK FLOW       (cms)=     .025 (i)
02928>      TIME TO PEAK    (hrs)=    2.417
02929>      RUNOFF VOLUME    (mm)=   18.437
02930>      TOTAL RAINFALL   (mm)=   54.789
02931>      RUNOFF COEFFICIENT   =     .337
02932>
02933>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02934>
02935> ---------------------------------------------------------------------------
02936> 004:0013-------------------------------------------------------------------
02937> *==========================================================================
02938> * WEST OF RICHMOND STREET
02939> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
02940> *==========================================================================
02941> ----------------------
02942> | CALIB STANDHYD     |   Area    (ha)=     .89
02943> | 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
02944> ----------------------
02945>                              IMPERVIOUS    PERVIOUS (i)
02946>      Surface Area     (ha)=        .58         .31
02947>      Dep. Storage     (mm)=       2.00         5.00
02948>      Average Slope     (%)=       2.00         2.00
02949>      Length            (m)=     241.00        35.00
02950>      Mannings n           =       .013         .240
02951>
02952>      Max.eff.Inten.(mm/hr)=     185.49        36.11
02953>                 over (min)       3.00        12.00
02954>      Storage Coeff.  (min)=       2.75 (ii)   12.30 (ii)
02955>      Unit Hyd. Tpeak (min)=       3.00        12.00
02956>      Unit Hyd. peak  (cms)=        .40         .09
02957>                                                          *TOTALS*
02958>      PEAK FLOW       (cms)=        .20         .02          .200 (iii)
02959>      TIME TO PEAK    (hrs)=       1.38        1.62         1.383
02960>      RUNOFF VOLUME    (mm)=      52.79       14.62        35.613
02961>      TOTAL RAINFALL   (mm)=      54.79       54.79        54.789
02962>      RUNOFF COEFFICIENT   =        .96         .27          .650
02963>
02964>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02965>             CN* =  61.0    Ia = Dep. Storage  (Above)
02966>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02967>             THAN THE STORAGE COEFFICIENT.
02968>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02969>
02970> ---------------------------------------------------------------------------
```

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 004:0014-----------------------------------------------------------------------------
 *=============================================================================
 * RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION (205b)
 *=============================================================================
 ---------------------
 | CALIB STANDHYD     |   Area    (ha)=     .78
 | 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
 ---------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .55          .23
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     388.00       194.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     172.52        21.17
               over (min)       4.00         37.00
     Storage Coeff.  (min)=       3.76 (ii)   36.82 (ii)
     Unit Hyd. Tpeak (min)=       4.00        37.00
     Unit Hyd. peak  (cms)=        .29          .03
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .17          .01           .168 (iii)
     TIME TO PEAK    (hrs)=       1.40         2.08          1.400
     RUNOFF VOLUME    (mm)=      52.79        15.07         37.703
     TOTAL RAINFALL   (mm)=      54.79        54.79         54.789
     RUNOFF COEFFICIENT   =        .96          .28           .688

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 -----------------------------------------------------------------------------
 004:0015-----------------------------------------------------------------------------
 *=============================================================================
 * WEST OF RICHMOND STREET
 * PARK AREA ON THE SOUTH BOUNDARY (206b)
 *=============================================================================
 ---------------------
 | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
 | 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ---------------------   U.H. Tp(hrs)=    .160

     Unit Hyd Qpeak  (cms)=     .043

     PEAK FLOW       (cms)=     .012 (i)
     TIME TO PEAK    (hrs)=    1.583
     RUNOFF VOLUME    (mm)=   18.435
     TOTAL RAINFALL   (mm)=   54.789
     RUNOFF COEFFICIENT   =     .336

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

 -----------------------------------------------------------------------------
 004:0016-----------------------------------------------------------------------------
 *=============================================================================
 * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
 *=============================================================================
 -----------------------
 | ADD HYD (2009      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
 -----------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                      ID1 01:208a         1.60      .308    1.38  32.70    .000
                     +ID2 02:204a          .99      .025    2.42  18.44    .000
                     +ID3 03:205a          .89      .200    1.38  35.61    .000
                     +ID4 04:205b          .78      .168    1.40  37.70    .000
                     +ID5 05:206b          .18      .012    1.58  18.44    .000
                      =======================================================
                      SUM 09:2009         4.44      .673    1.40  30.40    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 -----------------------------------------------------------------------------
 004:0017-----------------------------------------------------------------------------
 *=============================================================================
 * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
 * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
 *=============================================================================
 ---------------------
 | CALIB STANDHYD     |   Area    (ha)=    4.25
 | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
 ---------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         3.14
     Dep. Storage     (mm)=       2.00         8.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     256.00       237.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     185.49        24.82
               over (min)       3.00         38.00
     Storage Coeff.  (min)=       2.85 (ii)   37.82 (ii)
     Unit Hyd. Tpeak (min)=       3.00        38.00
     Unit Hyd. peak  (cms)=        .39          .03
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .19          .12           .190 (iii)
     TIME TO PEAK    (hrs)=       1.38         2.10          1.383
     RUNOFF VOLUME    (mm)=      52.79        19.55         23.205
     TOTAL RAINFALL   (mm)=      54.79        54.79         54.789
     RUNOFF COEFFICIENT   =        .96          .36           .424

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  75.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 -----------------------------------------------------------------------------
 004:0018-----------------------------------------------------------------------------
 *=============================================================================
 * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
 *=============================================================================
 ---------------------
 | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
 | 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ---------------------   U.H. Tp(hrs)=   1.930

     Unit Hyd Qpeak  (cms)=    3.692

     PEAK FLOW       (cms)=    2.354 (i)
     TIME TO PEAK    (hrs)=    3.850
     RUNOFF VOLUME    (mm)=   18.437
     TOTAL RAINFALL   (mm)=   54.789
     RUNOFF COEFFICIENT   =     .337

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

 -----------------------------------------------------------------------------
 004:0019-----------------------------------------------------------------------------
 *=============================================================================
 *SUB-TOTAL FLOW TO SANDUSKY DRAIN
 *=============================================================================
 -----------------------
 | ADD HYD (2003      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
```

```
 -----------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                      ID1 01:210          4.25      .190    1.38  23.21    .000
                     +ID2 02:EXT-3      186.58     2.354    3.85  18.44    .000
                      =======================================================
                      SUM 03:2003       190.83     2.393    3.82  18.54    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 -----------------------------------------------------------------------------
 004:0020-----------------------------------------------------------------------------
 *=============================================================================
 * SF ON THE NORTHEAST (ESTATE LOT)
 * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
 *=============================================================================
 ---------------------
 | CALIB STANDHYD     |   Area    (ha)=    1.26
 | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
 ---------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .69          .57
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      35.00        40.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     212.32        59.00
               over (min)       1.00          9.00
     Storage Coeff.  (min)=        .82 (ii)    9.32 (ii)
     Unit Hyd. Tpeak (min)=       1.00         9.00
     Unit Hyd. peak  (cms)=       1.20          .12
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .30          .06           .309 (iii)
     TIME TO PEAK    (hrs)=       1.35         1.55          1.350
     RUNOFF VOLUME    (mm)=      52.79        21.42         35.539
     TOTAL RAINFALL   (mm)=      54.79        54.79         54.789
     RUNOFF COEFFICIENT   =        .96          .39           .649

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  75.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 -----------------------------------------------------------------------------
 004:0021-----------------------------------------------------------------------------
 *=============================================================================
 * EAST OF RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
 *=============================================================================
 ---------------------
 | CALIB STANDHYD     |   Area    (ha)=     .45
 | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
 ---------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        .29          .16
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     155.00        35.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     202.10        36.11
               over (min)       2.00         12.00
     Storage Coeff.  (min)=       2.04 (ii)   11.59 (ii)
     Unit Hyd. Tpeak (min)=       2.00        12.00
     Unit Hyd. peak  (cms)=        .55          .10
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .11          .01           .111 (iii)
     TIME TO PEAK    (hrs)=       1.37         1.60          1.367
     RUNOFF VOLUME    (mm)=      52.79        14.62         35.613
     TOTAL RAINFALL   (mm)=      54.79        54.79         54.789
     RUNOFF COEFFICIENT   =        .96          .27           .650

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 -----------------------------------------------------------------------------
 004:0022-----------------------------------------------------------------------------
 *=============================================================================
 * EAST OF RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
 *=============================================================================
 ---------------------
 | CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
 | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ---------------------   U.H. Tp(hrs)=    .530

     Unit Hyd Qpeak  (cms)=     .049

     PEAK FLOW       (cms)=     .022 (i)
     TIME TO PEAK    (hrs)=    2.083
     RUNOFF VOLUME    (mm)=   18.436
     TOTAL RAINFALL   (mm)=   54.789
     RUNOFF COEFFICIENT   =     .336

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

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 004:0023-----------------------------------------------------------------------------
 *=============================================================================
 * EAST OF RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
 *=============================================================================
 ---------------------
 | CALIB STANDHYD     |   Area    (ha)=    2.61
 | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
 ---------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.46         1.15
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     126.00        35.00
     Mannings n          =        .013         .240

     Max.eff.Inten.(mm/hr)=     202.10        35.37
               over (min)       2.00         11.00
     Storage Coeff.  (min)=       1.80 (ii)   11.43 (ii)
     Unit Hyd. Tpeak (min)=       2.00        11.00
     Unit Hyd. peak  (cms)=        .60          .10
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .53          .07           .546 (iii)
     TIME TO PEAK    (hrs)=       1.37         1.60          1.367
     RUNOFF VOLUME    (mm)=      52.79        14.27         31.607
     TOTAL RAINFALL   (mm)=      54.79        54.79         54.789
     RUNOFF COEFFICIENT   =        .96          .26           .577

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  61.0    Ia = Dep. 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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03241> 004:0024----------------------------------------------------------------------------
03242> *==========================================================================
03243> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
03244> *==========================================================================
03245> ----------------------
03246> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
03247> |  IN>05:(209   )   |
03248> | OUT<06:(002006)   |    =========  OUTLFOW STORAGE TABLE  =========
03249> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
03250>                              (cms)    (ha.m.)   |    (cms)    (ha.m.)
03251>                               .000  .0000E+00   |     .030  .2263E+00
03252>                               .009  .8000E-02   |     .031  .2476E+00
03253>                               .013  .1970E-01   |     .031  .2698E+00
03254>                               .016  .3510E-01   |     .032  .2929E+00
03255>                               .019  .5430E-01   |     .033  .3169E+00
03256>                               .021  .7710E-01   |     .034  .3419E+00
03257>                               .023  .1038E+00   |     .034  .3678E+00
03258>                               .025  .1341E+00   |     .035  .3946E+00
03259>                               .027  .1682E+00   |     .036  .4224E+00
03260>                               .029  .2060E+00   |     .000  .0000E+00
03261>
03262>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
03263>      ---------------------       (ha)     (cms)     (hrs)       (mm)
03264>      INFLOW >05: (209   )       2.61      .546     1.367     31.607
03265>      OUTFLOW<06: (002006)       2.61      .020     3.117     31.606
03266>     OVERFLOW<07: (002007)        .00      .000      .000       .000
03267>
03268>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
03269>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
03270>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
03271>
03272>
03273>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.662
03274>                     TIME SHIFT OF PEAK FLOW         (min)=   105.00
03275>                     MAXIMUM  STORAGE   USED       (ha.m.)=.6385E-01
03276>
03277> ----------------------------------------------------------------------------
03278> 004:0025----------------------------------------------------------------------------
03279> *==========================================================================
03280> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
03281> *==========================================================================
03282> ------------------------
03283> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03284> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
03285>                          ID1 01:212        1.26      .309    1.35  35.54    .000
03286>                         +ID2 02:207         .45      .111    1.37  35.61    .000
03287>                         +ID3 03:2003      190.83     2.393    3.82  18.54    .000
03288>                         +ID4 04:204b        .68      .022    2.08  18.44    .000
03289>                         +ID5 06:     2006   2.61      .020    3.12  31.61    .000
03290>                          ==========================================================
03291>                          SUM 08:2008       195.83     2.428    3.82  18.87    .000
03292>
03293>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03294>
03295> ----------------------------------------------------------------------------
03296> 004:0026----------------------------------------------------------------------------
03297> *==========================================================================
03298> * EAST OF RICHMOND STREET
03299> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
03300> *==========================================================================
03301> ----------------------
03302> | CALIB STANDHYD     |   Area    (ha)=   24.15
03303> | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
03304> ----------------------
03305>                                IMPERVIOUS    PERVIOUS (i)
03306>      Surface Area     (ha)=      13.04        11.11
03307>      Dep. Storage     (mm)=       2.00         5.00
03308>      Average Slope     (%)=       2.00         2.00
03309>      Length            (m)=      35.00        40.00
03310>      Mannings n          =        .013         .240
03311>
03312>      Max.eff.Inten.(mm/hr)=     212.32        34.77
03313>                 over (min)        1.00        11.00
03314>      Storage Coeff.  (min)=        .82 (ii)   11.33 (ii)
03315>      Unit Hyd. Tpeak (min)=       1.00        11.00
03316>      Unit Hyd. peak  (cms)=       1.20          .10
03317>                                                          *TOTALS*
03318>      PEAK FLOW       (cms)=       5.48          .65        5.560 (iii)
03319>      TIME TO PEAK    (hrs)=       1.35         1.60        1.350
03320>      RUNOFF VOLUME    (mm)=      52.79        14.17       30.776
03321>      TOTAL RAINFALL   (mm)=      54.79        54.79       54.789
03322>      RUNOFF COEFFICIENT   =        .96          .26         .562
03323>
03324>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03325>            CN* =  61.0    Ia = Dep. Storage  (Above)
03326>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03327>            THAN THE STORAGE COEFFICIENT.
03328>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03329>
03330> ----------------------------------------------------------------------------
03331> 004:0027----------------------------------------------------------------------------
03332> *==========================================================================
03333> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
03334> *==========================================================================
03335> ----------------------
03336> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
03337> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03338> ----------------------   U.H. Tp(hrs)=   1.040
03339>
03340>      Unit Hyd Qpeak  (cms)=     .033
03341>
03342>      PEAK FLOW       (cms)=     .018 (i)
03343>      TIME TO PEAK    (hrs)=    2.750
03344>      RUNOFF VOLUME    (mm)=   18.437
03345>      TOTAL RAINFALL   (mm)=   54.789
03346>      RUNOFF COEFFICIENT   =     .336
03347>
03348>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03349>
03350> ----------------------------------------------------------------------------
03351> 004:0028----------------------------------------------------------------------------
03352> *==========================================================================
03353> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
03354> *==========================================================================
03355> ------------------------
03356> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03357> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
03358>                          ID1 01:208b      24.15     5.560    1.35  30.78    .000
03359>                         +ID2 02:EXT-4       .91      .018    2.75  18.44    .000
03360>                          ==========================================================
03361>                          SUM 03:SUM       25.06     5.560    1.35  30.33    .000
03362>
03363>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03364>
03365> ----------------------------------------------------------------------------
03366> 004:0029----------------------------------------------------------------------------
03367> *==========================================================================
03368> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
03369> *==========================================================================
03370> ----------------------
03371> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
03372> |  IN>03:(SUM   )   |
03373> | OUT<04:(002004)   |    =========  OUTLFOW STORAGE TABLE  =========
03374> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
03375>                              (cms)    (ha.m.)   |    (cms)    (ha.m.)
03376>                               .000  .0000E+00   |     .783  .9373E+00
03377>                               .020  .1250E+00   |     .993  .1083E+01
03378>                               .074  .2530E+00   |    1.215  .1232E+01
03379>                               .156  .3839E+00   |    1.441  .1383E+01
03380>                               .263  .5178E+00   |    1.655  .1538E+01
03381>                               .416  .6547E+00   |    1.827  .1696E+01
03382>                               .594  .7945E+00   |    1.986  .1856E+01
03383>
03384>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
03385>      ---------------------       (ha)     (cms)     (hrs)       (mm)
03386>      INFLOW >03: (SUM   )      25.06     5.560     1.350     30.328
03387>      OUTFLOW<04: (002004)      25.06      .297     2.567     30.326
03388>     OVERFLOW<01: (002001)        .00      .000      .000       .000
03389>
03390>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
03391>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
03392>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
03393>
03394>
03395>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    5.339
03396>                     TIME SHIFT OF PEAK FLOW         (min)=    73.00
03397>                     MAXIMUM  STORAGE   USED       (ha.m.)=.5482E+00
03398>
03399> ----------------------------------------------------------------------------
03400> 004:0030----------------------------------------------------------------------------
03401> *==========================================================================
03402> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
03403> *==========================================================================
03404> ------------------------
03405> | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03406> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
03407>                          ID1 10:2010      505.36     5.722    4.02  18.54    .000
03408>                         +ID2 09:2009        4.44      .673    1.40  30.40    .000
03409>                         +ID3 08:2008      195.83     2.428    3.82  18.87    .000
03410>                         +ID4 04:     2004  25.06      .297    2.57  30.33    .000
03411>                          ==========================================================
03412>                          SUM 07:TotalCNR   730.69     8.416    3.95  19.10    .000
03413>
03414>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03415>
03416> ----------------------------------------------------------------------------
03417> 004:0031----------------------------------------------------------------------------
03418> *PROPOSED - FLOW TO IDA STREET
03419> *==========================================================================
03420> ----------------------
03421> | CALIB STANDHYD     |   Area    (ha)=     .54
03422> | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
03423> ----------------------
03424>                                IMPERVIOUS    PERVIOUS (i)
03425>      Surface Area     (ha)=        .30          .24
03426>      Dep. Storage     (mm)=       2.00         5.00
03427>      Average Slope     (%)=       2.00         2.00
03428>      Length            (m)=      35.00        40.00
03429>      Mannings n          =        .013         .240
03430>
03431>      Max.eff.Inten.(mm/hr)=     212.32        32.71
03432>                 over (min)        1.00        12.00
03433>      Storage Coeff.  (min)=        .82 (ii)   11.59 (ii)
03434>      Unit Hyd. Tpeak (min)=       1.00        12.00
03435>      Unit Hyd. peak  (cms)=       1.20          .10
03436>                                                          *TOTALS*
03437>      PEAK FLOW       (cms)=        .13          .01         .130 (iii)
03438>      TIME TO PEAK    (hrs)=       1.35         1.60        1.350
03439>      RUNOFF VOLUME    (mm)=      52.79        14.00       31.456
03440>      TOTAL RAINFALL   (mm)=      54.79        54.79       54.789
03441>      RUNOFF COEFFICIENT   =        .96          .26         .574
03442>
03443>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03444>            CN* =  61.0    Ia = Dep. Storage  (Above)
03445>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03446>            THAN THE STORAGE COEFFICIENT.
03447>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03448>
03449> ----------------------------------------------------------------------------
03450> 004:0032----------------------------------------------------------------------------
03451> ----------------------------------------------------------------------------
03452> 004:0002----------------------------------------------------------------------------
03453> ----------------------------------------------------------------------------
03454> 004:0002----------------------------------------------------------------------------
03455> ----------------------------------------------------------------------------
03456> 004:0002----------------------------------------------------------------------------
03457>   ** END OF RUN :   4
03458>
03459> ***************************************************************************
03460>
03461>
03462>
03463>
03464>
03465> ----------------------
03466> | START              |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
03467> ----------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
03468>     TZERO =    .00 hrs on        0
03469>     METOUT=   2 (output = METRIC)
03470>     NRUN  = 005
03471>     NSTORM=   1
03472>            #  1=25YR.HYT
03473> ----------------------------------------------------------------------------
03474> 005:0002----------------------------------------------------------------------------
03475> *#*************************************************************************
03476> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
03477> *#  Date        : APRIL 2022
03478> *#  Modeller    : [MM]
03479> *#  Company     : STANTEC CONSULTING LTD.
03480> *#  License #   :
03481> *#*************************************************************************
03482> ----------------------------------------------------------------------------
03483> 005:0002----------------------------------------------------------------------------
03484> --------------------
03485> | READ STORM       |    Filename: 25YR Chicago 4-hr duration
03486> | Ptotal=  64.51 mm|    Comments: 25YR Chicago 4-hr duration
03487> --------------------
03488>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
03489>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
03490>                 .02   2.569 |   1.03  13.474 |   2.05  11.332 |   3.07   4.111
03491>                 .03   2.604 |   1.05  14.402 |   2.07  11.028 |   3.08   4.068
03492>                 .05   2.639 |   1.07  15.456 |   2.08  10.739 |   3.10   4.025
03493>                 .07   2.675 |   1.08  16.659 |   2.10  10.465 |   3.12   3.984
03494>                 .08   2.713 |   1.10  18.045 |   2.12  10.203 |   3.13   3.944
03495>                 .10   2.752 |   1.12  19.656 |   2.13   9.953 |   3.15   3.904
03496>                 .12   2.791 |   1.13  21.545 |   2.15   9.714 |   3.17   3.865
03497>                 .13   2.832 |   1.15  23.786 |   2.17   9.486 |   3.18   3.827
03498>                 .15   2.874 |   1.17  26.479 |   2.18   9.268 |   3.20   3.789
03499>                 .17   2.918 |   1.18  29.762 |   2.20   9.059 |   3.22   3.753
03500>                 .18   2.963 |   1.20  33.833 |   2.22   8.860 |   3.23   3.717
03501>                 .20   3.009 |   1.22  38.986 |   2.23   8.668 |   3.25   3.682
03502>                 .22   3.057 |   1.23  45.664 |   2.25   8.484 |   3.27   3.647
03503>                 .23   3.106 |   1.25  54.576 |   2.27   8.307 |   3.28   3.613
03504>                 .25   3.157 |   1.27  66.910 |   2.28   8.138 |   3.30   3.580
03505>                 .27   3.210 |   1.28  84.790 |   2.30   7.974 |   3.32   3.547
03506>                 .28   3.264 |   1.30 112.342 |   2.32   7.817 |   3.33   3.515
03507>                 .30   3.321 |   1.32 158.550 |   2.33   7.666 |   3.35   3.484
03508>                 .32   3.379 |   1.33 246.350 |   2.35   7.521 |   3.37   3.453
03509>                 .33   3.440 |   1.35 223.928 |   2.37   7.380 |   3.38   3.422
03510>                 .35   3.503 |   1.37 179.766 |   2.38   7.245 |   3.40   3.393
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03511>                .37   3.568 |   1.38 148.195 |   2.40   7.114 |   3.42   3.363
03512>                .38   3.636 |   1.40 124.774 |   2.42   6.988 |   3.43   3.335
03513>                .40   3.706 |   1.42 106.873 |   2.43   6.866 |   3.45   3.306
03514>                .42   3.779 |   1.43  92.851 |   2.45   6.748 |   3.47   3.279
03515>                .43   3.856 |   1.45  81.641 |   2.47   6.634 |   3.48   3.251
03516>                .45   3.935 |   1.47  72.522 |   2.48   6.524 |   3.50   3.224
03517>                .47   4.018 |   1.48  64.992 |   2.50   6.417 |   3.52   3.198
03518>                .48   4.104 |   1.50  58.692 |   2.52   6.313 |   3.53   3.172
03519>                .50   4.194 |   1.52  53.361 |   2.53   6.213 |   3.55   3.146
03520>                .52   4.288 |   1.53  48.806 |   2.55   6.116 |   3.57   3.121
03521>                .53   4.387 |   1.55  44.877 |   2.57   6.022 |   3.58   3.096
03522>                .55   4.490 |   1.57  41.461 |   2.58   5.930 |   3.60   3.072
03523>                .57   4.598 |   1.58  38.470 |   2.60   5.841 |   3.62   3.048
03524>                .58   4.711 |   1.60  35.834 |   2.62   5.755 |   3.63   3.024
03525>                .60   4.830 |   1.62  33.496 |   2.63   5.671 |   3.65   3.001
03526>                .62   4.955 |   1.63  31.413 |   2.65   5.590 |   3.67   2.978
03527>                .63   5.087 |   1.65  29.546 |   2.67   5.511 |   3.68   2.956
03528>                .65   5.226 |   1.67  27.865 |   2.68   5.434 |   3.70   2.934
03529>                .67   5.372 |   1.68  26.347 |   2.70   5.359 |   3.72   2.912
03530>                .68   5.528 |   1.70  24.968 |   2.72   5.286 |   3.73   2.891
03531>                .70   5.692 |   1.72  23.713 |   2.73   5.215 |   3.75   2.869
03532>                .72   5.865 |   1.73  22.566 |   2.75   5.146 |   3.77   2.848
03533>                .73   6.050 |   1.75  21.514 |   2.77   5.079 |   3.78   2.828
03534>                .75   6.246 |   1.77  20.547 |   2.78   5.014 |   3.80   2.808
03535>                .77   6.455 |   1.78  19.656 |   2.80   4.950 |   3.82   2.788
03536>                .78   6.678 |   1.80  18.831 |   2.82   4.887 |   3.83   2.768
03537>                .80   6.917 |   1.82  18.068 |   2.83   4.826 |   3.85   2.749
03538>                .82   7.173 |   1.83  17.358 |   2.85   4.767 |   3.87   2.730
03539>                .83   7.448 |   1.85  16.698 |   2.87   4.709 |   3.88   2.711
03540>                .85   7.743 |   1.87  16.082 |   2.88   4.653 |   3.90   2.692
03541>                .87   8.063 |   1.88  15.506 |   2.90   4.598 |   3.92   2.674
03542>                .88   8.408 |   1.90  14.967 |   2.92   4.544 |   3.93   2.656
03543>                .90   8.783 |   1.92  14.461 |   2.93   4.491 |   3.95   2.638
03544>                .92   9.191 |   1.93  13.986 |   2.95   4.440 |   3.97   2.621
03545>                .93   9.637 |   1.95  13.539 |   2.97   4.390 |   3.98   2.603
03546>                .95  10.126 |   1.97  13.118 |   2.98   4.340 |   4.00   2.586
03547>                .97  10.663 |   1.98  12.720 |   3.00   4.293 |   4.02   2.569
03548>                .98  11.257 |   2.00  12.344 |   3.02   4.246 |
03549>               1.00  11.916 |   2.02  11.989 |   3.03   4.200 |
03550>               1.02  12.650 |   2.03  11.652 |   3.05   4.155 |
03551>
03552> ------------------------------------------------------------------------------
03553> 005:0003-----------------------------------------------------------------------
03554> * WEST OF RICHMOND STREET
03555> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
03556> *============================================================================
03557> ----------------------
03558> | CALIB STANDHYD     |   Area    (ha)=    1.61
03559> | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
03560> ----------------------
03561>                                IMPERVIOUS    PERVIOUS (i)
03562>      Surface Area     (ha)=       1.05          .56
03563>      Dep. Storage     (mm)=       2.00         5.00
03564>      Average Slope     (%)=       2.00         2.00
03565>      Length            (m)=     217.00        35.00
03566>      Mannings n           =       .013         .240
03567>
03568>      Max.eff.Inten.(mm/hr)=     235.14        51.54
03569>                 over (min)        2.00        11.00
03570>      Storage Coeff.  (min)=       2.35 (ii)   10.63 (ii)
03571>      Unit Hyd. Tpeak (min)=       2.00        11.00
03572>      Unit Hyd. peak  (cms)=        .50          .11
03573>                                                          *TOTALS*
03574>      PEAK FLOW       (cms)=        .44          .05          .451 (iii)
03575>      TIME TO PEAK    (hrs)=       1.37         1.58         1.367
03576>      RUNOFF VOLUME    (mm)=      62.51        19.66        43.227
03577>      TOTAL RAINFALL   (mm)=      64.51        64.51        64.510
03578>      RUNOFF COEFFICIENT   =        .97          .30          .670
03579>
03580>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03581>              CN* =  61.0    Ia = Dep. Storage  (Above)
03582>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03583>              THAN THE STORAGE COEFFICIENT.
03584>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03585>
03586> ------------------------------------------------------------------------------
03587> 005:0004-----------------------------------------------------------------------
03588> *============================================================================
03589> * WEST OF RICHMOND STREET
03590> * PARK AREA (202)
03591> *============================================================================
03592> ----------------------
03593> | CALIB NASHYD       |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
03594> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03595> ----------------------   U.H. Tp(hrs)=    .500
03596>
03597>      Unit Hyd Qpeak  (cms)=     .226
03598>
03599>      PEAK FLOW       (cms)=     .139 (i)
03600>      TIME TO PEAK    (hrs)=    2.033
03601>      RUNOFF VOLUME    (mm)=   24.563
03602>      TOTAL RAINFALL   (mm)=   64.510
03603>      RUNOFF COEFFICIENT   =     .381
03604>
03605>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03606>
03607> ------------------------------------------------------------------------------
03608> 005:0005-----------------------------------------------------------------------
03609> * WEST OF RICHMOND STREET
03610> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
03611> *============================================================================
03612> ----------------------
03613> | CALIB STANDHYD     |   Area    (ha)=    1.76
03614> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
03615> ----------------------
03616>                                IMPERVIOUS    PERVIOUS (i)
03617>      Surface Area     (ha)=        .97          .79
03618>      Dep. Storage     (mm)=       2.00         5.00
03619>      Average Slope     (%)=       2.00         2.00
03620>      Length            (m)=      35.00        40.00
03621>      Mannings n           =       .013         .240
03622>
03623>      Max.eff.Inten.(mm/hr)=     246.35        48.48
03624>                 over (min)        1.00        10.00
03625>      Storage Coeff.  (min)=        .77 (ii)    9.97 (ii)
03626>      Unit Hyd. Tpeak (min)=       1.00        10.00
03627>      Unit Hyd. peak  (cms)=       1.23          .11
03628>                                                          *TOTALS*
03629>      PEAK FLOW       (cms)=        .49          .07          .500 (iii)
03630>      TIME TO PEAK    (hrs)=       1.35         1.57         1.350
03631>      RUNOFF VOLUME    (mm)=      62.51        18.89        38.517
03632>      TOTAL RAINFALL   (mm)=      64.51        64.51        64.510
03633>      RUNOFF COEFFICIENT   =        .97          .29          .597
03634>
03635>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03636>              CN* =  61.0    Ia = Dep. Storage  (Above)
03637>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03638>              THAN THE STORAGE COEFFICIENT.
03639>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03640>
03641> ------------------------------------------------------------------------------
03642> 005:0006-----------------------------------------------------------------------
03643> *============================================================================
03644> * WEST OF RICHMOND STREET
03645> * PARK AREA ON THE SOUTH BOUNDARY (206a)
03646> *============================================================================
03647> ----------------------
03648> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
03649> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03650> ----------------------   U.H. Tp(hrs)=    .270
03651>
03652>      Unit Hyd Qpeak  (cms)=     .083
03653>
03654>      PEAK FLOW       (cms)=     .041 (i)
03655>      TIME TO PEAK    (hrs)=    1.733
03656>      RUNOFF VOLUME    (mm)=   24.563
03657>      TOTAL RAINFALL   (mm)=   64.510
03658>      RUNOFF COEFFICIENT   =     .381
03659>
03660>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03661>
03662> ------------------------------------------------------------------------------
03663> 005:0007-----------------------------------------------------------------------
03664> *============================================================================
03665> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
03666> *============================================================================
03667> ----------------------
03668> | ADD HYD (2005      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03669> ----------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
03670>                          ID1 01:201       1.61      .451    1.37  43.23    .000
03671>                         +ID2 02:202       2.96      .139    2.03  24.56    .000
03672>                         +ID3 03:203       1.76      .500    1.35  38.52    .000
03673>                         +ID4 04:206a       .59      .041    1.73  24.56    .000
03674>                          ==============================================================
03675>                          SUM 05:2005      6.92      .921    1.35  32.45    .000
03676>
03677>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03678>
03679> ------------------------------------------------------------------------------
03680> 005:0008-----------------------------------------------------------------------
03681> *============================================================================
03682> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
03683> *============================================================================
03684> ----------------------
03685> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
03686> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03687> ----------------------   U.H. Tp(hrs)=    .870
03688>
03689>      Unit Hyd Qpeak  (cms)=     .838
03690>
03691>      PEAK FLOW       (cms)=     .599 (i)
03692>      TIME TO PEAK    (hrs)=    2.500
03693>      RUNOFF VOLUME    (mm)=   24.563
03694>      TOTAL RAINFALL   (mm)=   64.510
03695>      RUNOFF COEFFICIENT   =     .381
03696>
03697>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03698>
03699> ------------------------------------------------------------------------------
03700> 005:0009-----------------------------------------------------------------------
03701> *============================================================================
03702> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
03703> *============================================================================
03704> ----------------------
03705> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
03706> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03707> ----------------------   U.H. Tp(hrs)=   2.180
03708>
03709>      Unit Hyd Qpeak  (cms)=    8.399
03710>
03711>      PEAK FLOW       (cms)=    7.374 (i)
03712>      TIME TO PEAK    (hrs)=    4.100
03713>      RUNOFF VOLUME    (mm)=   24.563
03714>      TOTAL RAINFALL   (mm)=   64.510
03715>      RUNOFF COEFFICIENT   =     .381
03716>
03717>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03718>
03719> ------------------------------------------------------------------------------
03720> 005:0010-----------------------------------------------------------------------
03721> *============================================================================
03722> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
03723> *============================================================================
03724> ----------------------
03725> | ADD HYD (2010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03726> ----------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
03727>                          ID1 05:2005      6.92      .921    1.35  32.45    .000
03728>                         +ID2 01:EXT-1    19.09      .599    2.50  24.56    .000
03729>                         +ID3 02:EXT-2   479.35     7.374    4.10  24.56    .000
03730>                          ==============================================================
03731>                          SUM 10:2010    505.36     7.665    4.00  24.67    .000
03732>
03733>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03734>
03735> ------------------------------------------------------------------------------
03736> 005:0011-----------------------------------------------------------------------
03737> *============================================================================
03738> * EAST OF RICHMOND STREET
03739> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
03740> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
03741> *============================================================================
03742> ----------------------
03743> | CALIB STANDHYD     |   Area    (ha)=    1.60
03744> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
03745> ----------------------
03746>                                IMPERVIOUS    PERVIOUS (i)
03747>      Surface Area     (ha)=        .93          .67
03748>      Dep. Storage     (mm)=       2.00         5.00
03749>      Average Slope     (%)=       2.00         2.00
03750>      Length            (m)=     269.00        35.00
03751>      Mannings n           =       .013         .240
03752>
03753>      Max.eff.Inten.(mm/hr)=     216.68        48.00
03754>                 over (min)        3.00        11.00
03755>      Storage Coeff.  (min)=       2.76 (ii)   11.28 (ii)
03756>      Unit Hyd. Tpeak (min)=       3.00        11.00
03757>      Unit Hyd. peak  (cms)=        .40          .10
03758>                                                          *TOTALS*
03759>      PEAK FLOW       (cms)=        .36          .05          .375 (iii)
03760>      TIME TO PEAK    (hrs)=       1.38         1.58         1.383
03761>      RUNOFF VOLUME    (mm)=      62.51        19.08        39.928
03762>      TOTAL RAINFALL   (mm)=      64.51        64.51        64.510
03763>      RUNOFF COEFFICIENT   =        .97          .30          .619
03764>
03765>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03766>              CN* =  61.0    Ia = Dep. Storage  (Above)
03767>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03768>              THAN THE STORAGE COEFFICIENT.
03769>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03770>
03771> ------------------------------------------------------------------------------
03772> 005:0012-----------------------------------------------------------------------
03773> *============================================================================
03774> * WEST OF RICHMOND STREET
03775> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
03776> *============================================================================
03777> ----------------------
03778> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
03779> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03780> ----------------------   U.H. Tp(hrs)=    .780
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03781>
03782>      Unit Hyd Qpeak  (cms)=     .048
03783>
03784>      PEAK FLOW       (cms)=     .034 (i)
03785>      TIME TO PEAK    (hrs)=    2.400
03786>      RUNOFF VOLUME    (mm)=   24.563
03787>      TOTAL RAINFALL   (mm)=   64.510
03788>      RUNOFF COEFFICIENT   =     .381
03789>
03790>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03791>
03792> -----------------------------------------------------------------------------
03793> 005:0013-----------------------------------------------------------------------
03794> *============================================================================
03795> * WEST OF RICHMOND STREET
03796> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
03797> *============================================================================
03798> ----------------------
03799> | CALIB STANDHYD     |   Area    (ha)=     .89
03800> | 04:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
03801> ----------------------
03802>                              IMPERVIOUS    PERVIOUS (i)
03803>      Surface Area     (ha)=       .58         .31
03804>      Dep. Storage     (mm)=      2.00        5.00
03805>      Average Slope     (%)=      2.00        2.00
03806>      Length            (m)=    241.00       35.00
03807>      Mannings n           =      .013        .240
03808>
03809>      Max.eff.Inten.(mm/hr)=    216.68       51.54
03810>                 over (min)       3.00       11.00
03811>      Storage Coeff.  (min)=      2.58 (ii)  10.87 (ii)
03812>      Unit Hyd. Tpeak (min)=      3.00       11.00
03813>      Unit Hyd. peak  (cms)=       .41         .10
03814>                                                          *TOTALS*
03815>      PEAK FLOW       (cms)=       .23         .03          .242 (iii)
03816>      TIME TO PEAK    (hrs)=      1.38        1.83         1.383
03817>      RUNOFF VOLUME    (mm)=     62.51       19.66        43.227
03818>      TOTAL RAINFALL   (mm)=     64.51       64.51        64.510
03819>      RUNOFF COEFFICIENT   =       .97         .30          .670
03820>
03821>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03822>            CN* =  61.0    Ia = Dep. Storage  (Above)
03823>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03824>            THAN THE STORAGE COEFFICIENT.
03825>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03826>
03827> -----------------------------------------------------------------------------
03828> 005:0014-----------------------------------------------------------------------
03829> *============================================================================
03830> * RICHMOND STREET
03831> * PROPOSED - HUNTER SUBDIVISION (205b)
03832> *============================================================================
03833> ----------------------
03834> | CALIB STANDHYD     |   Area    (ha)=     .78
03835> | 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
03836> ----------------------
03837>                              IMPERVIOUS    PERVIOUS (i)
03838>      Surface Area     (ha)=       .55         .23
03839>      Dep. Storage     (mm)=      2.00        5.00
03840>      Average Slope     (%)=      2.00        2.00
03841>      Length            (m)=    388.00      194.00
03842>      Mannings n           =      .013        .240
03843>
03844>      Max.eff.Inten.(mm/hr)=    216.68       32.49
03845>                 over (min)       3.00       31.00
03846>      Storage Coeff.  (min)=      3.44 (ii)  31.28 (ii)
03847>      Unit Hyd. Tpeak (min)=      3.00       31.00
03848>      Unit Hyd. peak  (cms)=       .34         .04
03849>                                                          *TOTALS*
03850>      PEAK FLOW       (cms)=       .20         .01          .206 (iii)
03851>      TIME TO PEAK    (hrs)=      1.38        1.97         1.383
03852>      RUNOFF VOLUME    (mm)=     62.51       20.22        45.595
03853>      TOTAL RAINFALL   (mm)=     64.51       64.51        64.510
03854>      RUNOFF COEFFICIENT   =       .97         .31          .707
03855>
03856>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03857>            CN* =  61.0    Ia = Dep. Storage  (Above)
03858>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03859>            THAN THE STORAGE COEFFICIENT.
03860>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03861>
03862> -----------------------------------------------------------------------------
03863> 005:0015-----------------------------------------------------------------------
03864> *============================================================================
03865> * WEST OF RICHMOND STREET
03866> * PARK AREA ON THE SOUTH BOUNDARY (206b)
03867> *============================================================================
03868> ----------------------
03869> | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
03870> | 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03871> ----------------------   U.H. Tp(hrs)=    .160
03872>
03873>      Unit Hyd Qpeak  (cms)=     .043
03874>
03875>      PEAK FLOW       (cms)=     .017 (i)
03876>      TIME TO PEAK    (hrs)=    1.583
03877>      RUNOFF VOLUME    (mm)=   24.562
03878>      TOTAL RAINFALL   (mm)=   64.510
03879>      RUNOFF COEFFICIENT   =     .381
03880>
03881>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03882>
03883> -----------------------------------------------------------------------------
03884> 005:0016-----------------------------------------------------------------------
03885> *============================================================================
03886> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
03887> *============================================================================
03888> ------------------------
03889> | ADD HYD (2009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03890> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03891>                         ID1 01:208a       1.60     .375    1.38   39.93    .000
03892>                        +ID2 02:204a        .99     .034    2.40   24.56    .000
03893>                        +ID3 03:205a        .89     .242    1.38   43.23    .000
03894>                        +ID4 04:205b        .78     .206    1.38   45.60    .000
03895>                        +ID5 05:206b        .18     .017    1.58   24.56    .000
03896>                         ==============================================================
03897>                         SUM 09:2009       4.44     .828    1.38   37.54    .000
03898>
03899>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03900>
03901> -----------------------------------------------------------------------------
03902> 005:0017-----------------------------------------------------------------------
03903> *============================================================================
03904> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
03905> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
03906> *============================================================================
03907> ----------------------
03908> | CALIB STANDHYD     |   Area    (ha)=    4.25
03909> | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
03910> ----------------------
03911>                              IMPERVIOUS    PERVIOUS (i)
03912>      Surface Area     (ha)=      1.11        3.14
03913>      Dep. Storage     (mm)=      2.00        8.00
03914>      Average Slope     (%)=      2.00        2.00
03915>      Length            (m)=    256.00      237.00
03916>      Mannings n           =      .013        .240
03917>
03918>      Max.eff.Inten.(mm/hr)=    216.68       37.99
03919>                 over (min)       3.00       32.00
03920>      Storage Coeff.  (min)=      2.68 (ii)  32.17 (ii)
03921>      Unit Hyd. Tpeak (min)=      3.00       32.00
03922>      Unit Hyd. peak  (cms)=       .40         .04
03923>                                                          *TOTALS*
03924>      PEAK FLOW       (cms)=       .22         .19          .232 (iii)
03925>      TIME TO PEAK    (hrs)=      1.38        1.98         1.383
03926>      RUNOFF VOLUME    (mm)=     62.51       26.10        30.106
03927>      TOTAL RAINFALL   (mm)=     64.51       64.51        64.510
03928>      RUNOFF COEFFICIENT   =       .97         .40          .467
03929>
03930>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
03931>            CN* =  75.0    Ia = Dep. Storage  (Above)
03932>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
03933>            THAN THE STORAGE COEFFICIENT.
03934>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03935>
03936> -----------------------------------------------------------------------------
03937> 005:0018-----------------------------------------------------------------------
03938> *============================================================================
03939> * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
03940> *============================================================================
03941> ----------------------
03942> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
03943> | 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03944> ----------------------   U.H. Tp(hrs)=   1.930
03945>
03946>      Unit Hyd Qpeak  (cms)=    3.692
03947>
03948>      PEAK FLOW       (cms)=    3.162 (i)
03949>      TIME TO PEAK    (hrs)=    3.800
03950>      RUNOFF VOLUME    (mm)=   24.563
03951>      TOTAL RAINFALL   (mm)=   64.510
03952>      RUNOFF COEFFICIENT   =     .381
03953>
03954>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03955>
03956> -----------------------------------------------------------------------------
03957> 005:0019-----------------------------------------------------------------------
03958> *============================================================================
03959> *SUB-TOTAL FLOW TO SANDUSKY DRAIN
03960> *============================================================================
03961> ------------------------
03962> | ADD HYD (2003      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03963> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03964>                         ID1 01:210        4.25      .232    1.38   30.11    .000
03965>                        +ID2 02:EXT-3    186.58     3.162    3.80   24.56    .000
03966>                         ==============================================================
03967>                         SUM 03:2003      190.83     3.205    3.78   24.69    .000
03968>
03969>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03970>
03971> -----------------------------------------------------------------------------
03972> 005:0020-----------------------------------------------------------------------
03973> *============================================================================
03974> * SF ON THE NORTHEAST (ESTATE LOT)
03975> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
03976> *============================================================================
03977> ----------------------
03978> | CALIB STANDHYD     |   Area    (ha)=    1.26
03979> | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
03980> ----------------------
03981>                              IMPERVIOUS    PERVIOUS (i)
03982>      Surface Area     (ha)=       .69         .57
03983>      Dep. Storage     (mm)=      2.00        5.00
03984>      Average Slope     (%)=      2.00        2.00
03985>      Length            (m)=     35.00       40.00
03986>      Mannings n           =      .013        .240
03987>
03988>      Max.eff.Inten.(mm/hr)=    246.35       82.67
03989>                 over (min)       1.00        8.00
03990>      Storage Coeff.  (min)=       .77 (ii)   8.20 (ii)
03991>      Unit Hyd. Tpeak (min)=      1.00        8.00
03992>      Unit Hyd. peak  (cms)=      1.23         .14
03993>                                                          *TOTALS*
03994>      PEAK FLOW       (cms)=       .35         .08          .369 (iii)
03995>      TIME TO PEAK    (hrs)=      1.35        1.52         1.350
03996>      RUNOFF VOLUME    (mm)=     62.51       28.15        43.611
03997>      TOTAL RAINFALL   (mm)=     64.51       64.51        64.510
03998>      RUNOFF COEFFICIENT   =       .97         .44          .676
03999>
04000>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04001>            CN* =  75.0    Ia = Dep. Storage  (Above)
04002>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04003>            THAN THE STORAGE COEFFICIENT.
04004>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04005>
04006> -----------------------------------------------------------------------------
04007> 005:0021-----------------------------------------------------------------------
04008> *============================================================================
04009> * EAST OF RICHMOND STREET
04010> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
04011> *============================================================================
04012> ----------------------
04013> | CALIB STANDHYD     |   Area    (ha)=     .45
04014> | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
04015> ----------------------
04016>                              IMPERVIOUS    PERVIOUS (i)
04017>      Surface Area     (ha)=       .29         .16
04018>      Dep. Storage     (mm)=      2.00        5.00
04019>      Average Slope     (%)=      2.00        2.00
04020>      Length            (m)=    155.00       35.00
04021>      Mannings n           =      .013        .240
04022>
04023>      Max.eff.Inten.(mm/hr)=    235.14       53.37
04024>                 over (min)       2.00       10.00
04025>      Storage Coeff.  (min)=      1.92 (ii)  10.09 (ii)
04026>      Unit Hyd. Tpeak (min)=      2.00       10.00
04027>      Unit Hyd. peak  (cms)=       .57         .11
04028>                                                          *TOTALS*
04029>      PEAK FLOW       (cms)=       .13         .01          .133 (iii)
04030>      TIME TO PEAK    (hrs)=      1.37        1.57         1.367
04031>      RUNOFF VOLUME    (mm)=     62.51       19.66        43.227
04032>      TOTAL RAINFALL   (mm)=     64.51       64.51        64.510
04033>      RUNOFF COEFFICIENT   =       .97         .30          .670
04034>
04035>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04036>            CN* =  61.0    Ia = Dep. Storage  (Above)
04037>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04038>            THAN THE STORAGE COEFFICIENT.
04039>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04040>
04041> -----------------------------------------------------------------------------
04042> 005:0022-----------------------------------------------------------------------
04043> *============================================================================
04044> * EAST OF RICHMOND STREET
04045> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
04046> *============================================================================
04047> ----------------------
04048> | CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
04049> | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04050> ----------------------   U.H. Tp(hrs)=    .530
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04051>
04052>      Unit Hyd Qpeak  (cms)=     .049
04053>
04054>      PEAK FLOW       (cms)=     .031 (i)
04055>      TIME TO PEAK    (hrs)=    2.083
04056>      RUNOFF VOLUME    (mm)=   24.563
04057>      TOTAL RAINFALL   (mm)=   64.510
04058>      RUNOFF COEFFICIENT   =     .381
04059>
04060>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04061>
04062> ---------------------------------------------------------------------------
04063> 005:0023-------------------------------------------------------------------
04064> *===========================================================================
04065> * EAST OF RICHMOND STREET
04066> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
04067> *===========================================================================
04068> ----------------------
04069> | CALIB STANDHYD     |   Area    (ha)=    2.61
04070> | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
04071> ----------------------
04072>                                IMPERVIOUS    PERVIOUS (i)
04073>      Surface Area     (ha)=       1.46         1.15
04074>      Dep. Storage     (mm)=       2.00         5.00
04075>      Average Slope     (%)=       2.00         2.00
04076>      Length            (m)=     126.00        35.00
04077>      Mannings n           =       .013         .240
04078>
04079>      Max.eff.Inten.(mm/hr)=     235.14        50.60
04080>                 over (min)        2.00        10.00
04081>      Storage Coeff.  (min)=       1.69 (ii)   10.04 (ii)
04082>      Unit Hyd. Tpeak (min)=       2.00        10.00
04083>      Unit Hyd. peak  (cms)=        .62         .11
04084>                                                          *TOTALS*
04085>      PEAK FLOW       (cms)=        .63         .10          .656 (iii)
04086>      TIME TO PEAK    (hrs)=       1.37        1.57         1.367
04087>      RUNOFF VOLUME    (mm)=      62.51       19.23        38.705
04088>      TOTAL RAINFALL   (mm)=      64.51       64.51        64.510
04089>      RUNOFF COEFFICIENT   =        .97         .30          .600
04090>
04091>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04092>            CN* =  61.0    Ia = Dep. Storage  (Above)
04093>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04094>            THAN THE STORAGE COEFFICIENT.
04095>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04096>
04097> ---------------------------------------------------------------------------
04098> 005:0024-------------------------------------------------------------------
04099> *===========================================================================
04100> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
04101> *===========================================================================
04102> ----------------------
04103> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
04104> |  IN>05:(209   )    |
04105> | OUT<06:(002006)    |    =========  OUTLFOW STORAGE TABLE  =========
04106> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
04107>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
04108>                              .000  .0000E+00   |     .030  .2263E+00
04109>                              .009  .8000E-02   |     .031  .2476E+00
04110>                              .013  .1970E-01   |     .031  .2698E+00
04111>                              .016  .3510E-01   |     .032  .2929E+00
04112>                              .019  .5430E-01   |     .033  .3169E+00
04113>                              .021  .7710E-01   |     .034  .3419E+00
04114>                              .023  .1038E+00   |     .034  .3678E+00
04115>                              .025  .1341E+00   |     .035  .3946E+00
04116>                              .027  .1682E+00   |     .036  .4224E+00
04117>                              .029  .2060E+00   |     .000  .0000E+00
04118>
04119>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
04120>      -------------------        (ha)     (cms)     (hrs)       (mm)
04121>      INFLOW >05: (209   )       2.61      .656     1.367     38.705
04122>      OUTFLOW<06: (002006)       2.61      .022     3.217     38.705
04123>     OVERFLOW<07: (002007)        .00      .000      .000       .000
04124>
04125>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
04126>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
04127>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
04128>
04129>
04130>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.305
04131>                    TIME SHIFT OF PEAK FLOW         (min)=   111.00
04132>                    MAXIMUM  STORAGE   USED       (ha.m.)=.8044E-01
04133>
04134> ---------------------------------------------------------------------------
04135> 005:0025-------------------------------------------------------------------
04136> *===========================================================================
04137> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
04138> *===========================================================================
04139> ------------------------
04140> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04141> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
04142>                          ID1 01:212        1.26      .369    1.35  43.61    .000
04143>                         +ID2 02:207         .45      .133    1.37  43.23    .000
04144>                         +ID3 03:2003      190.83    3.205    3.78  24.69    .000
04145>                         +ID4 04:204b        .68      .031    2.08  24.56    .000
04146>                         +ID5 06:      2006  2.61     .022    3.22  38.70    .000
04147>                          ==========================================================
04148>                          SUM 08:2008       195.83    3.245    3.77  25.04    .000
04149>
04150>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04151>
04152> ---------------------------------------------------------------------------
04153> 005:0026-------------------------------------------------------------------
04154> *===========================================================================
04155> * EAST OF RICHMOND STREET
04156> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
04157> *===========================================================================
04158> ----------------------
04159> | CALIB STANDHYD     |   Area    (ha)=   24.15
04160> | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
04161> ----------------------
04162>                                IMPERVIOUS    PERVIOUS (i)
04163>      Surface Area     (ha)=      13.04        11.11
04164>      Dep. Storage     (mm)=       2.00         5.00
04165>      Average Slope     (%)=       2.00         2.00
04166>      Length            (m)=      35.00        40.00
04167>      Mannings n           =       .013         .240
04168>
04169>      Max.eff.Inten.(mm/hr)=     246.35        49.76
04170>                 over (min)        1.00        10.00
04171>      Storage Coeff.  (min)=        .77 (ii)    9.88 (ii)
04172>      Unit Hyd. Tpeak (min)=       1.00        10.00
04173>      Unit Hyd. peak  (cms)=       1.23         .11
04174>                                                          *TOTALS*
04175>      PEAK FLOW       (cms)=       6.41         .96         6.567 (iii)
04176>      TIME TO PEAK    (hrs)=       1.35        1.57         1.350
04177>      RUNOFF VOLUME    (mm)=      62.51       19.09        37.763
04178>      TOTAL RAINFALL   (mm)=      64.51       64.51        64.510
04179>      RUNOFF COEFFICIENT   =        .97         .30          .585
04180>
04181>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04182>            CN* =  61.0    Ia = Dep. Storage  (Above)
04183>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04184>            THAN THE STORAGE COEFFICIENT.
04185>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04186>
04187> ---------------------------------------------------------------------------
04188> 005:0027-------------------------------------------------------------------
04189> *===========================================================================
04190> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
04191> *===========================================================================
04192> ----------------------
04193> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
04194> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04195> ----------------------   U.H. Tp(hrs)=   1.040
04196>
04197>      Unit Hyd Qpeak  (cms)=     .033
04198>
04199>      PEAK FLOW       (cms)=     .025 (i)
04200>      TIME TO PEAK    (hrs)=    2.717
04201>      RUNOFF VOLUME    (mm)=   24.563
04202>      TOTAL RAINFALL   (mm)=   64.510
04203>      RUNOFF COEFFICIENT   =     .381
04204>
04205>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04206>
04207> ---------------------------------------------------------------------------
04208> 005:0028-------------------------------------------------------------------
04209> *===========================================================================
04210> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
04211> *===========================================================================
04212> ------------------------
04213> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04214> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
04215>                          ID1 01:208b      24.15    6.567    1.35  37.76    .000
04216>                         +ID2 02:EXT-4       .91     .025    2.72  24.56    .000
04217>                          ==========================================================
04218>                          SUM 03:SUM       25.06    6.567    1.35  37.28    .000
04219>
04220>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04221>
04222> ---------------------------------------------------------------------------
04223> 005:0029-------------------------------------------------------------------
04224> *===========================================================================
04225> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
04226> *===========================================================================
04227> ----------------------
04228> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
04229> |  IN>03:(SUM   )    |
04230> | OUT<04:(002004)    |    =========  OUTLFOW STORAGE TABLE  =========
04231> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
04232>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
04233>                              .000  .0000E+00   |     .783  .9373E+00
04234>                              .020  .1250E+00   |     .993  .1083E+01
04235>                              .074  .2530E+00   |    1.215  .1232E+01
04236>                              .156  .3839E+00   |    1.441  .1383E+01
04237>                              .263  .5178E+00   |    1.655  .1538E+01
04238>                              .416  .6547E+00   |    1.827  .1696E+01
04239>                              .594  .7945E+00   |    1.986  .1856E+01
04240>
04241>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
04242>      -------------------        (ha)     (cms)     (hrs)       (mm)
04243>      INFLOW >03: (SUM   )       25.06    6.567     1.350     37.284
04244>      OUTFLOW<04: (002004)       25.06     .421     2.400     37.283
04245>     OVERFLOW<01: (002001)        .00      .000      .000       .000
04246>
04247>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
04248>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
04249>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
04250>
04251>
04252>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    6.416
04253>                    TIME SHIFT OF PEAK FLOW         (min)=     63.00
04254>                    MAXIMUM  STORAGE   USED       (ha.m.)=.6592E+00
04255>
04256> ---------------------------------------------------------------------------
04257> 005:0030-------------------------------------------------------------------
04258> *===========================================================================
04259> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
04260> *===========================================================================
04261> ------------------------
04262> | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04263> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
04264>                          ID1 10:2010     505.36    7.665    4.00  24.67    .000
04265>                         +ID2 09:2009       4.44     .828    1.38  37.54    .000
04266>                         +ID3 08:2008     195.83    3.245    3.77  25.04    .000
04267>                         +ID4 04:    2004  25.06     .421    2.40  37.28    .000
04268>                          ==========================================================
04269>                          SUM 07:TotalCNR  730.69   11.260    3.90  25.28    .000
04270>
04271>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04272>
04273> ---------------------------------------------------------------------------
04274> 005:0031-------------------------------------------------------------------
04275> *PROPOSED - FLOW TO IDA STREET
04276> *===========================================================================
04277> ----------------------
04278> | CALIB STANDHYD     |   Area    (ha)=     .54
04279> | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
04280> ----------------------
04281>                                IMPERVIOUS    PERVIOUS (i)
04282>      Surface Area     (ha)=        .30          .24
04283>      Dep. Storage     (mm)=       2.00         5.00
04284>      Average Slope     (%)=       2.00         2.00
04285>      Length            (m)=      35.00        40.00
04286>      Mannings n           =       .013         .240
04287>
04288>      Max.eff.Inten.(mm/hr)=     246.35        48.48
04289>                 over (min)        1.00        10.00
04290>      Storage Coeff.  (min)=        .77 (ii)    9.97 (ii)
04291>      Unit Hyd. Tpeak (min)=       1.00        10.00
04292>      Unit Hyd. peak  (cms)=       1.23         .11
04293>                                                          *TOTALS*
04294>      PEAK FLOW       (cms)=        .15         .02          .153 (iii)
04295>      TIME TO PEAK    (hrs)=       1.35        1.57         1.350
04296>      RUNOFF VOLUME    (mm)=      62.51       18.89        38.517
04297>      TOTAL RAINFALL   (mm)=      64.51       64.51        64.510
04298>      RUNOFF COEFFICIENT   =        .97         .29          .597
04299>
04300>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04301>            CN* =  61.0    Ia = Dep. Storage  (Above)
04302>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04303>            THAN THE STORAGE COEFFICIENT.
04304>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04305>
04306> ---------------------------------------------------------------------------
04307> 005:0032-------------------------------------------------------------------
04308> ---------------------------------------------------------------------------
04309> 005:0002-------------------------------------------------------------------
04310> ---------------------------------------------------------------------------
04311> 005:0002-------------------------------------------------------------------
04312> ---------------------------------------------------------------------------
04313> 005:0002-------------------------------------------------------------------
04314> ---------------------------------------------------------------------------
04315> 005:0002-------------------------------------------------------------------
04316>   ** END OF RUN :   5
04317>
04318> ***************************************************************************
04319>
04320>
```

```
04321>
04322>
04323>
04324> --------------------
04325> | START             |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
04326> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
04327>     TZERO =   .00 hrs on        0
04328>     METOUT=   2 (output = METRIC)
04329>     NRUN  = 006
04330>     NSTORM=   1
04331>              #  1=50YR.HYT
04332> ----------------------------------------------------------------------------
04333> 006:0002--------------------------------------------------------------------
04334> *#****************************************************************************
04335> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
04336> *#  Date         : APRIL 2022
04337> *#  Modeller     : [MM]
04338> *#  Company      : STANTEC CONSULTING LTD.
04339> *#  License #    :
04340> *#****************************************************************************
04341> ----------------------------------------------------------------------------
04342> 006:0002--------------------------------------------------------------------
04343> --------------------
04344> | READ STORM       |    Filename: 50YR Chicago 4-hr duration
04345> | Ptotal=  72.10 mm|    Comments: 50YR Chicago 4-hr duration
04346> --------------------
04347>                TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
04348>                 hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
04349>                 .02   2.864 |  1.03  15.112 |  2.05  12.704 |  3.07   4.591
04350>                 .03   2.902 |  1.05  16.156 |  2.07  12.363 |  3.08   4.543
04351>                 .05   2.942 |  1.07  17.340 |  2.08  12.038 |  3.10   4.495
04352>                 .07   2.983 |  1.08  18.693 |  2.10  11.729 |  3.12   4.449
04353>                 .08   3.025 |  1.10  20.251 |  2.12  11.434 |  3.13   4.404
04354>                 .10   3.068 |  1.12  22.060 |  2.13  11.154 |  3.15   4.359
04355>                 .12   3.112 |  1.13  24.183 |  2.15  10.885 |  3.17   4.315
04356>                 .13   3.158 |  1.15  26.700 |  2.17  10.629 |  3.18   4.273
04357>                 .15   3.205 |  1.17  29.724 |  2.18  10.384 |  3.20   4.231
04358>                 .17   3.254 |  1.18  33.409 |  2.20  10.149 |  3.22   4.190
04359>                 .18   3.304 |  1.20  37.976 |  2.22   9.925 |  3.23   4.150
04360>                 .20   3.356 |  1.22  43.751 |  2.23   9.709 |  3.25   4.110
04361>                 .22   3.410 |  1.23  51.229 |  2.25   9.503 |  3.27   4.071
04362>                 .23   3.465 |  1.25  61.197 |  2.27   9.304 |  3.28   4.033
04363>                 .25   3.522 |  1.27  74.969 |  2.28   9.113 |  3.30   3.996
04364>                 .27   3.581 |  1.28  94.888 |  2.30   8.930 |  3.32   3.960
04365>                 .28   3.642 |  1.30 125.487 |  2.32   8.753 |  3.33   3.924
04366>                 .30   3.706 |  1.32 176.565 |  2.33   8.584 |  3.35   3.888
04367>                 .32   3.771 |  1.33 272.901 |  2.35   8.420 |  3.37   3.854
04368>                 .33   3.839 |  1.35 248.380 |  2.37   8.262 |  3.38   3.820
04369>                 .35   3.910 |  1.37 199.925 |  2.38   8.110 |  3.40   3.786
04370>                 .37   3.983 |  1.38 165.143 |  2.40   7.963 |  3.42   3.753
04371>                 .38   4.059 |  1.40 139.257 |  2.42   7.821 |  3.43   3.721
04372>                 .40   4.138 |  1.42 119.422 |  2.43   7.684 |  3.45   3.689
04373>                 .42   4.220 |  1.43 103.853 |  2.45   7.552 |  3.47   3.658
04374>                 .43   4.305 |  1.45  91.385 |  2.47   7.424 |  3.48   3.628
04375>                 .45   4.394 |  1.47  81.227 |  2.48   7.300 |  3.50   3.597
04376>                 .47   4.487 |  1.48  72.829 |  2.50   7.180 |  3.52   3.568
04377>                 .48   4.584 |  1.50  65.796 |  2.52   7.064 |  3.53   3.539
04378>                 .50   4.685 |  1.52  59.840 |  2.53   6.951 |  3.55   3.510
04379>                 .52   4.790 |  1.53  54.745 |  2.55   6.842 |  3.57   3.482
04380>                 .53   4.901 |  1.55  50.348 |  2.57   6.736 |  3.58   3.454
04381>                 .55   5.016 |  1.57  46.524 |  2.58   6.633 |  3.60   3.427
04382>                 .57   5.137 |  1.58  43.173 |  2.60   6.533 |  3.62   3.400
04383>                 .58   5.265 |  1.60  40.219 |  2.62   6.437 |  3.63   3.374
04384>                 .60   5.398 |  1.62  37.598 |  2.63   6.343 |  3.65   3.348
04385>                 .62   5.539 |  1.63  35.261 |  2.65   6.251 |  3.67   3.322
04386>                 .63   5.687 |  1.65  33.166 |  2.67   6.162 |  3.68   3.297
04387>                 .65   5.843 |  1.67  31.281 |  2.68   6.076 |  3.70   3.272
04388>                 .67   6.007 |  1.68  29.576 |  2.70   5.992 |  3.72   3.247
04389>                 .68   6.181 |  1.70  28.028 |  2.72   5.910 |  3.73   3.224
04390>                 .70   6.365 |  1.72  26.618 |  2.73   5.831 |  3.75   3.200
04391>                 .72   6.560 |  1.73  25.330 |  2.75   5.753 |  3.77   3.176
04392>                 .73   6.768 |  1.75  24.149 |  2.77   5.678 |  3.78   3.153
04393>                 .75   6.988 |  1.77  23.062 |  2.78   5.604 |  3.80   3.131
04394>                 .77   7.223 |  1.78  22.060 |  2.80   5.532 |  3.82   3.108
04395>                 .78   7.474 |  1.80  21.134 |  2.82   5.462 |  3.83   3.086
04396>                 .80   7.742 |  1.82  20.276 |  2.83   5.394 |  3.85   3.065
04397>                 .82   8.029 |  1.83  19.479 |  2.85   5.328 |  3.87   3.043
04398>                 .83   8.338 |  1.85  18.736 |  2.87   5.263 |  3.88   3.022
04399>                 .85   8.670 |  1.87  18.044 |  2.88   5.199 |  3.90   3.001
04400>                 .87   9.029 |  1.88  17.397 |  2.90   5.137 |  3.92   2.981
04401>                 .88   9.417 |  1.90  16.791 |  2.92   5.077 |  3.93   2.961
04402>                 .90   9.839 |  1.92  16.222 |  2.93   5.018 |  3.95   2.941
04403>                 .92  10.298 |  1.93  15.688 |  2.95   4.960 |  3.97   2.921
04404>                 .93  10.799 |  1.95  15.186 |  2.97   4.904 |  3.98   2.902
04405>                 .95  11.348 |  1.97  14.712 |  2.98   4.849 |  4.00   2.883
04406>                 .97  11.952 |  1.98  14.265 |  3.00   4.795 |  4.02   2.864
04407>                 .98  12.620 |  2.00  13.842 |  3.02   4.742 |
04408>                1.00  13.361 |  2.02  13.443 |  3.03   4.691 |
04409>                1.02  14.186 |  2.03  13.064 |  3.05   4.640 |
04410>
04411> ----------------------------------------------------------------------------
04412> 006:0003--------------------------------------------------------------------
04413> * WEST OF RICHMOND STREET
04414> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
04415> *==========================================================================
04416> ----------------------
04417> | CALIB STANDHYD     |   Area    (ha)=    1.61
04418> | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
04419> ----------------------
04420>                                IMPERVIOUS    PERVIOUS (i)
04421>      Surface Area     (ha)=       1.05          .56
04422>      Dep. Storage     (mm)=       2.00         5.00
04423>      Average Slope     (%)=       2.00         2.00
04424>      Length            (m)=     217.00        35.00
04425>      Mannings n          =        .013         .240
04426>
04427>      Max.eff.Inten.(mm/hr)=     260.64        65.38
04428>                 over (min)        2.00        10.00
04429>      Storage Coeff.  (min)=       2.25 (ii)    9.79 (ii)
04430>      Unit Hyd. Tpeak (min)=       2.00        10.00
04431>      Unit Hyd. peak  (cms)=        .52          .11
04432>                                                          *TOTALS*
04433>      PEAK FLOW       (cms)=        .50          .06          .511 (iii)
04434>      TIME TO PEAK    (hrs)=       1.37         1.57         1.367
04435>      RUNOFF VOLUME    (mm)=      70.10        23.92        49.317
04436>      TOTAL RAINFALL   (mm)=      72.10        72.10        72.098
04437>      RUNOFF COEFFICIENT   =        .97          .33          .684
04438>
04439>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04440>            CN* =  61.0    Ia = Dep. Storage  (Above)
04441>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04442>            THAN THE STORAGE COEFFICIENT.
04443>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04444>
04445> ----------------------------------------------------------------------------
04446> 006:0004--------------------------------------------------------------------
04447> *==========================================================================
04448> * WEST OF RICHMOND STREET
04449> * PARK AREA (202)
04450> *==========================================================================
04451> ----------------------
04452> | CALIB NASHYD       |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
04453> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04454> ----------------------   U.H. Tp(hrs)=    .500
04455>
04456>      Unit Hyd Qpeak  (cms)=     .226
04457>
04458>      PEAK FLOW       (cms)=     .169 (i)
04459>      TIME TO PEAK    (hrs)=    2.033
04460>      RUNOFF VOLUME    (mm)=   29.665
04461>      TOTAL RAINFALL   (mm)=   72.098
04462>      RUNOFF COEFFICIENT   =     .411
04463>
04464>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04465>
04466> ----------------------------------------------------------------------------
04467> 006:0005--------------------------------------------------------------------
04468> * WEST OF RICHMOND STREET
04469> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
04470> *==========================================================================
04471> ----------------------
04472> | CALIB STANDHYD     |   Area    (ha)=    1.76
04473> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
04474> ----------------------
04475>                                IMPERVIOUS    PERVIOUS (i)
04476>      Surface Area     (ha)=        .97          .79
04477>      Dep. Storage     (mm)=       2.00         5.00
04478>      Average Slope     (%)=       2.00         2.00
04479>      Length            (m)=      35.00        40.00
04480>      Mannings n          =        .013         .240
04481>
04482>      Max.eff.Inten.(mm/hr)=     272.90        61.65
04483>                 over (min)        1.00         9.00
04484>      Storage Coeff.  (min)=        .74 (ii)    9.10 (ii)
04485>      Unit Hyd. Tpeak (min)=       1.00         9.00
04486>      Unit Hyd. peak  (cms)=       1.26          .12
04487>                                                          *TOTALS*
04488>      PEAK FLOW       (cms)=        .54          .09          .560 (iii)
04489>      TIME TO PEAK    (hrs)=       1.35         1.55         1.350
04490>      RUNOFF VOLUME    (mm)=      70.10        23.02        44.208
04491>      TOTAL RAINFALL   (mm)=      72.10        72.10        72.098
04492>      RUNOFF COEFFICIENT   =        .97          .32          .613
04493>
04494>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04495>            CN* =  61.0    Ia = Dep. Storage  (Above)
04496>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04497>            THAN THE STORAGE COEFFICIENT.
04498>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04499>
04500> ----------------------------------------------------------------------------
04501> 006:0006--------------------------------------------------------------------
04502> *==========================================================================
04503> * WEST OF RICHMOND STREET
04504> * PARK AREA ON THE SOUTH BOUNDARY (206a)
04505> *==========================================================================
04506> ----------------------
04507> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
04508> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04509> ----------------------   U.H. Tp(hrs)=    .270
04510>
04511>      Unit Hyd Qpeak  (cms)=     .083
04512>
04513>      PEAK FLOW       (cms)=     .051 (i)
04514>      TIME TO PEAK    (hrs)=    1.733
04515>      RUNOFF VOLUME    (mm)=   29.665
04516>      TOTAL RAINFALL   (mm)=   72.098
04517>      RUNOFF COEFFICIENT   =     .411
04518>
04519>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04520>
04521> ----------------------------------------------------------------------------
04522> 006:0007--------------------------------------------------------------------
04523> *==========================================================================
04524> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
04525> *==========================================================================
04526> ------------------------
04527> | ADD HYD (2005      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04528> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
04529>                         ID1 01:201         1.61      .511    1.37  49.32    .000
04530>                       +ID2 02:202         2.96      .169    2.03  29.67    .000
04531>                       +ID3 03:203         1.76      .560    1.35  44.21    .000
04532>                       +ID4 04:206a         .59      .051    1.73  29.66    .000
04533>                        ==============================================================
04534>                         SUM 05:2005        6.92    1.039    1.35  37.94    .000
04535>
04536>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04537>
04538> ----------------------------------------------------------------------------
04539> 006:0008--------------------------------------------------------------------
04540> *==========================================================================
04541> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
04542> *==========================================================================
04543> ----------------------
04544> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
04545> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04546> ----------------------   U.H. Tp(hrs)=    .870
04547>
04548>      Unit Hyd Qpeak  (cms)=     .838
04549>
04550>      PEAK FLOW       (cms)=     .727 (i)
04551>      TIME TO PEAK    (hrs)=    2.500
04552>      RUNOFF VOLUME    (mm)=   29.665
04553>      TOTAL RAINFALL   (mm)=   72.098
04554>      RUNOFF COEFFICIENT   =     .411
04555>
04556>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04557>
04558> ----------------------------------------------------------------------------
04559> 006:0009--------------------------------------------------------------------
04560> *==========================================================================
04561> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
04562> *==========================================================================
04563> ----------------------
04564> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
04565> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04566> ----------------------   U.H. Tp(hrs)=   2.180
04567>
04568>      Unit Hyd Qpeak  (cms)=    8.399
04569>
04570>      PEAK FLOW       (cms)=    8.917 (i)
04571>      TIME TO PEAK    (hrs)=    4.083
04572>      RUNOFF VOLUME    (mm)=   29.665
04573>      TOTAL RAINFALL   (mm)=   72.098
04574>      RUNOFF COEFFICIENT   =     .411
04575>
04576>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04577>
04578> ----------------------------------------------------------------------------
04579> 006:0010--------------------------------------------------------------------
04580> *==========================================================================
04581> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
04582> *==========================================================================
04583> ------------------------
04584> | ADD HYD (2010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04585> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
04586>                         ID1 05:2005        6.92    1.039    1.35  37.94    .000
04587>                       +ID2 01:EXT-1       19.09     .727    2.50  29.67    .000
04588>                       +ID3 02:EXT-2      479.35    8.917    4.08  29.67    .000
04589>                        ==============================================================
04590>                         SUM 10:2010      505.36    9.267    3.98  29.78    .000
```

```
04591>
04592>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04593>
04594> ---------------------------------------------------------------------------
04595> 006:0011-----------------------------------------------------------------
04596> *==========================================================================
04597> * EAST OF RICHMOND STREET
04598> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
04599> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
04600> *==========================================================================
04601> ----------------------
04602> | CALIB STANDHYD     |   Area    (ha)=    1.60
04603> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
04604> ----------------------
04605>                              IMPERVIOUS    PERVIOUS (i)
04606>      Surface Area     (ha)=       .93          .67
04607>      Dep. Storage     (mm)=      2.00         5.00
04608>      Average Slope     (%)=      2.00         2.00
04609>      Length            (m)=    269.00        35.00
04610>      Mannings n           =      .013         .240
04611>
04612>      Max.eff.Inten.(mm/hr)=    240.40        60.97
04613>                 over (min)      3.00        10.00
04614>      Storage Coeff.  (min)=      2.65 (ii)   10.39 (ii)
04615>      Unit Hyd. Tpeak (min)=      3.00        10.00
04616>      Unit Hyd. peak  (cms)=       .41          .11
04617>                                                          *TOTALS*
04618>      PEAK FLOW       (cms)=       .41          .07          .427 (iii)
04619>      TIME TO PEAK    (hrs)=      1.38         1.57         1.383
04620>      RUNOFF VOLUME    (mm)=     70.10        23.25        45.738
04621>      TOTAL RAINFALL   (mm)=     72.10        72.10        72.098
04622>      RUNOFF COEFFICIENT   =       .97          .32          .634
04623>
04624>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04625>            CN* =  61.0    Ia = Dep. Storage  (Above)
04626>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04627>            THAN THE STORAGE COEFFICIENT.
04628>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04629>
04630> ---------------------------------------------------------------------------
04631> 006:0012-----------------------------------------------------------------
04632> *==========================================================================
04633> * WEST OF RICHMOND STREET
04634> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
04635> *==========================================================================
04636> ----------------------
04637> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
04638> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04639> ----------------------   U.H. Tp(hrs)=    .780
04640>
04641>      Unit Hyd Qpeak  (cms)=     .048
04642>
04643>      PEAK FLOW       (cms)=     .041 (i)
04644>      TIME TO PEAK    (hrs)=    2.383
04645>      RUNOFF VOLUME    (mm)=   29.665
04646>      TOTAL RAINFALL   (mm)=   72.098
04647>      RUNOFF COEFFICIENT   =     .411
04648>
04649>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04650>
04651> ---------------------------------------------------------------------------
04652> 006:0013-----------------------------------------------------------------
04653> *==========================================================================
04654> * WEST OF RICHMOND STREET
04655> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
04656> *==========================================================================
04657> ----------------------
04658> | CALIB STANDHYD     |   Area    (ha)=     .89
04659> | 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
04660> ----------------------
04661>                              IMPERVIOUS    PERVIOUS (i)
04662>      Surface Area     (ha)=       .58          .31
04663>      Dep. Storage     (mm)=      2.00         5.00
04664>      Average Slope     (%)=      2.00         2.00
04665>      Length            (m)=    241.00        35.00
04666>      Mannings n           =      .013         .240
04667>
04668>      Max.eff.Inten.(mm/hr)=    260.64        65.38
04669>                 over (min)      2.00        10.00
04670>      Storage Coeff.  (min)=      2.40 (ii)    9.93 (ii)
04671>      Unit Hyd. Tpeak (min)=      2.00        10.00
04672>      Unit Hyd. peak  (cms)=       .49          .11
04673>                                                          *TOTALS*
04674>      PEAK FLOW       (cms)=       .27          .04          .277 (iii)
04675>      TIME TO PEAK    (hrs)=      1.37         1.57         1.367
04676>      RUNOFF VOLUME    (mm)=     70.10        23.92        49.317
04677>      TOTAL RAINFALL   (mm)=     72.10        72.10        72.098
04678>      RUNOFF COEFFICIENT   =       .97          .33          .684
04679>
04680>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04681>            CN* =  61.0    Ia = Dep. Storage  (Above)
04682>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04683>            THAN THE STORAGE COEFFICIENT.
04684>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04685>
04686> ---------------------------------------------------------------------------
04687> 006:0014-----------------------------------------------------------------
04688> *==========================================================================
04689> * RICHMOND STREET
04690> * PROPOSED - HUNTER SUBDIVISION (205b)
04691> *==========================================================================
04692> ----------------------
04693> | CALIB STANDHYD     |   Area    (ha)=     .78
04694> | 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
04695> ----------------------
04696>                              IMPERVIOUS    PERVIOUS (i)
04697>      Surface Area     (ha)=       .55          .23
04698>      Dep. Storage     (mm)=      2.00         5.00
04699>      Average Slope     (%)=      2.00         2.00
04700>      Length            (m)=    388.00       194.00
04701>      Mannings n           =      .013         .240
04702>
04703>      Max.eff.Inten.(mm/hr)=    240.40        42.17
04704>                 over (min)      3.00        28.00
04705>      Storage Coeff.  (min)=      3.30 (ii)   28.38 (ii)
04706>      Unit Hyd. Tpeak (min)=      3.00        28.00
04707>      Unit Hyd. peak  (cms)=       .35          .04
04708>                                                          *TOTALS*
04709>      PEAK FLOW       (cms)=       .23          .02          .232 (iii)
04710>      TIME TO PEAK    (hrs)=      1.38         1.92         1.383
04711>      RUNOFF VOLUME    (mm)=     70.10        24.57        51.886
04712>      TOTAL RAINFALL   (mm)=     72.10        72.10        72.098
04713>      RUNOFF COEFFICIENT   =       .97          .34          .720
04714>
04715>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04716>            CN* =  61.0    Ia = Dep. Storage  (Above)
04717>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04718>            THAN THE STORAGE COEFFICIENT.
04719>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04720>
04721> ---------------------------------------------------------------------------
04722> 006:0015-----------------------------------------------------------------
04723> *==========================================================================
04724> * WEST OF RICHMOND STREET
04725> * PARK AREA ON THE SOUTH BOUNDARY (206b)
04726> *==========================================================================
04727> ----------------------
04728> | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
04729> | 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04730> ----------------------   U.H. Tp(hrs)=    .160
04731>
04732>      Unit Hyd Qpeak  (cms)=     .043
04733>
04734>      PEAK FLOW       (cms)=     .021 (i)
04735>      TIME TO PEAK    (hrs)=    1.583
04736>      RUNOFF VOLUME    (mm)=   29.664
04737>      TOTAL RAINFALL   (mm)=   72.098
04738>      RUNOFF COEFFICIENT   =     .411
04739>
04740>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04741>
04742> ---------------------------------------------------------------------------
04743> 006:0016-----------------------------------------------------------------
04744> *==========================================================================
04745> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
04746> *==========================================================================
04747> ----------------------
04748> | ADD HYD (2009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04749> ----------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
04750>                         ID1 01:208a      1.60      .427    1.38  45.74    .000
04751>                       +ID2 02:204a        .99      .041    2.38  29.67    .000
04752>                       +ID3 03:205a        .89      .277    1.37  49.32    .000
04753>                       +ID4 04:205b        .78      .232    1.38  51.89    .000
04754>                       +ID5 05:206b        .18      .021    1.58  29.66    .000
04755>                        ==========================================================
04756>                        SUM 09:2009       4.44      .940    1.38  43.30    .000
04757>
04758>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04759>
04760> ---------------------------------------------------------------------------
04761> 006:0017-----------------------------------------------------------------
04762> *==========================================================================
04763> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
04764> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
04765> *==========================================================================
04766> ----------------------
04767> | CALIB STANDHYD     |   Area    (ha)=    4.25
04768> | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
04769> ----------------------
04770>                              IMPERVIOUS    PERVIOUS (i)
04771>      Surface Area     (ha)=      1.11         3.14
04772>      Dep. Storage     (mm)=      2.00         8.00
04773>      Average Slope     (%)=      2.00         2.00
04774>      Length            (m)=    256.00       237.00
04775>      Mannings n           =      .013         .240
04776>
04777>      Max.eff.Inten.(mm/hr)=    240.40        49.12
04778>                 over (min)      3.00        29.00
04779>      Storage Coeff.  (min)=      2.57 (ii)   29.18 (ii)
04780>      Unit Hyd. Tpeak (min)=      3.00        29.00
04781>      Unit Hyd. peak  (cms)=       .41          .04
04782>                                                          *TOTALS*
04783>      PEAK FLOW       (cms)=       .25          .24          .266 (iii)
04784>      TIME TO PEAK    (hrs)=      1.38         1.93         1.900
04785>      RUNOFF VOLUME    (mm)=     70.10        31.53        35.773
04786>      TOTAL RAINFALL   (mm)=     72.10        72.10        72.098
04787>      RUNOFF COEFFICIENT   =       .97          .44          .496
04788>
04789>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04790>            CN* =  75.0    Ia = Dep. Storage  (Above)
04791>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04792>            THAN THE STORAGE COEFFICIENT.
04793>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04794>
04795> ---------------------------------------------------------------------------
04796> 006:0018-----------------------------------------------------------------
04797> *==========================================================================
04798> * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
04799> *==========================================================================
04800> ----------------------
04801> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
04802> | 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04803> ----------------------   U.H. Tp(hrs)=   1.930
04804>
04805>      Unit Hyd Qpeak  (cms)=    3.692
04806>
04807>      PEAK FLOW       (cms)=    3.826 (i)
04808>      TIME TO PEAK    (hrs)=    3.783
04809>      RUNOFF VOLUME    (mm)=   29.665
04810>      TOTAL RAINFALL   (mm)=   72.098
04811>      RUNOFF COEFFICIENT   =     .411
04812>
04813>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04814>
04815> ---------------------------------------------------------------------------
04816> 006:0019-----------------------------------------------------------------
04817> *==========================================================================
04818> * SUB-TOTAL FLOW TO SANDUSKY DRAIN
04819> *==========================================================================
04820> ----------------------
04821> | ADD HYD (2003      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
04822> ----------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
04823>                         ID1 01:210        4.25      .266    1.90  35.77    .000
04824>                       +ID2 02:EXT-3     186.58     3.826    3.78  29.67    .000
04825>                        ==========================================================
04826>                        SUM 03:2003      190.83     3.874    3.77  29.80    .000
04827>
04828>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
04829>
04830> ---------------------------------------------------------------------------
04831> 006:0020-----------------------------------------------------------------
04832> *==========================================================================
04833> * SF ON THE NORTHEAST (ESTATE LOT)
04834> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
04835> *==========================================================================
04836> ----------------------
04837> | CALIB STANDHYD     |   Area    (ha)=    1.26
04838> | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
04839> ----------------------
04840>                              IMPERVIOUS    PERVIOUS (i)
04841>      Surface Area     (ha)=       .69          .57
04842>      Dep. Storage     (mm)=      2.00         5.00
04843>      Average Slope     (%)=      2.00         2.00
04844>      Length            (m)=     35.00        40.00
04845>      Mannings n           =      .013         .240
04846>
04847>      Max.eff.Inten.(mm/hr)=    272.90        99.82
04848>                 over (min)      1.00         8.00
04849>      Storage Coeff.  (min)=       .74 (ii)    7.63 (ii)
04850>      Unit Hyd. Tpeak (min)=      1.00         8.00
04851>      Unit Hyd. peak  (cms)=      1.26          .15
04852>                                                          *TOTALS*
04853>      PEAK FLOW       (cms)=       .39          .10          .414 (iii)
04854>      TIME TO PEAK    (hrs)=      1.35         1.52         1.350
04855>      RUNOFF VOLUME    (mm)=     70.10        33.69        50.074
04856>      TOTAL RAINFALL   (mm)=     72.10        72.10        72.098
04857>      RUNOFF COEFFICIENT   =       .97          .47          .695
04858>
04859>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04860>            CN* =  75.0    Ia = Dep. Storage  (Above)
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04861>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04862>            THAN THE STORAGE COEFFICIENT.
04863>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04864>
04865> ------------------------------------------------------------------------------
04866> 006:0021------------------------------------------------------------------------
04867> *============================================================================
04868> * EAST OF RICHMOND STREET
04869> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
04870> *============================================================================
04871> ----------------------
04872> | CALIB STANDHYD     |   Area    (ha)=     .45
04873> | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
04874> ----------------------
04875>                                IMPERVIOUS    PERVIOUS (i)
04876>      Surface Area     (ha)=       .29          .16
04877>      Dep. Storage     (mm)=      2.00         5.00
04878>      Average Slope     (%)=      2.00         2.00
04879>      Length            (m)=    155.00        35.00
04880>      Mannings n           =      .013         .240
04881>
04882>      Max.eff.Inten.(mm/hr)=    260.64        67.75
04883>                 over (min)      2.00         9.00
04884>      Storage Coeff.  (min)=     1.84 (ii)    9.27 (ii)
04885>      Unit Hyd. Tpeak (min)=     2.00         9.00
04886>      Unit Hyd. peak  (cms)=      .59          .12
04887>                                                          *TOTALS*
04888>      PEAK FLOW       (cms)=      .15          .02          .150 (iii)
04889>      TIME TO PEAK    (hrs)=     1.37         1.55         1.367
04890>      RUNOFF VOLUME    (mm)=    70.10        23.92        49.317
04891>      TOTAL RAINFALL   (mm)=    72.10        72.10        72.098
04892>      RUNOFF COEFFICIENT   =     .97          .33          .684
04893>
04894>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04895>            CN* =  61.0    Ia = Dep. Storage  (Above)
04896>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04897>            THAN THE STORAGE COEFFICIENT.
04898>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04899>
04900> ------------------------------------------------------------------------------
04901> 006:0022------------------------------------------------------------------------
04902> *============================================================================
04903> * EAST OF RICHMOND STREET
04904> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
04905> *============================================================================
04906> ----------------------
04907> | CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
04908> | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
04909> ----------------------   U.H. Tp(hrs)=    .530
04910>
04911>      Unit Hyd Qpeak  (cms)=     .049
04912>
04913>      PEAK FLOW       (cms)=     .037 (i)
04914>      TIME TO PEAK    (hrs)=    2.067
04915>      RUNOFF VOLUME    (mm)=   29.665
04916>      TOTAL RAINFALL   (mm)=   72.098
04917>      RUNOFF COEFFICIENT   =     .411
04918>
04919>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04920>
04921> ------------------------------------------------------------------------------
04922> 006:0023------------------------------------------------------------------------
04923> *============================================================================
04924> * EAST OF RICHMOND STREET
04925> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
04926> *============================================================================
04927> ----------------------
04928> | CALIB STANDHYD     |   Area    (ha)=    2.61
04929> | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
04930> ----------------------
04931>                                IMPERVIOUS    PERVIOUS (i)
04932>      Surface Area     (ha)=      1.46         1.15
04933>      Dep. Storage     (mm)=      2.00         5.00
04934>      Average Slope     (%)=      2.00         2.00
04935>      Length            (m)=    126.00        35.00
04936>      Mannings n           =      .013         .240
04937>
04938>      Max.eff.Inten.(mm/hr)=    260.64        64.29
04939>                 over (min)      2.00         9.00
04940>      Storage Coeff.  (min)=     1.62 (ii)    9.21 (ii)
04941>      Unit Hyd. Tpeak (min)=     2.00         9.00
04942>      Unit Hyd. peak  (cms)=      .63          .12
04943>                                                          *TOTALS*
04944>      PEAK FLOW       (cms)=      .71          .13          .742 (iii)
04945>      TIME TO PEAK    (hrs)=     1.37         1.55         1.367
04946>      RUNOFF VOLUME    (mm)=    70.10        23.42        44.425
04947>      TOTAL RAINFALL   (mm)=    72.10        72.10        72.098
04948>      RUNOFF COEFFICIENT   =     .97          .32          .616
04949>
04950>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
04951>            CN* =  61.0    Ia = Dep. Storage  (Above)
04952>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
04953>            THAN THE STORAGE COEFFICIENT.
04954>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
04955>
04956> ------------------------------------------------------------------------------
04957> 006:0024------------------------------------------------------------------------
04958> *============================================================================
04959> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
04960> *============================================================================
04961> ----------------------
04962> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
04963> |  IN>05:(209    )   |
04964> | OUT<06:(002006)    |    =========  OUTLFOW STORAGE TABLE  =========
04965> ----------------------    OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
04966>                             (cms)     (ha.m.)  |    (cms)    (ha.m.)
04967>                              .000  .0000E+00   |     .030  .2263E+00
04968>                              .009  .8000E-02   |     .031  .2476E+00
04969>                              .013  .1970E-01   |     .031  .2698E+00
04970>                              .016  .3510E-01   |     .032  .2929E+00
04971>                              .019  .5430E-01   |     .033  .3169E+00
04972>                              .021  .7710E-01   |     .034  .3419E+00
04973>                              .023  .1038E+00   |     .034  .3678E+00
04974>                              .025  .1341E+00   |     .035  .3946E+00
04975>                              .027  .1682E+00   |     .036  .4224E+00
04976>                              .029  .2060E+00   |     .000  .0000E+00
04977>
04978>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
04979>      ---------------------      (ha)     (cms)     (hrs)       (mm)
04980>      INFLOW >05: (209    )      2.61      .742     1.367     44.425
04981>      OUTFLOW<06: (002006)       2.61      .023     3.350     44.425
04982>     OVERFLOW<07: (002007)        .00      .000      .000       .000
04983>
04984>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
04985>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
04986>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
04987>
04988>
04989>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.060
04990>                    TIME SHIFT OF PEAK FLOW         (min)=   119.00
04991>                    MAXIMUM  STORAGE   USED       (ha.m.)=.9383E-01
04992>
04993> ------------------------------------------------------------------------------
04994> 006:0025------------------------------------------------------------------------
04995> *============================================================================
04996> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
04997> *============================================================================
04998> ----------------------
04999> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05000> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
05001>                        ID1 01:212          1.26     .414    1.35  50.07    .000
05002>                       +ID2 02:207           .45     .150    1.37  49.32    .000
05003>                       +ID3 03:2003        190.83    3.874    3.77  29.80    .000
05004>                       +ID4 04:204b          .68     .037    2.07  29.66    .000
05005>                       +ID5 06:      2006    2.61     .023    3.35  44.42    .000
05006>                        ==================================================
05007>                        SUM 08:2008         195.83    3.917    3.75  30.17    .000
05008>
05009>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05010>
05011> ------------------------------------------------------------------------------
05012> 006:0026------------------------------------------------------------------------
05013> *============================================================================
05014> * EAST OF RICHMOND STREET
05015> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
05016> *============================================================================
05017> ----------------------
05018> | CALIB STANDHYD     |   Area    (ha)=   24.15
05019> | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
05020> ----------------------
05021>                                IMPERVIOUS    PERVIOUS (i)
05022>      Surface Area     (ha)=      13.04        11.11
05023>      Dep. Storage     (mm)=       2.00         5.00
05024>      Average Slope     (%)=       2.00         2.00
05025>      Length            (m)=      35.00        40.00
05026>      Mannings n           =       .013         .240
05027>
05028>      Max.eff.Inten.(mm/hr)=     272.90        63.26
05029>                 over (min)       1.00         9.00
05030>      Storage Coeff.  (min)=       .74 (ii)    9.01 (ii)
05031>      Unit Hyd. Tpeak (min)=       1.00         9.00
05032>      Unit Hyd. peak  (cms)=       1.26          .13
05033>                                                          *TOTALS*
05034>      PEAK FLOW       (cms)=       7.13         1.24         7.364 (iii)
05035>      TIME TO PEAK    (hrs)=       1.35         1.55         1.350
05036>      RUNOFF VOLUME    (mm)=      70.10        23.26        43.404
05037>      TOTAL RAINFALL   (mm)=      72.10        72.10        72.098
05038>      RUNOFF COEFFICIENT   =        .97          .32          .602
05039>
05040>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05041>            CN* =  61.0    Ia = Dep. Storage  (Above)
05042>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05043>            THAN THE STORAGE COEFFICIENT.
05044>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05045>
05046> ------------------------------------------------------------------------------
05047> 006:0027------------------------------------------------------------------------
05048> *============================================================================
05049> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
05050> *============================================================================
05051> ----------------------
05052> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
05053> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05054> ----------------------   U.H. Tp(hrs)=   1.040
05055>
05056>      Unit Hyd Qpeak  (cms)=     .033
05057>
05058>      PEAK FLOW       (cms)=     .030 (i)
05059>      TIME TO PEAK    (hrs)=    2.717
05060>      RUNOFF VOLUME    (mm)=   29.665
05061>      TOTAL RAINFALL   (mm)=   72.098
05062>      RUNOFF COEFFICIENT   =     .411
05063>
05064>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05065>
05066> ------------------------------------------------------------------------------
05067> 006:0028------------------------------------------------------------------------
05068> *============================================================================
05069> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
05070> *============================================================================
05071> ------------------------
05072> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05073> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
05074>                        ID1 01:208b        24.15    7.364    1.35  43.40    .000
05075>                       +ID2 02:EXT-4        .91     .030    2.72  29.66    .000
05076>                        ==================================================
05077>                        SUM 03:SUM         25.06    7.365    1.35  42.90    .000
05078>
05079>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05080>
05081> ------------------------------------------------------------------------------
05082> 006:0029------------------------------------------------------------------------
05083> *============================================================================
05084> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
05085> *============================================================================
05086> ----------------------
05087> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
05088> |  IN>03:(SUM    )   |
05089> | OUT<04:(002004)    |    =========  OUTLFOW STORAGE TABLE  =========
05090> ----------------------    OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
05091>                             (cms)     (ha.m.)  |    (cms)    (ha.m.)
05092>                              .000  .0000E+00   |     .783  .9373E+00
05093>                              .020  .1250E+00   |     .993  .1083E+01
05094>                              .074  .2530E+00   |    1.215  .1232E+01
05095>                              .156  .3839E+00   |    1.441  .1383E+01
05096>                              .263  .5178E+00   |    1.655  .1538E+01
05097>                              .416  .6547E+00   |    1.827  .1696E+01
05098>                              .594  .7945E+00   |    1.986  .1856E+01
05099>
05100>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
05101>      ---------------------      (ha)     (cms)     (hrs)       (mm)
05102>      INFLOW >03: (SUM    )     25.06     7.365     1.350     42.905
05103>      OUTFLOW<04: (002004)      25.06      .530     2.317     42.903
05104>     OVERFLOW<01: (002001)        .00      .000      .000       .000
05105>
05106>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
05107>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
05108>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
05109>
05110>
05111>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    7.200
05112>                    TIME SHIFT OF PEAK FLOW         (min)=    58.00
05113>                    MAXIMUM  STORAGE   USED       (ha.m.)=.7443E+00
05114>
05115> ------------------------------------------------------------------------------
05116> 006:0030------------------------------------------------------------------------
05117> *============================================================================
05118> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
05119> *============================================================================
05120> ----------------------
05121> | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05122> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
05123>                        ID1 10:2010       505.36    9.267    3.98  29.78    .000
05124>                       +ID2 09:2009         4.44     .940    1.38  43.30    .000
05125>                       +ID3 08:2008       195.83    3.917    3.75  30.17    .000
05126>                       +ID4 04:      2004   25.06     .530    2.32  42.90    .000
05127>                        ==================================================
05128>                        SUM 07:TotalCNR    730.69   13.602    3.88  30.42    .000
05129>
05130>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
05131>
05132> -------------------------------------------------------------------------------
05133> 006:0031-----------------------------------------------------------------------
05134> *PROPOSED - FLOW TO IDA STREET
05135> *==============================================================================
05136> ----------------------
05137> | CALIB STANDHYD     |   Area    (ha)=     .54
05138> | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
05139> ----------------------
05140>                                IMPERVIOUS    PERVIOUS (i)
05141>      Surface Area     (ha)=        .30          .24
05142>      Dep. Storage     (mm)=       2.00         5.00
05143>      Average Slope     (%)=       2.00         2.00
05144>      Length            (m)=      35.00        40.00
05145>      Mannings n          =        .013         .240
05146>
05147>      Max.eff.Inten.(mm/hr)=     272.90        61.65
05148>                 over (min)       1.00         9.00
05149>      Storage Coeff.  (min)=       .74 (ii)    9.10 (ii)
05150>      Unit Hyd. Tpeak (min)=      1.00         9.00
05151>      Unit Hyd. peak  (cms)=      1.26          .12
05152>                                                          *TOTALS*
05153>      PEAK FLOW       (cms)=       .17          .03          .172 (iii)
05154>      TIME TO PEAK    (hrs)=      1.35         1.55         1.350
05155>      RUNOFF VOLUME    (mm)=     70.10        23.02        44.208
05156>      TOTAL RAINFALL   (mm)=     72.10        72.10        72.098
05157>      RUNOFF COEFFICIENT   =       .97          .32          .613
05158>
05159>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05160>            CN* =  61.0    Ia = Dep. Storage  (Above)
05161>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05162>            THAN THE STORAGE COEFFICIENT.
05163>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05164>
05165> -------------------------------------------------------------------------------
05166> 006:0032-----------------------------------------------------------------------
05167> -------------------------------------------------------------------------------
05168> 006:0002-----------------------------------------------------------------------
05169> -------------------------------------------------------------------------------
05170> 006:0002-----------------------------------------------------------------------
05171> -------------------------------------------------------------------------------
05172> 006:0002-----------------------------------------------------------------------
05173> -------------------------------------------------------------------------------
05174> 006:0002-----------------------------------------------------------------------
05175> -------------------------------------------------------------------------------
05176> 006:0002-----------------------------------------------------------------------
05177>   ** END OF RUN :   6
05178>
05179> ******************************************************************************
05180>
05181>
05182>
05183>
05184>
05185> --------------------
05186> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
05187> -------------------- Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
05188>     TZERO =   .00 hrs on      0
05189>     METOUT=   2 (output = METRIC)
05190>     NRUN  = 007
05191>     NSTORM=   1
05192>            #  1=100YR.HYT
05193> -------------------------------------------------------------------------------
05194> 007:0002-----------------------------------------------------------------------
05195> *#*****************************************************************************
05196> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
05197> *#  Date        : APRIL 2022
05198> *#  Modeller    : [MM]
05199> *#  Company     : STANTEC CONSULTING LTD.
05200> *#  License #   :
05201> *#*****************************************************************************
05202> -------------------------------------------------------------------------------
05203> 007:0002-----------------------------------------------------------------------
05204> --------------------
05205> | READ STORM       |    Filename: 100YR Chicago 4-hr duration
05206> | Ptotal=  79.43 mm|    Comments: 100YR Chicago 4-hr duration
05207> --------------------
05208>              TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
05209>              hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr
05210>               .02   3.037 |  1.03  16.685 |  2.05  13.979 |  3.07   4.929
05211>               .03   3.079 |  1.05  17.859 |  2.07  13.595 |  3.08   4.876
05212>               .05   3.122 |  1.07  19.192 |  2.08  13.231 |  3.10   4.824
05213>               .07   3.167 |  1.08  20.716 |  2.10  12.884 |  3.12   4.773
05214>               .08   3.212 |  1.10  22.470 |  2.12  12.554 |  3.13   4.723
05215>               .10   3.260 |  1.12  24.509 |  2.13  12.239 |  3.15   4.674
05216>               .12   3.308 |  1.13  26.900 |  2.15  11.938 |  3.17   4.626
05217>               .13   3.358 |  1.15  29.736 |  2.17  11.651 |  3.18   4.579
05218>               .15   3.409 |  1.17  33.140 |  2.18  11.376 |  3.20   4.533
05219>               .17   3.463 |  1.18  37.287 |  2.20  11.114 |  3.22   4.488
05220>               .18   3.517 |  1.20  42.423 |  2.22  10.862 |  3.23   4.443
05221>               .20   3.574 |  1.22  48.907 |  2.23  10.621 |  3.25   4.400
05222>               .22   3.632 |  1.23  57.287 |  2.25  10.390 |  3.27   4.358
05223>               .23   3.693 |  1.25  68.424 |  2.27  10.168 |  3.28   4.316
05224>               .25   3.755 |  1.27  83.749 |  2.28   9.954 |  3.30   4.275
05225>               .27   3.820 |  1.28 105.785 |  2.30   9.749 |  3.32   4.235
05226>               .28   3.887 |  1.30 139.348 |  2.32   9.552 |  3.33   4.195
05227>               .30   3.956 |  1.32 194.650 |  2.33   9.363 |  3.35   4.156
05228>               .32   4.028 |  1.33 296.789 |  2.35   9.180 |  3.37   4.119
05229>               .33   4.103 |  1.35 271.039 |  2.37   9.004 |  3.38   4.081
05230>               .35   4.180 |  1.37 219.664 |  2.38   8.834 |  3.40   4.044
05231>               .37   4.260 |  1.38 182.358 |  2.40   8.670 |  3.42   4.009
05232>               .38   4.344 |  1.40 154.343 |  2.42   8.512 |  3.43   3.973
05233>               .40   4.430 |  1.42 132.722 |  2.43   8.359 |  3.45   3.938
05234>               .42   4.520 |  1.43 115.653 |  2.45   8.212 |  3.47   3.904
05235>               .43   4.614 |  1.45 101.920 |  2.47   8.069 |  3.48   3.871
05236>               .45   4.712 |  1.47  90.688 |  2.48   7.931 |  3.50   3.838
05237>               .47   4.814 |  1.48  81.372 |  2.50   7.797 |  3.52   3.805
05238>               .48   4.921 |  1.50  73.549 |  2.52   7.668 |  3.53   3.773
05239>               .50   5.032 |  1.52  66.909 |  2.53   7.543 |  3.55   3.742
05240>               .52   5.149 |  1.53  61.219 |  2.55   7.421 |  3.57   3.711
05241>               .53   5.270 |  1.55  56.301 |  2.57   7.304 |  3.58   3.681
05242>               .55   5.398 |  1.57  52.017 |  2.58   7.189 |  3.60   3.651
05243>               .57   5.532 |  1.58  48.259 |  2.60   7.079 |  3.62   3.622
05244>               .58   5.673 |  1.60  44.943 |  2.62   6.971 |  3.63   3.593
05245>               .60   5.820 |  1.62  41.998 |  2.63   6.867 |  3.65   3.565
05246>               .62   5.976 |  1.63  39.371 |  2.65   6.765 |  3.67   3.537
05247>               .63   6.139 |  1.65  37.015 |  2.67   6.667 |  3.68   3.509
05248>               .65   6.312 |  1.67  34.893 |  2.68   6.571 |  3.70   3.482
05249>               .67   6.495 |  1.68  32.974 |  2.70   6.478 |  3.72   3.455
05250>               .68   6.687 |  1.70  31.231 |  2.72   6.387 |  3.73   3.429
05251>               .70   6.892 |  1.72  29.643 |  2.73   6.299 |  3.75   3.403
05252>               .72   7.108 |  1.73  28.192 |  2.75   6.213 |  3.77   3.378
05253>               .73   7.339 |  1.75  26.861 |  2.77   6.129 |  3.78   3.353
05254>               .75   7.584 |  1.77  25.637 |  2.78   6.048 |  3.80   3.328
05255>               .77   7.845 |  1.78  24.509 |  2.80   5.969 |  3.82   3.304
05256>               .78   8.125 |  1.80  23.465 |  2.82   5.891 |  3.83   3.280
05257>               .80   8.423 |  1.82  22.498 |  2.83   5.816 |  3.85   3.256
05258>               .82   8.744 |  1.83  21.600 |  2.85   5.742 |  3.87   3.233
05259>               .83   9.088 |  1.85  20.764 |  2.87   5.670 |  3.88   3.210
05260>               .85   9.459 |  1.87  19.985 |  2.88   5.600 |  3.90   3.187
05261>               .87   9.860 |  1.88  19.256 |  2.90   5.532 |  3.92   3.165
05262>               .88  10.294 |  1.90  18.574 |  2.92   5.465 |  3.93   3.143
05263>               .90  10.766 |  1.92  17.934 |  2.93   5.400 |  3.95   3.121
05264>               .92  11.280 |  1.93  17.333 |  2.95   5.336 |  3.97   3.100
05265>               .93  11.841 |  1.95  16.768 |  2.97   5.274 |  3.98   3.079
05266>               .95  12.457 |  1.97  16.235 |  2.98   5.213 |  4.00   3.058
05267>               .97  13.134 |  1.98  15.733 |  3.00   5.154 |  4.02   3.037
05268>               .98  13.884 |  2.00  15.258 |  3.02   5.096 |
05269>              1.00  14.716 |  2.02  14.808 |  3.03   5.039 |
05270>              1.02  15.644 |  2.03  14.382 |  3.05   4.983 |
05271>
05272> -------------------------------------------------------------------------------
05273> 007:0003-----------------------------------------------------------------------
05274> * WEST OF RICHMOND STREET
05275> * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
05276> *==============================================================================
05277> ----------------------
05278> | CALIB STANDHYD     |   Area    (ha)=    1.61
05279> | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
05280> ----------------------
05281>                                IMPERVIOUS    PERVIOUS (i)
05282>      Surface Area     (ha)=       1.05          .56
05283>      Dep. Storage     (mm)=       2.00         5.00
05284>      Average Slope     (%)=       2.00         2.00
05285>      Length            (m)=     217.00        35.00
05286>      Mannings n          =        .013         .240
05287>
05288>      Max.eff.Inten.(mm/hr)=     283.91        80.85
05289>                 over (min)       2.00         9.00
05290>      Storage Coeff.  (min)=       2.18 (ii)    9.10 (ii)
05291>      Unit Hyd. Tpeak (min)=       2.00         9.00
05292>      Unit Hyd. peak  (cms)=        .53          .12
05293>                                                          *TOTALS*
05294>      PEAK FLOW       (cms)=        .55          .08          .569 (iii)
05295>      TIME TO PEAK    (hrs)=       1.37         1.55         1.367
05296>      RUNOFF VOLUME    (mm)=      77.43        28.27        55.309
05297>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
05298>      RUNOFF COEFFICIENT   =        .97          .36          .696
05299>
05300>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05301>            CN* =  61.0    Ia = Dep. Storage  (Above)
05302>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05303>            THAN THE STORAGE COEFFICIENT.
05304>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05305>
05306> -------------------------------------------------------------------------------
05307> 007:0004-----------------------------------------------------------------------
05308> *==============================================================================
05309> * WEST OF RICHMOND STREET
05310> * PARK AREA (202)
05311> *==============================================================================
05312> ----------------------
05313> | CALIB NASHYD       |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
05314> | 02:202    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05315> ----------------------   U.H. Tp(hrs)=    .500
05316>
05317>      Unit Hyd Qpeak  (cms)=     .226
05318>
05319>      PEAK FLOW       (cms)=     .201 (i)
05320>      TIME TO PEAK    (hrs)=    2.033
05321>      RUNOFF VOLUME    (mm)=   34.820
05322>      TOTAL RAINFALL   (mm)=   79.430
05323>      RUNOFF COEFFICIENT   =     .438
05324>
05325>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05326>
05327> -------------------------------------------------------------------------------
05328> 007:0005-----------------------------------------------------------------------
05329> * WEST OF RICHMOND STREET
05330> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
05331> *==============================================================================
05332> ----------------------
05333> | CALIB STANDHYD     |   Area    (ha)=    1.76
05334> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
05335> ----------------------
05336>                                IMPERVIOUS    PERVIOUS (i)
05337>      Surface Area     (ha)=        .97          .79
05338>      Dep. Storage     (mm)=       2.00         5.00
05339>      Average Slope     (%)=       2.00         2.00
05340>      Length            (m)=      35.00        40.00
05341>      Mannings n          =        .013         .240
05342>
05343>      Max.eff.Inten.(mm/hr)=     296.79        76.51
05344>                 over (min)       1.00         8.00
05345>      Storage Coeff.  (min)=        .72 (ii)    8.38 (ii)
05346>      Unit Hyd. Tpeak (min)=       1.00         8.00
05347>      Unit Hyd. peak  (cms)=       1.28          .14
05348>                                                          *TOTALS*
05349>      PEAK FLOW       (cms)=        .59          .11          .618 (iii)
05350>      TIME TO PEAK    (hrs)=       1.35         1.53         1.350
05351>      RUNOFF VOLUME    (mm)=      77.43        27.26        49.837
05352>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
05353>      RUNOFF COEFFICIENT   =        .97          .34          .627
05354>
05355>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05356>            CN* =  61.0    Ia = Dep. Storage  (Above)
05357>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05358>            THAN THE STORAGE COEFFICIENT.
05359>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05360>
05361> -------------------------------------------------------------------------------
05362> 007:0006-----------------------------------------------------------------------
05363> *==============================================================================
05364> * WEST OF RICHMOND STREET
05365> * PARK AREA ON THE SOUTH BOUNDARY (206a)
05366> *==============================================================================
05367> ----------------------
05368> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
05369> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05370> ----------------------   U.H. Tp(hrs)=    .270
05371>
05372>      Unit Hyd Qpeak  (cms)=     .083
05373>
05374>      PEAK FLOW       (cms)=     .060 (i)
05375>      TIME TO PEAK    (hrs)=    1.733
05376>      RUNOFF VOLUME    (mm)=   34.820
05377>      TOTAL RAINFALL   (mm)=   79.430
05378>      RUNOFF COEFFICIENT   =     .438
05379>
05380>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05381>
05382> -------------------------------------------------------------------------------
05383> 007:0007-----------------------------------------------------------------------
05384> *==============================================================================
05385> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
05386> *==============================================================================
05387> ------------------------
05388> | ADD HYD (2005      ) | ID: NHYD        AREA     QPEAK   TPEAK   R.V.    DWF
05389> ------------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
05390>                         ID1 01:201      1.61      .569    1.37  55.31    .000
05391>                        +ID2 02:202      2.96      .201    2.03  34.82    .000
05392>                        +ID3 03:203      1.76      .618    1.35  49.84    .000
05393>                        +ID4 04:206a      .59      .060    1.73  34.82    .000
05394>                         ==============================================================
05395>                         SUM 05:2005      6.92    1.154    1.35  43.41    .000
05396>
05397>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05398>
05399> -------------------------------------------------------------------------------
05400> 007:0008-----------------------------------------------------------------------
```

```
05401> *==============================================================================
05402> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
05403> *==============================================================================
05404> ----------------------
05405> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
05406> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05407> ----------------------   U.H. Tp(hrs)=    .870
05408>
05409>      Unit Hyd Qpeak  (cms)=     .838
05410>
05411>      PEAK FLOW       (cms)=     .862 (i)
05412>      TIME TO PEAK    (hrs)=    2.483
05413>      RUNOFF VOLUME    (mm)=   34.821
05414>      TOTAL RAINFALL   (mm)=   79.430
05415>      RUNOFF COEFFICIENT   =     .438
05416>
05417>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05418>
05419> ------------------------------------------------------------------------------
05420> 007:0009-----------------------------------------------------------------------
05421> *==============================================================================
05422> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
05423> *==============================================================================
05424> ----------------------
05425> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
05426> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05427> ----------------------   U.H. Tp(hrs)=   2.180
05428>
05429>      Unit Hyd Qpeak  (cms)=    8.399
05430>
05431>      PEAK FLOW       (cms)=   10.501 (i)
05432>      TIME TO PEAK    (hrs)=    4.067
05433>      RUNOFF VOLUME    (mm)=   34.821
05434>      TOTAL RAINFALL   (mm)=   79.430
05435>      RUNOFF COEFFICIENT   =     .438
05436>
05437>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05438>
05439> ------------------------------------------------------------------------------
05440> 007:0010-----------------------------------------------------------------------
05441> *==============================================================================
05442> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
05443> *==============================================================================
05444> ------------------------
05445> | ADD HYD (2010      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05446> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
05447>                        ID1 05:2005         6.92    1.154    1.35  43.41    .000
05448>                       +ID2 01:EXT-1       19.09     .862    2.48  34.82    .000
05449>                       +ID3 02:EXT-2      479.35   10.501    4.07  34.82    .000
05450>                        ==============================================================
05451>                        SUM 10:2010        505.36   10.910    3.97  34.94    .000
05452>
05453>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05454>
05455> ------------------------------------------------------------------------------
05456> 007:0011-----------------------------------------------------------------------
05457> *==============================================================================
05458> * EAST OF RICHMOND STREET
05459> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
05460> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
05461> *==============================================================================
05462> ----------------------
05463> | CALIB STANDHYD     |   Area    (ha)=    1.60
05464> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
05465> ----------------------
05466>                                IMPERVIOUS    PERVIOUS (i)
05467>      Surface Area     (ha)=        .93          .67
05468>      Dep. Storage     (mm)=       2.00         5.00
05469>      Average Slope     (%)=       2.00         2.00
05470>      Length            (m)=     269.00        35.00
05471>      Mannings n          =        .013         .240
05472>
05473>      Max.eff.Inten.(mm/hr)=     262.50        72.88
05474>                 over (min)        3.00        10.00
05475>      Storage Coeff.  (min)=       2.55 (ii)    9.77 (ii)
05476>      Unit Hyd. Tpeak (min)=       3.00        10.00
05477>      Unit Hyd. peak  (cms)=        .42          .11
05478>                                                          *TOTALS*
05479>      PEAK FLOW       (cms)=        .45          .09        .476 (iii)
05480>      TIME TO PEAK    (hrs)=       1.38         1.57        1.383
05481>      RUNOFF VOLUME    (mm)=      77.43        27.52       51.476
05482>      TOTAL RAINFALL   (mm)=      79.43        79.43       79.430
05483>      RUNOFF COEFFICIENT   =        .97          .35         .648
05484>
05485>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05486>            CN* =  61.0    Ia = Dep. Storage  (Above)
05487>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05488>            THAN THE STORAGE COEFFICIENT.
05489>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05490>
05491> ------------------------------------------------------------------------------
05492> 007:0012-----------------------------------------------------------------------
05493> *==============================================================================
05494> * WEST OF RICHMOND STREET
05495> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
05496> *==============================================================================
05497> ----------------------
05498> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
05499> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05500> ----------------------   U.H. Tp(hrs)=    .780
05501>
05502>      Unit Hyd Qpeak  (cms)=     .048
05503>
05504>      PEAK FLOW       (cms)=     .049 (i)
05505>      TIME TO PEAK    (hrs)=    2.383
05506>      RUNOFF VOLUME    (mm)=   34.820
05507>      TOTAL RAINFALL   (mm)=   79.430
05508>      RUNOFF COEFFICIENT   =     .438
05509>
05510>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05511>
05512> ------------------------------------------------------------------------------
05513> 007:0013-----------------------------------------------------------------------
05514> *==============================================================================
05515> * WEST OF RICHMOND STREET
05516> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
05517> *==============================================================================
05518> ----------------------
05519> | CALIB STANDHYD     |   Area    (ha)=     .89
05520> | 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
05521> ----------------------
05522>                                IMPERVIOUS    PERVIOUS (i)
05523>      Surface Area     (ha)=        .58          .31
05524>      Dep. Storage     (mm)=       2.00         5.00
05525>      Average Slope     (%)=       2.00         2.00
05526>      Length            (m)=     241.00        35.00
05527>      Mannings n          =        .013         .240
05528>
05529>      Max.eff.Inten.(mm/hr)=     283.91        80.85
05530>                 over (min)        2.00         9.00
05531>      Storage Coeff.  (min)=       2.32 (ii)    9.24 (ii)
05532>      Unit Hyd. Tpeak (min)=       2.00         9.00
05533>      Unit Hyd. peak  (cms)=        .51          .12
05534>                                                          *TOTALS*
05535>      PEAK FLOW       (cms)=        .30          .04        .309 (iii)
05536>      TIME TO PEAK    (hrs)=       1.37         1.55       1.367
05537>      RUNOFF VOLUME    (mm)=      77.43        28.27      55.309
05538>      TOTAL RAINFALL   (mm)=      79.43        79.43      79.430
05539>      RUNOFF COEFFICIENT   =        .97          .36        .696
05540>
05541>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05542>            CN* =  61.0    Ia = Dep. Storage  (Above)
05543>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05544>            THAN THE STORAGE COEFFICIENT.
05545>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05546>
05547> ------------------------------------------------------------------------------
05548> 007:0014-----------------------------------------------------------------------
05549> *==============================================================================
05550> * RICHMOND STREET
05551> * PROPOSED - HUNTER SUBDIVISION (205b)
05552> *==============================================================================
05553> ----------------------
05554> | CALIB STANDHYD     |   Area    (ha)=     .78
05555> | 04:205b   DT= 1.00 |   Total Imp(%)=   60.00   Dir. Conn.(%)=   60.00
05556> ----------------------
05557>                                IMPERVIOUS    PERVIOUS (i)
05558>      Surface Area     (ha)=        .55          .23
05559>      Dep. Storage     (mm)=       2.00         5.00
05560>      Average Slope     (%)=       2.00         2.00
05561>      Length            (m)=     388.00       194.00
05562>      Mannings n          =        .013         .240
05563>
05564>      Max.eff.Inten.(mm/hr)=     262.50        52.60
05565>                 over (min)        3.00        26.00
05566>      Storage Coeff.  (min)=       3.18 (ii)   26.15 (ii)
05567>      Unit Hyd. Tpeak (min)=       3.00        26.00
05568>      Unit Hyd. peak  (cms)=        .36          .04
05569>                                                          *TOTALS*
05570>      PEAK FLOW       (cms)=        .26          .02        .258 (iii)
05571>      TIME TO PEAK    (hrs)=       1.38         1.87       1.383
05572>      RUNOFF VOLUME    (mm)=      77.43        29.00      58.059
05573>      TOTAL RAINFALL   (mm)=      79.43        79.43      79.430
05574>      RUNOFF COEFFICIENT   =        .97          .37        .731
05575>
05576>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05577>            CN* =  61.0    Ia = Dep. Storage  (Above)
05578>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05579>            THAN THE STORAGE COEFFICIENT.
05580>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05581>
05582> ------------------------------------------------------------------------------
05583> 007:0015-----------------------------------------------------------------------
05584> *==============================================================================
05585> * WEST OF RICHMOND STREET
05586> * PARK AREA ON THE SOUTH BOUNDARY (206b)
05587> *==============================================================================
05588> ----------------------
05589> | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
05590> | 05:206b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05591> ----------------------   U.H. Tp(hrs)=    .160
05592>
05593>      Unit Hyd Qpeak  (cms)=     .043
05594>
05595>      PEAK FLOW       (cms)=     .025 (i)
05596>      TIME TO PEAK    (hrs)=    1.583
05597>      RUNOFF VOLUME    (mm)=   34.819
05598>      TOTAL RAINFALL   (mm)=   79.430
05599>      RUNOFF COEFFICIENT   =     .438
05600>
05601>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05602>
05603> ------------------------------------------------------------------------------
05604> 007:0016-----------------------------------------------------------------------
05605> *==============================================================================
05606> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
05607> *==============================================================================
05608> ------------------------
05609> | ADD HYD (2009      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05610> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
05611>                        ID1 01:208a         1.60     .476    1.38  51.48    .000
05612>                       +ID2 02:204a          .99     .049    2.38  34.82    .000
05613>                       +ID3 03:205a          .89     .309    1.37  55.31    .000
05614>                       +ID4 04:205b          .78     .258    1.38  58.06    .000
05615>                       +ID5 05:206b          .18     .025    1.58  34.82    .000
05616>                        ==============================================================
05617>                        SUM 09:2009          4.44    1.049    1.38  49.01    .000
05618>
05619>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05620>
05621> ------------------------------------------------------------------------------
05622> 007:0017-----------------------------------------------------------------------
05623> *==============================================================================
05624> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
05625> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
05626> *==============================================================================
05627> ----------------------
05628> | CALIB STANDHYD     |   Area    (ha)=    4.25
05629> | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
05630> ----------------------
05631>                                IMPERVIOUS    PERVIOUS (i)
05632>      Surface Area     (ha)=       1.11         3.14
05633>      Dep. Storage     (mm)=       2.00         8.00
05634>      Average Slope     (%)=       2.00         2.00
05635>      Length            (m)=     256.00       237.00
05636>      Mannings n          =        .013         .240
05637>
05638>      Max.eff.Inten.(mm/hr)=     283.91        60.94
05639>                 over (min)        2.00        27.00
05640>      Storage Coeff.  (min)=       2.40 (ii)   26.82 (ii)
05641>      Unit Hyd. Tpeak (min)=       2.00        27.00
05642>      Unit Hyd. peak  (cms)=        .49          .04
05643>                                                          *TOTALS*
05644>      PEAK FLOW       (cms)=        .28          .30        .333 (iii)
05645>      TIME TO PEAK    (hrs)=       1.37         1.88       1.867
05646>      RUNOFF VOLUME    (mm)=      77.43        36.99      41.442
05647>      TOTAL RAINFALL   (mm)=      79.43        79.43      79.430
05648>      RUNOFF COEFFICIENT   =        .97          .47        .522
05649>
05650>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05651>            CN* =  75.0    Ia = Dep. Storage  (Above)
05652>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05653>            THAN THE STORAGE COEFFICIENT.
05654>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05655>
05656> ------------------------------------------------------------------------------
05657> 007:0018-----------------------------------------------------------------------
05658> *==============================================================================
05659> * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
05660> *==============================================================================
05661> ----------------------
05662> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
05663> | 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05664> ----------------------   U.H. Tp(hrs)=   1.930
05665>
05666>      Unit Hyd Qpeak  (cms)=    3.692
05667>
05668>      PEAK FLOW       (cms)=    4.510 (i)
05669>      TIME TO PEAK    (hrs)=    3.767
05670>      RUNOFF VOLUME    (mm)=   34.821
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05671>      TOTAL RAINFALL   (mm)=   79.430
05672>      RUNOFF COEFFICIENT   =     .438
05673>
05674>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05675>
05676> ---------------------------------------------------------------------------
05677> 007:0019-------------------------------------------------------------------
05678> *==========================================================================
05679> *SUB-TOTAL FLOW TO SANDUSKY DRAIN
05680> *==========================================================================
05681> ----------------------
05682> | ADD HYD (2003      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
05683> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
05684>                         ID1 01:210          4.25      .333    1.87  41.44    .000
05685>                        +ID2 02:EXT-3       186.58    4.510    3.77  34.82    .000
05686>                         ==========================================================
05687>                         SUM 03:2003        190.83    4.561    3.75  34.97    .000
05688>
05689>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05690>
05691> ---------------------------------------------------------------------------
05692> 007:0020-------------------------------------------------------------------
05693> *==========================================================================
05694> * SF ON THE NORTHEAST (ESTATE LOT)
05695> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
05696> *==========================================================================
05697> ----------------------
05698> | CALIB STANDHYD     |   Area    (ha)=    1.26
05699> | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
05700> ----------------------
05701>                                IMPERVIOUS    PERVIOUS (i)
05702>      Surface Area     (ha)=        .69          .57
05703>      Dep. Storage     (mm)=       2.00         5.00
05704>      Average Slope     (%)=       2.00         2.00
05705>      Length            (m)=     35.00        40.00
05706>      Mannings n          =       .013         .240
05707>
05708>      Max.eff.Inten.(mm/hr)=     296.79       121.99
05709>                 over (min)        1.00         7.00
05710>      Storage Coeff.  (min)=        .72 (ii)    7.08 (ii)
05711>      Unit Hyd. Tpeak (min)=       1.00         7.00
05712>      Unit Hyd. peak  (cms)=       1.28          .16
05713>                                                          *TOTALS*
05714>      PEAK FLOW       (cms)=        .43          .13          .461 (iii)
05715>      TIME TO PEAK    (hrs)=       1.35         1.50         1.350
05716>      RUNOFF VOLUME    (mm)=      77.43        39.25        56.431
05717>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
05718>      RUNOFF COEFFICIENT   =        .97          .49          .710
05719>
05720>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05721>            CN* =  75.0    Ia = Dep. Storage  (Above)
05722>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05723>            THAN THE STORAGE COEFFICIENT.
05724>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05725>
05726> ---------------------------------------------------------------------------
05727> 007:0021-------------------------------------------------------------------
05728> *==========================================================================
05729> * EAST OF RICHMOND STREET
05730> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
05731> *==========================================================================
05732> ----------------------
05733> | CALIB STANDHYD     |   Area    (ha)=     .45
05734> | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
05735> ----------------------
05736>                                IMPERVIOUS    PERVIOUS (i)
05737>      Surface Area     (ha)=        .29          .16
05738>      Dep. Storage     (mm)=       2.00         5.00
05739>      Average Slope     (%)=       2.00         2.00
05740>      Length            (m)=    155.00        35.00
05741>      Mannings n          =       .013         .240
05742>
05743>      Max.eff.Inten.(mm/hr)=     283.91        80.85
05744>                 over (min)        2.00         9.00
05745>      Storage Coeff.  (min)=       1.78 (ii)    8.70 (ii)
05746>      Unit Hyd. Tpeak (min)=       2.00         9.00
05747>      Unit Hyd. peak  (cms)=        .60          .13
05748>                                                          *TOTALS*
05749>      PEAK FLOW       (cms)=        .16          .02          .167 (iii)
05750>      TIME TO PEAK    (hrs)=       1.37         1.55         1.367
05751>      RUNOFF VOLUME    (mm)=      77.43        28.27        55.309
05752>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
05753>      RUNOFF COEFFICIENT   =        .97          .36          .696
05754>
05755>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05756>            CN* =  61.0    Ia = Dep. Storage  (Above)
05757>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05758>            THAN THE STORAGE COEFFICIENT.
05759>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05760>
05761> ---------------------------------------------------------------------------
05762> 007:0022-------------------------------------------------------------------
05763> *==========================================================================
05764> * EAST OF RICHMOND STREET
05765> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
05766> *==========================================================================
05767> ----------------------
05768> | CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
05769> | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05770> ----------------------   U.H. Tp(hrs)=    .530
05771>
05772>      Unit Hyd Qpeak  (cms)=     .049
05773>
05774>      PEAK FLOW       (cms)=     .044 (i)
05775>      TIME TO PEAK    (hrs)=    2.067
05776>      RUNOFF VOLUME    (mm)=   34.820
05777>      TOTAL RAINFALL   (mm)=   79.430
05778>      RUNOFF COEFFICIENT   =     .438
05779>
05780>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05781>
05782> ---------------------------------------------------------------------------
05783> 007:0023-------------------------------------------------------------------
05784> *==========================================================================
05785> * EAST OF RICHMOND STREET
05786> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
05787> *==========================================================================
05788> ----------------------
05789> | CALIB STANDHYD     |   Area    (ha)=    2.61
05790> | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
05791> ----------------------
05792>                                IMPERVIOUS    PERVIOUS (i)
05793>      Surface Area     (ha)=       1.46         1.15
05794>      Dep. Storage     (mm)=       2.00         5.00
05795>      Average Slope     (%)=       2.00         2.00
05796>      Length            (m)=     126.00        35.00
05797>      Mannings n          =       .013         .240
05798>
05799>      Max.eff.Inten.(mm/hr)=     283.91        76.81
05800>                 over (min)        2.00         9.00
05801>      Storage Coeff.  (min)=       1.57 (ii)    8.63 (ii)
05802>      Unit Hyd. Tpeak (min)=       2.00         9.00
05803>      Unit Hyd. peak  (cms)=        .65          .13
05804>                                                          *TOTALS*
05805>      PEAK FLOW       (cms)=        .78          .16          .823 (iii)
05806>      TIME TO PEAK    (hrs)=       1.37         1.55         1.367
05807>      RUNOFF VOLUME    (mm)=      77.43        27.71        50.083
05808>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
05809>      RUNOFF COEFFICIENT   =        .97          .35          .631
05810>
05811>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05812>            CN* =  61.0    Ia = Dep. Storage  (Above)
05813>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05814>            THAN THE STORAGE COEFFICIENT.
05815>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05816>
05817> ---------------------------------------------------------------------------
05818> 007:0024-------------------------------------------------------------------
05819> *==========================================================================
05820> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
05821> *==========================================================================
05822> ----------------------
05823> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
05824> |  IN>05:(209    )   |
05825> | OUT<06:(002006)    |    =========  OUTLFOW STORAGE TABLE  =========
05826> ------------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
05827>                              (cms)     (ha.m.)   |    (cms)    (ha.m.)
05828>                              .000  .0000E+00     |     .030  .2263E+00
05829>                              .009  .8000E-02     |     .031  .2476E+00
05830>                              .013  .1970E-01     |     .031  .2698E+00
05831>                              .016  .3510E-01     |     .032  .2929E+00
05832>                              .019  .5430E-01     |     .033  .3169E+00
05833>                              .021  .7710E-01     |     .034  .3419E+00
05834>                              .023  .1038E+00     |     .034  .3678E+00
05835>                              .025  .1341E+00     |     .035  .3946E+00
05836>                              .027  .1682E+00     |     .036  .4224E+00
05837>                              .029  .2060E+00     |     .000  .0000E+00
05838>
05839>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
05840>     -------------------        (ha)     (cms)     (hrs)       (mm)
05841>     INFLOW >05: (209   )       2.61      .823     1.367     50.083
05842>     OUTFLOW<06: (002006)       2.61      .024     3.433     50.083
05843>    OVERFLOW<07: (002007)        .00      .000      .000       .000
05844>
05845>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
05846>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
05847>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
05848>
05849>
05850>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    2.884
05851>                    TIME SHIFT OF PEAK FLOW         (min)=   124.00
05852>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1074E+00
05853>
05854> ---------------------------------------------------------------------------
05855> 007:0025-------------------------------------------------------------------
05856> *==========================================================================
05857> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
05858> *==========================================================================
05859> ------------------------
05860> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05861> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
05862>                         ID1 01:212          1.26      .461    1.35  56.43    .000
05863>                        +ID2 02:207           .45      .167    1.37  55.31    .000
05864>                        +ID3 03:2003        190.83    4.561    3.75  34.97    .000
05865>                        +ID4 04:204b          .68      .044    2.07  34.82    .000
05866>                        +ID5 06:      2006    2.61     .024    3.43  50.08    .000
05867>                         ==========================================================
05868>                         SUM 08:2008         195.83    4.608    3.73  35.35    .000
05869>
05870>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05871>
05872> ---------------------------------------------------------------------------
05873> 007:0026-------------------------------------------------------------------
05874> *==========================================================================
05875> * EAST OF RICHMOND STREET
05876> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
05877> *==========================================================================
05878> ----------------------
05879> | CALIB STANDHYD     |   Area    (ha)=   24.15
05880> | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
05881> ----------------------
05882>                                IMPERVIOUS    PERVIOUS (i)
05883>      Surface Area     (ha)=      13.04        11.11
05884>      Dep. Storage     (mm)=       2.00         5.00
05885>      Average Slope     (%)=       2.00         2.00
05886>      Length            (m)=     35.00        40.00
05887>      Mannings n          =       .013         .240
05888>
05889>      Max.eff.Inten.(mm/hr)=     296.79        78.45
05890>                 over (min)        1.00         8.00
05891>      Storage Coeff.  (min)=        .72 (ii)    8.30 (ii)
05892>      Unit Hyd. Tpeak (min)=       1.00         8.00
05893>      Unit Hyd. peak  (cms)=       1.28          .14
05894>                                                          *TOTALS*
05895>      PEAK FLOW       (cms)=       7.79         1.55         8.135 (iii)
05896>      TIME TO PEAK    (hrs)=       1.35         1.53         1.350
05897>      RUNOFF VOLUME    (mm)=      77.43        27.53        48.989
05898>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
05899>      RUNOFF COEFFICIENT   =        .97          .35          .617
05900>
05901>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
05902>            CN* =  61.0    Ia = Dep. Storage  (Above)
05903>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
05904>            THAN THE STORAGE COEFFICIENT.
05905>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05906>
05907> ---------------------------------------------------------------------------
05908> 007:0027-------------------------------------------------------------------
05909> *==========================================================================
05910> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
05911> *==========================================================================
05912> ----------------------
05913> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
05914> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
05915> ----------------------   U.H. Tp(hrs)=   1.040
05916>
05917>      Unit Hyd Qpeak  (cms)=     .033
05918>
05919>      PEAK FLOW       (cms)=     .036 (i)
05920>      TIME TO PEAK    (hrs)=    2.700
05921>      RUNOFF VOLUME    (mm)=   34.820
05922>      TOTAL RAINFALL   (mm)=   79.430
05923>      RUNOFF COEFFICIENT   =     .438
05924>
05925>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
05926>
05927> ---------------------------------------------------------------------------
05928> 007:0028-------------------------------------------------------------------
05929> *==========================================================================
05930> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
05931> *==========================================================================
05932> ------------------------
05933> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05934> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
05935>                         ID1 01:208b        24.15    8.135    1.35  48.99    .000
05936>                        +ID2 02:EXT-4         .91     .036    2.70  34.82    .000
05937>                         ==========================================================
05938>                         SUM 03:SUM          25.06    8.136    1.35  48.47    .000
05939>
05940>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
05941>
05942> ------------------------------------------------------------------------------
05943> 007:0029-----------------------------------------------------------------------
05944> *============================================================================
05945> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
05946> *============================================================================
05947> ---------------------
05948> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
05949> |  IN>03:(SUM   )   |
05950> | OUT<04:(002004)   |    =========  OUTLFOW STORAGE TABLE  =========
05951> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
05952>                            (cms)     (ha.m.)   |   (cms)    (ha.m.)
05953>                            .000  .0000E+00     |    .783  .9373E+00
05954>                            .020  .1250E+00     |    .993  .1083E+01
05955>                            .074  .2530E+00     |   1.215  .1232E+01
05956>                            .156  .3839E+00     |   1.441  .1383E+01
05957>                            .263  .5178E+00     |   1.655  .1538E+01
05958>                            .416  .6547E+00     |   1.827  .1696E+01
05959>                            .594  .7945E+00     |   1.986  .1856E+01
05960>
05961>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
05962>      -------------------        (ha)     (cms)     (hrs)       (mm)
05963>      INFLOW >03: (SUM   )      25.06     8.136     1.350     48.475
05964>      OUTFLOW<04: (002004)      25.06      .643     2.250     48.474
05965>     OVERFLOW<01: (002001)        .00      .000      .000       .000
05966>
05967>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
05968>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
05969>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
05970>
05971>
05972>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    7.903
05973>                     TIME SHIFT OF PEAK FLOW         (min)=    54.00
05974>                     MAXIMUM  STORAGE   USED       (ha.m.)=.8312E+00
05975>
05976> ------------------------------------------------------------------------------
05977> 007:0030-----------------------------------------------------------------------
05978> *============================================================================
05979> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
05980> *============================================================================
05981> ------------------------
05982> | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
05983> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
05984>                        ID1 10:2010        505.36   10.910   3.97  34.94    .000
05985>                       +ID2 09:2009          4.44    1.049   1.38  49.01    .000
05986>                       +ID3 08:2008        195.83    4.608   3.73  35.35    .000
05987>                       +ID4 04:     2004   25.06     .643   2.25  48.47    .000
05988>                        ===================================================
05989>                        SUM 07:TotalCNR     730.69   16.005   3.85  35.60    .000
05990>
05991>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
05992>
05993> ------------------------------------------------------------------------------
05994> 007:0031-----------------------------------------------------------------------
05995> *PROPOSED - FLOW TO IDA STREET
05996> *============================================================================
05997> ---------------------
05998> | CALIB STANDHYD   |   Area    (ha)=      .54
05999> | 02:211     DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
06000> ---------------------
06001>                                  IMPERVIOUS    PERVIOUS (i)
06002>      Surface Area     (ha)=        .30          .24
06003>      Dep. Storage     (mm)=       2.00         5.00
06004>      Average Slope     (%)=       2.00         2.00
06005>      Length            (m)=      35.00        40.00
06006>      Mannings n          =        .013         .240
06007>
06008>      Max.eff.Inten.(mm/hr)=     296.79        76.51
06009>                 over (min)        1.00         8.00
06010>      Storage Coeff.  (min)=       .72 (ii)    8.38 (ii)
06011>      Unit Hyd. Tpeak (min)=       1.00         8.00
06012>      Unit Hyd. peak  (cms)=       1.28          .14
06013>                                                          *TOTALS*
06014>      PEAK FLOW       (cms)=        .18          .03          .190 (iii)
06015>      TIME TO PEAK    (hrs)=       1.35         1.53         1.350
06016>      RUNOFF VOLUME    (mm)=      77.43        27.26        49.837
06017>      TOTAL RAINFALL   (mm)=      79.43        79.43        79.430
06018>      RUNOFF COEFFICIENT   =        .97          .34          .627
06019>
06020>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06021>             CN* =  61.0    Ia = Dep. Storage  (Above)
06022>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06023>            THAN THE STORAGE COEFFICIENT.
06024>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06025>
06026> ------------------------------------------------------------------------------
06027> 007:0032-----------------------------------------------------------------------
06028> ------------------------------------------------------------------------------
06029> 007:0002-----------------------------------------------------------------------
06030> ------------------------------------------------------------------------------
06031> 007:0002-----------------------------------------------------------------------
06032> ------------------------------------------------------------------------------
06033> 007:0002-----------------------------------------------------------------------
06034> ------------------------------------------------------------------------------
06035> 007:0002-----------------------------------------------------------------------
06036> ------------------------------------------------------------------------------
06037> 007:0002-----------------------------------------------------------------------
06038> ------------------------------------------------------------------------------
06039> 007:0002-----------------------------------------------------------------------
06040>   ** END OF RUN :   7
06041>
06042> ******************************************************************************
06043>
06044>
06045>
06046>
06047>
06048> --------------------
06049> | START            |  Project  dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
06050> --------------------  Rainfall dir.: C:\Users\mmeqdad\ONEDRI~1\Desktop\SWMHYMO\
06051>     TZERO =   .00 hrs on        0
06052>     METOUT=   2 (output = METRIC)
06053>     NRUN  = 008
06054>     NSTORM=   1
06055>              #  1=250YR.HYT
06056> ------------------------------------------------------------------------------
06057> 008:0002-----------------------------------------------------------------------
06058> *#****************************************************************************
06059> *#  Project Name: [HUNTER SUBDIVISION]    Project Number: [161414095]
06060> *#  Date        : APRIL 2022
06061> *#  Modeller    : [MM]
06062> *#  Company     : STANTEC CONSULTING LTD.
06063> *#  License #   :
06064> *#****************************************************************************
06065> ------------------------------------------------------------------------------
06066> 008:0002-----------------------------------------------------------------------
06067> --------------------
06068> | READ STORM       |    Filename: 250YR Chicago 24-hr duration
06069> | Ptotal= 114.02 mm|    Comments: 250YR Chicago 24-hr duration
06070> --------------------
06071>              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
06072>               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
06073>               .02    .561 |   6.03   2.265 |  12.05   2.123 |  18.07    .868
06074>               .03    .562 |   6.05   2.286 |  12.07   2.114 |  18.08    .867
06075>               .05    .563 |   6.07   2.307 |  12.08   2.105 |  18.10    .866
06076>               .07    .565 |   6.08   2.328 |  12.10   2.096 |  18.12    .864
06077>               .08    .566 |   6.10   2.351 |  12.12   2.088 |  18.13    .863
06078>               .10    .567 |   6.12   2.373 |  12.13   2.079 |  18.15    .862
06079>               .12    .568 |   6.13   2.396 |  12.15   2.071 |  18.17    .860
06080>               .13    .569 |   6.15   2.419 |  12.17   2.062 |  18.18    .859
06081>               .15    .570 |   6.17   2.443 |  12.18   2.054 |  18.20    .858
06082>               .17    .571 |   6.18   2.468 |  12.20   2.046 |  18.22    .856
06083>               .18    .572 |   6.20   2.493 |  12.22   2.038 |  18.23    .855
06084>               .20    .574 |   6.22   2.518 |  12.23   2.029 |  18.25    .854
06085>               .22    .575 |   6.23   2.544 |  12.25   2.021 |  18.27    .852
06086>               .23    .576 |   6.25   2.570 |  12.27   2.013 |  18.28    .851
06087>               .25    .577 |   6.27   2.597 |  12.28   2.005 |  18.30    .850
06088>               .27    .578 |   6.28   2.625 |  12.30   1.998 |  18.32    .848
06089>               .28    .580 |   6.30   2.653 |  12.32   1.990 |  18.33    .847
06090>               .30    .581 |   6.32   2.682 |  12.33   1.982 |  18.35    .846
06091>               .32    .582 |   6.33   2.712 |  12.35   1.974 |  18.37    .845
06092>               .33    .583 |   6.35   2.742 |  12.37   1.967 |  18.38    .843
06093>               .35    .584 |   6.37   2.773 |  12.38   1.959 |  18.40    .842
06094>               .37    .586 |   6.38   2.805 |  12.40   1.952 |  18.42    .841
06095>               .38    .587 |   6.40   2.837 |  12.42   1.944 |  18.43    .839
06096>               .40    .588 |   6.42   2.870 |  12.43   1.937 |  18.45    .838
06097>               .42    .589 |   6.43   2.904 |  12.45   1.930 |  18.47    .837
06098>               .43    .590 |   6.45   2.939 |  12.47   1.922 |  18.48    .836
06099>               .45    .591 |   6.47   2.975 |  12.48   1.915 |  18.50    .834
06100>               .47    .593 |   6.48   3.011 |  12.50   1.908 |  18.52    .833
06101>               .48    .594 |   6.50   3.049 |  12.52   1.901 |  18.53    .832
06102>               .50    .595 |   6.52   3.087 |  12.53   1.894 |  18.55    .831
06103>               .52    .596 |   6.53   3.126 |  12.55   1.887 |  18.57    .829
06104>               .53    .598 |   6.55   3.167 |  12.57   1.880 |  18.58    .828
06105>               .55    .599 |   6.57   3.209 |  12.58   1.873 |  18.60    .827
06106>               .57    .600 |   6.58   3.251 |  12.60   1.866 |  18.62    .826
06107>               .58    .602 |   6.60   3.295 |  12.62   1.859 |  18.63    .824
06108>               .60    .603 |   6.62   3.340 |  12.63   1.853 |  18.65    .823
06109>               .62    .604 |   6.63   3.387 |  12.65   1.846 |  18.67    .822
06110>               .63    .605 |   6.65   3.434 |  12.67   1.839 |  18.68    .821
06111>               .65    .607 |   6.67   3.483 |  12.68   1.833 |  18.70    .820
06112>               .67    .608 |   6.68   3.534 |  12.70   1.826 |  18.72    .818
06113>               .68    .609 |   6.70   3.586 |  12.72   1.820 |  18.73    .817
06114>               .70    .611 |   6.72   3.640 |  12.73   1.813 |  18.75    .816
06115>               .72    .612 |   6.73   3.695 |  12.75   1.807 |  18.77    .815
06116>               .73    .613 |   6.75   3.752 |  12.77   1.801 |  18.78    .813
06117>               .75    .615 |   6.77   3.810 |  12.78   1.794 |  18.80    .812
06118>               .77    .616 |   6.78   3.871 |  12.80   1.788 |  18.82    .811
06119>               .78    .617 |   6.80   3.934 |  12.82   1.782 |  18.83    .810
06120>               .80    .619 |   6.82   3.998 |  12.83   1.776 |  18.85    .809
06121>               .82    .620 |   6.83   4.065 |  12.85   1.770 |  18.87    .808
06122>               .83    .621 |   6.85   4.134 |  12.87   1.763 |  18.88    .806
06123>               .85    .623 |   6.87   4.206 |  12.88   1.757 |  18.90    .805
06124>               .87    .624 |   6.88   4.280 |  12.90   1.751 |  18.92    .804
06125>               .88    .626 |   6.90   4.357 |  12.92   1.746 |  18.93    .803
06126>               .90    .627 |   6.92   4.436 |  12.93   1.740 |  18.95    .802
06127>               .92    .628 |   6.93   4.518 |  12.95   1.734 |  18.97    .801
06128>               .93    .630 |   6.95   4.604 |  12.97   1.728 |  18.98    .799
06129>               .95    .631 |   6.97   4.693 |  12.98   1.722 |  19.00    .798
06130>               .97    .633 |   6.98   4.785 |  13.00   1.716 |  19.02    .797
06131>               .98    .634 |   7.00   4.881 |  13.02   1.711 |  19.03    .796
06132>              1.00    .635 |   7.02   4.981 |  13.03   1.705 |  19.05    .795
06133>              1.02    .637 |   7.03   5.085 |  13.05   1.699 |  19.07    .794
06134>              1.03    .638 |   7.05   5.194 |  13.07   1.694 |  19.08    .793
06135>              1.05    .640 |   7.07   5.307 |  13.08   1.688 |  19.10    .791
06136>              1.07    .641 |   7.08   5.425 |  13.10   1.683 |  19.12    .790
06137>              1.08    .643 |   7.10   5.548 |  13.12   1.677 |  19.13    .789
06138>              1.10    .644 |   7.12   5.677 |  13.13   1.672 |  19.15    .788
06139>              1.12    .646 |   7.13   5.813 |  13.15   1.666 |  19.17    .787
06140>              1.13    .647 |   7.15   5.954 |  13.17   1.661 |  19.18    .786
06141>              1.15    .649 |   7.17   6.103 |  13.18   1.656 |  19.20    .785
06142>              1.17    .650 |   7.18   6.259 |  13.20   1.651 |  19.22    .784
06143>              1.18    .652 |   7.20   6.423 |  13.22   1.645 |  19.23    .783
06144>              1.20    .653 |   7.22   6.595 |  13.23   1.640 |  19.25    .781
06145>              1.22    .655 |   7.23   6.777 |  13.25   1.635 |  19.27    .780
06146>              1.23    .656 |   7.25   6.969 |  13.27   1.630 |  19.28    .779
06147>              1.25    .658 |   7.27   7.172 |  13.28   1.625 |  19.30    .778
06148>              1.27    .659 |   7.28   7.386 |  13.30   1.620 |  19.32    .777
06149>              1.28    .661 |   7.30   7.613 |  13.32   1.615 |  19.33    .776
06150>              1.30    .662 |   7.32   7.854 |  13.33   1.610 |  19.35    .775
06151>              1.32    .664 |   7.33   8.110 |  13.35   1.605 |  19.37    .774
06152>              1.33    .665 |   7.35   8.383 |  13.37   1.599 |  19.38    .773
06153>              1.35    .667 |   7.37   8.674 |  13.38   1.595 |  19.40    .772
06154>              1.37    .669 |   7.38   8.985 |  13.40   1.590 |  19.42    .771
06155>              1.38    .670 |   7.40   9.318 |  13.42   1.585 |  19.43    .770
06156>              1.40    .672 |   7.42   9.675 |  13.43   1.580 |  19.45    .769
06157>              1.42    .674 |   7.43  10.059 |  13.45   1.575 |  19.47    .768
06158>              1.43    .675 |   7.45  10.472 |  13.47   1.571 |  19.48    .766
06159>              1.45    .677 |   7.47  10.920 |  13.48   1.566 |  19.50    .766
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06163>              1.52    .683 |   7.53  13.133 |  13.55   1.547 |  19.57    .761
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06165>              1.55    .687 |   7.57  14.580 |  13.58   1.538 |  19.60    .759
06166>              1.57    .688 |   7.58  15.420 |  13.60   1.533 |  19.62    .758
06167>              1.58    .690 |   7.60  16.353 |  13.62   1.529 |  19.63    .757
06168>              1.60    .692 |   7.62  17.395 |  13.63   1.524 |  19.65    .756
06169>              1.62    .694 |   7.63  18.564 |  13.65   1.520 |  19.67    .755
06170>              1.63    .695 |   7.65  19.885 |  13.67   1.515 |  19.68    .754
06171>              1.65    .697 |   7.67  21.385 |  13.68   1.511 |  19.70    .753
06172>              1.67    .699 |   7.68  23.103 |  13.70   1.507 |  19.72    .752
06173>              1.68    .701 |   7.70  25.084 |  13.72   1.502 |  19.73    .751
06174>              1.70    .702 |   7.72  27.388 |  13.73   1.498 |  19.75    .750
06175>              1.72    .704 |   7.73  30.097 |  13.75   1.494 |  19.77    .749
06176>              1.73    .706 |   7.75  33.315 |  13.77   1.490 |  19.78    .748
06177>              1.75    .708 |   7.77  37.188 |  13.78   1.485 |  19.80    .747
06178>              1.77    .710 |   7.78  41.917 |  13.80   1.481 |  19.82    .746
06179>              1.78    .711 |   7.80  47.791 |  13.82   1.477 |  19.83    .745
06180>              1.80    .713 |   7.82  55.235 |  13.83   1.473 |  19.85    .744
06181>              1.82    .715 |   7.83  64.896 |  13.85   1.469 |  19.87    .743
06182>              1.83    .717 |   7.85  77.803 |  13.87   1.464 |  19.88    .742
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06184>              1.87    .721 |   7.88 121.597 |  13.90   1.456 |  19.92    .740
06185>              1.88    .723 |   7.90 161.512 |  13.92   1.452 |  19.93    .739
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06191>              1.98    .734 |   8.00 179.503 |  14.02   1.429 |  20.03    .733
06192>              2.00    .736 |   8.02 153.593 |  14.03   1.425 |  20.05    .733
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06196>              2.07    .744 |   8.08  92.897 |  14.10   1.409 |  20.12    .729
06197>              2.08    .746 |   8.10  83.767 |  14.12   1.406 |  20.13    .728
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06199>              2.12    .750 |   8.13  69.445 |  14.15   1.398 |  20.17    .726
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06201>              2.15    .754 |   8.17  58.815 |  14.18   1.391 |  20.20    .724
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06210>              2.30    .773 |   8.32  33.210 |  14.33   1.358 |  20.35    .716
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  2.63    .819 |   8.65  15.526 |  14.67   1.292 |  20.68    .698
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  2.67    .824 |   8.68  14.688 |  14.70   1.286 |  20.72    .696
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  4.67   1.309 |  10.68   3.253 |  16.70    .998 |  22.72    .607
  4.68   1.316 |  10.70   3.231 |  16.72    .996 |  22.73    .607
  4.70   1.322 |  10.72   3.211 |  16.73    .995 |  22.75    .606
  4.72   1.329 |  10.73   3.190 |  16.75    .993 |  22.77    .605
  4.73   1.336 |  10.75   3.170 |  16.77    .991 |  22.78    .605
  4.75   1.343 |  10.77   3.149 |  16.78    .989 |  22.80    .604
  4.77   1.350 |  10.78   3.129 |  16.80    .987 |  22.82    .604
  4.78   1.357 |  10.80   3.110 |  16.82    .986 |  22.83    .603
  4.80   1.364 |  10.82   3.091 |  16.83    .984 |  22.85    .602
  4.82   1.372 |  10.83   3.072 |  16.85    .982 |  22.87    .602
  4.83   1.379 |  10.85   3.053 |  16.87    .980 |  22.88    .601
  4.85   1.386 |  10.87   3.034 |  16.88    .979 |  22.90    .600
  4.87   1.394 |  10.88   3.016 |  16.90    .977 |  22.92    .600
  4.88   1.401 |  10.90   2.997 |  16.92    .975 |  22.93    .599
  4.90   1.409 |  10.92   2.979 |  16.93    .973 |  22.95    .598
  4.92   1.417 |  10.93   2.962 |  16.95    .971 |  22.97    .598
  4.93   1.424 |  10.95   2.944 |  16.97    .970 |  22.98    .597
  4.95   1.432 |  10.97   2.927 |  16.98    .968 |  23.00    .597
  4.97   1.440 |  10.98   2.910 |  17.00    .966 |  23.02    .596
  4.98   1.448 |  11.00   2.893 |  17.02    .965 |  23.03    .595
  5.00   1.457 |  11.02   2.876 |  17.03    .963 |  23.05    .595
  5.02   1.465 |  11.03   2.860 |  17.05    .961 |  23.07    .594
  5.03   1.473 |  11.05   2.843 |  17.07    .960 |  23.08    .594
  5.05   1.482 |  11.07   2.827 |  17.08    .958 |  23.10    .593
  5.07   1.490 |  11.08   2.811 |  17.10    .956 |  23.12    .592
  5.08   1.499 |  11.10   2.796 |  17.12    .955 |  23.13    .592
  5.10   1.508 |  11.12   2.780 |  17.13    .953 |  23.15    .591
  5.12   1.517 |  11.13   2.764 |  17.15    .951 |  23.17    .590
  5.13   1.526 |  11.15   2.749 |  17.17    .950 |  23.18    .590
  5.15   1.535 |  11.17   2.734 |  17.18    .948 |  23.20    .589
  5.17   1.544 |  11.18   2.719 |  17.20    .946 |  23.22    .589
  5.18   1.554 |  11.20   2.705 |  17.22    .945 |  23.23    .588
  5.20   1.563 |  11.22   2.690 |  17.23    .943 |  23.25    .587
  5.22   1.573 |  11.23   2.676 |  17.25    .941 |  23.27    .587
  5.23   1.582 |  11.25   2.661 |  17.27    .940 |  23.28    .586
  5.25   1.592 |  11.27   2.647 |  17.28    .938 |  23.30    .586
  5.27   1.602 |  11.28   2.633 |  17.30    .937 |  23.32    .585
  5.28   1.612 |  11.30   2.620 |  17.32    .935 |  23.33    .585
  5.30   1.623 |  11.32   2.606 |  17.33    .933 |  23.35    .584
  5.32   1.633 |  11.33   2.592 |  17.35    .932 |  23.37    .583
  5.33   1.643 |  11.35   2.579 |  17.37    .930 |  23.38    .583
  5.35   1.654 |  11.37   2.566 |  17.38    .929 |  23.40    .582
  5.37   1.665 |  11.38   2.553 |  17.40    .927 |  23.42    .581
  5.38   1.676 |  11.40   2.540 |  17.42    .925 |  23.43    .581
  5.40   1.687 |  11.42   2.527 |  17.43    .924 |  23.45    .580
  5.42   1.698 |  11.43   2.514 |  17.45    .922 |  23.47    .580
  5.43   1.710 |  11.45   2.502 |  17.47    .921 |  23.48    .579
  5.45   1.721 |  11.47   2.490 |  17.48    .919 |  23.50    .579
  5.47   1.733 |  11.48   2.477 |  17.50    .918 |  23.52    .578
  5.48   1.745 |  11.50   2.465 |  17.52    .916 |  23.53    .577
  5.50   1.757 |  11.52   2.453 |  17.53    .915 |  23.55    .577
  5.52   1.770 |  11.53   2.441 |  17.55    .913 |  23.57    .576
  5.53   1.782 |  11.55   2.429 |  17.57    .912 |  23.58    .576
  5.55   1.795 |  11.57   2.418 |  17.58    .910 |  23.60    .575
  5.57   1.808 |  11.58   2.406 |  17.60    .909 |  23.62    .575
  5.58   1.821 |  11.60   2.395 |  17.62    .907 |  23.63    .574
  5.60   1.834 |  11.62   2.383 |  17.63    .905 |  23.65    .573
  5.62   1.847 |  11.63   2.372 |  17.65    .904 |  23.67    .573
  5.63   1.861 |  11.65   2.361 |  17.67    .903 |  23.68    .572
  5.65   1.875 |  11.67   2.350 |  17.68    .901 |  23.70    .572
  5.67   1.889 |  11.68   2.339 |  17.70    .900 |  23.72    .571
  5.68   1.903 |  11.70   2.328 |  17.72    .898 |  23.73    .571
  5.70   1.917 |  11.72   2.317 |  17.73    .897 |  23.75    .570
  5.72   1.932 |  11.73   2.307 |  17.75    .895 |  23.77    .570
  5.73   1.947 |  11.75   2.296 |  17.77    .894 |  23.78    .569
  5.75   1.962 |  11.77   2.286 |  17.78    .892 |  23.80    .568
  5.77   1.978 |  11.78   2.276 |  17.80    .891 |  23.82    .568
  5.78   1.993 |  11.80   2.265 |  17.82    .889 |  23.83    .567
  5.80   2.010 |  11.82   2.255 |  17.83    .888 |  23.85    .567
  5.82   2.026 |  11.83   2.245 |  17.85    .887 |  23.87    .566
  5.83   2.042 |  11.85   2.235 |  17.87    .885 |  23.88    .566
  5.85   2.059 |  11.87   2.225 |  17.88    .884 |  23.90    .565
  5.87   2.076 |  11.88   2.216 |  17.90    .882 |  23.92    .564
  5.88   2.093 |  11.90   2.206 |  17.92    .881 |  23.93    .564
  5.90   2.111 |  11.92   2.196 |  17.93    .879 |  23.95    .563
  5.92   2.129 |  11.93   2.187 |  17.95    .878 |  23.97    .563
  5.93   2.148 |  11.95   2.178 |  17.97    .877 |  23.98    .562
  5.95   2.166 |  11.97   2.168 |  17.98    .875 |  24.00    .562
  5.97   2.185 |  11.98   2.159 |  18.00    .874 |  24.02    .561
  5.98   2.204 |  12.00   2.150 |  18.02    .873 |
  6.00   2.224 |  12.02   2.141 |  18.03    .871 |
  6.02   2.244 |  12.03   2.132 |  18.05    .870 |

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 008:0003----------------------------------------------------------------------
 * WEST OF RICHMOND STREET
 * PROPOSED - HUNTER SUBDIVISION - NORTH MEDIUM DENSITY (201)
 *=============================================================================
 ---------------------
 | CALIB STANDHYD      |   Area    (ha)=    1.61
 | 01:201    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
 ---------------------
                                   IMPERVIOUS    PERVIOUS (i)
      Surface Area      (ha)=        1.05           .56
      Dep. Storage      (mm)=        2.00          5.00
      Average Slope      (%)=        2.00          2.00
      Length             (m)=      217.00         35.00
      Mannings n            =        .013          .240

      Max.eff.Inten.(mm/hr)=      338.50        126.72
                over (min)          2.00          8.00
      Storage Coeff.  (min)=        2.03 (ii)     7.81 (ii)
      Unit Hyd. Tpeak (min)=        2.00          8.00
      Unit Hyd. peak  (cms)=         .55           .14
                                                              *TOTALS*
      PEAK FLOW       (cms)=         .66           .13          .708 (iii)
      TIME TO PEAK    (hrs)=        7.97          8.10         7.967
      RUNOFF VOLUME    (mm)=      112.01         51.29        84.697
      TOTAL RAINFALL   (mm)=      114.02        114.02       114.021
      RUNOFF COEFFICIENT   =         .98           .45          .743

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  61.0    Ia = Dep. 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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 008:0004----------------------------------------------------------------------
 *=============================================================================
 * WEST OF RICHMOND STREET
 * PARK AREA (202)
 *=============================================================================
 ---------------------
 | CALIB NASHYD        |   Area    (ha)=    2.96   Curve Number   (CN)=75.00
 | 02:202    DT= 1.00 |   Ia       (mm)=   5.000   # of Linear Res.(N)= 3.00
 ---------------------   U.H. Tp(hrs)=    .500

      Unit Hyd Qpeak  (cms)=      .226
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06481>
06482>      PEAK FLOW       (cms)=     .290 (i)
06483>      TIME TO PEAK    (hrs)=    8.583
06484>      RUNOFF VOLUME    (mm)=   61.365
06485>      TOTAL RAINFALL   (mm)=  114.021
06486>      RUNOFF COEFFICIENT   =     .538
06487>
06488>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06489>
06490> ----------------------------------------------------------------------------
06491> 008:0005--------------------------------------------------------------------
06492> * WEST OF RICHMOND STREET
06493> * PROPOSED - HUNTER SUBDIVISION - SF BLOCKS (203)
06494> *==========================================================================
06495> ----------------------
06496> | CALIB STANDHYD     |   Area    (ha)=    1.76
06497> | 03:203    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
06498> ----------------------
06499>                              IMPERVIOUS    PERVIOUS (i)
06500>      Surface Area     (ha)=        .97          .79
06501>      Dep. Storage     (mm)=       2.00         5.00
06502>      Average Slope     (%)=       2.00         2.00
06503>      Length            (m)=      35.00        40.00
06504>      Mannings n           =        .013         .240
06505>
06506>      Max.eff.Inten.(mm/hr)=     354.58       121.10
06507>                 over (min)        1.00         7.00
06508>      Storage Coeff.  (min)=        .67 (ii)    7.05 (ii)
06509>      Unit Hyd. Tpeak (min)=       1.00         7.00
06510>      Unit Hyd. peak  (cms)=       1.32          .16
06511>                                                          *TOTALS*
06512>      PEAK FLOW       (cms)=        .71          .18          .765 (iii)
06513>      TIME TO PEAK    (hrs)=       7.93         8.08         7.950
06514>      RUNOFF VOLUME    (mm)=     112.02        49.76        77.785
06515>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06516>      RUNOFF COEFFICIENT   =        .98          .44          .682
06517>
06518>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06519>            CN* =  61.0    Ia = Dep. Storage  (Above)
06520>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06521>            THAN THE STORAGE COEFFICIENT.
06522>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06523>
06524> ----------------------------------------------------------------------------
06525> 008:0006--------------------------------------------------------------------
06526> *==========================================================================
06527> * WEST OF RICHMOND STREET
06528> * PARK AREA ON THE SOUTH BOUNDARY (206a)
06529> *==========================================================================
06530> ----------------------
06531> | CALIB NASHYD       |   Area    (ha)=     .59   Curve Number   (CN)=75.00
06532> | 04:206a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06533> ----------------------   U.H. Tp(hrs)=    .270
06534>
06535>      Unit Hyd Qpeak  (cms)=     .083
06536>
06537>      PEAK FLOW       (cms)=     .088 (i)
06538>      TIME TO PEAK    (hrs)=    8.300
06539>      RUNOFF VOLUME    (mm)=   61.364
06540>      TOTAL RAINFALL   (mm)=  114.021
06541>      RUNOFF COEFFICIENT   =     .538
06542>
06543>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06544>
06545> ----------------------------------------------------------------------------
06546> 008:0007--------------------------------------------------------------------
06547> *==========================================================================
06548> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN FROM SITE AREA ON THE WEST PART
06549> *==========================================================================
06550> ------------------------
06551> | ADD HYD (2005      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
06552> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
06553>                         ID1 01:201         1.61      .708    7.97  84.70    .000
06554>                        +ID2 02:202         2.96      .290    8.58  61.36    .000
06555>                        +ID3 03:203         1.76      .765    7.95  77.78    .000
06556>                        +ID4 04:206a         .59      .088    8.30  61.36    .000
06557>                         ==========================================================
06558>                         SUM 05:2005        6.92     1.454    7.95  70.97    .000
06559>
06560>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
06561>
06562> ----------------------------------------------------------------------------
06563> 008:0008--------------------------------------------------------------------
06564> *==========================================================================
06565> *EXTERNAL AREA ON THE NORTHWEST (EXT-1)
06566> *==========================================================================
06567> ----------------------
06568> | CALIB NASHYD       |   Area    (ha)=   19.09   Curve Number   (CN)=75.00
06569> | 01:EXT-1  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06570> ----------------------   U.H. Tp(hrs)=    .870
06571>
06572>      Unit Hyd Qpeak  (cms)=     .838
06573>
06574>      PEAK FLOW       (cms)=    1.236 (i)
06575>      TIME TO PEAK    (hrs)=    9.033
06576>      RUNOFF VOLUME    (mm)=   61.365
06577>      TOTAL RAINFALL   (mm)=  114.021
06578>      RUNOFF COEFFICIENT   =     .538
06579>
06580>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06581>
06582> ----------------------------------------------------------------------------
06583> 008:0009--------------------------------------------------------------------
06584> *==========================================================================
06585> *EXTERNAL AREA ON THE NORTHWEST (EXT-2)
06586> *==========================================================================
06587> ----------------------
06588> | CALIB NASHYD       |   Area    (ha)=  479.35   Curve Number   (CN)=75.00
06589> | 02:EXT-2  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06590> ----------------------   U.H. Tp(hrs)=   2.180
06591>
06592>      Unit Hyd Qpeak  (cms)=    8.399
06593>
06594>      PEAK FLOW       (cms)=   14.816 (i)
06595>      TIME TO PEAK    (hrs)=   10.567
06596>      RUNOFF VOLUME    (mm)=   61.365
06597>      TOTAL RAINFALL   (mm)=  114.021
06598>      RUNOFF COEFFICIENT   =     .538
06599>
06600>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06601>
06602> ----------------------------------------------------------------------------
06603> 008:0010--------------------------------------------------------------------
06604> *==========================================================================
06605> *SUB-TOTAL - FLOW TO SANDUSKY DRAIN ON THE WEST FROM SITE AND EXTERNAL AREAS
06606> *==========================================================================
06607> ------------------------
06608> | ADD HYD (2010      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
06609> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
06610>                         ID1 05:2005        6.92     1.454    7.95  70.97    .000
06611>                        +ID2 01:EXT-1      19.09     1.236    9.03  61.36    .000
06612>                        +ID3 02:EXT-2     479.35    14.816   10.57  61.37    .000
06613>                         ==========================================================
06614>                         SUM 10:2010      505.36    15.384   10.47  61.50    .000
06615>
06616>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
06617>
06618> ----------------------------------------------------------------------------
06619> 008:0011--------------------------------------------------------------------
06620> *==========================================================================
06621> * EAST OF RICHMOND STREET
06622> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY, SF, AND PROPOSED STREET B
06623> * UNCONTROLLED TO RICHMOND ST AND ULTIMATELY TO THE DRAIN ON NORTH AND WEST
06624> *==========================================================================
06625> ----------------------
06626> | CALIB STANDHYD     |   Area    (ha)=    1.60
06627> | 01:208a   DT= 1.00 |   Total Imp(%)=   58.00   Dir. Conn.(%)=   48.00
06628> ----------------------
06629>                              IMPERVIOUS    PERVIOUS (i)
06630>      Surface Area     (ha)=        .93          .67
06631>      Dep. Storage     (mm)=       2.00         5.00
06632>      Average Slope     (%)=       2.00         2.00
06633>      Length            (m)=     269.00        35.00
06634>      Mannings n           =        .013         .240
06635>
06636>      Max.eff.Inten.(mm/hr)=     338.50       118.79
06637>                 over (min)        2.00         8.00
06638>      Storage Coeff.  (min)=       2.31 (ii)    8.24 (ii)
06639>      Unit Hyd. Tpeak (min)=       2.00         8.00
06640>      Unit Hyd. peak  (cms)=        .51          .14
06641>                                                          *TOTALS*
06642>      PEAK FLOW       (cms)=        .55          .14          .605 (iii)
06643>      TIME TO PEAK    (hrs)=       7.97         8.12         7.967
06644>      RUNOFF VOLUME    (mm)=     112.02        50.15        79.854
06645>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06646>      RUNOFF COEFFICIENT   =        .98          .44          .700
06647>
06648>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06649>            CN* =  61.0    Ia = Dep. Storage  (Above)
06650>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06651>            THAN THE STORAGE COEFFICIENT.
06652>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06653>
06654> ----------------------------------------------------------------------------
06655> 008:0012--------------------------------------------------------------------
06656> *==========================================================================
06657> * WEST OF RICHMOND STREET
06658> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204a)
06659> *==========================================================================
06660> ----------------------
06661> | CALIB NASHYD       |   Area    (ha)=     .99   Curve Number   (CN)=75.00
06662> | 02:204a   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06663> ----------------------   U.H. Tp(hrs)=    .780
06664>
06665>      Unit Hyd Qpeak  (cms)=     .048
06666>
06667>      PEAK FLOW       (cms)=     .070 (i)
06668>      TIME TO PEAK    (hrs)=    8.933
06669>      RUNOFF VOLUME    (mm)=   61.364
06670>      TOTAL RAINFALL   (mm)=  114.021
06671>      RUNOFF COEFFICIENT   =     .538
06672>
06673>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06674>
06675> ----------------------------------------------------------------------------
06676> 008:0013--------------------------------------------------------------------
06677> *==========================================================================
06678> * WEST OF RICHMOND STREET
06679> * PROPOSED - HUNTER SUBDIVISION - WEST MEDIUM DENSITY (205a)
06680> *==========================================================================
06681> ----------------------
06682> | CALIB STANDHYD     |   Area    (ha)=     .89
06683> | 03:205a   DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
06684> ----------------------
06685>                              IMPERVIOUS    PERVIOUS (i)
06686>      Surface Area     (ha)=        .58          .31
06687>      Dep. Storage     (mm)=       2.00         5.00
06688>      Average Slope     (%)=       2.00         2.00
06689>      Length            (m)=     241.00        35.00
06690>      Mannings n           =        .013         .240
06691>
06692>      Max.eff.Inten.(mm/hr)=     338.50       126.72
06693>                 over (min)        2.00         8.00
06694>      Storage Coeff.  (min)=       2.16 (ii)    7.94 (ii)
06695>      Unit Hyd. Tpeak (min)=       2.00         8.00
06696>      Unit Hyd. peak  (cms)=        .53          .14
06697>                                                          *TOTALS*
06698>      PEAK FLOW       (cms)=        .36          .07          .385 (iii)
06699>      TIME TO PEAK    (hrs)=       7.97         8.12         7.967
06700>      RUNOFF VOLUME    (mm)=     112.01        51.29        84.697
06701>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06702>      RUNOFF COEFFICIENT   =        .98          .45          .743
06703>
06704>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06705>            CN* =  61.0    Ia = Dep. Storage  (Above)
06706>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06707>            THAN THE STORAGE COEFFICIENT.
06708>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06709>
06710> ----------------------------------------------------------------------------
06711> 008:0014--------------------------------------------------------------------
06712> *==========================================================================
06713> * RICHMOND STREET
06714> * PROPOSED - HUNTER SUBDIVISION (205b)
06715> *==========================================================================
06716> ----------------------
06717> | CALIB STANDHYD     |   Area    (ha)=     .78
06718> | 04:205b   DT= 1.00 |   Total Imp(%)=   70.00   Dir. Conn.(%)=   60.00
06719> ----------------------
06720>                              IMPERVIOUS    PERVIOUS (i)
06721>      Surface Area     (ha)=        .55          .23
06722>      Dep. Storage     (mm)=       2.00         5.00
06723>      Average Slope     (%)=       2.00         2.00
06724>      Length            (m)=     388.00       194.00
06725>      Mannings n           =        .013         .240
06726>
06727>      Max.eff.Inten.(mm/hr)=     311.97        83.94
06728>                 over (min)        3.00        22.00
06729>      Storage Coeff.  (min)=       2.97 (ii)   22.02 (ii)
06730>      Unit Hyd. Tpeak (min)=       3.00        22.00
06731>      Unit Hyd. peak  (cms)=        .38          .05
06732>                                                          *TOTALS*
06733>      PEAK FLOW       (cms)=        .31          .03          .315 (iii)
06734>      TIME TO PEAK    (hrs)=       7.98         8.37         7.983
06735>      RUNOFF VOLUME    (mm)=     112.01        52.37        88.172
06736>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06737>      RUNOFF COEFFICIENT   =        .98          .46          .773
06738>
06739>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06740>            CN* =  61.0    Ia = Dep. Storage  (Above)
06741>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06742>            THAN THE STORAGE COEFFICIENT.
06743>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06744>
06745> ----------------------------------------------------------------------------
06746> 008:0015--------------------------------------------------------------------
06747> *==========================================================================
06748> * WEST OF RICHMOND STREET
06749> * PARK AREA ON THE SOUTH BOUNDARY (206b)
06750> *==========================================================================
```

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06751> ----------------------
06752> | CALIB NASHYD       |   Area    (ha)=     .18   Curve Number   (CN)=75.00
06753> | 01:206   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06754> ----------------------   U.H. Tp(hrs)=    .160
06755>
06756>      Unit Hyd Qpeak  (cms)=     .043
06757>
06758>      PEAK FLOW       (cms)=     .036 (i)
06759>      TIME TO PEAK    (hrs)=    8.167
06760>      RUNOFF VOLUME    (mm)=   61.363
06761>      TOTAL RAINFALL   (mm)=  114.021
06762>      RUNOFF COEFFICIENT   =     .538
06763>
06764>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06765>
06766> ---------------------------------------------------------------------------
06767> 008:0016-------------------------------------------------------------------
06768> *==========================================================================
06769> * SUB-TOTAL FLOW TO SANDUSKY DRAIN BETWEEN DRAIN AND RICHMOND STREET
06770> *==========================================================================
06771> ------------------------
06772> | ADD HYD (2009      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
06773> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
06774>                         ID1 01:208         1.60      .605    7.97   79.85    .000
06775>                        +ID2 02:204a         .99      .070    8.93   61.36    .000
06776>                        +ID3 03:205a         .89      .385    7.97   84.70    .000
06777>                        +ID4 04:205b         .78      .315    7.98   88.17    .000
06778>                        +ID5 05:206b         .18      .036    8.17   61.36    .000
06779>                         ==========================================================
06780>                         SUM 09:2009         4.44     1.317    7.98   77.41    .000
06781>
06782>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
06783>
06784> ---------------------------------------------------------------------------
06785> 008:0017-------------------------------------------------------------------
06786> *==========================================================================
06787> * UNCONTROLLED OPEN SPACE, PARK AND PARK LINK TOWARD THE NORTH AND
06788> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (210)
06789> *==========================================================================
06790> ----------------------
06791> | CALIB STANDHYD     |   Area    (ha)=    4.25
06792> | 01:210    DT= 1.00 |   Total Imp(%)=   26.00   Dir. Conn.(%)=   11.00
06793> ----------------------
06794>                                IMPERVIOUS    PERVIOUS (i)
06795>      Surface Area     (ha)=       1.11         3.14
06796>      Dep. Storage     (mm)=       2.00         8.00
06797>      Average Slope     (%)=       2.00         2.00
06798>      Length            (m)=     256.00       237.00
06799>      Mannings n           =       .013         .240
06800>
06801>      Max.eff.Inten.(mm/hr)=     338.50        95.31
06802>                 over (min)        2.00        23.00
06803>      Storage Coeff.  (min)=       2.24 (ii)   22.66 (ii)
06804>      Unit Hyd. Tpeak (min)=       2.00        23.00
06805>      Unit Hyd. peak  (cms)=        .52          .05
06806>                                                          *TOTALS*
06807>      PEAK FLOW       (cms)=        .34          .50          .539 (iii)
06808>      TIME TO PEAK    (hrs)=       7.97         8.38         8.367
06809>      RUNOFF VOLUME    (mm)=     112.01        64.81        70.039
06810>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06811>      RUNOFF COEFFICIENT   =        .98          .57          .614
06812>
06813>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06814>            CN* =  75.0    Ia = Dep. Storage  (Above)
06815>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06816>            THAN THE STORAGE COEFFICIENT.
06817>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06818>
06819> ---------------------------------------------------------------------------
06820> 008:0018-------------------------------------------------------------------
06821> *==========================================================================
06822> * EXTERNAL AREA - NORTH OF MARION STREET (EXT-3)
06823> *==========================================================================
06824> ----------------------
06825> | CALIB NASHYD       |   Area    (ha)=  186.58   Curve Number   (CN)=75.00
06826> | 02:EXT-3  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06827> ----------------------   U.H. Tp(hrs)=   1.930
06828>
06829>      Unit Hyd Qpeak  (cms)=    3.692
06830>
06831>      PEAK FLOW       (cms)=    6.378 (i)
06832>      TIME TO PEAK    (hrs)=   10.267
06833>      RUNOFF VOLUME    (mm)=   61.365
06834>      TOTAL RAINFALL   (mm)=  114.021
06835>      RUNOFF COEFFICIENT   =     .538
06836>
06837>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06838>
06839> ---------------------------------------------------------------------------
06840> 008:0019-------------------------------------------------------------------
06841> *==========================================================================
06842> *SUB-TOTAL FLOW TO SANDUSKY DRAIN
06843> *==========================================================================
06844> ------------------------
06845> | ADD HYD (2003      ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
06846> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
06847>                         ID1 01:210         4.25      .539    8.37   70.04    .000
06848>                        +ID2 02:EXT-3     186.58     6.378   10.27   61.36    .000
06849>                         ==========================================================
06850>                         SUM 03:2003       190.83     6.436   10.25   61.56    .000
06851>
06852>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
06853>
06854> ---------------------------------------------------------------------------
06855> 008:0020-------------------------------------------------------------------
06856> *==========================================================================
06857> * SF ON THE NORTHEAST (ESTATE LOT)
06858> * ULTIMATELY LOOP AND CONNECTS TO SANDUSKY DRAIN ON THE NORTHEAST (212)
06859> *==========================================================================
06860> ----------------------
06861> | CALIB STANDHYD     |   Area    (ha)=    1.26
06862> | 01:212    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
06863> ----------------------
06864>                                IMPERVIOUS    PERVIOUS (i)
06865>      Surface Area     (ha)=        .69          .57
06866>      Dep. Storage     (mm)=       2.00         5.00
06867>      Average Slope     (%)=       2.00         2.00
06868>      Length            (m)=      35.00        40.00
06869>      Mannings n           =       .013         .240
06870>
06871>      Max.eff.Inten.(mm/hr)=     354.58       184.84
06872>                 over (min)        1.00         6.00
06873>      Storage Coeff.  (min)=        .67 (ii)    6.05 (ii)
06874>      Unit Hyd. Tpeak (min)=       1.00         6.00
06875>      Unit Hyd. peak  (cms)=       1.32          .19
06876>                                                          *TOTALS*
06877>      PEAK FLOW       (cms)=        .51          .20          .586 (iii)
06878>      TIME TO PEAK    (hrs)=       7.93         8.07         7.950
06879>      RUNOFF VOLUME    (mm)=     112.02        67.42        87.499
06880>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06881>      RUNOFF COEFFICIENT   =        .98          .59          .767
06882>
06883>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06884>            CN* =  75.0    Ia = Dep. Storage  (Above)
06885>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06886>            THAN THE STORAGE COEFFICIENT.
06887>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06888>
06889> ---------------------------------------------------------------------------
06890> 008:0021-------------------------------------------------------------------
06891> *==========================================================================
06892> * EAST OF RICHMOND STREET
06893> * PROPOSED - HUNTER SUBDIVISION - MEDIUM DENSITY (207)
06894> *==========================================================================
06895> ----------------------
06896> | CALIB STANDHYD     |   Area    (ha)=     .45
06897> | 02:207    DT= 1.00 |   Total Imp(%)=   65.00   Dir. Conn.(%)=   55.00
06898> ----------------------
06899>                                IMPERVIOUS    PERVIOUS (i)
06900>      Surface Area     (ha)=        .29          .16
06901>      Dep. Storage     (mm)=       2.00         5.00
06902>      Average Slope     (%)=       2.00         2.00
06903>      Length            (m)=     155.00        35.00
06904>      Mannings n           =       .013         .240
06905>
06906>      Max.eff.Inten.(mm/hr)=     338.50       132.15
06907>                 over (min)        2.00         7.00
06908>      Storage Coeff.  (min)=       1.66 (ii)    7.34 (ii)
06909>      Unit Hyd. Tpeak (min)=       2.00         7.00
06910>      Unit Hyd. peak  (cms)=        .63          .16
06911>                                                          *TOTALS*
06912>      PEAK FLOW       (cms)=        .19          .04          .209 (iii)
06913>      TIME TO PEAK    (hrs)=       7.97         8.08         7.967
06914>      RUNOFF VOLUME    (mm)=     112.02        51.29        84.697
06915>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06916>      RUNOFF COEFFICIENT   =        .98          .45          .743
06917>
06918>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06919>            CN* =  61.0    Ia = Dep. Storage  (Above)
06920>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06921>            THAN THE STORAGE COEFFICIENT.
06922>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06923>
06924> ---------------------------------------------------------------------------
06925> 008:0022-------------------------------------------------------------------
06926> *==========================================================================
06927> * EAST OF RICHMOND STREET
06928> * PROPOSED - HUNTER SUBDIVISION - SANDUSKY DRAIN (204b)
06929> *==========================================================================
06930> ----------------------
06931> | CALIB NASHYD       |   Area    (ha)=     .68   Curve Number   (CN)=75.00
06932> | 04:204b   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
06933> ----------------------   U.H. Tp(hrs)=    .530
06934>
06935>      Unit Hyd Qpeak  (cms)=     .049
06936>
06937>      PEAK FLOW       (cms)=     .064 (i)
06938>      TIME TO PEAK    (hrs)=    8.633
06939>      RUNOFF VOLUME    (mm)=   61.364
06940>      TOTAL RAINFALL   (mm)=  114.021
06941>      RUNOFF COEFFICIENT   =     .538
06942>
06943>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06944>
06945> ---------------------------------------------------------------------------
06946> 008:0023-------------------------------------------------------------------
06947> *==========================================================================
06948> * EAST OF RICHMOND STREET
06949> * PROPOSED - HUNTER SUBDIVISION - NORTH PART (209)
06950> *==========================================================================
06951> ----------------------
06952> | CALIB STANDHYD     |   Area    (ha)=    2.61
06953> | 05:209    DT= 1.00 |   Total Imp(%)=   56.00   Dir. Conn.(%)=   45.00
06954> ----------------------
06955>                                IMPERVIOUS    PERVIOUS (i)
06956>      Surface Area     (ha)=       1.46         1.15
06957>      Dep. Storage     (mm)=       2.00         5.00
06958>      Average Slope     (%)=       2.00         2.00
06959>      Length            (m)=     126.00        35.00
06960>      Mannings n           =       .013         .240
06961>
06962>      Max.eff.Inten.(mm/hr)=     354.58       125.90
06963>                 over (min)        1.00         7.00
06964>      Storage Coeff.  (min)=       1.44 (ii)    7.23 (ii)
06965>      Unit Hyd. Tpeak (min)=       1.00         7.00
06966>      Unit Hyd. peak  (cms)=        .85          .16
06967>                                                          *TOTALS*
06968>      PEAK FLOW       (cms)=        .96          .26         1.046 (iii)
06969>      TIME TO PEAK    (hrs)=       7.95         8.08         7.950
06970>      RUNOFF VOLUME    (mm)=     112.02        50.44        78.157
06971>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
06972>      RUNOFF COEFFICIENT   =        .98          .44          .685
06973>
06974>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
06975>            CN* =  61.0    Ia = Dep. Storage  (Above)
06976>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
06977>            THAN THE STORAGE COEFFICIENT.
06978>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
06979>
06980> ---------------------------------------------------------------------------
06981> 008:0024-------------------------------------------------------------------
06982> *==========================================================================
06983> * CONTROL AREA 208 IN NORTH DRY SWM FACILITY
06984> *==========================================================================
06985> ----------------------
06986> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
06987> |  IN>05:(209   )    |
06988> | OUT<06:(002006)    |    =========  OUTLFOW STORAGE TABLE  =========
06989> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
06990>                              (cms)     (ha.m.)   |    (cms)    (ha.m.)
06991>                               .000  .0000E+00    |     .030  .2263E+00
06992>                               .009  .8000E-02    |     .031  .2476E+00
06993>                               .013  .1970E-01    |     .031  .2698E+00
06994>                               .016  .3510E-01    |     .032  .2929E+00
06995>                               .019  .5430E-01    |     .033  .3169E+00
06996>                               .021  .7710E-01    |     .034  .3419E+00
06997>                               .023  .1038E+00    |     .034  .3678E+00
06998>                               .025  .1341E+00    |     .035  .3946E+00
06999>                               .027  .1682E+00    |     .036  .4224E+00
07000>                               .029  .2060E+00    |     .000  .0000E+00
07001>
07002>      ROUTING RESULTS            AREA     QPEAK     TPEAK        R.V.
07003>      -------------------         (ha)     (cms)     (hrs)        (mm)
07004>      INFLOW >05: (209   )       2.61     1.046     7.950      78.157
07005>      OUTFLOW<06: (002006)       2.61      .026    10.117      78.156
07006>     OVERFLOW<07: (002007)        .00      .000      .000        .000
07007>
07008>                      TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
07009>                      CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
07010>                      PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
07011>
07012>
07013>                      PEAK   FLOW   REDUCTION [Qout/Qin](%)=    2.465
07014>                      TIME SHIFT OF PEAK FLOW        (min)=   130.00
07015>                      MAXIMUM  STORAGE   USED       (ha.m.)=.1395E+00
07016>
07017> ---------------------------------------------------------------------------
07018> 008:0025-------------------------------------------------------------------
07019> *==========================================================================
07020> *SUB-TOTAL FLOW TO SANDUSKY AT NORTH RICHMOND CROSSING
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```
07021> *==========================================================================
07022> ------------------------
07023> | ADD HYD (2008      ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
07024> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
07025>                          ID1 01:212        1.26      .586    7.95  87.50    .000
07026>                         +ID2 02:207         .45      .209    7.97  84.70    .000
07027>                         +ID3 03:2003      190.83    6.436   10.25  61.56    .000
07028>                         +ID4 04:204b        .68      .064    8.63  61.36    .000
07029>                         +ID5 06:      2006  2.61      .026   10.12  78.16    .000
07030>                          ==========================================================
07031>                          SUM 08:2008      195.83    6.491   10.25  62.00    .000
07032>
07033>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
07034>
07035> ---------------------------------------------------------------------------
07036> 008:0026-----------------------------------------------------------------------
07037> *==========================================================================
07038> * EAST OF RICHMOND STREET
07039> * PROPOSED - HUNTER SUBDIVISION - SOUTH PART
07040> *==========================================================================
07041> ----------------------
07042> | CALIB STANDHYD     |   Area    (ha)=   24.15
07043> | 01:208b   DT= 1.00 |   Total Imp(%)=   54.00   Dir. Conn.(%)=   43.00
07044> ----------------------
07045>                                IMPERVIOUS    PERVIOUS (i)
07046>      Surface Area     (ha)=      13.04        11.11
07047>      Dep. Storage     (mm)=       2.00         5.00
07048>      Average Slope     (%)=       2.00         2.00
07049>      Length            (m)=      35.00        40.00
07050>      Mannings n           =       .013         .240
07051>
07052>      Max.eff.Inten.(mm/hr)=     354.58       124.01
07053>                 over (min)        1.00         7.00
07054>      Storage Coeff.  (min)=        .67 (ii)    6.99 (ii)
07055>      Unit Hyd. Tpeak (min)=       1.00         7.00
07056>      Unit Hyd. peak  (cms)=       1.32          .16
07057>                                                          *TOTALS*
07058>      PEAK FLOW       (cms)=       9.31         2.54        10.111 (iii)
07059>      TIME TO PEAK    (hrs)=       7.93         8.08         7.950
07060>      RUNOFF VOLUME    (mm)=     112.02        50.18        76.776
07061>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
07062>      RUNOFF COEFFICIENT   =        .98          .44          .673
07063>
07064>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
07065>            CN* =  61.0    Ia = Dep. Storage  (Above)
07066>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
07067>            THAN THE STORAGE COEFFICIENT.
07068>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
07069>
07070> ---------------------------------------------------------------------------
07071> 008:0027-----------------------------------------------------------------------
07072> *==========================================================================
07073> * EXTERNAL AREA ON THE SOUTHEAST (EXT-4)
07074> *==========================================================================
07075> ----------------------
07076> | CALIB NASHYD       |   Area    (ha)=     .91   Curve Number   (CN)=75.00
07077> | 02:EXT-4  DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
07078> ----------------------   U.H. Tp(hrs)=   1.040
07079>
07080>      Unit Hyd Qpeak  (cms)=     .033
07081>
07082>      PEAK FLOW       (cms)=     .051 (i)
07083>      TIME TO PEAK    (hrs)=    9.233
07084>      RUNOFF VOLUME    (mm)=   61.364
07085>      TOTAL RAINFALL   (mm)=  114.021
07086>      RUNOFF COEFFICIENT   =     .538
07087>
07088>       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
07089>
07090> ---------------------------------------------------------------------------
07091> 008:0028-----------------------------------------------------------------------
07092> *==========================================================================
07093> *TOTAL RUNOFF FROM AREA 212 AND EXT-4
07094> *==========================================================================
07095> ------------------------
07096> | ADD HYD (SUM       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
07097> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
07098>                          ID1 01:208b      24.15   10.111    7.95  76.78    .000
07099>                         +ID2 02:EXT-4       .91     .051    9.23  61.36    .000
07100>                          ==========================================================
07101>                          SUM 03:SUM       25.06   10.112    7.95  76.22    .000
07102>
07103>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
07104>
07105> ---------------------------------------------------------------------------
07106> 008:0029-----------------------------------------------------------------------
07107> *==========================================================================
07108> *CONTROL AREA 208 AND EXT-4 IN SOUTH SWM FACILITY
07109> *==========================================================================
07110> ---------------------
07111> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
07112> |  IN>03:(SUM    )  |
07113> | OUT<04:(002004)   |    =========  OUTLFOW STORAGE TABLE  =========
07114> ---------------------    OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
07115>                             (cms)    (ha.m.)  |   (cms)    (ha.m.)
07116>                              .000  .0000E+00  |    .783  .9373E+00
07117>                              .020  .1250E+00  |    .993  .1083E+01
07118>                              .074  .2530E+00  |   1.215  .1232E+01
07119>                              .156  .3839E+00  |   1.441  .1383E+01
07120>                              .263  .5178E+00  |   1.655  .1538E+01
07121>                              .416  .6547E+00  |   1.827  .1696E+01
07122>                              .594  .7945E+00  |   1.986  .1856E+01
07123>
07124>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
07125>      -------------------        (ha)     (cms)     (hrs)       (mm)
07126>      INFLOW >03: (SUM   )      25.06    10.112     7.950     76.216
07127>      OUTFLOW<04: (002004)      25.06      .964     8.683     76.214
07128>     OVERFLOW<01: (002001)        .00      .000      .000       .000
07129>
07130>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
07131>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
07132>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
07133>
07134>
07135>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    9.536
07136>                     TIME SHIFT OF PEAK FLOW         (min)=    44.00
07137>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1063E+01
07138>
07139> ---------------------------------------------------------------------------
07140> 008:0030-----------------------------------------------------------------------
07141> *==========================================================================
07142> * TOTAL FLOW TO SANDUSKY DRAIN AT CN
07143> *==========================================================================
07144> ------------------------
07145> | ADD HYD (TotalCNR  ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
07146> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
07147>                          ID1 10:2010     505.36   15.384   10.47  61.50    .000
07148>                         +ID2 09:2009       4.44    1.317    7.98  77.41    .000
07149>                         +ID3 08:2008     195.83    6.491   10.25  62.00    .000
07150>                         +ID4 04:      2004  25.06     .964    8.68  76.21    .000
07151>                          ==========================================================
07152>                          SUM 07:TotalCNR  730.69   22.547   10.35  62.23    .000
07153>
07154>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
07155>
07156> ---------------------------------------------------------------------------
07157> 008:0031-----------------------------------------------------------------------
07158> *PROPOSED - FLOW TO IDA STREET
07159> *==========================================================================
07160> ----------------------
07161> | CALIB STANDHYD     |   Area    (ha)=     .54
07162> | 02:211    DT= 1.00 |   Total Imp(%)=   55.00   Dir. Conn.(%)=   45.00
07163> ----------------------
07164>                                IMPERVIOUS    PERVIOUS (i)
07165>      Surface Area     (ha)=        .30          .24
07166>      Dep. Storage     (mm)=       2.00         5.00
07167>      Average Slope     (%)=       2.00         2.00
07168>      Length            (m)=      35.00        40.00
07169>      Mannings n           =       .013         .240
07170>
07171>      Max.eff.Inten.(mm/hr)=     354.58       121.10
07172>                 over (min)        1.00         7.00
07173>      Storage Coeff.  (min)=        .67 (ii)    7.05 (ii)
07174>      Unit Hyd. Tpeak (min)=       1.00         7.00
07175>      Unit Hyd. peak  (cms)=       1.32          .16
07176>                                                          *TOTALS*
07177>      PEAK FLOW       (cms)=        .22          .05          .235 (iii)
07178>      TIME TO PEAK    (hrs)=       7.93         8.08         7.950
07179>      RUNOFF VOLUME    (mm)=     112.02        49.76        77.785
07180>      TOTAL RAINFALL   (mm)=     114.02       114.02       114.021
07181>      RUNOFF COEFFICIENT   =        .98          .44          .682
07182>
07183>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
07184>            CN* =  61.0    Ia = Dep. Storage  (Above)
07185>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
07186>            THAN THE STORAGE COEFFICIENT.
07187>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
07188>
07189> ---------------------------------------------------------------------------
07190> 008:0032-----------------------------------------------------------------------
07191> ---------------------------------------------------------------------------
07192> 008:0002-----------------------------------------------------------------------
07193> ---------------------------------------------------------------------------
07194> 008:0002-----------------------------------------------------------------------
07195> ---------------------------------------------------------------------------
07196> 008:0002-----------------------------------------------------------------------
07197> ---------------------------------------------------------------------------
07198> 008:0002-----------------------------------------------------------------------
07199> ---------------------------------------------------------------------------
07200> 008:0002-----------------------------------------------------------------------
07201> ---------------------------------------------------------------------------
07202> 008:0002-----------------------------------------------------------------------
07203> ---------------------------------------------------------------------------
07204> 008:0002-----------------------------------------------------------------------
07205>       FINISH
07206> ---------------------------------------------------------------------------
07207> ***************************************************************************
07208>      WARNINGS / ERRORS / NOTES
07209>      -------------------------
07210>    Simulation ended on 2022-05-06     at 14:22:51
07211> ===========================================================================
07212>
```

Reference: **Conceptual SWM Strategy**

Appendix E – UTRCA Communication

From:	Meqdad, Mohammad
To:	Christine Creighton; Shifflett, Mark; Tasker, Chris
Cc:	Stubgen, Tim; Vucetic, Dan; Williams, Dave; Macnaughton, Kate; Pratt, Stefanie
Subject:	Hunter Property, Dorchester ON - Flood Plain Info, HEC-RAS Model, X-Sections
Date:	Wednesday, April 13, 2022 11:44:00 AM

Dear All,

We are working with our client Auburn Developments for the preparation of a conceptual design for the development located in Dorchester, ON, at the location in the map below.

We ask that the UTRCA provide any floodplain information for the subject site. Looking for the existing HEC-RAS model, cross section locations, and any associated mapping that will give us an idea of development limits. These information are required for all the Drains crossing the site including Sandusky Drain, Hunter Branch, and Porter Subdivision Drain.

We look forward to hearing back from you.

Please let us know should you have any questions.

Thanks,

Mohammad Meqdad MEng., P.Eng., PMP, LEED Green Associate
Project Manager
Community Development

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