TATHAM ENGINEERING

Enhancing our communities

Melville Court Development, Oro-Medonte

FUNCTIONAL SERVICING REPORT

Doncor Developments Inc.

File 420427 | January 28, 2022

Document Control

File:

420427

Date:

January 28, 2022

Prepared by:

Tatham Engineering Limited
41 King Street, Unit 4
Barrie, Ontario L4N 6B5

T 705-733-9037
tathameng.com

Prepared for:

Doncor Developments Inc.
1004 Line 4 North
Oro-Medonte, Ontario L0L 2L0

Authored by:	Reviewed by:
	
Lauren Buss, B.Eng., P.Eng. Intermediate Engineer	Matt Brace, P.Eng. Senior Project Manager

Disclaimer	Copyright
The information contained in this document is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared and Tatham Engineering Limited undertakes no duty to or accepts any responsibility to any third party who may rely upon this document.	This document may not be used for any purpose other than that provided in the contract between the Owner/Client and the Engineer nor may any section or element of this document be removed, reproduced, electronically stored or transmitted in any form without the express written consent of Tatham Engineering Limited.

Issue	Date	Description
1	January 28, 2022	First Submission

Document Contents

Tables

Figures

Appendices

1 Introduction

Tatham Engineering Limited (Tatham) has been retained by Doncor Developments Inc. to prepare a Functional Servicing Report (FSR) in support of concurrent Official Plan Amendment (OPA), Zoning By-law Amendment (ZBA), and Draft Plan of Subdivision (draft plan) applications for a proposed residential development on Melville Court(subject site) located in the community of Guthrie, in the Township of Oro-Medonte (Township).

This report presents a servicing strategy, covering:

- water supply;
- sanitary sewage disposal system;
- drainage and stormwater management;
- grading and landscaping; and
- utility servicing.

1.1 SITE DESCRIPTION & SURROUNDING LAND USE

The site consists of approximately 6.6 ha of undeveloped land and is bound by farmland to the north and west, Melville Court and existing residential properties to the south, and Line 5 North to the east. The site is legally described as the east half of Lot 20, Concession 5 (Former Township of Oro). The site is located within the Lake Simcoe Region Conservation Authority (LSRCA) watershed. The east portion of the site is located in the LSRCA regulated area due to a tributary to Shelswell's Creek southeast of the property.

The location of the property is illustrated on the Site Location Plan (Figure 1), overleaf.

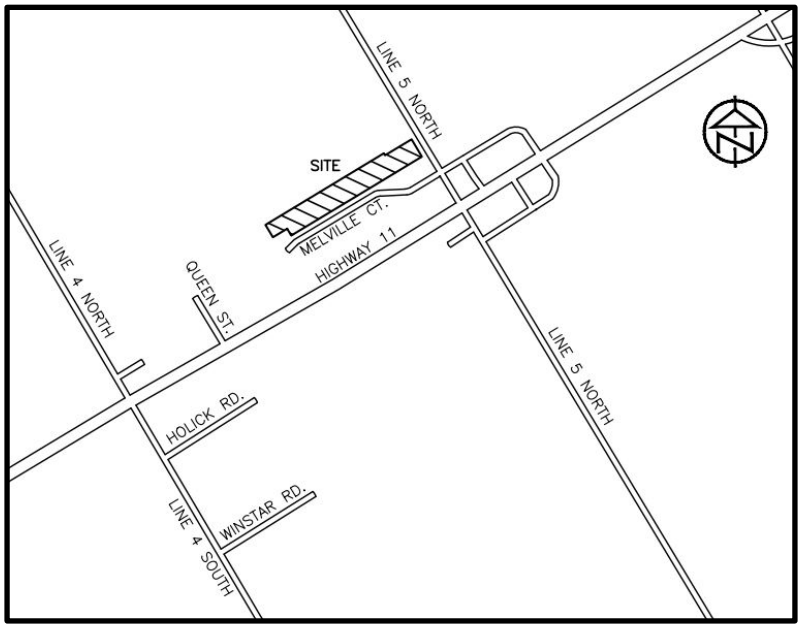


Figure 1: Site Location Plan

1.2 PROPOSED DEVELOPMENT

The proposed development consists of 16 single-family residential lots. 14 of the lots front onto Melville Court, while two lots front onto Line 5 North. The proposed draft plan, prepared by Innovative Planning Solutions is provided in Appendix A.

It is noted that there are no existing municipal water or sanitary services within the vicinity of the site. As such, each lot will be serviced with individual wells and sewage disposal systems. There is an existing stormwater management (SWM) facility southeast of the site which will be utilized to provide the majority of SWM controls required in support of the proposed development.

1.3 OBJECTIVES

The primary objective of this report is to assess the feasibility of the proposed development with respect to servicing and SWM and to ensure satisfactory information on these items is presented in support of the proposed planning applications. This will involve an evaluation of existing and future site conditions.

1.4 GUIDELINES & BACKGROUND INFORMATION

This report has been prepared recognizing applicable municipal, provincial and agency guidelines, including:

- The Ministry of the Environment, Conservation, and Parks (MECP, formerly known as Ministry of Environment), *Stormwater Management Practices Planning and Design Manual* (2003);
- The Ministry of the Environment, Conservation, and Parks (MECP, formerly known as Ministry of Environment), *Lake Simcoe Protection Plan* (LSPP) (2009);
- Lake Simcoe Region Conservation Authority (LSRCA), *Technical Guidelines for SWM Submissions* (2016);
- Lake Simcoe Region Conservation Authority (LSRCA), *Phosphorus Offsetting Policy* (2019);
- Government of Ontario, *Ontario Regulation 332/12: Building Code* (2020);
- Township of Oro-Medonte, *Development Engineering, Policies, Process, and Design Standards* (2019); and
- Ministry of Transportation Ontario (MTO) IDF Curve Look-up Tool, accessed August 12, 2020

The following studies have also been reviewed in support of our preparation of this FSR:

- Gemmell Engineering *Melville Meadows Functional Servicing Report*, (2010);
- Tatham Engineering Limited, formerly C.C. Tatham and Associates Limited *Oro-Medonte Comprehensive Stormwater Management Master Plan – Township of Oro Medonte Municipal Class Environmental Assessment*, (2015);
- Tatham Engineering Limited, formerly C.C. Tatham and Associates Limited *Guthrie Stormwater and Drainage Improvement Project Design Brief*, (2016);
- Peto MacCallum Limited, *Geotechnical/Hydrogeological Investigation Proposed Expansion of Melville Court Subdivision Oro-Medonte, Ontario*, (2021); and
- Peto MacCallum Limited, *Ground Water Level Monitoring Proposed Expansion of Melville Court Subdivision*, (2021).

It should be noted that Tatham was previously retained by the Township in 2015 to assess the drainage and flooding issues experienced in the area, as well as the existing SWM facility located on the south side of Melville Court. The SWM assessment provided in this FSR relies on background information presented in that report (*Guthrie Stormwater and Drainage Improvement Project Design Brief* (2016)).

2 Water Supply & Distribution

Under existing conditions there is no municipal water infrastructure within Meville Court, Line 5 North or within the vicinity of the subject lands. As such, private wells will be required for each lot to supply water to meet domestic and fire flow demands.

Based on our review of the Geotechnical/Hydrogeological Investigation dated 2021 completed by Peto MacCallum Ltd. (Peto) (provided under separate cover), adequate supply is anticipated to be available to service the proposed private wells. The site is not located within a Well Head Protection Area (WHPA) or an Intake Protection Zone (IPZ). The approximate location of each proposed well is noted on the Preliminary Site Servicing and Grading Plan (Drawing SSG-1) appended. The ultimate location of the individual wells will be determined during the detailed design and/or building permit stage.

Following well installation, a pump test will be required to confirm that an adequate water supply can be provided and that the sustained pumping rate will not have an adverse impact on other wells in the area. Refer to the geotechnical/hydrogeological report for additional information related to well supply.

3 Sanitary Sewage System

3.1 EXISTING SANITARY SEWAGE SYSTEM

There is no municipal sanitary infrastructure within Melville Court, Line 5 North or within the vicinity of the site. As such, each lot will require an on-site wastewater treatment system.

3.2 PROPOSED SANITARY SEWAGE SYSTEM

Two preliminary septic system designs (Options #1 and #2) have been prepared based on varying T-times of the soil for a 4-bedroom dwelling with an estimated footprint area of 266 m^2 and a design flow of 2,700 L/day. Based on review of the geotechnical/hydrogeological report prepared by Peto, in-situ soils have percolation rates ("T"-times) ranging between 8 to 12 min/cm and 20 to 50 min/cm depending on the borehole locations.

A summary of preliminary design details is provided below with additional calculations provided in Appendix B.

3.2.1 Septic System Option #1

Septic system option #1 is proposed for Lots 5 to 14 where T-Times are approximately 12 min/cm. This will consist of a 6,000 L septic tank, 36.0 m^2 filter bed area and 270 m^2 loading area. Septic bed design for Lots 5 to 14 will not be impacted by the deeper groundwater elevations in this area.

3.2.2 Septic System Option #2

Septic system option #2 is proposed for Lots 1 to 4 and 15 and 16 where the average T-times are 35 min/cm. This will consist of a 6,000 L septic tank, 36 m^2 filter bed and 338 m^2 loading area.

The high groundwater level at BH1 on the east side of the site is 0.9 m below ground surface. Septic bed designs for Lots 15 and 16 will be raised slightly to retain a minimum clearance of 0.9 m between high groundwater level and the underside of the filter bed layer. Septic bed design for Lots 1 to 4 will not be impacted by the deeper groundwater elevations in this area.

Locations of proposed septic systems are illustrated on the Drawing SSG-1. It is noted that, if required, the septic bed footprint could be further reduced by providing additional treatment and/or use of filter bed medium type bed material. Detailed design of the septic systems will be completed at the detailed design and/or building permit application stage.

4 Preliminary Stormwater Management Plan

4.1 DESIGN CRITERIA

This preliminary SWM plan is subject to the review and approval of the Township and the LSRCA. Applicable SWM design criteria for the proposed development are presented below.

4.1.1 Stormwater Quality Control

Water quality controls must be provided to satisfy the MECP's *Stormwater Management Practices Planning and Design Manual*. This corresponds to providing Enhanced Protection Level water quality protection of 80% total suspended solids (TSS) removal. Enhanced level treatment will be provided via enhanced ditches and within the existing SWM facility.

4.1.2 Stormwater Quantity Control

The Township requires that post-development peak flow rates be controlled to pre-development levels at any given outlet location to ensure no adverse impacts for downstream landowners. As such, water quantity controls will be provided by the existing downstream SWM facility which has sufficient capacity to attenuate post-development peak flow rates to pre-development rates.

4.1.3 Water Balance

As the development area is over 500 m^2, the proposed development is categorized as a "major development" under the LSPP. Therefore, best efforts must be demonstrated to maintain pre-development infiltration rates in the post-development scenario through the completion of a water balance assessment.

A water balance assessment has been completed as part of the *Geotechnical/Hydrogeological Investigation* by Peto MacCallum Ltd. (dated June 2021).

4.1.4 Phosphorus Budget

The proposed development is expected to be subject to the Lake Simcoe Phosphorus Offsetting Policy (LSPOP), which requires all major development to control 100% of the phosphorus generated from the site. Any remaining phosphorus load that cannot be controlled/removed will require a cash contribution for off-site mitigation.

4.2 BACKGROUND INFORMATION

Information relating to existing topography, ground cover and drainage patterns was obtained through a review of available background studies, available plans, and base mapping. Detailed contour mapping was prepared using detailed topographic survey completed by JoeTopo in October 2021.

4.3 EXISTING CONDITIONS

The site is approximately 6.6 ha and predominately drains from west to east towards existing roadside ditching on Melville Court and Line 5 North where it is collected and conveyed southeast to an existing SWM facility (dry pond). Controlled flows from the dry pond discharge to the existing outlet drainage channel which conveys flows southwest to an existing Highway 11 culvert crossing, ultimately draining into Lake Simcoe. The majority of the site consists of farmland with some woodland areas fronting Line 5 North. Soils in the area are classified as Guerin, Vasey and Sargent sandy loam soils which are part of Hydrologic Soil Group (HSG) AB. This is consistent with the findings of the geotechnical/hydrogeological report prepared by Peto. The geotechnical/hydrogeological report confirms a topsoil thickness of 220 to 280 mm throughout the site as well as a silt and sand layer extending from 0.8 to 2.9 m depth. Groundwater levels range from 0.9 to 4.8 meters below ground surface.

Based on review of available background reports and correspondence, the channel receives drainage from approximately 65.9 ha of upstream drainage area and is subject to reoccurring flooding between the existing SWM facility and Highway 11 culvert crossing.

4.3.1 Existing Dry Pond

There is an existing dry pond located on Melville Court, southeast of the site which was originally constructed as part of the Hastings Estate Residential Subdivision. Based on review of detailed topographic survey information completed in 2015, the total available active storage volume in the pond is approximately 3,347 m^3 (at top of pond elevation 288.98 m). The pond is controlled via a 300 mm dia. storm pipe which discharges into the existing conveyance channel at elevation 287.19 m. The pond was designed to provide water quantity control for approximately 9.9 ha of drainage area (including the subject site) per the Hasting Subdivision Storm Drainage Area Plan provided in Appendix C.

4.3.2 Existing Drainage Issues

In 2015, the Oro-Medonte Comprehensive Stormwater Management Master Plan (CSWM) first identified the existing drainage channel has a limited conveyance capacity which results in flooding issues. In 2016, Tatham completed the *Guthrie Stormwater and Drainage Improvement*

Project Design Brief which analyzed hydrologic and hydraulic behavior of the area and identified the following drainage issues and recommendations:

- The existing stormwater management facility was deemed to be ineffective from a water quality control perspective as it does not include the extended detention or permanent pool necessary to remove accumulated phosphorus and sediment. It was also confirmed to have too much storage volume for the drainage area directed to it and could therefore be downsized;
- The existing channel from the Highway 11 culvert crossing upstream to the Melville Court/Line 5 intersection was deemed to be too flat in sections and not able to convey the expected design flows. This results in the more frequent flooding of private properties than desired. The proximity of the channel to the private properties in conjunction with the location of the SWM facility also provided a flow constraint;
- If the existing channel were to be relocated, improvements could be made to naturalize the channel better from a water quality conveyance perspective; and
- The existing (600 mm dia.) culvert between the existing channel, adjacent to the SWM facility that travels down the side lot lines to the Highway 11 roadside ditch, was deemed to be only of the capacity of the 5-year storm and result in backing up of flows for greater events which would increase the frequency of local flooding.

It was later determined that re-grading and re-aligning of the existing drainage channel would provide negligible benefits to reducing flood issues in the area. Therefore, this option was not proposed.

As such, best efforts will be provided to address existing flooding issues and water quantity treatment control measures and demonstrate how the proposed development will not negatively impact the existing flooding issues.

4.3.3 Existing Hydrology

For the purpose of generating existing condition peak flow rates, 6 catchments (Catchment 101, 102, A1, A1B, A5, & A6) upstream of the existing SWM facility (Outlet #1) and the existing drainage channel (Outlet #2) have been delineated and assessed. Visual OTTHYMO 6.2 (VO) hydrologic modelling software was used to generate peak flows contributing to the SWM facility and drainage channel for the 1:2-year through 1:100-year 4-Hour Chicago (CHI) and 24-hour SCS Type II (SCS) storm distributions. Site specific intensity-duration frequency (IDF) data from the MTO IDF Curve Look-up tool has been utilized as per Township Standards.

Catchment 101 is approximately 56.0 ha and comprised of farmland, woodland, a small impervious area and a portion of the subject lands and drains to the existing drainage channel,

bypassing the existing SWM facility. Catchment 102 is approximately 6.4 ha and includes the majority of the subject lands and comprises of pastureland cover and drains to the existing dry pond via existing ditching within Melville Court. 3.5 ha of external drainage area, originally delineated in support of the Hastings Subdivision development (Catchments A1, A1B, A5, and A6) also drain to the existing dry pond. Applied design parameters, ID's and areas for these catchments have been taken directly from the Hastings Drainage Plan.

The total drainage area contributing to Outlet #1 is 9.9 ha which is consistent with the Hasting Subdivision Storm Drainage Plan while the total drainage area contributing to Outlet #2 is approximately 65.9 ha. Stage storage information including existing outlet structure details quantity storage volumes within the existing SWM facility has been generated using detailed topographic survey information completed by C.C. Tatham & Associated Ltd. in 2015.

Existing drainage patterns are depicted on the Pre-Development Drainage Plan Drawing (DP-1), and the Overall Existing Drainage Plan (Drawing DP-3), provided in Appendix F.

A summary of existing conditions peak flow rates and storage volumes at Outlet #1 is provided in Table 1. A summary of existing peak flow rates at Outlet #2 in provided in Table 2. Hydrologic model results are provided in Appendix C.

Table 1: Existing Conditions SWM facility Operating Characteristics Summary – Outlet #1

STORM EVENT	PEAK FLOWS (VO NODE 401) (m^3/s)		STORAGE VOLUMES (m^3)		WATER SURFACE ELEVATION (m)	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.07	0.12	96	175	287.55	287.60
1:5-Year	0.10	0.15	145	333	287.58	287.68
1:10-Year	0.13	0.16	184	503	287.60	287.77
1:25-Year	0.14	0.19	264	780	287.65	287.91
1:50-Year	0.15	0.21	359	1,028	287.70	288.03
1:100-Year	0.16	0.22	486	1,294	287.76	288.15

Under existing conditions, the existing dry pond attenuates peak flows to a maximum release rate of 0.23 m^3/s during the 1:100-year 24-Hour SCS storm event. The maximum storage volume required to attenuate the 1:100-year peak flow is 1,294 m^3 which occurs at an elevation of

288.15 m, providing approximately 0.83 m of freeboard. Considering the required freeboard depth above the design high water level is 0.30 m per MECP standards, there is 0.53 m of additional quantity storage depth available within the existing SWM facility which can be utilized by providing greater peak flow attenuation.

Table 2: Existing Conditions Peak Flow Summary – Outlet #2

STORM EVENT	PEAK FLOWS (VO NODE 902) (m^3/s)	
	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.20	0.50
1:5-Year	0.37	0.88
1:10-Year	0.52	1.15
1:25-Year	0.73	1.52
1:50-Year	0.89	1.82
1:100-Year	1.06	2.12
Regional (Hazel)	5.91	

Note 1: Regional storm (Hazel) peak flow referenced in this table is the uncontrolled condition under AMC III conditions (i.e. no SWM facility and no infiltration).

The existing condition peak flow rate at Outlet #2 is 2.12 m^3/s under the 24-Hour SCS 1:100-year storm event. This represents the total peak flow in the channel downstream of the SWM pond from external drainage areas and controlled flows from the pond.

4.4 PROPOSED CONDITIONS

Under proposed conditions, the majority of the proposed development will continue to drain to the existing SWM facility and has been accounted for in Catchment 202. A site imperviousness of 20.0% has been applied to the subject lands which includes the total rooftop and driveway areas and an allowance for construction of accessory buildings and structures based on our review of the conceptual draft plan and Township Zoning By-law. Minor and major storm event runoff from Catchment 202 will flow overland, to the existing dry pond via existing ditches. The remaining site area which fronts Line 5 North will drain uncontrolled to the existing drainage channel and has been accounted for in Catchment 201. External drainage areas A1, A1B, A5 & A6 will be maintained under proposed conditions.

Due to the proposed development, the total drainage area contributing to the existing SWM facility increases by 0.1 ha while the total drainage area contributing to the existing drainage channel increases by 0.3 ha. Post-development drainage patterns and outlet locations are depicted on the Post-Development Drainage Plan (Drawing DP-2), appended.

4.4.1 Proposed Hydrology

A post-development hydrology model has been prepared using VO hydrologic modelling software to determine peak flows rates at Outlet #1 and Outlet #2. Two hydrologic scenarios have been modelled to assess how the existing SWM facility would function under proposed conditions and determine how a retrofit to the facility would improve its operating efficiency.

Scenario #1 – No Change to Existing SWM Facility

Under Scenario #1, the existing SWM facility will be maintained. A summary of peak flows and storage volumes at Outlet #1 is provided in Table 3 below while a summary of peak flows at Outlet #2 is provided in Table 4. Additional details are provided in Appendix C.

Table 3: Proposed Conditions Operating Characteristics Summary – Outlet #1

STORM EVENT	PEAK FLOW (VO NODE 401) (m^3/s)		STORAGE VOLUME (m^3)		WATER SURFACE ELEVATION (m)	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.07	0.13	97	191	287.55	287.60
1:5-Year	0.11	0.16	150	450	287.58	287.74
1:10-Year	0.13	0.18	196	698	287.61	287.87
1:25-Year	0.15	0.21	351	1,058	287.69	288.04
1:50-Year	0.17	0.23	508	1,369	287.77	288.18
1:100-Year	0.18	0.25	683	1,693	287.86	288.33

Under Scenario #1 the existing SWM facility will attenuate peak flows to a maximum release rate of 0.25 m^3/s during the 1:100-year 24-Hour SCS storm event which is marginally greater than existing conditions. The maximum storage volume required to attenuate the 1:100-year peak flow is 1,693 m^3 which occurs at an elevation of 288.33 m, providing 0.65 m of freeboard.

Therefore, under proposed conditions, the existing SWM facility would not operate efficiently as there would be 0.35 m of additional quantity storage depth available in the pond.

Table 4: Proposed Conditions Peak Flow Summary – Outlet #2

STORM EVENT	PEAK FLOWS (VO NODE 902) (m^3/s)	
	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.21	0.54
1:5-Year	0.40	0.92
1:10-Year	0.56	1.20
1:25-Year	0.76	1.58
1:50-Year	0.93	1.88
1:100-Year	1.10	2.20
Regional (Hazel)	6.03	

Note 1: Regional storm (Hazel) peak flow referenced in this table is the uncontrolled condition under AMC III conditions (i.e. no SWM facility and no infiltration).

As shown in Table 4, the proposed condition peak flow rate at Outlet #2 would marginally increase to 2.20 m^3/s during the 24-Hour SCS 1:100-year storm event under Scenario #1.

To improve the existing drainage deficiencies noted in the area and the operating efficiency of the existing SWM facility, there is opportunity to implement a small retrofit to the pond involving modification to the outlet control pipe, which will result in reduction of peak flow rates from the pond in comparison to existing conditions by utilizing the additional quantity storage volume available in the pond. The preliminary retrofit design and a summary of peak flow rates and storage volumes is discussed further below.

Scenario #2 – Pond Retrofit Works

To provide more peak flow attenuation and maximize the available storage volume within the existing dry pond, thereby improving overall drainage conditions, a 242 mm dia. orifice plate attached to the existing 300 mm dia. outlet pipe at elevation 287.19 is proposed to be installed within a CSP riser structure. A summary of peak outflows and storage volumes within the retrofitted SWM facility at Outlet #1 is provided in Table 5 while a summary of peak flows at Outlet #2 is provided in Table 6. Additional details are provided in Appendix C.

Table 5: Proposed Conditions Operating Characteristics Summary – Outlet #1 with Retrofit

STORM EVENT	PEAK FLOWS (VO NODE 401) (m^3/s)		STORAGE VOLUMES (m^3)		WATER SURFACE ELEVATION (m)	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.05 *(0.07)*	0.08 *(0.12)*	141	392	287.58	287.71
1:5-Year	0.08 *(0.10)*	0.10 *(0.15)*	293	835	287.66	287.94
1:10-Year	0.09 *(0.13)*	0.11 *(0.16)*	480	1,197	287.76	288.11
1:25-Year	0.10 *(0.14)*	0.13 *(0.19)*	760	1,699	287.90	288.33
1:50-Year	0.11 *(0.15)*	0.14 *(0.21)*	1,006	2,118	288.02	288.51
1:100-Year	0.12 *(0.16)*	0.15 *(0.23)*	1,270	2,555	288.14	288.68

Note 1: Values in italics represent existing condition peak flow rates

Table 6: Proposed Conditions Peak Flow Summary – Outlet #2 with Retrofit

STORM EVENT	PEAK FLOWS (VO NODE 902) (m^3/s)	
	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.21 *(0.20)*	0.50 *(0.50)*
1:5-Year	0.39 *(0.37)*	0.86 *(0.88)*
1:10-Year	0.52 *(0.52)*	1.13 *(1.15)*
1:25-Year	0.71 *(0.73)*	1.49 *(1.52)*
1:50-Year	0.87 *(0.89)*	1.79 *(1.82)*
1:100-Year	1.03 *(1.06)*	2.09 *(2.12)*
Regional (Hazel)	6.03 *(5.91)*	

Note 1: Values in italics represent existing condition peak flow rates
Note 2: Regional storm (Hazell) peak flow referenced in this table is the uncontrolled condition under AMC III conditions (i.e. no SWM facility and no infiltration).

As shown in Table 5, the 1:100-year 24-Hour SCS storm event peak flow is reduced by approximately 65% from 0.23 to 0.15 m^3/s due to the proposed retrofit. The maximum storage volume under the 1:100-year 24-Hour SCS storm event is increased from 1,293 m^3 to 2,555 m^3 (at elevation 288.68 m) providing 0.30 m of freeboard. It is noted that peak flows at Outlet #2 marginally increase during the 1:2-year through 1-5:year 4-Hour Chicago storm return periods but are reduced for all remaining return periods, which represents best efforts and is therefore sufficient.

An emergency overflow weir has been designed to provide safe conveyance of the uncontrolled peak flow out of the pond, in the event the outlet structure becomes blocked. The uncontrolled peak flow occurs during the 1:100-year 24-Hour SCS storm event at a rate of 1.02 m^3/s. A 3.1 m wide overflow weir at elevation 288.68 conveys 1.05 m^3/s at the top of pond elevation (elevation 288.98), providing safe conveyance of the uncontrolled peak flow in an emergency situation.

4.4.2 Water Quality

"Enhanced" Level 1 water quality control (corresponding to 80% TSS removal) is required for the developed areas of the site (driveway & accessory structures). Water quality controls are not required for rooftop areas as runoff generated from these areas is generally considered to be clean, and therefore, not subject to water quality controls.

Water quality controls for the portion of the site draining to Outlet #1 will be provided via a treatment train comprised of vegetated filter strips, enhanced swales/diches within the Melville Court right-of-Way (ROW) and the existing SWM facility. TSS removal efficiencies of vegetated filter strips and enhanced swales/ditches have been applied based on those outlined in the LID SWM Planning and Design Guide published by Sustainable Technologies Evaluation Program (STEP). A water quality assessment of the SWM facility has been completed per Section 3.3.2 of the MECP SWM Planning and Design Manual which determined that based on an impervious level of 19.6%, the required storage volume for basic level protection is 488 m^3 which is provided within the retrofitted SWM facility at elevation 287.76. This exceeds the 25 mm storm runoff volume of 429 m^3 and therefore governs. It was determined that the equivalent drawdown time of the extended detention volume is less than 24-hours however, considering that existing operating characteristics of the SWM facility will be improved due to the proposed retrofit, the low level of imperviousness of the contributing drainage area and, that pre-treatment will be provided upstream, adequate water quality treatment is expected to be provided for the proposed development. As such, a combined TSS removal rate of 84% has been applied for Outlet #1. Additional analysis of the function of the SWM facility from a quality control perspective will be provided at detailed design.

Water quality controls for the portion of the site draining to Outlet #2 will be provided via a treatment train comprised of an enhanced lot-line swales and enhanced swales/ditches within Line 5 North. Based on review of Peto's geotechnical report, low permeable soils and raised groundwater levels are understood to be present. As such, to be conservative, a combined TSS removal rate 64% has been applied for Outlet #2. The 0.33 ha of open space area (Block 17) at the northwest quadrant of the site will remain predominately pervious and relatively undisturbed due to the proposed development and, therefore, is not subject to water quality controls. Therefore, the equivalent TSS removal rate for the proposed development is 79% which represents best efforts.

Supporting calculations are provided in Appendix C while additional details will be provided at detailed design.

4.4.3 LSRCA Volume Control & LID Design

In accordance with LSRCA requirements, projects defined as 'major development' are required to meet the volume control requirements outlined in Section 2.2.2 of the LSRCA 2016 SWM guidelines. As such, best efforts must be provided to infiltrate, filter, or re-use runoff generated from impervious areas on site.

Due to multiple site constraints (presented in Section 2.2.2.2 of the LSRCA SWM Guidelines) the site will not be able to provide runoff volume control for the 25 mm runoff volume. The constraints consist of:

- zoning, setbacks or other land use requirements;
- high groundwater levels;
- property or infrastructure restrictions; and
- excessive cost.

As such, an alternative treatment option implemented via low impact development (LID) practices has been proposed to infiltrate the equivalent 5 mm storm event runoff volume from impervious areas on site in accordance with LSRCA guidelines.

Considering a total site impervious area of approximately 1.25 ha, the equivalent single-event 5 mm storm event volume is approximately 62.5 m^3. 14 infiltration trenches comprised of clear stone have been sized to infiltrate the 25 mm storm event runoff from 50% of rooftop area. Trenches are proposed within lots 1 to 14 where static groundwater levels are understood to be suitable for infiltration-based controls. As mentioned, raised groundwater levels and lower permeable soils are understood to occur at lots 15 & 16 and therefore, infiltration based practices have not been proposed in these locations. In addition, based on review of Peto's geotechnical

report, the estimated hydraulic conductivity rates vary greatly across the site from $1x10^{-3}$ (high permeability) and $1x10^{-6}$ (low permeability). Therefore, underdrains which will discharge to the Melville Court ditch may be required for lots with low permeability (1 through 4). During detailed design, infiltration rates for each proposed LID device will be confirmed via in-situ infiltration testing.

As such, considering a single rooftop area of 326 m^2, the equivalent 25 mm storm event volume is approximately 4.1 m^3. Therefore, the total infiltration volume provided is approximately 57.4 m^3. Additional infiltration measures including enhancements to the existing Melville Court ditch, enhanced lot line swales and/or vegetated filter strips within the front yards and directing downspouts to pervious areas will also be provided and are expected to provide, at minimum, the remaining 5.1 m^3 of infiltration volume.

Approximate locations of the proposed infiltration trenches are provided on Drawing SSG-1. Additional details will be provided at the detailed design stage.

4.4.4 Water Balance

A preliminary water balance assessment has been completed by Peto MacCallum Ltd. to assess the potential impact of the development on local groundwater and surface water resources. Their analysis determined the annual pre-development infiltration volume for the site is 15,437 m^3/year. The increase in impervious area under post development conditions results in approximately 13,960 m^3/year of infiltration, resulting in an infiltration deficit of approximately 1,477 m^3/year.

As mentioned, best efforts will be provided to infiltrate the equivalent 5 mm storm event volume from all impervious areas. Based on review of historical rainfall data for the Shanty Bay rainfall station, the 5 mm storm event accounts for approximately 50% of rainfall events, which is approximately equivalent to 484 mm of the average annual rainfall. Therefore, the equivalent annual site rainfall capture is approximately 6,050 m^3/year (1.25 ha x 484 mm). This mitigates the infiltration deficit and exceeds water balance requirements.

Refer to the original report for additional information.

4.4.5 Phosphorus Budget

In order to comply with LSPOP requirements, a phosphorus budget for the site has been completed using the loading rates and removal efficiencies from the MECP Phosphorus Budget tool, for the Oro Creeks South Subwatershed, through a spreadsheet method, summarized below in Table 3.

Existing Conditions

Under existing conditions, the site has been modelled as hay-pasture and forest land-uses for the purpose of the phosphorus budget calculations.

Applying the relevant loading rate of 0.07 kg/ha/year for hay-pasture and 0.05 kg/ha/year for forest, the pre-development phosphorus load is 0.44 kg/year.

Proposed Conditions

Under proposed conditions, the site has also been modelled as a single land-use category (low intensity development) with a loading rate of 0.13 kg/ha/year. As such the post-development phosphorous load, without mitigation is 0.85 kg/year.

Phosphorous mitigation will be provided via a treatment train comprised of infiltration trenches, enhanced grassed swales and/or vegetated filter strips and enhanced swales/ditches and dry pond with removal efficiency rates, outlined in the LID SWM Planning and Design Guide published by STEP, of 60%, 20%, 25% and 10% respectively.

As such, applying the relevant loading and removal efficiency rates, the post-development phosphorus load with controls is 0.47 kg/year.

A summary of the phosphorus loading rates for each scenario is provided in Table 7. Additional details and outputs are provided in Appendix D. As shown, phosphorus loading is reduced under proposed conditions.

Table 7: Phosphorus Loading Summary

SCENARIO	AREA (ha)	PHOSPHORUS LOADING (kg/year)
Pre-Development	6.58	0.44
Post-Development (Without Controls)	6.58	0.85
Post-Development (With Controls)	6.58	0.47

5 Siltation & Erosion Control Plan

Siltation and erosion controls will be implemented for all construction activities, including demolition, earthworks, material stockpiling, pavement construction, and grading operations. Details of the sedimentation and erosion control will be provided during detailed design and are summarized as follows:

- heavy duty silt control fences will be erected to control sediment movement to abutting properties and the Melville Court and Line 5 North right-of-ways;
- a stone mud mat will be installed at the construction entrances from Melville Court and Line 5 North; and
- regular inspection of control measures will be implemented and repairs made as necessary during construction.

6 Grading & Landscaping

The grading of the proposed development will match to the existing grades along the limits of the development. The site will be graded to suit the existing boundary conditions surrounding the site. Refer to the Drawing SSG-1 provided in Appendix F for additional details.

7 Utilities

All appropriate utility companies (electrical, gas, telecommunications) have been contacted. Enbridge has a gas main on the south side of Melville Court; they would need to install a main on the north side of the street to avoid 14 long services. Currently, there is no gas main in front of lots 15 and 16, but they are serviceable with a gas main extension. Bell has copper cable servicing the houses on the south side of Melville Court. They will likely provide copper cable to the new houses. Rogers states that the subdivision requires new fibre build and new node for servicing. They only have existing fibre support for commercial units in this area. We are awaiting a response from HydroOne. Correspondence with these companies can be found in Appendix E. Further coordination will be required during the detailed design stage.

8 Summary

8.1 WATER SUPPLY & DISTRIBUTION

The site will be serviced by private wells for each lot.

8.2 SANITARY SEWER COLLECTION

The site will be serviced by individual septic bed systems. Two options for septic bed systems have been provided based on in-situ soil T-times. Detailed design of the septic beds will be completed at the detailed design and/or building permit application stage.

8.3 STORMWATER MANAGEMENT PLAN

The SWM plan demonstrates the proposed development will not result in negative impacts with respect to stormwater. Peak flow attenuation and water quantity controls for the proposed development will be provided within the existing SWM facility, which will be retrofitted with a proposed 242 mm dia. orifice plate attached to the 300 mm dia. outlet pipe and installed within a CSP riser structure to further reduce pond outflows, prevent outlet blockage and improve downstream drainage conditions. Water quality controls will be provided via a treatment train comprised of vegetated filter strips, enhanced swales/ditches and the existing SWM facility. Lot-level infiltration controls will be implemented to achieve runoff volume control, phosphorus mitigation and achieve water balance requirements.

8.4 SILTATION & EROSION CONTROL

Siltation and erosion controls will be provided with the proper construction mitigation efforts.

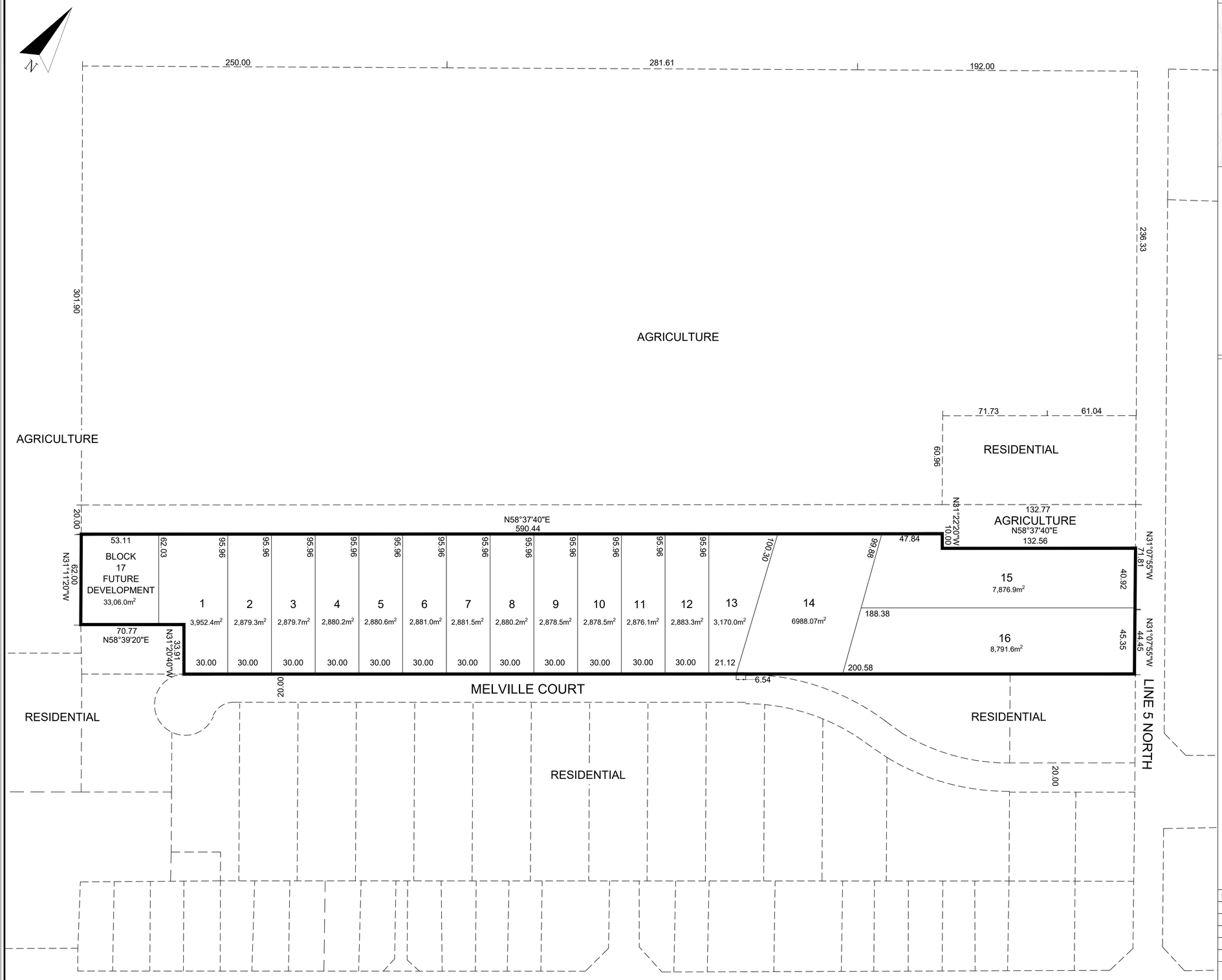
8.5 GRADING & LANDSCAPING

The grading of the proposed development will match to existing perimeter grades along the limits of the development.

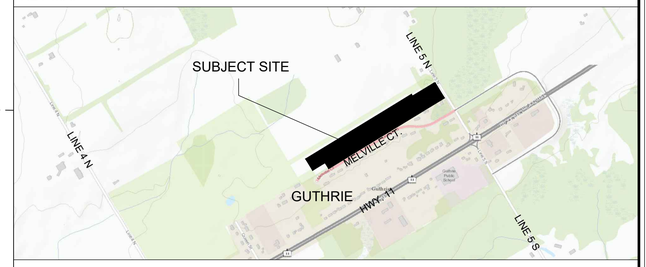
8.6 UTILITIES

All utilities (electrical, gas, telecommunications) are expected to be available from Melville Court and Line 5 North to service the proposed development.

Appendix A: Draft Plan



KEY MAP



DRAFT PLAN OF SUBDIVISON

EAST HALF OF LOT 20, CONCESSION 5

FORMERLY IN THE

TOWNSHIP OF ORO

NOW IN THE

TOWNSHIP OF ORO-MEDONTE
COUNTY OF SIMCOE

2010

25 0 25 50 75 100 125

SCALE = 1:1250

LEGEND

SUBJECT LANDS

OWNER'S CERTIFICATE

I, THE UNDERSIGNED, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE INNOVATIVE PLANNING SOLUTIONS, TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND TO SUBMIT SAME TO THE COUNTY OF SIMCOE FOR APPROVAL.

DATE DONCOR DEVELOPMENT INC.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE

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

a) SHOWN ON PLAN
b) SEE KEY PLAN
c) SHOWN ON PLAN
d) RESIDENTIAL
e) SHOWN ON PLAN
f) SHOWN ON PLAN
g) SHOWN ON PLAN
h) MUNICIPAL WATER
i) SAND
j) SHOWN ON PLAN
k) ALL MUNICIPAL SERVICES TO BE PROVIDED
l) NONE

LAND USE STATISTICS

Land Use	Lot / Block No.	Area (ha.)	Units
RESIDENTIAL SINGLE LOT	1-16	6.24	16
FUTURE DEVELOPMENT	17	0.33	
TOTAL		6.57	16

SOURCE:

- 1.0m CONTOUR INTERVALS: FIRST BASE SOLUTIONS, VuMAP, 2020

SCHEDULE OF REVISIONS

No.	Date	Description	By
1	Jan. 3, 2022	Application;	A.S.

IPS
INNOVATIVE PLANNING SOLUTIONS
PLANNERS • PROJECT MANAGERS • LAND DEVELOPERS
647 WELHAM ROAD, UNIT 9, BARRIE, ONTARIO, L4N 0B7
tel: 705 • 812 • 3281 fax: 705 • 812 • 3438 e: info@ipsconsultinginc.com www.ipsconsultinginc.com

Date:	Jan 3, 2022	Drawn By:	A.S.
File:	06-188	Checked:	D.V. / J.H.

Appendix B: Sanitary Sewage System Calculations

PROJECT:	Melville Court	FILE:	420427
	Township of Oro-Medonte	DATE:	January 18, 2022
SUBJECT:	On-Site Sewage System Design: In-ground Filter Bed	DESIGNED:	LB
	Daily Design Flow and Septic Tank Sizing: Option #1	CHECKED:	MB

HOUSE DESCRIPTION

Number of Bedrooms:	Existing	Proposed	Total
	0	4	4

Finished Floor Area (m^2)	Existing	Proposed	Total
	0	266	266

Fixture Units (FU)	Existing	Proposed	Total	FU / Fixture	Total FU
Bathroom Group	0	3	3.0	6.0	18.0
Toilet (Water Closet)	0	0	0.0	4.0	0.0
Washbasin	0	1	1.0	1.5	1.5
Shower	0	0	0.0	1.5	0.0
Kitchen Sink(s)	0	1	1.0	1.5	1.5
Bar Sink	0	0	0.0	1.5	0.0
Dishwasher (not connected to sink)	0	0	0.0	1.0	0.0
Clothes Washer	0	1	1.0	1.5	1.5
Laundry Tub	0	1	1.0	1.5	1.5
Floor Drain	0	1	1.0	1.0	1.0
Other (If Applicable)	0	0	0.0	0.0	0.0
Other (If Applicable)	0	0	0.0	0.0	0.0
Total					25.0

Notes: Fixture Units per fixture from OBC Table 7.4.9.3.
Number of bedrooms, fixture units, and floor area approximated based on email correspondence with IPS (December 16, 2021)

DAILY DESIGN FLOW

Base Design Flow (BDF)	OBC Table 8.2.1.3.A.	Based on No. of Bedrooms up to 4	2,000 L/day
Extra Bedroom Surcharge (EBS)	OBC Table 8.2.1.3.A.	500 L/day for each bed room over 5	0 L/day
Floor Area Surcharge (FAS)	OBC Table 8.2.1.3.A.	100L for each 10 m^2 (or part of it) over 200 m^2 but less than 400 m^2	700 L/day
		75L for each 10 m^2 (or part of it) over 400 m^2 but less than 600 m^2	0 L/day
		50L for each 10 m^2 (or part of it) over 600 m^2	0 L/day
		Total	700 L/day
Fixture Unit Surcharge (FUS)	OBC Table 8.2.1.3.A.	50 L/day for each fixture unit over 20 fixture units	250 L/day
Total Daily Design Flow (Q)	Q = BDF + maximum of EBS, FAS or FUS		2,700 L/day

SEPTIC TANK

Min. Septic Tank Volume (V)	OBC 8.2.2.3.(a)	V = 2Q	5,400 L

Use 6,000 L septic tank by Brooklin Concrete (or approved equal)

Filter Bed

Filter bed area calculated as follows: A= Q/LR

Where	A =	36 m^2	Minimum area of filter bed media (Calculated value)
	Q =	2,700 L/day	Daily Design Flow (Calculated above)
	LR =	75 L/m^2/day	Loading Rate 75 L/m^2/day when Q ≤ 3,000 L/day or 50 L/m^2/day when Q > 3,000 L/day

PROJECT:	Melville Court	FILE:	420427
	Township of Oro-Medonte	DATE:	January 18, 2022
SUBJECT:	On-Site Sewage System Design: In-ground Filter Bed	DESIGNED:	LB
	Daily Design Flow and Septic Tank Sizing: Option #1	CHECKED:	MB

Extended Contact Area

Filter Medium Base Area Calculated as follows: BA= QT/850 (ref OBC 8.7.5.3. (6))
(Expanded Contact Area)

Where BA= 38 m^2 Minimum required loading area (Calculated Value)
Q = 2,700 L/day Daily Design Flow (Calculated above)
T = 12 min/cm T-Time from report by Peto MacCallum dated June 7, 2021

Loading Area Q = 2,700 L/day (Total Daily Design Flow)
LR = 10 $L/m^2/day$ Based on T time of native soil: $1< T \leq 20$ and OBC Table 8.7.4.1.
= 270 m^2

PROJECT:	Melville Court	FILE:	420427
	Township of Oro-Medonte	DATE:	January 18, 2021
SUBJECT:	On-site Sewage System Design: Partially Raised Filter Bed	DESIGNED:	LB
	Daily Design Flow and Septic Tank Sizing: Option #2	CHECKED:	MB

HOUSE DESCRIPTION

Number of Bedrooms:	Existing	Proposed	Total
	0	4	4

Finished Floor Area (m^2)	Existing	Proposed	Total
	0	266	266

Fixture Units (FU)	Existing	Proposed	Total	FU / Fixture	Total FU
Bathroom Group	0	3	3.0	6.0	18.0
Toilet (Water Closet)	0	0	0.0	4.0	0.0
Washbasin	0	1	1.0	1.5	1.5
Shower	0	0	0.0	1.5	0.0
Kitchen Sink(s)	0	1	1.0	1.5	1.5
Bar Sink	0	0	0.0	1.5	0.0
Dishwasher (not connected to sink)	0	0	0.0	1.0	0.0
Clothes Washer	0	1	1.0	1.5	1.5
Laundry Tub	0	1	1.0	1.5	1.5
Floor Drain	0	1	1.0	1.0	1.0
Other (If Applicable)	0	0	0.0	0.0	0.0
Other (If Applicable)	0	0	0.0	0.0	0.0
Total					25.0

Notes: Fixture Units per fixture from OBC Table 7.4.9.3.
Number of bedrooms, fixture units, and floor area approximated based on email correspondence with IPS (December 16, 2021)

DAILY DESIGN FLOW

Base Design Flow (BDF)	OBC Table 8.2.1.3.A.	Based on No. of Bedrooms up to 4	2,000 L/day
Extra Bedroom Surcharge (EBS)	OBC Table 8.2.1.3.A.	500 L/day for each bedroom over 5	0 L/day
Floor Area Surcharge (FAS)	OBC Table 8.2.1.3.A.	100L for each 10 m^2 (or part of it) over 200 m^2 but less than 400 m^2	700 L/day
		75L for each 10 m^2 (or part of it) over 400 m^2 but less than 600 m^2	0 L/day
		50L for each 10 m^2 (or part of it) over 600 m^2	0 L/day
		Total	700 L/day
Fixture Unit Surcharge (FUS)	OBC Table 8.2.1.3.A.	50 L/day for each fixture unit over 20 fixture units	250 L/day
Total Daily Design Flow (Q)	Q = BDF + maximum of EBS, FAS or FUS		2,700 L/day

SEPTIC TANK

Min. Septic Tank Volume (V)	OBC 8.2.2.3.(a)	V = 2Q	5,400 L

Use 6,000 L septic tank by Brooklin Concrete (or approved equal)

Filter Bed

Filter bed area calculated as follows: A= Q/LR

Where	A =	36 m^2	Minimum area of filter bed media (Calculated value)
	Q =	2,700 L/day	Daily Design Flow (Calculated above)
	LR =	75 L/m^2/day	Loading Rate 75 L/m^2/day when Q ≤ 3,000 L/day or 50 L/m^2/day when Q > 3,000 L/day

PROJECT:	Melville Court	FILE:	420427
	Township of Oro-Medonte	DATE:	January 18, 2021
SUBJECT:	On-site Sewage System Design: Partially Raised Filter Bed	DESIGNED:	LB
	Daily Design Flow and Septic Tank Sizing: Option #2	CHECKED:	MB

Extended Contact Area

Filter Medium Base Area Calculated as follows: BA= QT/850 (ref OBC 8.7.5.3. (6))

(Expanded Contact Area)

Where BA= 111 m^2 Minimum required loading area (Calculated Value)

Q = 2,700 L/day Daily Design Flow (Calculated above)

T = 35 min/cm T-Time from report by Peto MacCallum dated June 7, 2021

Loading Area Q = 2,700 L/day (Total Daily Design Flow)

LR = 8 $L/m^2/day$ Based on T time of native soil: $20 < T \leq 35$ and OBC Table 8.7.4.1.

= 338 m^2

Appendix C: Stormwater Management Calculations

Existing Conditions Hydrology

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Melville Court	420427

Prepared By

LB	12-15-2021

Data Sources

Detailed Soil Survey Reports for Ontario, LSRCA Technical Guidelines for Stormwater Management Submissions (2016), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	LSRCA
Catchment ID:	101
Catchment Area (ha):	56.01
Impervious %:	5%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Gus**											
Soil Series		Guerin											
Hydrologic Soils Group		AB											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		56.01											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	2.83	98	0.95									
Gravel	3		81	0.09									
Woodland	10	22.64	46	0.08									
Pasture/Lawns	5		59	0.10									
Meadows	8		51	0.09									
Cultivated	7	30.54	68	0.22									
Waterbody	12		50	0.05									
Average CN		60.62											
Average C		0.20											
Average IA		7.96											

Time to Peak Calculations

Max. Catchment Elev. (m):	304.00
Min. Catchment Elev. (m):	288.00
Catchment Length (m):	1400
Catchment Slope (%):	1.14%
Method: Airport Method	
Time of Concentration (mins):	105.01

Summary

Catchment CN:	60.6
Catchment C:	0.20
Catchment IA (mm):	7.96
Time of Concentration (hrs):	1.75
Catchment Time to Peak (hrs):	1.17
Catchment Time Step (mins):	14.00

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Melville Court	420427

Prepared By

LB	12-15-2021

Data Sources

Detailed Soil Survey Reports for Ontario, LSRCA Technical Guidelines for Stormwater Management Submissions (2016), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	LSRCA
Catchment ID:	102
Catchment Area (ha):	6.35
Impervious %:	

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Vasl**											
Soil Series		Vasey											
Hydrologic Soils Group		AB											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		6.35											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2		98	0.95									
Gravel	3		81	0.09									
Woodland	10		46	0.08									
Pasture/Lawns	5	6.35	59	0.10									
Meadows	8		51	0.09									
Cultivated	7		68	0.22									
Waterbody	12		50	0.05									
Average CN		59.00											
Average C		0.10											
Average IA		5.00											

Time to Peak Calculations

Max. Catchment Elev. (m):	298.00
Min. Catchment Elev. (m):	288.52
Catchment Length (m):	900
Catchment Slope (%):	1.05%
Method: Airport Method	
Time of Concentration (mins):	96.14

Summary

Catchment CN:	59.0
Catchment C:	0.10
Catchment IA (mm):	5.00
Time of Concentration (hrs):	1.60
Catchment Time to Peak (hrs):	1.07
Catchment Time Step (mins):	12.82

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Melville Court	420427

Prepared By

LB	12-15-2021

Data Sources

Detailed Soil Survey Reports for Ontario, LSRCA Technical Guidelines for Stormwater Management Submissions (2016), MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	LSRCA
Catchment ID:	A6
Catchment Area (ha):	0.58
Impervious %:	10%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Stsl-s**											
Soil Series		Sargent											
Hydrologic Soils Group		AB											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		0.58											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2		98	0.95									
Gravel	3		81	0.14									
Woodland	10		46	0.12									
Pasture/Lawns	5		59	0.15									
Meadows	8		51	0.14									
Cultivated	7		68	0.30									
Waterbody	12		50	0.05									
Average CN		74.00											
Average C													
Average IA													

Time to Peak Calculations

Max. Catchment Elev. (m):	288.00
Min. Catchment Elev. (m):	287.50
Catchment Length (m):	10
Catchment Slope (%):	5.00%
Method: Airport Method	
Time of Concentration (mins):	6.67

Summary

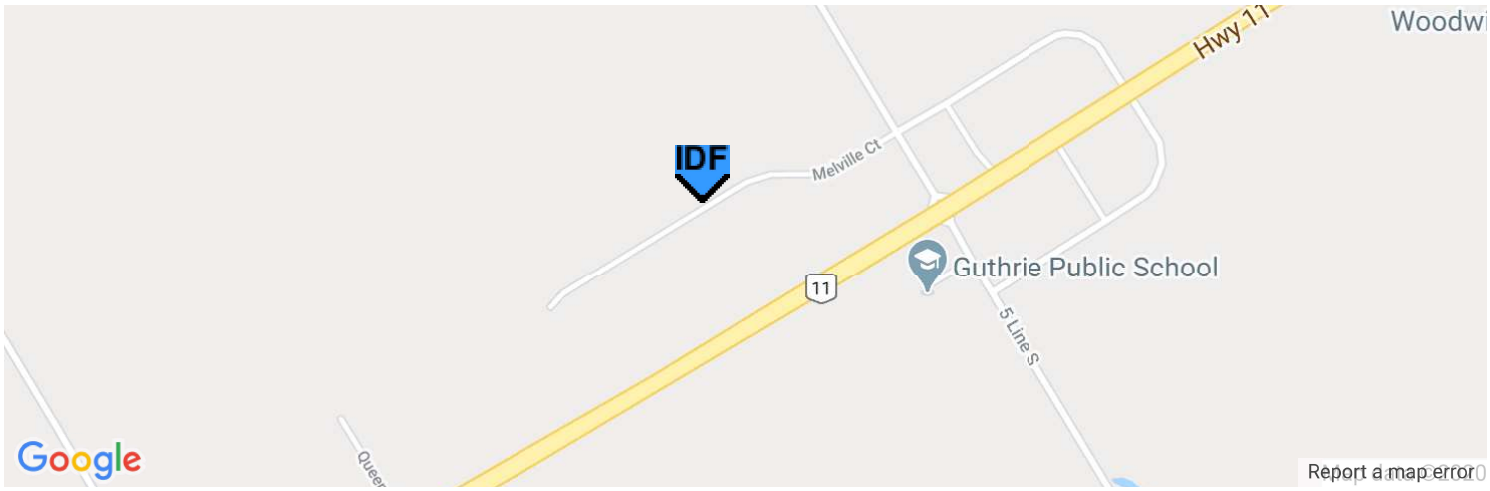
Catchment CN:	74.0
Catchment C:	
Catchment IA (mm):	3.82
Time of Concentration (hrs):	0.11
Catchment Time to Peak (hrs):	0.07
Catchment Time Step (mins):	0.89

Ontario IDF CURVE LOOKUP

Active coordinate

44° 27' 45" N, 79° 34' 14" W (44.462500,-79.570833)

Retrieved: Wed, 12 Aug 2020 15:37:01 GMT



Location summary

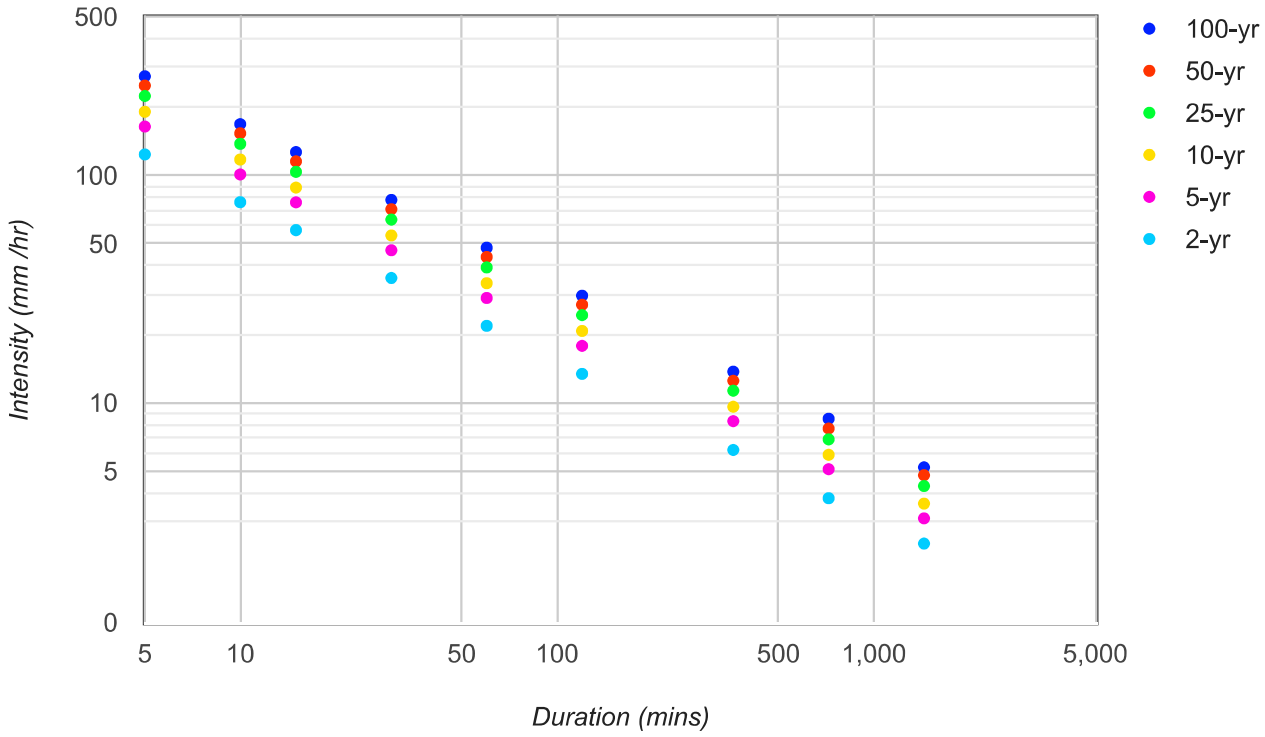
These are the locations in the selection.

IDF Curve: 44° 27' 45" N, 79° 34' 14" W (44.462500,-79.570833)

Results

An IDF curve was found.

Coordinate: 44.462500, -79.570833
IDF curve year: 2010



Coefficient summary

IDF Curve: 44° 27' 45" N, 79° 34' 14" W (44.462500,-79.570833)

Retrieved: Wed, 12 Aug 2020 15:37:01 GMT

Data year: 2010
IDF curve year: 2010

Return period	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
A	21.8	28.9	33.6	39.4	43.8	48.1
B	-0.699	-0.699	-0.699	-0.699	-0.699	-0.699

Statistics

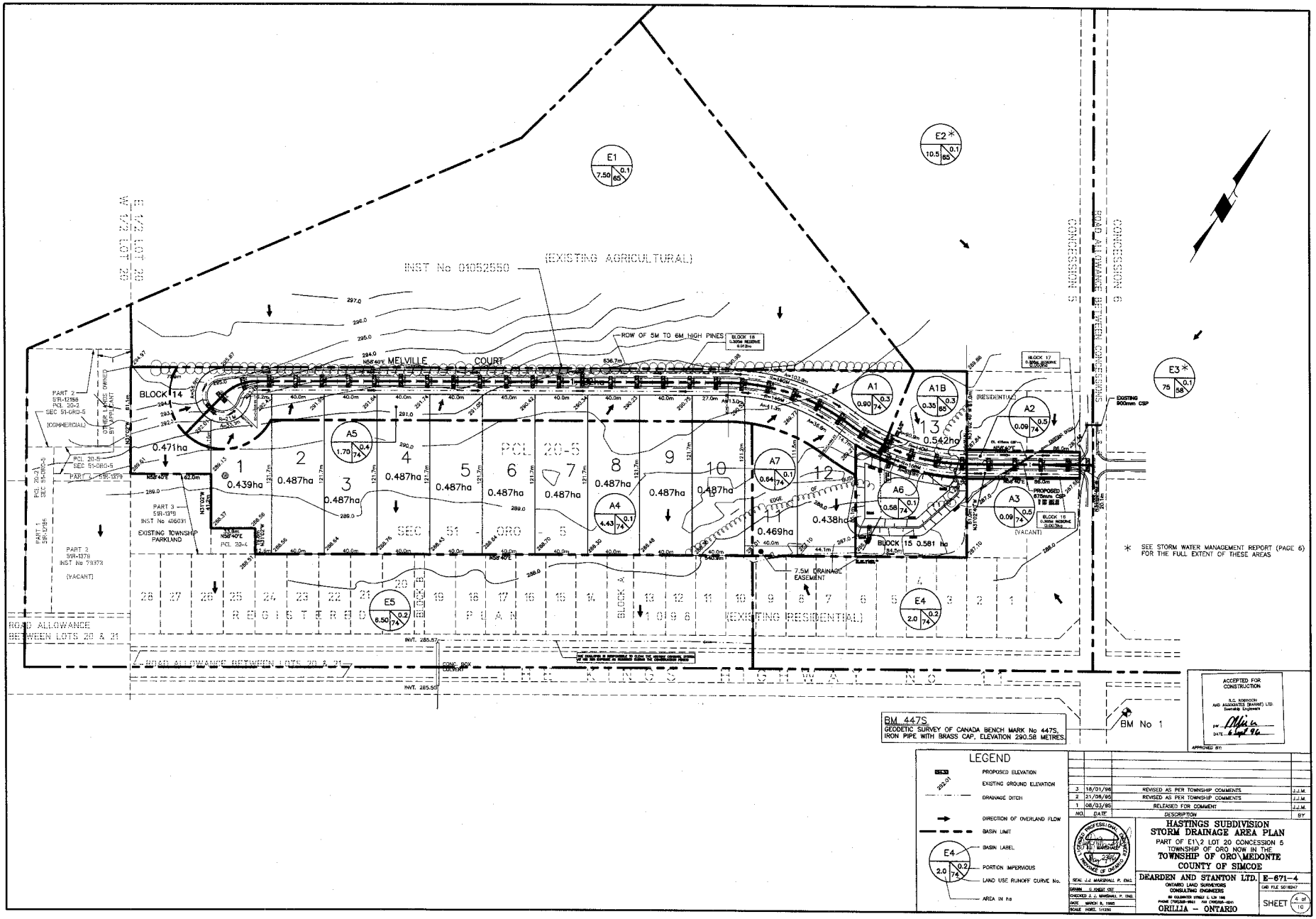
Rainfall intensity (mm hr^{-1})

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	123.8	76.3	57.5	35.4	21.8	13.4	6.2	3.8	2.4
5-yr	164.2	101.1	76.2	46.9	28.9	17.8	8.3	5.1	3.1
10-yr	190.8	117.6	88.5	54.5	33.6	20.7	9.6	5.9	3.6
25-yr	223.8	137.9	103.8	64.0	39.4	24.3	11.3	6.9	4.3
50-yr	248.8	153.3	115.4	71.1	43.8	27.0	12.5	7.7	4.8
100-yr	273.2	168.3	126.8	78.1	48.1	29.6	13.7	8.5	5.2

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	10.3	12.7	14.4	17.7	21.8	26.9	37.4	46.1	56.7
5-yr	13.7	16.9	19.0	23.5	28.9	35.6	49.6	61.1	75.2
10-yr	15.9	19.6	22.1	27.3	33.6	41.4	57.6	71.0	87.5
25-yr	18.6	23.0	26.0	32.0	39.4	48.5	67.6	83.2	102.6
50-yr	20.7	25.5	28.9	35.6	43.8	54.0	75.1	92.5	114.0
100-yr	22.8	28.0	31.7	39.0	48.1	59.3	82.5	101.6	125.2

Terms of Use


INST No 01052550
(EXISTING AGRICULTURAL)
MELVILLE COURT
ROW OF 5M TO 6M HIGH PINES
BLOCK 14
0.471ha
1 0.439ha
2 0.487ha
3 0.487ha
4 0.487ha
5 0.487ha
6 0.487ha
7 0.487ha
8 0.487ha
9 0.487ha
10 0.487ha
11 0.469ha
12 0.438ha
13 0.542ha
BLOCK 15 0.581 ha
PCL 20-5
SEC 51 - ORO - 5
(RESIDENTIAL)
(VACANT)
(EXISTING RESIDENTIAL)
EXISTING TOWNSHIP PARKLAND
PART 2 51R-12158 PCL 20-3 SEC 51-ORO-5 (COMMERCIAL)
PART 3 51R-1378 INST No 406031
PART 2 51R-1378 INST No 79372
PART 1 51R-12186
PART 2 51R-1379
OTHER LANDS OWNED BY APPLICANT
REGISTERED PLAN 1096
BLOCK A
BLOCK B
ROAD ALLOWANCE BETWEEN LOTS 20 & 21
7.5M DRAINAGE EASEMENT
EXISTING 900mm CSP
PROPOSED 675mm CSP
CONC BOX CULVERT
INVT. 285.57
INVT. 285.50
THE KINGS HIGHWAY NO. 11
SIMCOE-ORO TOWNLINE
SIMCOE-ORO NETHERLINE
W 1/2 LOT 20 CON 5
E 1/2 LOT 20 CON 5
E1 7.50 0.1 65
E2* 10.5 0.1 65
E3* 75 0.1 58
E4 2.0 0.2 74
E5 6.50 0.2 74
A1 0.90 0.3 74
A1B 0.35 0.3 65
A2 0.09 0.5 74
A3 0.09 0.5 74
A4 4.43 0.1 74
A5 1.70 0.4 74
A6 0.58 0.1 74
A7 0.64 0.1 74
* SEE STORM WATER MANAGEMENT REPORT (PAGE 6) FOR THE FULL EXTENT OF THESE AREAS
BM 447S
GEODETIC SURVEY OF CANADA BENCH MARK No 447S, IRON PIPE WITH BRASS CAP, ELEVATION 290.58 METRES.
BM No 1
LEGEND
PROPOSED ELEVATION
EXISTING GROUND ELEVATION
DRAINAGE DITCH
DIRECTION OF OVERLAND FLOW
BASIN LIMIT
BASIN LABEL
PORTION IMPERVIOUS
LAND USE RUNOFF CURVE No.
AREA IN ha
ACCEPTED FOR CONSTRUCTION
R.G. ROBINSON AND ASSOCIATES (BARRIE) LTD. Township Engineers
DATE 6 Sept 96
APPROVED BY:
3 18/01/96 REVISED AS PER TOWNSHIP COMMENTS J.J.M.
2 21/08/95 REVISED AS PER TOWNSHIP COMMENTS J.J.M.
1 08/03/95 RELEASED FOR COMMENT J.J.M.
NO. DATE DESCRIPTION BY
HASTINGS SUBDIVISION
STORM DRAINAGE AREA PLAN
PART OF E1/2 LOT 20 CONCESSION 5
TOWNSHIP OF ORO NOW IN THE
TOWNSHIP OF ORO-MEDONTE
COUNTY OF SIMCOE
SEAL J.J. MARSHALL P. ENG.
DRAWN G. KNIGHT OST
CHECKED J. J. MARSHALL P. ENG.
DATE MARCH 8, 1995
SCALE HORZ. 1:1250
DEARDEN AND STANTON LTD. E-671-4
ONTARIO LAND SURVEYORS
CONSULTING ENGINEERS
80 COLBORNE STREET E. S.W. 1966
PHONE (705)325-9561 FAX (705)325-4251
ORILLIA – ONTARIO
CAD FILE S018247
SHEET 4 of 10

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	2021-12-23

Existing SWM Facility - Pond Volume Table

Active Pool	Dry Pond
Bottom Elev.	Varies
Side Slopes	Varies

Water Level Elev.	**Depth**	**Areas**		**Storage**	
(m)	**(m)**	**Area (m^2)**	**Avg. Area (m^2)**	**Live (m^3)**	**Accum. Live (m^3)**
287.50	0.00	**1793.90**	0.00	0.0	0.0
287.60	0.10	1857.08	1825.49	182.5	182.5
287.70	0.20	1920.26	1888.67	188.9	371.4
287.80	0.30	1983.45	1951.86	195.2	566.6
287.90	0.40	2046.63	2015.04	201.5	768.1
288.00	0.50	2109.81	2078.22	207.8	975.9
288.10	0.60	2172.99	2141.40	214.1	1190.1
288.20	0.70	2236.18	2204.59	220.5	1410.5
288.30	0.80	2299.36	2267.77	226.8	1637.3
288.40	0.90	2362.54	2330.95	233.1	1870.4
288.50	1.00	2425.72	2394.13	239.4	2109.8
288.60	1.10	2488.91	2457.32	245.7	2355.5
288.70	1.20	2552.09	2520.50	252.0	2607.6
288.80	1.30	2615.27	2583.68	258.4	2866.0
288.90	1.40	2678.45	2646.86	264.7	3130.6
288.98	1.48	**2729.00**	2672.14	481.0	3346.9

Note: Bold areas measured using Civil 3D (based on ex. Conditions (2015) topo survey contours)

Note: Pond bottom slopes gradually toward outlet from 287.50 to 287.19. Bottom elevation of 287.50 set for volume calculation purposes based on topographic survey information.

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	2021-12-23

Existing SWM Facility - Pond Discharge Table

OUTLET CONTROL

Outlet Pipe

diameter =	300	mm
area =	0.0707	m^2
Orifice C =	0.80	
Invert =	287.19	m

WEIR CONTROL

Emergency Spillway

Length of Weir	N/A	m
Weir Sill Elevation	288.98	m
Weir constant K	Varies	
Side Slope (H:V)	N/A	

Orifice Equation

$Q = C \times A \times (2gH)^{0.5}$

Weir Control Discharge Rates Calculated as per Weir Control Design Sheet

where

Q = flow rate (cms) A = area of opening(sq. m)

C = constant H = net head on the orifice

g = Acceleration due to gravity

Water Level	Orifice Plate #1		Emergency Spillway		Hydraulic Control	Total Discharge
	Head	Discharge	Head	Discharge		
(m)	(m)	(m^3)	(m)	(m^3)		(cms)
287.60	0.26	0.1277	0.00		**Orifice Plate #1**	0.1277
287.70	0.36	0.1503	0.00		**Orifice Plate #1**	0.1503
287.80	0.46	0.1699	0.00		**Orifice Plate #1**	0.1699
287.90	0.56	0.1874	0.00		**Orifice Plate #1**	0.1874
288.00	0.66	0.2035	0.00		**Orifice Plate #1**	0.2035
288.10	0.76	0.2184	0.00		**Orifice Plate #1**	0.2184
288.20	0.86	0.2323	0.00		**Orifice Plate #1**	0.2323
288.30	0.96	0.2454	0.00		**Orifice Plate #1**	0.2454
288.40	1.06	0.2579	0.00		**Orifice Plate #1**	0.2579
288.50	1.16	0.2698	0.00		**Orifice Plate #1**	0.2698
288.60	1.26	0.2812	0.00		**Orifice Plate #1**	0.2812
288.70	1.36	0.2921	0.00		**Orifice Plate #1**	0.2921
288.80	1.46	0.3027	0.00		**Orifice Plate #1**	0.3027
288.90	1.56	0.3128	0.00		**Orifice Plate #1**	0.3128
288.98	1.64	0.3208	0.00		**Orifice Plate #1**	0.3208

Note: Invert of outlet pipe (287.19) is below base of pond as per topographic survey.

Note: Shaded cells have been calculated using partially full inlet control equations (Hydraulic Structures, C.D.Smith, University of Saskatchewan)

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	2021-12-23

Existing SWM Facility - Stage-Storage-Discharge Table

Water Level (m)	Orifice Plate Discharge (m^3/s)	Emergency Discharge (m^3/s)	Hydraulic Control	Total Discharge (m^3/s)	Total Storage (ha-m)
287.60	0.1277		Orifice Plate #1	**0.128**	0.018
287.70	0.1503		Orifice Plate #1	**0.150**	0.037
287.80	0.1699		Orifice Plate #1	**0.170**	0.057
287.90	0.1874		Orifice Plate #1	**0.187**	0.077
288.00	0.2035		Orifice Plate #1	**0.203**	0.098
288.10	0.2184		Orifice Plate #1	**0.218**	0.119
288.20	0.2323		Orifice Plate #1	**0.232**	0.141
288.30	0.2454		Orifice Plate #1	**0.245**	0.164
288.40	0.2579		Orifice Plate #1	**0.258**	0.187
288.50	0.2698		Orifice Plate #1	**0.270**	0.211
288.60	0.2812		Orifice Plate #1	**0.281**	0.236
288.70	0.2921		Orifice Plate #1	**0.292**	0.261
288.80	0.3027		Orifice Plate #1	**0.303**	0.287
288.90	0.3128		Orifice Plate #1	**0.313**	0.313
288.98	0.3208		Orifice Plate #1	**0.321**	0.335

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	2021-12-23

Existing Pond Outlet Hydraulics - Outlet Pipe

Outlet Pipe = C x A x (2gH)^0.5 C= 0.8

Depth Increment	(invert of Control) Min Elevation	(Top of Pond) Max Elevation
m	m	Max
0.1	287.19	289.10

Pipe Flowing Partially Full or full

Coefficient Metric = 1, Imperial=1.49	1
Pipe Diameter (m)	0.3
Mannings N Full	0.013
Pipe Slope (m/m)	
Elevation (m)	287.19
Inlet Type: 1= Projecting 2= Flush	1

Inlet Control (Smith) Projecting Inlet

MMF Model: y=(a*b+c*x^d)/(b+x^d)

Coefficient Data:

a =	1.68E-02
b =	1.77E+00
c =	3.06E+00
d =	2.27E+00

Inlet Control (Smith) Flush Inlet

MMF Model: y=(a*b+c*x^d)/(b+x^d)

Coefficient Data:

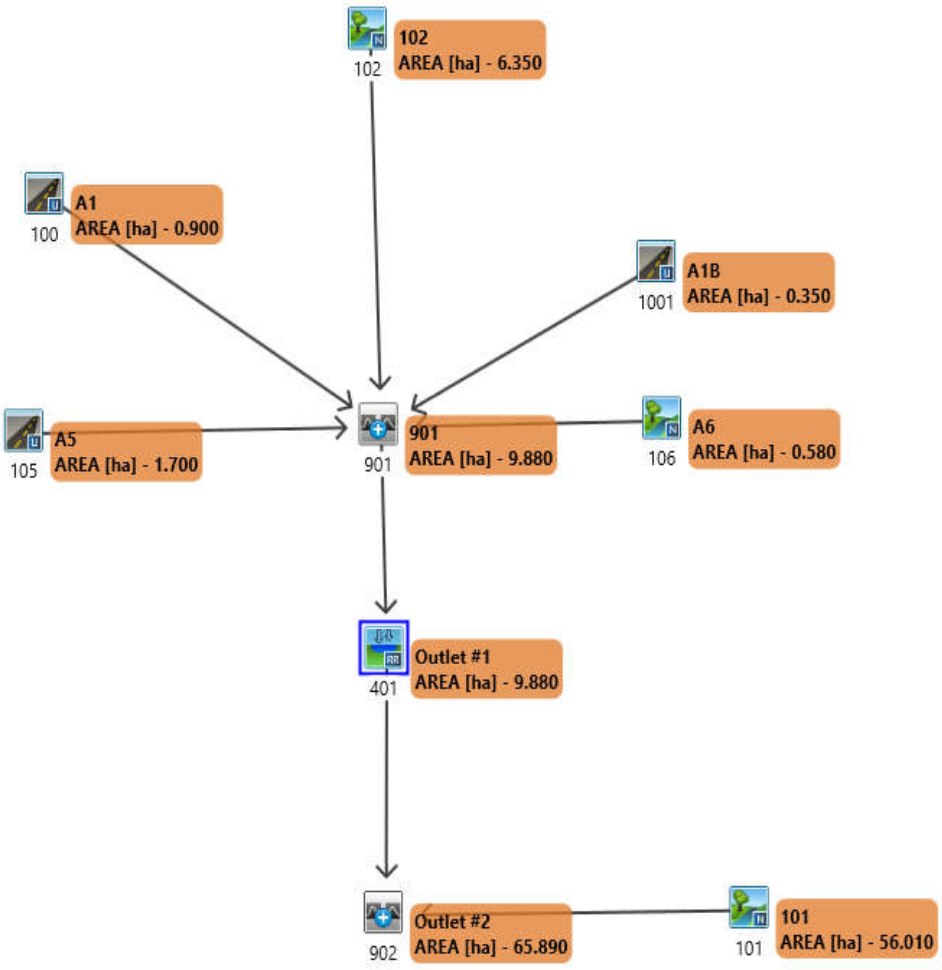
a =	-1.08E-03
b =	2.30E+00
c =	3.95E+00
d =	2.08E+00

Water Elevation	Depth from Min. Elevation	Pipe Partially Full Inlet Control Flow (Smith)
m	m	m^3/s
287.19	0.00	
287.20	0.10	0.001
287.30	0.20	0.009
287.40	0.30	0.031
287.50	0.40	0.058
287.60	0.50	0.128
287.70	0.60	0.150
287.80	0.70	0.170
287.90	0.80	0.187
288.00	0.90	0.203
288.10	1.00	0.218
288.20	1.10	0.232
288.30	1.20	0.245

TATHAM ENGINEERING

PROJECT	Melville Court Development	FILE	420427
		DATE	12-22-2021
SUBJECT	Existing Conditions VO Schematic	NAME	LB
		PAGE	1 OF 1

EXISTING CONDITIONS



NASHYD

ROUTE PIPE

DUHYD

STANDHYD

ROUTE CHANNEL

DIVERT HYD

ADDHYD

ROUTE RESERVOIR

SHIFTHYD

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\ef8cc0f9-ef4f
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\ef8cc0f9-ef4f

DATE: 01-19-2022                          TIME: 07:47:50

USER:

COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 01 - 2 Year 4 Hour Chicag **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0101  1 14.0   56.01    0.15  3.27   3.29 0.10   0.000
    [CN=60.6        ]
    [ N = 3.0:Tp 1.17]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.02  2.82   3.85 0.12   0.000
    [CN=59.0        ]
    [ N = 3.0:Tp 1.07]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.02  1.40   7.22 0.22   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01  1.33   7.78 0.24   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.06  1.33  12.30 0.37   0.000
    [I%=30.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.09  1.33  11.73 0.35   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001] 0901  3 10.0    1.25    0.07  1.33  11.03  n/a   0.000
*
    ADD [  0901+  0102] 0901  1 10.0    7.60    0.07  1.33   5.03  n/a   0.000
*
    ADD [  0901+  0105] 0901  3 10.0    9.30    0.16  1.33   6.26  n/a   0.000
*
    ADD [  0901+  0106] 0901  1  2.0    9.88    0.17  1.33   6.31  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.07  1.50   6.31  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401] 0902  3  1.0   65.89    0.20  3.03   3.75  n/a   0.000
*
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\1836c06b-a836
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\1836c06b-a836

DATE: 01-19-2022                          TIME: 07:47:50

USER:

COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 02 - 5 year 4 Hour Chicag **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0101  1 14.0   56.01    0.30  3.03   6.37 0.15   0.000
    [CN=60.6        ]
    [ N = 3.0:Tp 1.17]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.04  2.82   7.01 0.16   0.000
    [CN=59.0        ]
    [ N = 3.0:Tp 1.07]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.03  1.40  12.39 0.28   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01  1.33  12.36 0.28   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
```

```
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.08  1.33  17.75 0.40   0.000
    [I%=30.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 43.85 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.13  1.33  17.28 0.39   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.09  1.33  16.24  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.09  1.33   8.53  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.22  1.33  10.13  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.25  1.33  10.26  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.10  1.57  10.26  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    0.37  3.03   6.95  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\810287de-4038
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\810287de-4038


DATE: 01-19-2022                          TIME: 07:47:50

USER:


COMMENTS: ________________________________________________________


  ************************************************
  ** SIMULATION : Run 03 - 10 Year 4 Hour Chica **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.43  3.03   8.84 0.17   0.000
    [CN=60.6        ]
    [ N = 3.0:Tp 1.17]
*
    CHIC STORM                10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.05  2.82   9.50 0.19   0.000
    [CN=59.0        ]
    [ N = 3.0:Tp 1.07]
*
    CHIC STORM                10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.04  1.40  16.30 0.32   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  15.79 0.31   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.09  1.33  21.63 0.42   0.000
    [I%=30.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.15  1.33  21.29 0.42   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.11  1.33  20.00  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.11  1.33  11.23  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.27  1.33  13.07  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.30  1.33  13.26  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.13  1.62  13.26  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    0.52  2.80   9.50  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\5047036c-dbfe
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\5047036c-dbfe


DATE: 01-19-2022                          TIME: 07:47:50

USER:


COMMENTS: ________________________________________________________


  ************************************************
  ** SIMULATION : Run 04 - 25 Year 4 Hour Chica **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.60  3.03  12.31 0.21   0.000
    [CN=60.6        ]
    [ N = 3.0:Tp 1.17]
```

```
*
    CHIC STORM                  10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.08  2.82  12.97 0.22   0.000
    [CN=59.0        ]
    [ N = 3.0:Tp 1.07]
*
    CHIC STORM                  10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.05  1.40  21.55 0.36   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                  10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  20.41 0.34   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                  10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.11  1.33  26.71 0.45   0.000
    [I%=30.0:S%= 2.00]
*
    CHIC STORM                  10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.19  1.33  26.54 0.44   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001] 0901  3 10.0    1.25    0.13  1.33  24.94  n/a   0.000
*
    ADD [  0901+  0102] 0901  1 10.0    7.60    0.14  1.33  14.94  n/a   0.000
*
    ADD [  0901+  0105] 0901  3 10.0    9.30    0.33  1.33  17.06  n/a   0.000
*
    ADD [  0901+  0106] 0901  1  2.0    9.88    0.37  1.33  17.33  n/a   0.000
*
 ** Reservoir
    OUTFLOW:            0401  1  1.0    9.88    0.14  1.87  17.33  n/a   0.000
    OVERFLOW:           0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401] 0902  3  1.0   65.89    0.73  2.80  13.06  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\29fd2222-10ad
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\29fd2222-10ad


DATE: 01-19-2022                          TIME: 07:47:50

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 05 - 50 Year 4 Hour Chica **
  ************************************************
```

```
  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm           cms


     START @  0.00 hrs
     ---------------------
    CHIC STORM                  10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0101  1 14.0   56.01    0.74  2.80  15.22 0.23   0.000
    [CN=60.6        ]
    [ N = 3.0:Tp 1.17]
*
    CHIC STORM                  10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.09  2.82  15.87 0.24   0.000
    [CN=59.0        ]
    [ N = 3.0:Tp 1.07]
*
    CHIC STORM                  10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.06  1.40  25.82 0.39   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                  10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  24.16 0.36   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                  10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.13  1.33  30.74 0.46   0.000
    [I%=30.0:S%= 2.00]
*
    CHIC STORM                  10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.21  1.33  30.73 0.46   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001] 0901  3 10.0    1.25    0.15  1.33  28.90  n/a   0.000
*
    ADD [  0901+  0102] 0901  1 10.0    7.60    0.16  1.33  18.01  n/a   0.000
*
    ADD [  0901+  0105] 0901  3 10.0    9.30    0.37  1.33  20.34  n/a   0.000
*
    ADD [  0901+  0106] 0901  1  2.0    9.88    0.43  1.33  20.66  n/a   0.000
*
 ** Reservoir
    OUTFLOW:            0401  1  1.0    9.88    0.15  2.37  20.66  n/a   0.000
    OVERFLOW:           0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401] 0902  3  1.0   65.89    0.89  2.80  16.04  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\e67b8585-ffa6
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\e67b8585-ffa6
```

DATE: 01-19-2022 TIME: 07:47:51

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 06 - 100 Year 4 Hour Chic **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA   ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha    '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.90  2.80  18.28 0.25   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.11  2.60  18.90 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 1.07]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.08  1.40  30.18 0.41   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD        1001  1 10.0    0.35    0.03  1.33  28.01 0.38   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD        0100  1 10.0    0.90    0.14  1.33  34.82 0.48   0.000
    [I%=30.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD        0105  1 10.0    1.70    0.24  1.33  34.97 0.48   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.17  1.33  32.91  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.18  1.33  21.21  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.42  1.33  23.72  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.49  1.33  24.10  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.16  2.87  24.10  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    1.06  2.80  19.15  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

```
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\vO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\6139d847-09cb
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\6139d847-09cb
```

DATE: 01-19-2022 TIME: 07:47:50

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 07 - 2 Year 24 Hour SCS   **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA   ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha    '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.41 12.83  11.04 0.20   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.05 12.78  11.64 0.21   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 1.07]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.04 11.77  19.56 0.35   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD        1001  1 10.0    0.35    0.01 11.83  18.65 0.33   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD        0100  1 10.0    0.90    0.06 11.67  24.80 0.44   0.000
    [I%=30.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD        0105  1 10.0    1.70    0.10 11.67  24.56 0.43   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.07 11.67  23.08  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.08 11.67  13.52  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.18 11.67  15.54  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.20 11.73  15.78  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.12 11.97  15.78  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    0.50 12.83  11.75  n/a   0.000
*
================================================================================================
```

```
       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\35649a2f-e9f5
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\35649a2f-e9f5

DATE: 01-19-2022                          TIME: 07:47:50

USER:

COMMENTS: _____________________________________________________

  ********************************************
  ** SIMULATION : Run 08 - 5 Year 24 Hour SCS   **
  ********************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                    15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.73 12.83  19.34 0.26   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
    MASS STORM                    15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.09 12.78  19.86 0.26   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 1.07]
*
    MASS STORM                    15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.06 11.77  31.55 0.42   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                    15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02 11.83  29.21 0.39   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                    15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.08 11.67  36.09 0.48   0.000
    [I%=30.0:S%= 2.00]
*
    MASS STORM                    15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.14 11.67  36.30 0.48   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.10 11.67  34.16  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.12 11.83  22.21  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.26 11.67  24.79  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.31 11.77  25.18  n/a   0.000
*
 ** Reservoir
    OUTFLOW:              0401  1  1.0    9.88    0.15 12.37  25.18  n/a   0.000
    OVERFLOW:             0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    0.88 12.83  20.22  n/a   0.000
*
================================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\f3ae4726-3899
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\f3ae4726-3899

DATE: 01-19-2022                          TIME: 07:47:50

USER:

COMMENTS: _____________________________________________________

  ************************************************
  ** SIMULATION : Run 09 - 10 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                    15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.99 12.83  25.71 0.29   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
    MASS STORM                    15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.12 12.78  26.13 0.30   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 1.07]
*
    MASS STORM                    15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.08 11.77  40.28 0.46   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                    15.0
    [ Ptot= 87.24 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.03 11.83  36.95 0.42   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                    15.0
    [ Ptot= 87.24 mm ]
*
```

```
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.10 11.67  44.16 0.51   0.000
    [I%=30.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.17 11.67  44.71 0.51   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.12 11.67  42.14  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.16 11.83  28.76  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.32 11.67  31.68  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.40 11.77  32.18  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.16 12.80  32.18  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    1.15 12.83  26.68  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\db856e58-e8f9
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\db856e58-e8f9


DATE: 01-19-2022                          TIME: 07:47:50

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : Run 10 - 25 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD        0101  1 14.0   56.01    1.33 12.83  34.29 0.34   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.16 12.78  34.57 0.34   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 1.07]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.10 11.77  51.63 0.50   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.04 11.67  47.09 0.46   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.12 11.67  54.58 0.53   0.000
    [I%=30.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.21 11.67  55.57 0.54   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.16 11.67  52.48  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.21 11.83  37.51  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.41 11.83  40.81  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.51 11.77  41.45  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.19 13.18  41.45  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    1.52 12.83  35.36  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\c9d835c0-b078
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\c9d835c0-b078


DATE: 01-19-2022                          TIME: 07:47:50

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : Run 11 - 50 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                 15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0101  1 14.0   56.01    1.61 12.83  41.25 0.36   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
```

```
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.20 12.78  41.40 0.36   0.000
    [CN=59.0       ]
    [ N = 3.0:Tp 1.07]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.12 11.77  60.57 0.53   0.000
    [CN=74.0       ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.05 11.67  55.14 0.49   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.14 11.67  62.77 0.55   0.000
    [I%=30.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.24 11.83  64.11 0.56   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.19 11.67  60.64  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.24 11.83  44.56  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.49 11.83  48.13  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.60 11.77  48.86  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.21 13.37  48.86  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    1.82 12.83  42.39  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\7ac27cbf-e558
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\7ac27cbf-e558


DATE: 01-19-2022                          TIME: 07:47:50

USER:


COMMENTS: _____________________________________________________

  ********************************************
  ** SIMULATION : Run 12 - 100 Year 24 Hour SCS **
  ********************************************
```

```
  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm           cms

     START @  0.00 hrs
     ---------------------
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0101  1 14.0   56.01    1.90 12.83  48.42 0.39   0.000
    [CN=60.6       ]
    [ N = 3.0:Tp 1.17]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0102  1 13.0    6.35    0.23 12.78  48.45 0.39   0.000
    [CN=59.0       ]
    [ N = 3.0:Tp 1.07]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0106  1  2.0    0.58    0.14 11.77  69.60 0.56   0.000
    [CN=74.0       ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.06 11.67  63.34 0.51   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.15 11.67  71.06 0.57   0.000
    [I%=30.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.36 11.67  72.74 0.58   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.21 11.67  68.90  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.28 11.83  51.81  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.63 11.67  55.63  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.74 11.70  56.45  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.22 13.52  56.45  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    2.12 12.83  49.63  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\e5c7c965-d945
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\e5c7c965-d945
```

DATE: 01-19-2022 TIME: 07:47:51

USER:

COMMENTS: _____

```
  ****************************************
  ** SIMULATION : Run 13 - 25 mm        **
  ****************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\d95ec570-3058-4f9a-a149-a08543fbf702\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0101  1 14.0   56.01    0.08  3.73   1.58 0.06   0.000
    [CN=60.6         ]
    [ N = 3.0:Tp 1.17]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\d95ec570-3058-4f9a-a149-a08543fbf702\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.01  3.25   2.04 0.08   0.000
    [CN=59.0         ]
    [ N = 3.0:Tp 1.07]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\d95ec570-3058-4f9a-a149-a08543fbf702\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.01  1.57   4.07 0.16   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\d95ec570-3058-4f9a-a149-a08543fbf702\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD        1001  1 10.0    0.35    0.00  1.50   4.89 0.20   0.000
    [I%=10.0:S%= 2.00]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\d95ec570-3058-4f9a-a149-a08543fbf702\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD        0100  1 10.0    0.90    0.03  1.50   8.61 0.34   0.000
    [I%=30.0:S%= 2.00]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\d95ec570-3058-4f9a-a149-a08543fbf702\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD        0105  1 10.0    1.70    0.05  1.50   8.04 0.32   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.03  1.50   7.57  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.04  1.50   2.95  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.08  1.50   3.88  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.09  1.50   3.89  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.88    0.04  1.72   3.89  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0101+  0401]  0902  3  1.0   65.89    0.10  3.50   1.93  n/a   0.000
*
 FINISH
```

****
** SIMULATION:Run 01 - 2 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.2450	0.1640
			0.1280	0.0180	0.2580	0.1870
			0.1500	0.0370	0.2700	0.2110
			0.1700	0.0570	0.2810	0.2360
			0.1870	0.0770	0.2920	0.2610
			0.2030	0.0980	0.3030	0.2870
			0.2180	0.1190	0.3130	0.3130
			0.2320	0.1410	0.3210	0.3350

OVERFLOW IS OFF

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.171	1.33	6.31
OUTFLOW: ID= 1 (0401)	9.880	0.068	1.50	6.31

PEAK FLOW REDUCTION [Qout/Qin](%)= 40.14
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.0096

****
** SIMULATION:Run 02 - 5 year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.2450	0.1640
			0.1280	0.0180	0.2580	0.1870
			0.1500	0.0370	0.2700	0.2110
			0.1700	0.0570	0.2810	0.2360
			0.1870	0.0770	0.2920	0.2610
			0.2030	0.0980	0.3030	0.2870
			0.2180	0.1190	0.3130	0.3130
			0.2320	0.1410	0.3210	0.3350

OVERFLOW IS OFF

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.246	1.33	10.26
OUTFLOW: ID= 1 (0401)	9.880	0.103	1.57	10.26

PEAK FLOW REDUCTION [Qout/Qin](%)= 41.93
TIME SHIFT OF PEAK FLOW (min)= 14.00
MAXIMUM STORAGE USED (ha.m.)= 0.0145

****
** SIMULATION:Run 03 - 10 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.2450	0.1640
			0.1280	0.0180	0.2580	0.1870
			0.1500	0.0370	0.2700	0.2110
			0.1700	0.0570	0.2810	0.2360
			0.1870	0.0770	0.2920	0.2610
			0.2030	0.0980	0.3030	0.2870
			0.2180	0.1190	0.3130	0.3130
			0.2320	0.1410	0.3210	0.3350

OVERFLOW IS OFF

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.301	1.33	13.26
OUTFLOW: ID= 1 (0401)	9.880	0.129	1.62	13.26

PEAK FLOW REDUCTION [Qout/Qin](%)= 42.71
TIME SHIFT OF PEAK FLOW (min)= 17.00
MAXIMUM STORAGE USED (ha.m.)= 0.0184

****
** SIMULATION:Run 04 - 25 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.2450	0.1640
			0.1280	0.0180	0.2580	0.1870
			0.1500	0.0370	0.2700	0.2110
			0.1700	0.0570	0.2810	0.2360
			0.1870	0.0770	0.2920	0.2610
			0.2030	0.0980	0.3030	0.2870
			0.2180	0.1190	0.3130	0.3130
			0.2320	0.1410	0.3210	0.3350

OVERFLOW IS OFF

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.370	1.33	17.33
OUTFLOW: ID= 1 (0401)	9.880	0.138	1.87	17.33

PEAK FLOW REDUCTION [Qout/Qin](%)= 37.19
TIME SHIFT OF PEAK FLOW (min)= 32.00
MAXIMUM STORAGE USED (ha.m.)= 0.0264

****
** SIMULATION:Run 05 - 50 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.2450	0.1640
			0.1280	0.0180	0.2580	0.1870
			0.1500	0.0370	0.2700	0.2110
			0.1700	0.0570	0.2810	0.2360
			0.1870	0.0770	0.2920	0.2610
			0.2030	0.0980	0.3030	0.2870
			0.2180	0.1190	0.3130	0.3130
			0.2320	0.1410	0.3210	0.3350

OVERFLOW IS OFF

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.429	1.33	20.66
OUTFLOW: ID= 1 (0401)	9.880	0.149	2.37	20.66

PEAK FLOW REDUCTION [Qout/Qin](%)= 34.68
TIME SHIFT OF PEAK FLOW (min)= 62.00
MAXIMUM STORAGE USED (ha.m.)= 0.0359

****
** SIMULATION:Run 06 - 100 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.2450	0.1640
			0.1280	0.0180	0.2580	0.1870
			0.1500	0.0370	0.2700	0.2110
			0.1700	0.0570	0.2810	0.2360
			0.1870	0.0770	0.2920	0.2610
			0.2030	0.0980	0.3030	0.2870
			0.2180	0.1190	0.3130	0.3130
			0.2320	0.1410	0.3210	0.3350

OVERFLOW IS OFF

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.486	1.33	24.10
OUTFLOW: ID= 1 (0401)	9.880	0.162	2.87	24.10

PEAK FLOW REDUCTION [Qout/Qin](%)= 33.26
TIME SHIFT OF PEAK FLOW (min)= 92.00
MAXIMUM STORAGE USED (ha.m.)= 0.0486

****
** SIMULATION:Run 07 - 2 Year 24 Hour SCS **
****

RESERVOIR(0401)	IN= 2---> OUT= 1

OVERFLOW IS OFF

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.204	11.73	15.78
OUTFLOW: ID= 1 (0401)	9.880	0.124	11.97	15.78

PEAK FLOW REDUCTION [Qout/Qin](%)= 60.73
TIME SHIFT OF PEAK FLOW (min)= 14.00
MAXIMUM STORAGE USED (ha.m.)= 0.0175

****
** SIMULATION:Run 08 - 5 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.313	11.77	25.18
OUTFLOW: ID= 1 (0401)	9.880	0.146	12.37	25.18

PEAK FLOW REDUCTION [Qout/Qin](%)= 46.49
TIME SHIFT OF PEAK FLOW (min)= 36.00
MAXIMUM STORAGE USED (ha.m.)= 0.0333

****
** SIMULATION:Run 09 - 10 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.398	11.77	32.18
OUTFLOW: ID= 1 (0401)	9.880	0.163	12.80	32.18

PEAK FLOW REDUCTION [Qout/Qin](%)= 41.06
TIME SHIFT OF PEAK FLOW (min)= 62.00
MAXIMUM STORAGE USED (ha.m.)= 0.0503

****
** SIMULATION:Run 10 - 25 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.515	11.77	41.45
OUTFLOW: ID= 1 (0401)	9.880	0.188	13.18	41.45

PEAK FLOW REDUCTION [Qout/Qin](%)= 36.48
TIME SHIFT OF PEAK FLOW (min)= 85.00
MAXIMUM STORAGE USED (ha.m.)= 0.0780

****
** SIMULATION:Run 11 - 50 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.604	11.77	48.86
OUTFLOW: ID= 1 (0401)	9.880	0.207	13.37	48.86

PEAK FLOW REDUCTION [Qout/Qin](%)= 34.19
TIME SHIFT OF PEAK FLOW (min)= 96.00
MAXIMUM STORAGE USED (ha.m.)= 0.1030

****
** SIMULATION:Run 12 - 100 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.880	0.737	11.70	56.45
OUTFLOW: ID= 1 (0401)	9.880	0.225	13.52	56.45

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.48
TIME SHIFT OF PEAK FLOW (min)=109.00
MAXIMUM STORAGE USED (ha.m.)= 0.1294

****
** SIMULATION:Run 13 - 25 mm **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360

```
                        0.1870     0.0770   |   0.2920      0.2610
                        0.2030     0.0980   |   0.3030      0.2870
                        0.2180     0.1190   |   0.3130      0.3130
                        0.2320     0.1410   |   0.3210      0.3350

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)      9.880     0.088      1.50       3.89
   OUTFLOW: ID= 1 (  0401)      9.880     0.040      1.72       3.89

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 46.21
                  TIME SHIFT OF PEAK FLOW         (min)= 13.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0057

--------------------------------------------------------------------------------
```

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
        V  V    I       SS  U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\996988ba-2d1e
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\996988ba-2d1e


DATE: 01-19-2022                          TIME: 07:49:03

USER:


COMMENTS: _____________________________________________________

  ************************************************
  ** SIMULATION : Run 01 - Hazel                **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\6ac572ca-ed69-4a4b-9290-f80646da26db\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 ** CALIB NASHYD         0101  1 14.0   56.01    5.07 11.20 149.79 0.71   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 1.17]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\6ac572ca-ed69-4a4b-9290-f80646da26db\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 ** CALIB NASHYD         0102  1 13.0    6.35    0.59 11.05 150.46 0.71   0.000
    [CN=77.0         ]
    [ N = 3.0:Tp 1.07]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\6ac572ca-ed69-4a4b-9290-f80646da26db\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 ** CALIB NASHYD         0106  1  2.0    0.58    0.08 10.00 175.51 0.83   0.000
    [CN=87.0         ]
    [ N = 3.0:Tp 0.07]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\6ac572ca-ed69-4a4b-9290-f80646da26db\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.05 10.00 167.00 0.79   0.000
    [I%=10.0:S%= 2.00]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\6ac572ca-ed69-4a4b-9290-f80646da26db\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.12 10.00 169.33 0.80   0.000
    [I%=30.0:S%= 2.00]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\6ac572ca-ed69-4a4b-9290-f80646da26db\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.23 10.00 173.51 0.82   0.000
    [I%=25.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.17 10.00 168.68  n/a   0.000
*
    ADD [  0901+  0102]  0901  1 10.0    7.60    0.71 11.00 153.45  n/a   0.000
*
    ADD [  0901+  0105]  0901  3 10.0    9.30    0.88 11.00 157.12  n/a   0.000
*
    ADD [  0901+  0106]  0901  1  2.0    9.88    0.94 11.00 158.20  n/a   0.000
*
    ADD [  0101+  0901]  0902  3  2.0   65.89    5.91 11.00 151.05  n/a   0.000
*
 FINISH

================================================================================================================
```

Proposed Conditions Hydrology

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Melville Court	420427

Prepared By

LB	12-15-2021

Data Sources

Detailed Soil Survey Reports for Ontario, LSRCA Technical Guidelines for Stormwater Management Submissions (2016), MTO Drainage Management Manual (1997)

Post Development Condition

Watershed:	LSRCA
Catchment ID:	201
Catchment Area (ha):	56.24
Impervious %:	6%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Gus**											
Soil Series		Guerin											
Hydrologic Soils Group		AB											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		56.24											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	3.17	98	0.95									
Gravel	3		81	0.09									
Woodland	10	22.05	46	0.08									
Pasture/Lawns	5		59	0.10									
Meadows	8		51	0.09									
Cultivated	7	31.16	68	0.22									
Waterbody	12		50	0.05									
Average CN		61.23											
Average C		0.21											
Average IA		7.91											

Time to Peak Calculations

Max. Catchment Elev. (m):	304.00
Min. Catchment Elev. (m):	288.00
Catchment Length (m):	1400
Catchment Slope (%):	1.14%
Method: Airport Method	
Time of Concentration (mins):	104.25

Summary

Catchment CN:	61.2
Catchment C:	0.21
Catchment IA (mm):	7.91
Time of Concentration (hrs):	1.74
Catchment Time to Peak (hrs):	1.16
Catchment Time Step (mins):	13.90

Note: Catchment Impervious adjusted by 0.24 ha to account for development of Lots 15 & 16 - negligable impact to Ex. CN

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Melville Court	420427

Prepared By

LB	12-15-2021

Data Sources

Detailed Soil Survey Reports for Ontario, LSRCA Technical Guidelines for Stormwater Management Submissions (2016), MTO Drainage Management Manual (1997)

Post Development Condition

Watershed:	LSRCA
Catchment ID:	202
Catchment Area (ha):	6.45
Impervious %:	14%

Average Curve Number (CN), Runoff Coefficient (C) and Initial Abstraction (IA)

Soil Symbol		**Vasl**											
Soil Series		Vasey											
Hydrologic Soils Group		AB											
Soil Texture		Sand Loam											
Runoff Coefficient Type		1											
Area (ha)		6.45											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.91	98	0.95									
Gravel	3		81	0.09									
Woodland	10		46	0.08									
Pasture/Lawns	5	4.01	59	0.10									
Meadows	8		51	0.09									
Cultivated	7	1.53	68	0.22									
Waterbody	12		50	0.05									
Average CN		66.64											
Average C		0.25											
Average IA		5.05											

Time to Peak Calculations

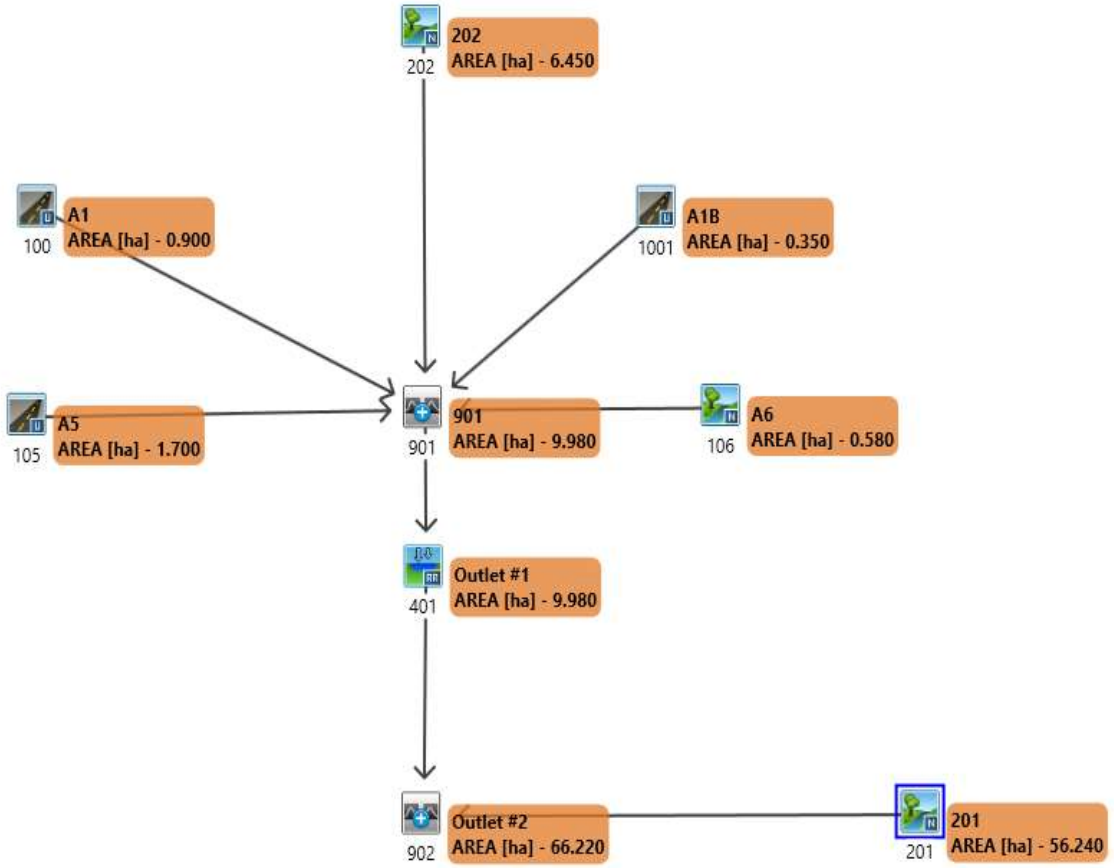
Max. Catchment Elev. (m):	298.00
Min. Catchment Elev. (m):	288.52
Catchment Length (m):	900
Catchment Slope (%):	1.05%
Method: Airport Method	
Time of Concentration (mins):	81.87

Summary

Catchment CN:	66.6
Catchment C:	0.25
Catchment IA (mm):	5.05
Time of Concentration (hrs):	1.36
Catchment Time to Peak (hrs):	0.91
Catchment Time Step (mins):	10.92

PROJECT	Melville Court Development	FILE	420427
		DATE	12-27-2021
SUBJECT	Proposed Conditions VO Schematic	NAME	LB
		PAGE	1 OF 1

PROPOSED CONDITIONS




NASHYD


ROUTE PIPE


DUHYD


STANDHYD


ROUTE CHANNEL


DIVERT HYD


ADDHYD


ROUTE RESERVOIR


SHIFTHYD

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\53baaf40-c622
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\53baaf40-c622

DATE: 01-19-2022                          TIME: 08:00:39

USER:

COMMENTS: _____________________________________________________________

  ********************************************
  ** SIMULATION : Run 01 - 2 Year 4 Hour Chicag **
  ********************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.16  3.03   3.38 0.10   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.03  2.57   5.05 0.15   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.02  1.40   7.22 0.22   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01  1.33   7.78 0.24   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.09  1.33  11.73 0.35   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.06  1.33  12.30 0.37   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.07  1.33  11.03  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.16  1.33  11.44  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.17  1.33  10.74  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.17  1.33   7.07  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.07  1.50   7.07  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.21  3.03   3.94  n/a   0.000
*
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\720e4832-e0ea
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\720e4832-e0ea

DATE: 01-19-2022                          TIME: 08:00:39

USER:

COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 02 - 5 Year 4 Hour Chicag **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.31  3.03   6.52 0.15   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.06  2.57   9.06 0.21   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.03  1.40  12.39 0.28   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01  1.33  12.36 0.28   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
```

```
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.13  1.33  17.28 0.39   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.08  1.33  17.75 0.40   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.09  1.33  16.24  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.22  1.33  16.84  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.24  1.33  16.11  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.25  1.33  11.55  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.11  1.62  11.55  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.40  2.80   7.28  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M  M  O   O
        OOO     T      T    H   H    Y    M   M  OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\89b38bf4-2c6f
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\89b38bf4-2c6f


DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: ________________________________________________________


  ********************************************
  ** SIMULATION : Run 03 - 10 Year 4 Hour Chica **
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.44  3.03   9.04 0.18   0.000
    [CN=61.2         ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.08  2.57  12.17 0.24   0.000
    [CN=66.6         ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.04  1.40  16.30 0.32   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  15.79 0.31   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.15  1.33  21.29 0.42   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.09  1.33  21.63 0.42   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.11  1.33  20.00  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.26  1.33  20.74  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.29  1.33  20.01  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.30  1.33  14.94  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.13  1.80  14.94  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.56  2.80   9.93  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M  M  O   O
        OOO     T      T    H   H    Y    M   M  OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\278df801-4d88
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\278df801-4d88

DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: ________________________________________________________


  ********************************************
  ** SIMULATION : Run 04 - 25 year 4 Hour Chica **
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                 10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.61  2.80  12.57 0.21   0.000
    [CN=61.2         ]
```

```
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.11  2.57  16.45 0.28   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.05  1.40  21.57 0.36   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  20.41 0.34   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.19  1.33  26.54 0.44   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.11  1.33  26.71 0.45   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.13  1.33  24.94  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.32  1.33  25.86  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.36  1.33  25.15  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.37  1.33  19.53  n/a   0.000
*
 ** Reservoir
    OUTFLOW:              0401  1  1.0    9.98    0.15  2.75  19.53  n/a   0.000
    OVERFLOW:             0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.76  2.80  13.62  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\76f288ba-1bc0
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\76f288ba-1bc0


DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: _____________________________________________________


  ***********************************************
  ** SIMULATION : Run 05 - 50 year 4 Hour Chica **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm           cms

     START @  0.00 hrs
     -------------------
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.76  2.80  15.53 0.23   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.13  2.38  19.97 0.30   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.06  1.40  25.83 0.39   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  24.16 0.36   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.21  1.33  30.73 0.46   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.13  1.33  30.74 0.46   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.15  1.33  28.90  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.36  1.33  29.95  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.41  1.33  29.27  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.43  1.33  23.26  n/a   0.000
*
 ** Reservoir
    OUTFLOW:              0401  1  1.0    9.98    0.16  2.98  23.26  n/a   0.000
    OVERFLOW:             0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.93  2.80  16.70  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\8e28d8ed-1336
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\8e28d8ed-1336
```

DATE: 01-19-2022 TIME: 08:00:39

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 06 - 100 Year 4 Hour Chic **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    0.92  2.80  18.64 0.26   0.000
    [CN=61.2         ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD         0202  1 11.0    6.45    0.16  2.38  23.62 0.32   0.000
    [CN=66.6         ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.08  1.40  30.19 0.41   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.03  1.33  28.01 0.38   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.24  1.33  34.97 0.48   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.14  1.33  34.82 0.48   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.17  1.33  32.91  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.41  1.33  34.10  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.47  1.33  33.45  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.49  1.33  27.10  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.18  3.15  27.10  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.10  2.80  19.91  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

```
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\c6e62356-3b9f
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\c6e62356-3b9f


DATE: 01-19-2022 TIME: 08:00:39

USER:

COMMENTS: _____

  ************************************************
  ** SIMULATION : Run 07 - 2 Year 24 Hour SCS   **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    0.42 12.83  11.27 0.20   0.000
    [CN=61.2         ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD         0202  1 11.0    6.45    0.08 12.65  14.82 0.26   0.000
    [CN=66.6         ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.04 11.78  16.03 0.28   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01 11.83  18.65 0.33   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.10 11.67  24.56 0.43   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.06 11.67  24.80 0.44   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.07 11.67  23.08  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.17 11.67  23.93  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.19 11.67  23.21  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.21 11.77  17.79  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.13 12.10  17.79  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.54 12.83  12.26  n/a   0.000
*
================================================================================================
```

```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\54614028-1dd1
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\54614028-1dd1


DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : Run 08 - 5 Year 24 Hour SCS   **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                     15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    0.76 12.83  19.72 0.26   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                     15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0202  1 11.0    6.45    0.13 12.65  24.78 0.33   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                     15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.06 11.78  26.17 0.35   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                     15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02 11.83  29.21 0.39   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                     15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.14 11.67  36.30 0.48   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                     15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.08 11.67  36.09 0.48   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.10 11.67  34.16  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.24 11.67  35.39  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.28 11.75  34.76  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.33 11.78  28.31  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.16 12.88  28.31  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.92 12.83  21.01  n/a   0.000
*
================================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\a485e398-66e9
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\a485e398-66e9


DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : Run 09 - 10 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                     15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    1.02 12.83  26.18 0.30   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                     15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0202  1 11.0    6.45    0.17 12.65  32.23 0.37   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                     15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.08 11.78  33.62 0.39   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                     15.0
    [ Ptot= 87.24 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.03 11.83  36.95 0.42   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                     15.0
    [ Ptot= 87.24 mm ]
*
```

```
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.17 11.67  44.71 0.51   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.10 11.67  44.16 0.51   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.12 11.67  42.14  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.29 11.67  43.62  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.36 11.77  43.07  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.43 11.78  36.06  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.18 13.12  36.06  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.20 12.83  27.67  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\8f96b8db-0a62
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\8f96b8db-0a62


DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: ________________________________________________________


  ************************************************
  ** SIMULATION : Run 10 - 25 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    1.37 12.83  34.87 0.34   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD         0202  1 11.0    6.45    0.23 12.65  42.09 0.41   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.10 11.78  43.36 0.42   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.04 11.67  47.09 0.46   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.21 11.67  55.57 0.54   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.12 11.67  54.58 0.53   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.16 11.67  52.48  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.37 11.67  54.26  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.46 11.77  53.83  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.55 11.78  46.25  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.21 13.32  46.24  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.58 12.83  36.59  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\01cb6be1-719a
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\01cb6be1-719a


DATE: 01-19-2022                          TIME: 08:00:38

USER:


COMMENTS: ________________________________________________________


  ************************************************
  ** SIMULATION : Run 11 - 50 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                 15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    1.66 12.83  41.91 0.37   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
```

```
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.27 12.65  49.98 0.44   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.12 11.78  51.06 0.45   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.05 11.67  55.14 0.49   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.24 11.83  64.11 0.56   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.14 11.67  62.77 0.55   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001] 0901  3 10.0    1.25    0.19 11.67  60.64  n/a   0.000
*
    ADD [  0901+  0105] 0901  1 10.0    2.95    0.43 11.67  62.64  n/a   0.000
*
    ADD [  0901+  0106] 0901  3  1.0    3.53    0.54 11.77  62.30  n/a   0.000
*
    ADD [  0901+  0202] 0901  1  1.0    9.98    0.65 11.80  54.34  n/a   0.000
*
 ** Reservoir
    OUTFLOW:            0401  1  1.0    9.98    0.23 13.43  54.34  n/a   0.000
    OVERFLOW:           0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401] 0902  3  1.0   66.22    1.88 12.83  43.79  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\0ee8413a-fc6a
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\0ee8413a-fc6a


DATE: 01-19-2022                          TIME: 08:00:39

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : Run 12 -100 Year 24 Hour SCS  **
  ************************************************
```

```
  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms


     START @  0.00 hrs
     ------------------
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    1.96 12.83  49.17 0.39   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0202  1 11.0    6.45    0.32 12.65  58.04 0.46   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.14 11.78  58.88 0.47   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.06 11.67  63.34 0.51   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.36 11.67  72.74 0.58   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.15 11.67  71.06 0.57   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001] 0901  3 10.0    1.25    0.21 11.67  68.90  n/a   0.000
*
    ADD [  0901+  0105] 0901  1 10.0    2.95    0.57 11.67  71.11  n/a   0.000
*
    ADD [  0901+  0106] 0901  3  1.0    3.53    0.67 11.67  70.87  n/a   0.000
*
    ADD [  0901+  0202] 0901  1  1.0    9.98    0.78 11.77  62.58  n/a   0.000
*
 ** Reservoir
    OUTFLOW:            0401  1  1.0    9.98    0.25 13.53  62.58  n/a   0.000
    OVERFLOW:           0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401] 0902  3  1.0   66.22    2.20 12.83  51.19  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\f39dfbbe-4663
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\f39dfbbe-4663
```

DATE: 01-19-2022 TIME: 08:00:39

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 13 - 25 mm                **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                 10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\b0e9d416-8a90-45d8-a051-ce89f11ec7a3\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0201  1 14.0   56.24    0.08  3.73   1.63 0.07   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    READ STORM                 10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\b0e9d416-8a90-45d8-a051-ce89f11ec7a3\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0202  1 11.0    6.45    0.02  2.93   2.71 0.11   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    READ STORM                 10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\b0e9d416-8a90-45d8-a051-ce89f11ec7a3\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.01  1.58   4.07 0.16   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    READ STORM                 10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\b0e9d416-8a90-45d8-a051-ce89f11ec7a3\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD        1001  1 10.0    0.35    0.00  1.50   4.89 0.20   0.000
    [I%=10.0:S%= 2.00]
*
    READ STORM                 10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\b0e9d416-8a90-45d8-a051-ce89f11ec7a3\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD        0105  1 10.0    1.70    0.05  1.50   8.04 0.32   0.000
    [I%=25.0:S%= 2.00]
*
    READ STORM                 10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\b0e9d416-8a90-45d8-a051-ce89f11ec7a3\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD        0100  1 10.0    0.90    0.03  1.50   8.61 0.34   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.03  1.50   7.57  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.08  1.50   7.84  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.09  1.50   7.22  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.09  1.50   4.30  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.04  1.73   4.30  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.11  3.50   2.03  n/a   0.000
*
 FINISH
```

```
**********************************************
** SIMULATION:Run 01 - 2 Year 4 Hour Chicago **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.2450      0.1640
                         0.1280     0.0180   |  0.2580      0.1870
                         0.1500     0.0370   |  0.2700      0.2110
                         0.1700     0.0570   |  0.2810      0.2360
                         0.1870     0.0770   |  0.2920      0.2610
                         0.2030     0.0980   |  0.3030      0.2870
                         0.2180     0.1190   |  0.3130      0.3130
                         0.2320     0.1410   |  0.3210      0.3350

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)     9.980     0.171      1.33       7.07
   OUTFLOW: ID= 1 (  0401)     9.980     0.069      1.50       7.07

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 40.53
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0097

--------------------------------------------------------------------------------
**********************************************
** SIMULATION:Run 02 - 5 Year 4 Hour Chicago **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.2450      0.1640
                         0.1280     0.0180   |  0.2580      0.1870
                         0.1500     0.0370   |  0.2700      0.2110
                         0.1700     0.0570   |  0.2810      0.2360
                         0.1870     0.0770   |  0.2920      0.2610
                         0.2030     0.0980   |  0.3030      0.2870
                         0.2180     0.1190   |  0.3130      0.3130
                         0.2320     0.1410   |  0.3210      0.3350

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)     9.980     0.247      1.33      11.55
   OUTFLOW: ID= 1 (  0401)     9.980     0.106      1.62      11.55

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 43.04
                  TIME SHIFT OF PEAK FLOW         (min)= 17.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0150

--------------------------------------------------------------------------------
**********************************************
** SIMULATION:Run 03 - 10 Year 4 Hour Chicago **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.2450      0.1640
                         0.1280     0.0180   |  0.2580      0.1870
                         0.1500     0.0370   |  0.2700      0.2110
                         0.1700     0.0570   |  0.2810      0.2360
                         0.1870     0.0770   |  0.2920      0.2610
                         0.2030     0.0980   |  0.3030      0.2870
                         0.2180     0.1190   |  0.3130      0.3130
                         0.2320     0.1410   |  0.3210      0.3350

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)     9.980     0.302      1.33      14.94
   OUTFLOW: ID= 1 (  0401)     9.980     0.130      1.80      14.94

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 42.95
                  TIME SHIFT OF PEAK FLOW         (min)= 28.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0196

--------------------------------------------------------------------------------
**********************************************
** SIMULATION:Run 04 - 25 year 4 Hour Chicago **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.2450      0.1640
                         0.1280     0.0180   |  0.2580      0.1870
                         0.1500     0.0370   |  0.2700      0.2110
                         0.1700     0.0570   |  0.2810      0.2360
                         0.1870     0.0770   |  0.2920      0.2610
                         0.2030     0.0980   |  0.3030      0.2870
                         0.2180     0.1190   |  0.3130      0.3130
                         0.2320     0.1410   |  0.3210      0.3350

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)     9.980     0.373      1.33      19.53
   OUTFLOW: ID= 1 (  0401)     9.980     0.148      2.75      19.53

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 39.64
                  TIME SHIFT OF PEAK FLOW         (min)= 85.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0351

--------------------------------------------------------------------------------
**********************************************
** SIMULATION:Run 05 - 50 year 4 Hour Chicago **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.2450      0.1640
                         0.1280     0.0180   |  0.2580      0.1870
                         0.1500     0.0370   |  0.2700      0.2110
                         0.1700     0.0570   |  0.2810      0.2360
                         0.1870     0.0770   |  0.2920      0.2610
                         0.2030     0.0980   |  0.3030      0.2870
                         0.2180     0.1190   |  0.3130      0.3130
                         0.2320     0.1410   |  0.3210      0.3350

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)     9.980     0.432      1.33      23.26
   OUTFLOW: ID= 1 (  0401)     9.980     0.164      2.98      23.26

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 37.91
                  TIME SHIFT OF PEAK FLOW         (min)= 99.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0508

--------------------------------------------------------------------------------
**********************************************
** SIMULATION:Run 06 - 100 Year 4 Hour Chicago **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.2450      0.1640
                         0.1280     0.0180   |  0.2580      0.1870
                         0.1500     0.0370   |  0.2700      0.2110
                         0.1700     0.0570   |  0.2810      0.2360
                         0.1870     0.0770   |  0.2920      0.2610
                         0.2030     0.0980   |  0.3030      0.2870
                         0.2180     0.1190   |  0.3130      0.3130
                         0.2320     0.1410   |  0.3210      0.3350

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)     9.980     0.490      1.33      27.10
   OUTFLOW: ID= 1 (  0401)     9.980     0.180      3.15      27.10

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 36.66
                  TIME SHIFT OF PEAK FLOW         (min)=109.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0683

--------------------------------------------------------------------------------
**********************************************
** SIMULATION:Run 07 - 2 Year 24 Hour SCS **
**********************************************
--------------------
| RESERVOIR(  0401)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
```

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.214	11.77	17.79
OUTFLOW: ID= 1 (0401)	9.980	0.129	12.10	17.79

PEAK FLOW REDUCTION [Qout/Qin](%)= 60.45
TIME SHIFT OF PEAK FLOW (min)= 20.00
MAXIMUM STORAGE USED (ha.m.)= 0.0191

****
** SIMULATION:Run 08 - 5 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.334	11.78	28.31
OUTFLOW: ID= 1 (0401)	9.980	0.158	12.88	28.31

PEAK FLOW REDUCTION [Qout/Qin](%)= 47.37
TIME SHIFT OF PEAK FLOW (min)= 66.00
MAXIMUM STORAGE USED (ha.m.)= 0.0450

****
** SIMULATION:Run 09 - 10 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.426	11.78	36.06
OUTFLOW: ID= 1 (0401)	9.980	0.181	13.12	36.06

PEAK FLOW REDUCTION [Qout/Qin](%)= 42.48
TIME SHIFT OF PEAK FLOW (min)= 80.00
MAXIMUM STORAGE USED (ha.m.)= 0.0698

****
** SIMULATION:Run 10 - 25 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.552	11.78	46.25
OUTFLOW: ID= 1 (0401)	9.980	0.209	13.32	46.24

PEAK FLOW REDUCTION [Qout/Qin](%)= 37.83
TIME SHIFT OF PEAK FLOW (min)= 92.00
MAXIMUM STORAGE USED (ha.m.)= 0.1060

****
** SIMULATION:Run 11 - 50 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.650	11.80	54.34
OUTFLOW: ID= 1 (0401)	9.980	0.229	13.43	54.34

PEAK FLOW REDUCTION [Qout/Qin](%)= 35.30
TIME SHIFT OF PEAK FLOW (min)= 98.00
MAXIMUM STORAGE USED (ha.m.)= 0.1369

****
** SIMULATION:Run 12 -100 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360
	0.1870	0.0770	0.2920	0.2610
	0.2030	0.0980	0.3030	0.2870
	0.2180	0.1190	0.3130	0.3130
	0.2320	0.1410	0.3210	0.3350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.776	11.77	62.58
OUTFLOW: ID= 1 (0401)	9.980	0.248	13.53	62.58

PEAK FLOW REDUCTION [Qout/Qin](%)= 31.96
TIME SHIFT OF PEAK FLOW (min)=106.00
MAXIMUM STORAGE USED (ha.m.)= 0.1695

****
** SIMULATION:Run 13 - 25 mm **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.2450	0.1640
	0.1280	0.0180	0.2580	0.1870
	0.1500	0.0370	0.2700	0.2110
	0.1700	0.0570	0.2810	0.2360

```
                        0.1870     0.0770   |   0.2920      0.2610
                        0.2030     0.0980   |   0.3030      0.2870
                        0.2180     0.1190   |   0.3130      0.3130
                        0.2320     0.1410   |   0.3210      0.3350

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)      9.980      0.088      1.50       4.30
   OUTFLOW: ID= 1 (  0401)      9.980      0.041      1.73       4.30

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 46.65
                  TIME SHIFT OF PEAK FLOW         (min)= 14.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0057

--------------------------------------------------------------------------------
```

Proposed Conditions with Retrofit Hydrology

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	12-23-2021

Retrofitted SWM Facility - Pond Volume Table

Active Pool	Dry Pond
Bottom Elev.	Varies
Side Slopes	Varies

Water Level Elev.	Depth	Areas		Storage	
(m)	(m)	Area (m^2)	Avg. Area (m^2)	Live (m^3)	Accum. Live (m^3)
287.50	0.00	**1793.90**	0.00	0.0	0.0
287.60	0.10	1857.08	1825.49	182.5	182.5
287.70	0.20	1920.26	1888.67	188.9	371.4
287.80	0.30	1983.45	1951.86	195.2	566.6
287.90	0.40	2046.63	2015.04	201.5	768.1
288.00	0.50	2109.81	2078.22	207.8	975.9
288.10	0.60	2172.99	2141.40	214.1	1190.1
288.20	0.70	2236.18	2204.59	220.5	1410.5
288.30	0.80	2299.36	2267.77	226.8	1637.3
288.40	0.90	2362.54	2330.95	233.1	1870.4
288.50	1.00	2425.72	2394.13	239.4	2109.8
288.60	1.10	2488.91	2457.32	245.7	2355.5
288.70	1.20	2552.09	2520.50	252.0	2607.6
288.80	1.30	2615.27	2583.68	258.4	2866.0
288.98	1.48	**2729.00**	2672.14	481.0	3346.9

Note: Bold areas measured using Civil 3D (based on ex. Conditions (2015) topo survey contours)

Note: Pond bottom slopes gradually toward outlet from 287.50 to 287.19. Bottom elevation of 287.50 set for volume calculation purposes based on topographic survey information.

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	12-23-2021

Retrofitted SWM Facility - Pond Discharge Table

ORIFICE CONTROL
Orifice Plate #1

diameter =	242	mm
area =	0.0460	m^2
Orifice C =	0.63	
Invert =	287.19	m

WEIR CONTROL
Emergency Spillway

Length of Weir	3.1	m
Weir Sill Elevation	288.68	m
Weir constant K	Varies	
Side Slope (H:V)	3	

Orifice Equation

$Q = C \times A \times (2gH)^{0.5}$

Weir Control Discharge Rates Calculated as per Weir Control Design Sheet

where
Q = flow rate (cms)
C = constant
A = area of opening(sq. m)
H = net head on the orifice
g = Acceleration due to gravity

	Orifice Plate #1		Emergency Spillway		Hydraulic Control	Total Discharge
Water Leve	Head	Discharge	Head	Discharge		
(m)	(m)	(m^3)	(m)	(m^3)		(cms)
287.60	0.29	0.0690	0.00		**Orifice Plate #1**	0.0690
287.70	0.39	0.0801	0.00		**Orifice Plate #1**	0.0801
287.80	0.49	0.0898	0.00		**Orifice Plate #1**	0.0898
287.90	0.59	0.0985	0.00		**Orifice Plate #1**	0.0985
288.00	0.69	0.1065	0.00		**Orifice Plate #1**	0.1065
288.10	0.79	0.1140	0.00		**Orifice Plate #1**	0.1140
288.20	0.89	0.1210	0.00		**Orifice Plate #1**	0.1210
288.30	0.99	0.1276	0.00		**Orifice Plate #1**	0.1276
288.40	1.09	0.1339	0.00		**Orifice Plate #1**	0.1339
288.50	1.19	0.1400	0.00		**Orifice Plate #1**	0.1400
288.60	1.29	0.1457	0.00		**Orifice Plate #1**	0.1457
288.70	1.39	0.1513	0.02		**Orifice Plate #1**	0.1513
288.80	1.49	0.1566	0.12		**Orifice Plate #1**	0.1566
288.98	1.67	0.1658	0.30		**Orifice Plate #1**	0.1658

Note: Invert of outlet pipe (287.19) is below base of pond as per topographic survey.
Note: Shaded cells have been calculated using partially full inlet control equations (Hydraulic Structures, C.D.Smith, University of Saskatchewan)
Note: GREEN shaded cells have been calculated using Trapezoidal & Rectangular Weir equations (Hydraulic Structures, C.D.Smith, University of Saskatchewan)

TATHAM ENGINEERING

Project:	Melville Court Development	Designed By:	LB
File:	420427	Checked By:	NHF
Municipality:	Township of Oro-Medonte	Date:	12-23-2021

SWM Facility #2 - Stage-Storage-Discharge Table

Water Level (m)	Orifice Plate Discharge (m^3/s)	Orifice Plate Discharge (m^3/s)	Emergency Discharge (m^3/s)	Hydraulic Control	Total Discharge (m^3/s)	Total Storage (ha-m)
287.50	0.0558	0.0000		Orifice Plate #1	**0.000**	0.000
287.60	0.0690	0.0000		Orifice Plate #1	**0.069**	0.018
287.70	0.0801	0.0000		Orifice Plate #1	**0.080**	0.037
287.80	0.0898	0.0000		Orifice Plate #1	**0.090**	0.057
287.90	0.0985	0.0000		Orifice Plate #1	**0.099**	0.077
288.00	0.1065	0.0000		Orifice Plate #1	**0.107**	0.098
288.10	0.1140	0.0000		Orifice Plate #1	**0.114**	0.119
288.20	0.1210	0.0000		Orifice Plate #1	**0.121**	0.141
288.30	0.1276	0.0000		Orifice Plate #1	**0.128**	0.164
288.40	0.1339	0.0000		Orifice Plate #1	**0.134**	0.187
288.50	0.1400	0.0000		Orifice Plate #1	**0.140**	0.211
288.60	0.1457	0.0000		Orifice Plate #1	**0.146**	0.236
288.70	0.1513	0.0000		Orifice Plate #1	**0.151**	0.261
288.80	0.1566	0.0000		Orifice Plate #1	**0.157**	0.287
288.98	0.1658	0.0000		Orifice Plate #1	**0.166**	0.335

TATHAM ENGINEERING	Project:	Melville Court Development	Designed By:	LB
	File:	420427	Checked By:	NHF
	Municipality:	Township of Oro-Medonte	Date:	12-23-2021

Retrofitted SWM Facility - Orifice Plate #1

Orifice Plate = C x A x (2gH)^0.5 C= 0.63

Depth Increment	(invert of Control) Min Elevation	(Top of Pond) Max Elevation
m	m	Max
0.1	287.19	289.10

Pipe Flowing Partially Full or full

Coefficient Metric = 1, Imperial=1.49	1
Pipe Diameter (m)	0.242
Mannings N Full	0.013
Pipe Slope (m/m)	
Elevation (m)	287.19
Inlet Type: 1= Projecting 2= Flush	1

Inlet Control (Smith) Projecting Inlet

MMF Model: y=(a*b+c*x^d)/(b+x^d)

Coefficient Data:

a =	1.68E-02
b =	1.77E+00
c =	3.06E+00
d =	2.27E+00

Inlet Control (Smith) Flush Inlet

MMF Model: y=(a*b+c*x^d)/(b+x^d)

Coefficient Data:

a =	-1.08E-03
b =	2.30E+00
c =	3.95E+00
d =	2.08E+00

Water Elevation	Depth from Min. Elevation	Pipe Partially Full Inlet Control Flow (Smith)
m	m	m^3/s
287.19	0.00	
287.20	0.10	0.001
287.30	0.20	0.008
287.40	0.30	0.026
287.50	0.40	0.056
287.60	0.50	0.069
287.70	0.60	0.080
287.80	0.70	0.090
287.90	0.80	0.099
288.00	0.90	0.107
288.10	1.00	0.114
288.20	1.10	0.121
288.30	1.20	0.128

TATHAM ENGINEERING

PROJECT	Melville Court Development	FILE	420427
		DATE	12-23-2021
SUBJECT	Preliminary Overflow Weir Calculations	NAME	LB
		PAGE	1 OF 1

Trapezoidal Broad Crested Weir

Source: Hydraulic Structures, C.D.Smith, University of Saskatchewan

Trapezoidal Weir

The trapezoidal weir is a combination of the rectangular weir and the triangular weir

Enter

W	Weir Bottom Width (m)	3
H	Head (m)	0
L	Weir Downstream Length	5
S	Side Slope (horizontal):1	5

Rectangular Weir $Q = CWH^{3/2}$

H/L 0.057

C 1.5281

Result

Q Rectangular Weir Flow (m^3/s) 0.7784

Triangular Weir $Q = CH^{5/2}\tan(\theta/2)$

Notch Angle (one side) 78.69 degrees

Notch Angle (one side) 1.3734 radians

$\tan(\theta/2)$ 5.00

Triangular H/L 0.057

C 1.0898

Result

Q Triangular Weir Flow (m^3/s) 0.2686

Total Rectangular + Triangular Weir

Q Total Flow (m^3/s) **1.047**

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\49424892-bb01
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\49424892-bb01

DATE: 01-19-2022                          TIME: 08:05:00

USER:

COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 01 - 2 year 4 Hour Chicag **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM               10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.16  3.03   3.38 0.10   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM               10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.03  2.67   5.05 0.15   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM               10.0
    [ Ptot= 33.08 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.02  1.40   7.22 0.22   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM               10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01  1.33   7.78 0.24   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM               10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.09  1.33  11.73 0.35   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM               10.0
    [ Ptot= 33.08 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.06  1.33  12.30 0.37   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.07  1.33  11.03  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.16  1.33  11.44  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.17  1.33  10.74  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.17  1.33   7.07  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.05  2.47   7.06  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.21  3.03   3.93  n/a   0.000
*
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\d3e15435-e273
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\d3e15435-e273

DATE: 01-19-2022                          TIME: 08:05:00

USER:

COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 02 - 5 Year 4 Hour Chicag **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM               10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.31  3.03   6.52 0.15   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM               10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.06  2.50   9.06 0.21   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM               10.0
    [ Ptot= 43.85 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.03  1.40  12.39 0.28   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM               10.0
    [ Ptot= 43.85 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01  1.33  12.36 0.28   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM               10.0
    [ Ptot= 43.85 mm ]
```

```
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.13  1.33  17.28 0.39   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 43.85 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.08  1.33  17.75 0.40   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.09  1.33  16.24  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.22  1.33  16.84  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.24  1.33  16.11  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.25  1.33  11.55  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.08  3.12  11.54  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.39  3.03   7.28  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\a7db6a67-77b2
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\a7db6a67-77b2


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : Run 03 - 10 Year 4 Hour Chica **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.44  3.03   9.04 0.18   0.000
    [CN=61.2         ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.08  2.50  12.17 0.24   0.000
    [CN=66.6         ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.04  1.40  16.30 0.32   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  15.79 0.31   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.15  1.33  21.29 0.42   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                 10.0
    [ Ptot= 50.98 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.09  1.33  21.63 0.42   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.11  1.33  20.00  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.26  1.33  20.74  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.29  1.33  20.01  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.30  1.33  14.94  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.09  3.50  14.94  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.52  3.03   9.93  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\a50fe444-ba17
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\a50fe444-ba17


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : Run 04 - 25 Hour 4 Hour Chica **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                 10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.61  2.80  12.57 0.21   0.000
    [CN=61.2         ]
```

```
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.11  2.50  16.45 0.28   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.05  1.40  21.57 0.36   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  20.41 0.34   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.19  1.33  26.54 0.44   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 59.78 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.11  1.33  26.71 0.45   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.13  1.33  24.94  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.32  1.33  25.86  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.36  1.33  25.15  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.37  1.33  19.53  n/a   0.000
*
 ** Reservoir
    OUTFLOW:              0401  1  1.0    9.98    0.10  3.85  19.52  n/a   0.000
    OVERFLOW:             0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.71  3.03  13.62  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\3b97ad95-e539
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\3b97ad95-e539


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: _____________________________________________________

  **********************************
  ** SIMULATION : Run 05 - 50 Year 4 Hour Chica **
```

```
  ********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.76  2.80  15.53 0.23   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.13  2.50  19.97 0.30   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.06  1.40  25.83 0.39   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.02  1.33  24.16 0.36   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.21  1.33  30.73 0.46   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM                10.0
    [ Ptot= 66.46 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.13  1.33  30.74 0.46   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.15  1.33  28.90  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.36  1.33  29.95  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.41  1.33  29.27  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.43  1.33  23.26  n/a   0.000
*
 ** Reservoir
    OUTFLOW:              0401  1  1.0    9.98    0.11  4.02  23.25  n/a   0.000
    OVERFLOW:             0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.87  2.80  16.70  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\155055ee-a743
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\155055ee-a743
```

DATE: 01-19-2022 TIME: 08:05:00

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 06 - 100 Year 4 Hour Chic **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    CHIC STORM               10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.92  2.80  18.64 0.26   0.000
    [CN=61.2         ]
    [ N = 3.0:Tp 1.16]
*
    CHIC STORM               10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.16  2.50  23.62 0.32   0.000
    [CN=66.6         ]
    [ N = 3.0:Tp 0.91]
*
    CHIC STORM               10.0
    [ Ptot= 72.98 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.08  1.40  30.19 0.41   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    CHIC STORM               10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.03  1.33  28.01 0.38   0.000
    [I%=10.0:S%= 2.00]
*
    CHIC STORM               10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.24  1.33  34.97 0.48   0.000
    [I%=25.0:S%= 2.00]
*
    CHIC STORM               10.0
    [ Ptot= 72.98 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.14  1.33  34.82 0.48   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.17  1.33  32.91  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.41  1.33  34.10  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.47  1.33  33.45  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.49  1.33  27.10  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.12  4.08  27.09  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.03  2.80  19.91  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
```

```
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\vO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\2691caed-a310
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\2691caed-a310

DATE: 01-19-2022 TIME: 08:05:00

USER:

COMMENTS: _____

  ************************************************
  ** SIMULATION : Run 07 - 2 Year 24 Hour SCS   **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM               15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    0.42 12.83  11.27 0.20   0.000
    [CN=61.2         ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM               15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.08 12.67  14.82 0.26   0.000
    [CN=66.6         ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM               15.0
    [ Ptot= 56.53 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.04 11.78  16.03 0.28   0.000
    [CN=74.0         ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM               15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.01 11.83  18.65 0.33   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM               15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.10 11.67  24.56 0.43   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM               15.0
    [ Ptot= 56.53 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.06 11.67  24.80 0.44   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.07 11.67  23.08  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.17 11.67  23.93  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.19 11.67  23.21  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.21 11.77  17.79  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.08 13.25  17.78  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.50 12.83  12.26  n/a   0.000
*
```

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\523ac905-8070
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\523ac905-8070


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 08 - 5 Year 24 Hour SCS   **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                 15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    0.76 12.83  19.72 0.26   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                 15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0202  1 10.0    6.45    0.13 12.67  24.78 0.33   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                 15.0
    [ Ptot= 74.97 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.06 11.78  26.17 0.35   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD        1001  1 10.0    0.35    0.02 11.83  29.21 0.39   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD        0105  1 10.0    1.70    0.14 11.67  36.30 0.48   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 74.97 mm ]
*
  * CALIB STANDHYD        0100  1 10.0    0.90    0.08 11.67  36.09 0.48   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.10 11.67  34.16  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.24 11.67  35.39  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.28 11.75  34.76  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.33 11.78  28.31  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.10 13.67  28.31  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.86 12.83  21.01  n/a   0.000
*
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.

                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\abf5fbbe-a18b
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\abf5fbbe-a18b


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 09 - 10 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND              HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                    min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    1.02 12.83  26.18 0.30   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0202  1 10.0    6.45    0.18 12.67  32.23 0.37   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.08 11.78  33.62 0.39   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
  * CALIB STANDHYD        1001  1 10.0    0.35    0.03 11.83  36.95 0.42   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
```

```
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.17 11.67  44.71 0.51   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot= 87.24 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.10 11.67  44.16 0.51   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.12 11.67  42.14  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.29 11.67  43.62  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.36 11.77  43.07  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.42 11.78  36.07  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.11 13.87  36.06  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.13 12.83  27.67  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\5f8983f8-3f6b
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\5f8983f8-3f6b


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: ________________________________________________________


  ************************************************
  ** SIMULATION : Run 10 - 25 Year 24 Hour SCS  **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak    R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    1.37 12.83  34.87 0.34   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD         0202  1 10.0    6.45    0.23 12.67  42.09 0.41   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.10 11.78  43.36 0.42   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.04 11.67  47.09 0.46   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.21 11.67  55.57 0.54   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                 15.0
    [ Ptot=102.29 mm ]
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.12 11.67  54.58 0.53   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.16 11.67  52.48  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.37 11.67  54.26  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.46 11.77  53.83  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.55 11.78  46.25  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.13 14.05  46.24  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.49 12.83  36.59  n/a   0.000
*
================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\ee8abf5a-6e9a
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\ee8abf5a-6e9a


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: ________________________________________________________


  ************************************************
  ** SIMULATION : Run 11 - 50 year 24 Hour SCS  **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak    R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                 15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD         0201  1 14.0   56.24    1.66 12.83  41.91 0.37   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
```

```
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.27 12.67  49.98 0.44   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.12 11.78  51.06 0.45   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.05 11.67  55.14 0.49   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.24 11.83  64.11 0.56   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=113.66 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.14 11.67  62.77 0.55   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.19 11.67  60.64  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.43 11.67  62.64  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.54 11.77  62.30  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.64 11.80  54.34  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.14 14.15  54.33  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    1.79 12.83  43.78  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\783637b2-51ff
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\783637b2-51ff


DATE: 01-19-2022                          TIME: 08:05:00

USER:


COMMENTS: _____________________________________________________________


  **********************************************
  ** SIMULATION : Run 12 - 100 Year 24 Hour SCS **
  **********************************************
```

```
  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm           cms


     START @  0.00 hrs
     -----------------
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0201  1 14.0   56.24    1.96 12.83  49.17 0.39   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0202  1 10.0    6.45    0.32 12.50  58.04 0.46   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
 ** CALIB NASHYD        0106  1  1.0    0.58    0.14 11.78  58.88 0.47   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       1001  1 10.0    0.35    0.06 11.67  63.34 0.51   0.000
    [I%=10.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       0105  1 10.0    1.70    0.36 11.67  72.74 0.58   0.000
    [I%=25.0:S%= 2.00]
*
    MASS STORM                  15.0
    [ Ptot=124.82 mm ]
*
  * CALIB STANDHYD       0100  1 10.0    0.90    0.15 11.67  71.06 0.57   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.21 11.67  68.90  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.57 11.67  71.11  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.67 11.67  70.87  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.77 11.75  62.58  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.15 14.27  62.57  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    2.09 12.83  51.19  n/a   0.000
*
================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\9f1a3208-218a
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\9f1a3208-218a
```

DATE: 01-19-2022 TIME: 08:05:00

USER:

COMMENTS: _____

```
  **********************************************
  ** SIMULATION : Run 13 - 25 mm                **
  **********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\a5ccaa7c-cd06-4942-80d0-1abfc065ec5c\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0201  1 14.0   56.24    0.08  3.73   1.63 0.07   0.000
    [CN=61.2        ]
    [ N = 3.0:Tp 1.16]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\a5ccaa7c-cd06-4942-80d0-1abfc065ec5c\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0202  1 10.0    6.45    0.02  3.00   2.71 0.11   0.000
    [CN=66.6        ]
    [ N = 3.0:Tp 0.91]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\a5ccaa7c-cd06-4942-80d0-1abfc065ec5c\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.01  1.58   4.07 0.16   0.000
    [CN=74.0        ]
    [ N = 3.0:Tp 0.11]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\a5ccaa7c-cd06-4942-80d0-1abfc065ec5c\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD       1001  1 10.0    0.35    0.00  1.50   4.89 0.20   0.000
    [I%=10.0:S%= 2.00]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\a5ccaa7c-cd06-4942-80d0-1abfc065ec5c\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD       0105  1 10.0    1.70    0.05  1.50   8.04 0.32   0.000
    [I%=25.0:S%= 2.00]
*
    READ STORM                10.0
    [ Ptot= 25.02 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\a5ccaa7c-cd06-4942-80d0-1abfc065ec5c\754080c7-048d-4c71-b842-e68
    remark: 25MMCHI
*
 *  CALIB STANDHYD       0100  1 10.0    0.90    0.03  1.50   8.61 0.34   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.03  1.50   7.57  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.08  1.50   7.84  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.09  1.50   7.22  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    0.09  1.50   4.30  n/a   0.000
*
 ** Reservoir
    OUTFLOW:             0401  1  1.0    9.98    0.03  2.75   4.30  n/a   0.000
    OVERFLOW:            0401  3  1.0    0.00    0.00  0.00   0.00  n/a   0.000
*
    ADD [  0201+  0401]  0902  3  1.0   66.22    0.11  3.50   2.03  n/a   0.000
*
 FINISH
```

****
** SIMULATION:Run 01 - 2 year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1280	0.1640
0.0690	0.0180	0.1340	0.1870
0.0800	0.0370	0.1400	0.2110
0.0900	0.0570	0.1460	0.2360
0.0990	0.0770	0.1510	0.2610
0.1070	0.0980	0.1570	0.2870
0.1140	0.1190	0.1660	0.3350
0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.170	1.33	7.07
OUTFLOW: ID= 1 (0401)	9.980	0.054	2.47	7.06

PEAK FLOW REDUCTION [Qout/Qin](%)= 31.70
TIME SHIFT OF PEAK FLOW (min)= 68.00
MAXIMUM STORAGE USED (ha.m.)= 0.0141

****
** SIMULATION:Run 02 - 5 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1280	0.1640
0.0690	0.0180	0.1340	0.1870
0.0800	0.0370	0.1400	0.2110
0.0900	0.0570	0.1460	0.2360
0.0990	0.0770	0.1510	0.2610
0.1070	0.0980	0.1570	0.2870
0.1140	0.1190	0.1660	0.3350
0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.246	1.33	11.55
OUTFLOW: ID= 1 (0401)	9.980	0.076	3.12	11.54

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.69
TIME SHIFT OF PEAK FLOW (min)=107.00
MAXIMUM STORAGE USED (ha.m.)= 0.0293

****
** SIMULATION:Run 03 - 10 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1280	0.1640
0.0690	0.0180	0.1340	0.1870
0.0800	0.0370	0.1400	0.2110
0.0900	0.0570	0.1460	0.2360
0.0990	0.0770	0.1510	0.2610
0.1070	0.0980	0.1570	0.2870
0.1140	0.1190	0.1660	0.3350
0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.301	1.33	14.94
OUTFLOW: ID= 1 (0401)	9.980	0.086	3.50	14.94

PEAK FLOW REDUCTION [Qout/Qin](%)= 28.42
TIME SHIFT OF PEAK FLOW (min)=130.00
MAXIMUM STORAGE USED (ha.m.)= 0.0480

****
** SIMULATION:Run 04 - 25 Hour 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1280	0.1640
0.0690	0.0180	0.1340	0.1870
0.0800	0.0370	0.1400	0.2110
0.0900	0.0570	0.1460	0.2360
0.0990	0.0770	0.1510	0.2610
0.1070	0.0980	0.1570	0.2870
0.1140	0.1190	0.1660	0.3350
0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.371	1.33	19.53
OUTFLOW: ID= 1 (0401)	9.980	0.099	3.85	19.52

PEAK FLOW REDUCTION [Qout/Qin](%)= 26.59
TIME SHIFT OF PEAK FLOW (min)=151.00
MAXIMUM STORAGE USED (ha.m.)= 0.0760

****
** SIMULATION:Run 05 - 50 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1280	0.1640
0.0690	0.0180	0.1340	0.1870
0.0800	0.0370	0.1400	0.2110
0.0900	0.0570	0.1460	0.2360
0.0990	0.0770	0.1510	0.2610
0.1070	0.0980	0.1570	0.2870
0.1140	0.1190	0.1660	0.3350
0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.429	1.33	23.26
OUTFLOW: ID= 1 (0401)	9.980	0.108	4.02	23.25

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.12
TIME SHIFT OF PEAK FLOW (min)=161.00
MAXIMUM STORAGE USED (ha.m.)= 0.1006

****
** SIMULATION:Run 06 - 100 Year 4 Hour Chicago **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	DT= 1.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1280	0.1640
0.0690	0.0180	0.1340	0.1870
0.0800	0.0370	0.1400	0.2110
0.0900	0.0570	0.1460	0.2360
0.0990	0.0770	0.1510	0.2610
0.1070	0.0980	0.1570	0.2870
0.1140	0.1190	0.1660	0.3350
0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.487	1.33	27.10
OUTFLOW: ID= 1 (0401)	9.980	0.117	4.08	27.09

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.94
TIME SHIFT OF PEAK FLOW (min)=165.00
MAXIMUM STORAGE USED (ha.m.)= 0.1270

****
** SIMULATION:Run 07 - 2 Year 24 Hour SCS **
****

RESERVOIR(0401)	IN= 2---> OUT= 1	OVERFLOW IS OFF

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.212	11.77	17.79
OUTFLOW: ID= 1 (0401)	9.980	0.081	13.25	17.78

PEAK FLOW REDUCTION [Qout/Qin](%)= 38.24
TIME SHIFT OF PEAK FLOW (min)= 89.00
MAXIMUM STORAGE USED (ha.m.)= 0.0392

****
** SIMULATION:Run 08 - 5 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.330	11.78	28.31
OUTFLOW: ID= 1 (0401)	9.980	0.101	13.67	28.31

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.73
TIME SHIFT OF PEAK FLOW (min)=113.00
MAXIMUM STORAGE USED (ha.m.)= 0.0835

****
** SIMULATION:Run 09 - 10 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.421	11.78	36.07
OUTFLOW: ID= 1 (0401)	9.980	0.114	13.87	36.06

PEAK FLOW REDUCTION [Qout/Qin](%)= 27.11
TIME SHIFT OF PEAK FLOW (min)=125.00
MAXIMUM STORAGE USED (ha.m.)= 0.1197

****
** SIMULATION:Run 10 - 25 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.546	11.78	46.25
OUTFLOW: ID= 1 (0401)	9.980	0.130	14.05	46.24

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.74
TIME SHIFT OF PEAK FLOW (min)=136.00
MAXIMUM STORAGE USED (ha.m.)= 0.1699

****
** SIMULATION:Run 11 - 50 year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.642	11.80	54.34
OUTFLOW: ID= 1 (0401)	9.980	0.140	14.15	54.33

PEAK FLOW REDUCTION [Qout/Qin](%)= 21.82
TIME SHIFT OF PEAK FLOW (min)=141.00
MAXIMUM STORAGE USED (ha.m.)= 0.2118

****
** SIMULATION:Run 12 - 100 Year 24 Hour SCS **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0901)	9.980	0.769	11.75	62.58
OUTFLOW: ID= 1 (0401)	9.980	0.150	14.27	62.57

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.49
TIME SHIFT OF PEAK FLOW (min)=151.00
MAXIMUM STORAGE USED (ha.m.)= 0.2555

****
** SIMULATION:Run 13 - 25 mm **
****

RESERVOIR(0401)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1280	0.1640
	0.0690	0.0180	0.1340	0.1870
	0.0800	0.0370	0.1400	0.2110
	0.0900	0.0570	0.1460	0.2360
	0.0990	0.0770	0.1510	0.2610
	0.1070	0.0980	0.1570	0.2870
	0.1140	0.1190	0.1660	0.3350
	0.1210	0.1410	0.0000	0.0000

```
                        0.0990     0.0770   |   0.1510      0.2610
                        0.1070     0.0980   |   0.1570      0.2870
                        0.1140     0.1190   |   0.1660      0.3350
                        0.1210     0.1410   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0901)      9.980      0.087      1.50       4.30
   OUTFLOW: ID= 1 (  0401)      9.980      0.031      2.75       4.30

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 36.01
                   TIME SHIFT OF PEAK FLOW         (min)= 75.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0082

--------------------------------------------------------------------------------
```

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2008)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
        V  V    I       SS  U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
Copyright 2007 - 2021 Smart City Water Inc
All rights reserved.


                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\aa6199a1-aad0
  Summary filename: C:\Users\LBuss\AppData\Local\Civica\VH5\18b1f826-8929-408e-9936-e2d934269cf1\aa6199a1-aad0


DATE: 01-19-2022                          TIME: 08:06:58

USER:


COMMENTS: _____________________________________________________


  ************************************************
  ** SIMULATION : HAZEL.STM                     **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\cf3225d1-d683-447b-9033-5525d80b52d4\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 ** CALIB NASHYD         0201  1 14.0   56.24    5.11 11.20 149.83 0.71   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 1.16]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\cf3225d1-d683-447b-9033-5525d80b52d4\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 ** CALIB NASHYD         0202  1 10.0    6.45    0.66 11.00 163.02 0.77   0.000
    [CN=82.0         ]
    [ N = 3.0:Tp 0.91]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\cf3225d1-d683-447b-9033-5525d80b52d4\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 ** CALIB NASHYD         0106  1  1.0    0.58    0.08 10.00 176.04 0.83   0.000
    [CN=87.0         ]
    [ N = 3.0:Tp 0.07]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\cf3225d1-d683-447b-9033-5525d80b52d4\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 *  CALIB STANDHYD        1001  1 10.0    0.35    0.05 10.00 167.00 0.79   0.000
    [I%=10.0:S%= 2.00]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\cf3225d1-d683-447b-9033-5525d80b52d4\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 *  CALIB STANDHYD        0105  1 10.0    1.70    0.23 10.00 173.51 0.82   0.000
    [I%=25.0:S%= 2.00]
*
    READ STORM                12.0
    [ Ptot=212.00 mm ]
    fname : C:\Users\LBuss\AppData\Local\Temp\cf3225d1-d683-447b-9033-5525d80b52d4\b3895df3-8984-4913-9a29-d81
    remark: HAZEL.STM
*
 *  CALIB STANDHYD        0100  1 10.0    0.90    0.12 10.00 169.33 0.80   0.000
    [I%=30.0:S%= 2.00]
*
    ADD [  0100+  1001]  0901  3 10.0    1.25    0.17 10.00 168.68  n/a   0.000
*
    ADD [  0901+  0105]  0901  1 10.0    2.95    0.40 10.00 171.46  n/a   0.000
*
    ADD [  0901+  0106]  0901  3  1.0    3.53    0.48 10.00 172.21  n/a   0.000
*
    ADD [  0901+  0202]  0901  1  1.0    9.98    1.02 11.00 166.27  n/a   0.000
*
    ADD [  0201+  0901]  0902  3  1.0   66.22    6.03 11.00 152.31  n/a   0.000
*
 FINISH

================================================================================================================
```

Water Quality Control

TATHAM ENGINEERING

PROJECT	Melville Court Development	FILE	420427
		DATE	21-Dec-21
SUBJECT	Water Quality - Treatment Train Calculation - to Outlet #1	NAME	LB
		PAGE	1 OF 1

Water Quality Treatment Train Calculation

Site Area

Drainage Area to Controls= 4.57 ha Imperviousness of Drainage Area to Controls= 20%

Device		Target Total Suspended Solids (TSS) Removal
Primary Treatment	Enhanced Ditches	40%
Secondary Treatment	Existing Dry Pond	60%
Tertiary Treatment	Veg. Filter Strip	35%

$$\boldsymbol{TSS\ Removal} = \boldsymbol{(1 - ((1 - R_P) * (1 - R_S) * (1 - R_T))}$$

where:

R_P = % TSS Removal provided by Primary Treatment Strategy

R_S = % TSS Removal provided by Secondary Treatment Strategy

R_T = % TSS Removal provided by Tertiary Treatment Strategy

TSS Removal Provided By Controls = 84% %

PROJECT	Melville Court Development	FILE	420427
		DATE	21-Dec-21
SUBJECT	Water Quality - Treatment Train Calculation - to Outlet #2	NAME	LB
		PAGE	1 OF 1

Water Quality Treatment Train Calculation

Site Area

Drainage Area to Controls= 1.68 ha Imperviousness of Drainage Area to Controls= 20%

Device		Target Total Suspended Solids (TSS) Removal
Primary Treatment	Enhanced Ditches	40%
Secondary Treatment	Enhanced Lot-Line Swale	40%

$$\boldsymbol{TSS\ Removal} = \ (\mathbf{1} - ((\mathbf{1} - \boldsymbol{R_P}) * (\mathbf{1} - \boldsymbol{R_S}))$$

where:

R_P = % TSS Removal provided by Primary Treatment Strategy

R_S = % TSS Removal provided by Secondary Treatment Strategy

TSS Removal Provided By Controls = 64% %

Note: Site drainage area of 1.68 ha subject to water quality controls excludes rooftop area as this area is generally considered to be clean, and, therefore, not subject to water quality controls.

Appendix D:
Phosphorus Budget Calculations

TATHAM ENGINEERING

PROJECT	Melville Court Development	FILE	420427
		DATE	2021-12-24
SUBJECT	Phosphorus Budget Assessment	DESIGNED	LB
		CHECKED	NHF

Phosphorus Loading

			Existing		Proposed	
LAND USE CATEGORY	Existing Phosphorus Loading Rate (kg/ha/year)	Future Phosphorus Loading Rate (kg/ha/year)	Existing Area (ha)	Existing Phosphorus Loading (kg/year)	Area (ha)	Phosphorus Load (kg/year)
Cropland	0.19	0.19	0.00	0.00	0.00	0.00
Hay-Pasture	0.07	0.07	5.42	0.38	0.00	0.00
Turf-Sod	0.12	0.12	0.00	0.00	0.33	0.04
High Intensity Development - C/I	1.82	1.82	0.00	0.00	0.00	0.00
High Intensity Development - R	1.32	1.32	0.00	0.00	0.00	0.00
Low Intensity Development	0.13	0.13	0.00	0.00	6.25	0.81
Quarry	0.08	0.08	0.00	0.00	0.00	0.00
Unpaved Road	0.83	0.83	0.00	0.00	0.00	0.00
Forest	0.05	0.05	1.16	0.06	0.00	0.00
Transition	0.06	0.06	0.00	0.00	0.00	0.00
Wetland	0.05	0.05	0.00	0.00	0.00	0.00
Open Water	0.26	0.26	0.00	0.00	0.00	0.00
Total			6.58	0.44	6.58	0.85

Controls

	Control Removal Efficiency (%)					Proposed	
Land Use Area	Infiltration Trenches	Enh. Swale	Vegetated Filter Strip	Enh. Ditch	Dry Pond	Area (ha)	Phosphorous Load (kg/year)
Low Intensity Development (50% of Rooftop Area)	0.60		20%	25%	10%	0.23	0.01
Low Intensity Development (to Outlet #1)			20%	25%	10%	4.34	0.30
Low Intensity Development (to Outlet #2)		25%		25%		1.68	0.12
Turf-Sod			20%			0.33	0.03
Total Phosphorus (No Controls)							0.85
Total Phosphorus (With Controls)							0.47

Summary

Existing Phosphorus Load	0.44	kg/year
Post Development Phosphorus Load (no controls)	0.85	kg/year
Increase	0.41	kg/year
Post Development Phosphorus Load (with controls)	0.47	kg/year

Phosphorus Offsetting Policy

Post Development Phosphorus Load (with controls)	0.47	kg/year
Offset Calculation (2.5 * P deficit * $35,000)	**$ 40,740.51**	

Appendix E:
Utilities Correspondence

John-Lui Marra

From: David Smith <David.Smith@enbridge.com>
Sent: December 16, 2021 7:55 AM
To: John-Lui Marra
Cc: Matt Brace
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

Follow Up Flag: Follow up
Flag Status: Completed

Good morning John.

We currently have main on the south side of Melville and I think we are going to want to run a new main on the north side to avoid 14 long services. Also there is no main in front of lots 15 and 16.

I will send this to planning and have them determine if gas is available. With the holiday season close to upon us I probably will not have anything back until mid January.

I hope that works.

Thanks.

David Smith
Customer Connections Representative

ENBRIDGE
TEL: 705-739-5254 | CELL: 705-220-5997 | FAX: 705-739-5200
10 Churchill Dr. Barrie ON L4N 8Z5

enbridge.com
Safety. Integrity. Respect. Inclusion.

From: John-Lui Marra <jlmarra@tathameng.com>
Sent: Wednesday, December 15, 2021 4:24 PM
To: David Smith <David.Smith@enbridge.com>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: [External] 420427 - Melville Court Development - Utility Inquiry

Good afternoon David,

I work with Nick Millington at Tatham Engineering who passed along your contact information.

We are working on behalf of Doncor Developments Inc. in support of official plan amendment, zoning by-law amendment, and draft plan of subdivision applications for a development project located on the north side of Melville Court in Oro-Medonte, near Highway 11 and Line 5 North. The project proposes to develop existing agricultural lands by constructing 16 new residences (site plan attached). Currently, only the south side of Melville Court has existing residential units.

We are looking for preliminary comment regarding feasibility of gas servicing for the site to allow us to include commentary regarding such in our Functional Servicing Report.

If you could kindly review and provide comment at your earliest convenience it would be greatly appreciated.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

John-Lui Marra

To: David Smith
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

---

From: David Smith <David.Smith@enbridge.com>
Sent: January 19, 2022 9:54 AM
To: John-Lui Marra <jlmarra@tathameng.com>; Area Planning 50 <AreaPlanning50@enbridge.com>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

Hi John.

We had a little miscommunication here on our end. See my email from earlier. I am submitting this for gas availability to ensure gas is available. As mentioned in my earlier email we will have to install a main on the north side of Melville Court to avoid 14 long services. Costs for the entire site will vary depending on whether the portion along the north side of Melville is installed joint trench with hydro. Is this a possibility? I leave that question with you. First we need to ensure that gas is available off our existing plant.

I will get back to you with that shortly.

Thanks.

David Smith
Customer Connections Representative

ENBRIDGE
TEL: 705-739-5254 | CELL: 705-220-5997 | FAX: 705-739-5200
10 Churchill Dr. Barrie ON L4N 8Z5

enbridge.com
Safety. Integrity. Respect. Inclusion.

From: John-Lui Marra <jlmarra@tathameng.com>
Sent: Wednesday, January 19, 2022 9:48 AM
To: Area Planning 50 <AreaPlanning50@enbridge.com>
Cc: Matt Brace <mbrace@tathameng.com>; David Smith <David.Smith@enbridge.com>
Subject: [External] RE: 420427 - Melville Court Development - Utility Inquiry

Good morning Jennifer,

I appreciate the detailed response. Can you please provide a high-level cost estimate for the main extension to Lots 15 and 16? It would be for the owner's reference.

Thanks,

John-Lui Marra, B.Eng., EIT
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

Enhancing our communities

From: Area Planning 50 <AreaPlanning50@enbridge.com>
Sent: January 19, 2022 9:04 AM
To: John-Lui Marra <jlmarra@tathameng.com>
Cc: Matt Brace <mbrace@tathameng.com>; David Smith <David.Smith@enbridge.com>
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

---

Hi John,

It looks there is already gas main along Melville Court, so with the exception of Lot 15 and 16, all that is required is the gas services to the individual homes. I've attached the Builder Service Order Form, which can be used if there is one builder only within the site. If this isn't the case, please let me know. Please also include the registered plan if at all possible, showing both lot number and civic numbers.

The timeframe for gas services is typically about 6-8 weeks for an exclusive trench gas service, if there are no issues. It looks like the east end of the street does fall within the Lake Simcoe Region Conservation Authority's regulated area, so Enbridge would need to get a Conservation permit for any services that fall within this regulated area. This adds approximately 6-8 weeks onto the timeframe.

The current costs for gas services that are coming off existing gas main are as follows:
Enbridge will provide and install at no cost one service line per civic address to new customers provided that:
1. The distance between the Owner's property line and the front wall of house/building is 20 meters or less
2. The distance between the front wall of house/building and the selected meter location is 2 meters or less

Service and meter installation in excess of these distances will result in additional charges of $32 per meter (plus applicable taxes). In-field measurements or in-field changes will result in additional charges.

For Lots 15 and 16, it does not look like there is gas main coverage on Line 5 North. As these two lots don't have frontage onto Melville Court, we also couldn't run the services off the main on that street either. It looks like a main extension would be required north on Line 5 N. Main extensions for only a couple of homes would incur a significant contribution. The timeframe for main extensions are quite a bit longer as well, typically around 8-12 months. If you'd like we can get a high level estimate for the main extension to reach these two homes.

Sincerely,

Jennifer Wingrove-Jones
Customer Connections Coordinator
—

ENBRIDGE
TEL: 705-739-5237 | FAX: 705-739-5200
10 Churchill Dr, Barrie, Ontario L4N 8Z5

enbridge.com
Safety. Integrity. Respect. Inclusion.

From: John-Lui Marra <jlmarra@tathameng.com>
Sent: December 15, 2021 4:21 PM
To: Area Planning 50 <AreaPlanning50@enbridge.com>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: 420427 - Melville Court Development - Utility Inquiry

Good afternoon,

We are working on behalf of Doncor Developments Inc. in support of official plan amendment, zoning by-law amendment, and draft plan of subdivision applications for a development project located on the north side of Melville Court in Oro-Medonte, near Highway 11 and Line 5 North. The project proposes to develop existing agricultural lands by constructing 16 new residences (site plan attached). Currently, only the south side of Melville Court has existing residential units.

We are looking for preliminary comment regarding feasibility of gas servicing for the site to allow us to include commentary regarding such in our Functional Servicing Report.

If you could kindly review and provide comment at your earliest convenience it would be greatly appreciated.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

This email may contain confidential and/or privileged information for the sole use of the intended recipient. Any review or distribution by others is strictly prohibited. If you have received this email in error, please contact the sender and delete all copies.

Tatham Engineering Limited's agreement to transfer digital documents electronically or otherwise is made under the following conditions:

1. Electronic documents made available by Tatham Engineering Limited are supplied for the recipient's use only under authorization from the current owner and with the consent of Tatham Engineering Limited. It is the responsibility of the recipient to determine the accuracy, completeness and the appropriateness of the information provided.

2. It is agreed that only those hard copy documents bearing the professional seal and signature of the Tatham Engineering Limited project engineer will govern the work of the project. In the event of any dispute concerning an electronic document, the appropriately dated hard copy will be the document used by Tatham Engineering Limited to govern and resolve the dispute.

John-Lui Marra

From: Damstedt, Shannon <shannon.micks@bell.ca>
Sent: December 16, 2021 12:29 PM
To: John-Lui Marra
Cc: Matt Brace
Subject: RE: 420427 - Melville Court Development - Utility Inquiry
Attachments: RFI.xls

Good Afternoon,
Please fill out the attached form and return it at your earliest convenience and then I can forward that to governance and provide you with the plan for Bell.
We have copper cable feeding the homes on the South side at the very least I think we would provide copper to the new homes.
Thank you
Shannon

Shannon Damstedt
Network Planning & Provisioning
Network Provisioning Manager
136 Bayfield St. FL2
Barrie, ON, L4M 3B1

C:(705)627-0597
email: shannon.micks@bell.ca

From: O'Brien, Carol A <carol.obrien@bell.ca>
Sent: December-16-21 8:08 AM
To: John-Lui Marra <jlmarra@tathameng.com>
Cc: Matt Brace <mbrace@tathameng.com>; Damstedt, Shannon <shannon.micks@bell.ca>
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

Good morning

This proposed development would fall under the territory that my peer Shannon Damstedt would manage. I have cc'd her on this email.

Carol

Carol O'Brien
Network Provisioning Manager
136 Bayfield st, Barrie ON
office: 705-722-2405
cell: 705-627-0259

From: John-Lui Marra <jlmarra@tathameng.com>
Sent: December-15-21 4:18 PM
To: O'Brien, Carol A <carol.obrien@bell.ca>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: [EXT]420427 - Melville Court Development - Utility Inquiry

Good afternoon Carol,

I work with Nick Millington at Tatham Engineering who passed along your contact information.

We are working on behalf of Doncor Developments Inc. in support of official plan amendment, zoning by-law amendment, and draft plan of subdivision applications for a development project located on the north side of Melville Court in Oro-Medonte, near Highway 11 and Line 5 North. The project proposes to develop existing agricultural lands by constructing 16 new residences (site plan attached). Currently, only the south side of Melville Court has existing residential units.

We are looking for preliminary comment regarding feasibility of Bell servicing for the site to allow us to include commentary regarding such in our Functional Servicing Report.

If you could kindly review and provide comment at your earliest convenience it would be greatly appreciated.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

John-Lui Marra

From: Xinyi Wang <Xinyi.Wang@rci.rogers.com>
Sent: January 4, 2022 3:21 PM
To: John-Lui Marra
Cc: Matt Brace
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

Hi John,

Subdivision currently requires new fibre build and new node for servicing. Rogers only has existing fibre support for commercial units in this area.

What is the proposed timeline for this subdivision?

Regards,

Xinyi Wang
System Planner Outside Plant Engineering
xinyi.wang@rci.rogers.com

ROGERS.

From: John-Lui Marra <jlmarra@tathameng.com>
Sent: December 22, 2021 11:21 AM
To: Xinyi Wang <Xinyi.Wang@rci.rogers.com>
Cc: Matt Brace <mbrace@tathameng.com>; Graham McPherson <Graham.McPherson@rci.rogers.com>
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

Good morning Xinyi,

I am following up on the below emails. Attached is the site plan of the proposed development. Please advise at your earliest convenience.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

Enhancing our communities

From: Graham McPherson <Graham.McPherson@rci.rogers.com>
Sent: December 15, 2021 5:03 PM
To: John-Lui Marra <jlmarra@tathameng.com>; Xinyi Wang <Xinyi.Wang@rci.rogers.com>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: RE: 420427 - Melville Court Development - Utility Inquiry

---

Hi Xinyi, please see the attached request.

Thanks,

Graham McPherson
System Planner

Outside Plant Engineering - York
244 Newkirk Road
Richmond Hill, ON L4C 3S5

graham.mcpherson@rci.rogers.com

o (705) 812-4528
m (705) 896-9608

From: John-Lui Marra <jlmarra@tathameng.com>
Sent: December 15, 2021 4:14 PM
To: Graham McPherson <Graham.McPherson@rci.rogers.com>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: 420427 - Melville Court Development - Utility Inquiry

Good afternoon Graham,

I work with Nick Millington at Tatham Engineering who passed along your contact information.

We are working on behalf of Doncor Developments Inc. in support of official plan amendment, zoning by-law amendment, and draft plan of subdivision applications for a development project located on the north side of Melville Court in Oro-Medonte, near Highway 11 and Line 5 North. The project proposes to develop existing agricultural lands by constructing 16 new residences (site plan attached). Currently, only the south side of Melville Court has existing residential units.

We are looking for preliminary comment regarding feasibility of Rogers servicing for the site to allow us to include commentary regarding such in our Functional Servicing Report.

If you could kindly review and provide comment at your earliest convenience it would be greatly appreciated.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

Enhancing our communities

2. It is agreed that only those hard copy documents bearing the professional seal and signature of the Tatham Engineering Limited project engineer will govern the work of the project. In the event of any dispute concerning an electronic document, the appropriately dated hard copy will be the document used by Tatham Engineering Limited to govern and resolve the dispute.

This communication is confidential. We only send and receive email on the basis of the terms set out at www.rogers.com/web/content/emailnotice

Ce message est confidentiel. Notre transmission et réception de courriels se fait strictement suivant les modalités énoncées dans l'avis publié à www.rogers.com/aviscourriel

---

Matt Brace

From: John-Lui Marra
Sent: December 22, 2021 11:20 AM
To: BRACKLEY Kevin; SZYMCZAK Sarah
Cc: Matt Brace
Subject: RE: 420427 - Melville Court Development - Utility Inquiry
Attachments: Site plan - Melville Court, Oro.pdf

Good morning Kevin and Sarah,

I am following up on the below email. Attached is the site plan of the proposed development. Please advise at your earliest convenience.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

Enhancing our communities

From: John-Lui Marra
Sent: December 15, 2021 4:32 PM

To: BRACKLEY Kevin <Kevin.BRACKLEY@HydroOne.com>; SZYMCZAK Sarah <Sarah.Szymczak@HydroOne.com>
Cc: Matt Brace <mbrace@tathameng.com>
Subject: 420427 - Melville Court Development - Utility Inquiry

Good afternoon Kevin and Sarah,

I work with Nick Millington at Tatham Engineering who passed along your contact information.

We are working on behalf of Doncor Developments Inc. in support of official plan amendment, zoning by-law amendment, and draft plan of subdivision applications for a development project located on the north side of Melville Court in Oro-Medonte, near Highway 11 and Line 5 North. The project proposes to develop existing agricultural lands by constructing 16 new residences (site plan attached). Currently, only the south side of Melville Court has existing residential units.

We are looking for preliminary comment regarding feasibility of hydro servicing for the site to allow us to include commentary regarding such in our Functional Servicing Report.

If you could kindly review and provide comment at your earliest convenience it would be greatly appreciated.

Thanks,

John-Lui Marra, B.Eng.
Engineering Intern

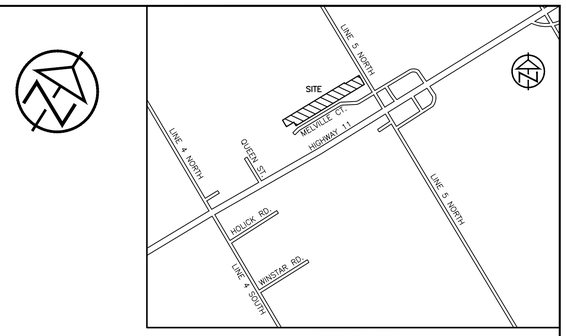
Tatham Engineering Limited
41 King Street, Unit 4 | Barrie | Ontario | L4N 6B5
T 705-733-9037 x2184 | **C** 647-404-2070 | jlmarra@tathameng.com | tathameng.com

Enhancing our communities

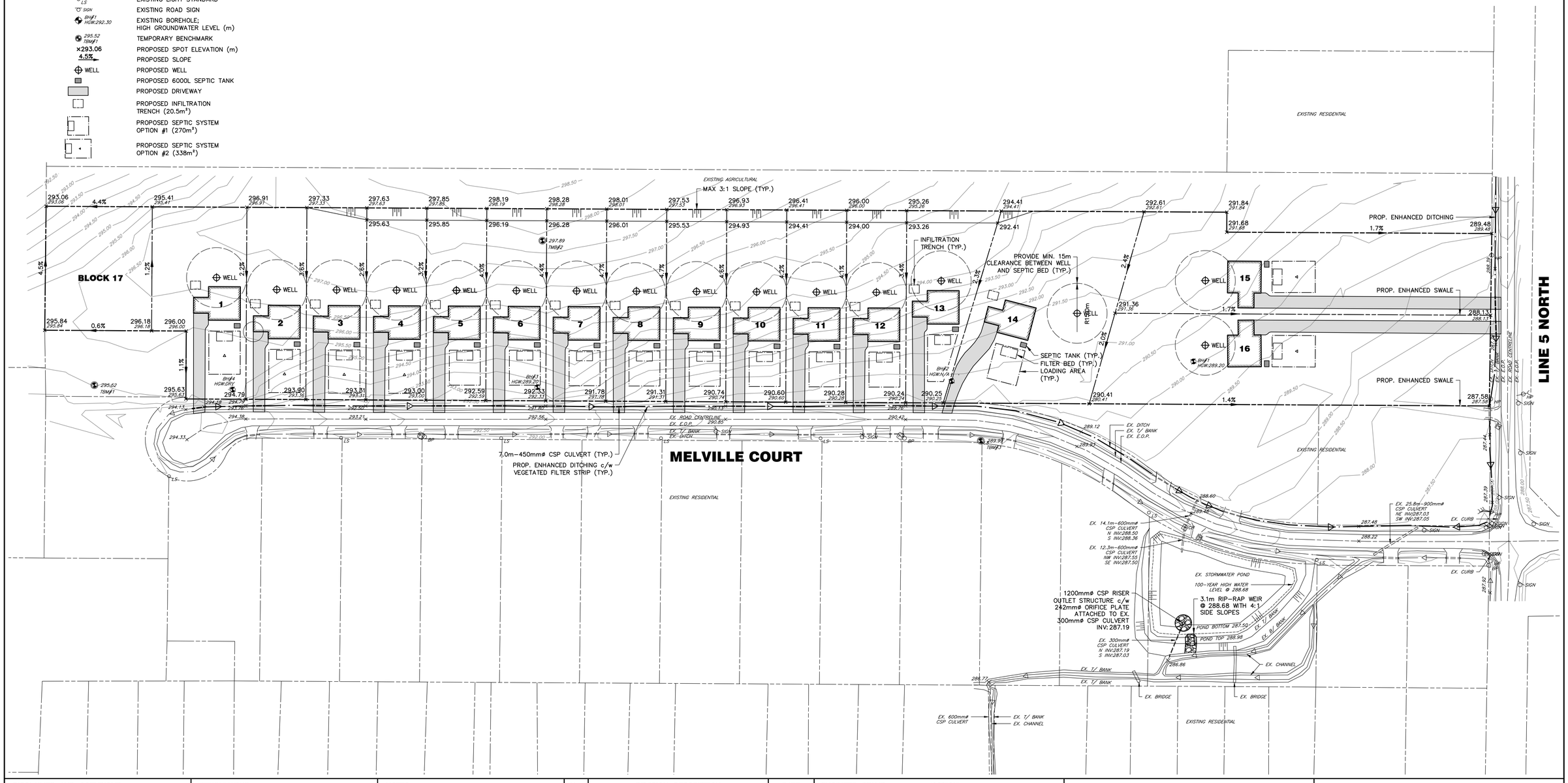
Appendix F: Drawings

LEGEND

- EXISTING PROPERTY LINE
- EXISTING ROAD CENTRELINE
- EXISTING EDGE OF PAVEMENT (E.O.P.)
- 293.00 EXISTING ELEVATION CONTOURS (0.50m INTERVALS)
- EXISTING DITCH CENTRELINE
- EXISTING CULVERT
- PROPOSED PROPERTY LINE
- PROPOSED LOT LINE
- PROPOSED HOUSE
- PROPOSED DITCH CENTRELINE
- PROPOSED CULVERT
- PROPOSED SEPTIC BED LIMIT
- × 293.06 EXISTING SPOT ELEVATION (m)
- CB EXISTING CATCH BASIN
- M EXISTING MAILBOX
- H EXISTING HYDRO TRANSFORMER
- HP EXISTING HYDRO POLE
- BP EXISTING BELL POLE
- LS EXISTING LIGHT STANDARD
- SIGN EXISTING ROAD SIGN
- BH#1 HGW:292.30 EXISTING BOREHOLE; HIGH GROUNDWATER LEVEL (m)
- 295.52 TBM#1 TEMPORARY BENCHMARK
- ×293.06 PROPOSED SPOT ELEVATION (m)
- 4.5% PROPOSED SLOPE
- WELL PROPOSED WELL
- PROPOSED 6000L SEPTIC TANK
- PROPOSED DRIVEWAY
- PROPOSED INFILTRATION TRENCH (20.5m²)
- PROPOSED SEPTIC SYSTEM OPTION #1 (270m²)
- PROPOSED SEPTIC SYSTEM OPTION #2 (338m²)



KEY PLAN
NTS



DISCLAIMER AND COPYRIGHT

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

BENCHMARKS

TBM#1 – ELEVATION 295.52m
TOP OF IRON BAR, WEST OF SUBJECT SITE. LOCATED SOUTH OF PROPOSED BLOCK 17 AND WEST OF PROPOSED LOT 1.

TBM#2 – ELEVATION 297.89m
TOP OF IRON BAR, NORTH WITHIN SUBJECT SITE. LOCATED WITHIN PROPOSED LOT 6.

TBM#3 – ELEVATION 289.99m
TOP OF IRON BAR, SOUTH OF SUBJECT SITE. LOCATED SOUTH OF PROPOSED LOT 14, SOUTH SIDE OF ROAD.

NOTES

DRAFT PLAN PREPARED BY INNOVATIVE PLANNING SOLUTIONS; DATED NOVEMBER 25, 2021.

LEGAL SURVEY COMPLETED BY DEARDEN & STANTON LTD.; DATED JUNE 8, 2004.

TOPOGRAPHIC SURVEY FOR SWM POND AND SOUTH SIDE OF MELVILLE COURT COMPLETED BY C.C. TATHAM & ASSOCIATES LTD.; DATED JULY 2015. TOPOGRAPHIC SURVEY FOR ROAD AND NORTH SIDE OF MELVILLE COURT COMPLETED BY JOETOPO; DATED OCTOBER 6, 2021.

No.	REVISION DESCRIPTION	DATE
1.	FSR – FIRST SUBMISSION	JAN 27/22

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
M. R. BRACE
100230251
Jan. 27/22
PROVINCE OF ONTARIO

MELVILLE COURT DEVELOPMENT
TOWNSHIP OF ORO-MEDONTE

PRELIMINARY SITE SERVICING AND GRADING PLAN

TATHAM ENGINEERING

DESIGN: MB	FILE: 420427	DWG: SSG-1
DRAWN: JLM	DATE: SEP 2021	
CHECK: NM	SCALE: 1:1,000	

Drawing Name: 420427-SG01.dwg, Plotted: Jan 28, 2022

LEGEND

- EXISTING PROPERTY LINE
- SUBJECT SITE
- 293.00 — EXISTING GIS CONTOURS (1.0m INTERVALS)
- EXISTING WATERCOURSE
- EXISTING OVERLAND FLOW DIRECTION
- CATCHMENT BOUNDARY
- 101 — CATCHMENT ID
- 56.01 | 60.6 — CURVE NUMBER/% IMPERVIOUS
- CATCHMENT AREA (ha)

102 | 6.35 | 59.0

REFER TO DRAWING DP-3 FOR ADDITIONAL EXTERNAL DRAINAGE AREA INFORMATION

101 | 56.01 | 60.6

CATCHMENT 101 DRAINS TO THIS LOCATION

LINE 5 NORTH

MELVILLE COURT

A1B | 0.35 | 30%

A1 | 0.90 | 30%

A5 | 1.70 | 40%

EXISTING SWM POND (OUTLET 1)

EXISTING DRAINAGE CHANNEL (OUTLET 2)

A6 | 0.58 | 74.0

294.00 295.00 296.00 297.00 298.00 293.00 292.00 291.00 290.00 289.00 288.00

TATHAM ENGINEERING

MELVILLE COURT DEVELOPMENT
TOWNSHIP OF ORO-MEDONTE
PRE-DEVELOPMENT DRAINAGE PLAN

DWG. No. **DP-1**

SCALE: 1: 2,000	DRAWN: LB/JLM	DATE: AUG/2020	JOB NO. 420427

Drawing Name: 420427 – DP01.dwg, Plotted: Jan 07, 2022

LEGEND

- EXISTING PROPERTY LINE
- SUBJECT SITE
- 293.00 — EXISTING GIS CONTOURS (1.0m INTERVALS)
- EXISTING WATERCOURSE
- PROPOSED LOT LINE
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION
- CATCHMENT BOUNDARY
- 201 / 56.24 / 61.2 — CATCHMENT ID / CURVE NUMBER/% IMPERVIOUS / CATCHMENT AREA (ha)

202 | 6.45 | 66.6

SITE AREA (ha): 4.57
% IMPERVIOUS: 20.0%

SITE AREA (ha): 1.68
% IMPERVIOUS: 20.0 %

REFER TO DRAWING DP-3 FOR ADDITIONAL EXTERNAL DRAINAGE AREA INFORMATION

201 | 56.24 | 61.2

BLOCK 17

MELVILLE COURT

LINE 5 NORTH

CATCHMENT 201 DRAINS TO THIS LOCATION

A1B | 0.35 | 30%

A1 | 0.90 | 30%

A5 | 1.70 | 40%

A6 | 0.58 | 74.0

EXISTING SWM POND (OUTLET 1)

EXISTING DRAINAGE CHANNEL (OUTLET 2)

294.00 293.00 292.00 291.00 290.00 289.00 288.00

TATHAM ENGINEERING

MELVILLE COURT DEVELOPMENT
TOWNSHIP OF ORO-MEDONTE
POST-DEVELOPMENT DRAINAGE PLAN

DWG. No. **DP-2**

SCALE: 1: 2,000	DRAWN: LB/JLM	DATE: AUG/2020	JOB NO. 420427

Drawing Name: 420427 – DP02.dwg, Plotted: Jan 07, 2022

LEGEND

- EXISTING PROPERTY LINE
- SUBJECT SITE
- 293.00 — EXISTING GIS CONTOURS (1.0m INTERVALS)
- EXISTING WATERCOURSE
- EXISTING OVERLAND FLOW DIRECTION
- CATCHMENT BOUNDARY
- 101 / 56.01 | 60.6 — CATCHMENT ID; CURVE NUMBER/% IMPERVIOUS; CATCHMENT AREA (ha)

LINE 5 NORTH

MELVILLE COURT

HIGHWAY 11

EXISTING SWM POND (OUTLET 1)

EXISTING DRAINAGE CHANNEL (OUTLET 2)

	CATCHMENT ID	CURVE NUMBER	% IMPERVIOUS	CATCHMENT AREA (ha)
1	101	56.01	60.6	
2	A1B	0.35	30%	
3	A6	0.58	74.0	
4	102	6.35	59.0	
5	A1	0.90	30%	
6	A4	1.70	40%	

TATHAM ENGINEERING

MELVILLE COURT DEVELOPMENT
TOWNSHIP OF ORO-MEDONTE
OVERALL EXISTING DRAINAGE PLAN

DWG. No. **DP-3**

SCALE: 1: 5,000 | DRAWN: LB/JLM | DATE: AUG/2020 | JOB NO. 420427

Drawing Name: 420427 – DP03.dwg, Plotted: Jan 07, 2022